

Service Manual

Digital Camera

LUMIX

SD
XC

WiFi
CERTIFIED

PictBridge
USB LAN WLAN
✓ — ✓

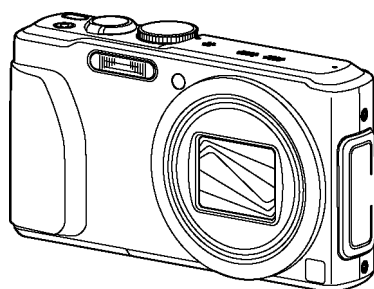
NANO
SURFACE
COATING

AVCHD™
Progressive

DLNA
CERTIFIED™

WIRELESS
SETUP

ED



Model No. **DMC-TZ37EC**

DMC-TZ40EB

DMC-TZ40EE

DMC-TZ40EF

DMC-TZ40EG

DMC-TZ40EP

DMC-TZ40EA

DMC-TZ40GA

DMC-TZ40GC

DMC-TZ40GN

DMC-TZ41EG

DMC-ZS27PC

DMC-ZS30P

DMC-ZS30PC

DMC-ZS30PU

DMC-ZS30GK

DMC-ZS30GH

DMC-ZS30GT

Colours

- (S).....Silver Type (only DMC-TZ40EB/EE/EF/
EG/EP, TZ41, ZS30P/PC/GK)
- (K).....Black Type
- (W).....White Type (except DMC-TZ40EA,
TZ37EB/EC, ZS30PC/PU, ZS27P/PC)
- (R).....Red Type (except DMC-TZ37EB/EC,
ZS30P/PC/PU/GH, ZS27P/PC)

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⚠ WARNING

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


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1 Safety Precautions

1.1. General Guidelines

1. IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by  in the Schematic Diagrams, Circuit Board Layout, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock fire, or other hazards. Do not modify the original design without permission of manufacturer.

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

1.2. Leakage Current Cold Check

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

1.3. Leakage Current Hot Check (See Figure 1)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a $1.5\text{k}\Omega$, 10 W resistor, in parallel with a $0.15\mu\text{F}$ capacitor, between each exposed metallic part on the set and a good earth ground, as shown in Figure 1.
3. Use an AC voltmeter, with $1\text{ k}\Omega/\text{V}$ or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 V RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed $1/2\text{ mA}$. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

Hot-Check Circuit

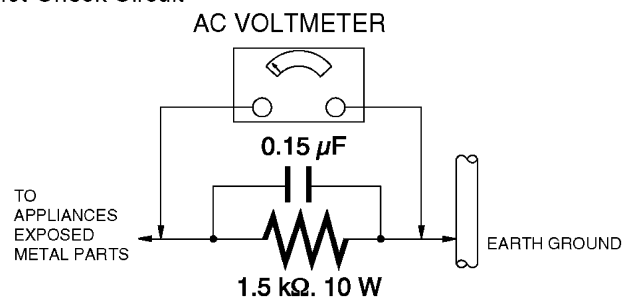


Figure 1

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

CAUTION:

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

[Discharging Procedure]

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

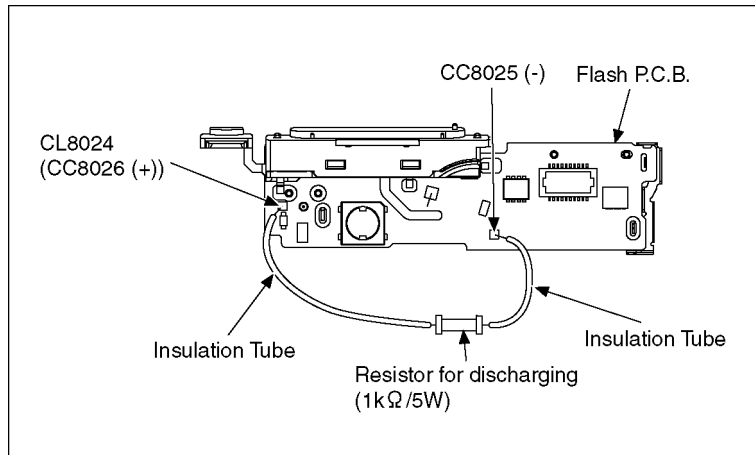


Fig. F1

2 Warning

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

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

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

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

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

CAUTION:

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

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

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

ENGLISH



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

FRANÇAIS

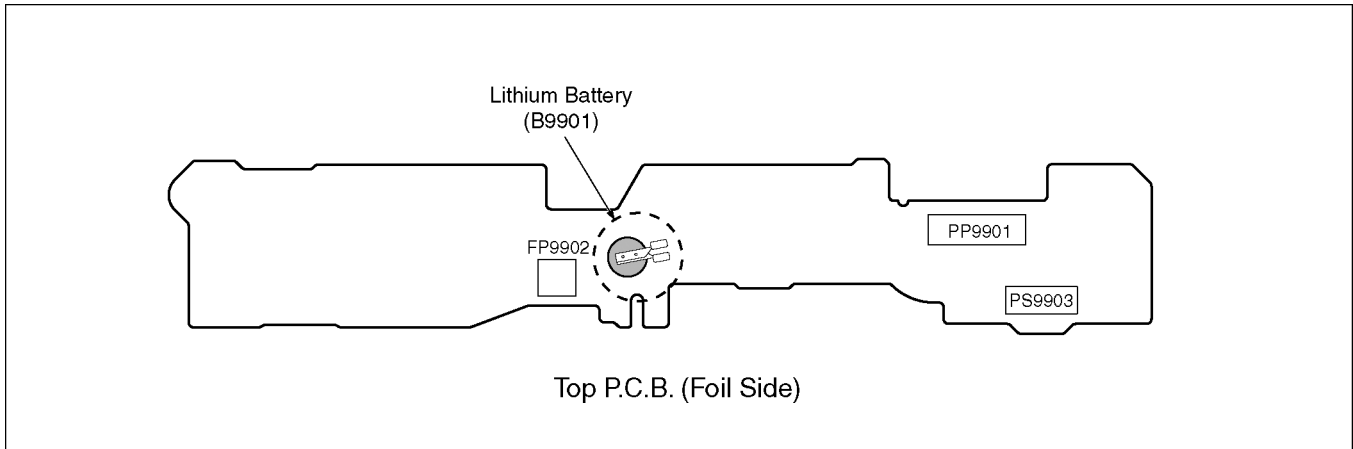


L'appareil que vous vous êtes procuré est alimenté par une batterie au lithium-ion/polymère recyclable. Pour des renseignements sur le recyclage de la batterie, veuillez composer le 1-800-8-BATTERY.

2.3. How to Replace the Lithium Battery

2.3.1. Replacement Procedure

1. Remove the Top P.C.B. (Refer to Disassembly Procedures.)
2. Unsolder the Lithium battery (Ref. No. **B9901** at foil side of Top P.C.B.) and then replace it into new one.



CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

CAUTION

The battery used in this device may present a risk of fire or chemical burn if mistreated.
Do not recharge, disassemble, heat above 100°C (212°F), or incinerate.
Replace battery with Panasonic part number ML-421S/DN only.
Use of another battery may present a risk of fire or explosion.
Dispose of used battery promptly.
Keep away from children.
Do not disassemble and do not dispose of in fire.

Note:

The lithium battery is a critical component.
(Type No.: ML-421S/DN **Manufactured by Energy Company, Panasonic Corporation.**)
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in equipment designed specifically for its use.
Replacement batteries must be of the same type and manufacture.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the old battery or re-use it for any other purpose.
It should be disposed of in waste products destined for burial rather than incineration.

(For English)

CAUTION

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

(For German)

ACHTUNG

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

(For French)

MISE EN GARDE

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

Note:

Above caution is applicable for a battery pack which is for DMC-TZ37/TZ40/TZ41/ZS27/ZS30 series, as well.

3 Service Navigation

3.1. Introduction

This service manual contains technical information, which will 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. Service Navigation

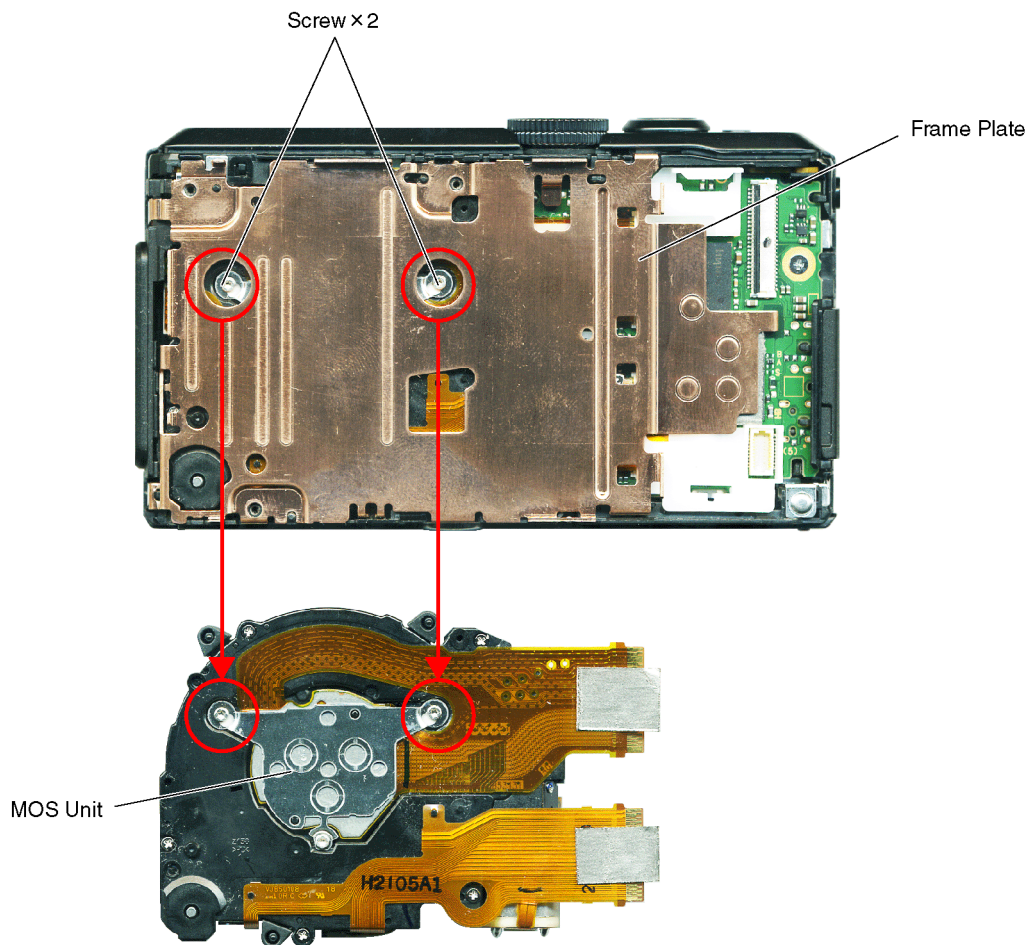
3.2.1. About lens block

The image sensor (MOS) unit which are connected to the lens unit with 3 screws. 2 of these 3 screws are locked, after performing the Optical tilt adjustment. During servicing, if one of MOS fixing screws are loosened, the Optical tilt adjustment must be performed. (About the Optical tilt adjustment, refer to the "9.3.2 Adjustment Specifications" for details.)

NOTE:

It is necessary to use the "DSC_Tilt" software to allow the "Optical tilt adjustment".

The Adjustment software "DSC_Tilt" is available at "TSN Website".



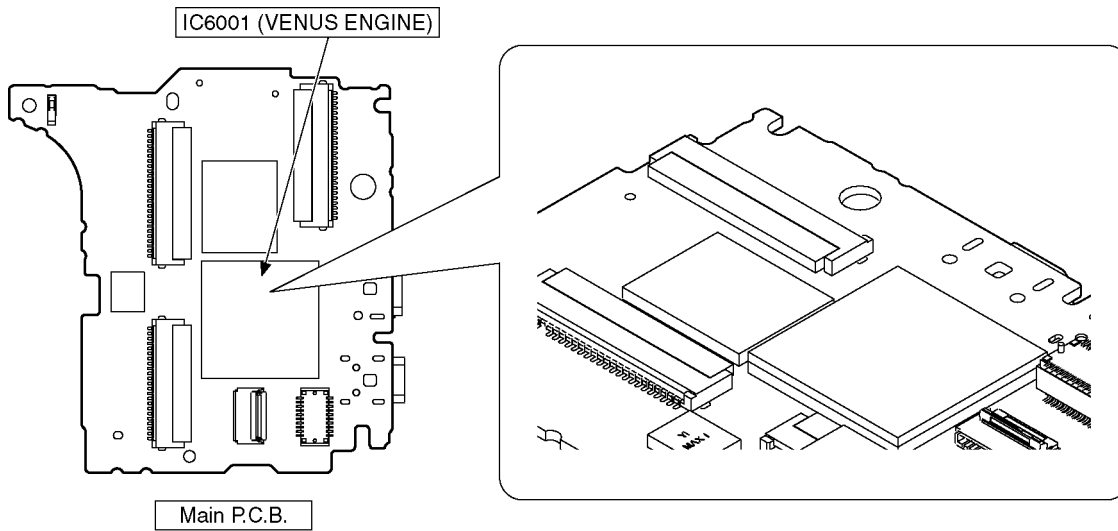
The Optical tilt adjustment can be performed with the Frame Plate attached.

3.2.2. About VENUS ENGINE (IC6001) < Located on the Main P.C.B. >

- The VENUS ENGINE (IC6001) consists of two IC chips, which are fixed together with solder.
(It is so called, "Package On Package" type of IC.)

Caution:

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



3.2.3. About protection sheet



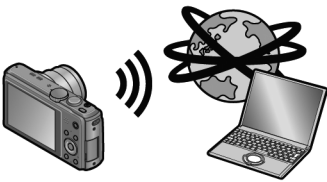
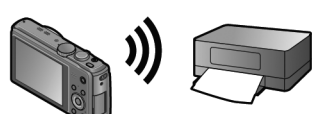
The hardening gel has been applied to the rear case and LCD during factory process.

If the hardening gel is damaged when removing the rear case unit during servicing, remove the hardening gel completely and attach the protection sheet.

3.3. Service Notes

3.3.1. About Wi-Fi Function

Linking with the Wi-Fi compatible equipment allows you to remotely operate the camera, or share pictures with people in distant places even during recording or playing back.

[Remote Shooting] (→197)	[Playback on TV] (→209)
 <p>Linking with a smartphone/tablet enables the following:</p> <ul style="list-style-type: none"> • Remote recording (→197) • Playing back the pictures in the camera (→200) • Saving the pictures in the camera to the smartphone/tablet, or sending them to WEB services. (→200) • Sending the acquired location information to the camera. (→201) 	 <p>By linking with the DLNA compatible TV, you can display pictures on TV right after taking them or display them on TV later by playing them back on the camera.</p>
[Send Images While Recording] (→211)	[Send Images Stored in the Camera] (→224)
 <p>Every time you take a picture, the picture can be automatically sent to a specified location. You can play back the picture on the smartphone/tablet, or save and edit it on PC.</p> <ul style="list-style-type: none"> • Send to: <ul style="list-style-type: none"> – [Smartphone]/[PC]/[Cloud Sync. Service]/[Web service]/[AV device] 	 <p>You can select and send recorded images.</p> <ul style="list-style-type: none"> • Send to: <ul style="list-style-type: none"> – [Smartphone]/[PC]/[Cloud Sync. Service]/[Web service]/[AV device]/[Printer]

* The page number in the above table does not show the page number of this service manual.

3.3.2. Important Notice of Servicing

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

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

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

Printing Material [Leaflet for Customer]

Printing Material [Leaflet for Customer]

[For The Customer]

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

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

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

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

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

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

3.4. General Description About Lead Free Solder (PbF)

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

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

Definition of PCB 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 degrees C (662±86 °F).

Recommended Lead Free Solder (Service Parts Route.)

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

Note:

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

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









There are eight kinds of DMC-TZ37/TZ40/TZ41/ZS27/ZS30, regardless of the colours.

- a) DMC-TZ40 (Japan domestic model.)
- b) DMC-ZS27PC, ZS30P/PC
- c) DMC-TZ37EC, TZ40EB/EF/EG/EP, TZ41EG
- d) DMC-TZ40EE
- e) DMC-TZ40GN
- f) DMC-ZS30GT
- g) DMC-ZS30GK
- h) DMC-TZ40GA/GC, ZS30PU/GH

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

3.5.1. Defining methods

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

<p>a) DMC-TZ40 (Japan domestic model) The nameplate for this model shows the following Safety registration mark.</p> 	
<p>b) DMC-ZS27PC, ZS30P/PC The nameplate for these models show the following Safety registration mark.</p> 	
<p>c) DMC-TZ37EC, TZ40EB/EF/EG/EP, TZ41EG The nameplate for these models show the following Safety registration mark.</p> 	
<p>d) DMC-TZ40EE The nameplate for this model show the following Safety registration mark.</p> 	<p>f) DMC-ZS30GT The nameplate for these models show the following Safety registration mark.</p> 
<p>e) DMC-TZ40GN The nameplate for this model show the following Safety registration mark.</p> 	<p>g) DMC-ZS30GK The nameplate for these models show the following Safety registration mark.</p> 
<p>h) DMC-TZ40GA/GC, DMC-ZS30PU/GH The nameplate for these models do not show any above safety registration mark.</p>	

Note:

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

3.5.2. INITIAL SETTINGS:

After replacing the Main P.C.B., make sure to perform the initial settings after achieving the adjustment by ordering the following procedure in accordance with model suffix of the unit.

1. IMPORTANT NOTICE:

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

CAUTION 1:(INITIAL SETTINGS)

--- AFTER REPLACING THE MAIN P.C.B. and/or FLASH ROM ---

[Except "DMC-TZ40EG/EF/EB/EP, TZ41EG and TZ37" models]

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

(Effective model suffix : DMC-TZ30 "EE/EA/GA/GC and GN",
DMC-ZS30 "P/PC/PU/GK/GH and GT", DMC-ZS27 " PC")

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

CAUTION 2:(Stored picture image data in the unit)

This unit employs "Built-in Memory" for picture image data recording.

(DMC-TZ40/TZ41, ZS30(except GK): Approx.12MB, DMC-ZS30GK, TZ37, ZS27: Approx.70MB)
After proceeding "INITIAL SETTINGS", the picture image data stored in the unit is erased.

2. PROCEDURES:

- Precautions: Read the above "CAUTION 1" and "CAUTION 2", carefully.
- Preparation:
 1. Attach the Battery to the unit.
 2. Set the mode dial to the PROGRAM AE mode.
Note: If the mode dial position is other than PROGRAM AE mode, it does not display the initial settings menu.
- **Step 1. The temporary cancellation of "INITIAL SETTINGS":**
While keep pressing "UP of Cursor button" and MOTION PICTURE button simultaneously, turn the Power on.
- **Step 2. The cancellation of "INITIAL SETTINGS":**
Press the PLAYBACK button.
Press "UP of Cursor button" and MOTION PICTURE button simultaneously, then turn the Power off.
- **Step 3. Turn the Power on:**
Turn the Power on.

• **Step 4. Display the "INITIAL SETTINGS" menu:**

Note: If the unit is other than PROGRAM AE mode, it does not display the initial settings menu.
While keep pressing MENU/SET and "RIGHT" of Cursor button" simultaneously, turn the Power off.
The "INITIAL SETTINGS" menu is displayed.

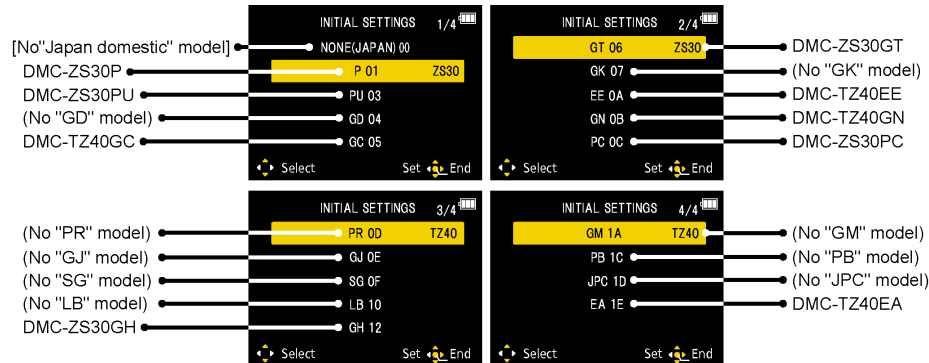
There are two kinds of "INITIAL SETTINGS" menu form as follows:

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

There are four kinds of menu from as follows:

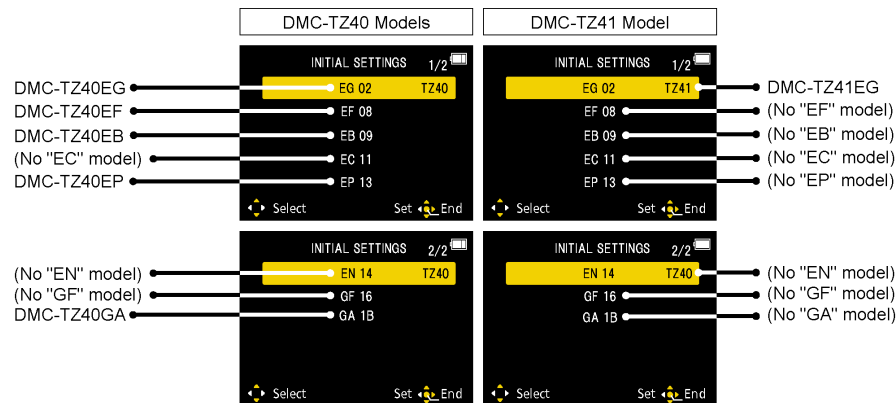
[Except for "DMC-TZ40EG, EF, EB, EP, GA, ZS30GK, TZ41, TZ37 and ZS27" models : (VEK0U05 is used as a Main P.C.B.)]

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



[Only for "DMC-TZ40EG, EF, EB, EP, GA and TZ41" models : (VEK0U06 is used as a Main P.C.B.)]

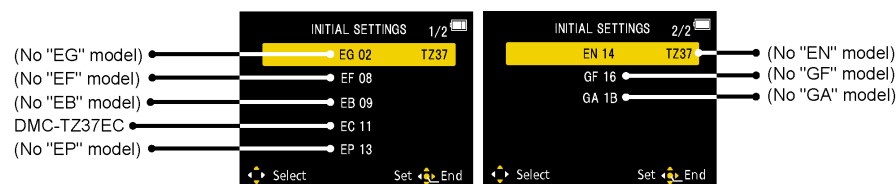
When Main P.C.B. has just been replaced, only 8 model suffix are displayed as follows. (Two pages in total)



To display the "TZ41" model suffix, choose the "EG" area and press the DELETE button.

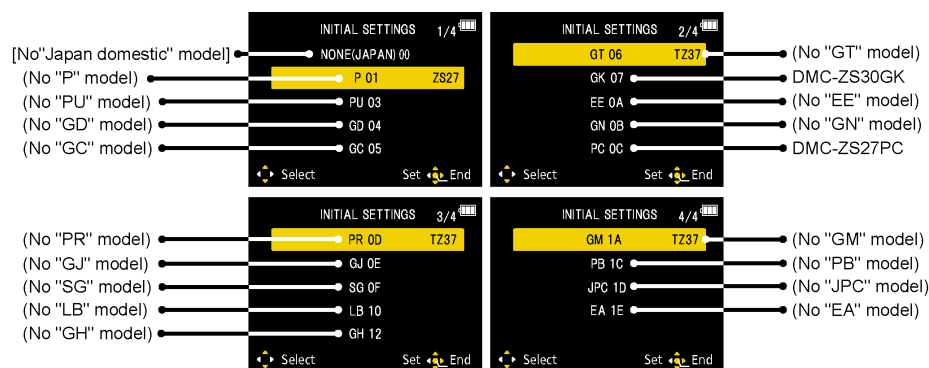
[Only for "DMC-TZ37" models : (VEK0U09 is used as a Main P.C.B.)]

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

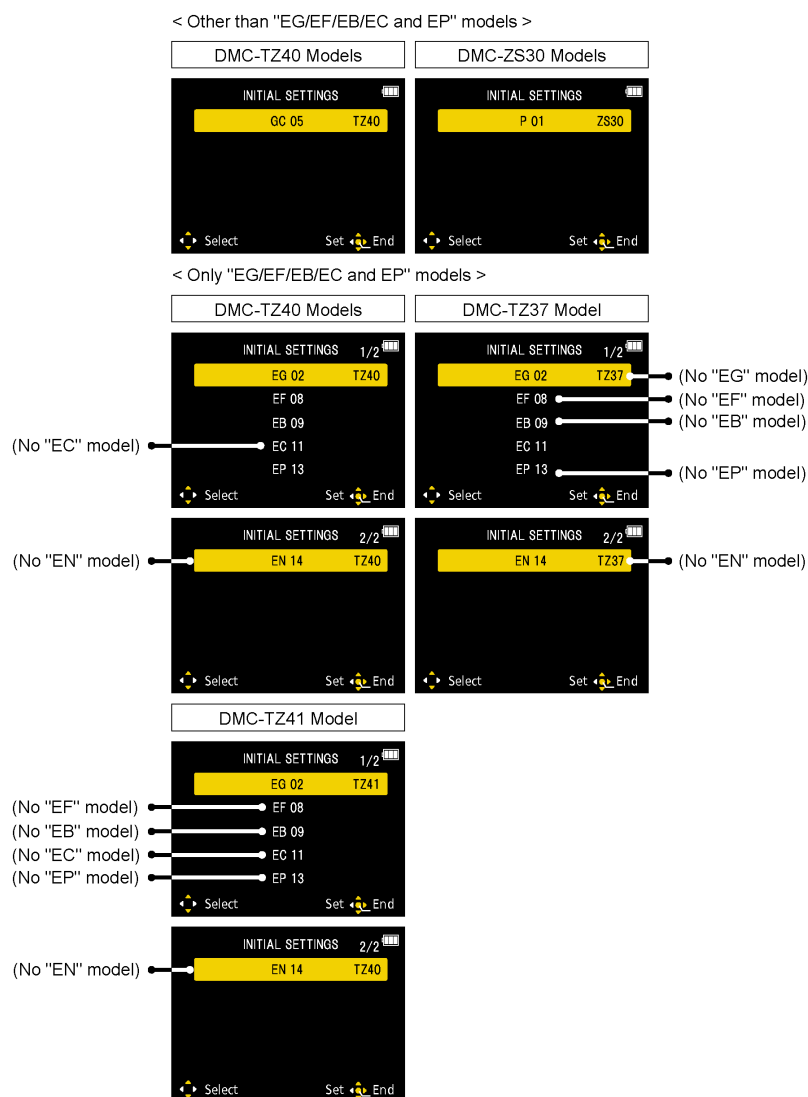


[Only for "DMC-ZS27 and ZS30GK" models : (VEK0U10 is used as a Main P.C.B.)]

When Main P.C.B. has been replaced, the following model suffix are displayed as follows. (Four pages in total)



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



• Step 5. Chose the model suffix in "INITIAL SETTINGS": (Refer to "CAUTION 1")

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

(Especially, other than "DMC-TZ40EG/EF/EB/EP, TZ41 and DMC-TZ37" models)

The model suffix can be chosen, JUST ONE TIME.

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

Therefore, select the area carefully.

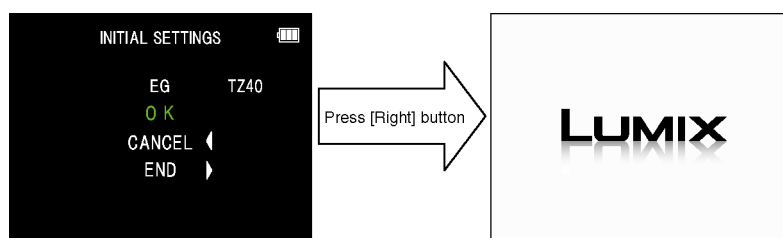
Select the area with pressing "UP / DOWN of Cursor buttons".

• **Step 6. Set the model suffix at "INITIAL SETTINGS":**

Press the "RIGHT" of Cursor buttons".

The only set area is displayed. Press the "RIGHT" of Cursor buttons" after confirmation.

(The unit is powered off automatically.)



• **Step 7. CONFIRMATION:**

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

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

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

• **Default setting (After "INITIAL SETTINGS")**

	MODEL	VIDEO OUTPUT	LANGUAGE	DATE	REMARKS
a)	DMC-TZ40 (Japan domestic model)	NTSC	Japanese	Year/Month/Date	
b)	DMC-TZ37EC	PAL	English	Date/Month/Year	
c)	DMC-TZ40EB	PAL	English	Date/Month/Year	
d)	DMC-TZ40EE	PAL	Russian	Date/Month/Year	
e)	DMC-TZ40EF	PAL	French	Date/Month/Year	
f)	DMC-TZ40EG	PAL	English	Date/Month/Year	
g)	DMC-TZ40EP	PAL	English	Date/Month/Year	
h)	DMC-TZ40EA	PAL	Russian	Date/Month/Year	
i)	DMC-TZ40GA	PAL	English	Date/Month/Year	
j)	DMC-TZ40GC	PAL	English	Date/Month/Year	
k)	DMC-TZ40GN	PAL	English	Date/Month/Year	
l)	DMC-TZ41EG	PAL	English	Date/Month/Year	
m)	DMC-ZS27PC	NTSC	English	Month/Date/Year	
n)	DMC-ZS30P	NTSC	English	Month/Date/Year	
o)	DMC-ZS30PC	NTSC	English	Month/Date/Year	
p)	DMC-ZS30PU	NTSC	Spanish	Month/Date/Year	
q)	DMC-ZS30GK	PAL	Chinese (simplified)	Year/Month/Date	No Underwater mode.
r)	DMC-ZS30GH	PAL	English	Date/Month/Year	
s)	DMC-ZS30GT	NTSC	Chinese (Traditional)	Year/Month/Date	

4 Specifications

The following specification is for DMC-ZS27PC/30PC.
Some specifications may differ depending on model suffix.

Digital Camera: Information for your safety

Power Source	DC 5.1 V
Power Consumption	When recording: 1.7 W When playing back: 1.1 W
Camera effective pixels	18,100,000 pixels
Image sensor	1/2.3" MOS sensor, total pixel number 18,900,000 pixels Primary color filter
Lens [NANO SURFACE COATING]	Optical 20 x zoom f=4.3 mm to 86.0 mm (35 mm film camera equivalent: 24 mm to 480 mm) / F3.3 (Max. Wide) to F6.4 (Max. Tele)
Image Stabilizer	Optical method
Focus range	
P / A / S / M	50 cm (1.6 feet) (Max. Wide) / 2 m (6.6 feet) (Max. Tele) to ∞
Macro / Intelligent Auto / Motion picture	3 cm (0.098 feet) (Max. Wide) / 1 m (3.3 feet) (Max. Tele) to ∞ (5 × to 7 × is 2 m (6.6 feet) to ∞)
Scene Mode	The focus ranges listed above may vary depending on the selected Scene Mode.
Shutter system	Electronic shutter + Mechanical shutter
Minimum Illumination	Approx. 10 lx (when i-Low light is used, the shutter speed is 1/30th of a second)
Shutter speed	4 seconds to 1/2000th of a second [Starry Sky] Mode: 15 seconds, 30 seconds
Exposure (AE)	Program AE (P) / Aperture-priority AE (A) / Shutter-priority AE (S) / Manual exposure (M)
Metering Mode	[Multi Metering] / [Center Weighted] / [Spot]

Operating temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating humidity	10%RH to 80%RH

Wireless transmitter

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

AC adaptor

(Panasonic VSK0768): Information for your safety

Input	~ 110 V to 240 V, 50/60 Hz, 0.2 A
Output	=== 5 V, 800 mA

Battery pack (lithium-ion)

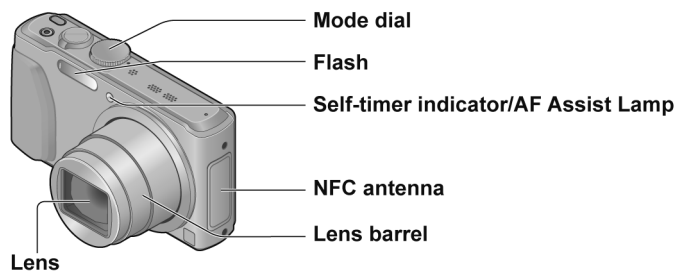
(Panasonic DMW-BCM13PP): Information for your safety

Voltage / capacity	3.6 V / 1250 mAh
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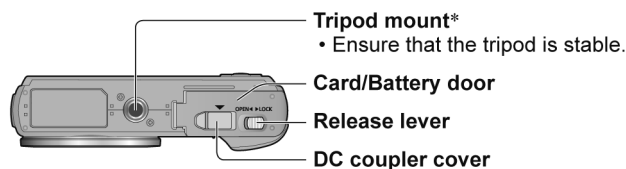
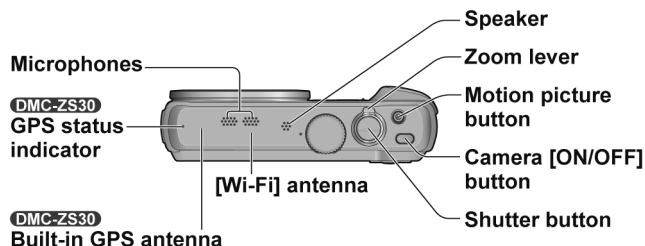
LCD monitor	3.0" TFT LCD (4:3) (Approx. 921,600 dots) (field of view ratio about 100%) / Touch screen
Microphones	Stereo
Speaker	Monaural
Recording media	Built-in Memory DMC-ZS30 (Approx. 12 MB) DMC-ZS27 (Approx. 70 MB) SD Memory Card / SDHC Memory Card / SDXC Memory Card
Recording file format	
Still picture	JPEG (based on Design rule for Camera File system, based on Exif 2.3 standard / DPOF corresponding) / MPO
Motion pictures	AVCHD / MP4
Audio compression format	AVCHD: Dolby® Digital (2 ch) MP4: AAC (2 ch)
Interface	
Digital	USB 2.0 (High Speed)
Analog video	NTSC Composite
Audio	Audio line output (Monaural)
Terminal	HDMI: MicroHDMI TypeD AV OUT/DIGITAL: Dedicated jack (8 pin)
Dimensions	Approx. 108.3 mm (W) x 58.9 mm (H) x 27.7 mm (D) [4.26" (W) x 2.32" (H) x 1.09" (D)] (excluding the projection part)
Mass (Weight)	DMC-ZS30 With card and battery: Approx. 198 g (0.437 lb) Excluding card and battery: Approx. 172 g (0.379 lb) DMC-ZS27 With card and battery: Approx. 197 g (0.434 lb) Excluding card and battery: Approx. 171 g (0.375 lb)

5 Location of Controls and Components

The following description is for DMC-ZS27PC/30PC.
Some description may differ depending on model suffix.

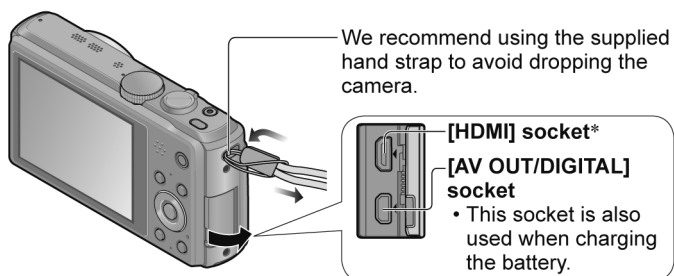
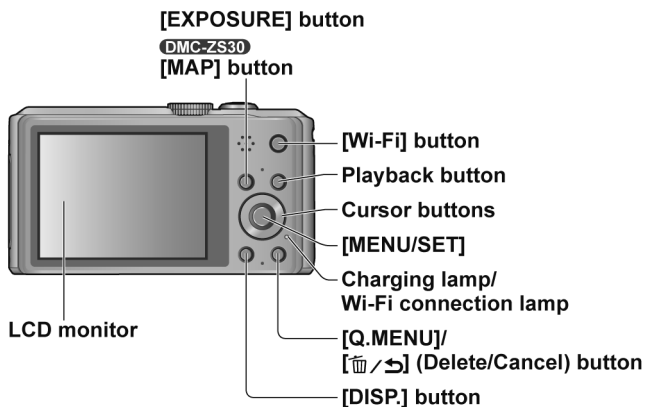


• Do not touch the lens barrier.



* Do not attach to a tripod with a 5.5 mm (0.22 inch) or longer screw. Doing so may damage this unit.

- Always use a genuine Panasonic AC adaptor (DMW-AC5PP: optional).
- When using an AC adaptor, ensure that the Panasonic DC coupler (DMW-DCC14: optional) and AC adaptor (DMW-AC5PP: optional) are used.



* Do not connect any other cables except the HDMI micro cable (RP-CHEU15: optional). Doing so may cause malfunction.

6 Service Mode

6.1. Error Code Memory Function

1. General description

This unit is equipped with history of error code memory function, and can be memorized 16 error codes in sequence from the latest. When the error is occurred more than 16, the oldest error is overwritten in sequence.

The error code is not memorized when the power supply is shut down forcibly (i.e., when the unit is powered on by the battery, the battery is pulled out) The error code is memorized to Flash ROM when the unit has just before powered off.

2. How to display

The error code can be displayed by ordering the following procedure:

• Preparation:

1. Attach the Battery to the unit.
2. Set the mode dial to the PROGRAM AE mode.

Note:

*Since this unit has built-in memory, it can be performed without inserting Memory Card.

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

While keep pressing "UP of Cursor button" and MOTION PICTURE button simultaneously, turn the Power on.

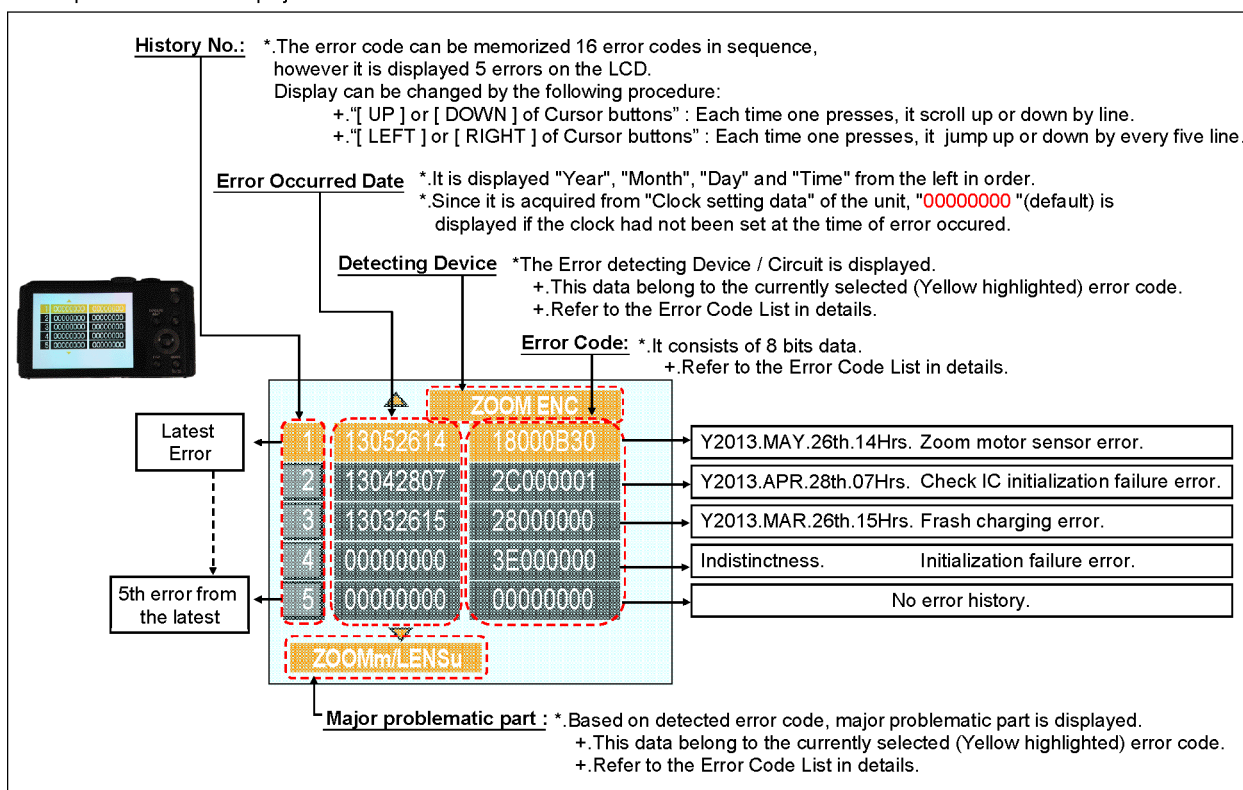
• Step 2. Execute the error code display mode:

Press the "LEFT of Cursor button", MENU/SET button and MOTION PICTURE button simultaneously.

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

Normal display → Error code display → CAMERA INFO → Normal display →

Example of Error Code Display



3. Error Code List

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

Attribute	Main item	Sub item	Error code		Contents (Upper)	Error Indication			
			High 4bits	Low 4 bits	Check point (Lower)	Detecting device	Part/Circuit		
LENS	Lens drive	OIS	18*0	1000	PSD (X) error. Hall element (X axis) position detect error in OIS unit. OIS Unit	OIS X	LENSu NG		
				2000	PSD (Y) error. Hall element (Y axis) position detect error in OIS unit. OIS Unit			OIS Y	
				3000	GYRO (X) error. Gyro (IC7101) detect error on Main P.C.B. IC7101 (Gyro element) or IC6001 (VENUS ENGINE)	GYRO X			GYRO NG
				4000	GYRO (Y) error. Gyro (IC7101) detect error on Main P.C.B. IC7101 (Gyro element) or IC6001 (VENUS ENGINE)	GYRO Y			
				5000	GYRO (R) error, Gyro (IC7101) detect error on Main P.C.B. IC7101 (Gyro element) or IC6001 (VENUS ENGINE)	GYRO R			
				6000	Drive voltage (X) error. LENS Unit, LENS flex breaks, IC6001(VENUS ENGINE) AD value error, etc.	OISX REF		LENSu/LENS FPC	
			7000	Drive voltage (Y) error. LENS Unit, LENS flex breaks, IC6001(VENUS ENGINE) AD value error, etc.	OISY REF				
			8000	OIS GYRO - Digital communication error. IC7101 (Gyro element) or IC6001 (VENUS ENGINE)	(No indication)	(No indication)			
			Zoom (C.B.)	0?10	Collapsible barrel Low detect error (Collapsible barrel encoder always detects High.) Mechanical lock, FP9005-(11) signal line or IC6001 (VENUS ENGINE)	ZOOM L	ZOOMm/ LENSu		
					0?20			Collapsible barrel High detect error (Collapsible barrel encoder always detects Low.) Mechanical lock, FP9005-(11) signal line or IC6001 (VENUS ENGINE)	ZOOM H
								0?30	
				0?40	Zoom motor sensor error. (During monitor mode.) Mechanical lock, FP9005-(6), (9) signal line or IC6001 (VENUS ENGINE)				
		0?50			Zoom motor sensor error. (During monitor mode with slow speed.) Mechanical lock, FP9005-(6), (9) signal line or IC6001 (VENUS ENGINE)				
				0?60	Phase error or operation failure of zoom Lens/motor/ encoder. (IMPACT) Mechanical lock, zoom encoder.				
		Focus		0?01	HP High detect error (Focus encoder always detects High, and not becomes Low) Mechanical lock, FP9005-(11) signal line or IC6001 (VENUS ENGINE)	FOCUS L	LENS FPC/ DSP		
					0?02			HP Low detect error (Focus encoder always detects Low, and not becomes High) Mechanical lock, FP9005-(11) signal line or IC6001 (VENUS ENGINE)	FOCUS H
						Lens		18*1	
		18*2		0000	Power OFF time out error. Lens drive system				

Attribute	Main item	Sub item	Error code		Contents (Upper)	Error Indication				
			High 4bits	Low 4 bits	Check point (Lower)	Detecting device	Part/Circuit			
	Adj.History	OIS	19*0	2000	OIS adj. Yaw direction amplitude error (small)	OIS ADJ	OIS ADJ			
				3000	OIS adj. Pitch direction amplitude error (small)					
				4000	OIS adj. Yaw direction amplitude error (large)					
				5000	OIS adj. Pitch direction amplitude error (large)					
				8000	OIS adj. Yaw direction off set error					
				9000	OIS adj. Pitch direction off set error					
				A000	OIS adj. Yaw direction gain error					
				B000	OIS adj. Pitch direction gain error					
				C000	OIS adj. Yaw direction position sensor error					
				D000	OIS adj. Pitch direction position sensor error					
				E000	OIS adj. other error					
				HARD	VENUS A/D			Flash	28*0	0000
FLASH ROM (EEPROM Area)	FLASH ROM (EEPROM Area)	2B*0	0001		EEPROM read error IC6002 (Flash ROM)	FROM RE	FROM			
			0002		EEPROM write error IC6002 (Flash ROM)	FROM WR	FROM			
			0005		Firmware version up error Replace the firmware file in the Memory Card.	(No indication)	(No indication)			
			0001		SYSTEM IC initialize failure error Communication between IC6001 (VENUS ENGINE) and IC9101 (SYSTEM)	SYS INIT	MAIN P.C.B.			
SYSTEM	RTC	2C*0								
SOFT	CPU	Reset	30*0		0001 0007	NMI reset Non Mask-able Interrupt (30000001-30000007 are caused by factors)	NMI RST	MAIN P.C.B.		
	CPU, ASIC hard	Stop	38*0		0001	Camera task finish process time out. Communication between Lens system and IC6001 (VENUS ENGINE)	LENS COM	LENSu/DSP		
					0002	Camera task invalid code error. IC6001 (VENUS ENGINE)	DSP	DSP		
					0100	File time out error in recording motion image IC6001 (VENUS ENGINE)				
					0200	File data cue send error in recording motion image IC6001 (VENUS ENGINE)				
					0300	Single or burst recording brake time out.				
				Memory area	3A*0	0008	work area partitioning failure USB dynamic memory securing failure when connecting	(No indication)	(No indication)	
				Operation	Power on	3B*0	0000	Flash ROM processing early period of camera during movement.	INIT	(No indication)
				Zoom	Zoom	3C*0	0000	Imperfect zoom lens processing Zoom lens	ZOOM	ZOOMm/ LENSu
	35*0	0000 FFFF	Software error (0-7bit : command, 8-15bit : status)				DSP	DSP		
	35*1	0000	Though record preprocessing is necessary, it is not called.							
	35*2	0000	Though record preprocessing is necessary, it is not completed.				(No indication)	(No indication)		
	Wi-Fi			3211 3214	0001 FFFF	Wi-Fi related errors: *Generally, above are unable to specified the, which cannot be used for malfunction diagnosis.				

Important notice about "Error Code List"

1) About "*" indication:

The third digit from the left is different as follows.

+In case of 0 (example: 18 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: 18 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.

2) About "?" indication: ("18*0 0?01" to "18*0 0?50"):

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

4. How to exit from Error Code display mode:

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

Note:

The error code can not be initialized.

7 Troubleshooting Guide

7.1. Failure Diagnosis of GPS (Except: TZ37, ZS27 and ZS30GK)

7.1.1. Checking Method of GPS failure

GENERAL DESCRIPTION

- When [GPS Setting] is [ON], the GPS function works even if the camera is turned off.
 - Electromagnetic waves from the camera can affect instruments and meters. In airplane cabins (during takeoff and landing) or in other restricted areas, set [Airplane Mode] to [ON], and then turn off the camera.
 - When [GPS Setting] is [ON] and [Airplane Mode] is [OFF], power will drain from the battery even if the camera is turned off.
- Recording location information
 - The names of recording locations and landmarks (such as buildings) are current as of October 2012. These will not be updated.
 - Depending on the country or area, limited location name and landmark information may be available.
- Positioning
 - Positioning will take time in environments where it is difficult to receive the signals from the GPS satellites.
 - Even if GPS reception is good, it will take approx. 2 to 3 minutes to successfully execute positioning under the following conditions: when positioning is executed for the first time, or when positioning is executed after the camera is turned off with the [GPS Setting] set to [OFF] or [Airplane Mode] set to [ON], and then turned on again.
Positioning can be executed faster using GPS assist data.
 - Because the positions of the GPS satellites are constantly changing, depending on the recording location and conditions, it may not be possible to position such satellites accurately, or positioning discrepancy may occur.
- When using in another country
 - The GPS function may not work in China or in the border regions of countries neighboring China. (Current as of January 2013)
 - Some countries or regions may regulate the use of GPS or related technology. Because this camera has a GPS function, before taking it into another country, check with the embassy or your travel agency whether there are any restrictions on bringing cameras with a GPS function.

Note:

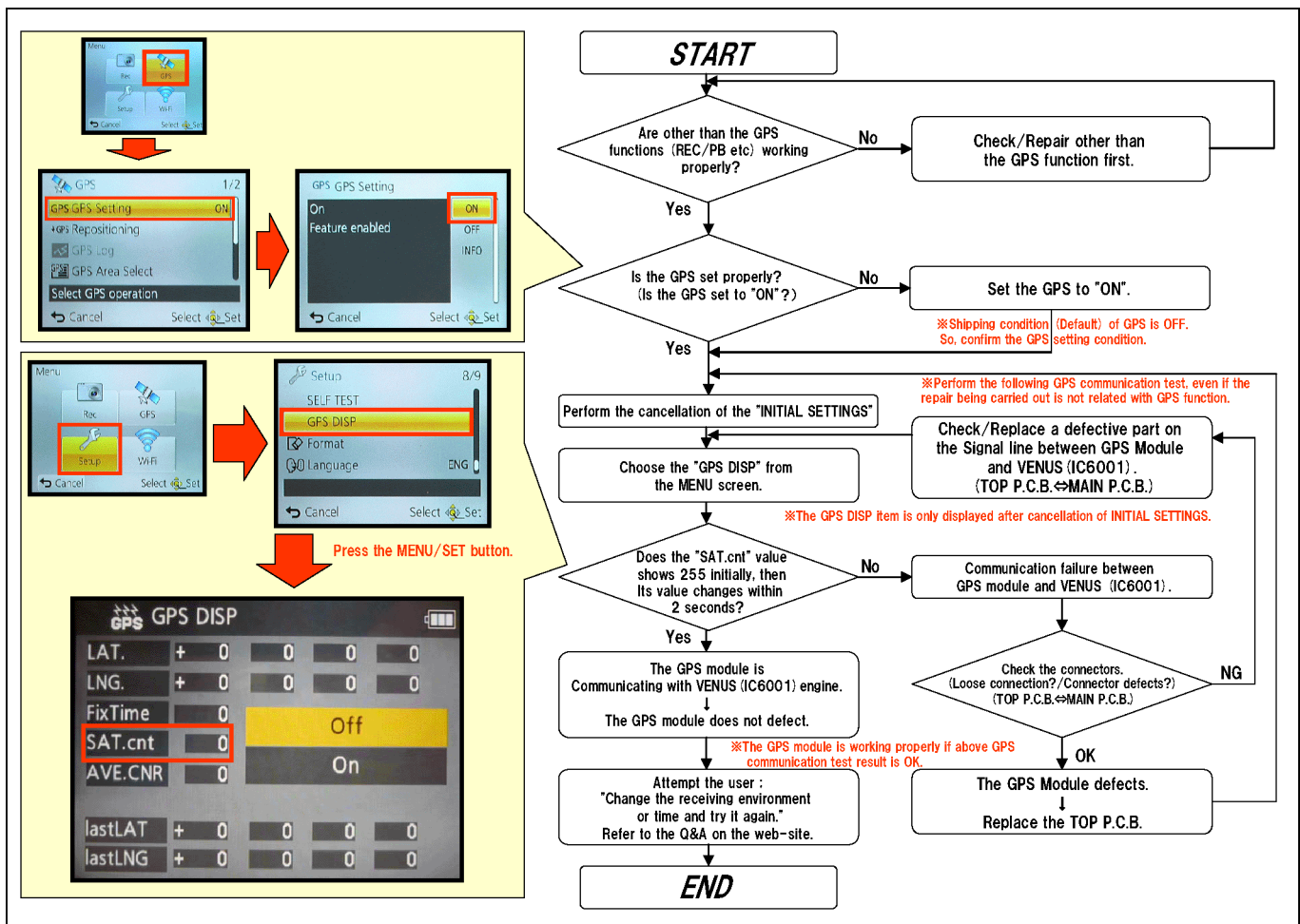
DMC-TZ37EB/EC, ZS27P/PC and ZS30GK do not equipped with GPS function.

7.1.2. Checking flowchart of GPS failure

The checking flowchart of GPS failure is as follows:

Note:

- *Perform the GPS communication test, even if the repair being carried out is not related with GPS function.
- *The GPS function in this unit is performed communication between GPS P.C.B. (on the Top P.C.B.) and VENUS ENGINE (IC6001: on the Main P.C.B.).



7.2. Failure Diagnosis of Wi-Fi

7.2.1. How to Remove Wi-Fi Password Protection

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

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

[Reset Procedure of Wi-Fi Settings]

1. Press the [MENU/SET] button, and select the [SETUP] mode by Cursor buttons, then press the [MENU/SET] button.
2. Select [Reset Wi-Fi Settings] by Cursor buttons, then press the [MENU/SET] button.
3. Select [YES] and press the [MENU/SET] button in several times.
4. (The [Reset Wi-Fi Settings] performs not only resetting Wi-Fi Password but also resetting other all Wi-Fi Settings.)

7.2.2. Checking of trouble caused by Wi-Fi Module on Top P.C.B. or not

(Primary Confirmation)

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

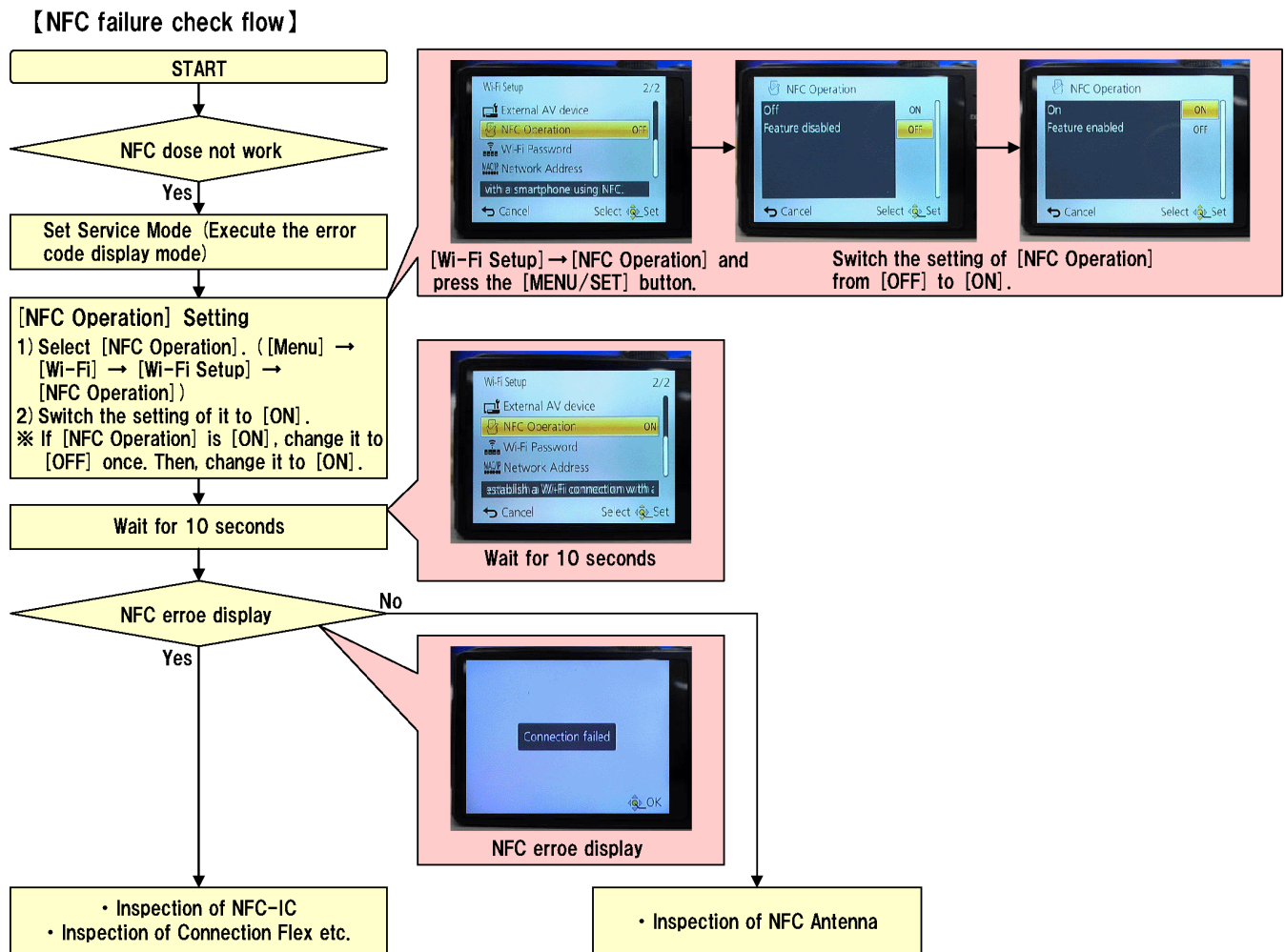
(Procedure)

- 1) Select [Access Point] in [Wi-Fi Setup] menu.
- 2) Select [Add] in [Access Point] menu.
- 3) Select [Manual Connection] in [Register Access Point] menu.
- 4) The Wi-Fi Module on Top P.C.B. works properly if the wireless access point (broadband router) in use is displayed.

When Wi-Fi Module has a defect, replace the Top P.C.B.

7.3. Failure Diagnosis of NFC

7.3.1. Checking flowchart of NFC failure



7.3.2. Initial Setting of NFC

【NFC initial setting procedure when repair work complete.】

After repair, make sure to perform the following ① and ②. (Initial Setting of NFC)
Then, the initialization data is written to NFC-IC.

① [NFC Operation] Setting

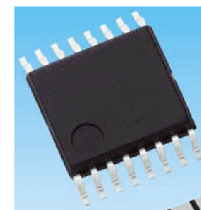
- 1) Select [NFC Operation]. ([Menu] → [Wi-Fi] → [Wi-Fi Setup] → [NFC Operation])
- 2) Switch the setting of it to [ON].
- ※ If [NFC Operation] is [ON], change it to [OFF] once. Then, change it to [ON].
- ※ If NFC-IC is defective, an error message will be displayed. (Mentioned Above)

② Initial Setting

- Perform the initial setting operation. (Refer to 3.5.2. INITIAL SETTINGS)
※ The default setting of NFC operation is [ON].

Notes:

- NFC-IC and NFC P.C.B. have no initialization data of NFC.
So, make sure to perform Initial Setting of NFC.
- NFC-IC may lose the initialization data due to heat during repair process.
Therefore, make sure to perform Initial Setting of NFC when the component parts on NFC P.C.B. are replaced.

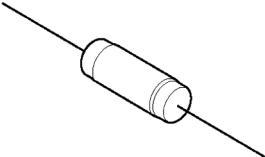
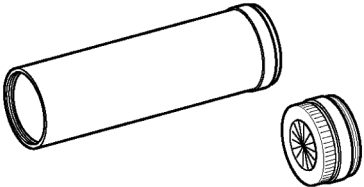
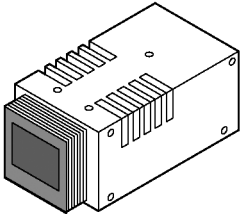


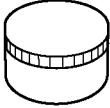

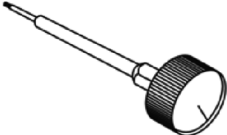
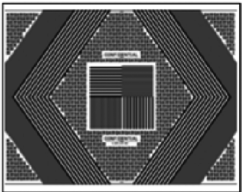





【NFC-IC】

8 Service Fixture & Tools

8.1. Service Fixture and Tools

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

Resistor for Discharging ERG5SJ102	COLLIMATOR (with Focus Chart) RFKZ0422	LIGHT BOX (with DC Cable) RFKZ0523
 <p>An equivalent type of Resistor may be used.</p>		 <p>※ VFK1164TDVLB may be used.</p>
ND Filter RFKZ0513(ND0.3)	Lens Cleaning Kit (BK) VFK1900BK	Grease (for Lens) RFKZ0472
	 <p>* Only supplied as 10 set/box.</p>	
Diffuser RFKZ0591	Driver (for optical axis adjustment) RFKZ0609	Optical axis adjustment chart RFKZ0570
	 <p>* T3 Torx type</p>	
Camera stand RFKZ0333J	Torque Driver RFKZ0542	Touch Pen Goods on market
		 <p>* VGQ0C14 (Example)</p>

Leveller adjustment chart

1. Leveller adjustment chart for adjustment of electronic leveller.
2. Download the leveller adjustment chart "ACC_Adjustment_Chart.pdf" from the Web site and print in A3 size.

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

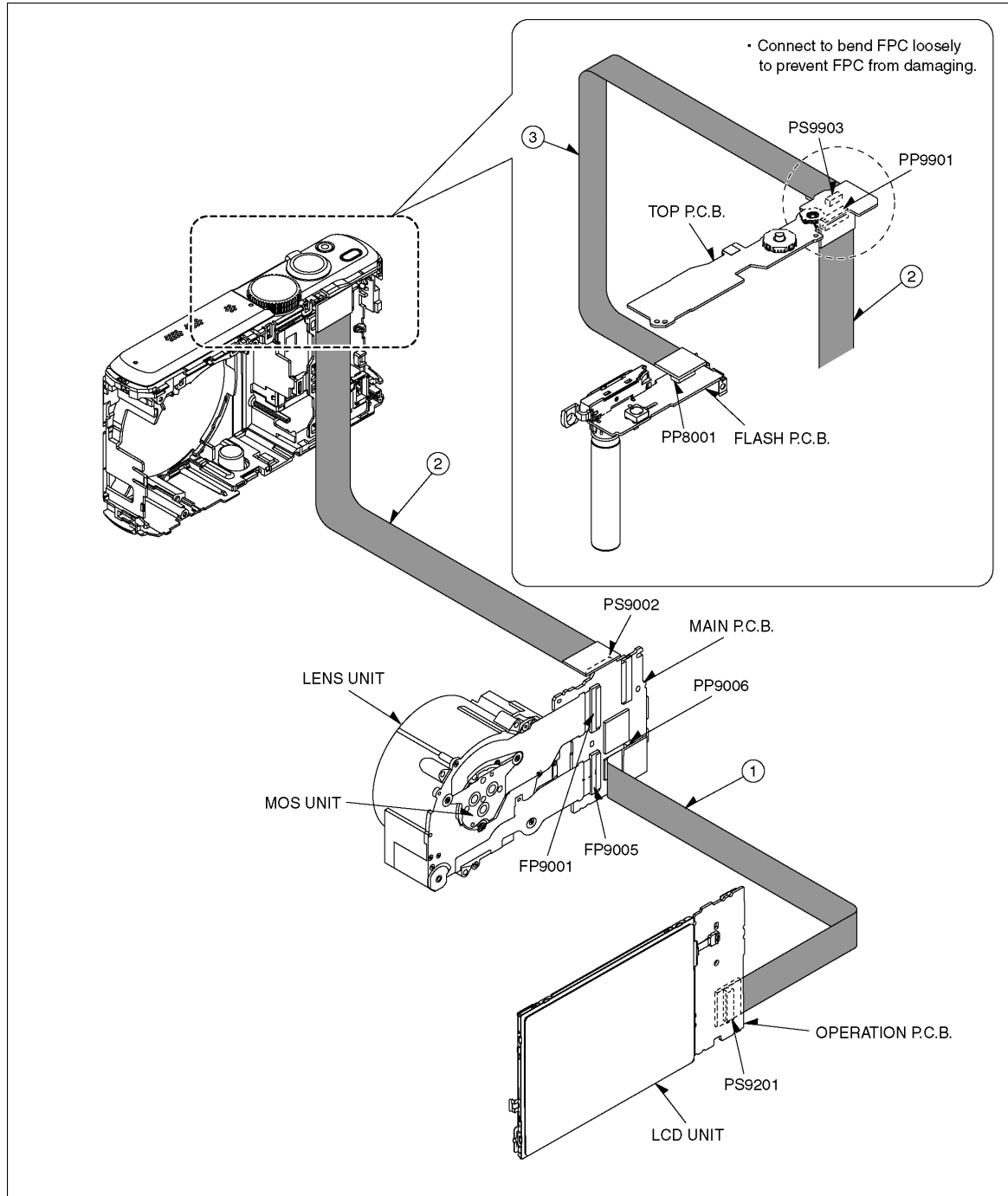
After replacing the Main P.C.B., be sure to achieve adjustment.

8.3. Service Position

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

No.	Parts No.	Connection	Form
1	VFK1906	PP9006 (MAIN P.C.B.) - PS9201 (OPERATION P.C.B.)	20PIN B to B
2	VFK1541	PP9901 (TOP P.C.B.) - PS9002 (Main P.C.B.)	34PIN B to B
3	VFK1906	PP8001 (FLASH P.C.B.) - PS9903 (TOP P.C.B.)	20PIN B to B

8.3.1. Extension Cable Connections

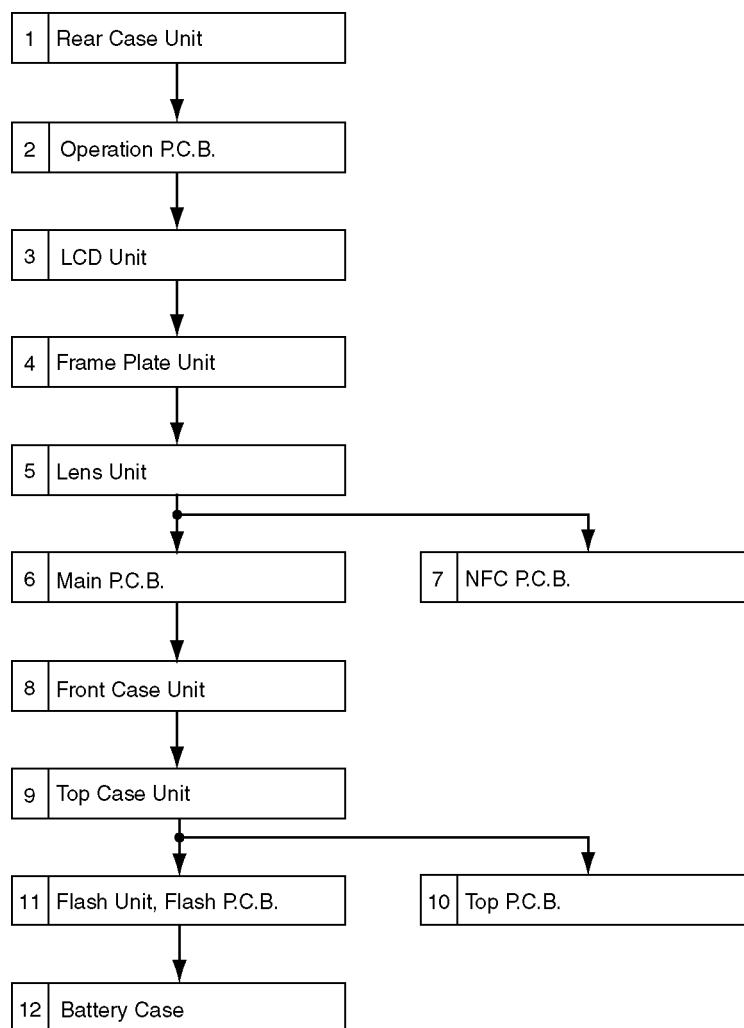


CAUTION-1. (When servicing Flash P.C.B.)

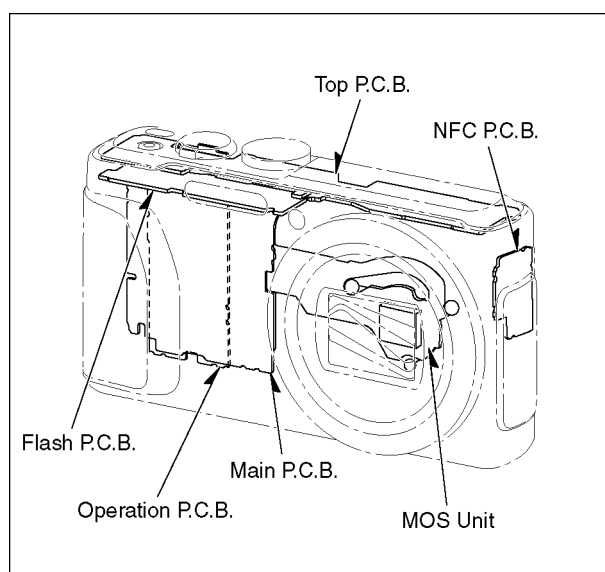
1. Be sure to discharge the capacitor on Flash P.C.B.
Refer to "HOW TO DISCHARGE THE CAPACITOR ON Flash P.C.B.". The capacitor voltage is not lowered soon even if the AC Cord is unplugged or the battery is removed.
2. Be careful of the high voltage circuit on Flash P.C.B.
3. DO NOT allow other parts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

9 Disassembly and Assembly Instructions

9.1. Disassembly Flow Chart



9.2. P.C.B. Location



9.3. Disassembly Procedure

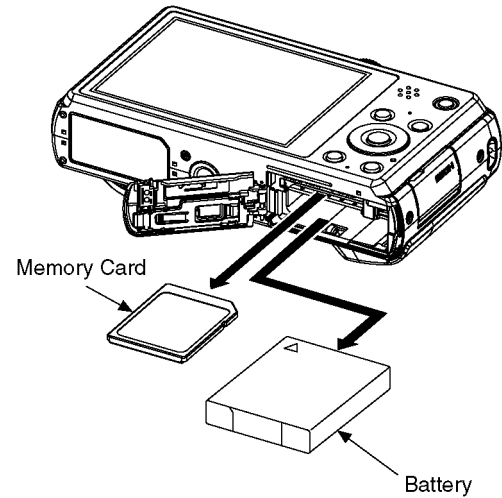
No.	Item	Fig.	Removal
1	Rear Case Unit	Fig. D1-1	4 screws (A) 1 screw (B) 4 Lockings tabs Rear Case Unit
2	Operation P.C.B.	Fig. D2	FP9202 (Flex) PP9006 (Connector) Operation P.C.B. Note:(When replacing Operation P.C.B.) Operation Sheet
3	LCD Unit	Fig. D3	1 Locking tab FP9003 (Flex) LCD Unit
4	Frame Plate Unit	Fig. D4	3 screws (C) 4 Locking tabs Frame Plate Unit
5	Lens Unit	Fig. D5	2 Lockings tabs PCB Spacer FP9004 (Flex) DPR Sheet (F) 2 FPC Tapes FP9001 (Flex) FP9005 (Flex) Lens Unit
6	Main P.C.B.	Fig. D6	1 screw (D) 1 Locking tab PP9901 (Connector) Jack Door Main P.C.B. Note: (When replacing DPR Sheet) DPR Sheet
7	NFC P.C.B.	Fig. D7	NFC Antenna Unit, NFC Earth Plate, NFC P.C.B. 1 screw (E) FP9702 (Flex) 2 Locking tabs NFC P.C.B.
8	Front Case Unit	Fig. D8	1 screw (F) 3 Lockings tabs (A) 1 Locking tab (B) Front Case Unit
9	Top Case Unit	Fig. D9	5 Locking tabs PP8001 (Connector) Top Case Unit
10	Top P.C.B.	Fig. D10	1 screw (G) FP9902 (Flex) 2 Locking tabs (A) 2 Locking tab (B) Earth Plate (R) Top P.C.B.
11	Flash Unit, Flash P.C.B.	Fig. D11	1 screw (H) 2 Locking tabs Flash Unit, Flash P.C.B.
12	Battery Case	Fig. D12	2 Locking tabs Battery Case

9.3.1. Removal of the Rear Case Unit

- Memory Card
- Battery

Note:

When servicing and reassembling, remove the Memory Card and Battery from the unit.



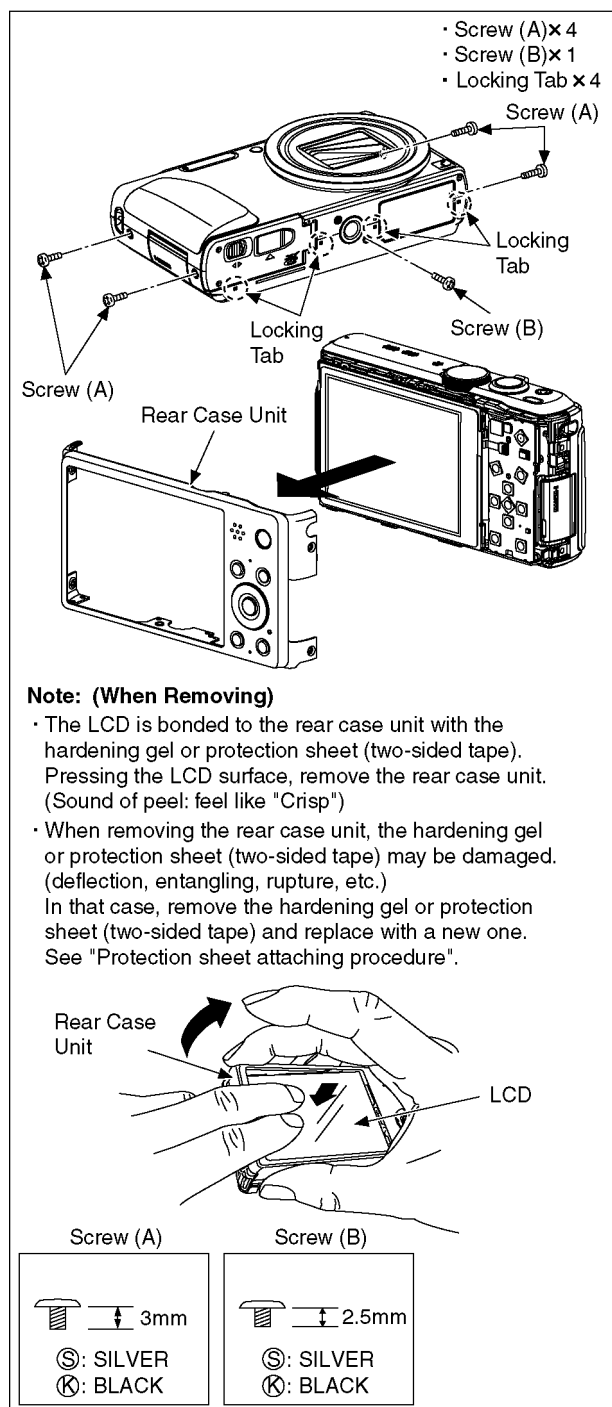


Fig. D1-1

Protection sheet attaching procedure:

1. Remove the protection sheet from the base sheet and fold the flap of the separator to the two-sided tape side.

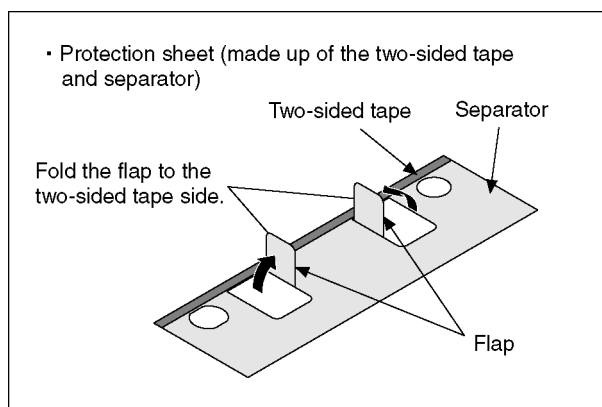


Fig. D1-2

2. Slightly tilt the separator to prevent the two-sided tape's adhesion. Align the flap of the separator with the end of the rear case, and then attach according to the fig. below.

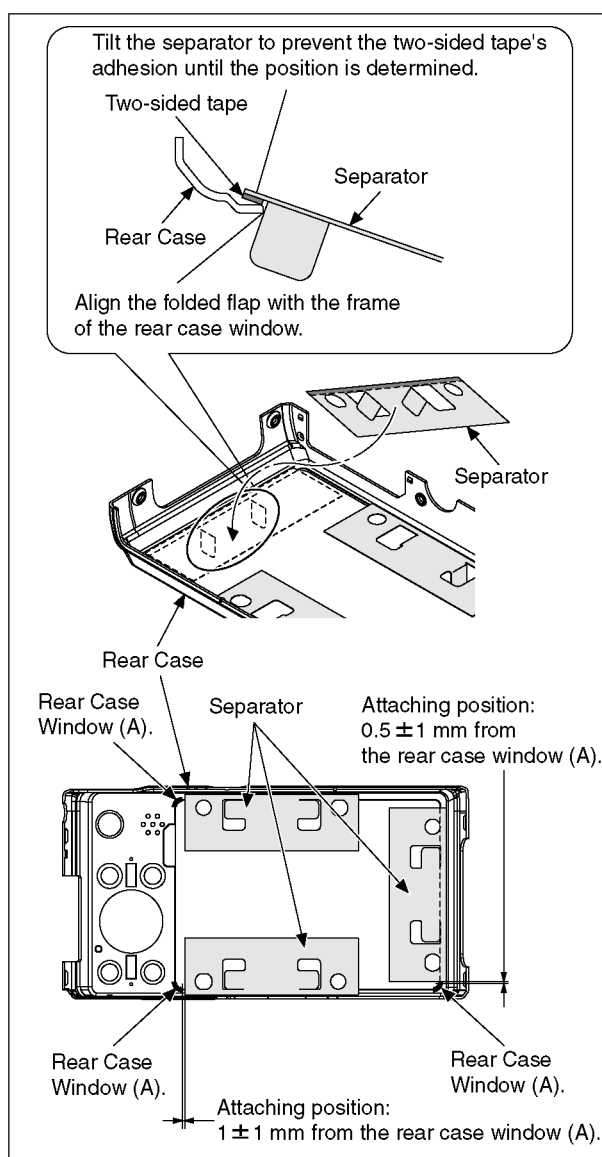


Fig. D1-3

3. Press the separator firmly and attach the two-sided tape.
4. Remove the separator slowly and carefully.
Check if there is nothing sticking out from the rear case window frame.

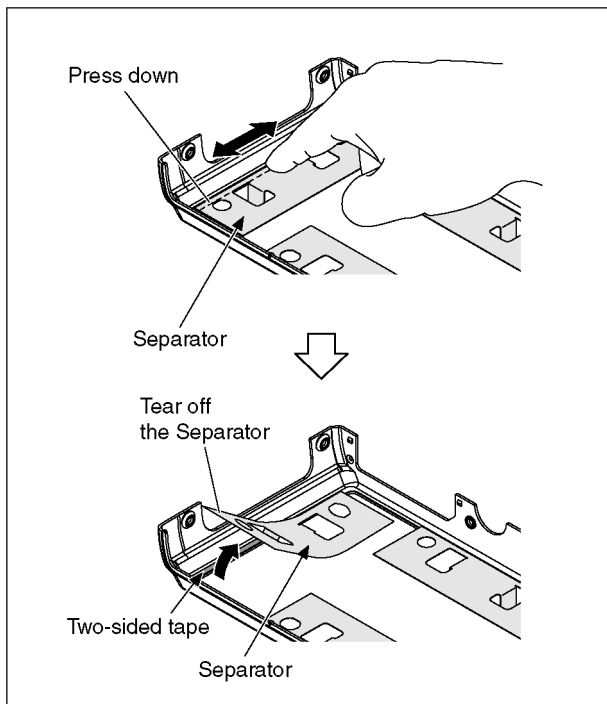


Fig. D1-4

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

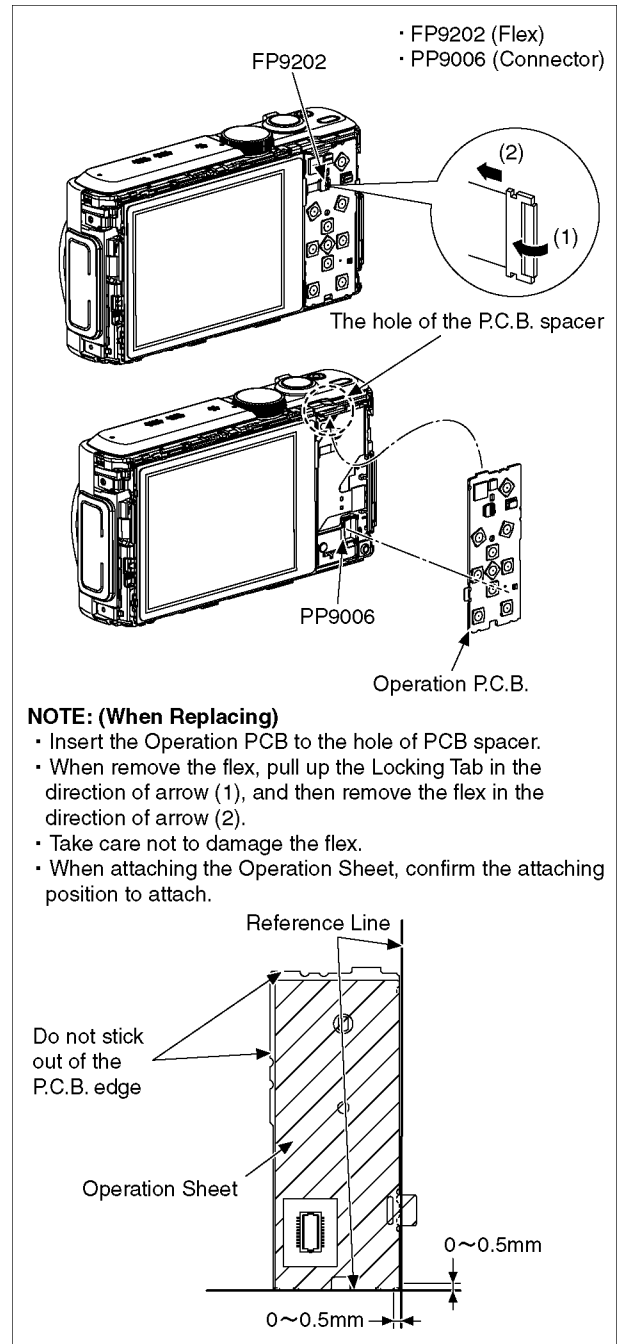


Fig. D2

9.3.3. Removal of the LCD Unit

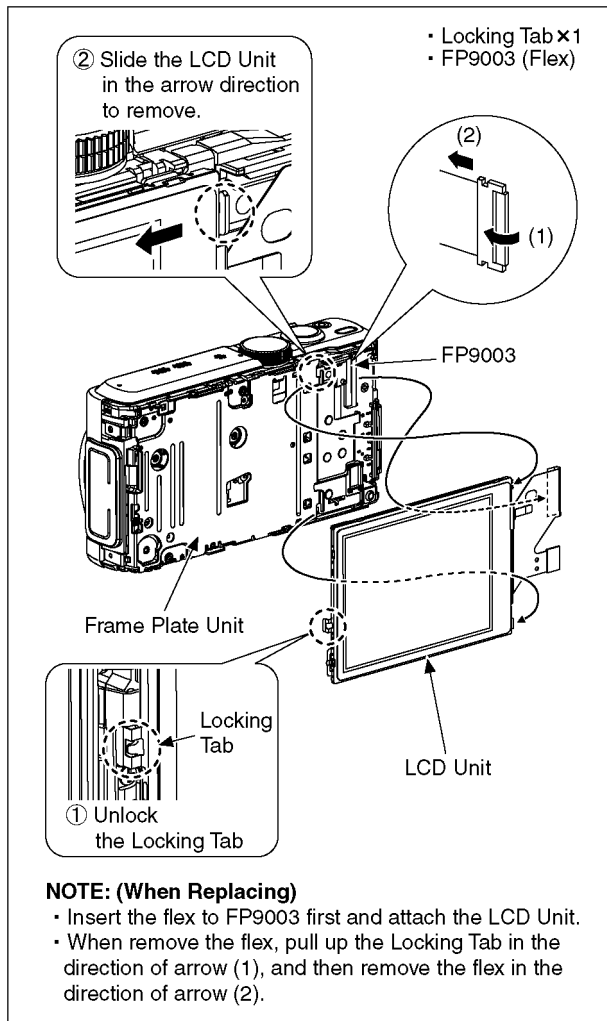


Fig. D3

9.3.4. Removal of the Frame Plate Unit

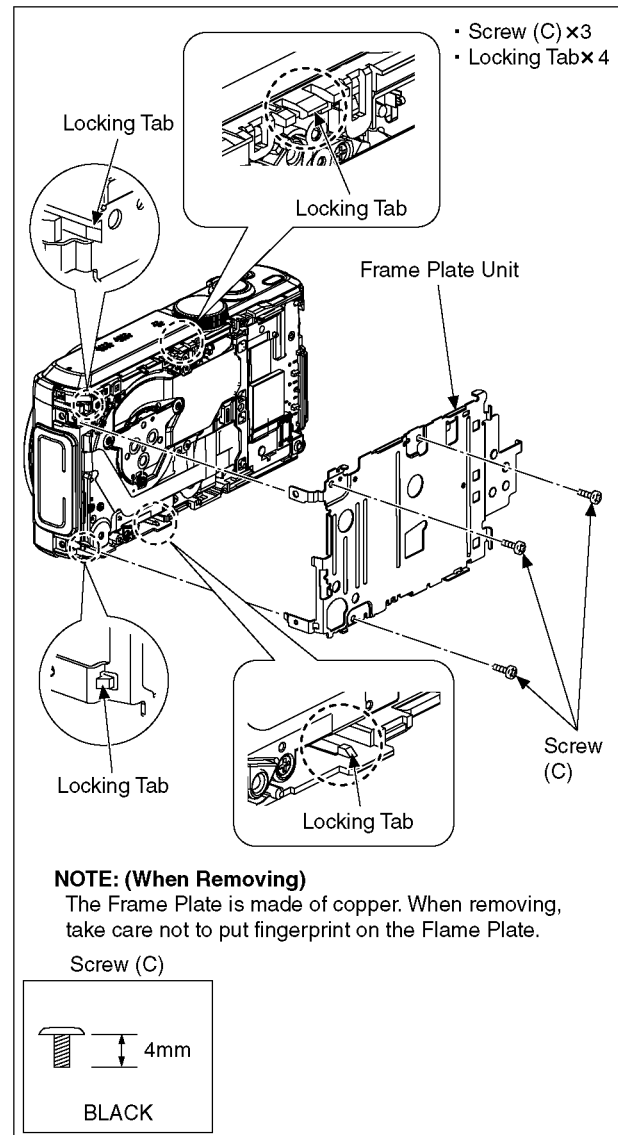


Fig. D4

9.3.5. Removal of the Lens Unit

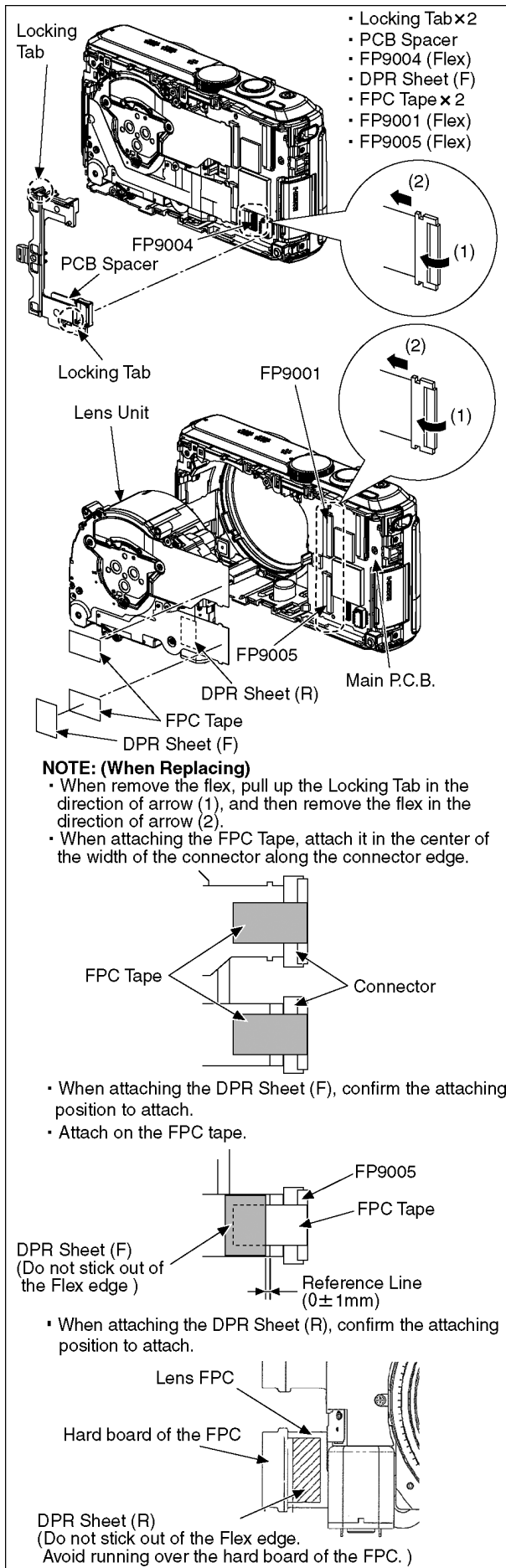


Fig. D5

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

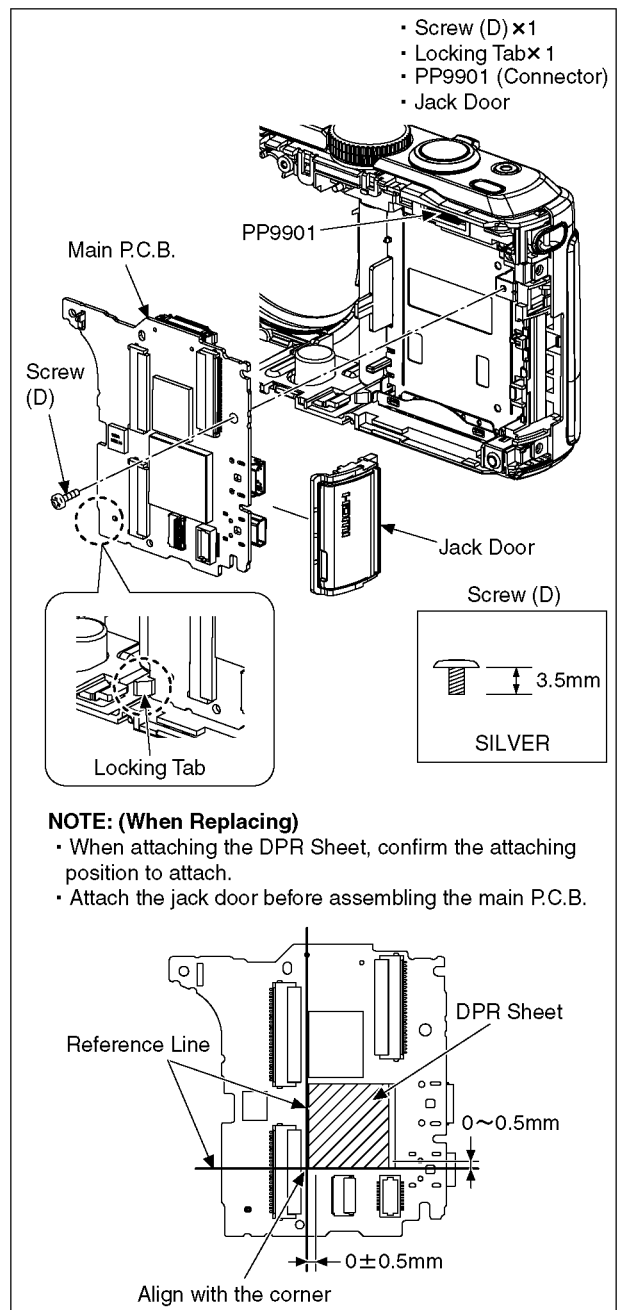


Fig. D6

9.3.7. Removal of the NFC P.C.B.

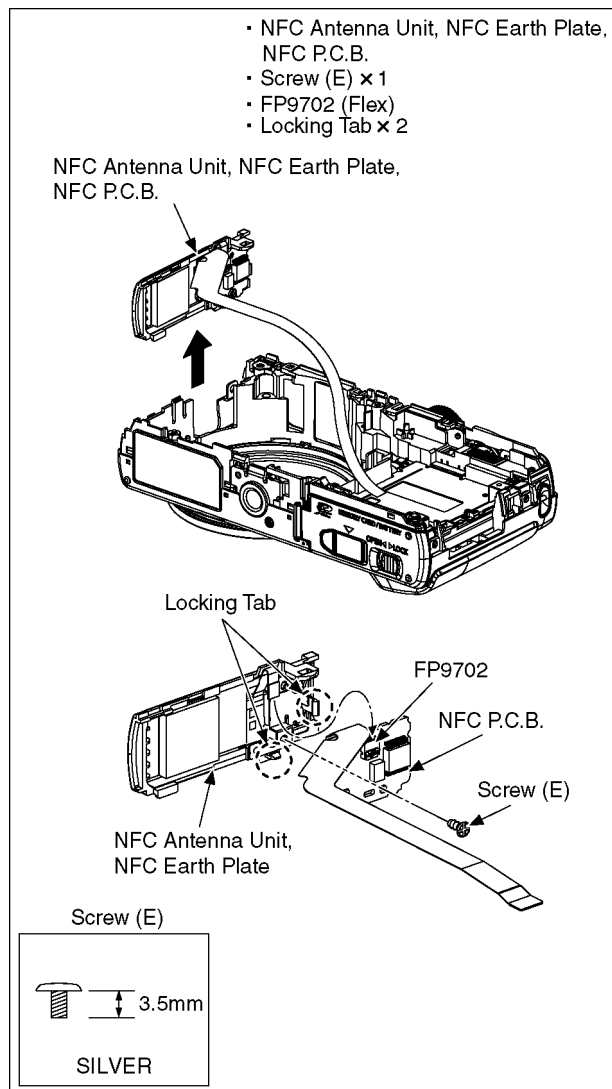


Fig. D7

9.3.8. Removal of the Front Case Unit

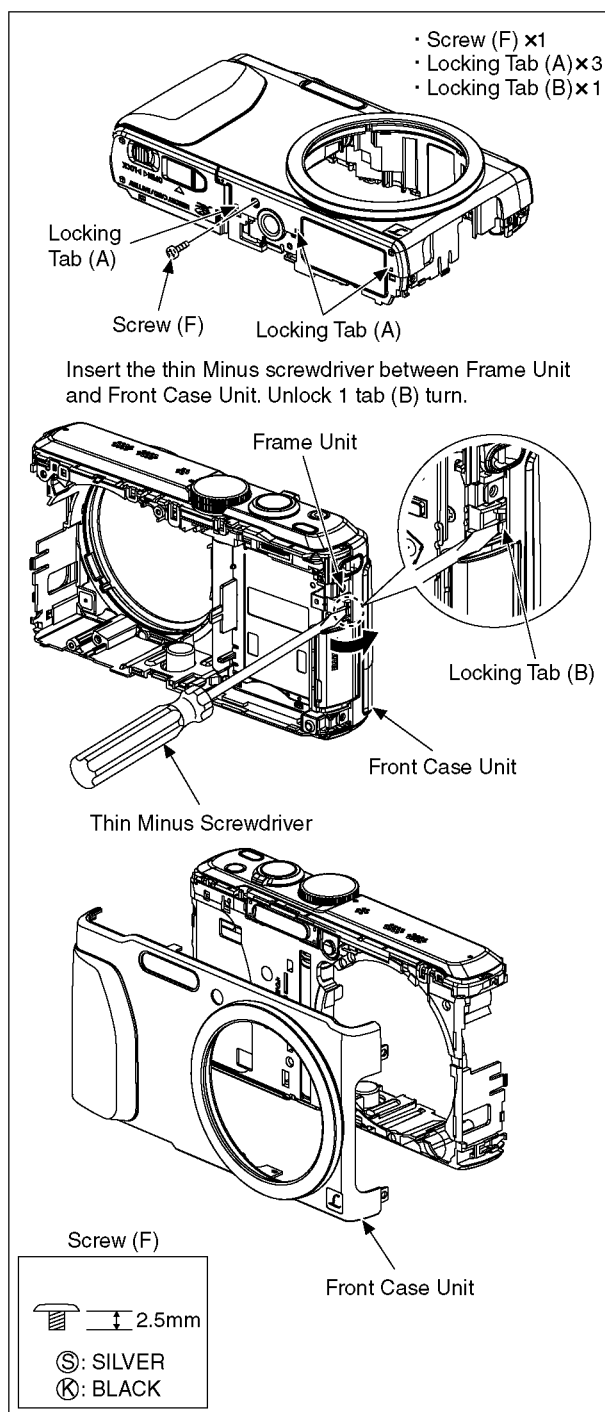


Fig. D8

9.3.9. Removal of the Top Case Unit

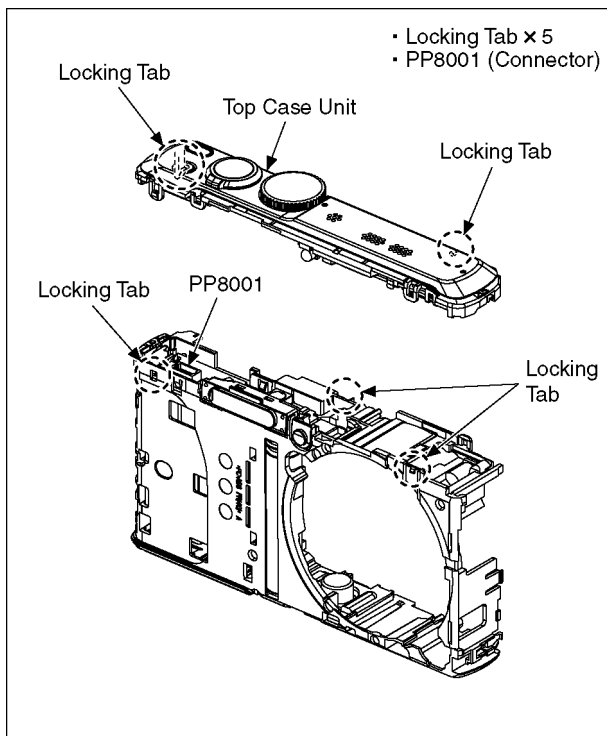
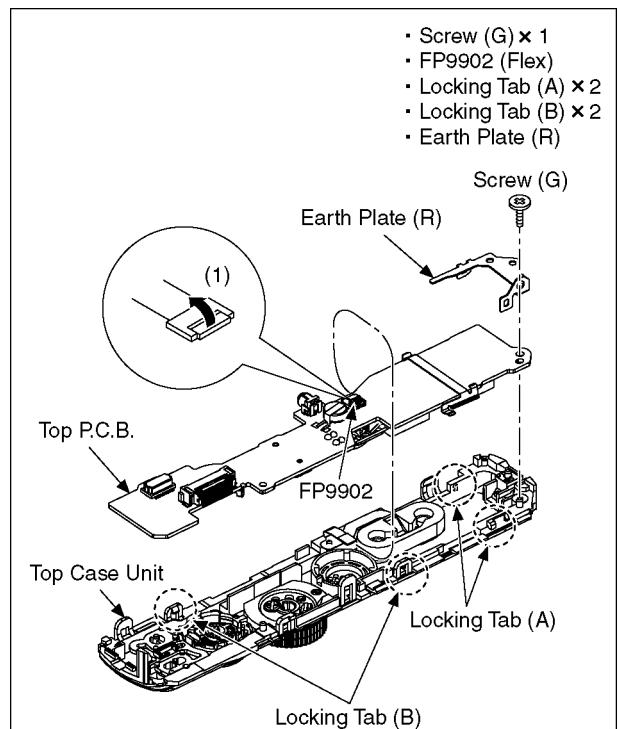


Fig. D9

9.3.10. Removal of the Top P.C.B.



NOTE: (When Replacing)

· When remove the flex, pull up the Locking Tab in the direction of arrow (1).

· Do not allow the speaker wire to protrude on the top board when attaching. (See below.)

※ Set the Zoom Switch to the center position and fix with the Zoom Lever.

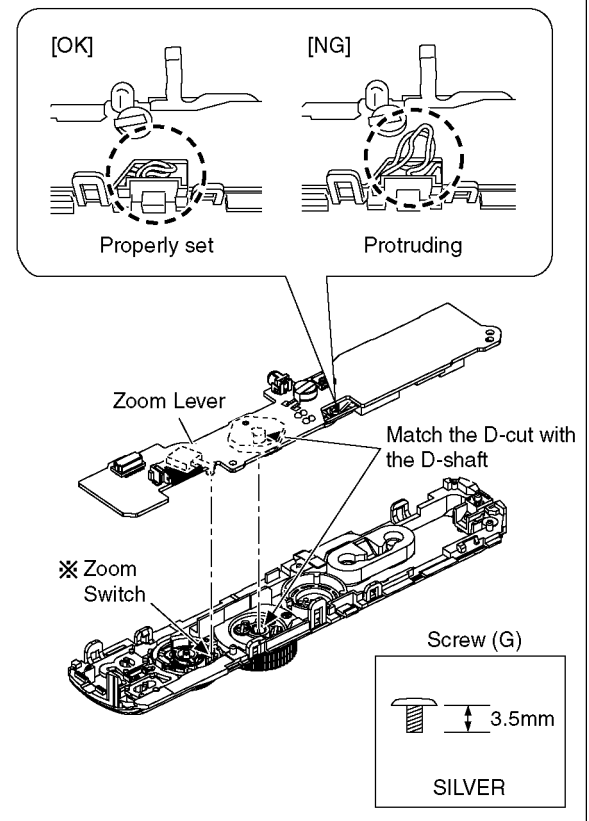


Fig. D10

9.3.11. Removal of the Flash Unit, Flash P.C.B.

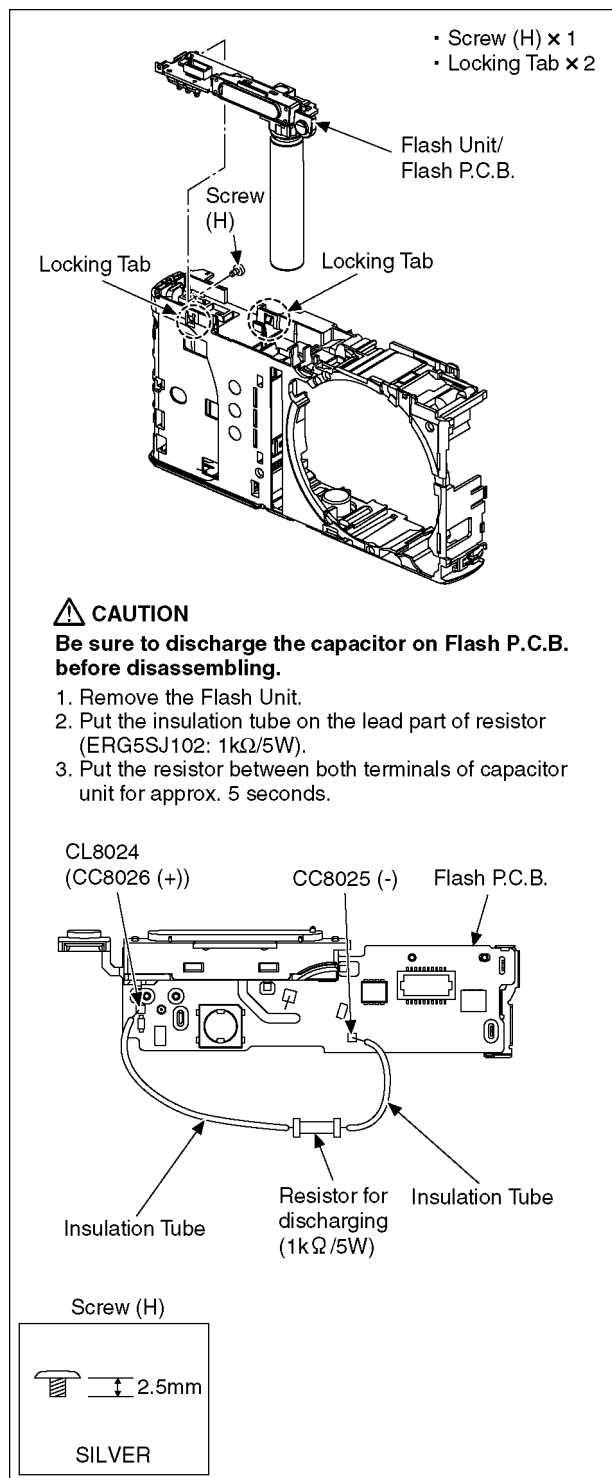


Fig. D11

9.3.12. Removal of the Battery Case

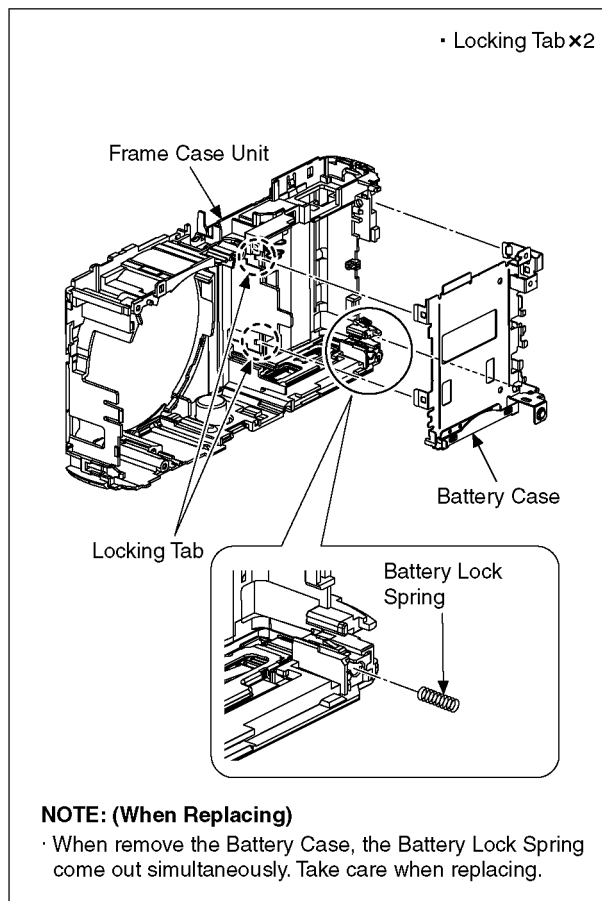


Fig. D12

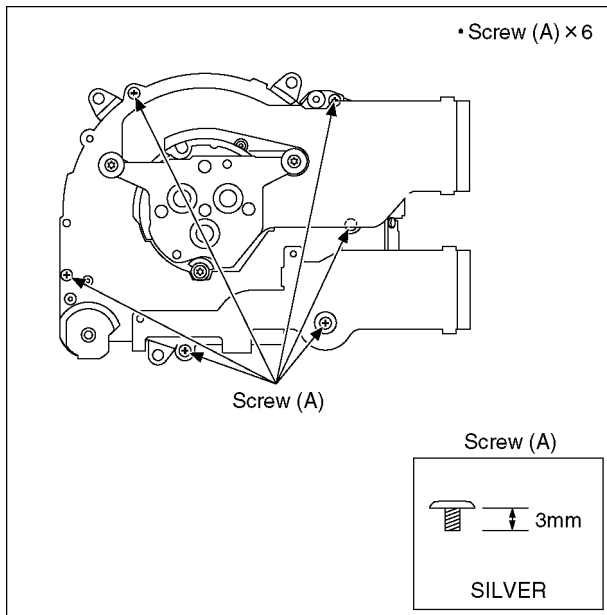
9.4. Lens Disassembly Procedure

Precaution:

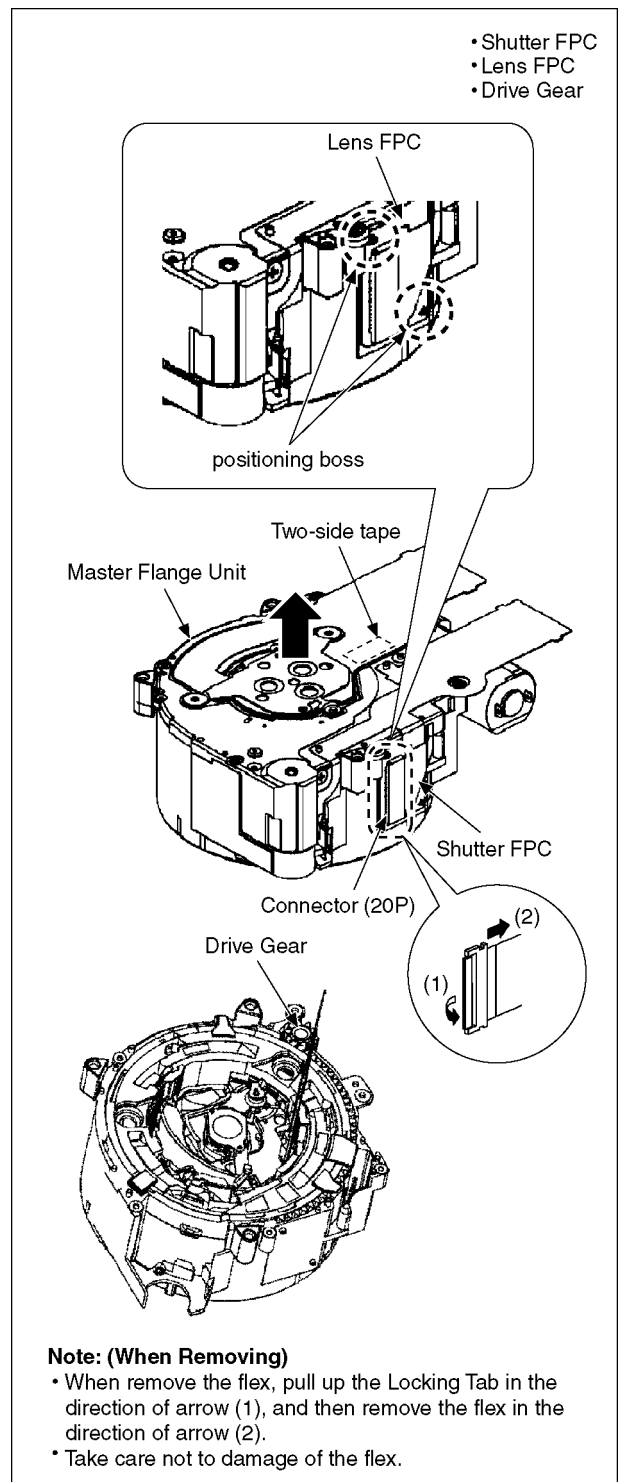
1. Do not remove the MOS when disassembling or re-assembling the lens in order to maintain it clean.
When remove it, refer to item "9.6".
2. Keep dust or dirt away from the lens.
3. To remove dirt or dust from the lens, blow with dry air.
4. Do not touch the lens surface.
5. Use lens cleaning KIT (BK)(VFK1900BK).
6. Apply grease (RFKZ0472) as shown on "THE APPLICATION OF GREASE METHOD" in the figure.
7. Apply a light coat of grease using an object similar to a toothpick.

9.4.1. Removal of the Master Flange Unit

1. Unscrew the 6 screws (A).

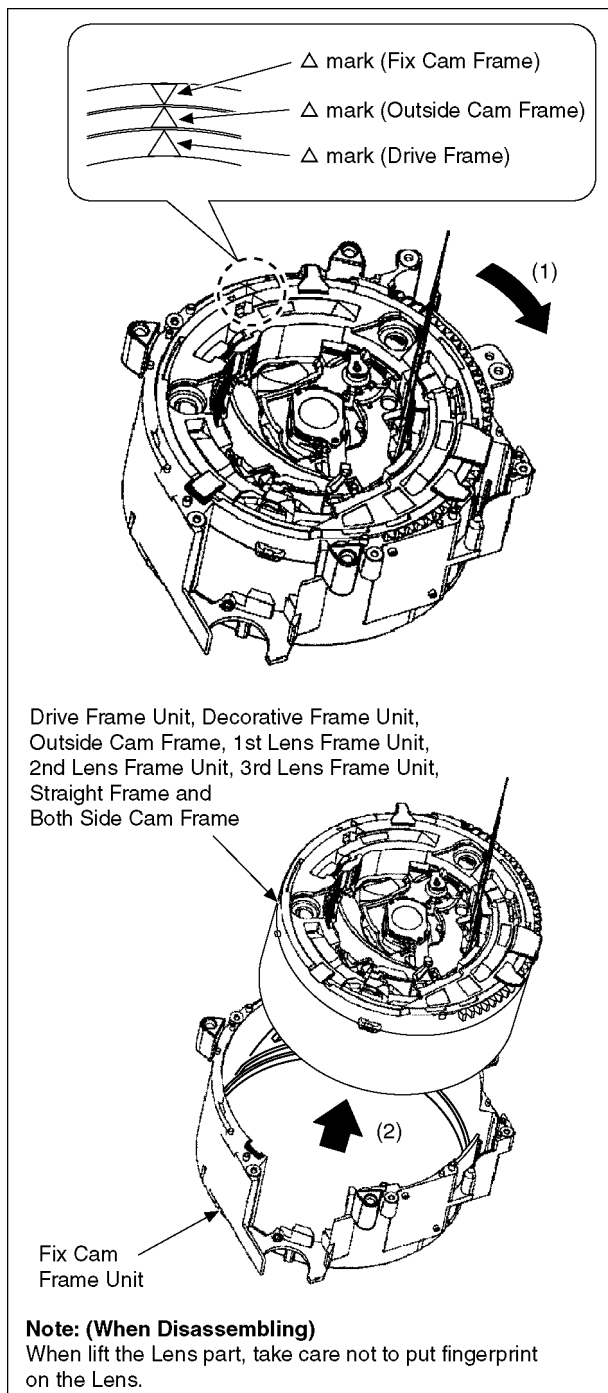


2. Remove the Shutter FPC.
3. Remove the Lens FPC from the positioning boss.
4. Remove the Master Flange Unit and Drive Gear.



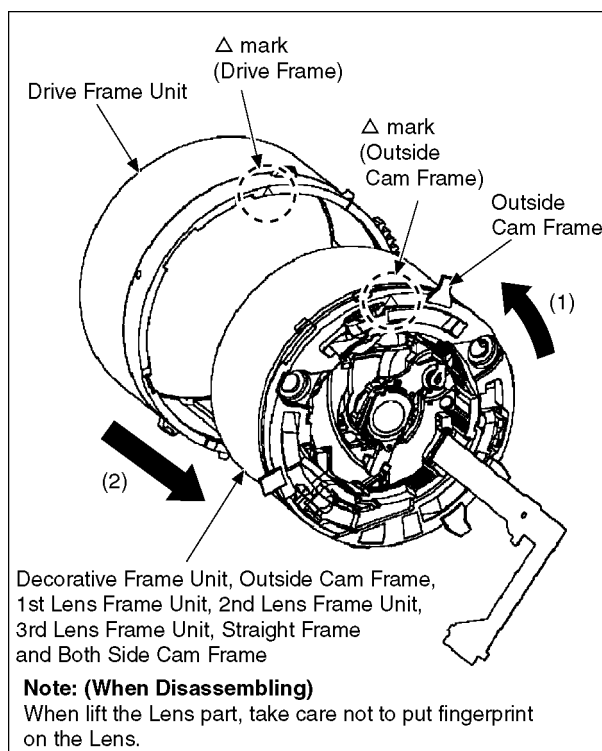
9.4.2. Removal of the Drive Frame Unit, Decorative Frame Unit, Outside Cam Frame, 1st Lens Frame Unit, 2nd Lens Frame Unit, 3rd Lens Frame Unit, Straight Frame and Both Side Cam Frame

1. Turn the Fix Cam Frame Unit in the arrow (1) direction, and align the Δ mark (Fix Cam Frame and Outside Cam Frame and Drive Frame).
2. Push the 1st Lens Frame Unit in the arrow (2) direction from the front of the Lens, and then remove the Unit of Drive Frame Unit, Decorative Frame Unit, Outside Cam Frame, 1st Lens Frame Unit, 2nd Lens Frame Unit, 3rd Lens Frame Unit, Straight Frame and Both Side Cam Frame from the Fix Cam Frame Unit.



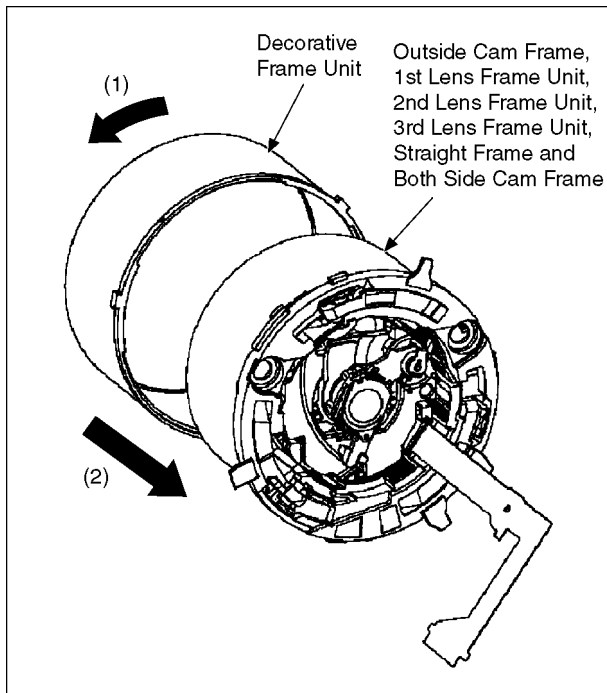
9.4.3. Removal of the Decorative Frame Unit, Outside Cam Frame, 1st Lens Frame Unit, 2nd Lens Frame Unit, 3rd Lens Frame Unit, Straight Frame and Both Side Cam Frame

1. Turn the Outside Cam Frame in the arrow (2) direction, and then align the Δ mark (Drive Frame and Outside Cam Frame).
2. Push the 1st Lens Frame Unit in the arrow (2) direction from the front of the Lens, and remove the Unit of Decorative Frame Unit, Outside Cam Frame, 1st Lens Frame Unit, 2nd Lens Frame Unit, 3rd Lens Frame Unit, Straight Frame and Both Side Cam Frame from the Drive Frame Unit.



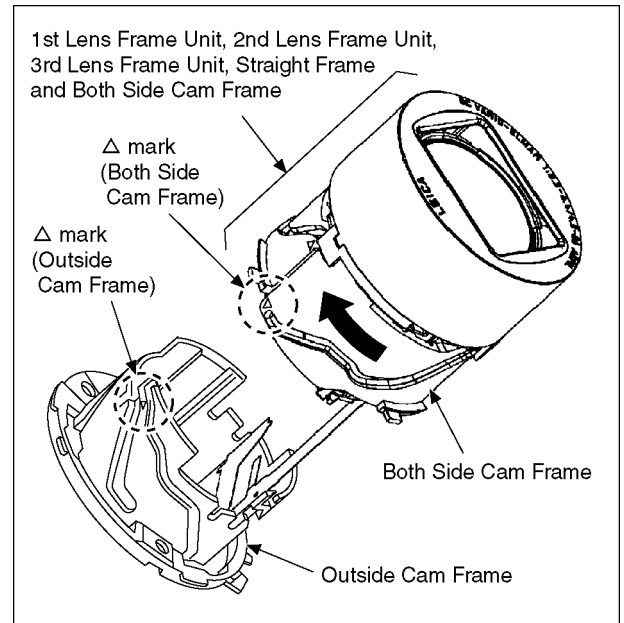
9.4.4. Removal of the Outside Cam Frame, 1st Lens Frame Unit, 2nd Lens Frame Unit, 3rd Lens Frame Unit, Straight Frame and Both Side Cam Frame

- Turn the Decorative Frame Unit in the arrow (1) direction, and remove the Unit of Outside Cam Frame, 1st Lens Frame Unit, 2nd Lens Frame Unit, 3rd Lens Frame Unit, Straight Frame and Both Side Cam Frame from the Decorative Frame Unit in the arrow (2) direction.



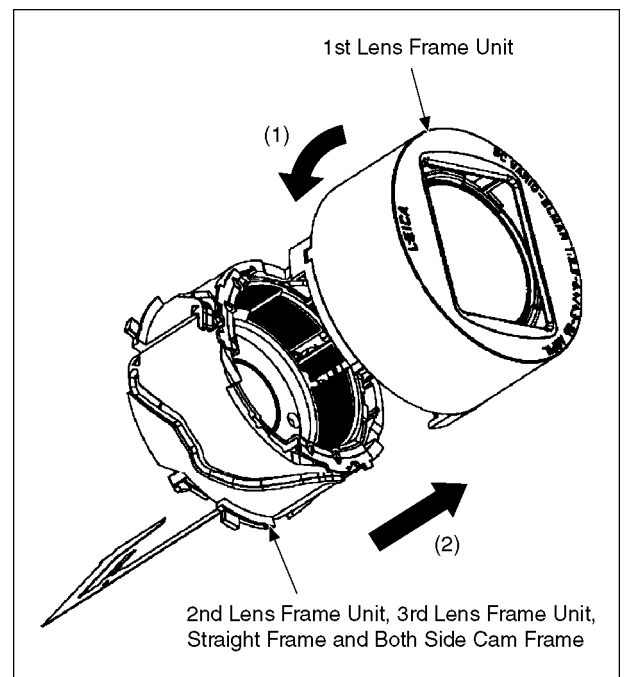
9.4.5. Removal of the 1st Lens Frame Unit, 2nd Lens Frame Unit, 3rd Lens Frame Unit, Straight Frame and Both Side Cam Frame

- Hold the Both Side Cam Frame and turn it in the arrow direction. Align the Δ mark (Outside Cam Frame and Both Side Cam Frame), and then remove the Unit of 1st Lens Frame Unit, 2nd Lens Frame Unit, 3rd Lens Frame Unit, Straight Frame and Both Side Cam Frame from the Outside Cam Frame.



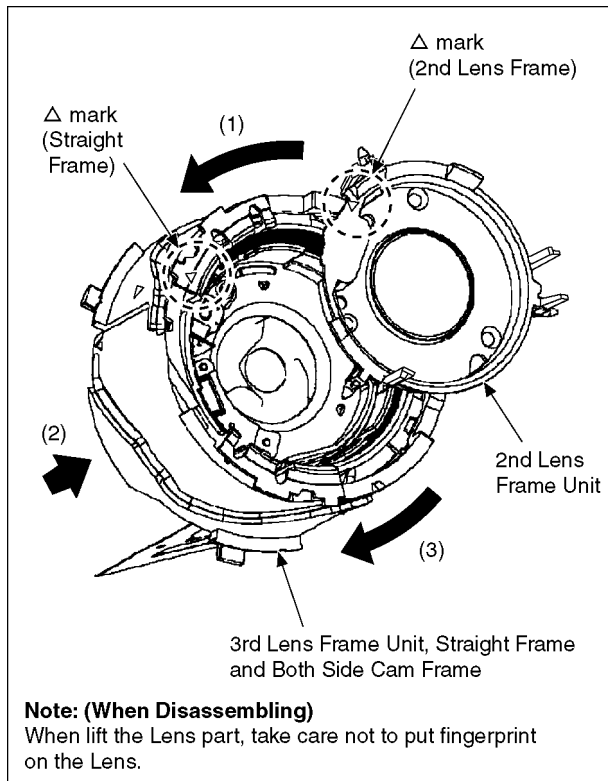
9.4.6. Removal of the 1st Lens Frame Unit

- Turn the 1st Lens Frame Unit in the arrow (1) direction a little, and remove the Unit of 2nd Lens Frame Unit, 3rd Lens Frame Unit, Straight Frame and Both Side Cam Frame in the arrow (2) direction.



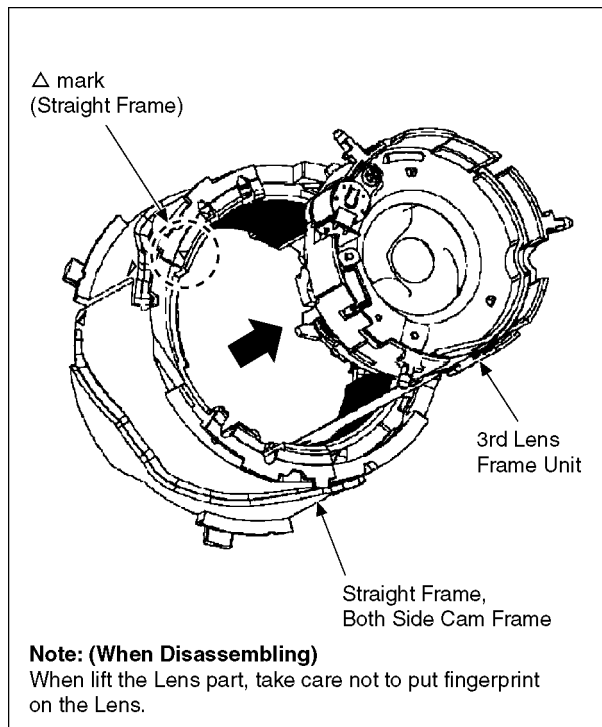
9.4.7. Removal of the 2nd Lens Frame Unit

1. Hold the Straight Frame and turn it in the arrow (1) so that the Δ mark (2nd Lens Frame Unit) meets the Δ mark (Straight Frame).
2. Pushing the 3rd Lens Frame Unit in the arrow (2) direction from the front of the Lens, turn it in the arrow (3) direction.



9.4.8. Removal of the 3rd Lens Frame Unit

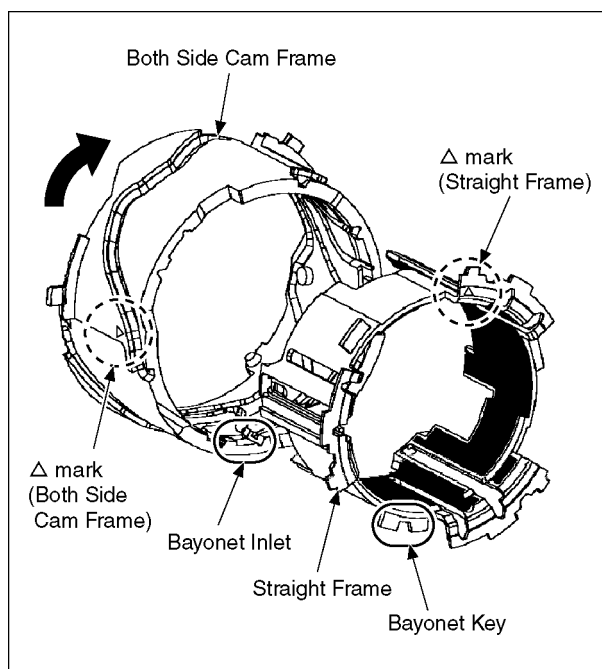
- Push the 3rd Lens Frame Unit in the arrow direction from the front of the Lens, and remove the 3rd Lens Frame Unit from the Straight Frame and Both Side Cam Frame.



9.4.9. Removal of the Straight Frame

- Turn the Straight Frame in the arrow direction, and align the Δ mark (Straight Frame and Both Side Cam Frame) in the direction as below.

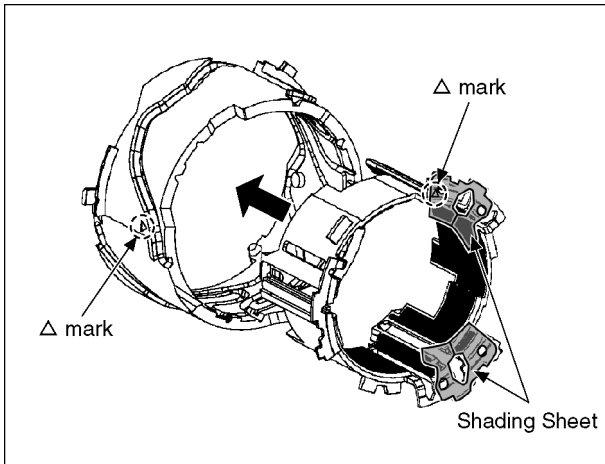
Align the Bayonet Key with the Bayonet Inlet, and remove the Straight Frame from the Both Side Cam Frame.



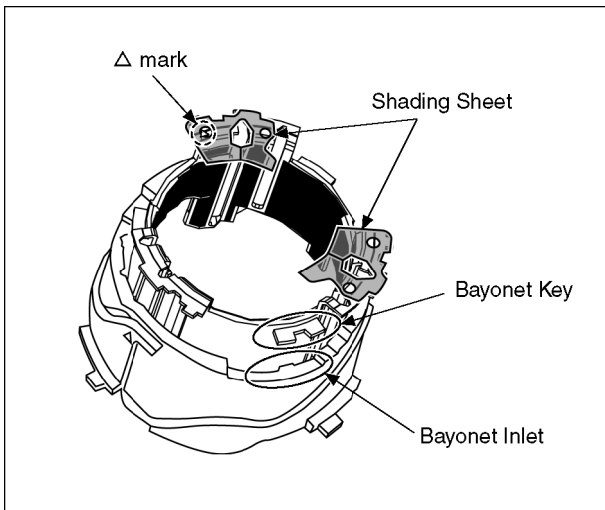
9.5. Assembly Procedure for Lens (Revised Version)

9.5.1. Insert the Straight Frame

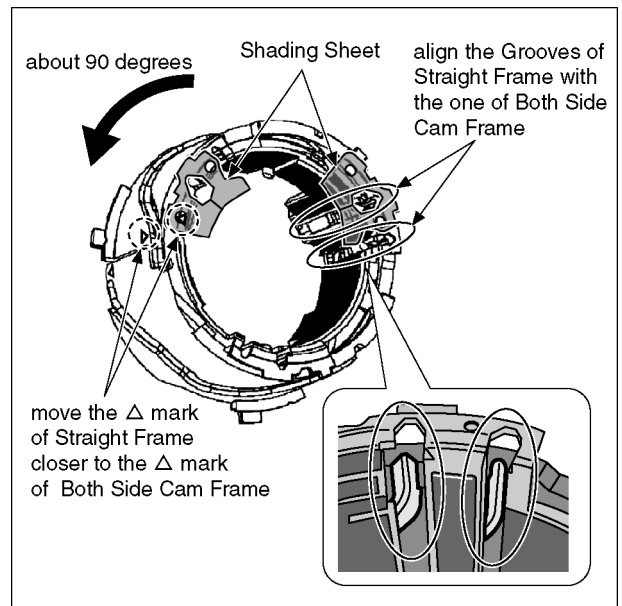
1. Insert the Straight Frame into the Both Side Cam Frame as below.
(The phase difference between the two Δ marks is about 90 degrees.)
*The Δ mark of the Straight Frame is under the Shading Sheet.



2. Insert the Bayonet Key of the Straight Frame into the Bayonet Inlet of the Both Side Cam Frame.
(Pass the convexity of Bayonet Inlet through the concavity of Bayonet Key.)

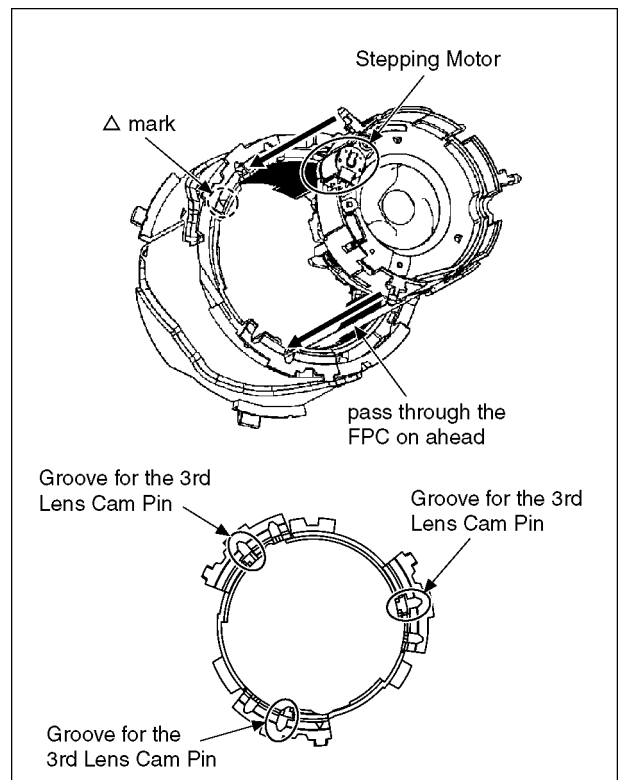


3. Turn the Straight Frame about 90 degrees in the arrow direction so that the Δ mark of Straight Frame comes close to the mark of Both Side Cam Frame.
*As the drawing below indicates, align the Grooves of Straight Frame with the one of Both Side Cam Frame.



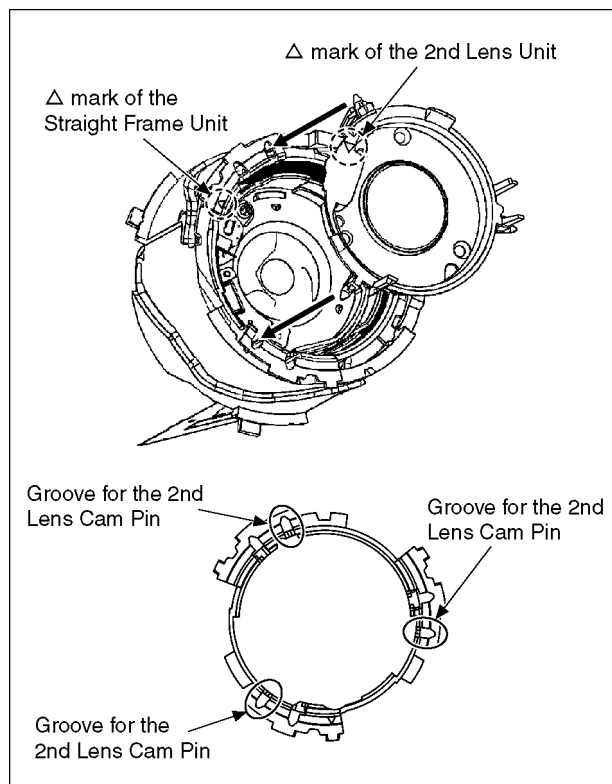
9.5.2. Insert the 3rd Lens Frame Unit and the 2nd Lens Frame Unit

1. Insert the 3rd Lens Frame Unit as the drawing below indicated.
*Align the Stepping Motor of the 3rd Lens Frame Unit with the Δ mark of the Straight Frame Unit, then put the each Cam Pin of the 3rd Lens Frame Unit in the each Groove of the Straight Frame Unit.



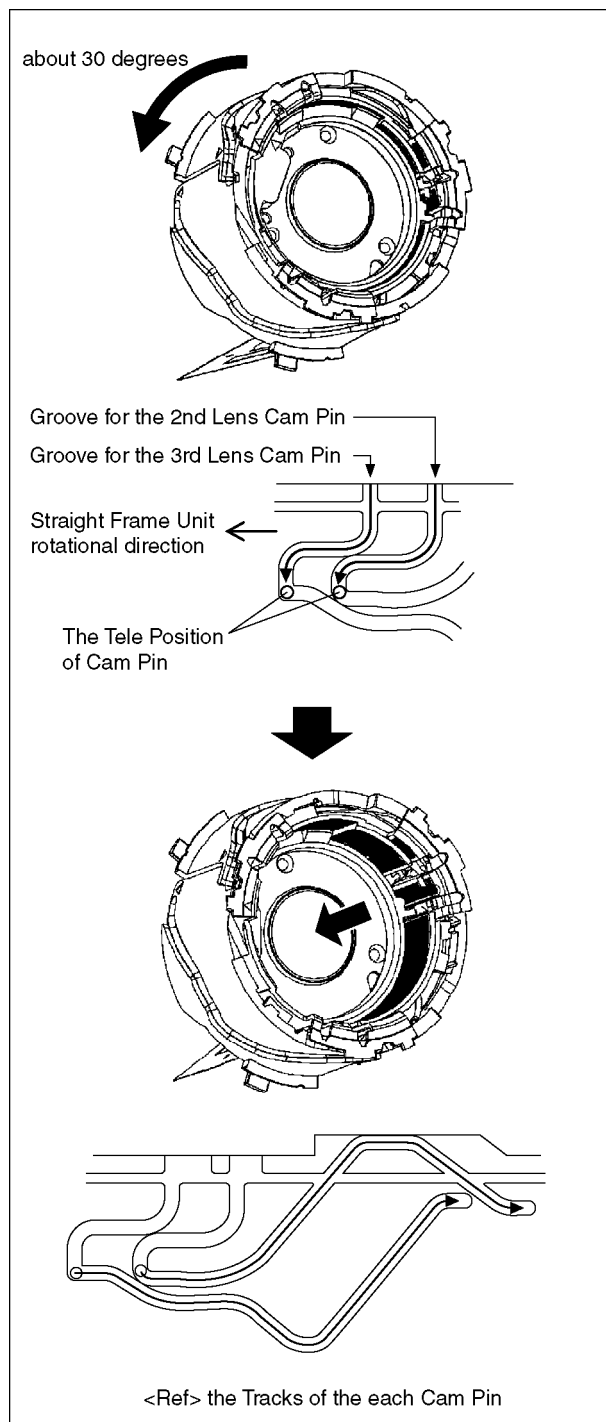
2. Insert the 2nd Lens Frame Unit as the drawing below indicated.

*Align the Δ mark of the 2nd Lens Frame Unit with the one of the Straight Frame Unit, then put the each Cam Pin of the 2nd Lens Frame Unit in the each Groove of the Straight Frame Unit.



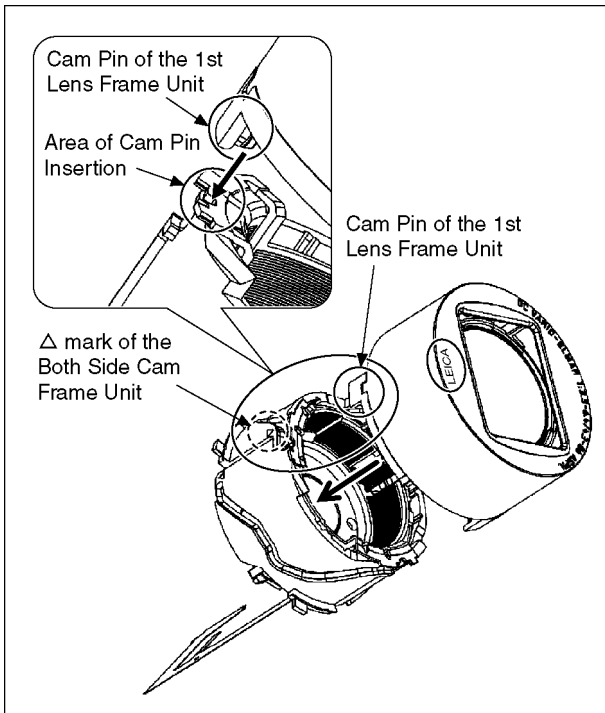
3. While pushing the 3rd Lens Frame Unit and the 2nd Lens Frame Unit, turn the Straight Frame Unit in the arrow direction to the end.(about 30 degree)

*Need to confirm that the two Lens Frames move smoothly when the Straight Frame Unit rotates in two directions.

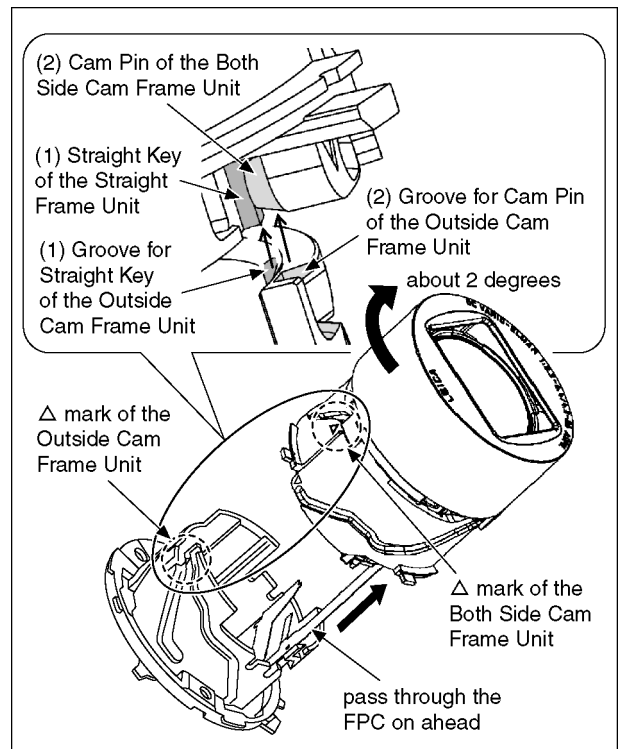


9.5.3. Insert the 1st Lens Frame Unit and the Outside Cam Frame Unit

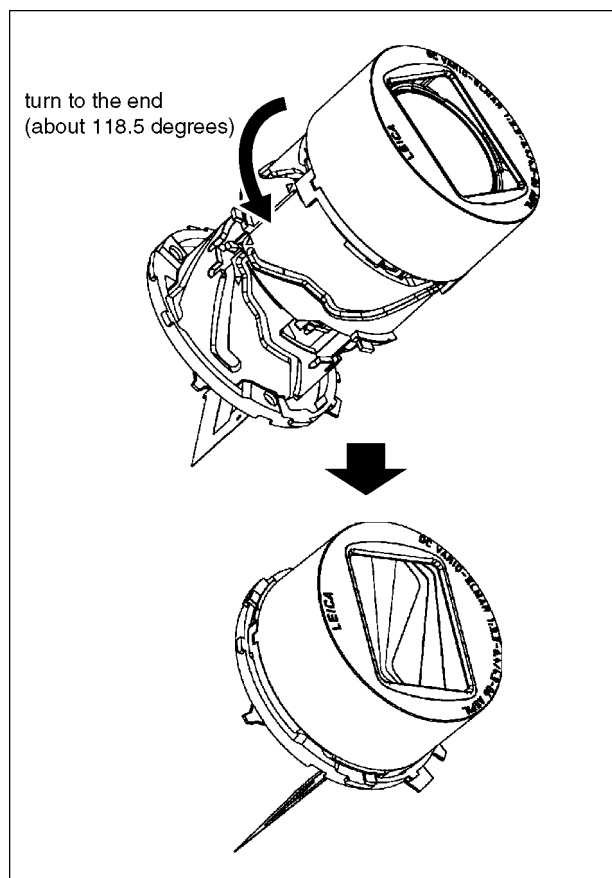
1. Insert the 1st Lens Frame as the drawing below indicated.
Pass the Cam Pin of the "LEICA" side of the 1st Lens Frame Unit through the Area of Cam Pin Insertion near the mark of Both Side Cam Frame Unit



2. Move the △ mark of the Both Side Cam Frame Unit closer to the △ mark of the Outside Cam Frame Unit, then turn the 1st Lens Frame Unit just a bit in the arrow direction.(about 2 degrees)
*Hold the Cam Pin of the Both Side Frame Unit close to the Straight Key of the Straight Frame Unit.
3. Insert the Straight Key and the Cam Pin into the following grooves.
(1)The Straight Key of the Straight Unit -> The groove for the Straight key of the Outside Cam Frame Unit
(2)The Cam Pin of the Both Side Cam Frame Unit -> The groove for the Cam Pin of the Outside Cam Frame Unit

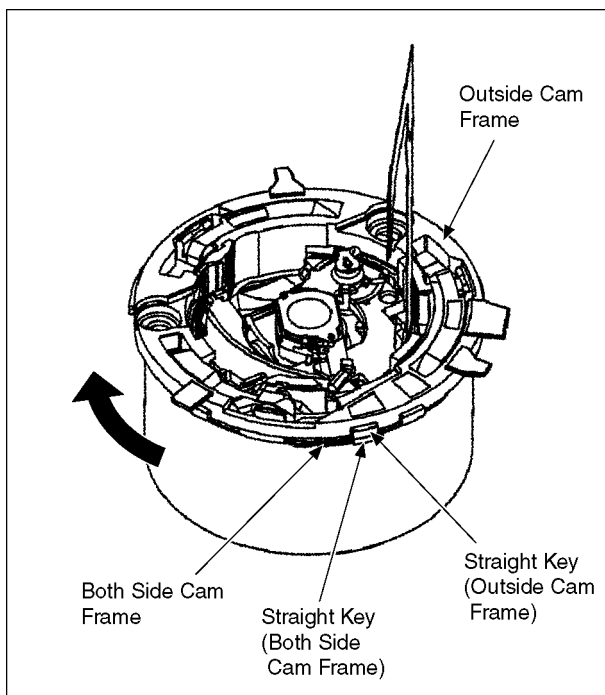


4. Turn the Both Side Cam Frame Unit to the end in the arrow direction while holding the Outside Cam Frame Unit. (About 118.5 degrees)
 *Confirm that 1st Lens Frame Unit does not rotate when the Both Side Cam Frame Unit rotates.
 (It's the confirmation that previous insertion is done normally.)

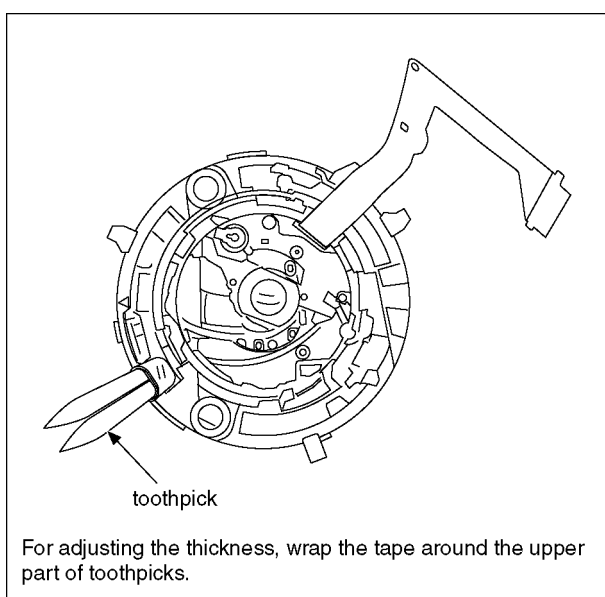


9.5.4. Insert the Decorative Frame Unit

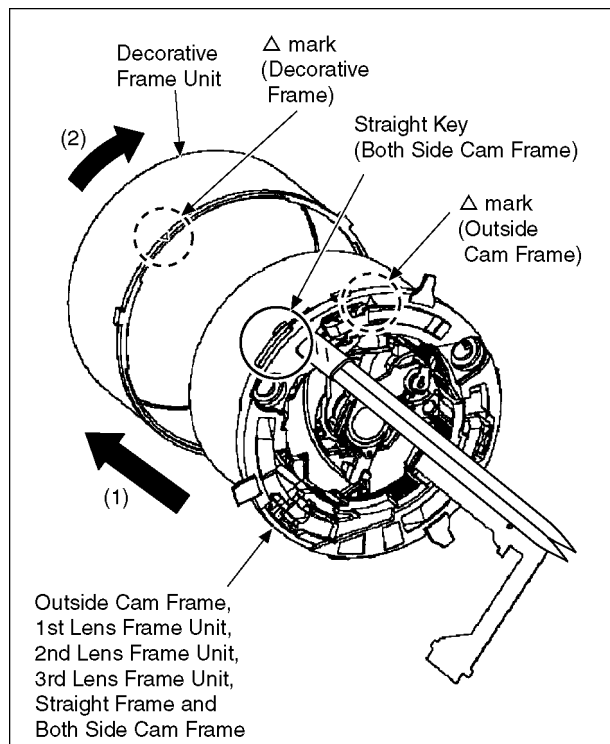
1. Hold the Straight Key (Both Side Cam Frame), turn it in the arrow direction and align with the Straight Key (Outside Cam Frame).



2. Insert 2 toothpicks (rotation stopper) in the position as below.



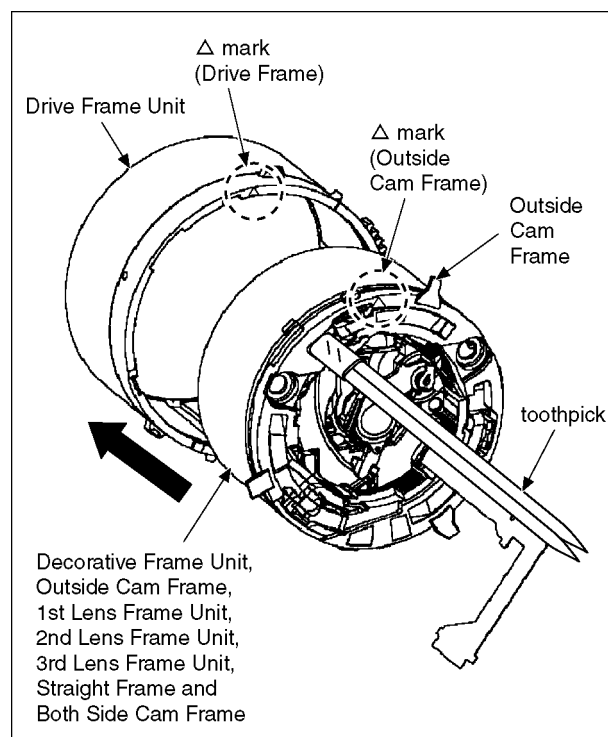
3. Align the Δ mark (Decorative Frame) with the Straight Key (Both Side Cam Frame), and install the Unit of Outside Cam Frame, 1st Lens Frame Unit, 2nd Lens Frame Unit, 3rd Lens Frame Unit, Straight Frame and Both Side Cam Frame to the Decorative Frame Unit.
4. Turn the Decorative Frame Unit in the arrow (2) direction so that the Δ mark (Decorative Frame) meets the mark (Outside Cam Frame).



9.5.5. Insert the Drive Frame Unit

- Align the Δ mark (Drive Frame and Outside Cam Frame), and install the Unit of Decorative Frame Unit, Outside Cam Frame, 1st Lens Frame Unit, 2nd Lens Frame Unit, 3rd Lens Frame Unit, Straight Frame and Both Side Cam Frame to the Drive Frame Unit.

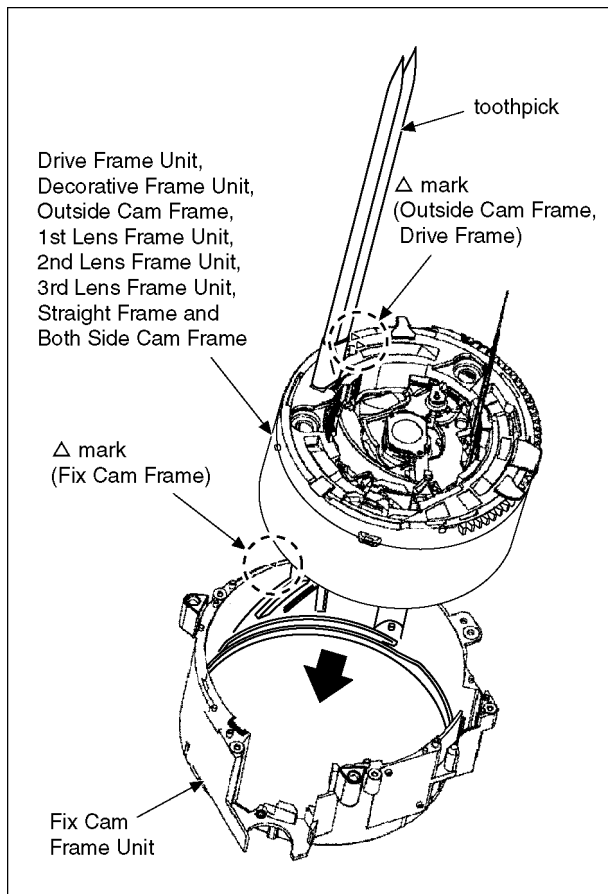
*Keep the toothpicks (rotation stopper) inserted.



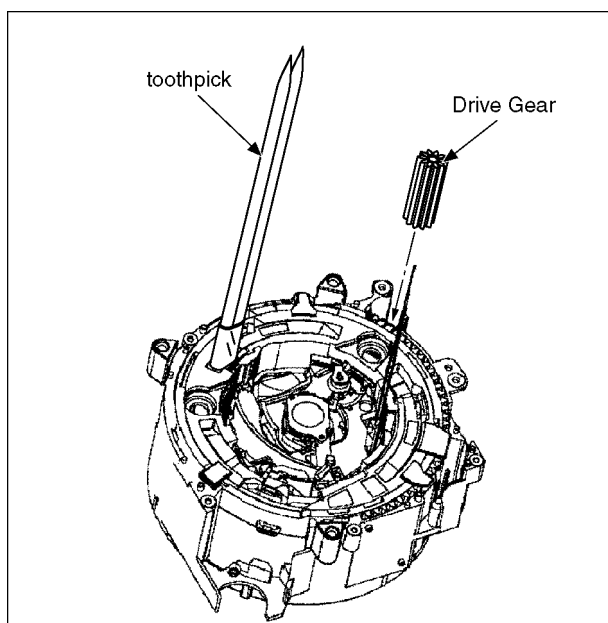
9.5.6. Insert the Fix Frame Unit

1. Install the Drive Gear to the Fix Cam Frame Unit.
2. Align the Δ mark (Outside Cam Frame and Drive Frame and Fix Cam Frame), and install the Unit of Drive Frame Unit, Decorative Frame Unit, Outside Cam Frame, 1st Lens Frame Unit, 2nd Lens Frame Unit, 3rd Lens Frame Unit, Straight Frame and Both Side Cam Frame to the Fix Cam Frame Unit.

*Keep the toothpicks (rotation stopper) inserted.



3. Remove the toothpicks (rotation stopper) and insert the Drive Gear.



9.5.7. Insert the Master Flange Unit

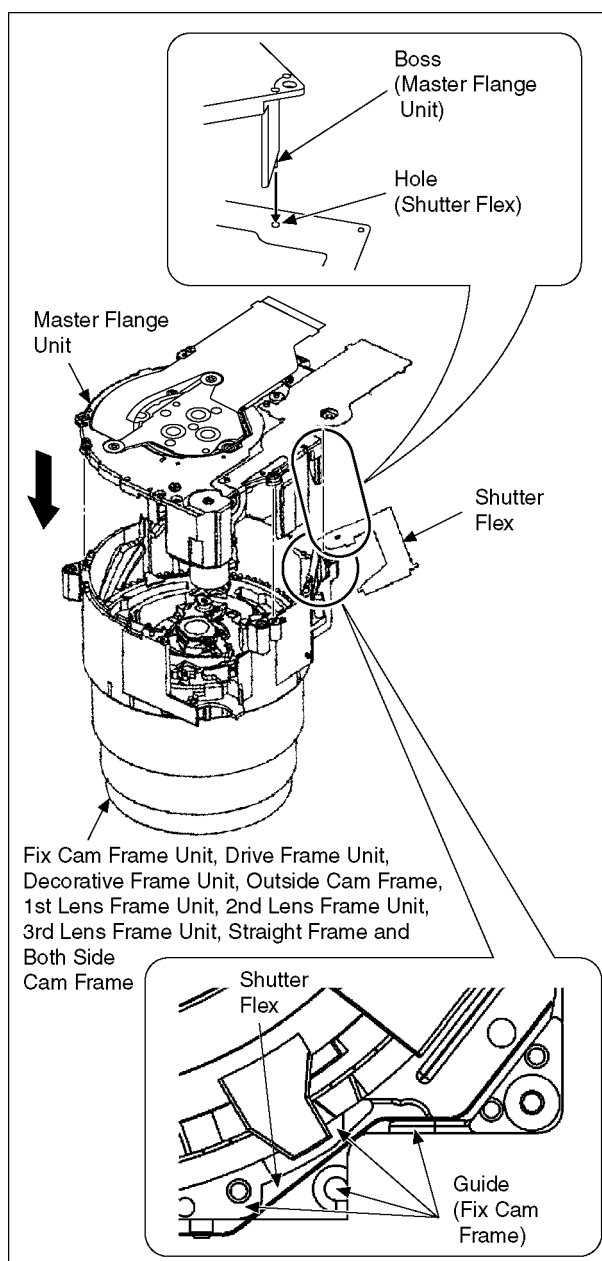
Note: (When Installing)

Refer to "The Application of Grease Method" when installing the Master Flange Unit.

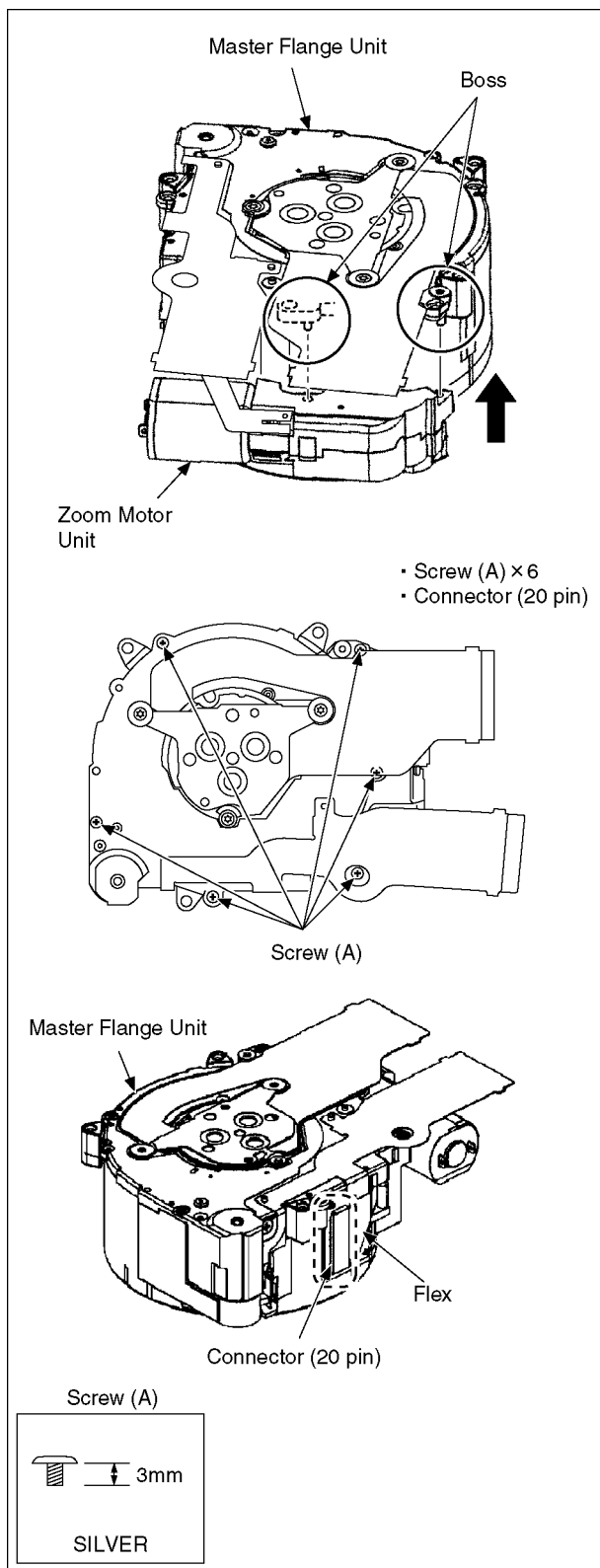
Take Care not to damage the flex.

Take Care not to tuck in to the Master Flange Unit, When inserting the Shutter Flex.

1. Turn the Drive Frame Unit to the Wide position as below.
2. Push the Hole of the Shutter Flex to the Boss of the Master Flange Unit tightly.
3. Place the Shutter Flex following the Guide of the Fix Cam Frame, and install the Master Flange Unit to the Unit of Fix Cam Frame Unit, Drive Frame Unit, Decorative Frame Unit, Outside Cam Frame, 1st Lens Frame Unit, 2nd Lens Frame Unit, 3rd Lens Frame Unit, Straight Frame and Both Side Cam Frame.
4. Turn the Drive Frame Unit to the completely retracted position.



5. Join the Zoom Motor Unit to the Boss, and install to the Fix Cam Frame.

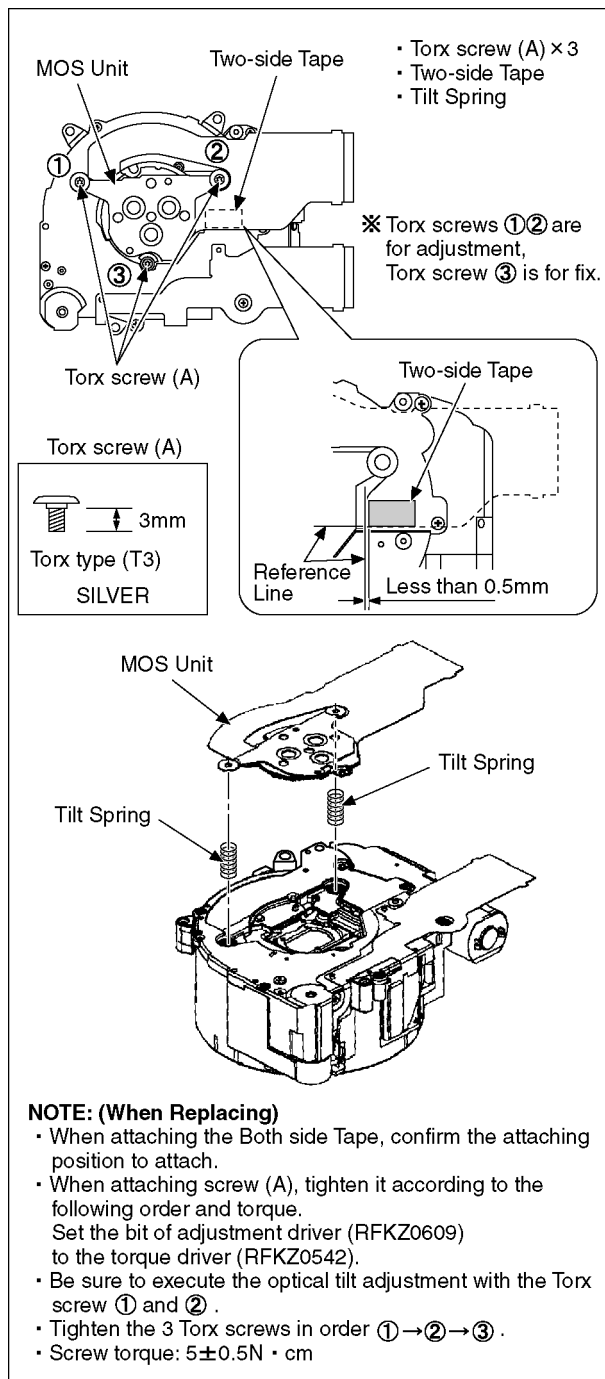


9.6. Removal of the MOS Unit

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

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

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



10 Measurements and Adjustments

10.1. Introduction

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

When trouble occurs, it is recommended to backup the Flash-rom data before disassembling the unit.

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

- When the MOS unit is unavoidably removed for Lens unit, Master flange unit and MOS unit replaced, an optical adjustment is necessary after parts are exchanged.
- It is necessary to use the "DSC_Tilt" software to allow the "Optical tilt adjustment".
- The Adjustment software "DSC_Tilt" is available at "TSN Website".

NOTICE (When Main P.C.B. is exchanged)

Number of necessary adjustment items decreases by copying the backup data to new Main P.C.B. when adjustment data in old Main P.C.B. can be read by ROM_BACKUP "DSC→SD" in "10.2.2. Flash-Rom Data Backup".

For more details, please refer an item "MAIN PCB (to which the backup data was copied)" in the table of "10.3.2. Adjustment Specifications".

IMPORTANT NOTICE (After replacing the Main P.C.B.)

After replacing the Main P.C.B., it is necessary to achieve adjustment.

10.2. Before Disassembling the unit

10.2.1. Initial Setting Release

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

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

Note:

The initial setting should be again done after completing the alignment. Otherwise, the camera may not work properly.

Therefore as a warning, the camera display a warning symbol " ! " on the LCD monitor every time the camera is turned off.

Refer to the procedure described in "3.4.2. INITIAL SETTINGS" for details.

[How to Release the camera initial setting]

Preparation:

Attach the Battery to the unit.

Set the recording mode dial to PROGRAM AE mode.

Step 1. Temporary cancellation of "INITIAL SETTINGS":

While pressing the UP of Cursor button and MOTION PICTURE button simultaneously, turn the Power on.

Step 2. Cancellation of "INITIAL SETTINGS":

Press the PLAYBACK button.

While pressing UP of Cursor button and MOTION PICTURE button simultaneously. (The camera will beep after this.)

Turn the Power off. (The warning symbol " ! " is displayed on the LCD monitor.)

10.2.2. Flash-Rom Data Backup

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

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

[ROM_BACKUP (Method of Non-PC backup)]

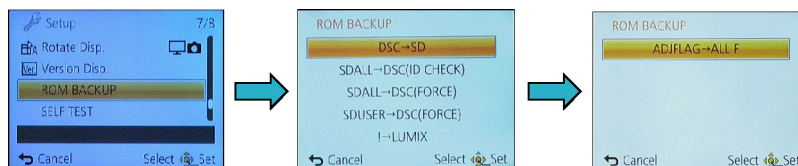
1. Insert the Memory Card into the camera.
2. Set the camera to "Temporary cancellation of the initial settings".
3. Select the "SETUP" menu.

From the "SETUP" menu, select "ROM BACKUP".

Note:

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

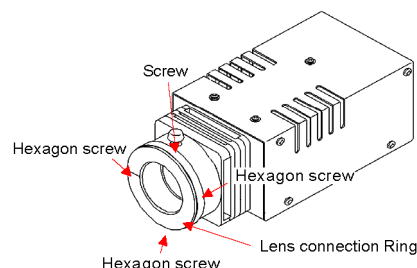
4. When this "ROM_BACKUP" item is selected, the following submenus are displayed.



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

10.2.3. Light Box

If using VFK1164TDVLB Light Box, remove the lens connection ring by loosening three hexagon screws.



10.3. Details of Electrical Adjustment

10.3.1. How to execute the Electrical Adjustment

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

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

10.3.1.1. Startup Electrical Adjustment mode

1. Release the initial settings.
2. Insert a recordable Memory Card.
(Without a Memory Card, the automatic adjustment can not executed.)
3. Procedure to set the camera into adjustment mode:
 - a. Set the mode into PROGRAM AE mode.
 - b. Turn the Power off.
 - c. Turn the Power on pressing MOTION PICTURE and MENU/SET simultaneously.
LCD monitor displays "SERVICE MODE".
(Refer to Fig.F3-1)

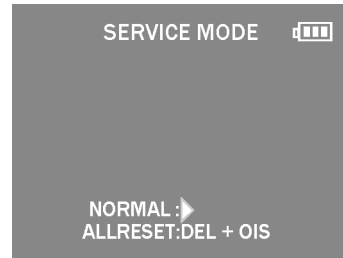


Fig. 3-1

10.3.1.2. Status Adjustment Flag Setting

Reset (Not yet adjusted) the status flag condition.

1. After pressing the DISPLAY button, the LCD monitor displays the Flag status screen (Refer to Fig.3-2.)
2. Select item by pressing the cross keys. (Gray cursor is moved accordingly.)
3. Press the DELETE button.

Note:

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

*(Refer to Fig. 3-3)

*Flag conditions:

F (green)

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

0 (yellow)

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

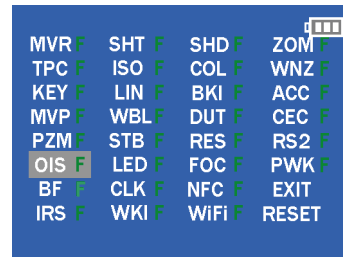


Fig. 3-2



Fig. 3-3

- To display the "BKS" flag, choose the "RESET" and press the DOWN of Cursor button.
- In case of setting the status flag into set condition again without completion of the alignment, the status flag should be SET by using PC, or UNDO by using ROM BACKUP function.

10.3.1.3. Execute Adjustment

1. Perform step "10.3.1.1." to "10.3.1.2.", to reset the OIS flag status "F" (Set) to "0" (Reset).
2. Press DISPLAY button after Flag reset.
OIS Adjustment screen is displayed on the LCD panel.
(Refer to Fig.3-4)
3. Press the shutter button. The adjustment will start automatically.
4. When the adjustment is completed successfully, adjustment report menu appears with Green OK on the LCD monitor. (Refer to Fig.3-5)



Fig. 3-4

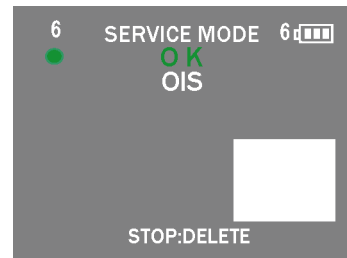


Fig. 3-5

10.3.1.4. Attention point during Adjustment

1. Step "10.3.1.3." procedure shows OIS adjustment as an example. To perform the adjustment, refer to the "10.3.2. Adjustment Specifications" table which shows key point for each adjustment.
2. Do not move the light box, the camera or the chart while adjusting. If one of these is moved accidentally, start the adjustment again.
3. Do not press any buttons/keys until the default menu (Fig.3-6) is displayed on the LCD monitor. Otherwise, adjustment data may not be stored properly.
4. If the adjustment is interrupted accidentally, the alignment data may not be properly saved in the Flash-rom.

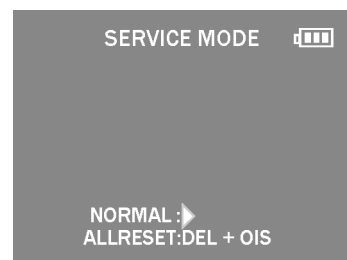


Fig. 3-6

10.3.1.5. Finalizing the Adjustment

1. Several adjustment flags can be reset ("F" into "0") at the same time. In this case, when the adjustment has been completed, the screen will change showing the adjustment for the next item until all reset items are completed.
Also, when the shutter button is pressed, the screen jump to the next adjustment item.
2. To cancel the adjustment mode while in the process of performing the adjustment, follow this procedures.
(1) Press "Right of cross key" button.

Note:

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

10.3.2. Adjustment Specifications

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

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

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

Adjustment order	Adjustment Item	FLAG	Purpose	Replacing Parts									JIG/TOOLS	SET UP	How to Operate
				MAIN P.C.B./ VENUS ENGINE (IC6001)/ MCP (IC6005)	MAIN P.C.B. (to which the backup data was copied)	Lens Parts (except MOS UNIT)	MOS UNIT	MIC UNIT	FLASH UNIT	LCD (with TOUCH PANEL UNIT)	OPERATION P.C.B./ELECTRONIC LEVELLER(IC9201)	NFC P.C.B./ Component parts on NFC P.C.B.			
1	Optical Tilt	—	Align the image sensor installation angle to the Lens	—	—	○	○	—	—	—	—	—	• OPTICAL AXIS ADJUSTMENT CHART (RFKZ0570) • DRIVER (for OPTICAL AXIS ADJUSTMENT (RFKZ03009 (T3 TORX TYPE)) • CAMERA STAND (RFKZ0333J) • TORQUE DRIVER (RFKZ0542)	Note: - When the Lens Part (except MOS Unit) or MOS Unit is replaced, make sure to perform the "Optical tilt adjustment" before another "Optical Adjustment". - The "DSC Tilt" software (include the "Optical tilt adjustment process document") for the "Optical tilt adjustment" is specially uploaded on the Web-site.	
2	Touch Panel	TPC	Touch Panel adjustment	○	—	—	—	—	—	○	—	—	• TOUCH (VGOOC14 X 2)	- Refer to "10.3.2.1. How to adjustment the Touch Panel".	
3	Venus Zoom ※ 4	PZM	Venus Zoom Inspection	○	○	—	—	—	—	—	—	—	NONE	NONE	1)Press Shutter Button. 2)After completed, the "OK" menu appears.
4	OIS sensor	OIS	OIS sensor output level adjustment	○	—	○	○	—	—	—	—	—	NONE	NONE	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)After completed, the "OK" menu appears.
5	Back focus / GYRO ※ 4	BF	To have the focus tracking curve be appropriate shape and GYRO sensor adjustment	○	○	○	○ ※ 1	—	—	—	○	—	• COLLIMATOR (RFKZ0422)	1)Set the camera in front of collimator so that the distance from collimator to camera becomes about 6.0 cm as shown in Fig. A. 2)Set the camera angle so that the center of the chart comes to the center of the LCD monitor. [IMPORTANT] The adjustment "NG" might be happened with the following conditions: - Do not put the black colored stuff at the back side of collimator near hunching chart. It needs to get some certain brightness. - Make sure the hunching chart has no dust and dirty condition. - Do not connect a USB cable during adjustment.	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)After completed, the "OK" menu appears.
6	Iris	IRS	Iris adjustment	○	—	○	○	—	—	—	—	—	• LIGHT BOX (VFK1164TDVLB or RFKZ0523)	1)Set the camera in front of LIGHT BOX so that the distance from LIGHT BOX to camera becomes about 15 cm as shown in Fig. B. 2)Aim the LIGHTBOX so that the entire LCD screen becomes fully "white". (No dark area).	1)Press Shutter Button 2)After completed, the "OK" menu appears.
7	Shutter	SHT	Shutter speed adjustment	○	—	○	○	—	—	—	—	—		1)Set the camera in front of LIGHT BOX so that the distance from LIGHT BOX to camera becomes about 15 cm as shown in Fig. B. 2)Aim the LIGHTBOX so that the entire LCD screen becomes fully "white". (No dark area).	1)Press Shutter Button 2)After completed, the "OK" menu appears.
8	High brightness coloration	LIN	High brightness coloration adjustment	○	—	○	○	—	—	—	—	—	• LIGHT BOX (VFK1164TDVLB or RFKZ0523) • ND FILTER (RFKZ0513 (ND0.3))	1) Set the ND FILTER of LIGHT BOX. 2) Set the camera in front of LIGHT BOX so that the distance from LIGHT BOX to camera becomes about 7 cm as shown in Fig. B. 3) Set the camera angle so that the color chart is displayed on the LCD monitor fully. [IMPORTANT] The adjustment "NG" might be happened with the following conditions: - Since the lens position is automatically set into certain position after executing auto adjustment, confirm the angle after stopping the lens zoom position. - It is no problem even though the chart on to the LCD monitor slightly cut at the corner. - It is no problem even though the focusing slightly becomes out of focusing condition. - Not connect the USB cable at this stage.	1)Press Shutter Button 2)After completed, the "OK" menu appears.
9	Flash ※ 4	STB	Flash Inspection	○	○	—	—	—	—	○	—	—	NONE	NONE	1)Press Shutter Button and check that Flash is emitted. (The number of emissions differs depending on the model.) If Flash is not emitted, Flash Unit may be damaged. 2)If the inspection result shows "NG", use "ROM_BACKUP" and rewrite STB to confirm it is adjusted. The result may show "NG" if the inspection is performed on sites other than the specific environment (factory). However, if the flash emission is visible, there is no problem. 3)After completed, the "OK" menu appears.
10	MOS Missing Pixels (White) ※ 2	WKL	Compensation of MOS Missing Pixels (White)	○	—	○	○ ※ 1	—	—	—	—	—	NONE	NONE	1)Press Shutter Button 2)After completed, the "OK" menu appears.

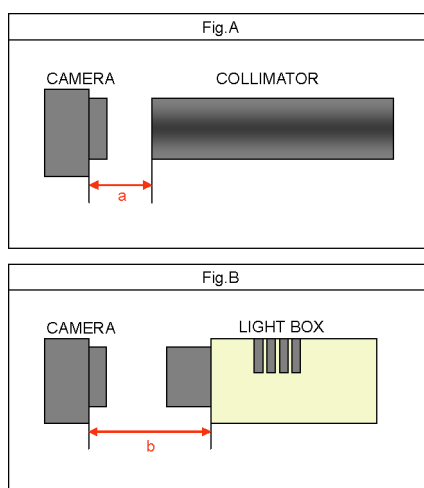
Adjustment order	Adjustment Item	FLAG	Purpose	Replacing Parts									JIG/TOOLS	SET UP	How to Operate
				MAIN P.C.B./ VENUS ENGINE (IC6001)/ MCP (IC6005)	MAIN P.C.B. (to which the backup data was copied)	Lens Parts (except MOS UNIT)	MOS UNIT	MIC UNIT	FLASH UNIT	LCD (with TOUCH PANEL UNIT)	OPERATION P.C.B./ELECTRONIC LEVELLER(IC9201)	NFC P.C.B./ Component parts on NFC P.C.B.			
11	Color reproduction inspection and Microphone check	COL	Color reproduction inspection and Microphone check	○	—	○	○	○	—	—	—	—	NONE	Right after pressing the shutter button, enter the continuous sounds (voice) to the microphone until lens unit starting the zooming.	1)Press Shutter Button. Right after pressing the shutter button, make a continuous sound (voice) to the microphone until lens unit starting the zooming. 2)After completed, the "OK" menu appears.
		BKI	Do not use "BKI" adjustment flag for this unit. Use "BK2" adjustment flag, instead. (In case of most DSC models, the adjustment flag for MOS Missing Pixels is "BKI". But, in this model, "BK2" the adjustment flag for MOS Missing Pixels.)												
12	MOS Missing Pixels (Black) ※3	BK2	Compensation of MOS Missing Pixels (Black)	○	—	○	○	—	—	—	—	—	—	<div>- LIGHT BOX (RFKZ0523 VFK1164TDVLB) - DIFFUSER (RFKZ0591)</div> <div>NOTE: Do not use "BKI" adjustment flag for this unit. Use "BK2" adjustment flag, instead.</div>	<div>1)Set the LIGHTBOX and Camera unit so that the distance becomes about 4.0 cm. (Refer to Fig. B) 2)Display of "BK2" is checked, press the Shutter Button. (The green● mark is displayed on LCD.) 3)Aim the LIGHTBOX and make the frame detail alignment so that the entire LCD screen becomes fully "white". (No dark area). 4)Press Shutter Button. (The adjustment is executed, and then green● mark is displayed on LCD.) 5)Set the LIGHTBOX and Camera unit so that the distance becomes about 5.0 cm. (Refer to Fig. B) 6)Press Shutter Button. (The green● mark is displayed on LCD.) 7)Press Shutter Button. (The adjustment is executed, and then green● mark is displayed on LCD.) 8)Set the LIGHTBOX and Camera unit so that the distance becomes about 6.5 cm. (Refer to Fig. B) 9)Press Shutter Button. (The green● mark is displayed on LCD.) 10)Press Shutter Button. (The adjustment is executed, then "OK" mark is displayed on LCD when the adjustment has been completed successfully.).</div>
13	Electronic Leveller	ACC	Electronic Leveller adjustment	○	—	—	—	—	—	—	○	—	- LEVELLER ADJ. CHART (ACC_ Adjustment_chart.pdf)	· Refer to "10.3.2.2. How to adjustment the Electronic Leveller".	
14	Initialization data of NFC	NFC	Initial Setting of NFC	○	○	—	—	—	—	—	—	○	<div>■ Make sure to perform the following ① and ②. (Initial Setting of NFC) ※NFC-IC and NFC P.C.B. have no initialization data of NFC. So, make sure to perform Initial Setting of NFC. ※NFC-IC may lose the initialization data due to heat during repair process. Therefore, make sure to perform Initial Setting of NFC when the component parts on NFC P.C.B. are replaced.</div> <div><Initial Setting of NFC> ① [NFC Operation] Setting 1) Select [NFC Operation]. ([Menu] → [W-Fi] → [W-Fi Setup] → [NFC Operation]) 2) Switch the setting of it to [ON]. ※ If [NFC Operation] is [ON], change it to [OFF] once. Then, change it to [ON]. ② Initial Setting Perform the initial setting operation. (Refer to 3.5.2. INITIAL SETTINGS) ※ The default setting of NFC operation is [ON].</div>		

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

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

※3: The pixel that does not light while complete exposed is called a black wound. This unit does not have the LCD adjustment of the camera (LCD flicker adjustment etc.).

※4: If the adjusted data is backed up from the main board before replacement or repair, write the data to the new main board. If parts other than the main board are not replaced, adjustment is not necessary for items other than "Venus Zoom(PZM)/Backfocus/GYRO(BF)/Flash(STB)".



■ IMPORTANT NOTICE (After replacing the Main P.C.B.)

After replacing the Main P.C.B., make sure to perform the "INITIAL SETTINGS" first, then release the "INITIAL SETTINGS" in order to proceed the electrical adjustment.

Note:

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

10.3.2.1. How to adjust the Touch Panel

<Preparation>

- Prepare two touch pens.

<Adjustment Procedure>

1. Start up the automatic adjustment mode and set the TPC flag to "O".
2. (+) appears in the upper right and bottom left (Fig.3.7).
Touch the two (+) marks once at the same time. (At this time, (+) mark indications do not change.)
3. After 1 second or more elapses, touch the two (+) marks once at the same time again in the same manner.
4. The (+) mark appears in the center (Fig.3-8). Then touch the (+) mark.
5. The (+) mark appears in the upper left (Fig.3-9). Then touch the (+) mark.
6. The (+) mark appears in the bottom left (Fig.3-10). Then touch the (+) mark.
7. The (+) mark appears in the bottom right (Fig.3-11). Then touch the (+) mark.
8. The (+) mark appears in the upper right (Fig.3-12). Then touch the (+) mark.
9. The (+) mark appears in the center (Fig.3-13). Then touch the (+) mark.
10. When "OK" is displayed (Fig.3-14), adjustment is complete.

* Touch at least 500 msec.

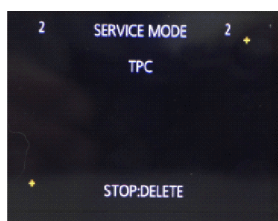


Fig.3-7

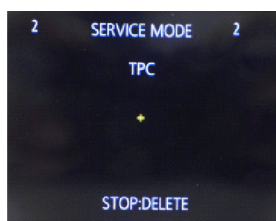


Fig.3-8

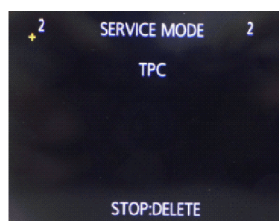


Fig.3-9

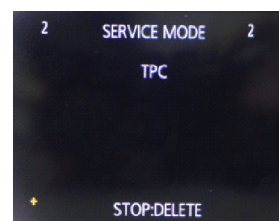


Fig.3-10

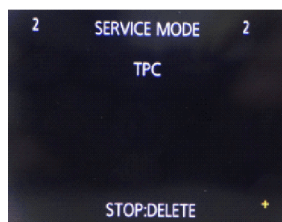


Fig.3-11

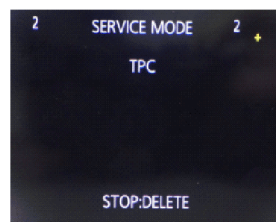


Fig.3-12

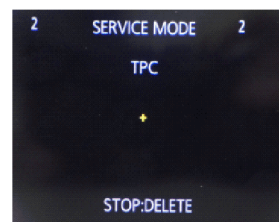


Fig.3-13

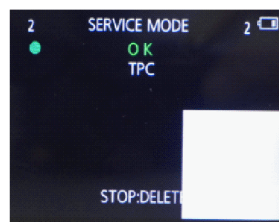


Fig.3-14

10.3.2.2. How to Adjustment the Electronic Leveller

<Preparation>

- Download the leveller adjustment chart "ACC_Adjustment_Chart.pdf" from the Web site and print in A3 size.
- Fix the leveller adjustment chart to the wall or panel using thumbtacks and drop a thread with weight. (Fig.3-15)
Attach it to the wall or panel in that condition and remove the thread with weight.
- Attach the camera main unit to a tripod.

<Adjustment Procedure>

1. Place the camera main unit horizontally and keep the distance of 25 cm between the leveller adjustment chart and camera main unit.
Set up the camera so that the optical axis of the lens intersects the center of the leveller adjustment chart at a right angle (Fig.3-16)
- 1.1.) Adjust the height of the tripod so that the center of the leveller adjustment chart coincides with the height of the camera lens.
- 1.2.) Put a triangle ruler at the center of the leveller adjustment chart, and then adjust so that the center of the camera lens comes on the horizontal line.
- 1.3.) Adjust so that the leveller adjustment chart comes out on the full LCD screen.
- 1.4.) Make fine adjustment so that the side bar indication of the leveller adjustment chart appears horizontally on the LCD screen and the cross shape guide indication of LCD of camera overlaps on the center. (Fig.3-17)

Horizontal setting of the leveller adjustment chart

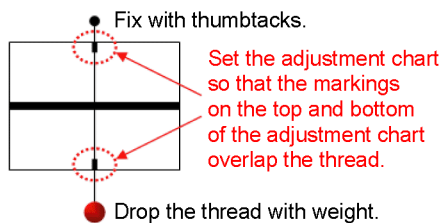


Fig.3-15

Camera setting in front of the leveller adjustment chart

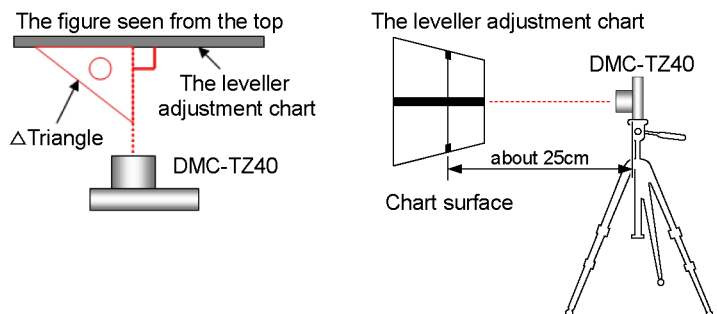


Fig.3-16

2. Press the shutter button.
→ "Green ●" is displayed on the LCD. → Press the shutter button.
3. Rotate the camera at a 90-degree angle so that the grip faces upward with the camera attached to the tripod, and set up in the same way as above 1). (Fig.3-18)
4. Press the shutter button.
→ "Green ●" is displayed on the LCD. → Press the shutter button.
5. Rotate the camera at a 90-degree angle so that the grip faces downward with the camera attached to the tripod, and set up in the same way as above 1). (Fig.3-19)
6. Press the shutter button.
→ "Green ●" is displayed on the LCD. → Press the shutter button.
→ When "OK" is displayed, adjustment is complete.

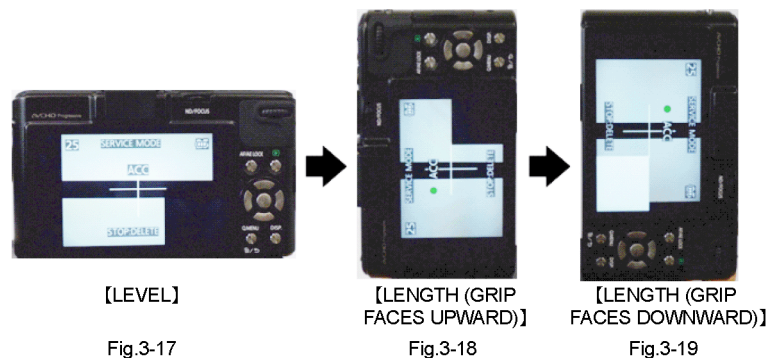


Fig.3-17

Fig.3-18

Fig.3-19

10.4. After Adjustment

10.4.1. Initial Setting

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

Refer to the procedure described in "3.4.2. INITIAL SETTINGS" for details.

[IMPORTANT]

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

11 Maintenance

11.1. Cleaning Lens, Viewfinder and LCD Panel

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

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

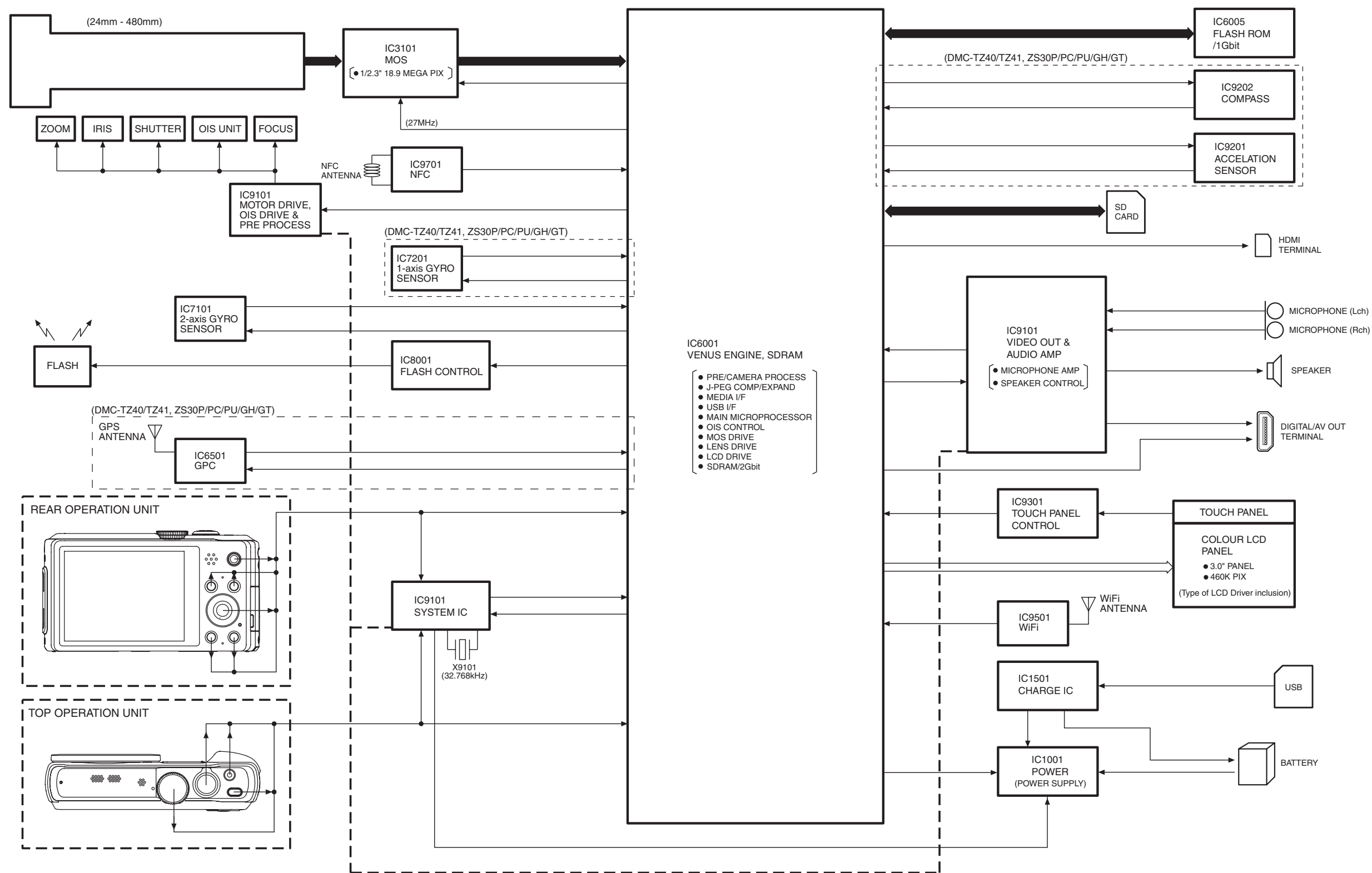
When cleaning the LCD Panel, dampen the lens cleaning paper with lens cleaner, and the gently wipe the their surface.

Note:

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

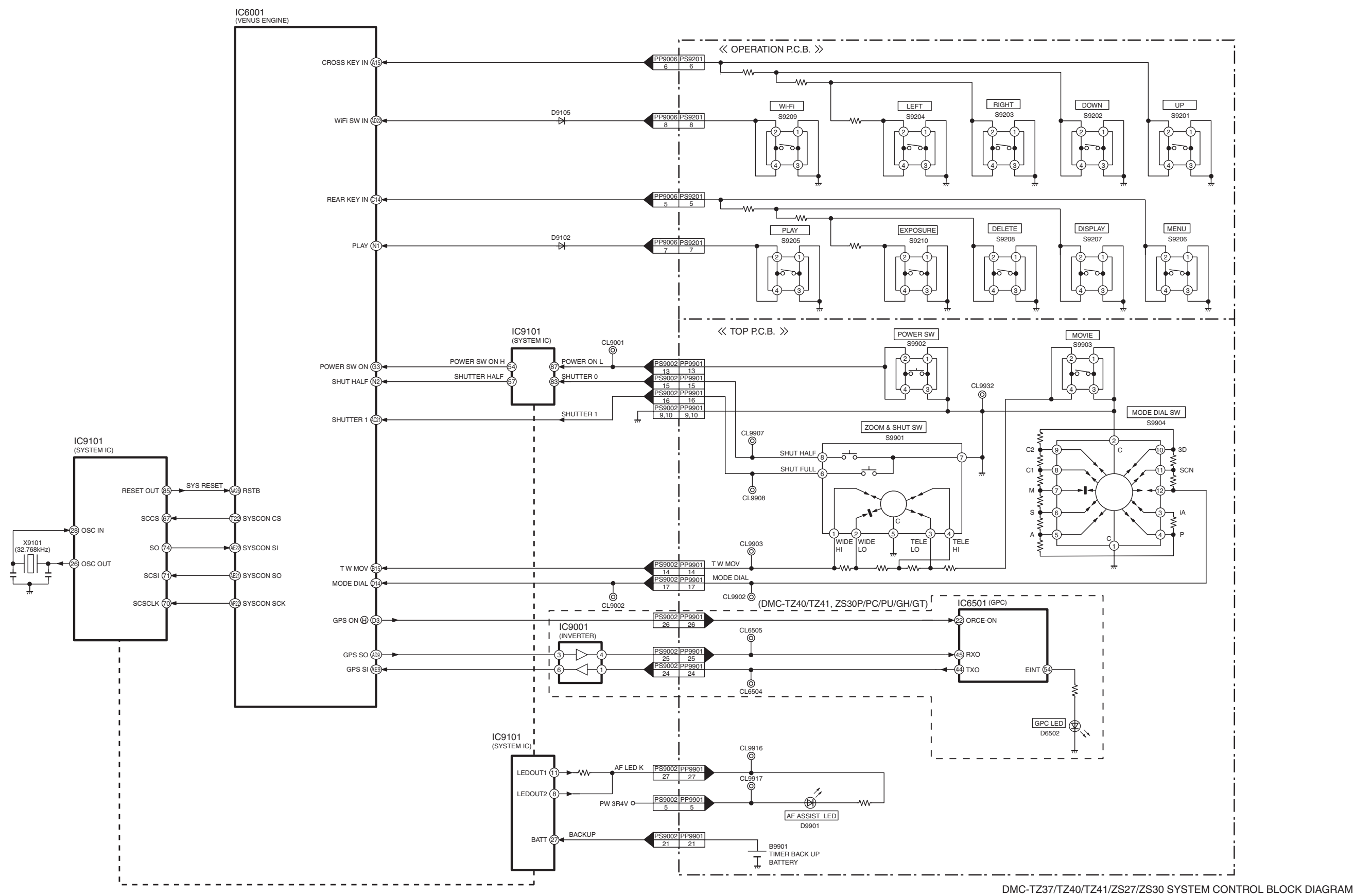
12 Block Diagram

12.1. Overall Block Diagram



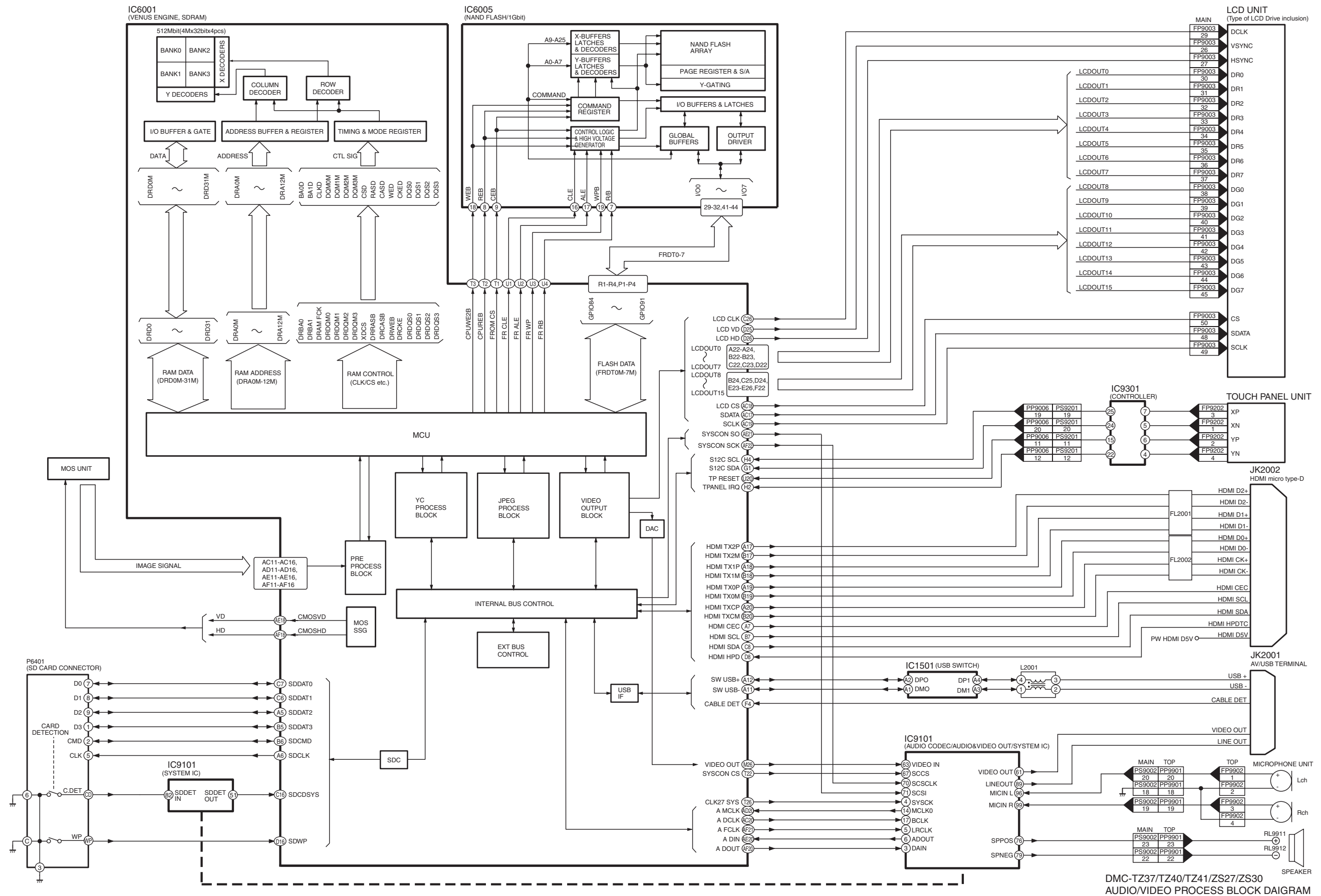
DMC-TZ37/TZ40/TZ41/ZS27/ZS30 OVERALL BLOCK DIAGRAM

12.2. System Control Block Diagram

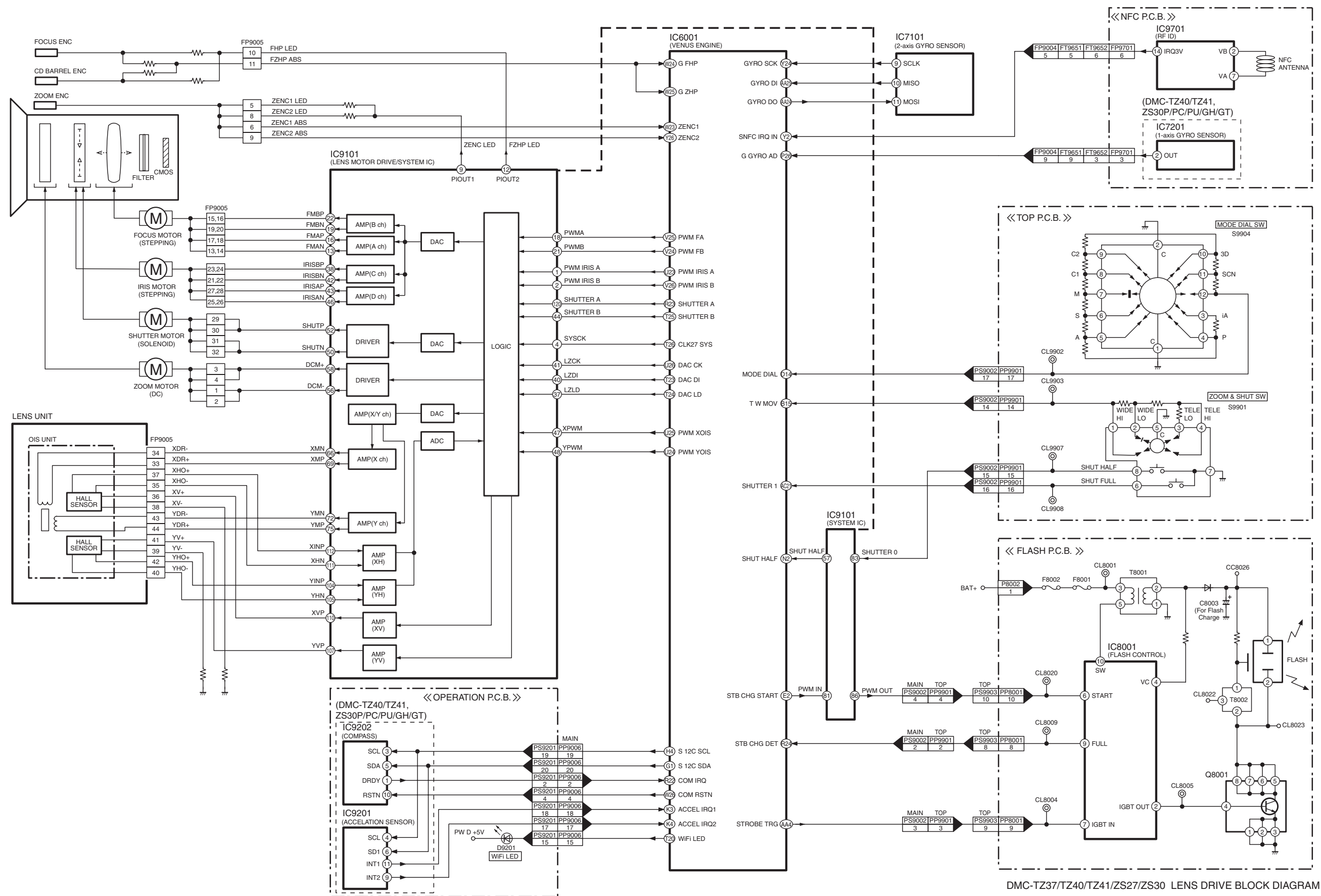


DMC-TZ37/TZ40/TZ41/ZS27/ZS30 SYSTEM CONTROL BLOCK DIAGRAM

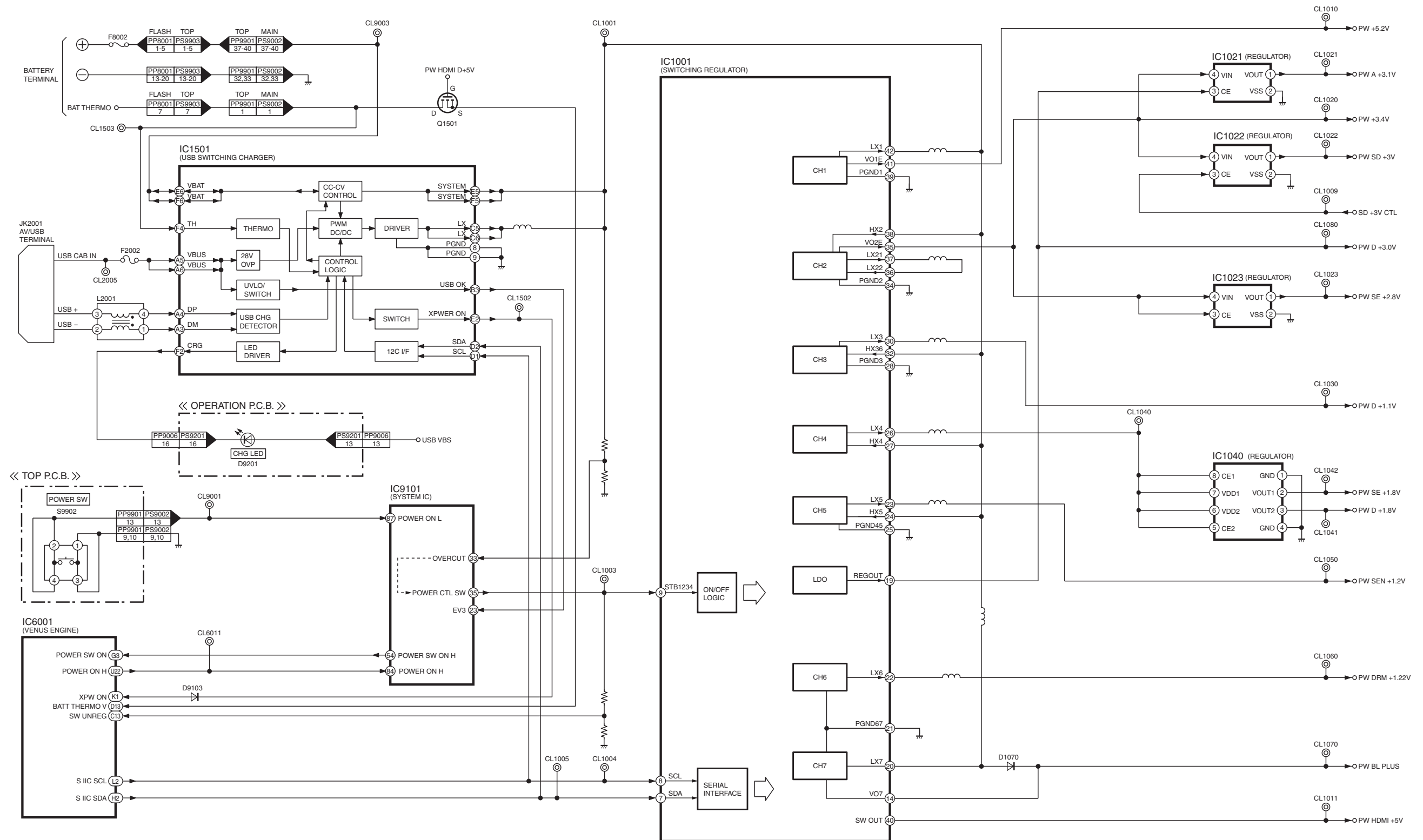
12.3. Audio/Video Process/ HDMI Block Diagram



12.4. Lens Drive Block Diagram



12.5. Power Block Diagram



13 Wiring Connection Diagram

13.1. Interconnection Schematic Diagram

