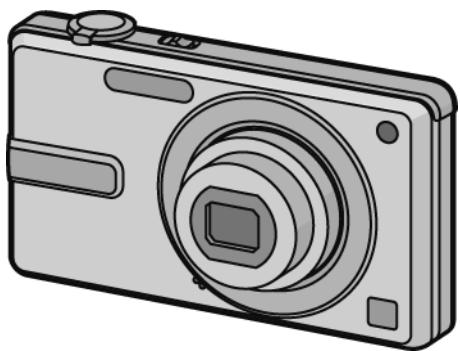


# Service Manual

Digital Camera

LUMIX



Model No. **DMC-F3P**  
**DMC-F3PC**  
**DMC-F3PR**  
**DMC-F3PU**  
**DMC-F3EB**  
**DMC-F3EE**  
**DMC-F3EF**  
**DMC-F3EG**  
**DMC-F3EP**  
**DMC-F3GC**  
**DMC-F3GF**  
**DMC-F3GN**  
**DMC-F3GT**  
**DMC-F4EB**  
**DMC-F4EE**  
**DMC-F4EG**  
**DMC-F4EP**

Colour

[ DMC-F3 ]  
(S).....Silver Type (except PC/EF/GT)  
(K).....Black Type  
(P).....Pink Type (except PC)

[ DMC-F4 ]

(S).....Silver Type (only EE)  
(K).....Black Type (except EE)

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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  $1.5\text{ k}\Omega$ ,  $10\text{ W}$  resistor, in parallel with a  $0.15\text{ }\mu\text{F}$  capacitor, between each exposed metallic part on the set and a good earth ground, as shown in Figure 1.
3. Use an AC voltmeter, with  $1\text{ k}\Omega/\text{V}$  or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed  $0.75\text{ V RMS}$ . 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. Make 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 (ERG5SJ102:1kΩ /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.

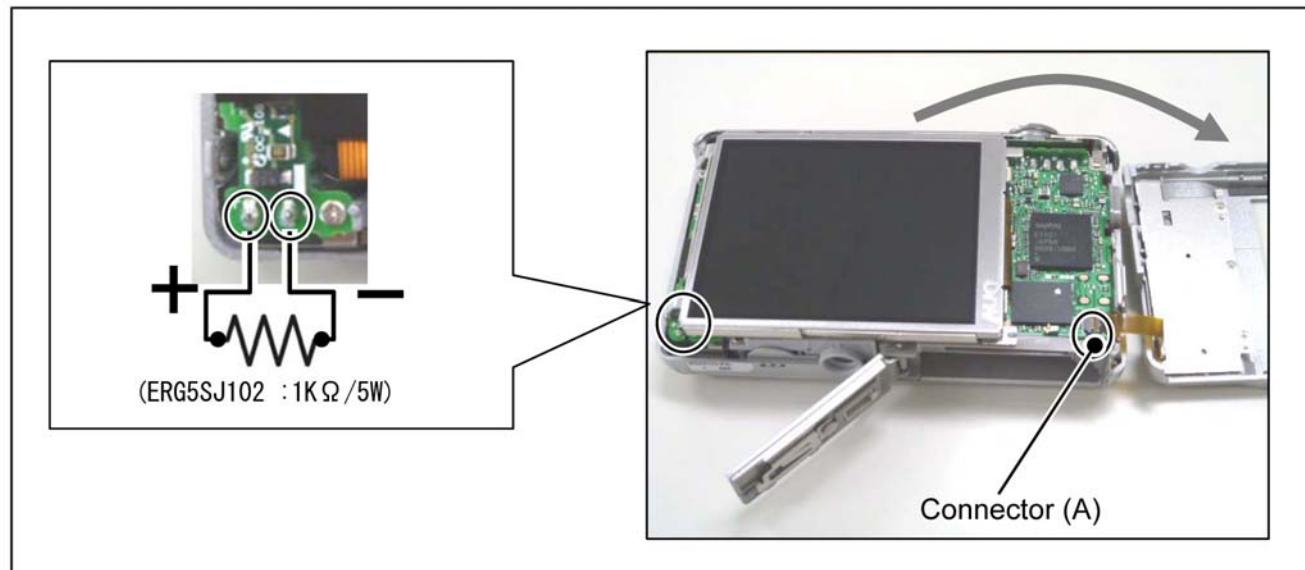


Fig. F1

## 2 Warning

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

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

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

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

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

**CAUTION :**

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

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

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

#### ENGLISH



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

#### FRANÇAIS



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

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

### 2.3.1. Information for Your Safety

#### IMPORTANT

Your attention is drawn to the fact that recording of pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

#### WARNING

To reduce the risk of fire or shock hazard, do not expose this equipment to rain or moisture.

#### CAUTION

To reduce the risk of fire or shock hazard and annoying interference, use the recommended accessories only.

#### FOR YOUR SAFETY

##### DO NOT REMOVE THE OUTER COVER

To prevent electric shock, do not remove the cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

### 2.3.2. Caution for AC Mains Lead

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three-pin mains plug for your safety and convenience.

A 5-ampere fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amperes and it is approved by ASTA or BSI to BS1362

Check for the ASTA mark or the BSI mark on the body of the fuse.



If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover, the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local Panasonic Dealer.

If the fitted moulded plug is unsuitable for the socket outlet in your home then the fuse should be removed and the plug cut off and disposed of safely.

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

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

If in any doubt, please consult a qualified electrician.

#### 2.3.2.1. Important

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

Blue	Neutral
Brown	Live

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

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

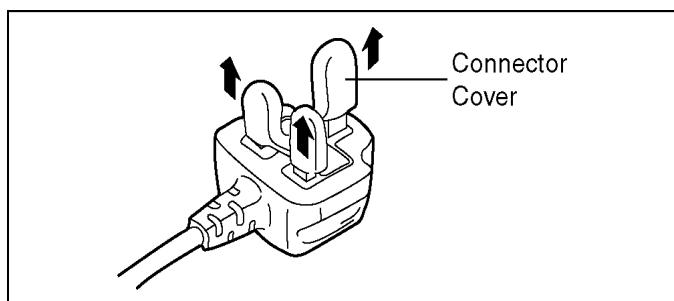
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

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



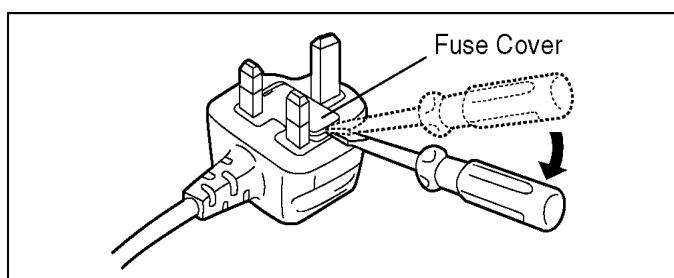
#### 2.3.2.2. Before Use

Remove the Connector Cover as follows.

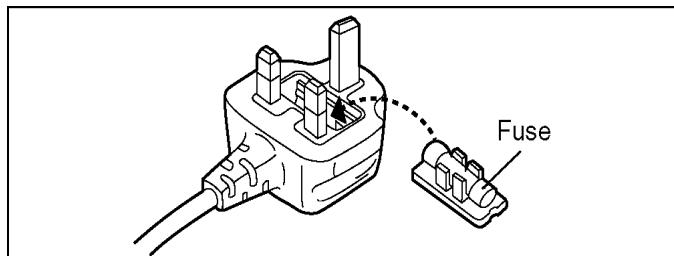


#### 2.3.2.3. How to Replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



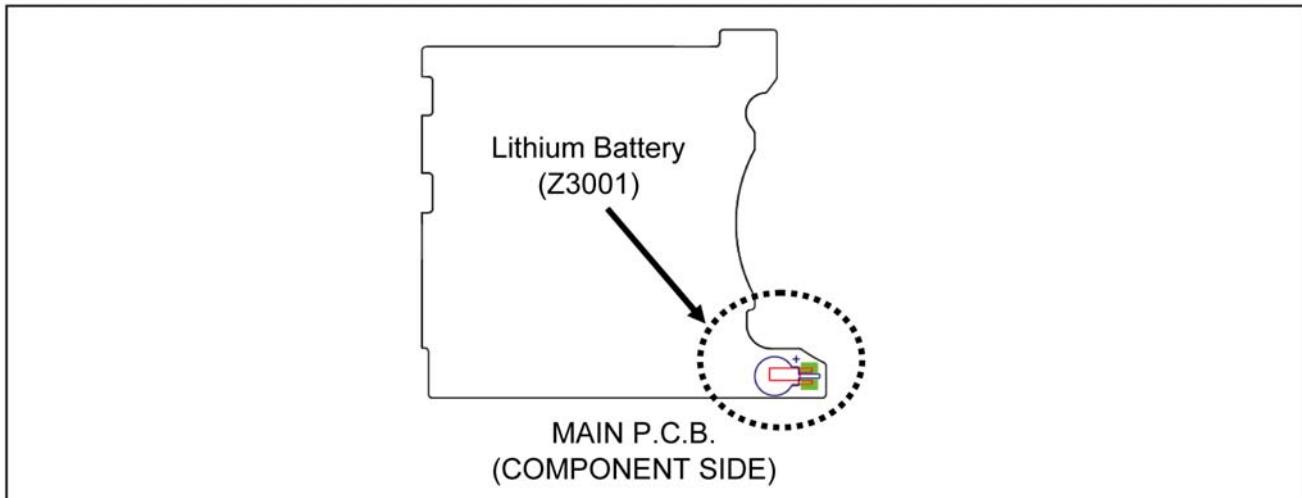
2. Replace the fuse and attach the Fuse cover.



## 2.4. How to dispose the Lithium Battery

### 2.4.1. Removal Procedure

1. Remove the Main P.C.B. (Refer to Disassembly Procedures.)
2. Remove the Lithium battery (Ref. No.“Z3001” at component side of Main P.C.B.) and then dispose it.  
It should be disposed of in waste products destined for burial rather than incineration.



#### NOTE:

This Lithium battery is a critical component.  
It must never be subjected to excessive heat or discharge.  
It should be disposed of in waste products destined for burial rather than incineration.

(For English)

#### CAUTION

Dispose of used batteries according to the manufacturer's instructions.

(For German)

#### ACHTUNG

Behandeln Sie gebrauchte Batterien nach den Anweisungen des Herstellers.

(For French)

#### MISE EN GARDE

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-F3/F4 series, as well.

### 3 Service Navigation

#### 3.1. Introduction

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

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

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

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

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

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

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

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

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

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

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

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

RFKZ03D01KS-----(0.3mm 100g Reel)

RFKZ06D01KS-----(0.6mm 100g Reel)

RFKZ10D01KS-----(1.0mm 100g Reel)

##### Note

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

### 3.3. Important Notice 1:

#### [1.Component on P.C.B.]

1. The P.C.B.'s in this unit is not component replacement excluding following part.  
MAIN P.C.B. ----- Fuse (F5001, F5002, F5005, F5006)  
FLASH P.C.B. ----- Flash Charging Capacitor(C5412), Trigger Coil(T5402)  
Other than above component on P.C.B.'s are defected, replace each P.C.B. as a unit.

#### [2.MAIN P.C.B.]

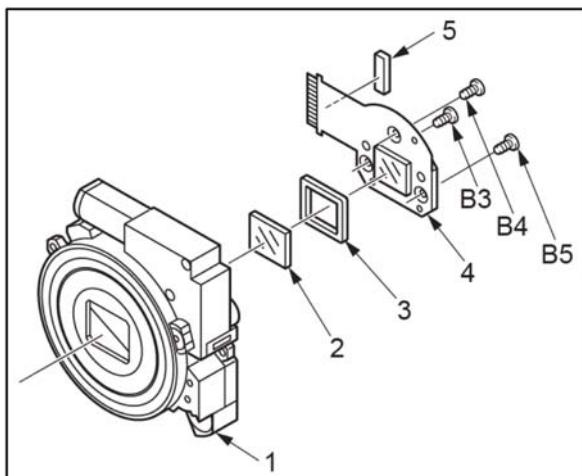
##### AFTER REPLACING THE MAIN P.C.B.

After replacing the Main P.C.B., follow the following steps in order.

1. Assemble the unit.  
Refer to the "7.Disassembly and Assembly Instructions" section.
2. Up date the firmware.  
The firmware together with version up procedure are available at "software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system".
3. Perform the adjustment using adjustment software "DscCalDi".  
The adjustment software is available at "software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system".
4. Register the USB storage information.  
Refer to the "8.4.6.USB STORAGE INFO. REGISTRATION" in "8.4.Adjustment procedures" section.
5. Set the "model suffix".  
Refer to the "3.4.2.INITIAL SETTINGS:" section.
6. Refresh the unit.  
Refer to the "3.4.2.INITIAL SETTINGS:" section.

#### [3.Lens unit]

1. The Lens unit in this unit is not component replacement.



Other than above part are defected, replace minimumsize of concerned part as a unit.

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

There are six kinds of DMC-F3/F4, regardless of the colours.

- a) DMC-F3P/PC
- b) DMC-F3EB/EF/EG/EP, F4EB/EG/EP
- c) DMC-F3EE, F4EE
- d) DMC-F3GT
- e) DMC-F3GN
- f) DMC-F3PU/PR/GC/GF

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

#### 3.4.1. Defining methods:

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

##### a) DMC-F3P/PC

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



##### c) DMC-F3EB/EF/EG/EP, F4EB/EG/EP

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



##### d) DMC-F3EE, F4EE

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



##### e) DMC-F3GT

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



##### fh) DMC-F3GN

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



##### i) DMC-F3PU/PR/GC/GF

The nameplate for these models do not show any above Safety registration mark.

#### NOTE:

After replacing the MAIN P.C.B., make sure to perform the "firmware version up", "Initial settings" and "adjustment".

The firmware & adjustment software is available at "software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system".

### 3.4.2. INITIAL SETTINGS:

#### 1. PURPOSE OF INITIAL SETTINGS:

There are two cases to perform the INITIAL SETTINGS.

1. Refresh the unit: The INITIAL SETTINGS can be used to erase all back up data.

(Not only user setting and image data stored in "Built-in Memory", but also clock data is reset.)

2. After replacing the MAIN P.C.B.:

(Since the model suffix data is not assigned for the MAIN P.C.B. being supplied as spare parts, model suffix has to be assigned.)

After replacing the MAIN P.C.B., make sure to perform the "firmware version up", "adjustment" and "Initial settings" by ordering the following procedure in accordance with model suffix of the unit.

#### 2. IMPORTANT NOTICE:

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

### CAUTION 1:(INITIAL SETTINGS)

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

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

Model suffix :

DMC-F3 series : P/PC/PU/PR/EB/EE/EF/EG/EP/GC/GF/GT/GN

DMC-F4 series : EB/EE/EG/EP

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

[NOTE:Only for "EG, EP, EF, EB and EE" models]

\*.When one of the "EG, EP, EF, EB and EE" has been chosen, only "EG, EP, EF, EB and EE" are displayed from second times.

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

This unit employs "Built-in Memory" for picture image data recording.(Approx.40MB)

After proceeding "INITIAL SETTINGS", the picture image data stored in the unit is erased.

### 3. PROCEDURES:

#### NOTE:

1. Precautions: Read the above "CAUTION 1" and "CAUTION 2", carefully.
2. To perform the Initial settings, adjustment software "DscCalDi" is required. The software together with installation instruction is available at "software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system".

#### Step 1. Preparation:

1. After replacing the MAIN P.C.B., assemble the unit by referring the "7.Disassembly and Assembly Instructions".
2. Update the firmware of the unit.  
The firmware together with version up procedure are available at "software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system".
3. Perform the adjustment using adjustment software "DscCalDi".  
The adjustment software is available at "software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system".
4. Register the USB storage information.  
Refer to the "8.4.6.USB STORAGE INFO. REGISTRATION" in "8.4.Adjustment procedures" section.

## Step 2. Setup:

1. Attach the Battery or AC Adaptor with a DC coupler to the unit.
2. Set the [ REC/PLAY ] switch to "REC" mode.
3. Set the recording mode to [ Normal Picture ] mode.
  - \*.Turn on the power switch and then press the "MODE" button.
  - \*.Choose the [ Normal Picture ] mode with cursor buttons, then press the "MENU/SET" button.
  - \*.Turn the power switch to OFF.
4. Connect the Camera unit and a PC with a USB cable.
5. Turn the power switch to ON.
6. Select the USB mode to "PC" mode, then press the "MENU/SET" button.

(NOTE: Right after replacing the MAIN P.C.B., the USB selection screen does not displayed.)



### NOTE:

If the MAIN P.C.B. has just replaced, the USB selection screen does not displayed on the LCD unit.

But, it is connected as "PC" mode, automatically.

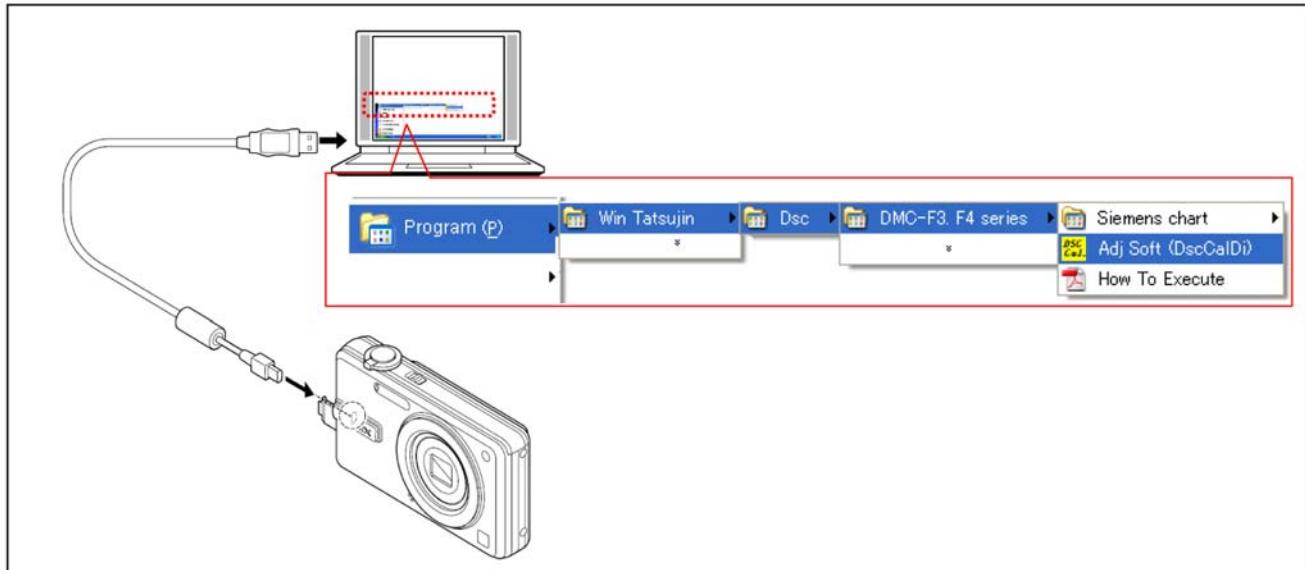


Fig.X1:Connection

### Step 3. Execute the software “DscCalDi” :

1. Choose the “Adj Soft (DscCalDi)” and execute the adjustment software.(Refer to Fig.X1:Connection)  
[ “Start” ---> “Program(P)” ---> “Win Tatsujin” ---> “Dsc” ---> “DMC-F3,F4 series” ---> “Adj Soft (DscCalDi)” ]

The following main screen is appear on the PC monitor.

#### NOTE:

Without connecting the USB cable between DSC (USB mode with power on) and PC, adjustment software does not executed.

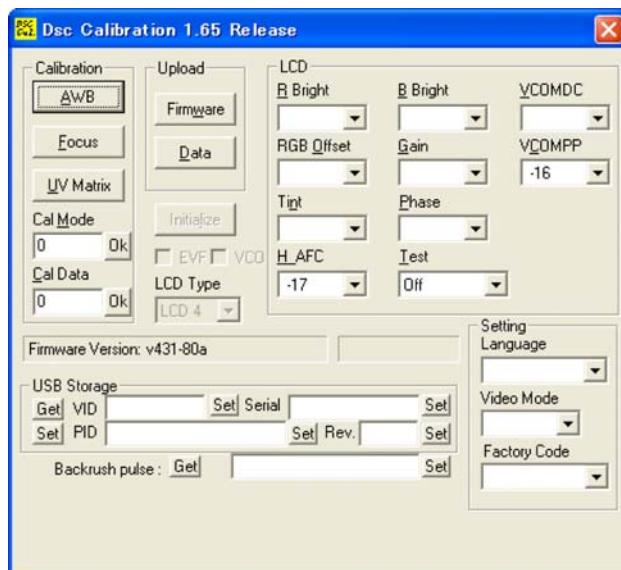
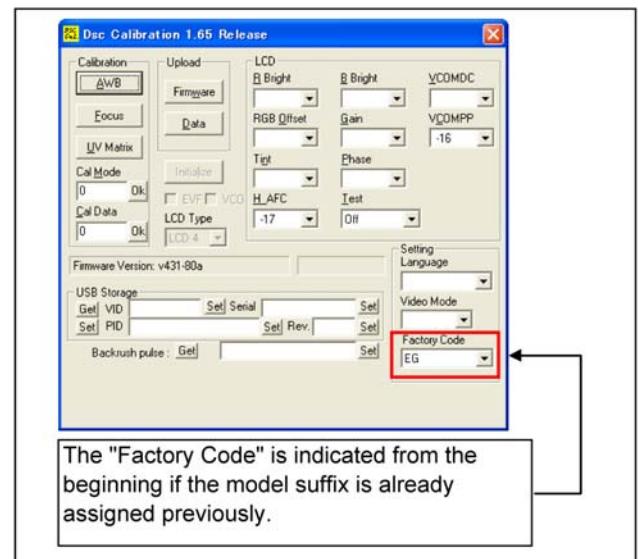


Fig.X2:Default screen



#### Step 4. Select the Model suffix (Factory Code):

1. Click on the pull down menu tag of the "Factory Code".  
The model suffix list is displayed.
2. Choose the appropriate model suffix.

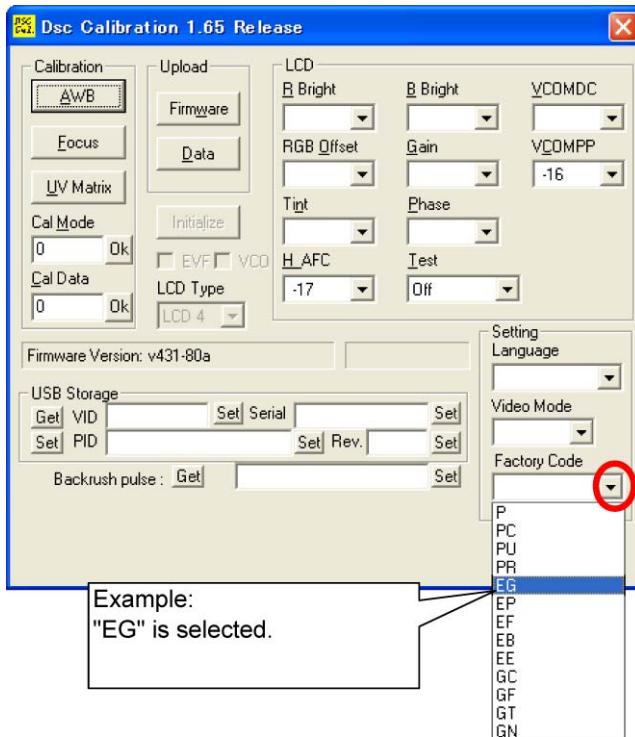
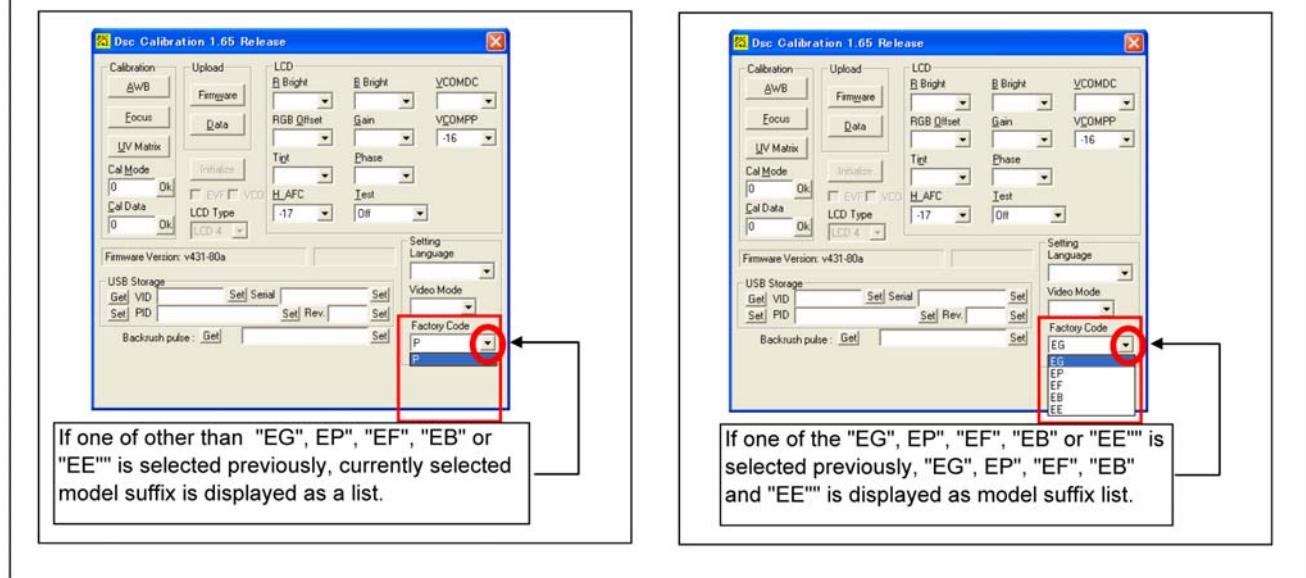


Fig.X3:Select model suffix

[IF ONE OF THE MODEL SUFFIX IS ALREADY SELECTED PREVIOUSLY]



### Step 5. Default settings (Test):

1. Click on the pull down menu tag of the "Test".  
(The Test item list is displayed.)
2. Choose the "Set Default" in order to refresh the unit (Factory shipping condition).

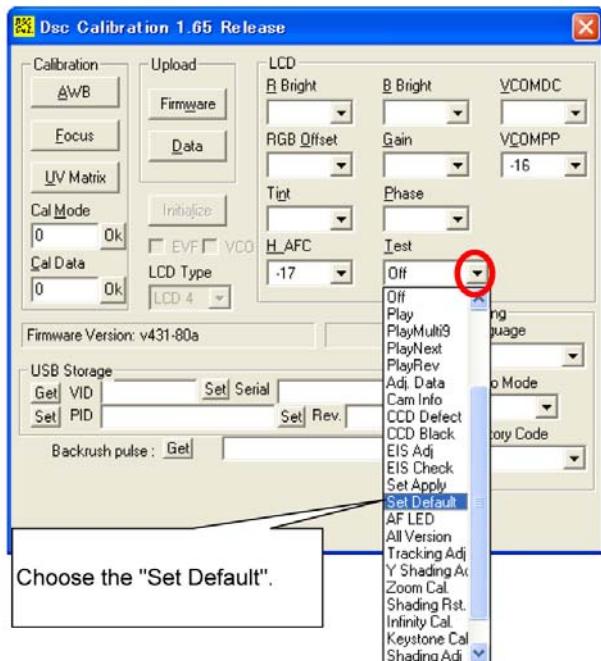


Fig.X4:Select "Set Default"

### Step 6. CONFIRMATION:

1. Close the "DscCalDi.exe" by clicking on the "X" located on the top right corner.
2. Turn on the camera switch.
3. Disconnect the USB cable and turn "OFF" the power switch of the camera unit.
4. Confirm that the language and Clock set request screen is displayed on the LCD monitor.

Major default setting condition is as shown in the following table.

	MODEL	VIDEO OUTPUT SW (Default)	VIDEO OUTPUT DURING REC.	MOVIE PICTURE LIMIT	USB DATA (PC to DSC)	CLOCK INDICATION SW (Default)	DATE Y:Year M:Month D:Date	WORLD TIME	DIST. INDI.	Default LANGUAGE
1	DMC-F3P	NO(NTSC)	YES	NO	YES	YES (12hours)	M/D/Y	GMT-5:00	ft	English
2	DMC-F3PC	NO(NTSC)	YES	NO	YES	YES (12hours)	M/D/Y	GMT-5:00	m	English
3	DMC-F3PR	YES(NTSC)	NO	NO	YES	YES (12hours)	M/D/Y	GMT-3:00	m	Spanish
4	DMC-F3PU	YES(NTSC)	NO	NO	YES	YES (12hours)	M/D/Y	GMT-3:00	m	Spanish
5	DMC-F3EG	YES(PAL)	NO	YES (15Min.)	NO	YES (24hours)	D/M/Y	GMT+1:00	m	English
6	DMC-F3EP	YES(PAL)	NO	YES (15Min.)	NO	YES (24hours)	D/M/Y	GMT+1:00	m	English
7	DMC-F3EF	YES(PAL)	NO	YES (15Min.)	NO	YES (24hours)	D/M/Y	GMT+1:00	m	French
8	DMC-F3EB	YES(PAL)	NO	YES (15Min.)	NO	YES (24hours)	D/M/Y	GMT 0:00	m	English
9	DMC-F3EE	YES(PAL)	NO	NO	YES	YES (24hours)	D/M/Y	GMT+3:00	m	Russian
10	DMC-F3GC	YES(PAL)	NO	NO	YES	YES (24hours)	D/M/Y	GMT+8:00	m	English
11	DMC-F3GT	YES(NTSC)	NO	NO	YES	YES (24hours)	Y/M/D	GMT+8:00	m	Chinese (traditional)
12	DMC-F3GF	YES(NTSC)	NO	NO	YES	YES (24hours)	D/M/Y	GMT+8:00	m	English
13	DMC-F3GN	YES(NTSC)	NO	NO	YES	YES (24hours)	D/M/Y	GMT+10:00	m	English

Fig.X5:Major Default item list

# 4 Specifications

<b>Digital Camera:</b>	Information for your safety
<b>Power Source:</b>	DC 5.1 V
<b>Power Consumption:</b>	1.4 W (When recording) 0.6 W (When playing back)
<b>Camera effective pixels:</b>	12,100,000 pixels
<b>Image sensor:</b>	1/2.33" CCD, total pixel number 12,700,000 pixels, Primary color filter
<b>Lens:</b>	Optical 4×zoom, f=5 mm to 20 mm (35 mm film camera equivalent: 28 mm to 112 mm)/F2.8 to F6.2 Max. 4x
<b>Digital zoom:</b>	Max. 7.8x
<b>Extended optical zoom:</b>	Normal: 50 cm (1.64 feet) (Wide)/70 cm (2.30 feet) (Tele) to ∞
<b>Focus range:</b>	Macro/Auto Scene: 20 cm (0.66 feet) (Wide)/70 cm (2.30 feet) (Tele) to ∞ Scene Mode: There may be differences in the above settings.
<b>Shutter system:</b>	Electronic shutter+Mechanical shutter
<b>Burst recording</b>	
<b>Burst speed:</b>	Approx. 1 picture/second
<b>Number of recordable pictures:</b>	Depends on the remaining capacity of the built-in memory/ card.
<b>Hi-speed burst</b>	
<b>Burst speed:</b>	Approx. 6 pictures/second [3M (4:3), 2.5M (3:2) or 2M (16:9) is selected as the picture size.]
<b>Number of recordable pictures:</b>	Max. 20 pictures
<b>Shutter speed:</b>	8 seconds to 1/1000th of a second [STARRY SKY] Mode: 15 seconds, 30 seconds, 60 seconds
<b>Exposure (AE):</b>	Program AE Exposure compensation (1/3 EV Step, -2 EV to +2 EV)
<b>Metering mode:</b>	Multiple
<b>LCD monitor:</b>	2.7" TFT LCD (Approx. 230,000 dots) (field of view ratio about 100%)
<b>Flash:</b>	Flash range: [ISO] Approx. 30 cm (0.98 feet) to 7.1 m (23.2 feet) (Wide)
<b>Microphone:</b>	Monaural
<b>Speaker:</b>	Monaural
<b>Recording media:</b>	Built-in Memory (Approx. 40 MB)/SD Memory Card/SDHC Memory Card/SDXC Memory Card
<b>Recording file format</b>	
<b>Still Picture:</b>	JPEG (based on "Design rule for Camera File system", based on "Exif 2.21" standard)/DPOF corresponding
<b>Motion pictures:</b>	"QuickTime Motion JPEG" (motion pictures with audio)
<b>Interface</b>	
<b>Digital:</b>	"USB 2.0" (High Speed)
<b>Analog video/audio:</b>	NTSC/PAL composite (switched by menu), Audio line output (monaural)
<b>Terminal</b>	
<b>[AV OUT/DIGITAL]:</b>	Dedicated jack (8 pin)
<b>Dimensions:</b>	Approx. 95.9 mm (W)×53.9 mm (H)×22.0 mm (D) [3.8" (W)×2.1"(H)×0.9" (D)] (excluding the projecting parts)
<b>Mass (weight):</b>	Approx. 132 g/0.29 lb (with card and battery) Approx. 110 g/0.24 lb (excluding card and battery)
<b>Operating temperature:</b>	0 °C to 40 °C (32 °F to 104 °F)
<b>Operating humidity:</b>	10% to 80%
<b>Battery Charger:</b>	Information for your safety
<b>Input:</b>	110 V to 240 V~50/60 Hz, 0.2 A
<b>Output:</b>	4.2 V---0.65 A (Battery charging)
<b>Equipment mobility:</b>	Movable
<b>Battery Pack (lithium-ion):</b>	Information for your safety
<b>Voltage/capacity:</b>	3.6 V/740 mAh

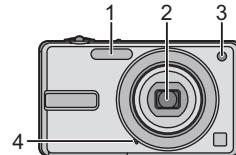
## NOTE:(Only for "EB/EF/EG/EP/PR" models)

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

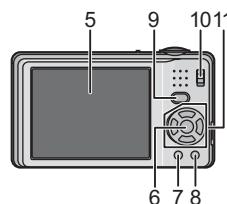
## 5 Location of Controls and Components

### Names of the Components

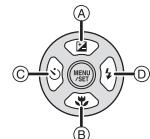
1 Flash  
2 Lens  
3 Self-timer indicator  
AF assist lamp  
4 Microphone



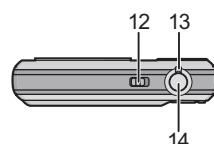
5 LCD monitor  
6 [MENU/SET] button  
7 [DISPLAY] button  
8 [Q.MENU]/Delete button  
9 [MODE] button  
10 [REC]/[PLAYBACK] selector switch



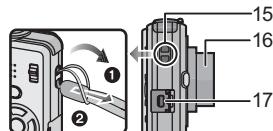
11 Cursor buttons  
(A): ▲/Exposure compensation  
(B): ▼/Macro Mode  
(C): ◀/Self-timer button  
(D): ▶/Flash setting button



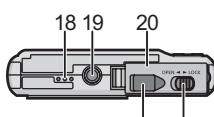
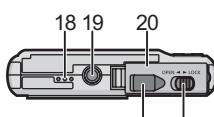
12 Camera ON/OFF switch  
13 Zoom lever  
14 Shutter button



15 Hand strap eyelet  
• Be sure to attach the hand strap when using the camera to ensure that you will not drop it.  
16 Lens barrel  
17 [AV OUT/DIGITAL] socket



18 Speaker  
19 Tripod receptacle  
• When you use a tripod, make sure the tripod is stable when the camera is attached to it.  
20 Card/Battery door  
21 Release lever  
22 DC coupler cover  
• When using an AC adaptor, ensure that the Panasonic DC coupler and AC adaptor are used.  
• We recommend you use a battery with sufficient battery power or the AC adaptor when recording motion pictures.  
• If while recording motion pictures using the AC adaptor and the power supply is cut off due to a power outage or if the AC adaptor is disconnected etc., the motion picture being recorded will not be recorded.



## Selecting the [REC] Mode

### 1 Turn the camera on.

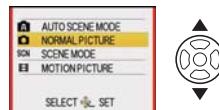
- Ⓐ [MENU/SET] button
- Ⓑ [REC]/[PLAYBACK] selector switch
- Ⓒ [MODE] button

### 2 Slide the [REC]/[PLAYBACK] selector switch to [CAM].

### 3 Press [MODE].

### 4 Press ▲/▼ to select the mode.

### 5 Press [MENU/SET].



### ■ List of [REC] Modes

#### A Auto Scene Mode

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

#### Normal Picture Mode

The subjects are recorded using your own settings.

#### SCN Scene Mode

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

#### Motion Picture Mode

This mode allows you to record motion pictures with audio.

## About the Battery

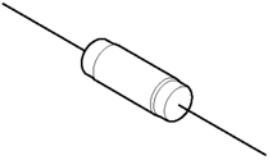
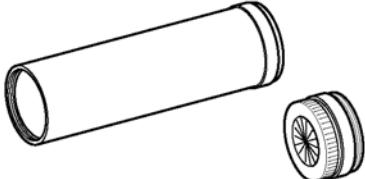
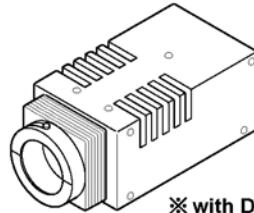
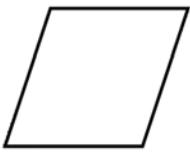
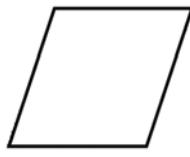
- The camera has a function for distinguishing batteries which can be used safely. The dedicated battery supports this function. The only batteries suitable for use with this unit are genuine Panasonic products and batteries manufactured by other companies and certified by Panasonic. (Batteries which do not support this function cannot be used.) Panasonic cannot in any way guarantee the quality, performance or safety of batteries which have been manufactured by other companies and are not genuine Panasonic products.

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

## 6 Service Fixture & Tools

### 6.1. Service Fixture and Tools

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

Resistor for Discharging ERG5SJ102	Infinity Lens (with Focus Chart) VFK1164TCM02	LIGHT BOX VFK1164TDVLB
 An equivalent type of Resistor may be used.	 * VFK1164TCM03 can be used. * RFKZ0422 can be used.	 ※ with DC Cable * RFKZ0523 can be used.
Lens Cleaning Kit (BK) VFK1900BK	LBB Filter VFK1164LBB1	ND Filter VFK1164ND02
 * Only supplied as 10 set/box.		
Siemens star chart (Print out and make it locally.)		
		

## REMARKS

### 1. ABOUT "Siemens star chart":

The PDF version of Siemens star chart together adjustment software is available at "software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system".

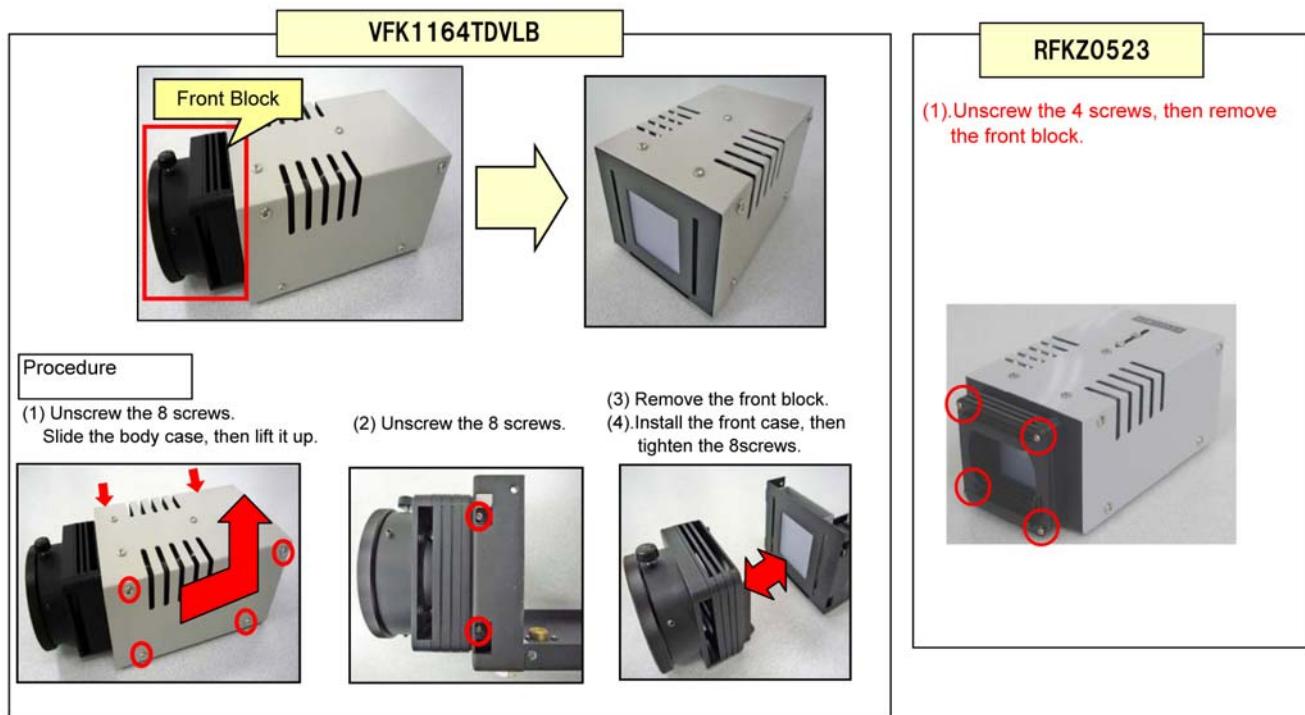
Download its PDF file and print out it, then stick on the suitable panel.

For your convenience, there are two kinds of PDF files are available.; "A3 size"(Full-size) / "Letter size"(Divided into 3 sheets).

If you have A3 size printer, print it out then stick on the suitable panel.

If you have not A3 size printer, print out "Letter size PDF" version, then make a Siemens star chart.

### 2. ABOUT "LIGHT BOX":

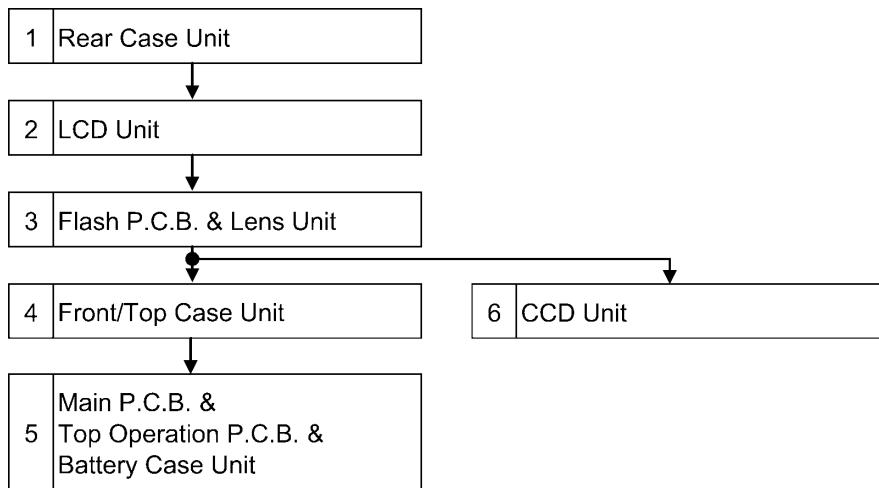


# 7 Disassembly and Assembly Instructions

## 7.1. Disassembly Flow Chart

This is a disassembling chart.

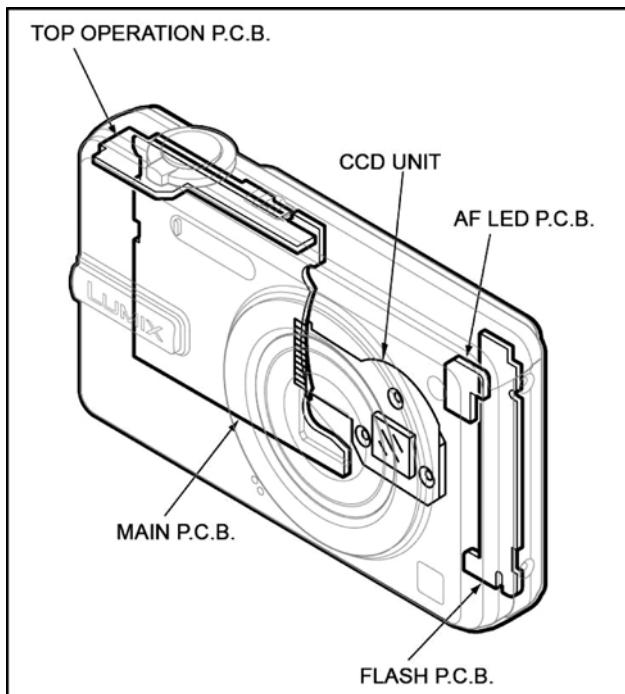
When assembling, perform this chart conversely.



### NOTE:

- \*.As for early Mass-production unit, the Front case and the Top case are agglutinate part.
- \*.When Front case and Top case is glued, do not separate them.
- \*.When either front case or top case are necessary to be replaced, replace both cases by using the replacement part.

## 7.2. PCB Location



## 7.3. Disassembly Procedure

No.	Item	Fig	Removal
1	Rear Case Unit	(Fig.D1) (Fig.D2)	Card
			Battery
			4 Screws (A)
			1 Screw (B)
			Connector (A)
2	LCD Unit	(Fig.D3) (Fig.D4)	3 Screws (C)
			LCD Holder
			Connector (B)
3	Flash P.C.B. & Lens Unit	(Fig.D5) (Fig.D6) (Fig.D7)	Flex Cable
			2 Screws (D)
			Lens Holder
			Connector (C)
			Connector (D)
			Lens Unit
4	Front/Top Case Unit	(Fig.D8) (Fig.D9a) (Fig.D9b) (Fig.D10)	1 Screw (E)
			1 Screw (F)
			1 Screw (G)
			1 Screw (H)
			1 Screw (I)
			Jack Door
			AF LED P.C.B.
			Earth bottom
			Earth E.capacitor
			Tripod stand
5	Main P.C.B. & Top Operation P.C.B. & Battery Case Unit	(Fig.D11)	2 Screws (J)
			2 Screws (K)
			Unsolder
6	CCD Unit	(Fig.D12)	3 Screws (L)
			CCD Cushion
			Optical Filter

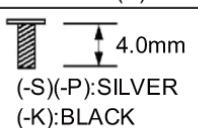
### 7.3.1. Removal of the Rear Case Unit

NOTE:When disassembling, remove the card and battery from the unit.

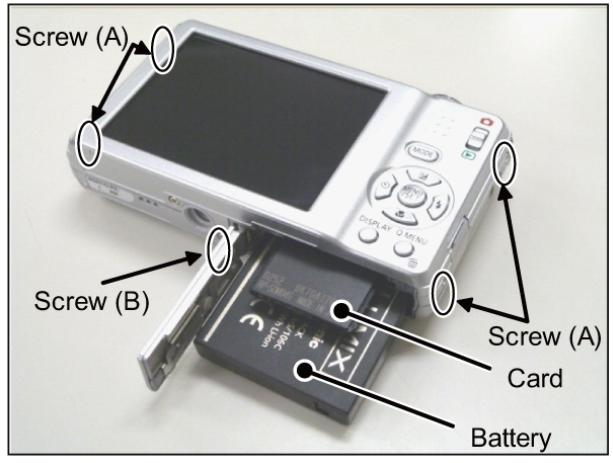
Screw(A)



Screw(B)



- Card
- Battery
- Screw(A) X4
- Screw(B) X1

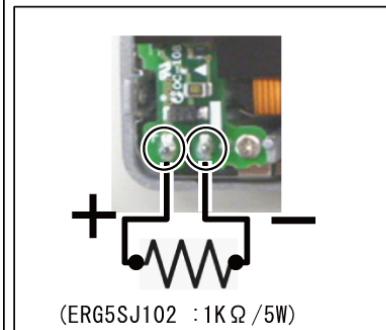


(Fig.D1)

### CAUTION

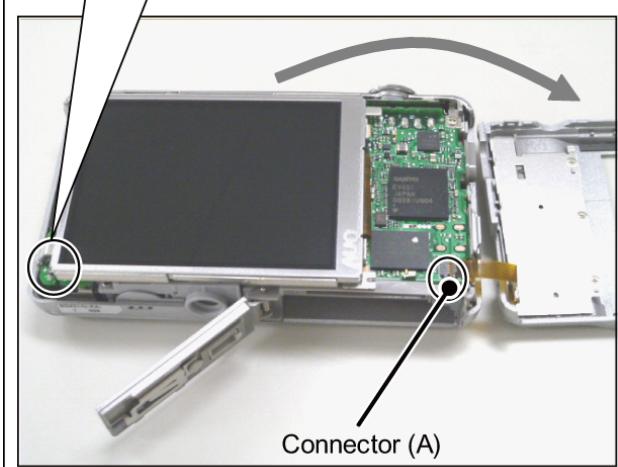
Be sure to discharge the capacitor on the Flash P.C.B. before disassembling.

- Put the insulation tube on the lead part of resistor (ERG5SJ102 :1KΩ/5W)
- Put the resistor between both terminal of capacitor unit for approx.5seconds.



(ERG5SJ102 :1KΩ/5W)

• Connector (A)

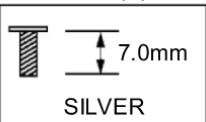


(Fig.D2)

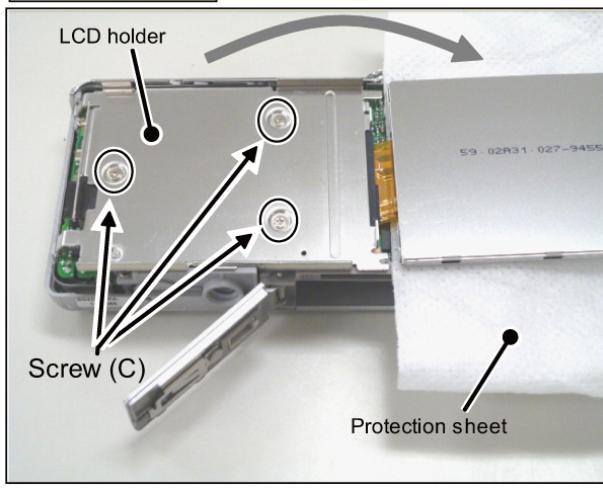
### 7.3.2. Removal of the LCD Unit

NOTE: To prevent scratch on the LCD unit, put a kind of a sheet under the LCD unit.

Screw(C)

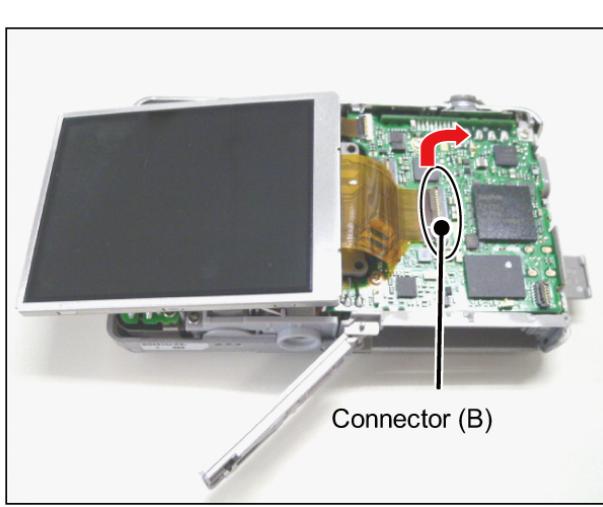


• Screw(C) X3  
• LCD holder



(Fig.D3)

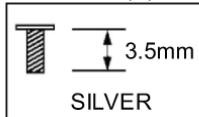
• Connector (B)



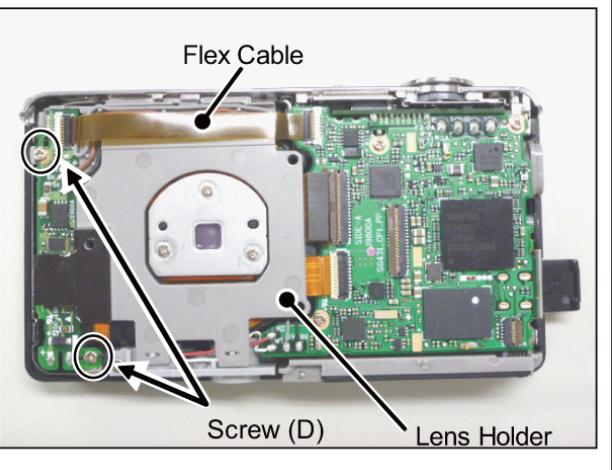
(Fig.D4)

### 7.3.3. Removal of the Flash P.C.B. & Lens Unit

Screw(D)

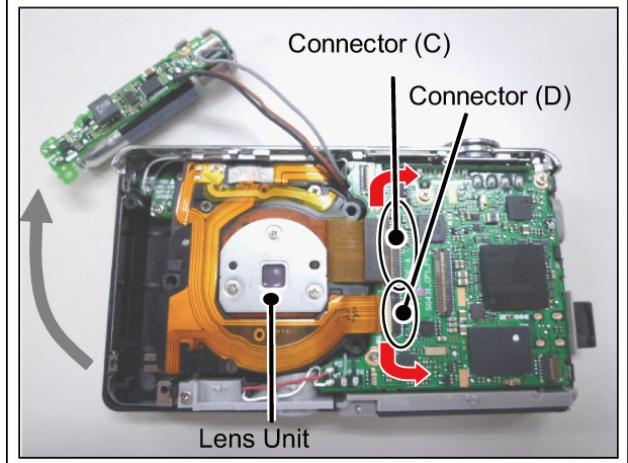


• Flex Cable  
• Screw(D) X2  
• Lens Holder



(Fig.D5)

• Connector (C)  
• Connector (D)  
• Lens Unit



(Fig.D6)

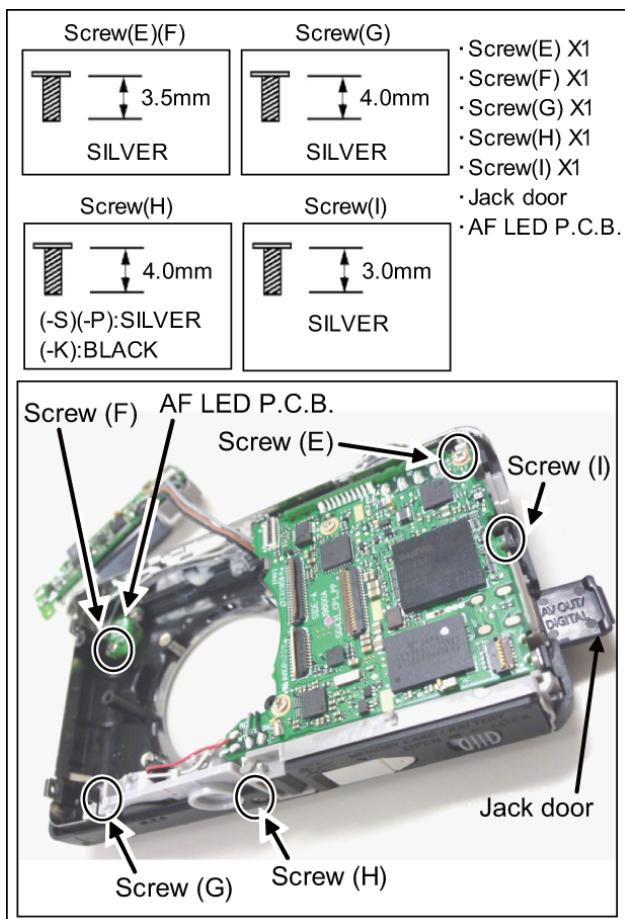
**NOTE:(When Assembling)**

- \*.Insert the Flahs cables to the cable roads on the Lens holder.



(Fig.D7)

### 7.3.4. Removal of the Front/Top Case Unit



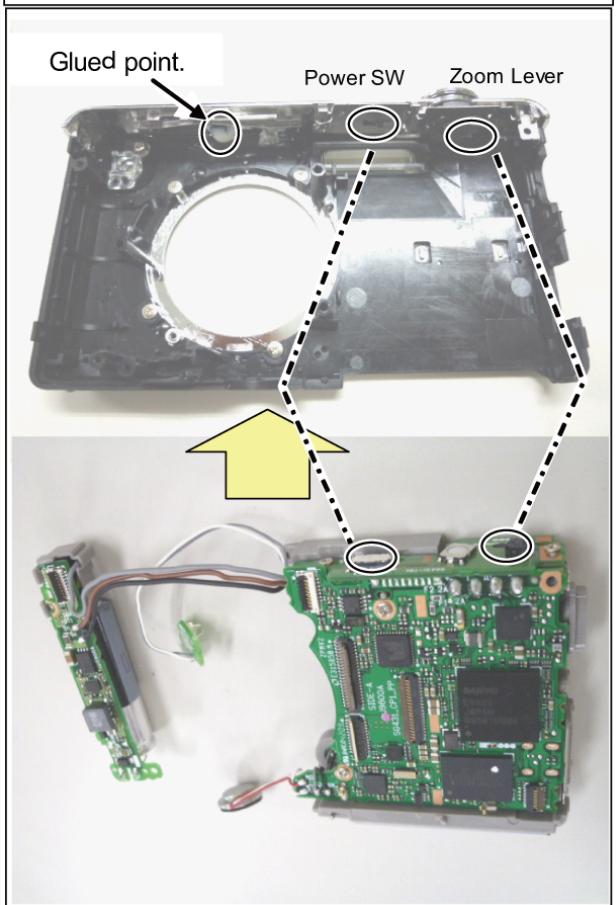
(Fig.D8)

**NOTE:**

- \*.As for early Mass-production unit, the Front case and the Top case are agglutinate part.
- \*.When Front case and Top case is glued, do not separate them.
- \*.When either front case or top case are necessary to be replaced, replace both by using the replacement part.

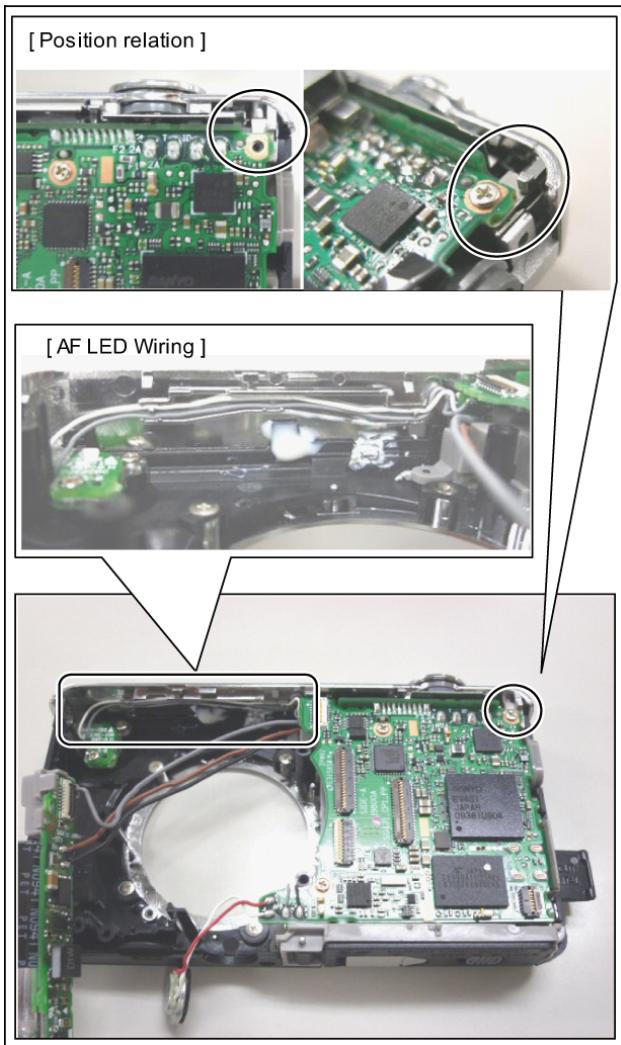
**NOTE:(When Assembling)**

- \*.Insert the Whole PCB block to the Front/Top Case unit.
- [POINTS.]
- \*.Align the phase of Power SW and Zoom Lever.
- \*.Position relation of Main P.C.B. and shield from top case.
- \*.Insert the cable for AF LED to the Top case.

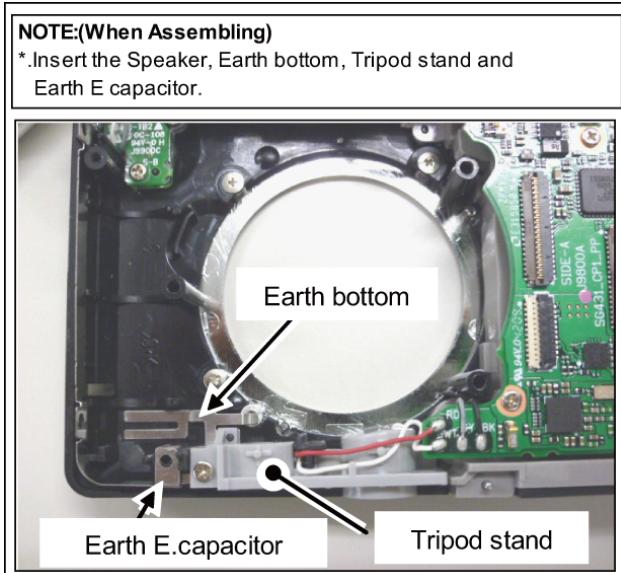


(Fig.D9a)

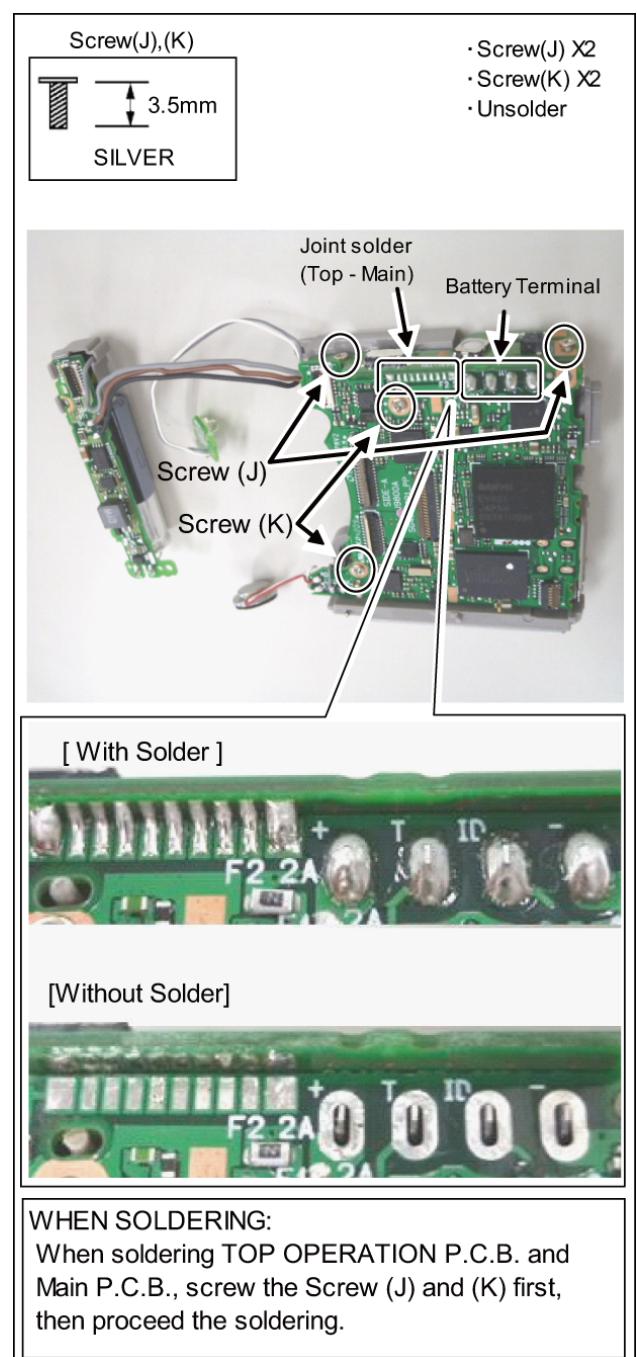
### 7.3.5. Removal of the Main P.C.B. and Top Operation P.C.B. & Battery Case Unit



(Fig.D9b)



(Fig.D10)



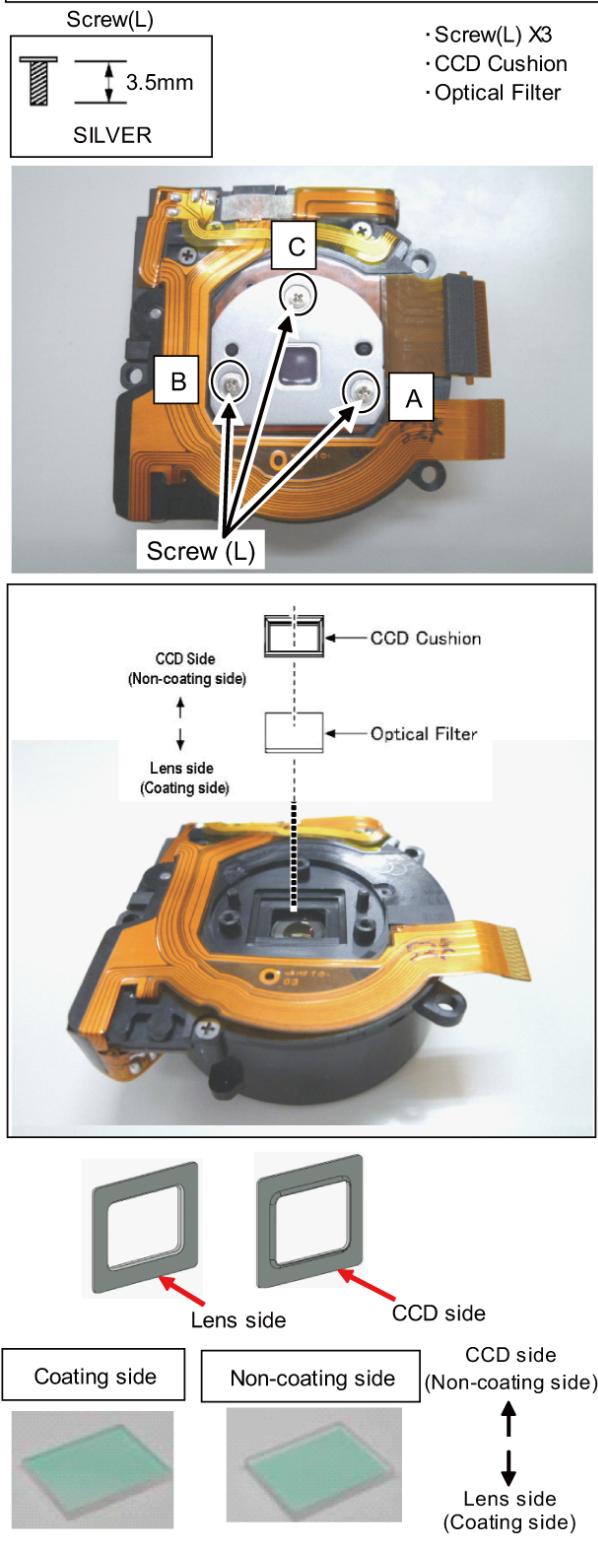
(Fig.D11)

### 7.3.6. Removal of the CCD Unit

#### NOTE:

1. Make sure no dust or dirt gets into the lens.
2. To remove dust from the lens, use airbrush.
3. Do not touch the surface of the lens.
4. Use lens cleaning KIT (BK) (VFK1900BK).

**NOTE:** To prevent the CCD surface from catching a dust and dirt, do not remove the CCD unit except for replacing.



#### NOTE: (When Assembling)

[Definitions of mount side of Optical filter.]

- Put the Optical filter on the white sheet.
- When the "non-coating side is face up condition, it can be seen as two-layered filter.
- Set the Coating (Green layer) side to lens side.

#### [Screwing Order]

- When installing the CCD unit to Lens unit with screw, tighten the screws in the letters order.(A, B, C.)

#### NOTE: (When Assembling)

Make sure to confirm the following points when assembling:

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

(Fig.D12)

# 8 Measurements and Adjustments

## 8.1. Introduction

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

To perform the adjustment, it is necessary to use the "DscCalDi" software.

The Adjustment software "DscCalDi" together with its installation instruction are available at "TSN Website".

To download, click on "Support Information from NWBG/VDBG-AVC".

## 8.2. Matrix chart (Replaced part and Adjustment item)

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.

Adjustment order	Adjustment Item	Purpose	Replaced Parts			JIG/TOOLS
			MAIN P.C.B. ※2	Lens Parts (except for CCD)	CCD Unit	
1	BF ADJUSTMENT (1) 1meter adjustment	To have the focus tracking curve	<input type="radio"/>	<input type="radio"/> ※1	<input type="radio"/> ※1	•Ruler ( More than 1meter) •Siemens star chart
2	BF ADJUSTMENT (2) Infinity adjustment	To have the focus tracking curve	<input type="radio"/>	<input type="radio"/> ※1	<input type="radio"/> ※1	•COLLIMATOR (VFK1164TCM02 or VFK1164TCM03 or RFKZ0422) •LIGHT BOX (VFK1164TDVLB or RFKZ0523)
3	WBL ADJUSTMENT	White balance adjustment under various color temperature.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	•LB FILTER (VFK1164LBB1) •ND FILTER (VFK1164ND02) •LIGHT BOX (VFK1164TDVLB or RFKZ0523)
4	BKI ADJUSTMENT	Compensation of CCD Missing Pixels (Black)	<input type="radio"/>	—	<input type="radio"/>	•LB FILTER (VFK1164LBB1) •ND FILTER (VFK1164ND02) •LIGHT BOX (VFK1164TDVLB or RFKZ0523)
5	WKI ADJUSTMENT	Compensation of CCD Missing Pixels (White)	<input type="radio"/>	—	<input type="radio"/>	—
6	USB storage info. Registration	To register the USB storage information under regulation.	<input type="radio"/>	—	—	—

※1. The adjustment is necessary, not only replacing the Lens unit or CCD unit, but also, removing the CCD unit from Lens unit.

※2. After replacing the MAIN P.C.B., make sure to perform the "firmware version up", "adjustment" and "Initial settings" in order.

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

After replacing the Main P.C.B., follow the following steps in order.

1)Assemble the unit.

Refer to the "7.Disassembly and Assembly Instructions"section.

2)Up date the firmware.

The firmware together with version up procedure are available at "software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system".

3)Perform the adjustment using adjustment software "DscCalDi".

The adjustment software is available at "software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system".

4)Register the USB storage information.

Refer to the "8.4.6.USB STORAGE INFO. REGISTRATION" in "8.4.Adjustment procedures" section.

5)Set the "model suffix".

Refer to the "3.4.2.INITIAL SETTINGS:" section.

6)Refresh the unit.

Refer to the "3.4.2.INITIAL SETTINGS:" section.

## 8.3. Execute the Adjustment software “DscCalDi.exe”.

### Step 1.Preparation:

1. Attach the Battery or AC Adaptor with a DC coupler to the unit.
2. Set the [ REC/PLAY ] switch to “REC” mode.
3. Set the recording mode to [ Normal Picture ] mode.
  - Turn on the power switch and then press the “MODE” button.
  - Choose the [ Normal Picture ] mode with cursor buttons, then press the “MENU/SET” button.
  - Turn the power switch to OFF.
4. Connect the Camera unit and a PC with a USB cable.
5. Turn the power switch to ON.
6. Select the USB mode to “PC” mode, then press the “MENU/SET” button.

(NOTE: Right after replacing the MAIN P.C.B., the USB selection screen does not displayed.)

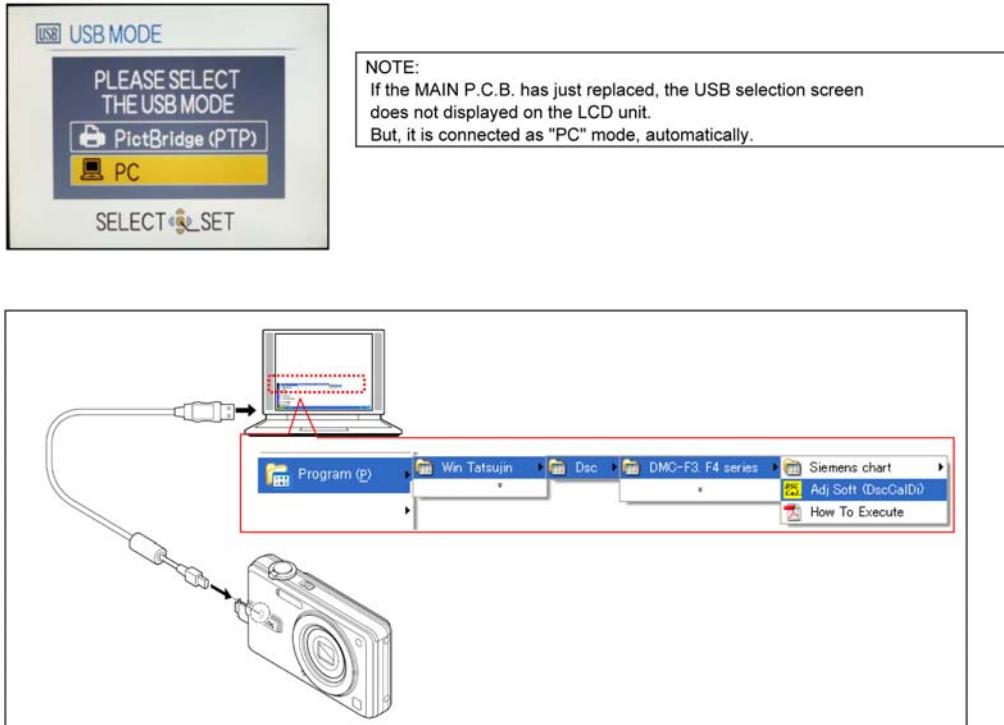


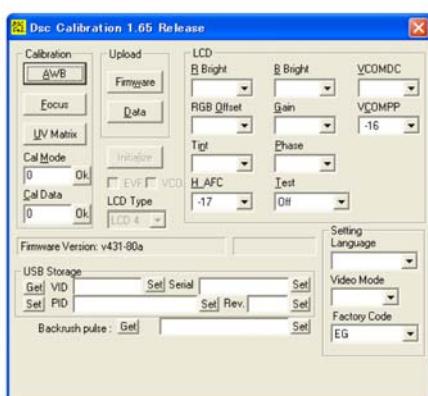
Fig.E1:Connection

### Step 2.Execute the software “DscCalDi” :

1. Choose the “Adj Soft (DscCalDi)” and execute the adjustment software.(Refer to Fig.E1:Connection)  
[ “Start” ---> “Program(P)” ---> “Win Tatsujin” ---> “Dsc” ---> “DMC-F3,F4 series” ---> “Adj Soft (DscCalDi)” ]  
The following main screen is appear on the PC monitor.

#### NOTE:

Without connecting the USB cable between DSC (USB mode with power on) and PC, adjustment software does not executed.



Now, perform the necessary adjustment by ordering each adjustment procedures described in “8.4 Adjustment procedures” section, continuously.

## 8.4. Adjustment procedures

### 8.4.1. BF ADJUSTMENT(1) [ 1meter adjustment ]

#### [ PREPARATION ]

1. Perform the "8.3 Execute the Adjustment software "DscCalDi.exe"" in advance.

#### [ CAUTION ]

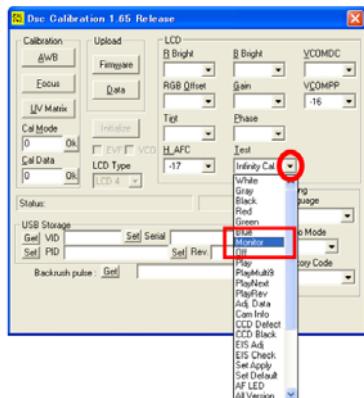
1. Do not apply any vibration to the camera during adjustment.

#### [ ADJUSTMENT CONDITION ]

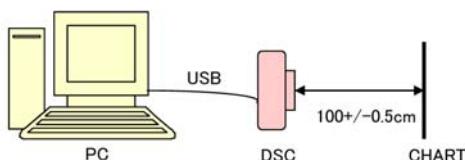
1. Aim the specified Siemens star chart.  
(As for Siemens star chart, refer to the "6 Service Fixture & Tools" section for details.)

#### [ ADJUSTMENT SETTINGS ]

1. Click on the pull down menu tag of the "Test".  
(The Test item list is displayed.)
2. Choose the "Monitor" so that the LCD display displays monitoring image.



3. Set the camera unit and chart at 100 +/- 0.5cm.



4. Adjust the chart position so that the center of the chart is displayed to center of the LCD display.

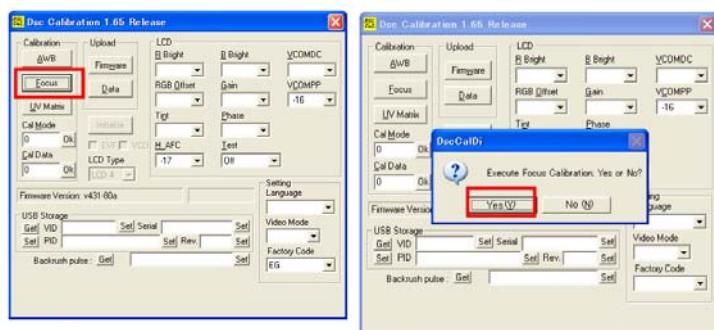
By changing the Zoom condition, confirm that the center of the chart is displayed to center of the LCD display.

#### [ ADJUSTMENT ]

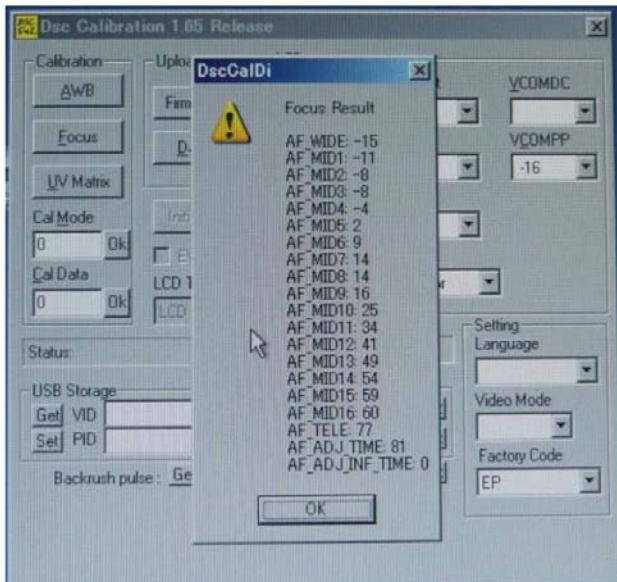
1. Click on the "Focus" button on the PC monitor.  
(The Confirmation box is displayed.)
2. Click on "YES".

#### NOTE:

It takes few minutes for adjustment process.



3. When the adjustment is completed, the “Focus Result value list” is displayed.



4. Compare the Value displayed on the PC monitor and the following table.

If the adjustment value is out of specification, replace the Lens unit and try it again.

5. After confirmation (Data comparison) has been completed, click on “OK”.

Adjustment Items	Abbriviation	Specification
AF_WIDE	FW	$-345 \leq FW \leq 21$
AF_MID1	FM1	$-339 \leq FM1 \leq 55$
AF_MID2	FM2	$-325 \leq FM2 \leq 91$
AF_MID3	FM3	$-298 \leq FM3 \leq 111$
AF_MID4	FM4	$-280 \leq FM4 \leq 126$
AF_MID5	FM5	$-260 \leq FM5 \leq 138$
AF_MID6	FM6	$-240 \leq FM6 \leq 153$
AF_MID7	FM7	$-229 \leq FM7 \leq 160$
AF_MID8	FM8	$-226 \leq FM8 \leq 160$
AF_MID9	FM9	$-212 \leq FM9 \leq 159$
AF_MID10	FM10	$-204 \leq FM10 \leq 156$
AF_MID11	FM11	$-200 \leq FM11 \leq 148$
AF_MID12	FM12	$-200 \leq FM12 \leq 135$
AF_MID13	FM13	$-206 \leq FM13 \leq 120$
AF_MID14	FM14	$-217 \leq FM14 \leq 116$
AF_MID15	FM15	$-233 \leq FM15 \leq 96$
AF_MID16	FM16	$-244 \leq FM16 \leq 100$
AF_TELE	FT	$-238 \leq FT \leq 99$

#### [ AFTER ADJUSTMENT ]

##### NOTE:

If you want to perform other adjustments continuously, click on the pull down menu tag of the “Test” and choose the “OFF” in stead of perform the following 1 to 3.

(The LCD display becomes black fade.)

Do not perform the same adjustment, continuously.

If it is necessary to perform the same adjustment, follow the following 1 to 3.

1. Close the “DscCalDi.exe” by clicking on the “X” located on the top right corner.

The LCD of the Camera unit becomes black fade.

2. Turn “off” the power switch of the camera unit.

3. Disconnect the USB cable.

## 8.4.2. BF ADJUSTMENT(2) [ Infinity adjustment ]

### [ PREPARATION ]

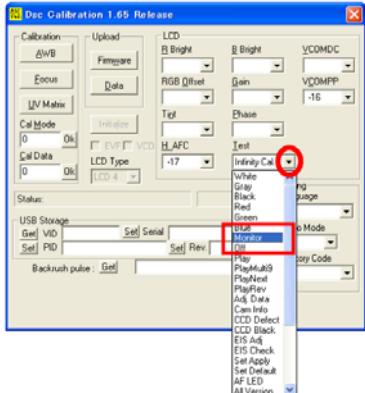
1. Perform the "8.3 Execute the Adjustment software "DscCalDi.exe"" in advance.

### [ CAUTION ]

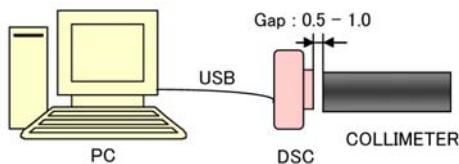
1. Do not apply any vibration to the camera during adjustment.

### [ ADJUSTMENT SETTINGS ]

1. Click on the pull down menu tag of the "Test".  
(The Test item list is displayed.)
2. Choose the "Monitor" so that the LCD display displays monitoring image.



3. Set the camera unit and collimator as follows.  
Make a gap between DSC unit and Collimator, to prevent touching each other.



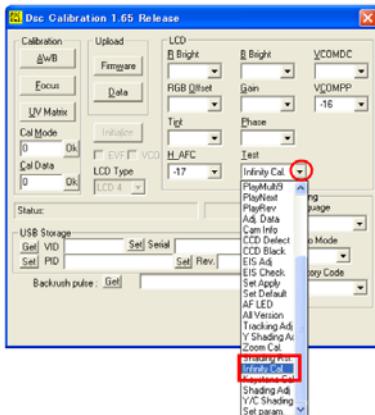
4. Adjust the collimator position so that the center of the chart is displayed to center of the LCD display.  
By changing the Zoom condition, confirm that the center of the chart is displayed to center of the LCD display.

### [ ADJUSTMENT ]

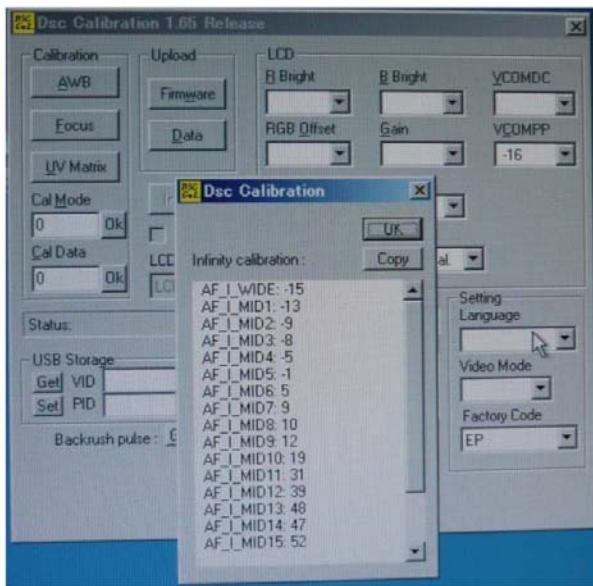
1. Click on the pull down menu tag of the "Test".  
(The Test item list is displayed.)
2. Choose the "Infinity Cal." in order to execute adjustment.

#### NOTE:

It takes few minutes for adjustment process.



3. When the adjustment is completed, the “Infinity calibration value list” is displayed.



4. Compare the Value displayed on the PC monitor and the following table.

If the adjustment value is out of specification, replace the Lens unit and try it again.

5. After confirmation (Data comparison) has been completed, click on “OK”.

Adjustment Items	Abbr i-vation	Specification
AF_I_WIDE	FIW	$-339 \leq FIW \leq 27$
AF_I_MID1	FIM1	$-333 \leq FIM1 \leq 61$
AF_I_MID2	FIM2	$-317 \leq FIM2 \leq 98$
AF_I_MID3	FIM3	$-288 \leq FIM3 \leq 121$
AF_I_MID4	FIM4	$-267 \leq FIM4 \leq 140$
AF_I_MID5	FIM5	$-243 \leq FIM5 \leq 154$
AF_I_MID6	FIM6	$-218 \leq FIM6 \leq 175$
AF_I_MID7	FIM7	$-204 \leq FIM7 \leq 185$
AF_I_MID8	FIM8	$-198 \leq FIM8 \leq 187$
AF_I_MID9	FIM9	$-177 \leq FIM9 \leq 194$
AF_I_MID10	FIM10	$-160 \leq FIM10 \leq 200$
AF_I_MID11	FIM11	$-146 \leq FIM11 \leq 202$
AF_I_MID12	FIM12	$-137 \leq FIM12 \leq 198$
AF_I_MID13	FIM13	$-132 \leq FIM13 \leq 194$
AF_I_MID14	FIM14	$-138 \leq FIM14 \leq 195$
AF_I_MID15	FIM15	$-145 \leq FIM15 \leq 184$
AF_I_MID16	FIM16	$-155 \leq FIM16 \leq 169$
AF_I_TELE	FIT	$-133 \leq FIT \leq 184$

#### [ AFTER ADJUSTMENT ]

##### NOTE:

If you want to perform other adjustments continuously, click on the pull down menu tag of the “Test” and choose the “OFF” instead of perform the following 1 to 3.

(The LCD display becomes black fade.)

Do not perform the same adjustment, continuously.

If it is necessary to perform the same adjustment, follow the following 1 to 3.

1. Close the “DscCalDi.exe” by clicking on the “X” located on the top right corner.

The LCD of the Camera unit becomes black fade.

2. Turn “off” the power switch of the camera unit.

3. Disconnect the USB cable.

### 8.4.3. ISO/WBL/SHT ADJUSTMENT

#### [PREPARATION]

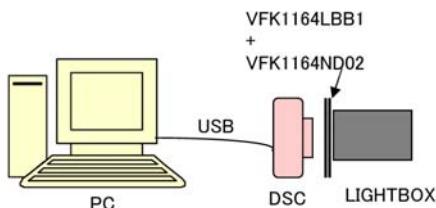
1. Perform the "8.3 Execute the Adjustment software "DscCalDi.exe"" in advance.
2. Remove the Front block of the Lightbox. (Refer to the "6 Service Fixture & Tools" section for details.)
3. Turn on the Lightbox.

#### [ADJUSTMENT SETTINGS]

1. Set the LBB1 filter (Part No.VFK1164LBB1) and ND filter (Part No.VFK1164ND02) on the screen part of the Lightbox.
2. Set the camera unit and Lightbox as follows.

##### NOTE:

When the zoom condition of camera is fully tele side, the distance between Lens edge and lightbox becomes 1.5+/-0.5cm.  
(DO NOT APPLY ANY LIGHT FROM OTHERS.)

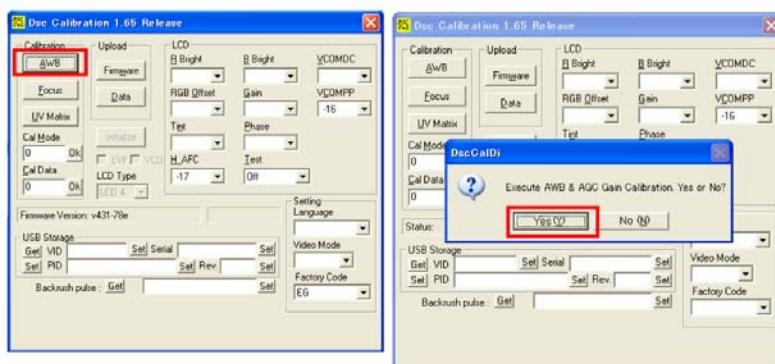


#### [ADJUSTMENT]

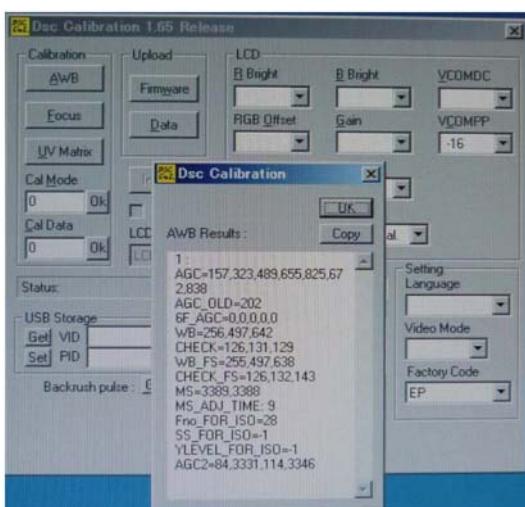
1. Click on the "AWB" button on the PC monitor.  
(The Confirmation box is displayed.)
2. Click on "YES".

##### NOTE:

It takes few minutes for adjustment process.

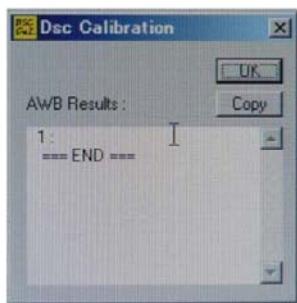


3. When the adjustment is completed, the "AWB Result value list" is displayed.



**NOTE:**

When the following "AWB Results:" (without data) message is displayed instead of displaying the above "AWB Result value list", try this adjustment again.



4. Compare the Value displayed on the PC monitor and the following table.

If the adjustment value is out of specification, replace the Lens unit and try it again.

5. After confirmation (Data comparison) has been completed, click on "OK".

Adjustment Items	Abbre-i-vation	Specification
AGC=a1, a2, a3, a4, a5, a6, a7	a1	$100 \leq a1 \leq 350$
	a2	$0 \leq a2 \leq 1023$
	a3	$0 \leq a3 \leq 1023$
	a4	$0 \leq a4 \leq 1023$
	a5	$0 \leq a5 \leq 1023$
	a6	$0 \leq a6 \leq 1023$
	a7	$0 \leq a7 \leq 1023$
AGC_OLD=ao1	ao1	$0 \leq ao1 \leq 1023$
6F_AGC=fd1, fd2, fd3, fd4, fd5	fd1	$fd1 \leq 10$
	fd2	$fd2 \leq 10$
	fd3	$fd3 \leq 10$
	fd4	$fd4 \leq 10$
	fd5	$fd5 \leq 10$
WB=1, 2, 3, 4, 5	-	(Any value is OK)
CHECK=wc0, wc1, wc2	wc0	$wc0=128+/-2$
	wc1	$wc1=128+/-2$
	wc2	$wc2=130+/-40$
WB_FS=1, 2, 3	-	(Any value is OK)
CHECK_FS=wfc0, wfc1, wfc2	wfc0	$wfc0=128+/-2$
	wfc1	$wfc1=128+/-2$
	wfc2	$wfc2=130+/-40$
MS=ms1, ms2	ms1	$2874 \leq ms1 \leq 4272$
	ms2	$2874 \leq ms2 \leq 4274$
MS_ADJ_TIME:	-	(Any value is OK)
Fno_FOR_ISO=	-	(Any value is OK)
SS_FOR_ISO=	-	(Any value is OK)
YLEVEL_FOR_ISO=	-	(Any value is OK)
AGC2=a21, a22, a23, a24	a21	(Any value is OK)
	a22	$3000 \leq a22 \leq 3600$
	a23	(Any value is OK)
	a24	$3000 \leq a24 \leq 4095$

**[ AFTER ADJUSTMENT ]**

**NOTE:**

If you want to perform other adjustments continuously, click on the pull down menu tag of the "Test" and choose the "OFF" instead of perform the following 1 to 3.

(The LCD display becomes black fade.)

Do not perform the same adjustment, continuously.

If it is necessary to perform the same adjustment, follow the following 1 to 3.

1. Close the "DscCalDi.exe" by clicking on the "X" located on the top right corner.

The LCD of the Camera unit becomes black fade.

2. Turn "off" the power switch of the camera unit.

3. Disconnect the USB cable.

## 8.4.4. BKI ADJUSTMENT

### [PREPARATION]

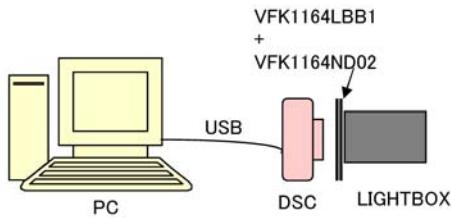
1. Perform the "8.3 Execute the Adjustment software "DscCalDi.exe"" in advance.]
2. Remove the front block of the Lightbox. (Refer to the "6 Service Fixture & Tools" section for details.)
3. Turn on the Lightbox.

### [ADJUSTMENT SETTINGS]

1. Set the LBB1 filter (Part No.VFK1164LBB1) filter and ND filter (Part No.VFK1164ND02) on the screen part of the Lightbox.
2. Set the camera unit and Lightbox as follows.

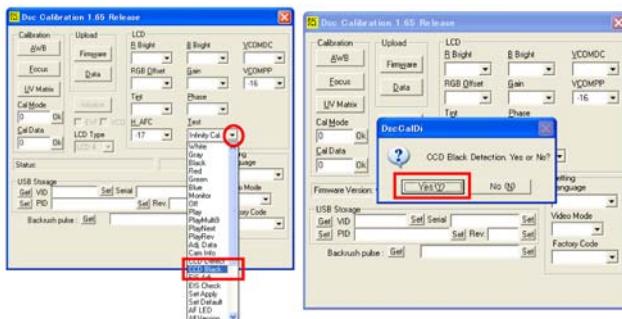
#### NOTE:

The zoom condition of camera is fully tele side, the distance between Lens edge and lightbox becomes 1.5+/-0.5cm.  
(DO NOT APPLY ANY LIGHT FROM OTHERS.)

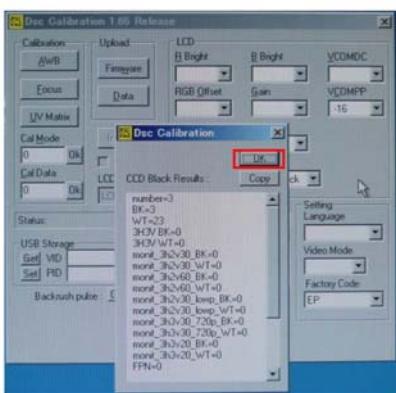


### [ADJUSTMENT]

1. Click on the pull down menu tag of the "Test".  
(The Test item list is displayed.)
2. Choose the "CCD Black" in order to execute adjustment. (The Confirmation box is displayed.)
3. Click on "YES".



4. When the adjustment is completed, the "CCD Black Result value list" is displayed.
5. Click on "OK".



## [ AFTER ADJUSTMENT ]

### [ NOTE ]

If you want to perform other adjustments continuously, click on the pull down menu tag of the “Test” and choose the “OFF” in stead of perform the following 1 to 3.

(The LCD display becomes black fade.)

Do not perform the same adjustment, continuously.

If it is necessary to perform the same adjustment, follow the following 1 to 3.

1. Close the “DscCalDi.exe” by clicking on the “X” located on the top right corner.

The LCD of the Camera unit becomes black fade.

2. Turn “off” the power switch of the camera unit.

3. Disconnect the USB cable.

## 8.4.5. WKI ADJUSTMENT

### [ PREPARATION ]

1. Perform the “8.3 Execute the Adjustment software“DscCalDi.exe”” in advance.

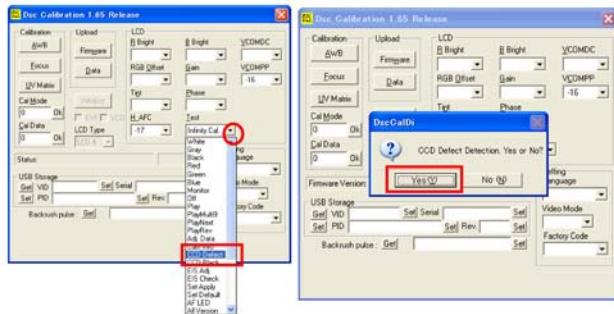
### [ ADJUSTMENT ]

1. Click on the pull down menu tag of the “Test”.

(The Test item list is displayed.)

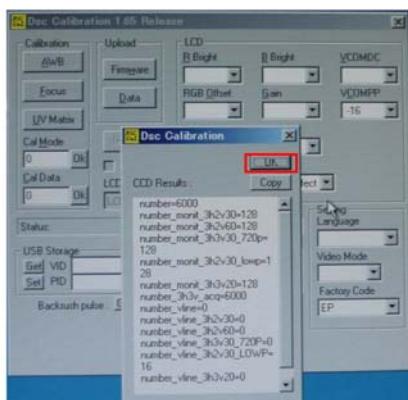
2. Choose the “CCD Defect” in order to execute adjustment. (The Confirmation box is displayed.)

3. Click on “YES”.



4. When the adjustment is completed, the “CCD Result value list” is displayed.

5. Click on “OK”.



## [ AFTER ADJUSTMENT ]

### [ NOTE ]

If you want to perform other adjustments continuously, click on the pull down menu tag of the “Test” and choose the “OFF” in stead of perform the following 1 to 3.

(The LCD display becomes black fade.)

Do not perform the same adjustment, continuously.

If it is necessary to perform the same adjustment, follow the following 1 to 3.

1. Close the “DscCalDi.exe” by clicking on the “X” located on the top right corner.

The LCD of the Camera unit becomes black fade.

2. Turn “off” the power switch of the camera unit.

3. Disconnect the USB cable.

## 8.4.6. USB STORAGE INFO. REGISTRATION

### [PREPARATION]

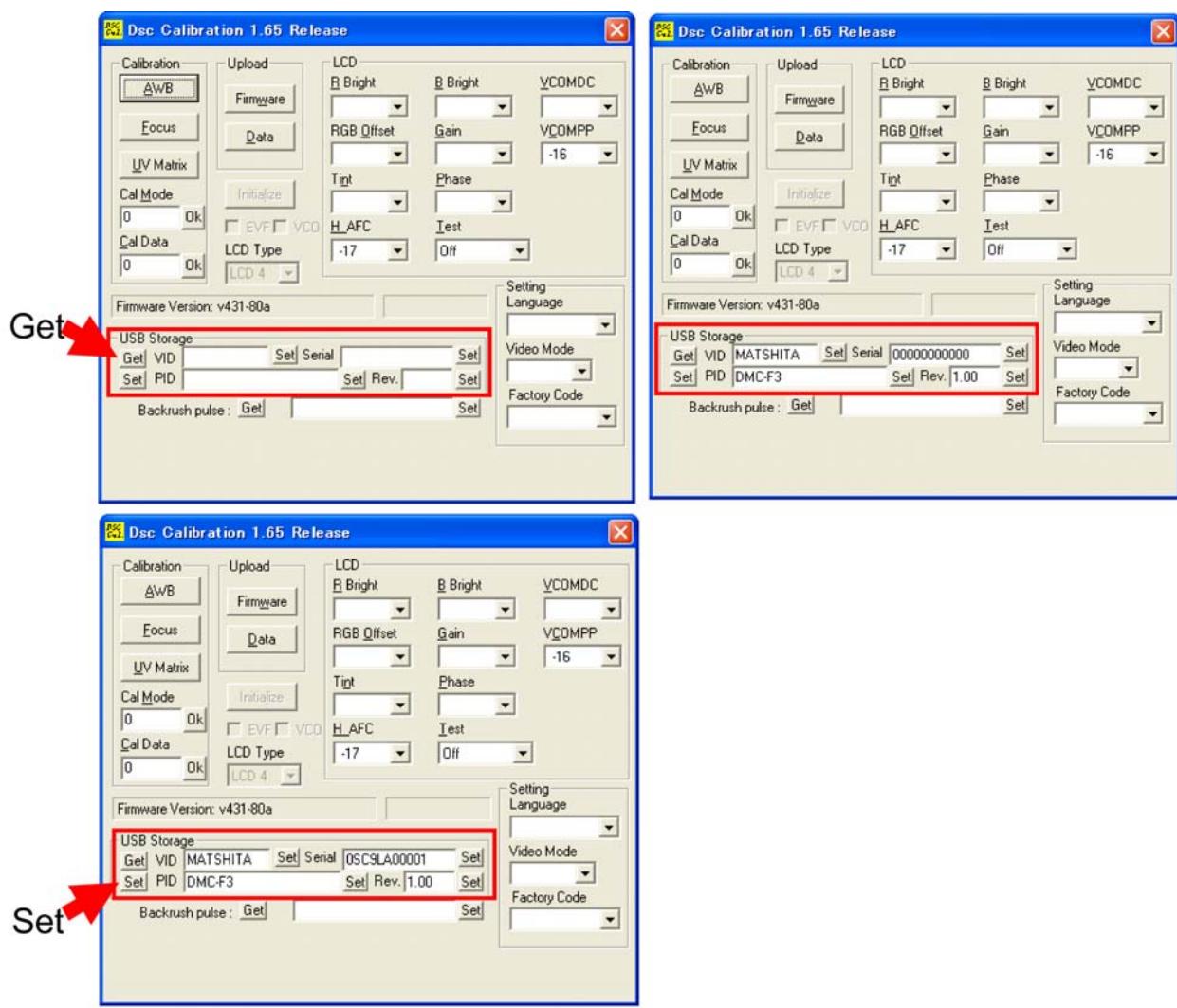
1. Perform the "8.3 Execute the Adjustment software "DscCalDi.exe"" in advance.

### [SETUP]

1. Click on "Get" button.  
(The USB Storage data is displayed.)
2. Confirm that the following data is displayed in each frame.  
If not, revise the data as follows.  
\* "VID" frame : "MATSHITA"  
\* "PID" frame : "DMC-F3" ----(For DMC-F3), "DMC-F4" ----(For DMC-F4).  
\* "Rev" frame : "1.00"
3. Change the data in "Serial" frame from "00000000000" (11 digit) into the serial number.  
(The serial number (it consists of 11 digit) is printed on the nameplate which is put on the bottom side of the Unit.)

**NOTE:**  
To change the data, delete data first, then enter the data.

4. Click on "Set" button, which is located on just below the "Get" button.



### [AFTER SETTING-UP]

1. Close the "DscCalDi.exe" by clicking on the "X" located on the top right corner.  
The LCD of the Camera unit becomes black fade.
2. Turn "off" the power switch of the camera unit.
3. Disconnect the USB cable.

# 9 Maintenance

## 9.1. Cleaning Lens and LCD Panel

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

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

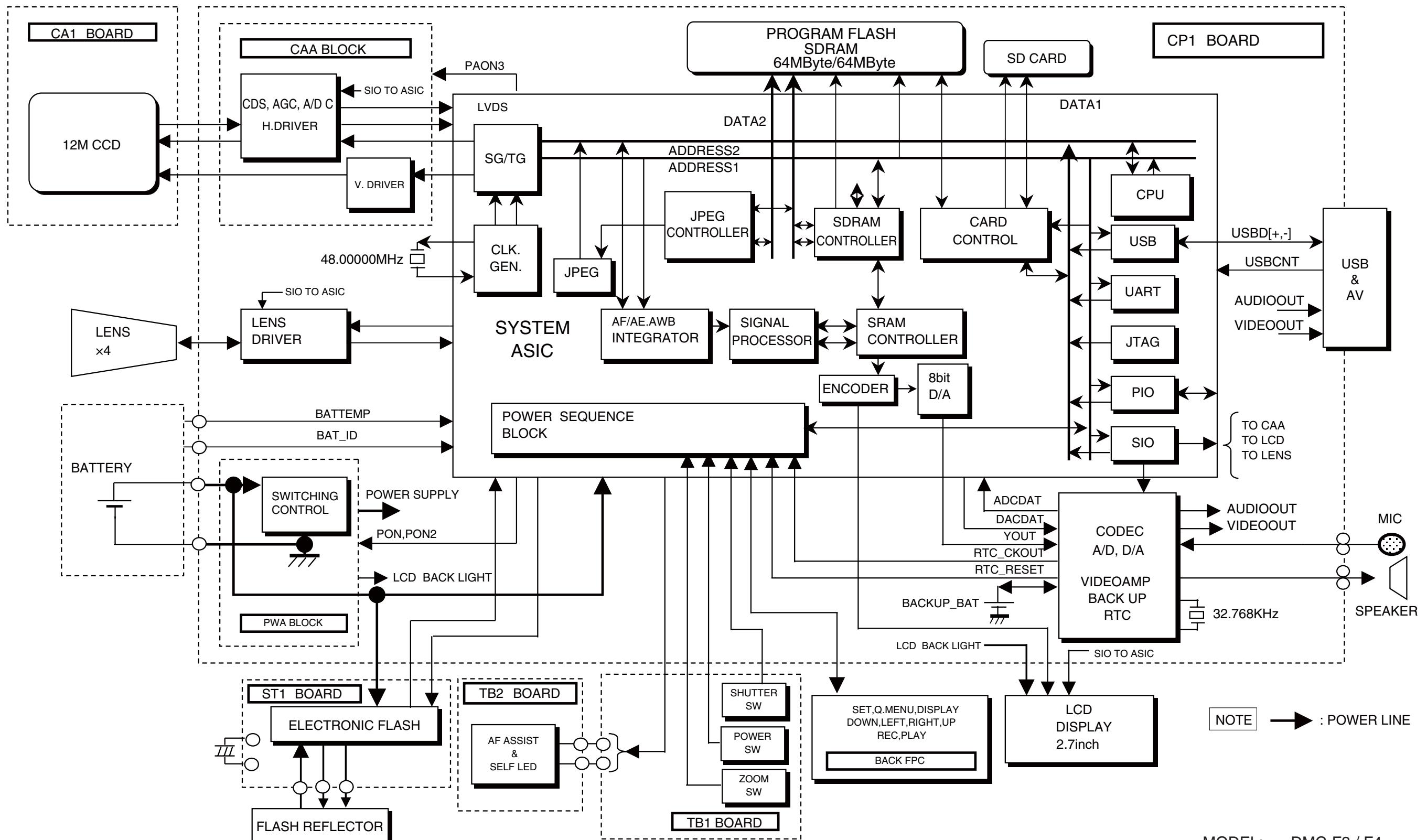
When cleaning the LCD Panel, dampen the lens cleaning paper with lens cleaner, and the gently wipe the its surface.

**Note:**

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

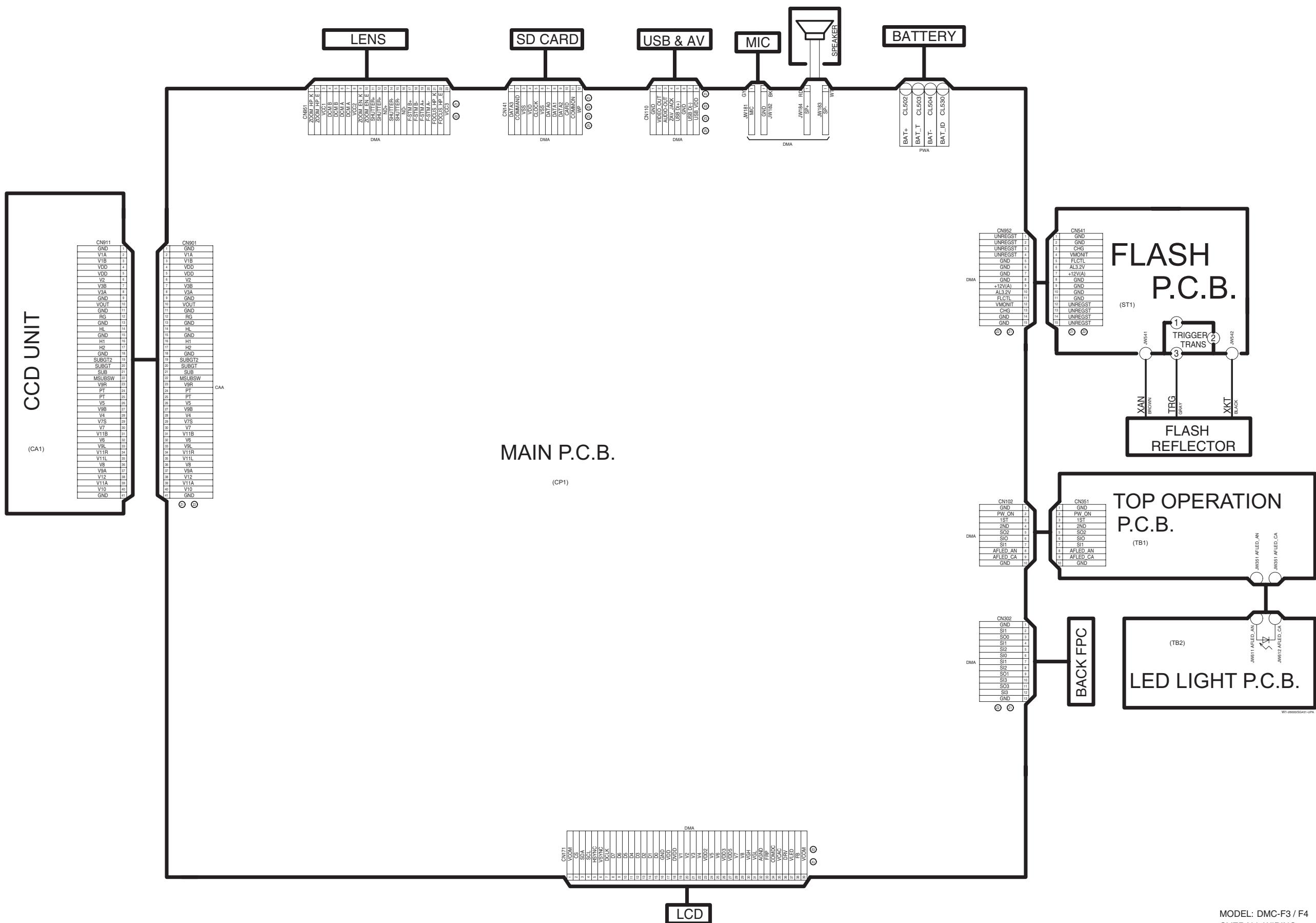
# 10 Block Diagram

## 10.1. Overall Block Diagram



MODEL: DMC-F3 / F4  
BLOCK DIAGRAM: OVERALL

# 11 Wiring Connection Diagram

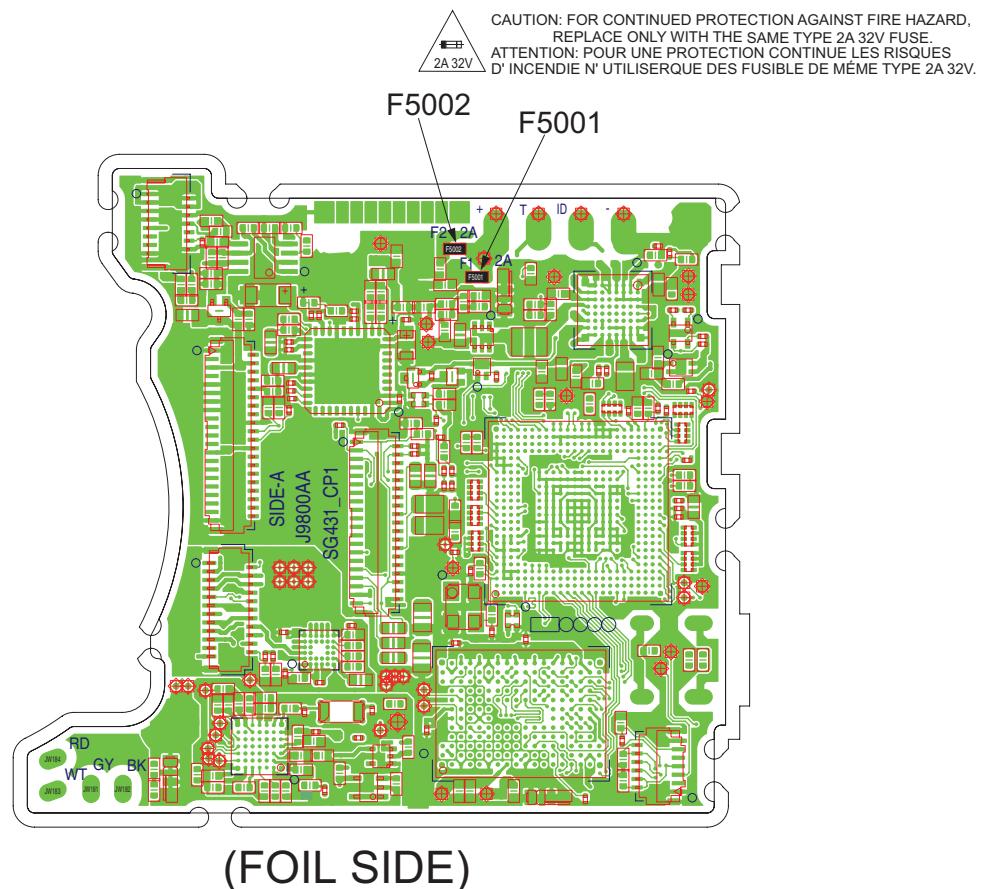


# 12 Printed Circuit Board

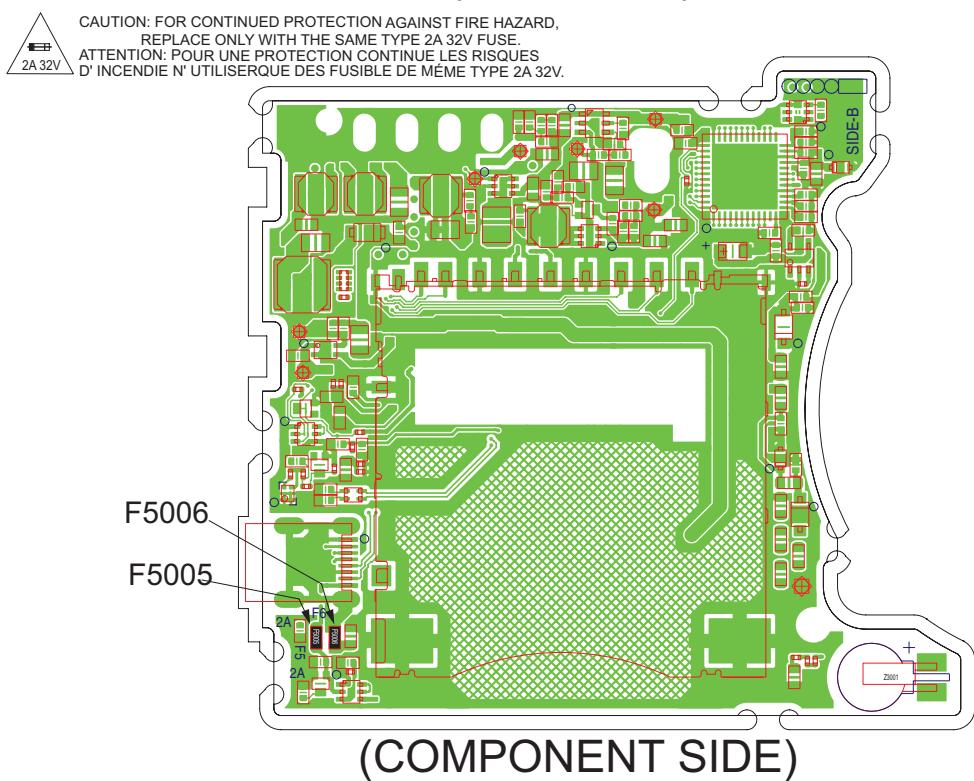
## 12.1. Fuse location on MAIN P.C.B.

The following drawings show the location of the fuse on MAIN P.C.B.

[FOIL SIDE ..... : F5001,F5002 / COMPONENT SIDE.....: F5005,F5006]



(FOIL SIDE)



(COMPONENT SIDE)

# S1. Replacement Parts List

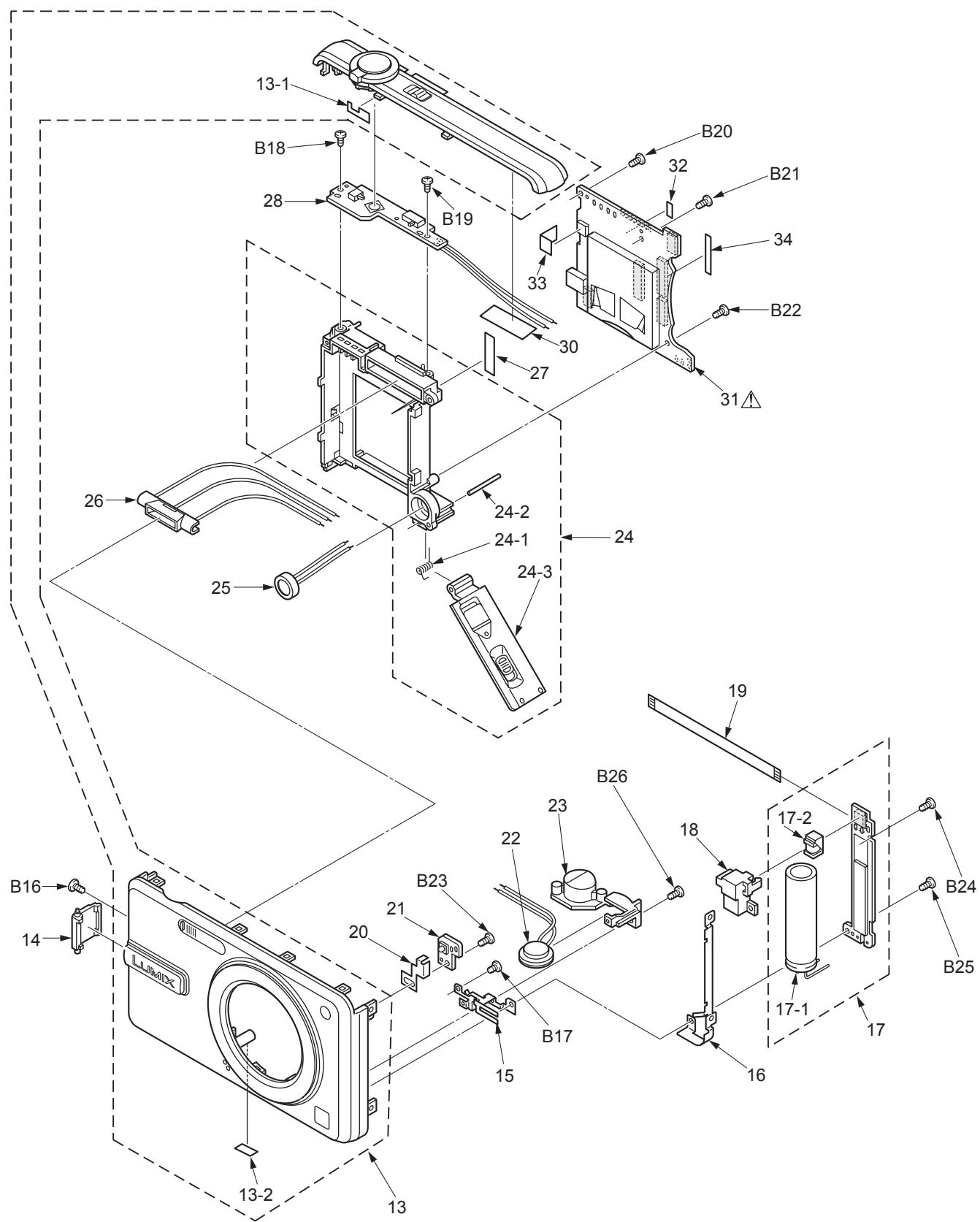
Note:

1. \*Be sure to make your orders of replacement parts according to this list.
2. **IMPORTANT SAFETY NOTICE**  
Components identified with the mark  have the special characteristics for safety.  
When replacing any of these components, use only the same type.
3. Unless otherwise specified,  
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICRO-FARADS (uf), P=uuF.
4. The marking (RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.
5. Supply of CD-ROM, in accordance with license protection, is allowable as replacement parts only for customers who accidentally damaged or lost their own.

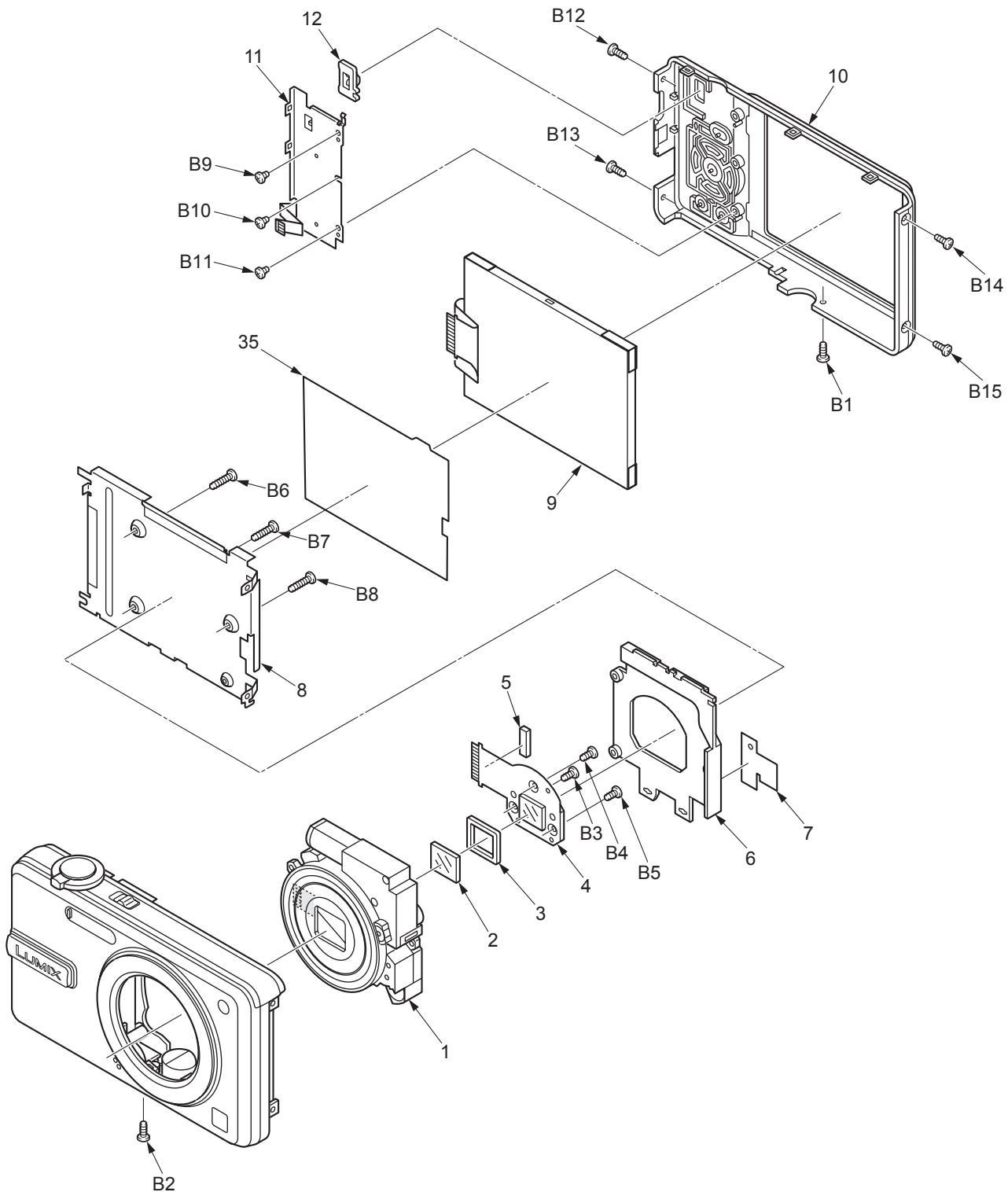
**E.S.D. standards for Electrostatically Sensitive Devices, refer to PREVENTION OF ELECTROSTATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES section.**

## S2. Exploded View

### S2.1. Frame and Casing Section (1)



## S2.2. Frame and Casing Section (2)



## S2.3. Packing Parts and Accessories Section

