

Service Manual

Digital Camera

LUMIX



Model No. **DMC-FP3P**

DMC-FP3PC

DMC-FP3PU

DMC-FP3EB

DMC-FP3EE

DMC-FP3EG

DMC-FP3EP

DMC-FP3GC

DMC-FP3GF

DMC-FP3GH

DMC-FP3GK

DMC-FP3GN

DMC-FP3GT

Vol. 1

Colour

- (S).....Silver Type (only P/PU/GC/GF/GH/GK)
- (K).....Black Type
- (N).....Gold Type (only PU/GF/GH/GK/GN/GT)
- (PA).....Light Pink Type (only GF/GH/GK/GN/GT)
- (V).....Violet Type (except P/PC/PU/EP/GN)
- (AA).....Blue Type (only GF/GH/GK)
- (AB).....Navy Type (only P/PC/EB/EG/GK)
- (P).....Pink Type (only GC/GK)
- (G).....Green Type (only GK)
- (D).....Orange Type (only EG/GK)
- (R).....Red Type (except PC/EE/EP/GT)
- (H).....Gray Type (except P/PC/GC/GF/GH/GT)

WARNING

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

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1 Safety Precautions

1.1. General Guidelines

1. IMPORTANT SAFETY NOTICE

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

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

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

1.2. Leakage Current Cold Check

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

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

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

Hot-Check Circuit

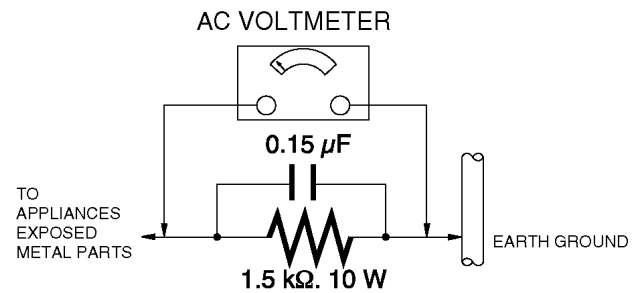


Figure. 1

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

CAUTION:

1. Be sure to discharge the capacitor on E.CAPACITOR P.C.B..
2. Be careful of the high voltage circuit on E.CAPACITOR 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 E.CAPACITOR P.C.B. for approx. 5 seconds.
4. After discharging, confirm that the capacitor voltage is lower than 10V using a voltmeter.

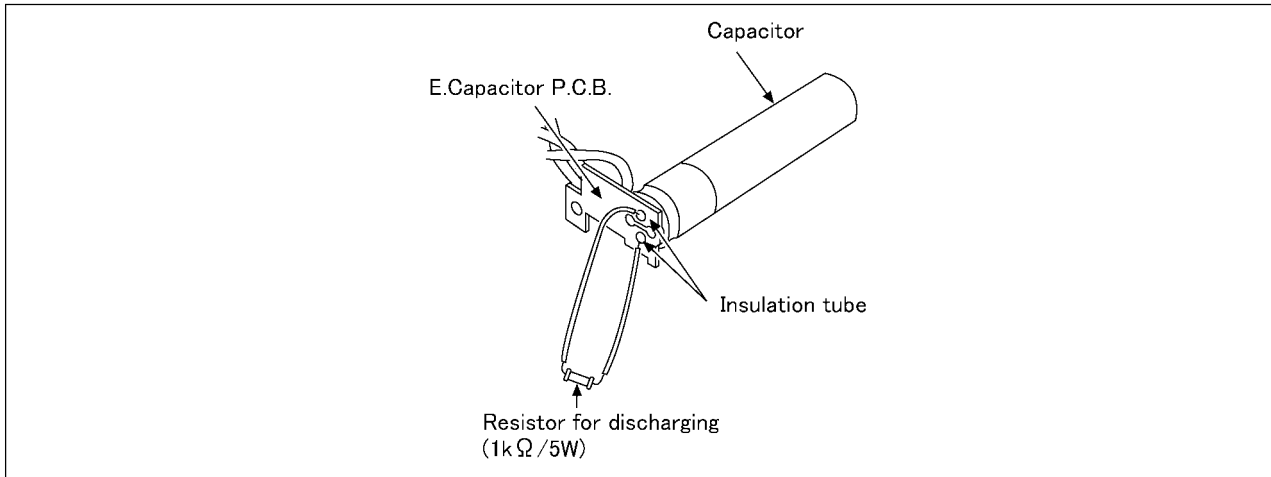


Fig. F1

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 IC (integrated circuits) and some field-effect transistors and semiconductor "chip" components.

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

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

CAUTION :

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

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

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

ENGLISH



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

FRANÇAIS



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

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

2.3.1. Information for Your Safety

IMPORTANT

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

WARNING

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

CAUTION

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

FOR YOUR SAFETY

DO NOT REMOVE THE OUTER COVER

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

2.3.2. Caution for AC Mains Lead

For your safety, please read the following text carefully.

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

A 5-ampere fuse is fitted in this plug.

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

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



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

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

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

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

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

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

If in any doubt, please consult a qualified electrician.

2.3.2.1. Important

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

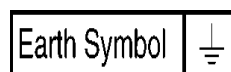
Blue	Neutral
Brown	Live

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

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

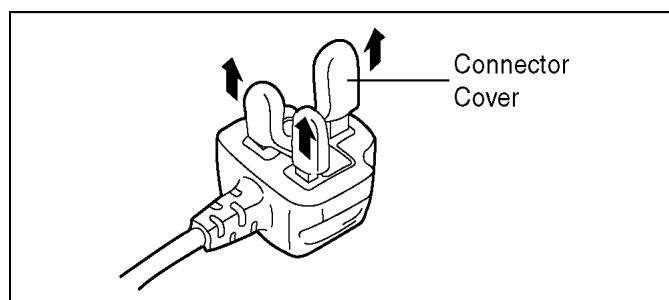
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

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



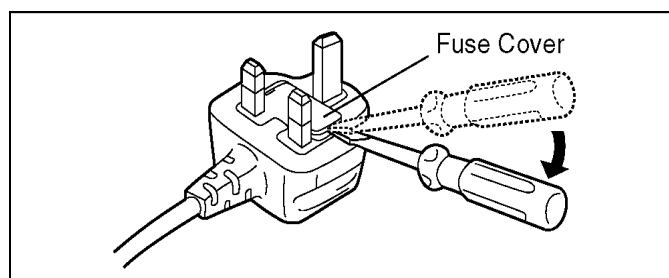
2.3.2.2. Before Use

Remove the Connector Cover as follows.

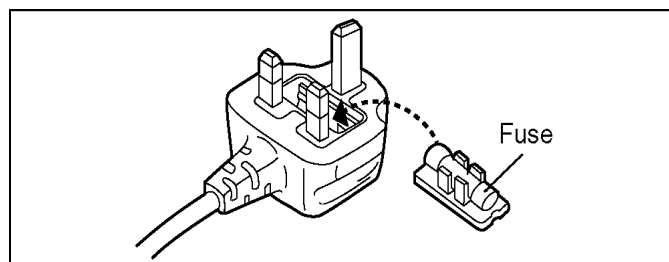


2.3.2.3. How to Replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



2. Replace the fuse and attach the Fuse cover.



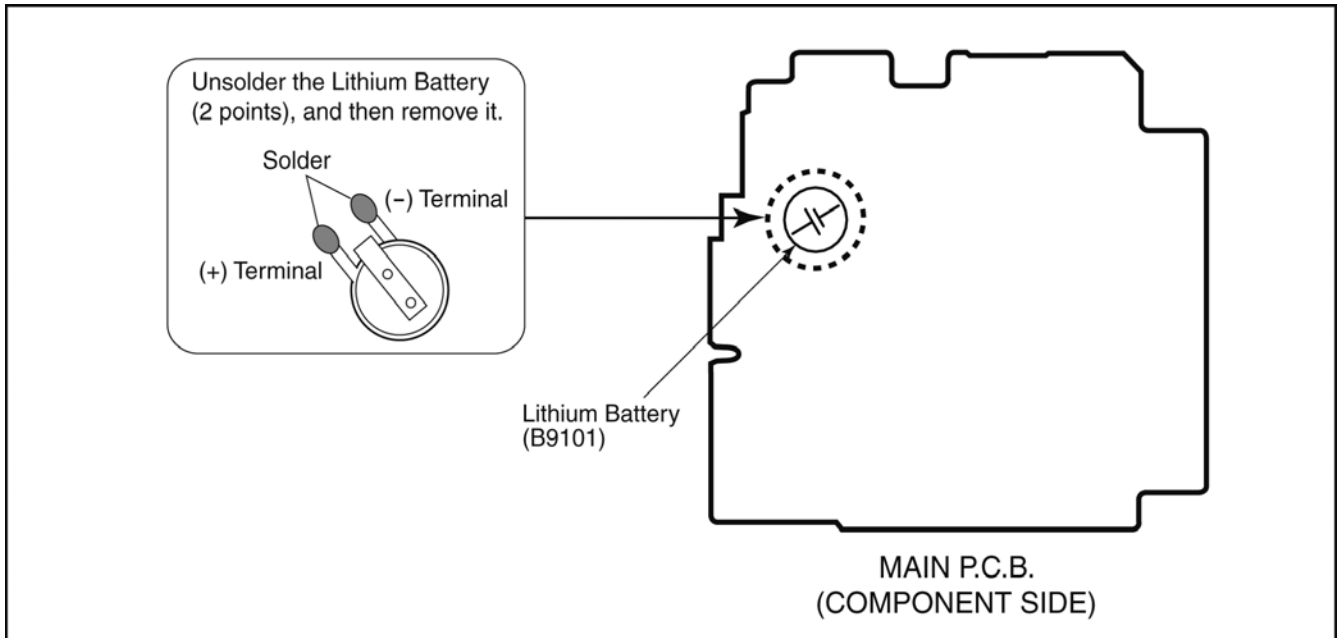
2.4. How to Replace the Lithium Battery

2.4.1. Replacement Procedure

1. Remove the MAIN P.C.B.. (Refer to Disassembly Procedures.)
2. Unsolder the each soldering point of electric lead terminal for Lithium battery (Ref. No. "B9101" at component side of MAIN P.C.B.) and remove the Lithium battery together with electric lead terminal. Then replace it into new one.

NOTE:

The Type No. ML421 includes electric lead terminals.



NOTE:

This Lithium battery is a critical component.

(Type No.: ML421 **Manufactured by Energy Company, Panasonic Corporation.**)

It must never be subjected to excessive heat or discharge.

It must therefore only be fitted in requirement designed specifically for its use.

Replacement batteries must be of same type and manufacture.

They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.

Do not attempt to re-charge the old battery or re-use it for any other purpose.

It should be disposed of in waste products destined for burial rather than incineration.

(For English)

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.

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

(For German)

ACHTUNG

Explosionsgefahr bei falschem Anbringen der Batterie. Ersetzen Sie nur mit einem äquivalentem vom Hersteller empfohlenem Typ.

Behandeln Sie gebrauchte Batterien nach den Anweisungen des Herstellers.

(For French)

MISE EN GARDE

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

NOTE:

Above caution is applicable for a battery pack which is for DMC-FP3 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:(Other than U.S.A. and Canadian Market)

1. The service manual does not contain the following information because of issues servicing to component level without necessary equipment/facilities.
 - a. Schematic diagram, Block Diagram and P.C.B. layout of MAIN P.C.B. and SUB OPERATION P.C.B..
 - b. Parts list for individual parts for MAIN P.C.B. and SUB OPERATION P.C.B..When a part replacement is required for repairing MAIN P.C.B. and/or SUB OPERATION P.C.B., replace as an assembled parts. (MAIN P.C.B. / SUB OPERATION P.C.B.)
2. The following category is/are recycle module part. please send it/them to Central Repair Center.
 - MAIN P.C.B. (VEP56095A): Excluding replacement of Lithium Battery
 - SUB OPERATION P.C.B. (VEP59073A)

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

There are seven kinds of DMC-FP3, regardless of the colours.

- a) DMC-FP3P/PC
- b) DMC-FP3EB/EG/EP
- c) DMC-FP3EE
- d) DMC-FP3GT
- e) DMC-FP3GK
- f) DMC-FP3GN
- g) DMC-FP3PU/GC/GF/GH

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-FP3P/PC
The nameplate for these models show the following Safety registration mark.



b) DMC-FP3EB/EG/EP
The nameplate for these models show the following Safety registration mark.



c) DMC-FP3EE
The nameplate for this model show the following Safety registration mark.



d) DMC-FP3GT
The nameplate for this model show the following Safety registration mark.



e) DMC-FP3GK
The nameplate for this model show the following Safety registration mark.



f) DMC-FP3GN
The nameplate for this model show the following Safety registration mark.



g) DMC-FP3PU/GC/GF/GH
The nameplate for these models do not show any above Safety registration mark.

NOTE:

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

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

3.4.2. INITIAL SETTINGS:

After replacing the MAIN P.C.B., be 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. ---

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

(Model suffix : "P/EG/PU/GC/GT/GK/EB/EE/GN/PC/GH/EP and GF")

*.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, EB, EE and EP" models]

*.When one of the "EG, EB, EE and EP" has been chosen, only "EG, EB, EE and EP" 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.

2. PROCEDURES:

- Precautions: Read the above "CAUTION 1" and "CAUTION 2", carefully.

- Preparation:

1. Attach the Battery or AC Adaptor with a DC coupler to the unit.

(Since this unit has built-in memory, it can be performed without inserting SD memory card.)

2. Set the recording mode to the [NORMAL PICTURE] mode.

(Press the [MODE] button and select the [NORMAL PICTURE] by touching the Touch Panel.)

NOTE:

If the unit is other than [NORMAL PICTURE] mode, it does not display the initial settings menu.

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

While keep turning the Zoom Lever to [Wide] and pressing [iA] button simultaneously, turn the Power on.

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

Press the [PLAYBACK] button to "Playback Mode".

Press the [iA] button and [MODE] button simultaneously, then turn the Power off.

- **Step 3. Turn the Power on:**

Turn the Power on.

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

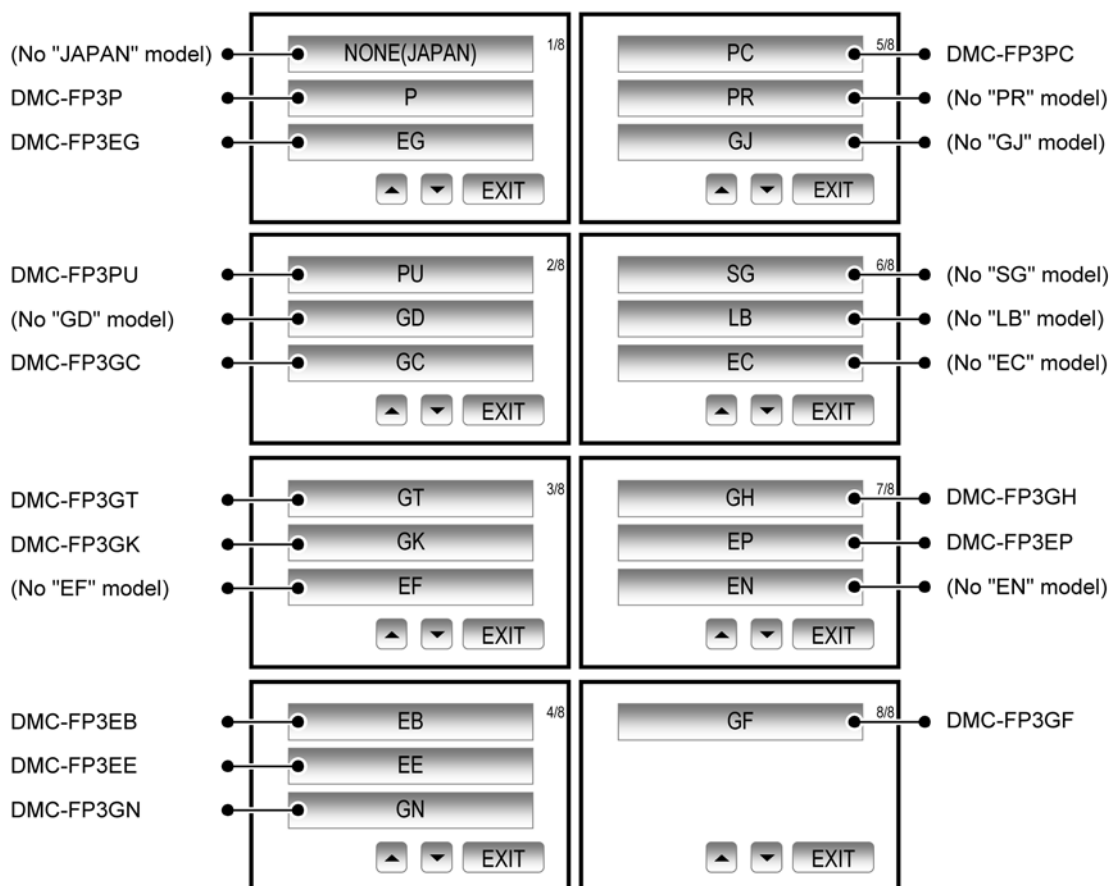
While keep turning the Zoom Lever to [Tele] and pressing [MENU] button simultaneously, turn the Power off.

The "INITIAL SETTINGS" menu is displayed.

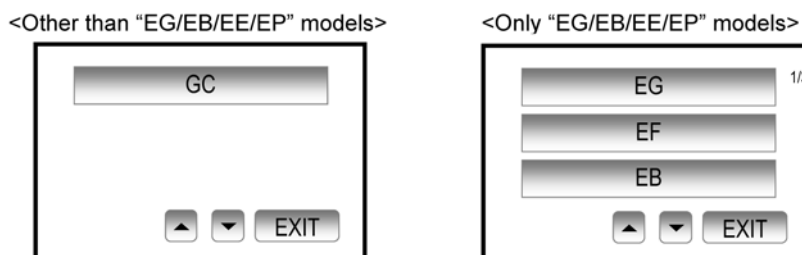
There are two kinds of "INITIAL SETTINGS" menu form as follows:

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

When MAIN P.C.B. has just been replaced, all of the model suffix is displayed as follows. (Eight pages in total)



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



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

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

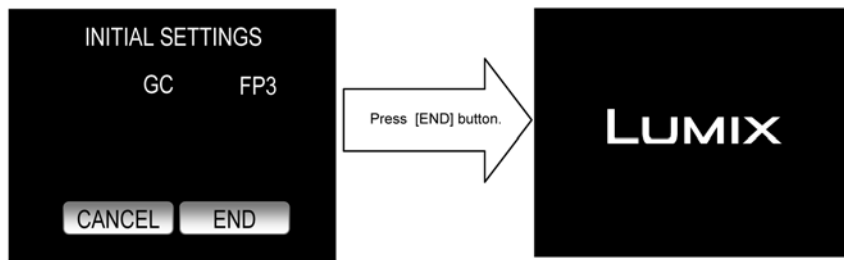
The model suffix can be chosen, **JUST ONE TIME**.

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

Therefore, select the area carefully.

Select the page by [UP] / [DOWN] of Touch Panel or [Wide] / [Tele] of Zoom Lever, and then select the area by touching the Touch Panel.

- **Step 6. Set the model suffix in “INITIAL SETTINGS”:**
- The only set area is displayed, and then select the [END] by touching the Touch Panel.
(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-FP3P	NTSC	English	Month/Date/Year	
b)	DMC-FP3EG	PAL	English	Date/Month/Year	
c)	DMC-FP3PU	NTSC	English	Month/Date/Year	
d)	DMC-FP3GC	PAL	English	Date/Month/Year	
e)	DMC-FP3GT	NTSC	Chinese (traditional)	Year/Month/Date	
f)	DMC-FP3GK	PAL	Chinese (simplified)	Year/Month/Date	
g)	DMC-FP3EB	PAL	English	Date/Month/Year	
h)	DMC-FP3EE	PAL	Russian	Date/Month/Year	
i)	DMC-FP3GN	PAL	English	Date/Month/Year	
j)	DMC-FP3PC	NTSC	English	Month/Date/Year	
k)	DMC-FP3GH	PAL	English	Date/Month/Year	
l)	DMC-FP3EP	PAL	English	Date/Month/Year	
m)	DMC-FP3GF	PAL	English	Date/Month/Year	

4 Specifications

Digital Camera: Information for your safety

Power Source	DC 5.1 V
Power Consumption	When recording: 1.0 W When playing back: 0.6 W
Camera effective pixels	14,100,000 pixels
Image sensor	1/2.33" CCD, total pixel number 14,500,000 pixels Primary color filter
Lens	Optical 4 x zoom f=6.3 mm to 25.2 mm (35 mm film camera equivalent: 35 mm to 140 mm) / F3.5 to F5.9
Digital Zoom	Max. 4 x
Extended Optical Zoom	Max. 8.4 x
Focus range	
Normal	50 cm (1.64 feet) to ∞
Macro / Intelligent Auto	10 cm (0.33 feet) (Wide) / 50 cm (1.64 feet) (Tele) to ∞
Scene Mode	There may be difference in above settings.
Shutter system	Electronic shutter + Mechanical shutter
Burst recording	
Burst speed	1.5 pictures/second
Number of recordable pictures	Until card/built-in memory is full
Hi-speed burst	
Burst speed	Approx. 4.6 pictures/second
Number of recordable pictures	Approx. 15 pictures (When using the built-in memory, immediately after formatting) Max. 100 pictures (When using a card, it may differ depending on the type of card and the recording conditions)
Shutter speed	8 to 1/1600 th [STARRY SKY] mode: 15 seconds, 30 seconds, 60 seconds
Exposure (AE)	AUTO (Program AE) Exposure compensation (1/3 EV Step, -2 EV to +2 EV)
Metering mode	Multiple
LCD monitor	3.0" TFT LCD (Approx. 230,400 dots) (field of view ratio about 100 %)

Flash	Flash range: (ISO  ISO) Approx. 30 cm (0.99 feet) to 4.9 m (16.08 feet) (Wide)
Microphone	Monaural
Speaker	Monaural
Recording media	Built-in Memory (Approx. 40 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 2.21 standard) / DPOF corresponding
Motion pictures	QuickTime Motion JPEG (motion pictures with audio)
Interface	Digital: USB 2.0 (Full Speed) Analog video / audio: NTSC Composit, Audio line output (Monaural)
Terminal	AV OUT / DIGITAL: Dedicated jack (8 pin) DC IN: Dedicated jack (2 pin)
Dimensions	Approx. 98.6 mm (W) x 58.9 mm (H) x 18.6 mm (D) [3.88" (W) x 2.32" (H) x 0.73" (D)] (excluding the projection part)
Mass	With card and battery: Approx. 145 g (0.32 lb) Excluding card and battery: Approx. 125 g (0.28 lb)
Operating temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating humidity	10 % to 80 %

Battery charger: Information for your safety

Input	110 V to 240 V 50/60Hz, 0.2 A
Output	4.2 V --- 0.65 A (Battery charging)

Equipment mobility: Movable

Battery Pack (lithium-ion): Information for your safety

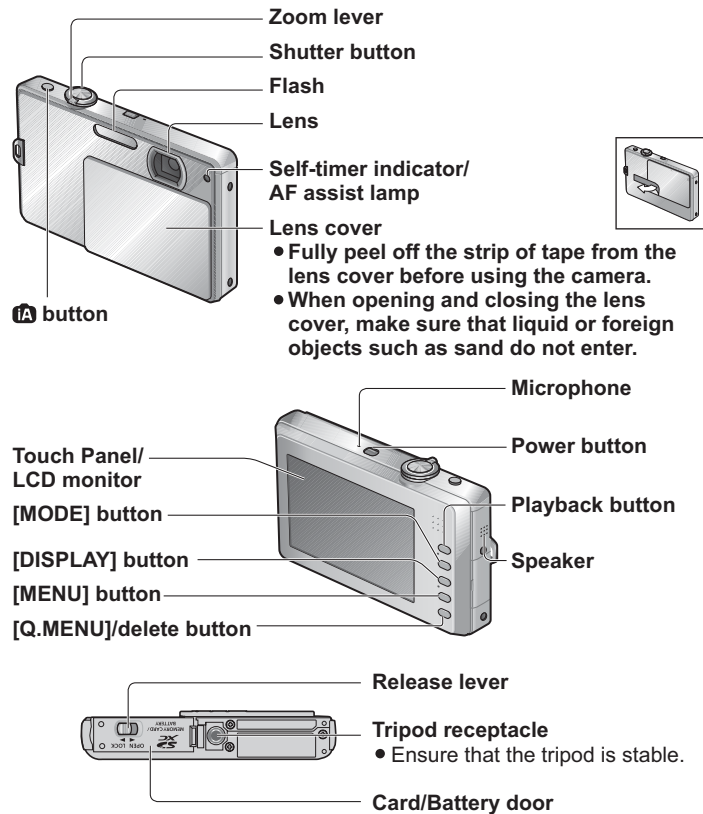
Voltage/capacity	3.7 V / 695 mAh
-------------------------	-----------------

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

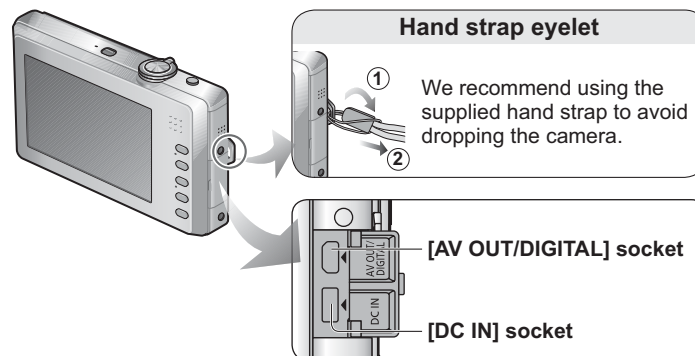
- Data from the PC can not be written to the camera using the USB connection cable.
- Motion pictures can be recorded continuously for up to 15 minutes.
The maximum continuous recording time (up to 15 minutes) is displayed on the screen.

5 Location of Controls and Components

Names of parts



- We recommend you use a battery with sufficient battery power or the AC adaptor when recording motion pictures.

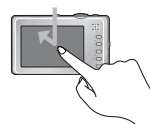


- Always use a genuine Panasonic AC adaptor.
- If while recording motion pictures using the AC adaptor the power supply is cut off due to a power cut or if the AC adaptor is disconnected etc., the motion picture being recorded will not be recorded.

Touch operations

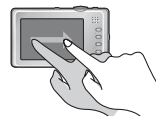
■ Touch

To "touch" is to press the touch panel and then pull the finger back again.



■ Drag

To "drag" is to touch and slide your finger across the touch panel surface.



■ Effective range of touching

Touch operations do not work at the edge of the screen.



Detection area of the sensor (approximation)

- During touch operations, hold the camera securely so it does not drop.

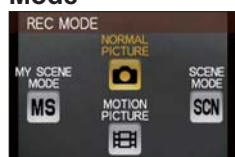
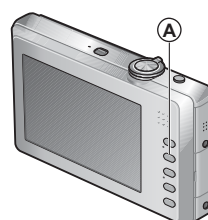
Selecting the [REC] mode

1 Open the lens cover

The power is turned on.

2 Press the [MODE] button (A)

3 Touch the desired Recording Mode



	[NORMAL PICTURE] Mode Take pictures with your own settings.
MS	[MY SCENE MODE] Take pictures in commonly used Scene Modes.
SCN	[SCENE MODE] Take pictures according to scene.
	[MOTION PICTURE] Mode Take motion pictures.

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 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 or AC Adaptor with a DC coupler to the unit.

NOTE:

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

*It is not a matter of the setting condition of Recording mode (such as "normal picture/scene/motion picture" mode) to display the error code.

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

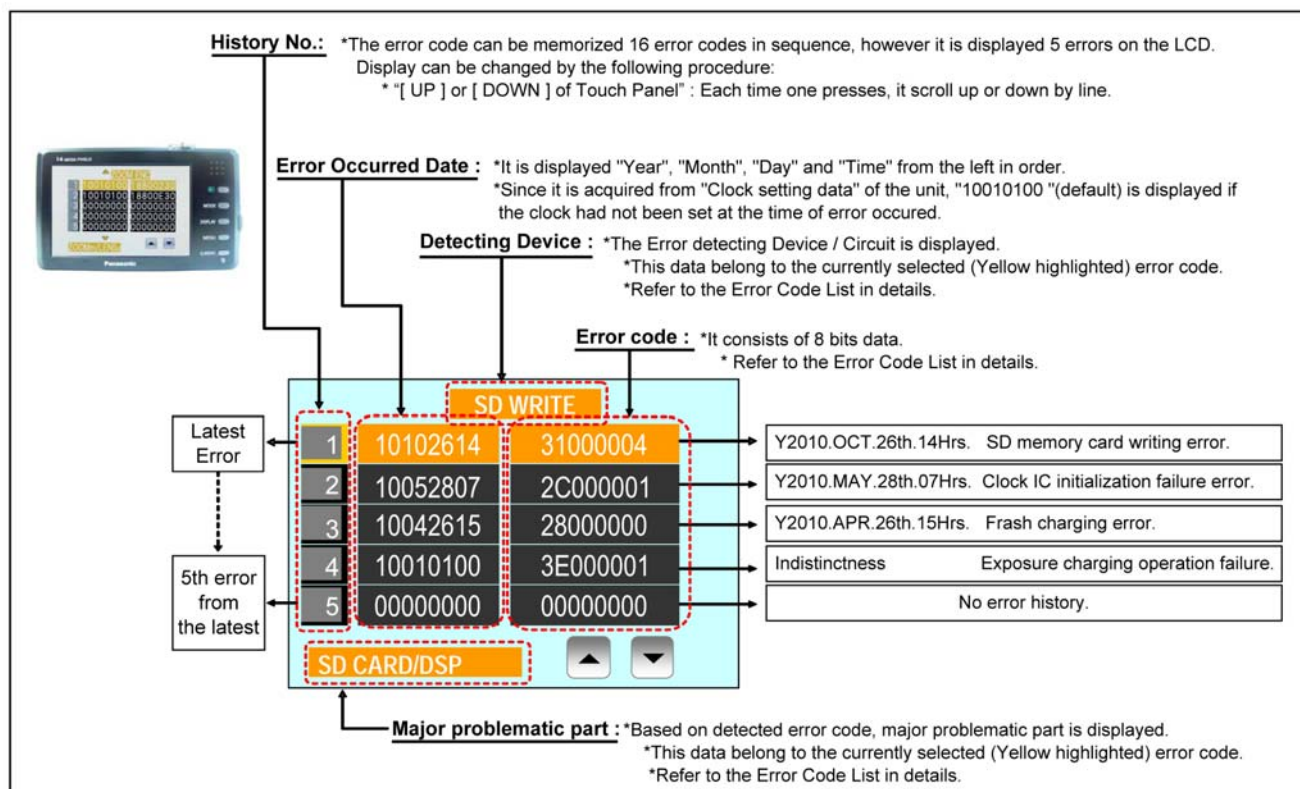
While keep turning the Zoom Lever to [Wide] and pressing [iA] button simultaneously, turn the Power on.

• Step 2. Execute the error code display mode:

Turn the Zoom Lever to [Wide] and press the [iA] button and [MENU] button simultaneously.

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

Normal display → Error code display → Operation history display → 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	Err code		Contents (Upper line)	Error Indication		
			High 4 bits	Low 4 bits	Problematic Part & Check point (Lower line)	Detecting device	Problematic Part/Circuit	
LENS	Lens drive	OIS	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 (IC9701: X axis) detect error on Sub Operation P.C.B.. IC9701 (Gyro element) or IC6001 (VENUS 4)	GYRO X	GYRO NG		
			4000	GYRO (Y) error. Gyro (IC9701: Y axis) detect error on Sub Operation P.C.B.. IC9701 (Gyro element) or IC6001 (VENUS 4)	GYRO Y			
			5000	MREF error (Reference voltage error). IC9101 (SYSTEM) or IC6001 (VENUS 4)	OIS REF	LENSSd/DSP NG		
			6000	Drive voltage (X) error. LENS Unit, LENS flex breaks, IC6001 (VENUS 4) AD value error, etc.	OISX REF	LENSu/LENS FPC		
			7000	Drive voltage (Y) error. LENS Unit, LENS flex breaks, IC6001 (VENUS 4) AD value error, etc.	OISY REF			
			Zoom	0710	Collapsible barrel Low detect error (Collapsible barrel encoder always detects Low.) Mechanical lock, FP9002-(9) signal line or IC6001 (VENUS 4)	ZOOM L	ZOOMm/LENSu	
					0720	Collapsible barrel High detect error (Collapsible barrel encoder always detects High.) Mechanical lock, FP9002-(9) signal line or IC6001 (VENUS 4)		ZOOM H
				0730	Zoom motor sensor error. Mechanical lock, FP9002-(21) signal line or IC6001 (VENUS 4)	ZOOM ENC		
				0740	Zoom motor sensor error. (During monitor mode.) Mechanical lock, FP9002-(21) signal line or IC6001 (VENUS 4)			
				0750	Zoom motor sensor error. (During monitor mode with slow speed.) Mechanical lock, FP9002-(21) signal line or IC6001 (VENUS 4)			
				0760	Detection of zoom misregistration by impact such as falls. Lens Unit		(No indication)	(No indication)
			Focus	0701	HP High detect error (Focus encoder always detects High, and not becomes Low) Mechanical lock, FP9002-(9) signal line or IC6001 (VENUS 4)	FOCUS L	LENS FPC/DSP	
		0702			HP Low detect error (Focus encoder always detects Low, and not becomes High) Mechanical lock, FP9002-(9) signal line or IC6001 (VENUS 4)	FOCUS H		
		Lens	18*1	0000	Power ON time out error. Lens drive system	LENS DRV	LENSu	
			18*2	0000	Power OFF time out error. Lens drive system			
		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)		
					6000	OIS adj. MREF error		
					7000	OIS adj. time out error		
					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 charging error. IC6001-(AC17) signal line or Flash charging circuit	STRB CHG	STRB PCB/FPC	
	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 SD memory card.	(No indication)	(No indication)	
				0008 0009	SDRAM error SDRAM Mounting defective			
	SYSTEM	RTC	2C*0	0001	SYSTEM IC initialize failure error Communication between IC6001 (VENUS 4) and IC9101 (SYSTEM)	SYS INIT	MAIN PCB	
	SOFT	CPU	Reset	30*0	0001 0007	NMI reset Non Mask-able Interrupt (30000001-30000007 are caused by factors)	NMI RST	MAIN PCB
Card		Card	31*0	0001	Card logic error SD memory card data line or IC6001 (VENUS 4)	SD CARD	SD CARD/DSP	
				0002	Card physical error SD memory card data line or IC6001 (VENUS 4)			
				0004	Write error SD memory card data line or IC6001 (VENUS 4)	SD WRITE		
				39*0	0005	Format error	INMEMORY	FROM
CPU, ASIC hard		Stop	38*0	0001	Camera task finish process time out. Communication between Lens system and IC6001 (VENUS 4)	LENS COM	LENSu/DSP	
				0002	Camera task invalid code error. IC6001 (VENUS 4)	DSP	DSP	
				0100	File time out error in recording motion image IC6001 (VENUS 4)			
				0200	File data cue send error in recording motion image IC6001 (VENUS 4)			
				0300	Single or burst recording brake time out.			
				Memory area	3A*0	0008	USB work area partitioning failure USB dynamic memory securing failure when connecting	(No indication)
		Operation Zoom	Power on Zoom	3B*0	0000	FLASHROM 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.	(No indication)	(No indication)	
35*2				0000	Though record preprocessing is necessary, it is not completed.			

Important notice about "Error Code List"

1) About "*" indication:

The third digit from the left is different as follows.

- In case of 0 (example: 18001000)

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

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

- In case of 8 (example: 18801000)

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

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

It means that this error is occurred at service side.

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

6.2. ICS (Indication of additional Camera Settings when picture was taken) function

1. General description

This unit is equipped with ICS (ICS: Indication of additional Camera Settings when picture was taken) function by playing back the concerned picture on the LCD display.

(This function is achieved by utilizing "maker note" data stored in Exif data area of recorded picture file.)

To proceed failure diagnosis, use this ICS function together with "displaying the recorded picture with picture information" function.

NOTE:

- The ICS function operates with a picture which is only taken with the same model. (It may not be displayed when the picture was taken with other model.)
- Since Exif data is not available after the picture is edited by PC, the ICS function may not be activated.

2. How to display

The ICS data is displayed by ordering the following procedure:

• Preparation:

1. Attach the Battery or AC Adaptor with a DC coupler to the unit.

NOTE:

It is not a matter or the setting condition of Recording mode (such as "normal picture/scene/motion picture" mode) to display the ICS data.

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

While keep turning the Zoom Lever to [Wide] and pressing [iA] button simultaneously, turn the Power on.

• Step 2. Execute the ICS display mode:

Press the [PLAYBACK] button to "Playback Mode".

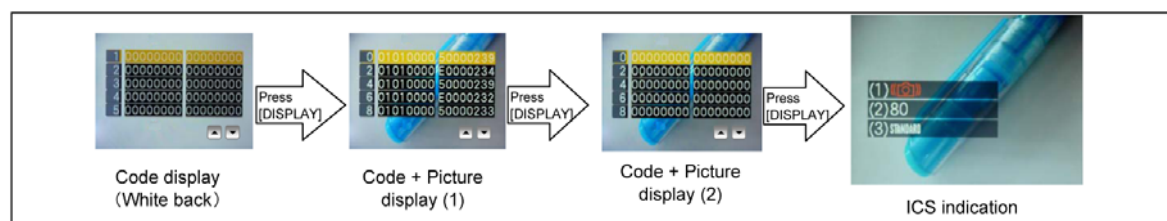
Select the concerned picture by [LEFT] / [RIGHT] of Touch Panel.

Turn the Zoom Lever to [Wide] and press the [iA] button and [MENU] button simultaneously.

Press the [DISPLAY] button, 3 times.

The display condition is changed as shown below when the [DISPLAY] button is pressed.

Code display → Code + Picture display (1) → Code + Picture display (2) → ICS display → Code display



3. How to read

(1). Jitter alert was displayed or not:

This part shows that the "Jitter alert" mark was displayed or not when the picture has just before been taken.

- +With "Jitter alert" mark : The "Jitter alert" mark was displayed.
- +Without "Jitter alert" mark: The "Jitter alert" mark was not displayed.

[About "Jitter alert" mark]

Due to lacking the enough light amount etc, shooting condition prone to make a "hand jitter", the "Jitter alert" mark is displayed.

[Reference Guide]

(Applicable settings : Normal picture mode, ISO100, WIDE edge, Flash OFF)

- +The "Jitter alert" mark is displayed when the shutter speed is 1/15th and below.

Normal playback screen
(Recorded picture with information)



*In playback mode, the picture information is displayed when pressing the [DISPLAY] button.
(It can be confirmed at user as well.)

*Use this indication together with ICS function

(2). ISO Sensitivity Setting condition:

This part shows that the "ISO Sensitivity" setting condition when the picture had been taken.

(Note: The [i ISO] is displayed when the "Intelligent ISO" was selected.)

For instance, when the recorded picture information shows [ISO80], it can be confirmed the ISO setting condition ; [AUTO], [INTELLIGENT ISO] or [ISO 80](Fixed: set by user).

[Point for Confirmation]

- *The symptom is "Picture with "hand jitter". Subject is not clearly stopped." in darker scene, does the picture was taken with lower ISO setting mode?
- *The symptom is "Noisy picture. Rough picture image" in brighter scene, does the picture was taken with higher ISO setting mode?

(3). Color mode Setting condition:

This part shows that the "Color mode" setting condition when the picture had been taken.

[Point for Confirmation]

- *The symptom is "Color is strange. The picture is bluish (Yellowish) ", does the picture was taken with [SEPIA] / [COOL] / [WARM] settings?

NOTE: As for the symptom related with the color, confirm the picture information which is displayed in normal playback screen as well.

(In normal playback screen, the setting condition of "White balance" and "WB Adjustment "can be confirmed.)

[Reference Guide : Settings "When taking picture"]

<ISO SENSITIVITY>

- *This allows the sensitivity to light (ISO sensitivity) to be set. Setting to a higher figure enables pictures to be taken even in dark places without the resulting pictures coming out dark.
- *In this unit, it can be set one of the [i ISO], [80], [100], [200], [400], [800] and [1600] in "Normal shooting" mode.
- *When setting to [i ISO], the ISO sensitivity is automatically adjusted to a maximum of [ISO1600] according to the brightness.
- *To avoid picture noise, we recommend that you either reduce the ISO sensitivity level or set [COLOR MODE] to [NATURAL], and then take pictures.

ISO sensitivity	80		1600
Recording location (recommended)	When it is light (outdoors)		When it is dark
Shutter speed	Slow		Fast
Noise	Less		Increased

<COLOR MODE>

- *Using these modes, the pictures can be made sharper or softer, the colors of the pictures can be turned into sepia colors or other color effects can be achieved.
- *In this unit, it can be set one of the following effects in "Normal shooting" mode.

[STANDARD] : This is the standard setting.	[B/W] : The picture becomes black and white.
[NATURAL] : The picture becomes softer.	[SEPIA] : The picture becomes sepia.
[VIVID] : The picture becomes sharper.	[COOL] : The picture becomes bluish.
	[WARM] : The picture becomes reddish.

NOTE: You cannot set [NATURAL], [VIVID], [COOL] or [WARM] in Intelligent auto mode.

*When you take pictures in dark places, noise may become visible. To avoid noise, we recommend setting to [NATURAL].

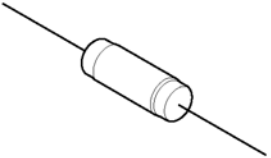
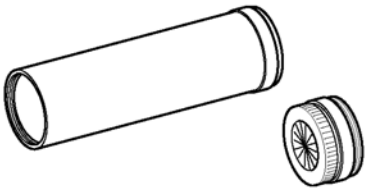
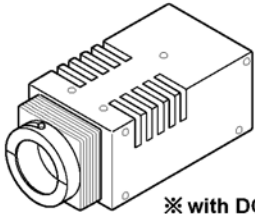
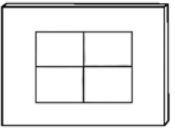
4. How to exit:

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

7 Service Fixture & Tools

7.1. 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.
TR Chart RFKZ0443	Lens Cleaning Kit (BK) VFK1900BK	
	 * Only supplied as 10 set/box.	

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

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

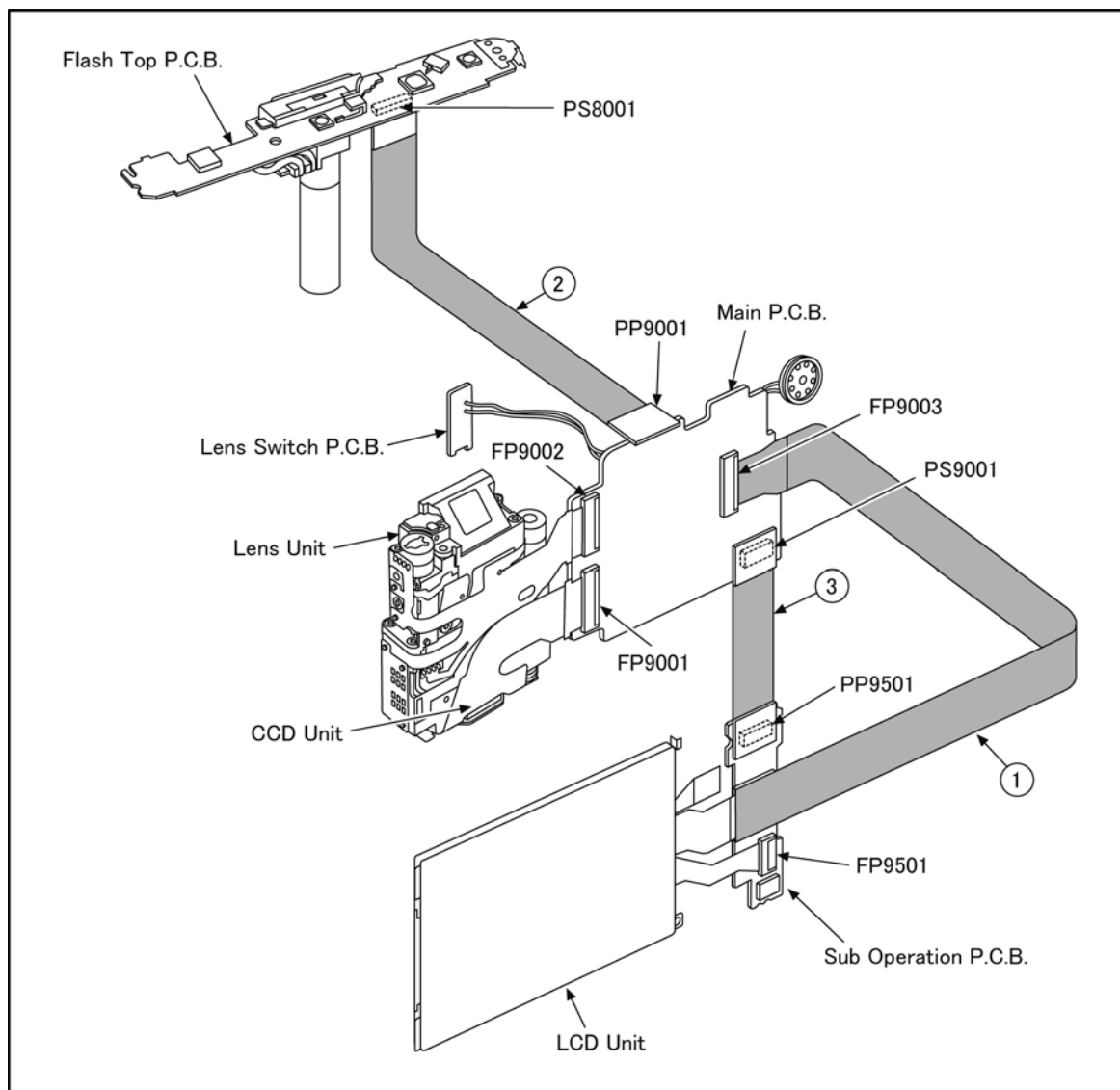
The adjustment instruction is available at "software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system", together with Maintenance software.

7.3. Service Position

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

Table S1 Extension Cable List

No.	Parts No.	Connection	Form
1	RFKZ0416	FP9003 (MAIN) - LCD UNIT	41PIN 0.3 FFC
2	RFKZ0418	PP9001 (MAIN) - PS8001 (FLASH TOP)	30PIN B to B
3	RFKZ0548	PS9001 (MAIN) - PP9501 (SUB OPERATION)	20PIN B to B



CAUTION-1. (When servicing E.CAPACITOR P.C.B.)

1. Be sure to discharge the capacitor on E.CAPACITOR P.C.B..

Refer to "HOW TO DISCHARGE THE CAPACITOR ON E.CAPACITOR P.C.B..".

The capacitor voltage is not lowered soon even if the AC Cord is unplugged or the battery is removed.

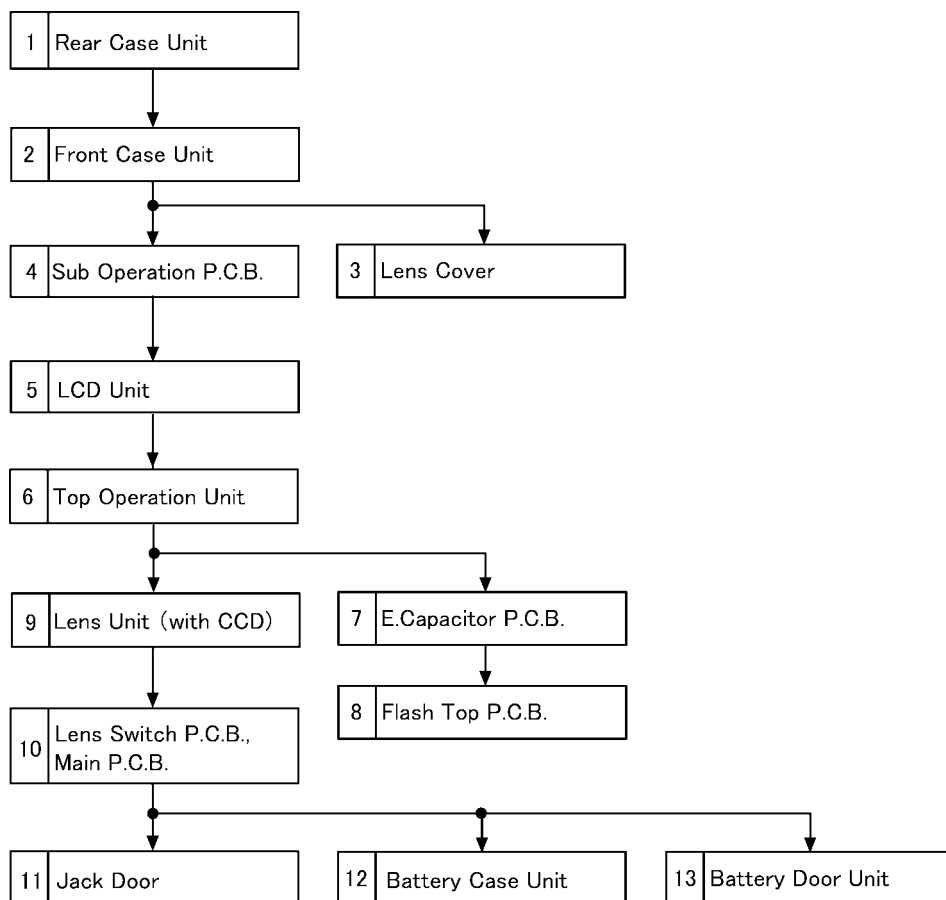
2. Be careful of the high voltage circuit on E.CAPACITOR P.C.B..
3. DO NOT allow other parts to touch the high voltage circuit on E.CAPACITOR P.C.B..

8 Disassembly and Assembly Instructions

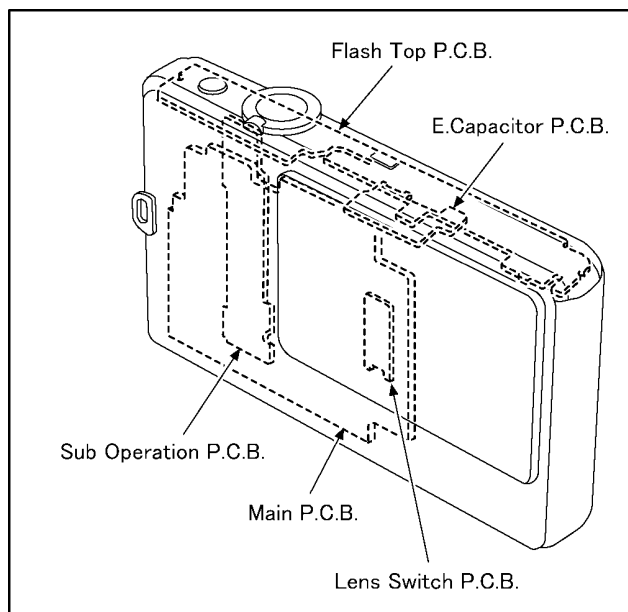
8.1. Disassembly Flow Chart

This is a disassembling chart.

When assembling, perform this chart conversely.



8.2. PCB Location



8.3. Disassembly Procedure

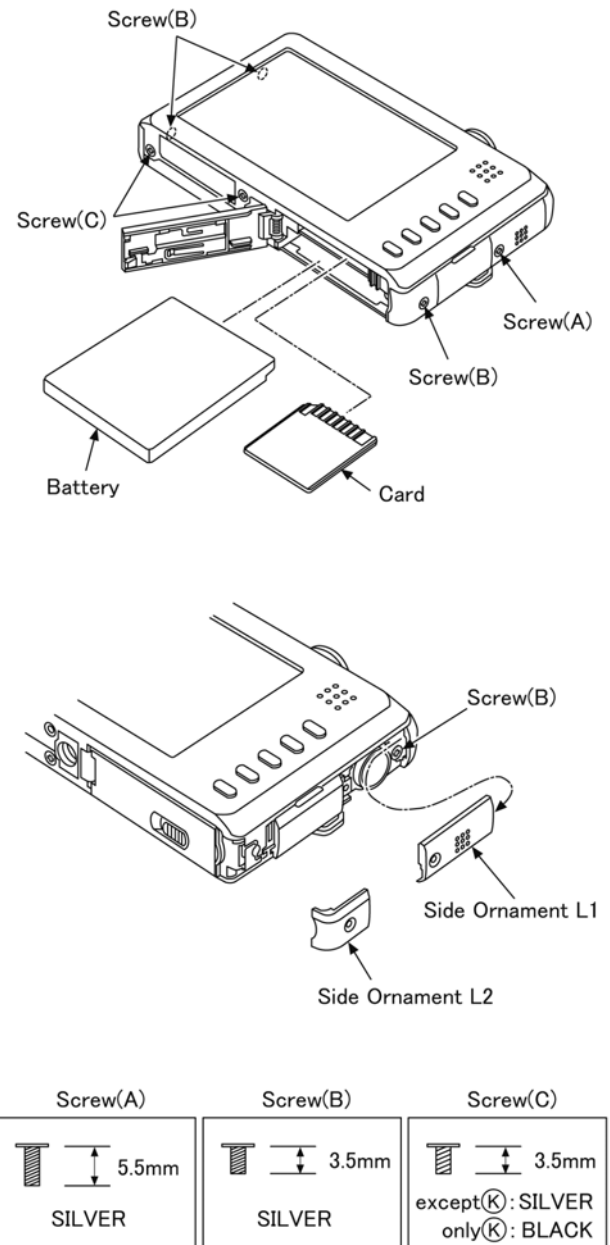
No.	Item	Fig	Removal
1	Rear Case Unit	(Fig. D1)	Card
			Battery
			1 Screw (A)
			4 Screws (B)
			2 Screws (C)
			Side Ornament L1
			Side Ornament L2
		(Fig. D2)	Side Ornament (R)
			1 Screw (D)
			2 Locking tabs
			Rear Case Unit
2	Front Case Unit	(Fig. D3)	1 Screw (E)
			Strap Holder
			Front Case Unit
3	Lens Cover	(Fig. D4)	3 Screws (F)
			2 Hanging parts
		(Fig. D5)	1 Screw (G)
			Lens Cover Spring
			Lens Cover Angle
			Lens Cover Slide Angle
			Lens Cover
4	Sub Operation P.C.B.	(Fig. D6)	PP9501(Connector)
			FP9501(Flex)
			Sub Operation P.C.B.
5	LCD Unit	(Fig. D7)	2 Locking tabs
			PCB Spacer
			1 Screw (H)
		(Fig. D8)	2 Screws (I)
			Frame Plate
			FP9003(Flex)
			LCD Unit
6	Top Operation Unit	(Fig. D9)	PS8001(Connector)
			Top Operation Unit
7	E.Capacitor P.C.B.	(Fig. D10)	1 Screw (J)
			1 Hanging part
			1 Locking tab
			Capacitor Holder
			E.Capacitor P.C.B.
		(Fig. D11)	Discharge the Capacitor
8	Flash Top P.C.B.	(Fig. D12)	1 Screw (K)
			1 Locking tab
		(Fig. D13)	Mic Damper
			POWER Knob
			IA Knob
			Flash Top P.C.B.
9	Lens Unit (with CCD)	(Fig. D14)	FP9001(Flex)
			FP9002(Flex)
			Lens Unit
10	Lens Switch P.C.B. Main P.C.B.	(Fig. D15)	1 Locking tab
			Speaker
			1 Screw (L)
			Lens Switch P.C.B.
			Main P.C.B.
11	Jack Door	(Fig. D16)	Jack Door Shaft
			Jack Door
12	Battery Case Unit	(Fig. D17)	Battery Out Spring
			2 Locking tabs
13	Battery Door Unit	(Fig. D18)	Battery Case Unit
			Battery Door Shaft
			Battery Door Spring
			Battery Door Unit

8.3.1. Removal of the Rear Case Unit

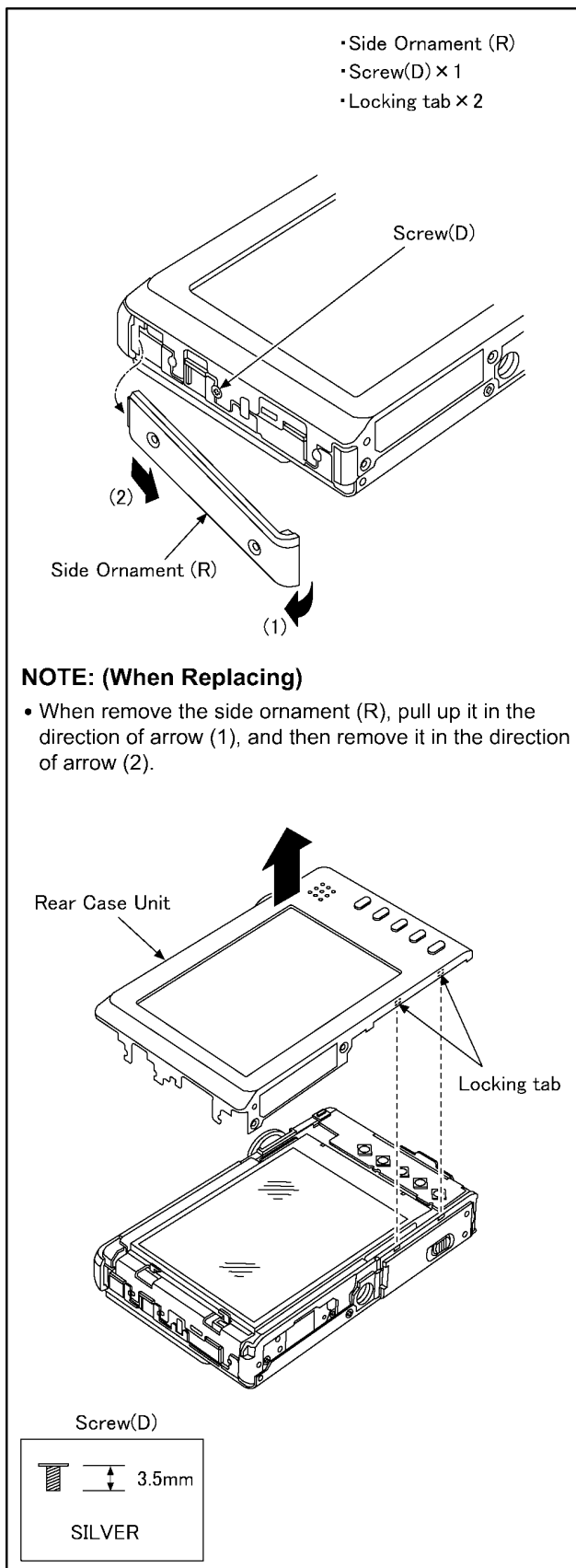
NOTE:

When servicing and reassembling, remove the card and battery from the unit.

- Card
- Battery
- Screw(A) × 1
- Screw(B) × 4
- Screw(C) × 2
- Side Ornament L1
- Side Ornament L2

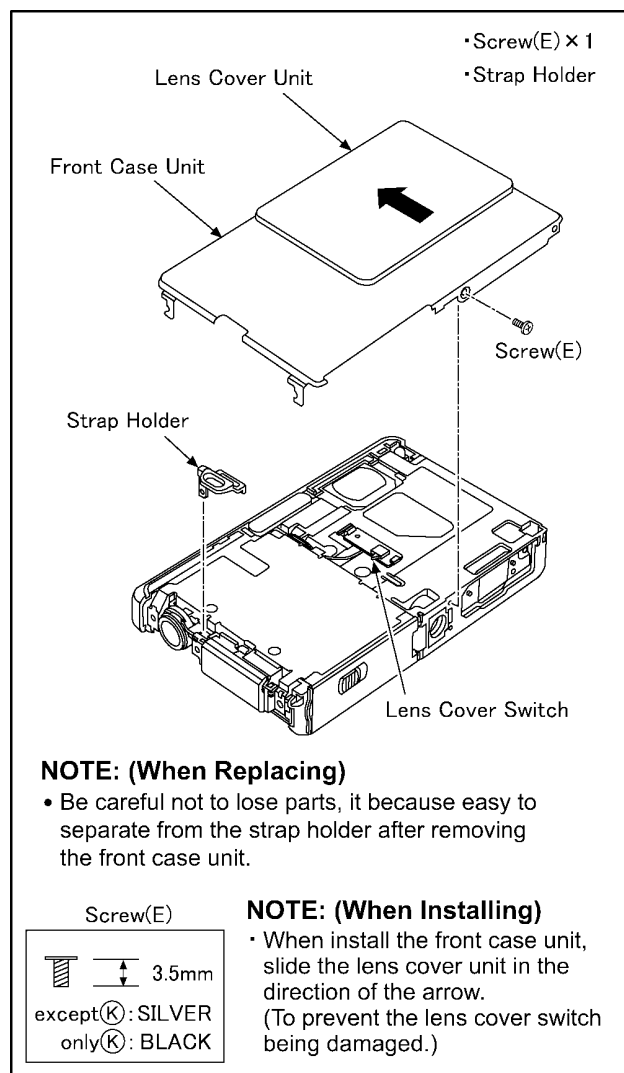


(Fig. D1)



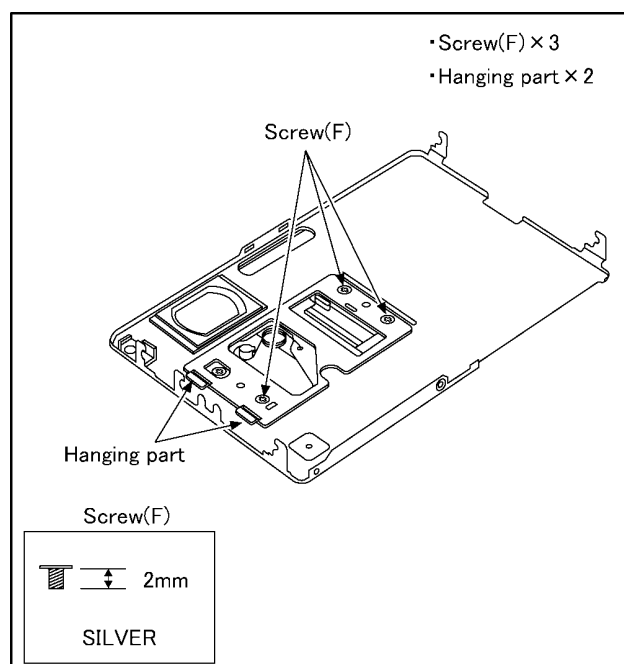
(Fig. D2)

8.3.2. Removal of the Front Case Unit

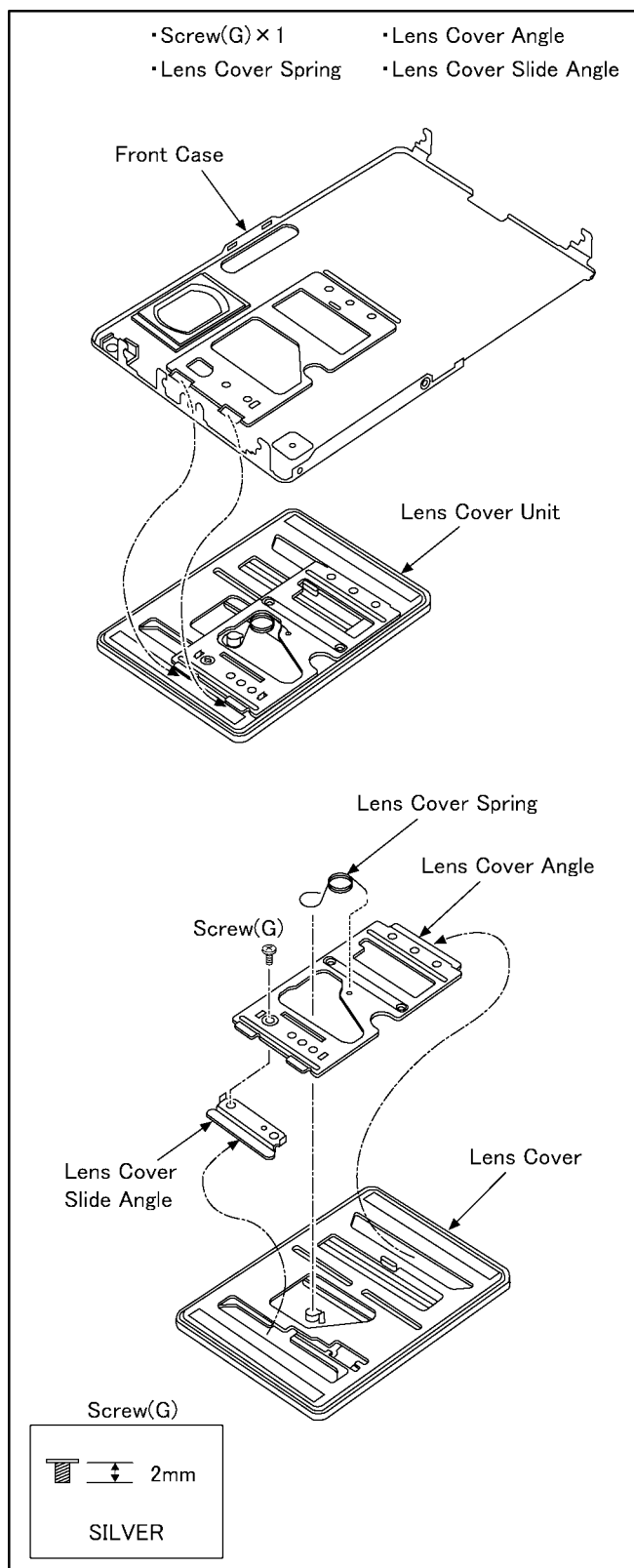


(Fig. D3)

8.3.3. Removal of the Lens Cover

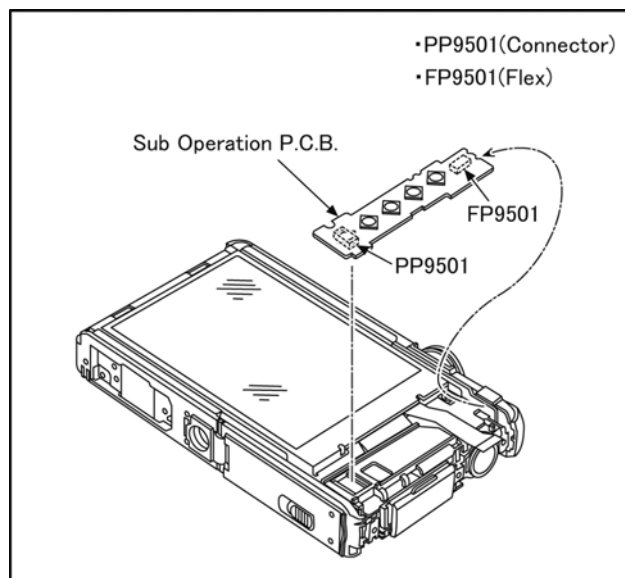


(Fig. D4)



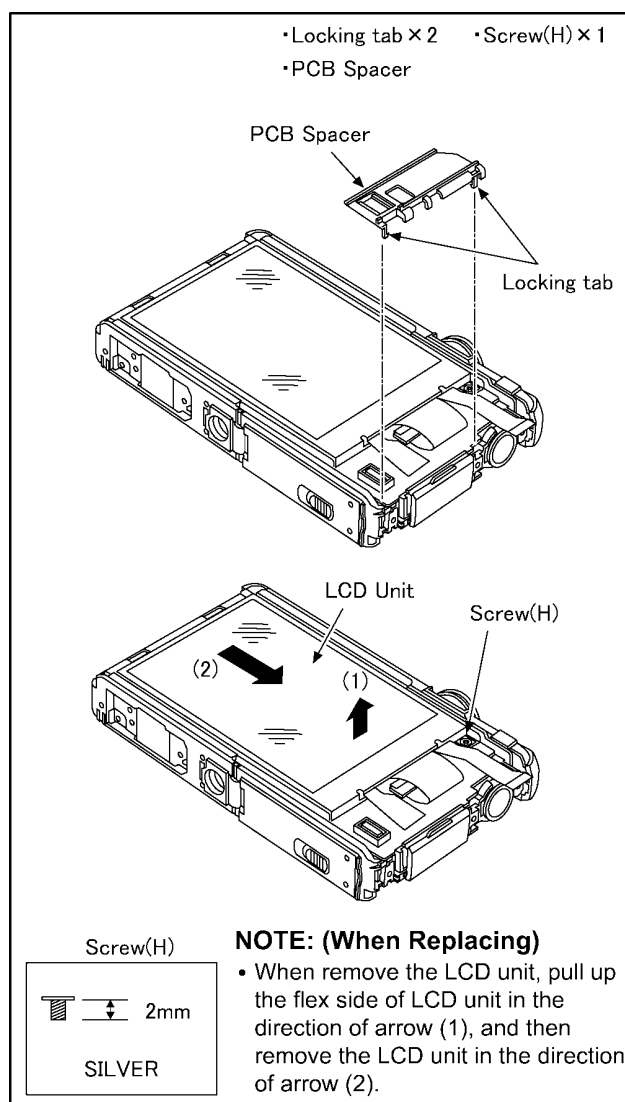
(Fig. D5)

8.3.4. Removal of the Sub Operation P.C.B.



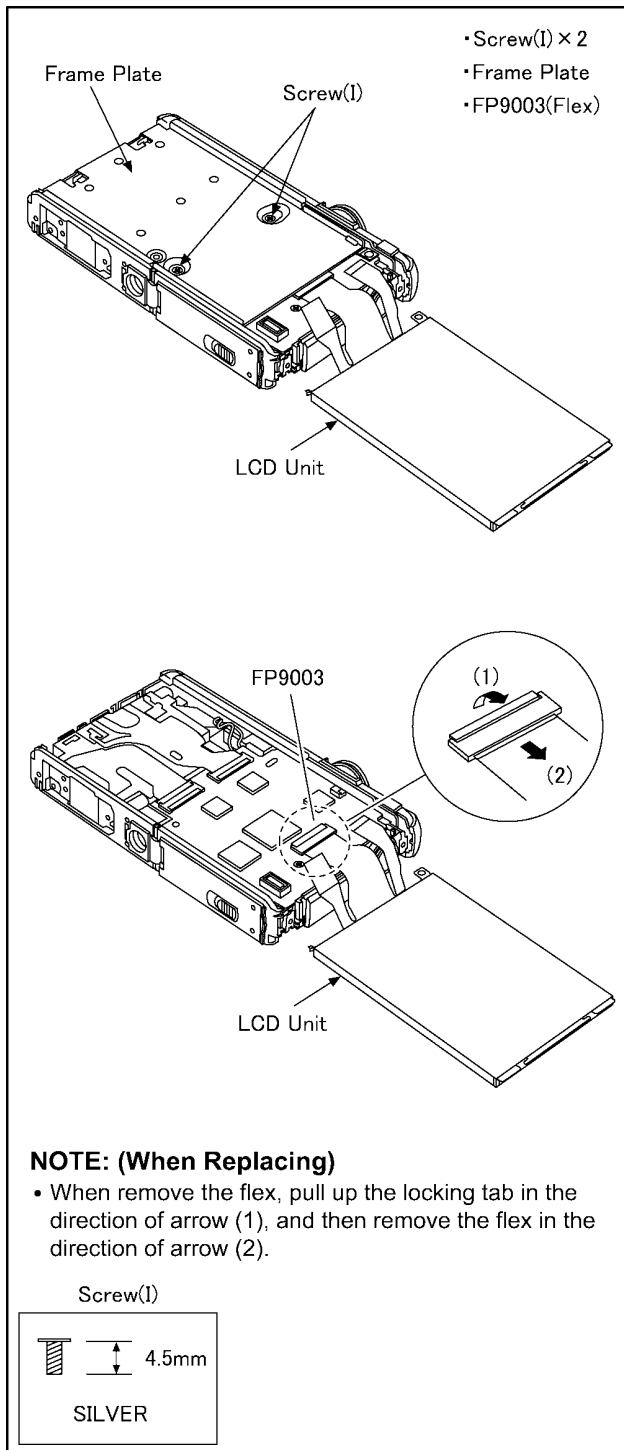
(Fig. D6)

8.3.5. Removal of the LCD Unit

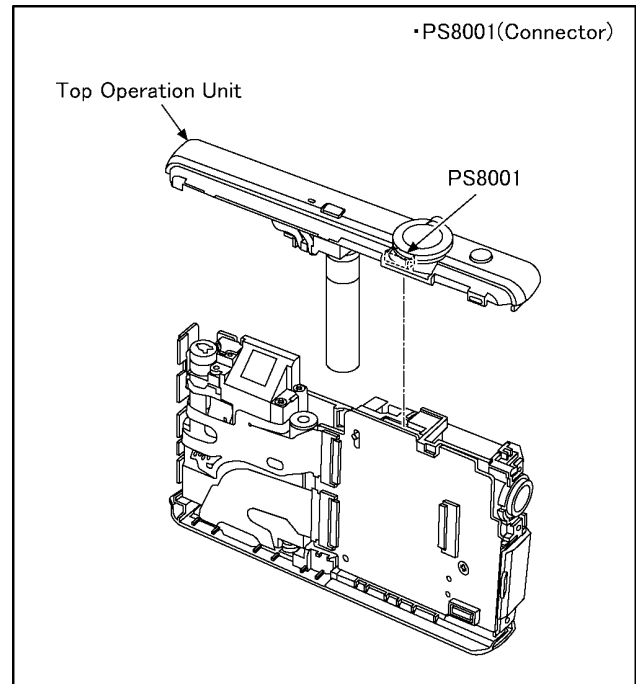


(Fig. D7)

8.3.6. Removal of the Top Operation Unit



(Fig. D8)



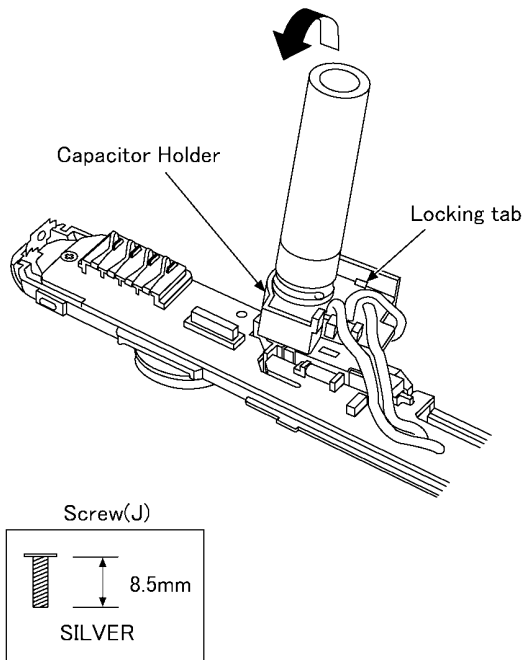
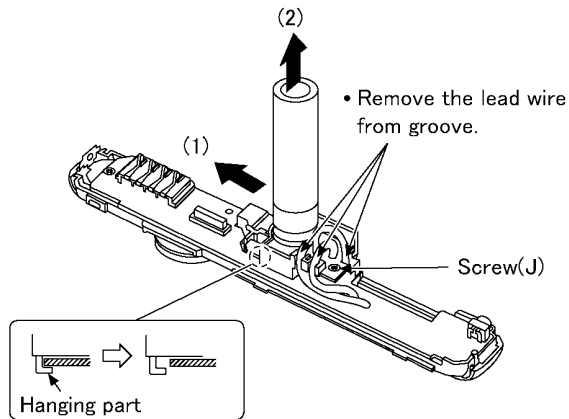
(Fig. D9)

8.3.7. Removal of the E.Capacitor P.C.B.

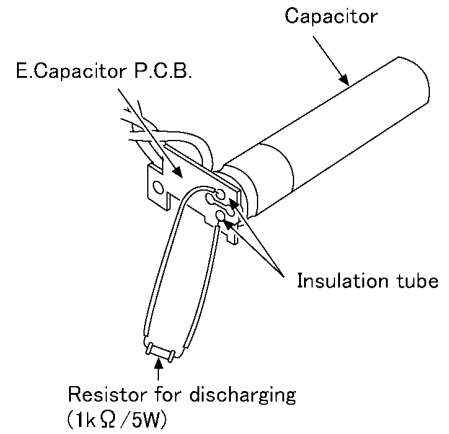
IMPORTANT NOTICE:

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

- Screw(J) × 1
- Locking tab × 1
- Hanging part × 1
- Capacitor Holder



(Fig. D10)



CAUTION

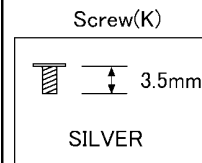
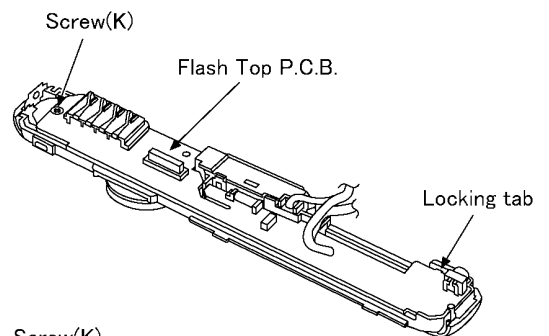
Be sure to discharge the capacitor on E.Capacitor P.C.B. before disassembling.

1. Remove the E.Capacitor P.C.B..
2. Put the insulation tube on the lead part of resistor (ERG5SJ102: 1kΩ/5W).
3. Put the resistor between both terminals of capacitor unit for approx. 5 seconds.

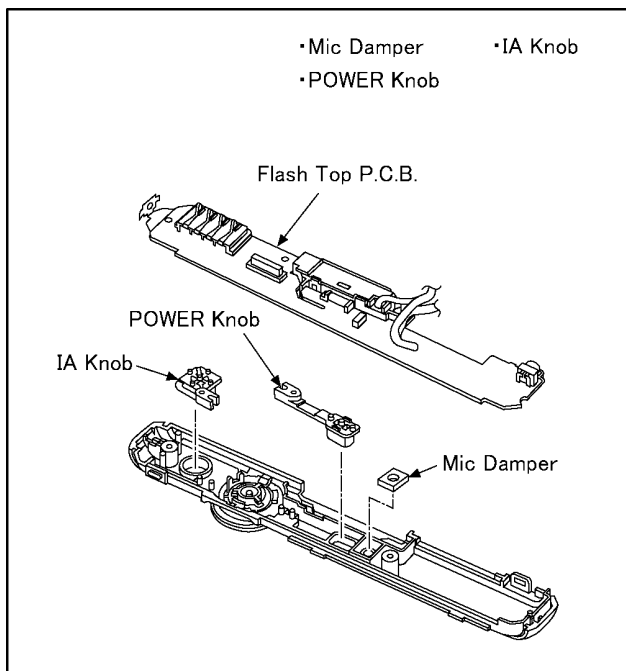
(Fig. D11)

8.3.8. Removal of the Flash Top P.C.B.

- Screw(K) × 1
- Locking tab × 1



(Fig. D12)



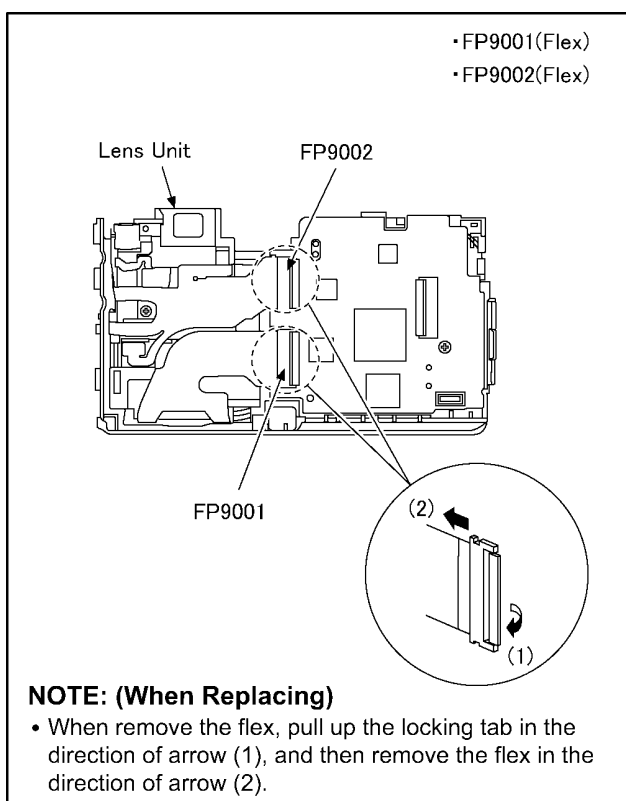
(Fig. D13)

8.3.9. Removal of the Lens Unit (with CCD)

NOTE:

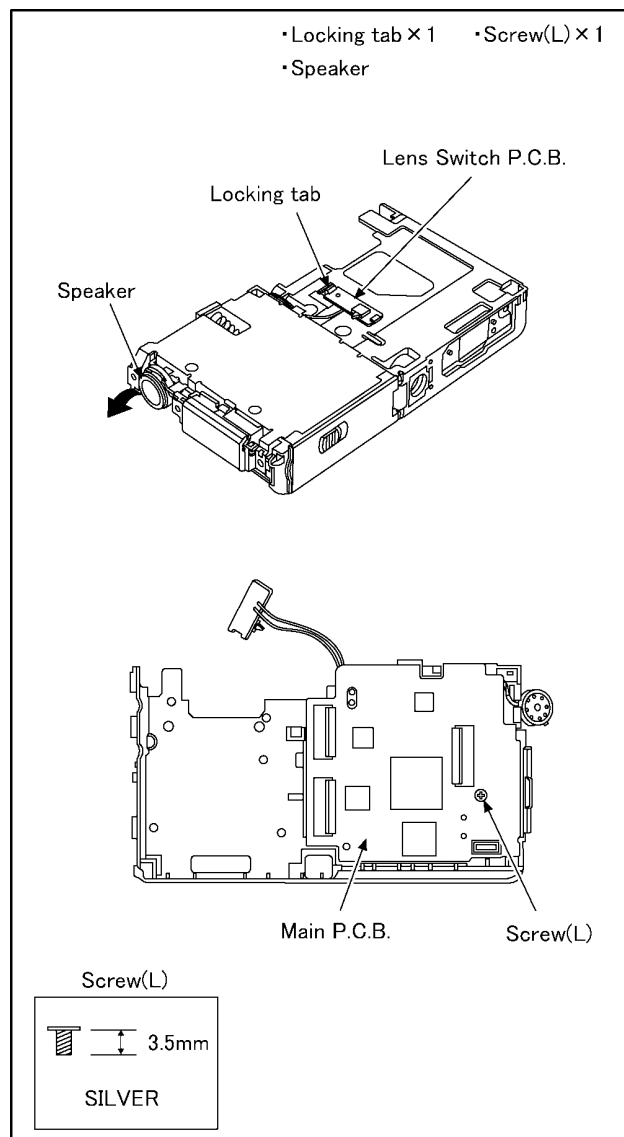
When Disassembling and Assembling for the Lens Unit

1. Take care that the dust and dirt are not entered into the lens. In case of the dust is putted on the lens, blow off them by airbrush.
2. Do not touch the surface of lens.
3. Use lens cleaning KIT(BK) (VFK1900BK).



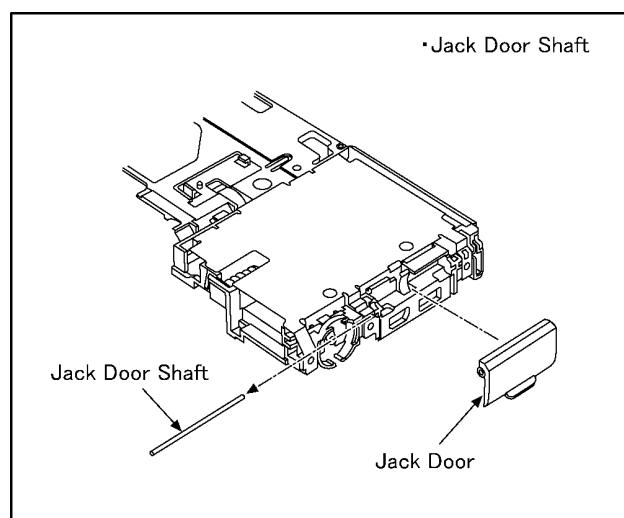
(Fig. D14)

8.3.10. Removal of the Lens Switch P.C.B. and Main P.C.B.



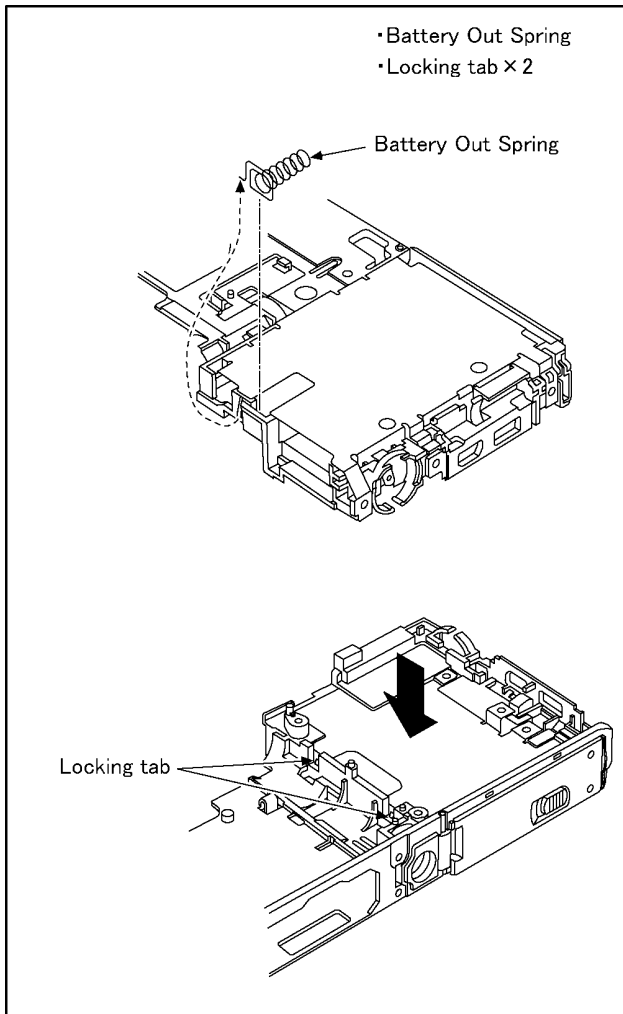
(Fig. D15)

8.3.11. Removal of the Jack Door

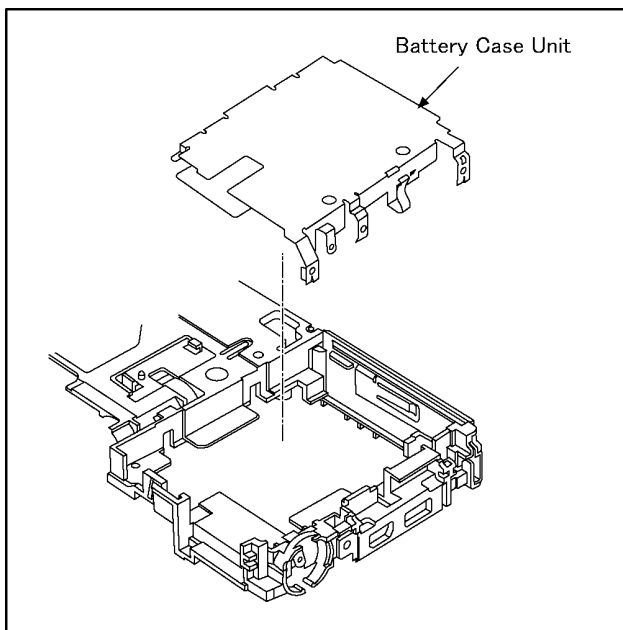


(Fig. D16)

8.3.12. Removal of the Battery Case Unit

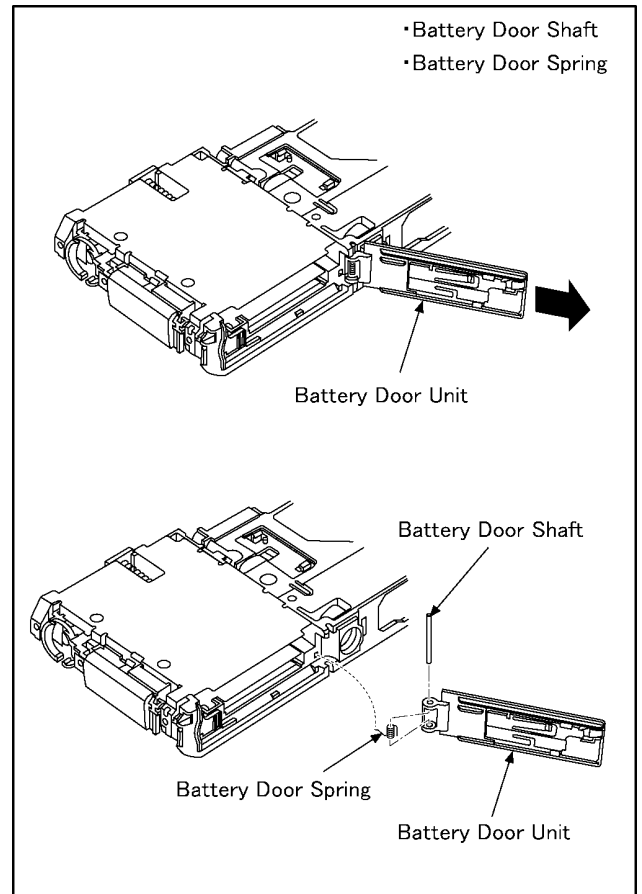


(Fig. D17)



(Fig. D18)

8.3.13. Removal of the Battery Door Unit



(Fig. D19)

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.)

9 Measurements and Adjustments

9.1. Introduction

When servicing this unit, make sure to perform the adjustments necessary based on the part(s) replaced.
Before disassembling the unit, it is recommended to back up the camera data stored in flash-rom as a data file.

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

After replacing the MAIN P.C.B., it is necessary to use the "DIAS" software to allow the release of adjustment flag(s).

The Adjustment software "DIAS" is available at "TSN Website". To download, click on "Support Information from NWBG/VDBG-AVC".

*DIAS (DSC Integrated Assist Software)

9.2. Before Disassembling the unit

9.2.1. 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:

1. Attach the Battery or AC Adaptor with a DC coupler to the unit.
(Since this unit has built-in memory, it can be performed without inserting SD memory card.)
2. Set the recording mode to the [NORMAL PICTURE] mode.
(Press the [MODE] button and select the [NORMAL PICTURE] by touching the Touch Panel.)

Step 1. Temporary cancellation of "INITIAL SETTINGS":

While keep turning the Zoom Lever to [Wide] and pressing [iA] button simultaneously, turn the Power on.

Step 2. Cancellation of "INITIAL SETTINGS":

Press the [PLAYBACK] button to "Playback Mode".

Press the [iA] button and [MODE] button simultaneously. (The camera will beep after this.)

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

9.2.2. Flash-Rom Data Backup

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

There are two kinds of Flash-rom data backup methods:

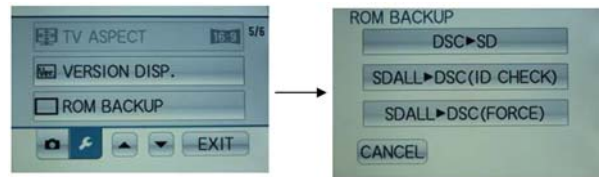
[ROM_BACKUP (Method of Non-PC backup)]

1. Insert the SD-card into the camera.
2. Set the camera to "Temporary cancellation of the initial settings".
3. Select the "SETUP" menu.
From the "SETUP" menu, select "ROM BACKUP".

NOTE:

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

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



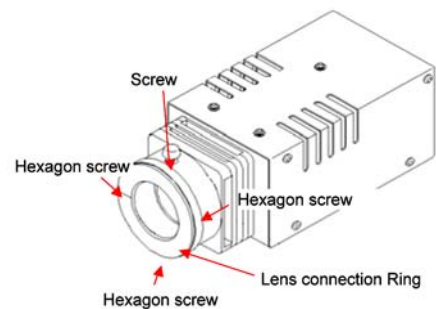
Item	Function	Details
DSC → SD	Save all the DSC's EEPROM data to SD-CARD	• DSC's EEPROM data is saved to the SD-CARD by the same format as the TATSUJIN software for the previous models. -File location: ROOT DIRECTORY in SD-CARD. -File Name: 1) User Setup Information data: <FileName>U.txt 2) Optical Adjustment data: <FileName>F.txt ※File name is changed from 2009 Spring models.
SDALL → DSC(ID CHECK)	Write the all data to DSC's EEPROM from SD-CARD	• ID CHECK: When the model ID is different, can not write • FORCE: Even if the model ID is different, can write. ※In case of replacing main PCB, it is not useful "SDALL → DSC(ID CHECK)" but "SDALL → DSC(FORCE)".
SDALL → DSC(FORCE)	Write the all data to DSC's EEPROM from SD-CARD	
SDUSER → DSC(FORCE)	Only "User setup information" is write from the saved file in the SD-CARD to DSC's EEPROM.	• FORCE: Even if the model ID is different, can write.

[DSC Integrated Assist Software (Method of Using PC)]

Same as TATSUJIN software for previous models.

9.2.3. Light Box

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



9.3. Details of Electrical Adjustment

9.3.1. 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.

9.3.1.1. Startup Electrical Adjustment mode

1. Release the initial settings.
2. Insert a recordable SD card.
(Without a SD card, the automatic adjustment can not executed.)
3. Procedure to set the camera into adjustment mode:
 - a. Set the mode into [NORMAL PICTURE] mode.
 - b. Turn the Power off.
 - c. Turn the Power on pressing [iA] and [MENU] simultaneously.
LCD monitor displays “SERVICE MODE”.(Refer to Fig. 3-1)



Fig. 3-1

9.3.1.2. 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 Zoom lever (Tele/Wide).
(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.

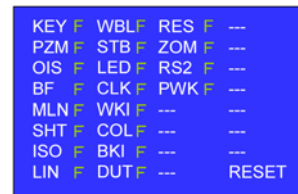


Fig. 3-2



Fig. 3-3

<Example: OIS flag is reset. >

- 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.

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

1. Perform step “9.3.1.1.” to “9.3.1.2.”, 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

9.3.1.4. Attention point during Adjustment

1. Step “9.3.1.3.” procedure shows OIS adjustment as an example. To perform the adjustment, refer to the “9.3.2. 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

9.3.1.5. 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 [Delete] button.
 - (2) Turn the zoom lever to [TELE].

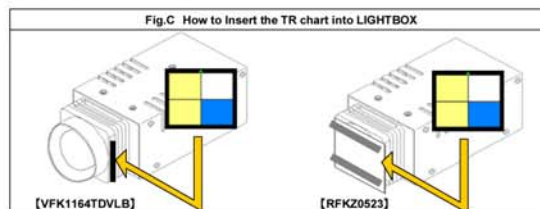
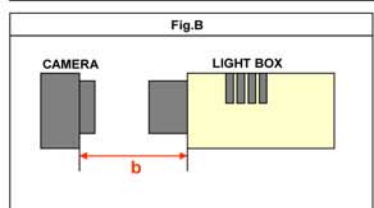
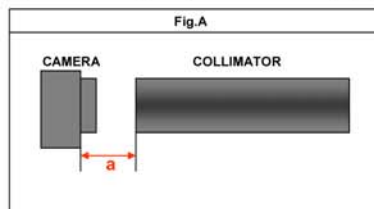
NOTE:

- If adjustment is cancelled with above procedure, adjustment is not completed. Make sure to adjust it later.
- Adjustment software “DIAS” is able to control the status of the adjustment flags.

9.3.2. 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 Item	FLAG	Purpose	Replacing Parts						JIG/TOOLS	SET UP	How to Operate
			MAIN PCB	VENUS (IC8001)	MCP (IC8002)	Lens Parts (with CCD)	LCD Unit	GYRO (IC9701)			
1 Venus Zoom	PZM	Venus Zoom Inspection	O	O	O	—	—	—	NONE	NONE	1) Press Shutter Button. 2) After displaying "PZM", press Shutter Button again. 3) After completed, the "OK" menu appears.
2 OIS sensor	OIS	OIS sensor output level adjustment	O	O	O	O	—	—	NONE	NONE	1) Press Shutter Button (Do not offer any shock and vibration for the camera while adjusting) 2) After completed, the "OK" menu appears.
3 Backfocus / GYRO	BF	To have the focus tracking curve be appropriate shape and GYRO sensor adjustment	O	O	O	O	—	O	• COLLIMATOR (VFK1164TCM02 or VFK1164TCM03 or RFKZ0422)	1) Set the camera in front of collimator so that the distance from collimator to camera becomes about 1 cm as shown in Fig.A. [NOTE] Please notice ! "NG" might happen while auto adjusting. - Do not put the black colored stuff at the back side of collimator near hunching chart to get some certain brightness. - Make sure the hunching chart has no dust and dirty condition. - Not connect the USB cable at this stage.	1) Press Shutter Button (Do not offer any shock and vibration for the camera while adjusting) 2) After completed, the "OK" menu appears.
4 Iris	IRS	Iris adjustment	O	O	O	O	—	—	• LIGHT BOX (VFK1164TDVLB or RFKZ0523)	1) Set the camera in front of LIGHTBOX so that the distance from collimator to camera becomes about 5 cm as shown in Fig.B.	1) Press Shutter Button 2) After completed, the "OK" menu appears.
5 Monitor Linearity	MLN	Monitor Linearity adjustment	O	O	O	O	—	—		1) Set the camera in front of LIGHTBOX so that the distance from collimator to camera becomes about 8 cm as shown in Fig.B.	1) Press Shutter Button 2) After completed, the "OK" menu appears.
6 Shutter	SHT	Shutter speed adjustment	O	O	O	O	—	—		1) Insert the TR chart into the slot of LIGHTBOX. 2) Set the camera in front of LIGHTBOX so that the distance from LIGHTBOX to camera becomes about 1.7 cm as shown in Fig.B. 3) Set the camera angle so that the color chart is displayed on the LCD monitor fully.	1) Press Shutter Button 2) After completed, the "OK" menu appears.
7 ISO	ISO	ISO sensitivity adjustment	O	O	O	O	—	—	• LIGHT BOX (VFK1164TDVLB or RFKZ0523) • TR CHART (RFKZ0443)	[NOTE] - 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.
8 White Balance	WBL	White balance adjustment under various color temperature	O	O	O	O	—	—			1) Press Shutter Button 2) After completed, the "OK" menu appears.
9 High brightness coloration	LIN	High brightness coloration adjustment	O	O	O	O	—	—			1) Press Shutter Button 2) After completed, the "OK" menu appears.
10 CCD Missing Pixels (White)	WKI	Compensation of CCD Missing Pixels (White)	O	O	O	—	—	—	NONE	NONE	1) Press Shutter Button 2) After completed, the "OK" menu appears.
11 Color reproduction inspection and Microphone check	COL	Color reproduction inspection and Microphone check	O	O	O	O	—	—	NONE	NONE	1) Press Shutter Button 2) After completed, the "OK" menu appears.
12 CCD Missing Pixels (Black)	BKI	Compensation of CCD Missing Pixels (Black)	O	O	O	—	—	—	• LIGHT BOX (VFK1164TDVLB or RFKZ0523)	1) Set the camera in front of LIGHTBOX so that the distance from collimator to camera becomes about 8 cm as shown in Fig.B.	1) Press Shutter Button 2) After completed, the "OK" menu appears.
13 Touch Panel Control	TPC	Touch Panel Inspection	O	O	O	—	O	—	NONE	NONE	1) Press the GUI Buttons in order of number (1→2→3→4), then GUI Button is disappear. 2) Flick the LCD monitor from left to right, then white color is displayed. 3) Flick the LCD monitor from left to right again, then black color is displayed. 4) Flick the LCD monitor from left to right again, then normal picture is displayed. 5) Press the Shutter Button, then OK is displayed.



■ IMPORTANT NOTICE (After replacing the MAIN P.C.B. / FLASH_ROM)

If you intend to proceed adjustment after replacing the MAIN P.C.B. (Include FLASH_ROM) and/or FLASH_ROM, it should be executed "INITIAL SETTINGS" FIRST, then release the "INITIAL SETTINGS" in order to proceed the electrical adjustment.

※ 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.

9.4. After Adjustment

9.4.1. 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.
3. Adjustment software “DIAS” is able to control the status of the adjustment flags.
The Adjustment software “DIAS” is available at “TSN Website”, therefore, access to “TSN Website” at “Support Information from NWBG/VDBG-AVC”.

10 Maintenance

10.1. 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.

Service Manual

Diagrams and Replacement Parts List

Digital Camera

Model No.

DMC-FP3P	DMC-FP3EG	DMC-FP3GK
DMC-FP3PC	DMC-FP3EP	DMC-FP3GN
DMC-FP3PU	DMC-FP3GC	DMC-FP3GT
DMC-FP3EB	DMC-FP3GF	
DMC-FP3EE	DMC-FP3GH	

- Vol. 1
Colour
- (S).....Silver Type (only P/PU/GC/GF/GH/GK)
 - (K).....Black Type
 - (N).....Gold Type (only PU/GF/GH/GK/GN/GT)
 - (PA).....Light Pink Type (only GF/GH/GK/GN/GT)
 - (V).....Violet Type (except P/PC/PU/EP/GN)
 - (AA).....Blue Type (only GF/GH/GK)
 - (AB).....Navy Type (only P/PC/EB/EG/GK)
 - (P).....Pink Type (only GC/GK)
 - (G).....Green Type (only GK)
 - (D).....Orange Type (only EG/GK)
 - (R).....Red Type (except PC/EE/EP/GT)
 - (H).....Gray Type (except P/PC/GC/GF/GH/GT)

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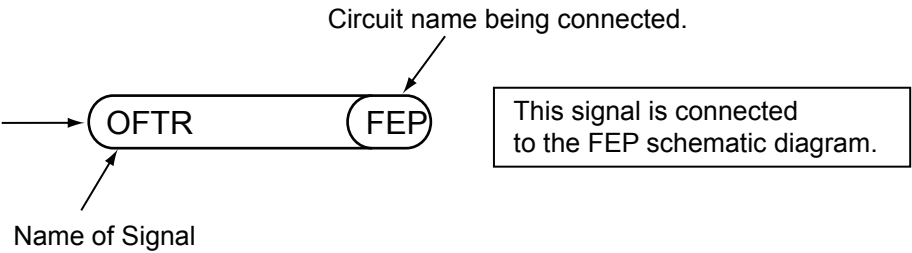
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S1. About Indication of The Schematic Diagram

S1.1. Important Safety Notice

COMPONENTS IDENTIFIED WITH THE MARK $\triangle$ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS USE ONLY THE SAME TYPE.

- 1.Although reference number of the parts is indicated on the P.C.B. drawing and/or schematic diagrams, it is NOT mounted on the P.C.B. when it is displayed with "\$" mark.
- 2.It is only the "Test Round" and no terminal (Pin) is available on the P.C.B. when the TP (Test Point) indicated as "●" mark.
- 3.The voltage being indicated on the schematic diagram is measured in "Standard-Playback" mode when there is no specify mode is mentioned.
- 4.Although the voltage and waveform available on here is measured with standard frame, it may be differ from actual measurement due to modification of circuit and so on.
- 5.The voltage being indicated here may be include observational-error (deviation) due to internal-resistance and/or reactance of equipment. Therefore, handle the value indicated on here as reference.
- 6.Use the parts number indicated on the Replacement Parts List .
- 7.Indication on Schematic diagrams:



S2. Voltage Chart

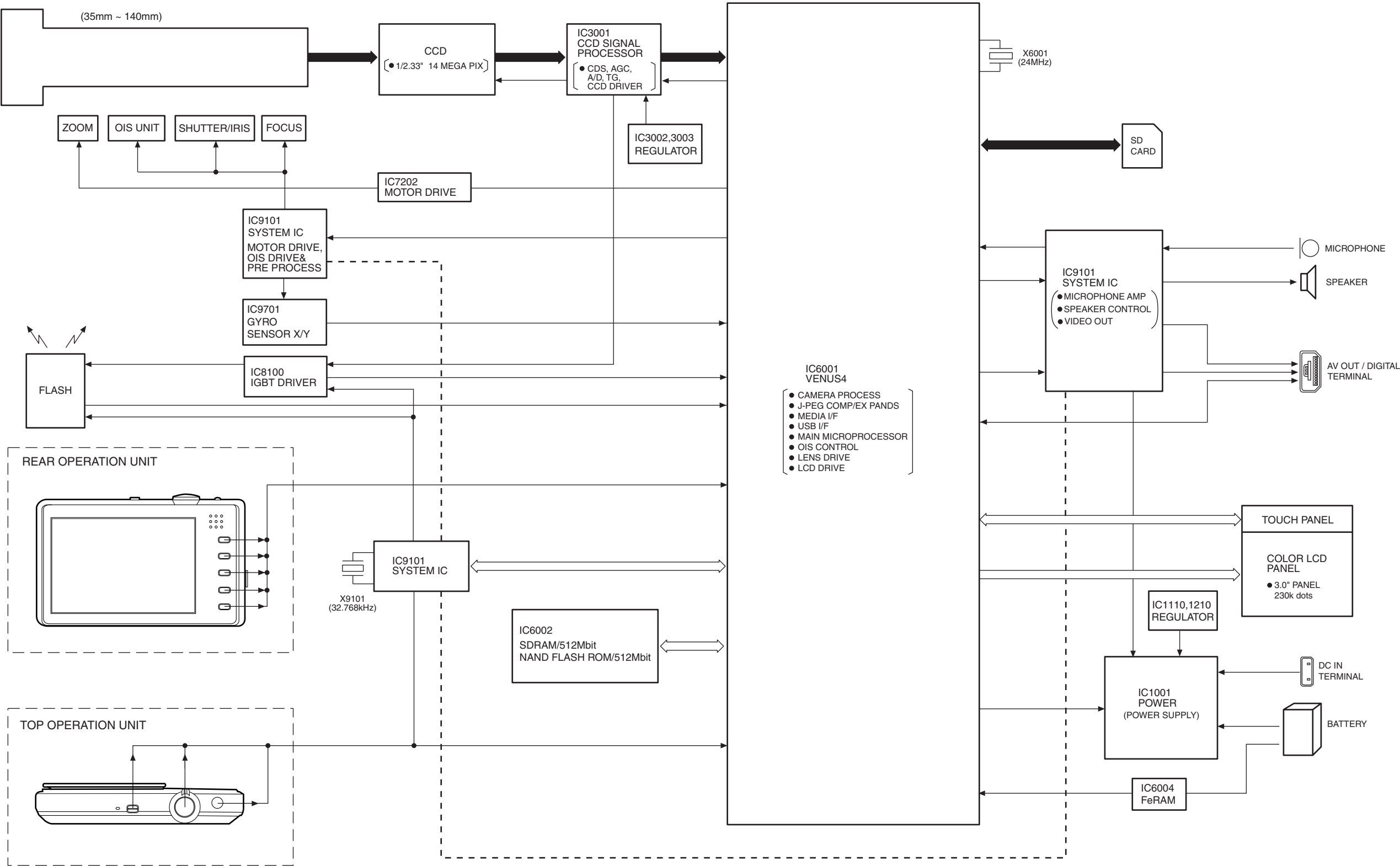
Note) Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard.
Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

S2.1. Flash Top P.C.B.

REF No.	PIN No.	POWER ON
IC8100	1	0
IC8100	2	0
IC8100	3	0
IC8100	4	0
IC8100	5	3.4
IC8100	6	0
IC8100	7	0
IC8100	8	0
IC8100	9	3.1
IC8100	10	3.8

S3. Block Diagram

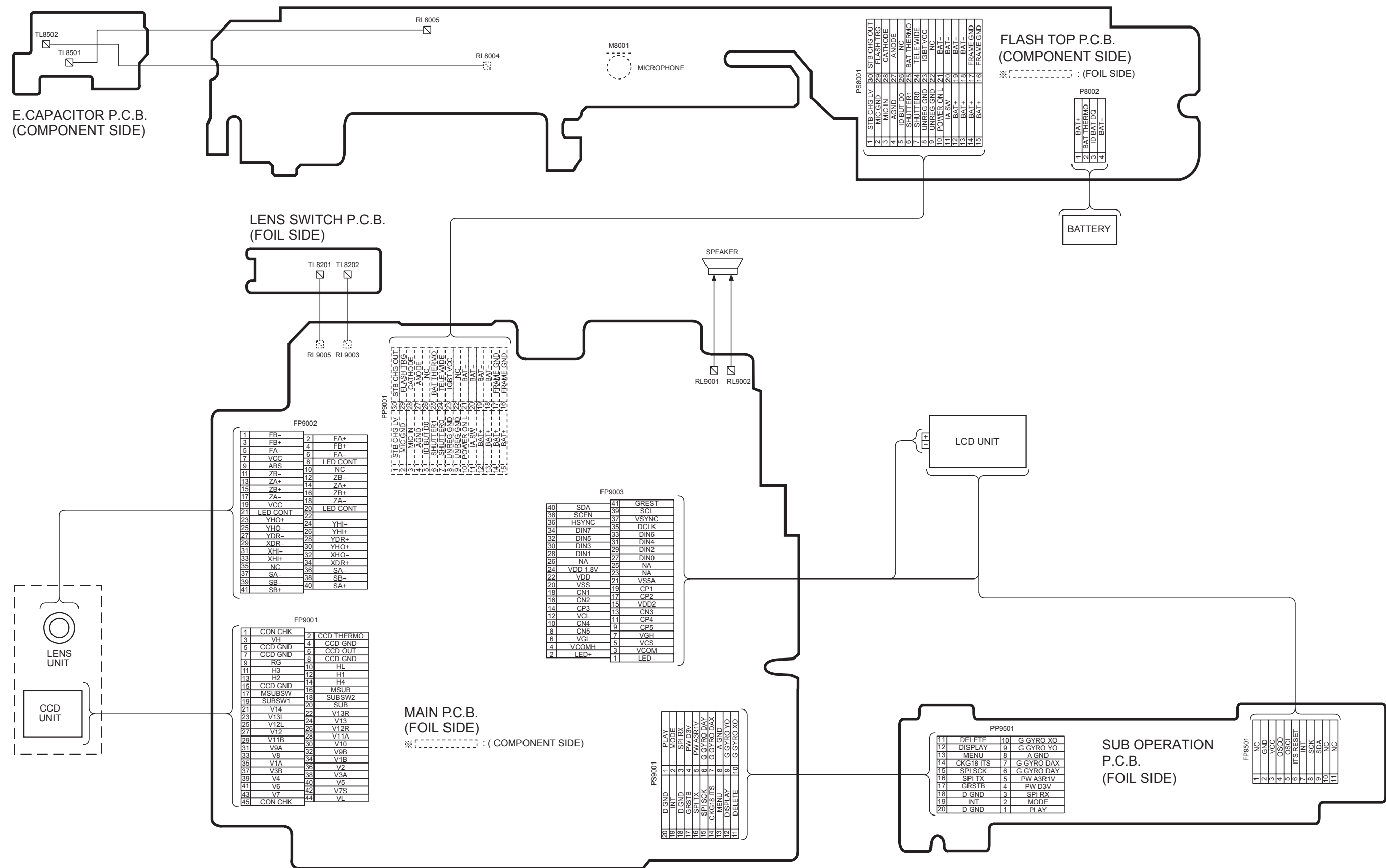
S3.1. Overall Block Diagram



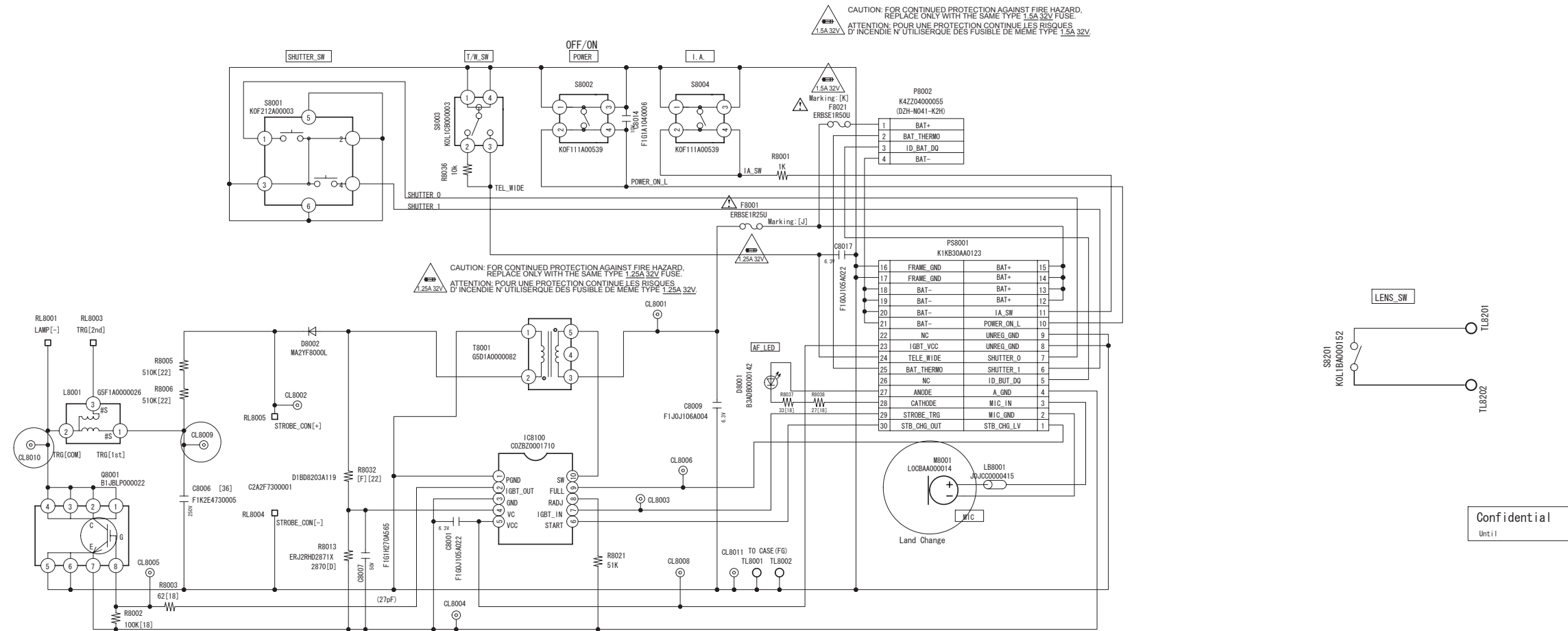
DMC-FP3 OVERALL BLOCK DIAGRAM

S4. Schematic Diagram

S4.1. Interconnection Diagram



S4.2. Flash Top Schematic Diagram / S4.3. Lens Switch Schematic Diagram



Confidential
Until

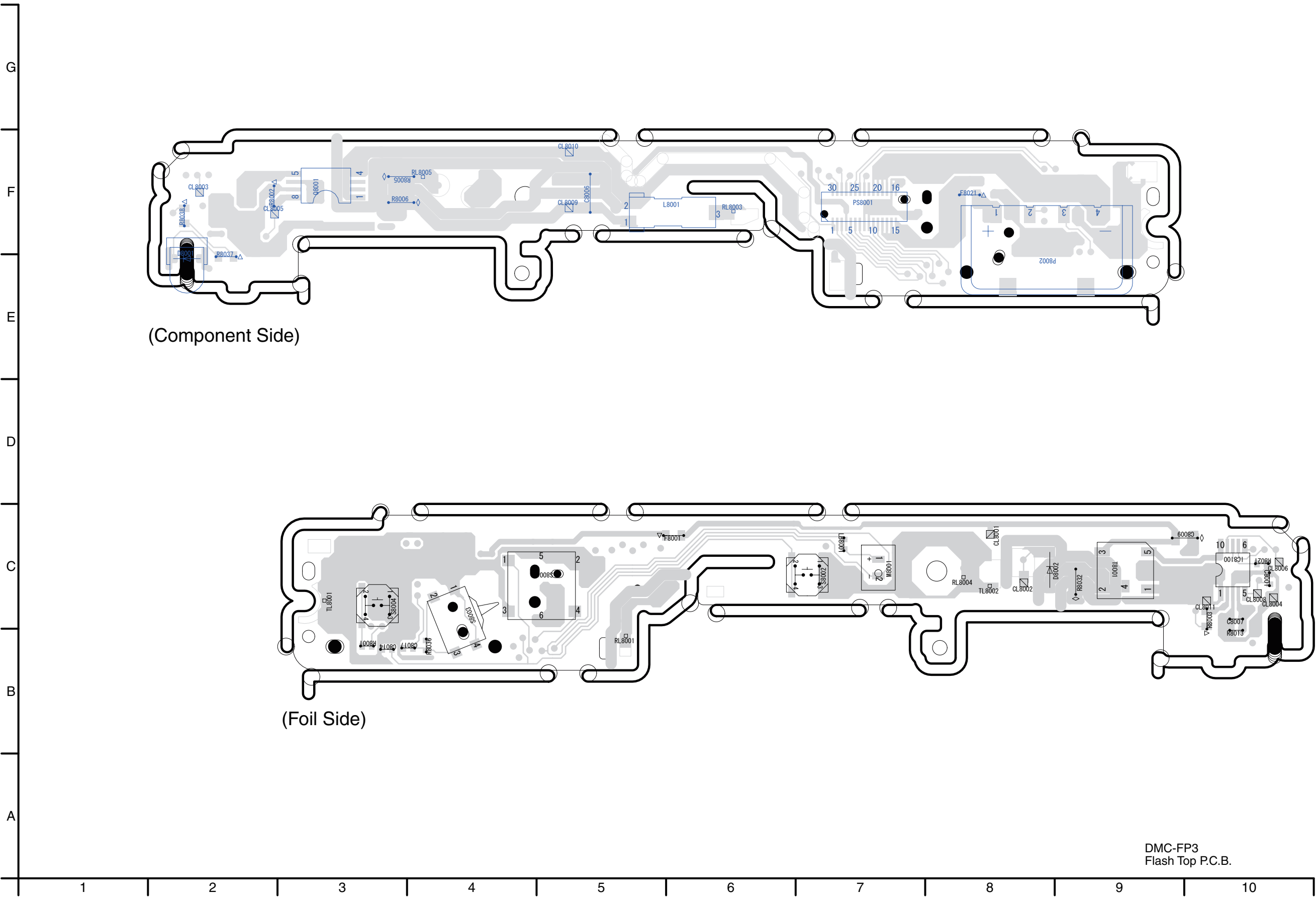
Confidential
Until

DMC-FP3 Flash Top Schematic Diagram

DMC-FP3
Lens Switch
Schematic Diagram

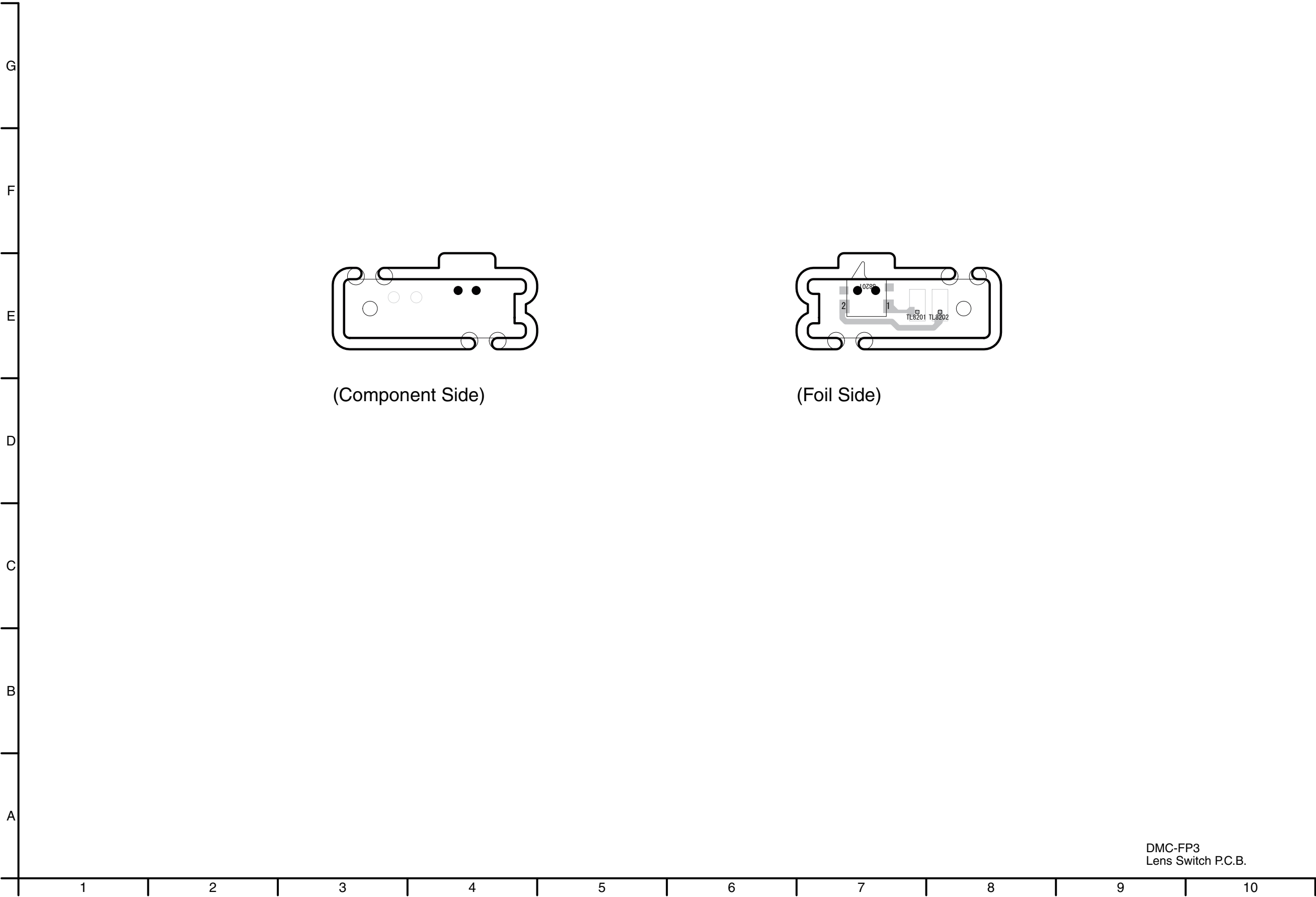
S5. Print Circuit Board

S5.1. Flash Top P.C.B.



DMC-FP3
Flash Top P.C.B.

S5.2. Lens Switch P.C.B.



S6. 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.

Definition of Parts supplier:

1. Parts marked with [ENERGY] in the remarks column are supplied from Panasonic Corporation Energy Company.
2. Parts marked with [SPC] in the remarks column are supplied from AVC-CSC-SPC. Others are supplied from PAVCSG.

[illegible]

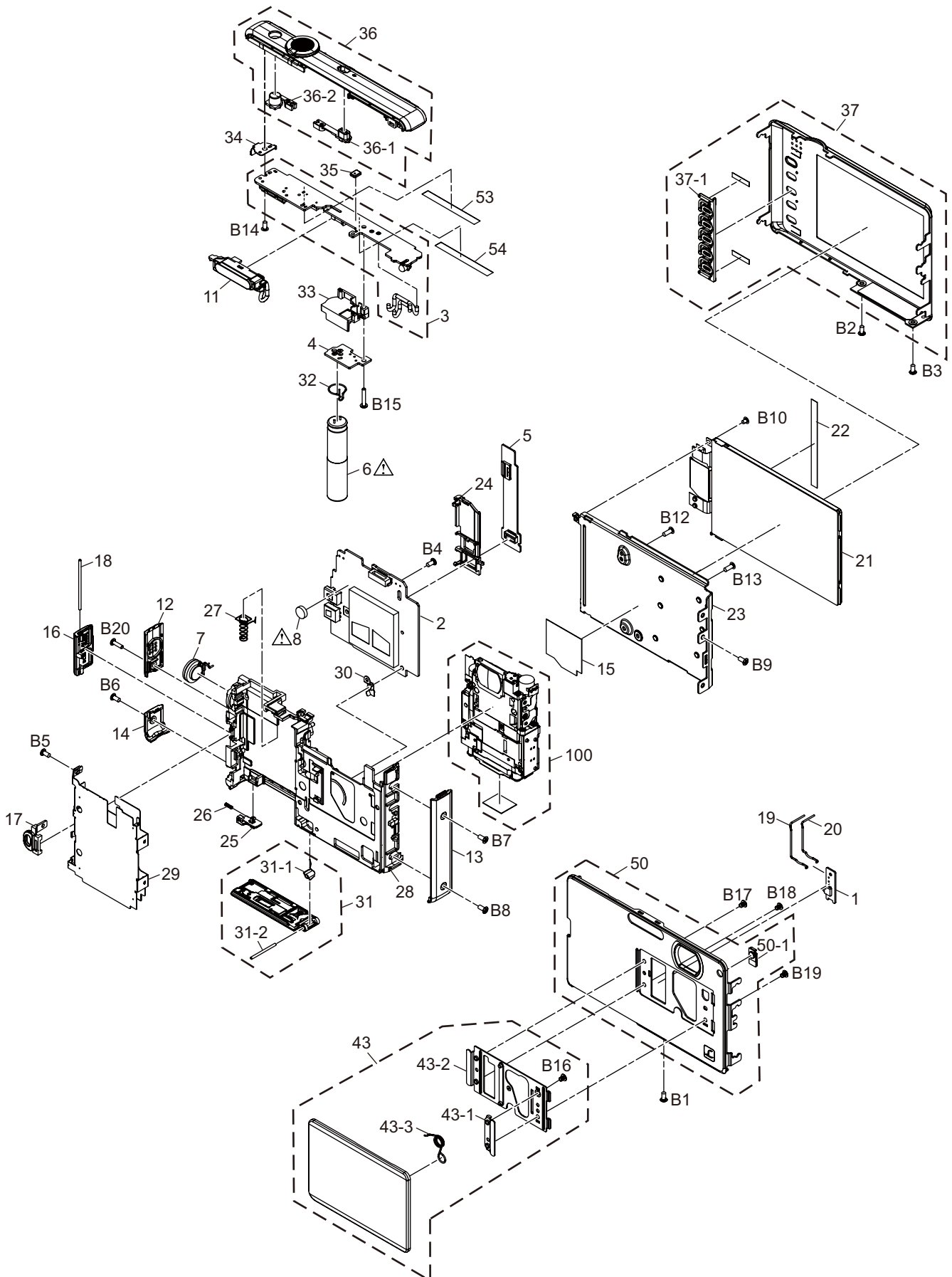
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	VEP50062A	LENS SWITCH P.C.B.	1	(RTL)	50	VYK3Z71	FRONT CASE UNIT	1	PR
2	VEP56095A	MAIN P.C.B.	1	(RTL) E.S.D.	50	VYK3Z77	FRONT CASE UNIT	1	PAB
3	VEK0Q26	FLASH TOP P.C.B.	1	(RTL) E.S.D.	50	VYK3S93	FRONT CASE UNIT	1	PUS,GCS,GHS,GFS,GKS
4	VEP58104A	E. CAPACITOR P.C.B.	1	(RTL)	50	VYK3S95	FRONT CASE UNIT	1	(-N)
5	VEP59073A	SUB OPERATION P.C.B.	1	(RTL) E.S.D.	50	VYK3S97	FRONT CASE UNIT	1	(-AA)
△ 6	F2A2F7300001	E.CAPACITOR	1	(C8503)	50	VYK3S10	FRONT CASE UNIT	1	(-PA)
7	L0AA01A00048	SPEAKER	1		50	VYK3S08	FRONT CASE UNIT	1	(-P)
△ 8	ML-421S/DN	BUTTON BATTERY	1	[ENERGY] (B9101)	50	VYK3S09	FRONT CASE UNIT	1	(-G)
11	VEK0P98	FLASH	1		50-1	VGL1328	AF PANEL LIGHT	1	
12	VGK3621	SIDE ORNAMENT L-1	1		53	VGQ0N00	TOP SHEET A	1	
13	VGK3622	SIDE ORNAMENT R	1		54	VGQ0N38	TOP SHEET B	1	
14	VGK3625	SIDE ORNAMENT L-2	1						
15	VGQ0L53	DPR SHEET	1		100	VXW1113	LENS UNIT (W/CCD)	1	E.S.D.
16	VKF4658	JACK DOOR	1						
17	VKH0452	STRAP HOLDER	1		B1	VHD1896	SCREW	1	(-K)
18	VMS7864	JACK DOOR SHAFT	1		B1	VHD1803	SCREW	1	(-S/R/AB/N/H/D/V/AA/ PA/P/G)
19	VWJ2146	SW WIRE P	1		B2	VHD1896	SCREW	1	(-K)
20	VWJ2147	SW WIRE N	1		B2	VHD1803	SCREW	1	(-S/R/AB/N/H/D/V/AA/ PA/P/G)
21	L5EDDXM00009	LCD UNIT	1						
22	VGQ0M53	LCD SHEET D	1		B3	VHD1896	SCREW	1	(-K)
23	VMP9601	FRAME PLATE	1		B3	VHD1803	SCREW	1	(-S/R/AB/N/H/D/V/AA/ PA/P/G)
24	VMX3812	PCB SPACER B	1						
25	VGQ9717	BATTERY LOCK KNOB	1		B4	VHD2081	SCREW	1	
26	VMB4152	BATTERY LOCK SPRING	1		B5	VHD2081	SCREW	1	
27	VMB4362	BATTERY OUT SPRING	1		B6	VHD2081	SCREW	1	
28	VMP9598-2	FRAME	1		B7	VHD2081	SCREW	1	
29	VMP9602	BATTERY CASE	1		B8	VHD2081	SCREW	1	
30	VMP9659	EARTH PLATE	1		B9	VHD2081	SCREW	1	
31	VYF3300	BATTERY DOOR UNIT	1	(-K)	B10	VHD2210	SCREW	1	
31	VYF3301	BATTERY DOOR UNIT	1	(-R)	B12	XQN16+BJ45FN	SCREW	1	
31	VYF3313	BATTERY DOOR UNIT	1	(-AB)	B13	XQN16+BJ45FN	SCREW	1	
31	VYF3302	BATTERY DOOR UNIT	1	(-H)	B14	VHD1998	SCREW	1	
31	VYF3303	BATTERY DOOR UNIT	1	(-D)	B15	XQN14+BJ85FN	SCREW	1	
31	VYF3311	BATTERY DOOR UNIT	1	(-V)	B16	VHD2198	SCREW	1	
31	VYF3299	BATTERY DOOR UNIT	1	(-S)	B17	VHD2198	SCREW	1	
31	VYF3310	BATTERY DOOR UNIT	1	(-N)	B18	VHD2198	SCREW	1	
31	VYF3312	BATTERY DOOR UNIT	1	(-AA)	B19	VHD2198	SCREW	1	
31	VYF3307	BATTERY DOOR UNIT	1	(-PA)	B20	VHD2201	SCREW	1	
31	VYF3305	BATTERY DOOR UNIT	1	(-P)					
31	VYF3306	BATTERY DOOR UNIT	1	(-G)					
31-1	VMB4143	BATTERY DOOR SPRING	1						
31-2	VMS7863	BATTERY DOOR SHAFT	1						
32	VMB4297	EARTH SPRING	1	(ET8503)					
33	VMP9599	CONDENSER HOLDER	1						
34	VMP9604	TOP PLATE L	1						
35	VMT1968	MIC DAMPER	1						
36	VYK3R92	TOP CASE UNIT	1						
36-1	VGU0F78	POWER BUTTON	1						
36-2	VGU0F79	IA BUTTON	1						
37	VYK3S13	REAR CASE UNIT	1						
37-1	VGU0F82	CURSOR BUTTON	1						
43	VYF3315	LENS COVER UNIT	1	(-K)					
43	VYF3316	LENS COVER UNIT	1	(-R)					
43	VYF3326	LENS COVER UNIT	1	(-AB)					
43	VYF3317	LENS COVER UNIT	1	(-H)					
43	VYF3318	LENS COVER UNIT	1	(-D)					
43	VYF3321	LENS COVER UNIT	1	(-V)					
43	VYF3314	LENS COVER UNIT	1	(-S)					
43	VYF3320	LENS COVER UNIT	1	(-N)					
43	VYF3322	LENS COVER UNIT	1	(-AA)					
43	VYF3323	LENS COVER UNIT	1	(-PA)					
43	VYF3324	LENS COVER UNIT	1	(-P)					
43	VYF3325	LENS COVER UNIT	1	(-G)					
43-1	VMA0X10	LENS COVER SLIDE ANGLE	1						
43-2	VMP9605	LENS COVER ANGLE	1						
43-3	VMB4355	LENS COVER SPRING	1						
50	VYK3S03	FRONT CASE UNIT	1	EGK,EPK,EBK,EEK,PCK,PUK, GCK,GHK,GFK,GTK,GKK,GNK					
50	VYK3S04	FRONT CASE UNIT	1	EGR,EBR,PUR,GCR,GHR,GFR, GKR,GNR					
50	VYK3S98	FRONT CASE UNIT	1	EGAB,EBAB,PCAB,GKAB					
50	VYK3S05	FRONT CASE UNIT	1	(-H)					
50	VYK3S06	FRONT CASE UNIT	1	(-D)					
50	VYK3S96	FRONT CASE UNIT	1	(-V)					
50	VYK3Z70	FRONT CASE UNIT	1	PK					
50	VYK3Z69	FRONT CASE UNIT	1	PS					

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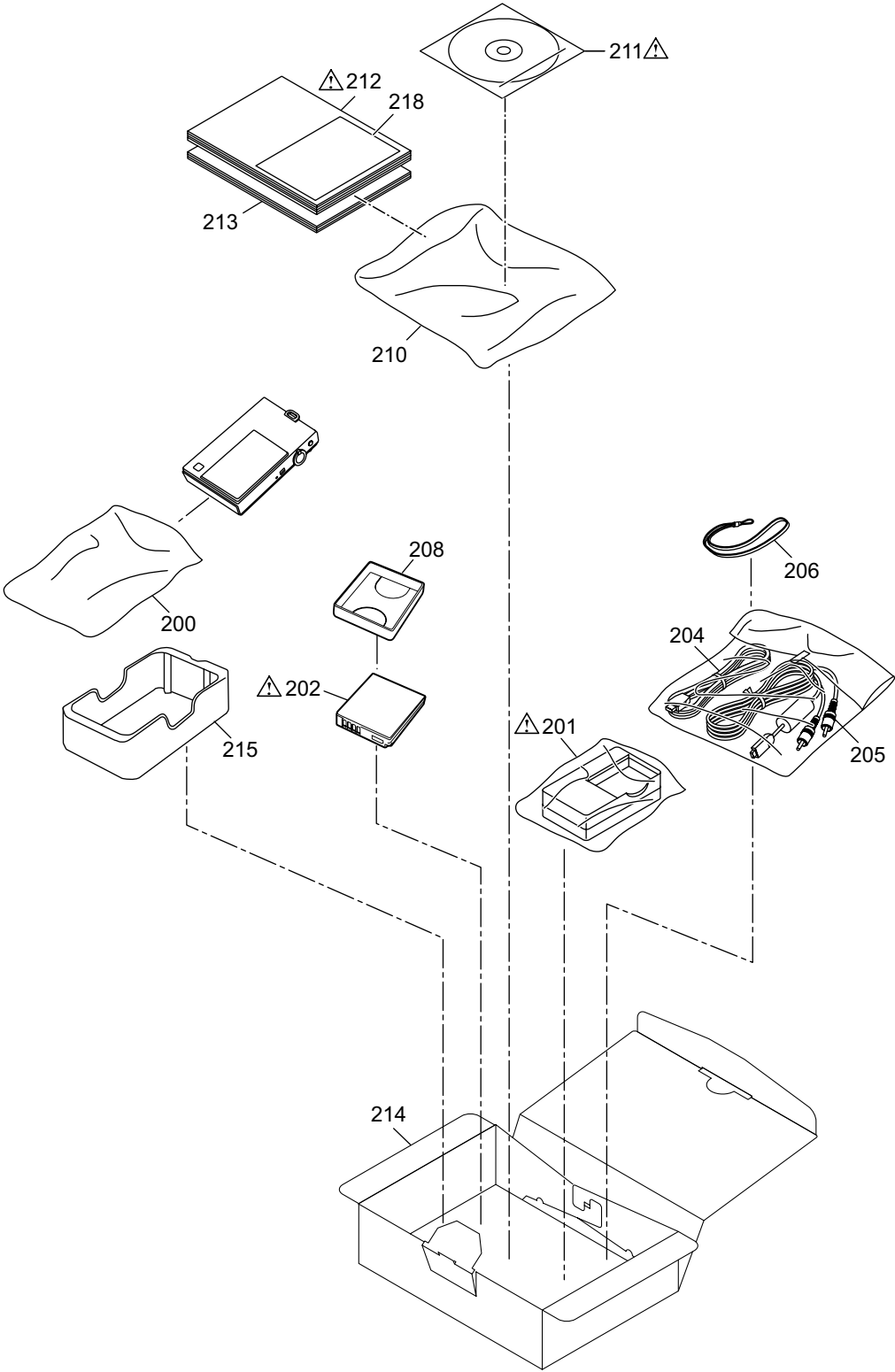
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
300	VPF1317	CAMERA BAG	1	GC [SPC]	314	VPK4147	PACKING CASE	1	EGV,EBV,EEV,GHV,GTV
300	VPF1372	CAMERA BAG	1	(EXCEPT P,PC,PU,GC)	314	VPK4122	PACKING CASE	1	GHS
⚠ 301	DE-A76AA/SX	BATTERY CHARGER	1	EG,EP,EB,EE,GH,GF,GK,GN	314	VPK4139	PACKING CASE	1	GHN,GTN,GNN
⚠ 301	DE-A76BA/SX	BATTERY CHARGER	1	GT	314	VPK4150	PACKING CASE	1	GHAA
⚠ 301	DE-A76DA	BATTERY CHARGER	1	GC [SPC]	314	VPK4153	PACKING CASE	1	GHPA,GTPA,GNPA
⚠ 302	----	BATTERY	1	(EXCEPT P,PC,PU)	314	VPK4128	PACKING CASE	1	GFK
304	K1HA08AD0002	USB CABLE W/PLUG	1	(EXCEPT P,PC,PU)	314	VPK4123	PACKING CASE	1	GFS
305	K1HA08CD0028	AV CABLE W/PLUG	1	(EXCEPT P,PC,PU)	314	VPK4133	PACKING CASE	1	GFR
306	VFC4297-B	HAND STRAP	1	(EXCEPT P,PC,PU)	314	VPK4140	PACKING CASE	1	GFN
308	YGQ0J54	BATTERY PROTECTION CASE	1	(EXCEPT P,PC,PU)	314	VPK4148	PACKING CASE	1	GFV
310	VPF1230	BAG, POLYETHYLENE	1	GC [SPC]	314	VPK4151	PACKING CASE	1	GFAA
310	VPF1378	BAG, POLYETHYLENE	1	(EXCEPT P,PC,PU,GC)	314	VPK4154	PACKING CASE	1	GFPA
⚠ 311	VFF0572-S	CD-ROM	1	EG,EP,EB	314	VPK4129	PACKING CASE	1	GKK
		(SOFTWARE/INSTRUCTION BOOK)		[SPC] See "Notes"	314	VPK4124	PACKING CASE	1	GKS
⚠ 311	VFF0573-S	CD-ROM	1	EE	314	VPK4134	PACKING CASE	1	GKR
		(SOFTWARE/INSTRUCTION BOOK)		[SPC] See "Notes"	314	VPK4393	PACKING CASE	1	GKAB
⚠ 311	VFF0574-S	CD-ROM	1	GH,GF,GT,GN	314	VPK4141	PACKING CASE	1	GKN
		(SOFTWARE/INSTRUCTION BOOK)		[SPC] See "Notes"	314	VPK4144	PACKING CASE	1	GKH
⚠ 311	VFF0575-S	CD-ROM	1	GK	314	VPK4146	PACKING CASE	1	GKD
		(SOFTWARE/INSTRUCTION BOOK)		[SPC] See "Notes"	314	VPK4149	PACKING CASE	1	GKV
⚠ 311	VFF0620-S	CD-ROM	1	GC	314	VPK4152	PACKING CASE	1	GKAA
		(SOFTWARE/INSTRUCTION BOOK)		[SPC] See "Notes"	314	VPK4155	PACKING CASE	1	GKPA
⚠ 312	VQT2L43	SIMPLIFIED O/I	1	EG	314	VPK4156	PACKING CASE	1	GKP
		(GERMAN/FRENCH)			314	VPK4157	PACKING CASE	1	GKG
⚠ 312	VQT2L44	SIMPLIFIED O/I	1	EG	314	VPK4478	PACKING CASE	1	GCP [SPC]
		(ITALIAN/DUTCH)			314	VPK4396	PACKING CASE	1	GCS [SPC]
⚠ 312	VQT2L45	SIMPLIFIED O/I	1	EG	314	VPK4402	PACKING CASE	1	GCR [SPC]
		(SPANISH/PORTUGUESE)			314	VPK4403	PACKING CASE	1	GCV [SPC]
⚠ 312	VQT2L46	SIMPLIFIED O/I	1	EG	314	VPK4397	PACKING CASE	1	GCK [SPC]
		(TURKISH)			315	VPN7010	CUSHION	1	(EXCEPT P,PC,PU,GC)
⚠ 312	VQT2L47	SIMPLIFIED O/I	1	EP	315	VPN7015	CUSHION	1	GC [SPC]
		(SWEDISH/DANISH)			318	VQL2C68-A	OPERATING LABEL	1	GT
⚠ 312	VQT2L48	SIMPLIFIED O/I	1	EP	⚠ 319	K2CT39A00002	AC CORD W/PLUG	1	EB,GC,GH
		(POLISH/CZECH)			⚠ 320	K2CQ29A00002	AC CORD W/PLUG	1	EG,EP,EE,GF
⚠ 312	VQT2L49	SIMPLIFIED O/I	1	EP	⚠ 321	K2CJ29A00002	AC CORD W/PLUG	1	GN
		(HUNGARIAN/FINNISH)			⚠ 322	K2CA29A00021	AC CORD W/PLUG	1	GT
⚠ 312	VQT2L51	SIMPLIFIED O/I	1	EB	⚠ 322	K2CA2YY00070	AC CORD W/PLUG	1	GK
		(ENGLISH)							
⚠ 312	VQT2L52	SIMPLIFIED O/I	1	EE					
		(RUSSIAN/UKRAINIAN)							
⚠ 312	VQT2L53	SIMPLIFIED O/I	1	GC,GH,GF					
		(ENGLISH/							
		CHINESE(TRADITIONAL))							
⚠ 312	VQT2L54	SIMPLIFIED O/I	1	GC,GF					
		(ARABIC/PERSIAN)							
⚠ 312	VQT2L55	SIMPLIFIED O/I	1	GT					
		(CHINESE(TRADITIONAL))							
⚠ 312	VQT2L56	SIMPLIFIED O/I	1	GK					
		(CHINESE(SIMPLIFIED))							
⚠ 312	VQT2L57	SIMPLIFIED O/I	1	GN					
		(ENGLISH)							
313	VQT2K39	O/I SOFTWARE	1	EG					
		(GERMAN/FRENCH/ITALIAN/							
		DUTCH/SPANISH/PORTUGUESE/							
		TURKISH)							
313	VQT2K40	O/I SOFTWARE	1	EP					
		(FINNISH/SWEDISH/DANISH/							
		POLISH/CZECH/HUNGARIAN)							
313	VQT2K42	O/I SOFTWARE	1	EB,GN					
		(ENGLISH)							
313	VQT2K43	O/I SOFTWARE	1	EE					
		(RUSSIAN/UKRAINIAN)							
313	VQT2K44	O/I SOFTWARE	1	GC,GH,GF					
		(ENGLISH/							
		CHINESE(TRADITIONAL)/							
		ARABIC/PERSIAN)							
313	VQT2K45	O/I SOFTWARE	1	GT					
		(CHINESE(TRADITIONAL))							
313	VQT2K46	O/I SOFTWARE	1	GK					
		(CHINESE(SIMPLIFIED))							
314	VPK4127	PACKING CASE	1	EGK,EPK,EBK,EEK,GHK,GTK, GNK					
314	VPK4132	PACKING CASE	1	EGR,EGR,GHR,GNR					
314	VPK4392	PACKING CASE	1	EGAB,EBAB					
314	VPK4143	PACKING CASE	1	EGH,EPH,EBH,EEH,GNH					
314	VPK4145	PACKING CASE	1	EGD					

S7. Exploded View

S7.1. Frame and Casing Section



S7.2. Packing Parts and Accessories Section (1)



S7.3. Packing Parts and Accessories Section (2)

