

# Service Manual

Digital Camera/Lens Kit

**LUMIX**

LEICA  
D VARIO-ELMARIT

W<sup>TM</sup>  
FOURTHIRD

SD  
HC



**DMC-L1KPP**

**DMC-L1KEB**

**DMC-L1KEG**

**DMC-L1KGC**

**DMC-L1KGK**

**DMC-L1KGN**

**DMC-L1KGT**

Vol. 1

Colour

(K).....Black Type

**Panasonic®**

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## SPECIFICATIONS

### Digital Camera Body

(DMC-L1): Information for your safety

<b>Power Source:</b>	DC 8.4 V
<b>Power Consumption:</b>	2.2 W (When taking pictures with the Viewfinder) 3.8 W (When taking pictures with Live View) 2.2 W (When playing back)
<b>Camera effective pixels:</b>	7,500,000 pixels
<b>Image sensor:</b>	4/3" Live MOS sensor, total pixel number 7,940,000 pixels Primary color filter
<b>Digital zoom:</b>	Max. 4X
<b>Extended optical zoom</b> (Except for the maximum picture size for each aspect ratio):	ON/OFF simple enlargement (compatible with lenses from other manufacturers)
<b>Focus:</b>	3 points, AUTO/1 fixed point, right/1 fixed point, center/1 fixed point, left Focal-plane shutter
<b>Shutter System:</b>	
<b>Burst recording</b>	
<b>Burst speed:</b>	3 pictures/second (High speed), 2 pictures/second (Low speed)
<b>Number of recordable pictures:</b>	6 pictures (when there are RAW files) Depends on the capacity of the card (when there are no RAW files) AUTO/100/200/400/800/1600
<b>ISO sensitivity:</b>	AUTO/100/200/400/800/1600
<b>Shutter speed:</b>	B (Bulb) (max. 8 minutes), 60 seconds to 1/4000th of a second
<b>White balance:</b>	AUTO/Daylight/Cloudy/Shade/Halogen/Flash/White set 1/ White set 2/Color temperature setting
<b>Metering range:</b>	EV 1 to EV 20 (When taking pictures with the Viewfinder)
<b>Exposure (AE):</b>	Program AE (P)/Aperture-priority AE (A)/ Shutter-priority AE (S)/Manual exposure (M) Exposure compensation (1/3 EV Step, - 2 EV to + 2 EV)
<b>Metering mode:</b>	Multiple/Center weighted/Spot
<b>LCD monitor:</b>	2.5" low-temperature polycrystalline TFT LCD (Approx. 207,000 pixels) (field of view ratio about 100%) Optical SLR Viewfinder (Mirror) (field of view ratio about 95%) (with diopter adjustment - 3 to + 1 diopter)
<b>Viewfinder:</b>	Built-in pop up flash
<b>Flash:</b>	Flash range: Approx. 2.5 m (8.2 feet) to 7.0 m (23.0 feet) (Supplied lens attached, Wide, When the ISO sensitivity is set to [AUTO].) AUTO, AUTO/Red-eye reduction, Forced ON, Forced ON/ Red-eye reduction, Slow sync., Slow sync./Red-eye reduction, Forced OFF
<b>Flash synchronization speed:</b>	Equal to or smaller than 1/160th of a second
<b>Recording media:</b>	SD Memory Card/SDHC Memory Card/MultiMediaCard

### Picture size

<b>Still picture:</b>	When the aspect ratio setting is [4:3] 3136×2352 pixels, 2560×1920 pixels, 2048×1536 pixels When the aspect ratio setting is [3:2] 3136×2080 pixels, 2560×1712 pixels, 2048×1360 pixels When the aspect ratio setting is [16:9] 3136×1760 pixels, 1920×1080 pixels Super Fine/Fine/Standard
<b>Quality:</b>	JPEG (based on Design rule for Camera File system , based on Exif 2.21 standard)/DPOF corresponding
<b>Recording file format:</b>	
<b>Interface</b>	
<b>Digital:</b>	USB 2.0 (High Speed) corresponding
<b>Analog video:</b>	NTSC/PAL Composite (Switched by menu)
<b>Terminal</b>	
<b>[USB]:</b>	5 pin Mini USB
<b>[V OUT/REMOTE]:</b>	ø 2.5 mm jack
<b>[DC IN]:</b>	Dedicated DC cable
<b>Dimensions:</b>	Approx. 145.8 mm (W)×86.9 mm (H)×80 mm (D) [5 3/4" (W)×3 7/16" (H)×3 3/16" (D)] (excluding the projecting part)
<b>Mass:</b>	Approx. 530 g/18.7 oz (camera body), Approx. 1098 g/38.7 oz (with supplied lens, card and battery)
<b>Operating temperature:</b>	0 °C to 40 °C (32 °F to 104 °F)
<b>Operating humidity:</b>	10% to 80%

### AC Adaptor

(Panasonic DE-972A): Information for your safety

<b>Output:</b>	DIGITAL CAMERA 8.4 V = 1.2 A CHARGE 8.4 V = 1.2 A
<b>Input:</b>	110 V to 240 V ~ 50/60 Hz, 0.3 A

### Battery Pack (lithium-ion)

(Panasonic CGR-S603A): Information for your safety

<b>Voltage/capacity:</b>	7.2 V, 1500 mAh
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### Interchangeable Lens "LEICA D VARIO-ELMARIT 14–50 mm/F2.8–3.5" (L-ES014050)

<b>Focal length</b>	f=14 mm to 50 mm (35 mm film camera equivalent: 28 mm to 100 mm)
<b>Aperture type</b>	7 leaf shutters/iris diaphragm
<b>Aperture range</b>	F2.8 (Wide) to F3.5 (Tele)
<b>Lens construction</b>	16 elements in 12 groups (2 aspherical lenses)
<b>In focus distance</b>	0.29 m (0.95 feet) to ∞ (from the focus distance reference line)
<b>Optical image stabilizer</b>	Available
<b>Mount</b>	Four Thirds Mount
<b>Max. diameter</b>	78.1 mm (3.07 inch)
<b>Overall length</b>	Approx. 97.4 mm (3.83 inch) (from the tip of the lens to the base side of the lens mount)
<b>Mass</b>	Approx. 490 g (17.3 oz)

## ⚠ 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 INTRODUCTION

## 1.1. 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.

## 1.2. HOW TO DEFINE THE MODEL SUFFIX (NTSC or PAL model)

There are six kinds of DMC-L1K, regardless of the colours.

- a) DMC-L1KS
- b) DMC-L1KPP
- c) DMC-L1KEB/EG/GN
- d) DMC-L1KGC
- e) DMC-L1KGT
- f) DMC-L1KGK

(DMC-L1KS is exclusively Japan domestic model.)

What is the difference is that the "INITIAL SETTING" data which is stored in Flash ROM mounted on Main PCB.

### 1.2.1. 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-L1KS

DMC-L1KS is exclusively Japan domestic model.

#### b) DMC-L1KPP

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



#### c) DMC-L1KEB/EG/GN

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



#### d) DMC-L1KGC

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



#### e) DMC-L1KGT

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



#### f) DMC-L1KGK

The nameplate for this model do not show any above Safty registration mark.



Safty registration mark

## 1.2.2. INITIAL SETTINGS:

### CAUTION:

NEVER select "NONE(JAPAN)" if the unit is other than "JAPAN" model.  
Other-wise, it can not be reset to the others.

When you replace the Main PCB be sure to perform the initial settings after achieving the Adjustment, by ordering the following procedure in accordance with model suffix.

#### • Step 1. The temporary cancellation of factory setting:

Set the shutter speed dial to "8".

While keep pressing **[AFL/AEL]**, then turn the Power on.

#### • Step 2. The cancellation of factory setting:

Press the "**[Playback]**" button to playback mode.

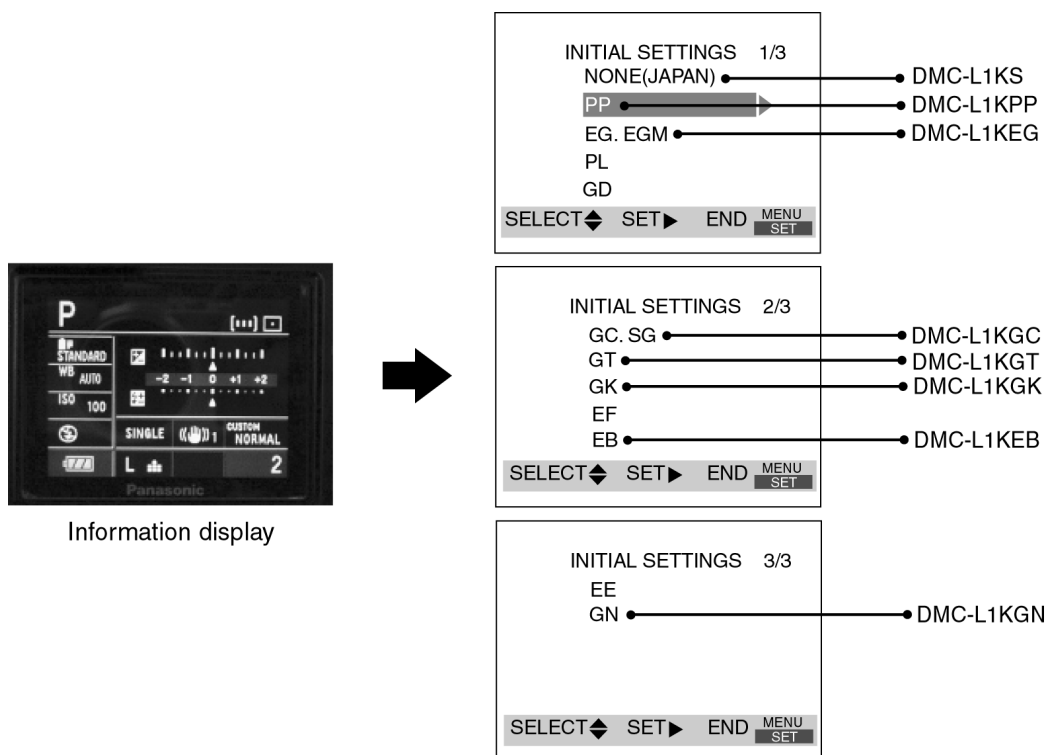
Press **[FUNC.2]** and "**[UP]** of Cursor key" simultaneously, then turn the Power off.

#### • Step 3. Turn the Power on:

Set the shutter speed dial to "**[A]**", and then turn the Power on.

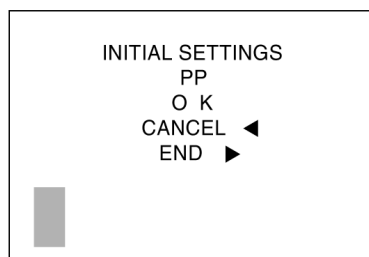
#### • Step 4. Display the INITIAL SETTING:

1. Press the **[Playback]** button, and then viewing information display.
2. While keep pressing **[MENU/SET]** and "**[RIGHT]** of Cursor key" simultaneously, turn the Power off.



#### • Step 5. Set the INITIAL SETTING:

Select the area with pressing "**[UP]** / **[DOWN]** of Cursor key", and then press the "**[RIGHT]** of Cursor key".



The only set area is displayed, and then press the "**[RIGHT]** of Cursor key" after confirmation.  
(The unit is powered off automatically.)



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

• **Step 6. CONFIRMATION:**

The display shows "PLEASE SET THE CLOCK" when turn the Power on again.

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

(When the "GT" or "GK" model suffix is selected, the display shows "PLEASE SET THE CLOCK" in Chinese.)

1) As for your reference Default setting condition is given in the following table.

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

	MODEL	VIDEO OUTPUT	LANGUAGE	DATE	REMARKS
a)	DMC-L1KS	NTSC	Japanese	Year/Month/Date	
b)	DMC-L1KPP	NTSC	English	Month/Date/Year	
c)	DMC-L1KEB/EG/GC/GN	PAL	English	Date/Month/Year	
d)	DMC-L1KGK	PAL	Chinese (simplified)	Year/Month/Date	
e)	DMC-L1KGT	NTSC	Chinese (traditional)	Year/Month/Date	

## 2 SAFETY PRECAUTIONS

### 2.1. GENERAL GUIDELINES

#### 1. IMPORTANT SAFETY NOTICE

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

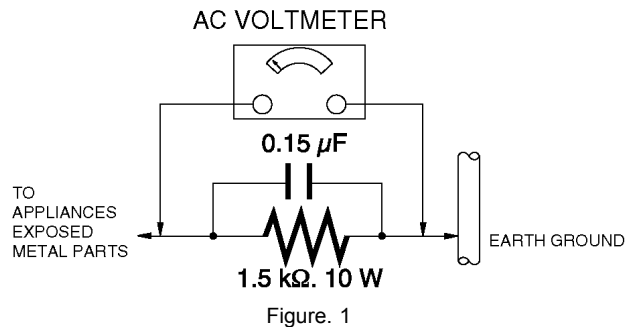
### 2.2. LEAKAGE CURRENT COLD CHECK

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 M $\Omega$  and 5.2 M $\Omega$ . When the exposed metal does not have a return path to the chassis, the reading must be infinity.

### 2.3. 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 k $\Omega$ , 10 W resistor, in parallel with a 0.15  $\mu$ 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 k $\Omega$ /V or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 V RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 mA. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

Hot-Check Circuit



### 3 PREVENTION OF ELECTRO STATIC 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 electro static 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).

### 4 HOW TO RECYCLE THE LITHIUM ION BATTERY (U.S. ONLY)

**ENGLISH**



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

**FRANÇAIS**



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

## 5 CAUTION FOR AC CORD (EB/GC only)

### 5.1. 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.

### 5.2. 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 ASRA 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.

#### 5.2.1. Important

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

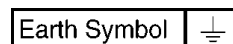
Blue	Neutral
Brown	Live

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.

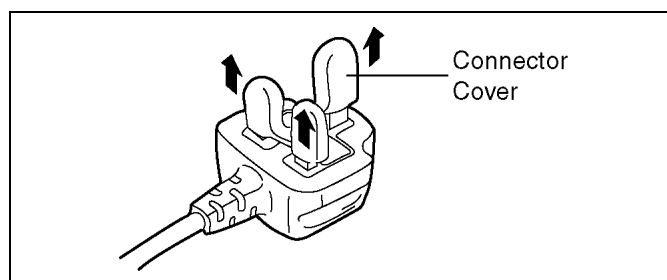
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

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.



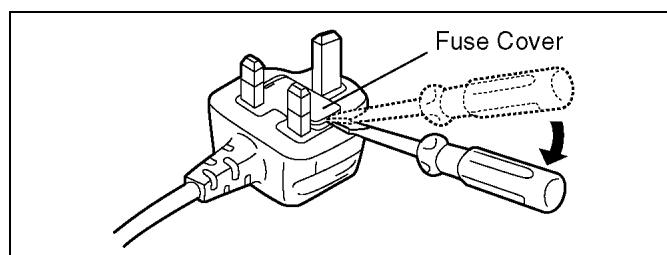
#### 5.2.2. Before use

Remove the Connector Cover as follows.

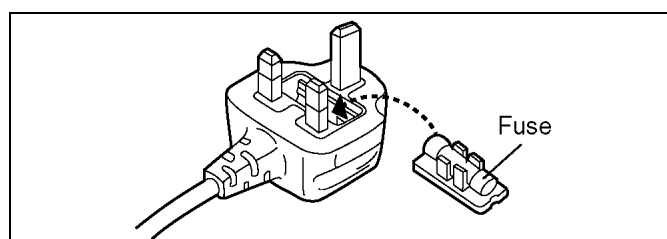


#### 5.2.3. How to replace the Fuse

1. Remove the Fuse Cover with a screwdriver.

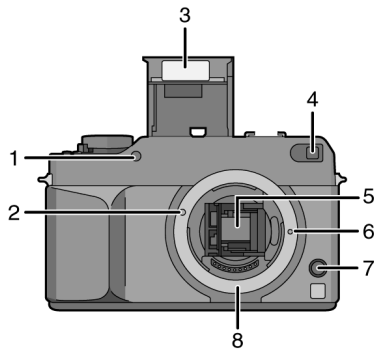


2. Replace the fuse and attach the Fuse cover.

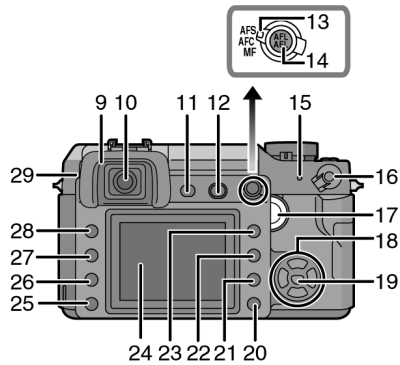


## 6 OPERATING GUIDE

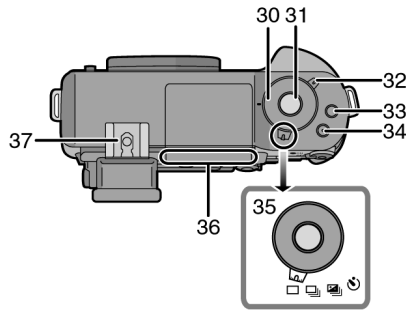
### ■ Camera body



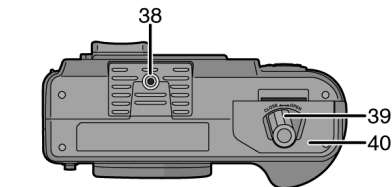
- 1 IR sensor
- 2 Lens fitting mark
- 3 Flash
- 4 AF assist lamp
- 5 Mirror
- 6 Lens lock pin
- 7 Lens release button
- 8 Mount



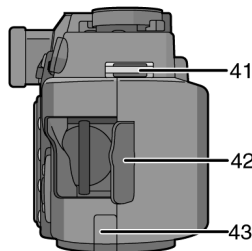
- 9 Eye cup
- 10 Viewfinder
- 11 [LIVE VIEW] button
- 12 Flash open button
- 13 Focus mode lever
- 14 [AFL/AEL] button
- 15 Status indicator
- 16 Camera ON/OFF switch
- 17 Command dial
- 18 ◀/▼/▶/▲ Cursor buttons
- 19 [MENU/SET] button
- 20 Delete button
- 21 Aperture stopping down button
- 22 [DISPLAY] button
- 23 Playback button
- 24 LCD monitor
- 25 Flash output adjustment button
- 26 Flash button
- 27 [ISO] button
- 28 [WB] button
- 29 Diopter adjustment dial



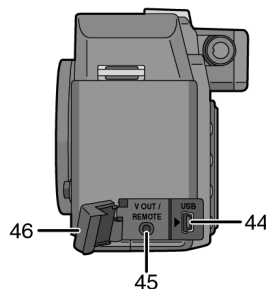
- 30 Shutter speed dial
- 31 Shutter button
- 32 Metering mode lever
- 33 [FUNC.1] button
- 34 [FUNC.2] button
- 35 Drive mode lever
- Single : □
- Burst : ⏏
- Auto bracket : ⏏
- Self-timer : ⌚
- 36 Focus distance reference line
- 37 Hot shoe



- 38 Tripod receptacle
- When you use a tripod, make sure it is stable when the camera is attached to it.
- 39 Open/Close lever
- 40 Battery door



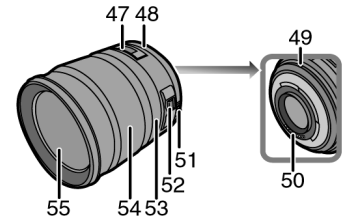
- 41 Strap eyelet
- 42 Card door
- 43 DC cable cover



- 44 [USB] socket
- 45 [V OUT/REMOTE] socket
- 46 Terminal door

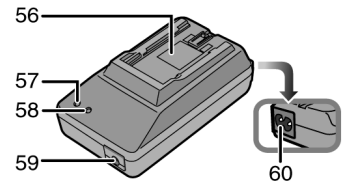
### ■ Lens

“LEICA D VARIO-ELMARIT 14–50 mm/  
F2.8–3.5”



- 47 Focus distance indicator
- 48 Aperture ring
- 49 Lens fitting mark
- 50 Contact point
- 51 Aperture ring button
- 52 [O.I.S.] switch
- 53 Focus ring
- 54 Zoom ring
- 55 Lens surface

### ■ Battery charger/AC adaptor



- 56 Battery holder
- 57 [POWER] indicator
- 58 [CHARGE] indicator
- 59 Power output socket [DC OUT]
- 60 Power input socket [AC IN]
- Do not use any other AC adaptors except the supplied one.

## 7 OPERATING INFORMATION

### About the Lens

You can use the supplied lens or a lens that is compatible with the lens mount standard for the "Four Thirds System (Four Thirds Mount)" with this unit.

If you use a lens other than a dedicated interchangeable lens, auto focus cannot be activated and accurate metering is not possible. Also, some functions will not work.

#### ■ "Four Thirds Mount"



This is the lens mount standard for the "Four Thirds System".

These are interchangeable lenses newly developed specifically for the optical design requirements of digital cameras.

#### ■ Using a lens from another manufacturer

- Some lenses from other manufacturers do not have an aperture ring. When you use a lens with no aperture ring, [FUNC.1] is fixed for aperture. Refer to P73 for more information about how to use [FUNC.1].
- Depending on the type of lens, you may not be able to use some functions.
- The available flash range etc. differs depending on the aperture value of the lens you are using.
- Take some test pictures with the lens you are using.

### About the SD Memory Card

- The SDHC Memory Card is a memory card standard decided by the SD Association in 2006 for high capacity memory cards more than 2 GB.



- This camera is compatible with SD Memory Cards based on SD Memory Card Specifications and formatted in FAT12 system and FAT16 system. It is also compatible with SDHC Memory Cards based on SD Memory Card Specifications and formatted in FAT32 system.
- This camera is compatible with both an SD Memory Card and an SDHC Memory Card. You can use an SDHC Memory Card in equipment that is compatible with SDHC Memory Cards however you cannot use an SDHC Memory Card in equipment that is only compatible with SD Memory Cards. (If you use an SDHC Memory Card in other equipment, always read the operating instructions for the other equipment.)

### Cautions for Use

#### ■ Optimal use of the camera

**Take care not to drop or knock the unit or put a lot of pressure on it.**

- Take care not to drop or knock the bag that you inserted the unit in as it may strongly shock the unit.
- A strong shock may break the lens, screen or outer case and cause the camera to malfunction.

**Keep the camera as far away as possible from electromagnetic equipment (such as microwave ovens, TVs, video games etc.).**

- If you use the camera on top of or near a TV, the pictures on the camera may be disrupted by electromagnetic wave radiation.
- Do not use the camera near cell phones because doing so may result in noise adversely affecting the pictures.
- Recorded data may be damaged, or pictures may be distorted, by strong magnetic fields created by speakers or large motors.
- Electromagnetic wave radiation generated by microprocessors may adversely affect the camera, disturbing the pictures.
- If the camera is adversely affected by electromagnetic equipment and stops functioning properly, turn the camera off and remove the battery or disconnect AC adaptor. Then reinsert the battery or reconnect AC adaptor and turn the camera on.

**Do not use the camera near radio transmitters or high-voltage lines.**

- If you record near radio transmitters or high-voltage lines, the recorded pictures may be adversely affected.

**Always use the supplied cords and cables. If you use optional accessories, use the cords and the cables supplied with them.**

**Do not extend the cords or the cables.**

**Do not spray the camera with insecticides or volatile chemicals.**

- If the camera is sprayed with such chemicals, the body of the camera may be damaged and the surface finish may peel off.
- Do not keep rubber or plastic products in contact with the camera for a long period of time.

**Do not use benzine, thinner or alcohol for cleaning the camera.**

- Remove the battery or disconnect the AC adaptor from the electrical outlet before wiping the camera.
- The body of the camera may be damaged and the surface finish may peel off.
- Wipe off any dust or fingerprints with a soft, dry cloth.
- Use a dry, dust cloth to remove dirt and dust on the zoom ring, focus ring and

aperture ring.

- Do not use a kitchen detergent or a chemically treated cloth.
- The camera is not waterproof. If rain water or other drops of water splash onto the camera, wipe it with a dry cloth. If the camera does not operate normally, contact the dealer or your nearest servicer.

#### About dirt on the image sensor

This camera features an interchangeable lens system so dirt may get inside the camera body when changing lenses.

Depending on the recording conditions, dirt on the image sensor may appear on the recorded picture.

Do not change lenses where there is a lot of dust, and always attach the body cap when a lens is not attached to the camera, so that dirt or dust does not get inside the camera body. Remove any dirt on the body cap before attaching it.

Clean any dirt on the image sensor using the steps below.

#### Removing dirt on the image sensor

Black spots may appear on the recorded picture if dirt or dust gets on the image sensor. The image sensor is very delicate and easily scratched. If it becomes necessary to clean the image sensor, always use the following steps.

- Use the AC adaptor when cleaning. If you use the battery and the remaining battery power becomes low during cleaning, the shutter will close and the shutter curtains and the mirror may be damaged.

- 1 Detach the lens. (P16)
- 2 Turn the camera on.
- 3 Set [NO RELEASE WITHOUT LENS] in the [CUSTOM] menu to [OFF]. (P87)
- 4 Set the focus mode lever to [MF]. (P42)
- 5 Set the shutter speed to [B] (Bulb). (P39)
- 6 Press and hold the shutter button.
  - The mirror goes up and the shutter curtains open.
- 7 Clean the image sensor.
  - Blow off the dust on the surface of the image sensor with a commercially available blower brush. Be careful not to blow too strongly.
  - Do not put the blower brush further inside than the lens mount.
  - Do not let the blower brush touch the image sensor as the image sensor may get scratched.
  - Do not use any objects except a blower brush to clean the image sensor.
- 8 Release the shutter button.
  - The shutter curtains close and the mirror goes down when the camera is turned off. Be careful that the blower brush does not get caught in the shutter curtains.
- 9 Turn the camera off.

### ■ Care of the camera

- **Do not strongly shake or bump the camera.** The camera may stop operating normally, pictures may not be recorded or the lens may be damaged.
- **Sand or dust may cause the camera to malfunction. Make sure that sand or dust does not get into the lens or the terminals when using the camera on a beach etc.**
- Make sure that water does not get into the camera when using it on a rainy day or on a beach.
- **This unit is not waterproof. If rain water or other drops of water splash onto the camera, wipe it with a dry cloth.**
- **Do not put your hands inside the mirror.** Do not press, push or use a blower brush to forcefully blow air on the shutter curtains as they are very thin. Be careful as they may get scratched, bent or damaged.

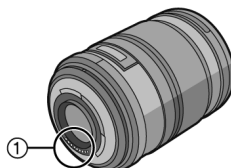
### ■ About the LCD monitor

- **Do not press the LCD monitor with excessive force as it may cause the camera to malfunction.**
- Condensation may form on the LCD monitor in places with large temperature differences. Wipe the condensation with a soft, dry cloth.
- If the camera is cold when you turn it on, the picture on the LCD monitor will be slightly darker than usual at first. However, the picture will return to normal brightness when the internal temperature of the camera increases.

Extremely high precision technology is employed to produce the LCD monitor. However there may be some dark or bright spots (red, blue or green) on the screen. This is not a malfunction. The LCD monitor screen has more than 99.99% effective pixels with a mere 0.01% of the pixels inactive or always lit. The spots will not be recorded on pictures on a card.

### ■ About the Lens

- Do not press the lens with excessive force.
- Do not leave the camera with the lens facing the sun as it may cause the camera to malfunction. Also, be careful when you leave the camera outside or near a window.
- When there is dirt (water, oil, and fingerprints, etc.) on the surface of the lens, the picture may be affected. Lightly wipe the surface of the lens with a soft, dry cloth before and after taking pictures.
- Do not place the lens mount facing downwards. Do not allow the lens mount contacts ① to become dirty.



## Troubleshooting

If you return the menu settings to the initial settings at the time of purchase, the condition may improve.

Select **[RESET]** in the **[SETUP]** menu.

### Battery and power source

#### 1: The camera cannot be operated even when it is turned on.

- Is the battery inserted correctly? Is the AC adaptor connected correctly?
- Is the battery sufficiently charged?  
– Charge the battery or use one that has been sufficiently charged.

#### 2: The LCD monitor turns off while the camera is turned on.

The camera turns off arbitrarily.

- Is power save mode activated?  
– Press the shutter button halfway to cancel this mode.
- Is the battery exhausted?  
– Charge the battery or replace it with a battery which has enough capacity.

#### 3: The camera turns off immediately after it is turned on.

- Is the battery charge insufficient to operate the camera?  
– Charge the battery or use one that has been sufficiently charged.
- If you leave the camera on, the battery will be exhausted. Turn the camera off frequently by using power save mode etc.

### Recording

#### 1: The picture cannot be recorded.

The shutter does not activate.

- Is the card inserted?
- Is there any memory remaining on the card?  
– Before recording, delete some pictures.
- Is the subject focused?  
– At the time of purchase, the camera is set so that you cannot take a picture until the subject is brought into focus. If you want to be able to take a picture when you press the shutter button fully even if the subject is not focused, set **[FOCUS PRIORITY]** in the **[CUSTOM]** menu to **[OFF]**.

#### 2: The recording mode (**[P]**, **[A]**, **[S]**, **[M]**) cannot be set correctly.

- Is the lens attached correctly?  
– Detach the lens and attach it again.

#### 3: The subject is not focused properly.

- Is the subject beyond the focus range of the camera?
- Have you taken a picture with jitter?
- Is **[FOCUS PRIORITY]** in the **[CUSTOM]** menu set to **[OFF]**?  
– In this case, the picture may not be properly focused even if **[AFS]** or **[AFC]** in focus mode is set.

#### 4: The recorded picture is whitish.

The lens is dirty.

- The picture can become whitish if there is dirt e.g. fingerprints on the lens. If the lens is dirty turn the camera off and then gently wipe the lens surface with a soft dry cloth.

#### 5: The recorded picture is too bright or dark.

- Check that the exposure is correctly compensated.

#### 6: The recorded picture is blurred. The optical image stabilizer is not effective.

- The shutter speed will become slower and the optical image stabilizer function may not work properly when taking pictures especially in dark places. In this case, we recommend holding the camera firmly with both hands when taking pictures. We recommend using a tripod and the self-timer when taking pictures with a slow shutter speed.

#### 7: The recorded picture looks rough.

Noise appears on the picture.

- Is the ISO sensitivity high or the shutter speed slow?  
(ISO sensitivity is set to **[AUTO]** when the camera is shipped. Therefore, when taking pictures indoors etc. the ISO sensitivity increases.)  
– Decrease the ISO sensitivity.  
– Set **[NOISE RED.]** in **[FILM MODE]** towards **[+]** or set every item except **[NOISE RED.]** towards **[–]**.  
– Take pictures in bright places.
- Is **[LONG SHUTTER NR]** in the **[CUSTOM]** menu set to **[OFF]**?

#### 8: The picture cannot be recorded with Live View.

- If you use Live View for a long period of time or where the temperature is high, the temperature of the image sensor will increase. A message may appear on the screen and Live View may become unusable. In this case, switch to using the viewfinder for taking pictures or turn the camera off for a short while.

#### 9: A shutter sound is heard twice when taking pictures with Live View.

- If you press the shutter button fully, the shutter sound is heard twice and 1 picture is taken. The first shutter sound is heard when the shutter returns to the position before a picture is taken and the second shutter sound is heard when the picture is actually taken

#### 10: The shutter sound is heard once when taking pictures with Live View however a picture is not taken.

- The shutter sound is heard in auto focus when the mirror goes down and then goes up after pressing the shutter button halfway to enable the camera to focus or when the shutter button is released immediately after pressing it fully. However a picture is not taken.

### LCD monitor/Viewfinder

#### 1: A flickering vertical line appears on the LCD monitor under fluorescent light.

High luminance light sources turn black.

If you move the camera quickly left and right when taking pictures, the dark parts of the subject may appear as if they have a purple or green afterimage.

- The LCD monitor may flicker for a few seconds after turning the camera on indoors under fluorescent light.  
This is not a malfunction. This does not affect the pictures you are recording.

#### 2: The LCD monitor is too bright or dark.

- Adjust the brightness of the LCD monitor.
- Is the camera in High angle mode?

#### 3: Black, red, blue and green dots appear on the LCD monitor.

- These pixels do not affect the recorded pictures.  
This is not a malfunction.

#### 4: Noise appears on the LCD monitor.

- In dark places, noise may appear to maintain the brightness of the LCD monitor.  
This does not affect the pictures you are recording.

### Flash

#### 1: The flash is not activated.

- Is the flash closed?  
– Press the **[⚡ OPEN]** button to open the flash.

#### 2: The flash is activated 2 times.

- The flash is activated 2 times. The interval between the first and second flash is longer when **AUTO/Red-eye reduction** **[⚡ A👁]**, **Forced ON/Red-eye reduction** **[⚡👁]** or **Slow sync./Red-eye reduction** **[⚡ S👁]** is set so the subject should not move until the second flash is activated.



**■ Playback****1: The picture being played back is rotated and displayed in an unexpected direction.**

The camera has a function that automatically rotates the display of pictures recorded holding the camera vertically. (If you take pictures when aiming the camera up or down, the camera may recognize that it is being held vertically.)

- You can display the pictures without being rotated when [ROTATE DISP.] (P91) is set to [OFF].
- You can rotate pictures with the [ROTATE] function.

**2: The picture is not played back.**

- Did you press [▶]?
- Is the card inserted?
- Is there a picture in the card?

**3: The folder number and the file number are displayed as [-] and the screen turns black.**

- Is the picture edited with a PC or recorded with a digital camera from another manufacturer?  
This may happen if you remove the battery immediately after recording or you record with an exhausted battery.  
– Format the data to delete the pictures mentioned above. (Formatting irretrievably deletes all data including the other pictures. Check the data carefully before formatting.)
- Pictures edited or rotated with a PC may be displayed in black in playback mode, multi playback and calendar playback.

**4: The picture is displayed with a date different from the actual recording date in calendar playback.**

- Was the picture edited with a PC or recorded with a digital camera from another manufacturer?  
This kind of picture may be displayed with a date different from the actual recording date in calendar playback.
- Is the clock in the camera set properly?  
For example, if the clock setting on the camera is different from the date and time set on the PC and you acquire pictures recorded with the camera to the PC and then write them back to the card, the pictures may be displayed with dates different from the actual recording dates in calendar playback etc.

**■ TV, PC and printer****1: The picture does not appear on the television.**

- Is the camera connected to the TV correctly?
- Set the TV input to external input mode.

**2: The display areas on the TV screen and the camera's LCD monitor are different.**

Depending on the TV model, the area display may be smaller so the picture may be stretched horizontally or vertically and the top and bottom or left and right of the picture may be cut off when it is displayed. This is due to the TV specifications and is not a malfunction.

**3: The picture cannot be transferred when the camera is connected to a PC.**

- Is the camera connected to the PC correctly?
- Is the camera recognized by the PC correctly?
- Set [USB MODE] to [PC].

**4: The card is not recognized by the PC.**

- Disconnect the USB connection cable. Connect it again while the card is inserted in the camera.

**5: The picture cannot be printed when the camera is connected to a printer.**

- Does the printer support PictBridge?  
– You cannot print pictures with printers which do not support PictBridge.
- Set [USB MODE] to [PictBridge (PTP)].

**6: The ends of the pictures are cut at printing.**

- When using a printer with a trimming or borderless printing function, cancel this function before printing. (For details, refer to the operating instructions for the printer.)
- Depending on the photo printing store, you may be able to print pictures in 16:9 size if they were recorded when the aspect ratio setting was [16:9]. Check with the photo printing store before printing.

**7: The picture is not displayed fully on the TV.**

- Check the [TV ASPECT] setting on the camera.

**■ Others****1: An unreadable language was selected by mistake.**

- Press [MENU/SET], select the [SETUP] menu icon [P] and then select the [Q] icon to set the desired language.

**2: A sound is heard when the camera is turned on or off.**

This is the sound of lens or aperture movement and is not a malfunction.

**3: A certain part of the picture appears blinking in black and white.**

- Is [HIGHLIGHT] set to [ON]?  
– This appears due to the highlight feature function which shows white saturated areas.

**4: The AF assist lamp does not turn on.**

- Is [AF ASSIST LAMP] in the [REC] mode menu set to [ON]?
- Are you taking pictures in dark places?  
– The AF assist lamp does not turn on in bright places.

**5: The camera becomes warm.**

- The surface of the camera may become warm during use. This does not affect the performance or quality of the camera.

**6: The clock is reset.**

- If you do not use the camera for a long time, the clock may be reset. When the message [PLEASE SET THE CLOCK] appears, set the clock again.
- When you take a picture before setting the clock, [0:00 0. 0. 0] is recorded.

**7: Colors appear on the picture which were not found in the actual scene.**

- Depending on the zoom magnification, the picture may have some colored fringes around the subject. This is called chromatic aberration and may be more visible when recording distant subjects. However this is not a malfunction.

**8: The file numbers are not recorded consecutively.**

- When you perform an operation after taking a certain action, the pictures may be recorded in folders with different numbers from the ones used prior to the operation.

**9: The file numbers are recorded in ascending order.**

- If the battery is inserted or removed when the camera is not turned off, the recorded folder numbers are lost. However if you turn the camera on again and record pictures, the recorded folder numbers are different from the prior recorded folder numbers.

## 8 TROUBLESHOOTING

### 1.INITIAL (DEFAULT) STATUS OF THE LENS UNIT

The Lens which is supplied as a KIT for this unit shows the following status when the Lens is detached from the Camera unit.

NOTE: It shows the same condition when the Camera turns off although the lens unit is attached.

- [1].ZOOM RING ..... When the Zoom ring is rotated, Zoom condition is changing accordingly.  
 [Focal length : 14mm to 50mm [35mm film camera equivalent: 28mm to 100mm]]
- [2].FOCUS RING ..... The Focus condition does not changed although Focus ring is rotated.
- [3].FOCUS DISTANCE INDICATOR... The focus distance indicator does not changed although focus ring is rotated.  
 [Fixed at fully Infinity position.]
- [4].APERTURE RING..... The Aperture condition does not changed although Aperture ring is rotated.  
 [Fixed at fully open position.]

### 2.INITIAL INSPECTION TIPS (BEFORE DETERMINE THE UNIT BEING FAULTY/DEFECTIVE):

Since this unit is equipped with various function/settings, some phenomenon/effect might be caused by miss usage of function and/or settings.

It might be intend to a miss-judgement caused by miss usage of function & settings although the unit is working properly without fault.

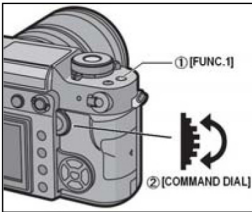



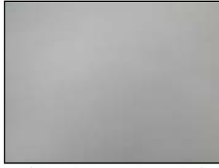

Therefore, check/confirm the followings before concluding/determine the unit being faulty/defective.

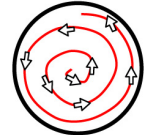
NOTE: Refer to the Operating Instructions carefully.

Also, useful hint/tips for this unit is available at following URL, and is updated frequently.

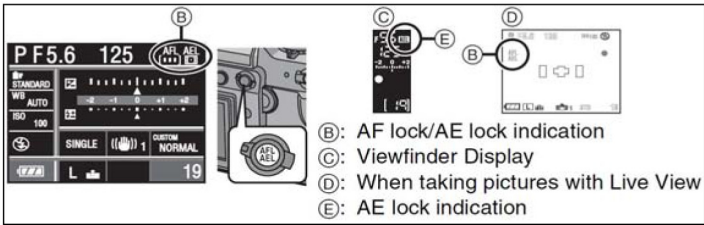
<http://panasonic.co.jp/pavc/global/cs>

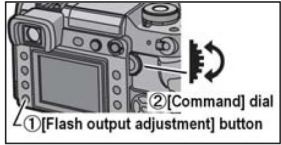
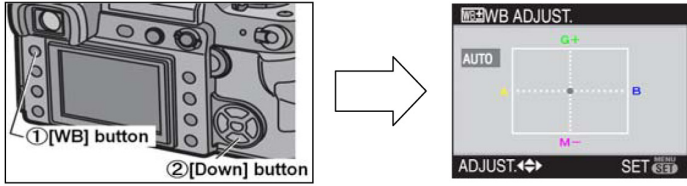
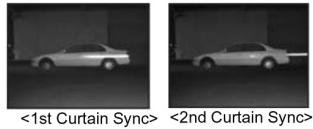
#### [1]. [LENS RELATIVES]

TITLE	ITEMS	DESCRIPTION
LENS	[FUNC 1] is fixed for Aperture. (No function is assigned to [FUNC 1].)	<p>*Some lenses from other manufacturers do not have an aperture ring. When such a lens is used, the [FUNC.1] is fixed to aperture setting button.</p> <p>*Confirm that lens &amp; body mount contacts are not dirty.</p> 
	The Aperture condition does not changed although Aperture ring is rotated. (Aperture value shows "F0.0")	<p>*The Lens &amp; Body are communicating (serial communication) through mount contacts (9pins) ].</p> <p>*Confirm that lens &amp; body mount contacts are not dirty.</p> <p>*While keep pressing the [Lens release] button, it makes same situation that Lens does not attached.</p> <p>*Although lens is attached to the body, the Aperture value shows "F0.0" when the communication error is occurred. Also, when the firmware version confirmation mode is executed, the [LENS:FFFF] is displayed as Lens firmware version.</p>   <p>Aperture value shows [F0.0] Besides, [B] is displayed when shutter speed dial sets at [A] position.</p> <p>Firmware version shows [LENS:FFFF]</p> 
	The corner edge of the Picture is/are too dark.	<p>*Confirm that the attaching condition of the Lens hood. Be sure to attach it onto the lens properly, by referring the fitting mark.</p> <p>*The Lens which is supplied as a KIT for this unit shows better performance compared with previous models even if it is fully Wide edge zooming condition.</p>  <p>&lt;Actual captured sample &gt;</p>
	Although the Focus ring is rotating, it does not change the Focus condition. (Focus Distance Indicator is never changed.)	<p>*The Focus condition as well as the [Focus distance indicator] are never changed although focus ring is rotated when the Focus Lever is positioned at AFS and/or AFC.          (When the [AF + MF] is set to [ON], it is able to change the focus condition after Auto Focus is executed at [AFS] setting. )</p> <p>*Although Focus lever is positioned at MF and the Focus Ring is rotating, focus distance indicator is fixed at fully infinity condition and is never changed when the Power switch of the Body turns off.</p> 

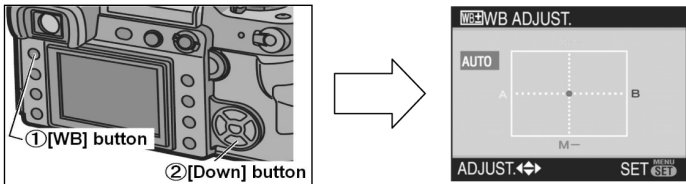
TITLE	ITEMS	DESCRIPTION
LENS	No released without lens connection.	*It is able to release the shutter button without attaching the lens unit. !! [CUSTOM] menu (4/4) ---- [NO RELEASE WITHOUT LENS] (ON/OFF)
	The Dusty and/or dirty of the Lens	<p>*Define the location of the dirt / dust of the lens first, whether it is outside surface of the lens or not. If it is outside surface of the lens, order the following procedure in steps. STEP-1. Blow off the dust certainly with Hand Blower. STEP-2. Clean and wipe up the Lens surface by using the Lens cleaning Kit (VFK1900BK). (Read/consult the instruction sheet being included in the Lens cleaning Kit in details.)</p> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p>[ Wiping up the lens surface ]</p>  </div>
	It does not become the Shutter speed [B] (Bulb) mode.	<p>*When the Drive mode lever is other than [SINGLE] position, it does not change to the [B] mode. *When the Aperture ring is positioned at [A], the [B] mode does not appear.</p>

## [2]. [BODY RELATIVES]

TITLE	ITEMS	DESCRIPTION
CAPTURING	Although shutter is released, no picture is captured.	<p>*It can not take a picture until the subject is brought into focus. (It can take a picture when the Focus Priority turns [OFF] although focus condition does not perfect.) !![CUSTOM] menu (3/4) -----FOCUS PRIORITY (ON/OFF)</p>
	[Aperture Stopping Down] button does not work.	<p>*This button allows to confirm the depth of field (effective focus range) by moving the aperture barrel physically before taking the picture. Only available in "Live view" mode. ) *In the "Finder view" mode, it does not work although "aperture stopping down" button is depressed.</p>
	[AUTO BRACKET] does not work.	*Only single picture is able to captured when flash is fired.
FOCUS	The picture is out of focus although the focus is adjusted in MF mode at once.	<p>*In the following conditions, the focus may be out of focus, no matter the kind of subject. Therefore, adjust the focus again by rotating the Focus ring. *After "in-focus" condition, Zoom condition has been changed. *Power switch is turned OFF and ON again. *After releasing the Power save.</p>
	Focus does not become in focus condition.	*If the shooting distance is less than 0.29m (Minimum requirement distance for focus), the focus may not be brought into focus, no matter the kind of subject.
	MF(Manual Focus)ASSIST does not work.	<p>*It does not work if the [Focus Lever] is positioned other than [MF] position. *It does not work when the MF (Manual Focus ) ASSIST is turned off condition. !![SETUP] menu (2/3) -----[MF ASSIST] (X4, X8, OFF) *It does not work when Digital Zoom function is activated.</p>
	Focus does not work.	<p>*Focus &amp; Exposure condition is locked when the [AFL / AEL] button is pressed under the condition of [AF / AE LOCK HOLD] is "On". *It can be reset when [AFL/AEL] button is pressed again.</p> <div style="border: 1px solid black; padding: 5px; display: inline-block;">  </div>
	Although [AFL/AEL] button is pressed, it does not hold the Focus, only Exposure is locked.	<p>*Focus does not hold even if [AF/AE Lock] button is pressed if the 「AF/AE LOCK HOLD」 is selected [AE]. !![REC] menu (3/3) -----「AF/AE LOCK」 settings (AF, AE, AF/AE ) *In the Manual Focus condition, It is only worked as [AE lock] function.</p>
Live view	It does not turn to the "AFC" mode. (Motion prediction does not work. )	*In the "Live view" mode, although Focus lever is selected at "AFC", the Focus function only works in "AFS (Auto Focus Single)" mode, but not AFC (Auto Focus Continuous).
	Although shutter sound is heard, no picture is captured.	<p>*When the shutter button is pressed in half way, the mirror is down/up at once to measure the Focus and Exposure. In this case, it makes sounds but, picture is not taken at this stage. *The shutter sound is heard twice when 1 picture is taken. *The first shutter sound is heard when the shutter returns to the position before a picture is taken and the second shutter sound is heard when the picture is actually taken.</p>

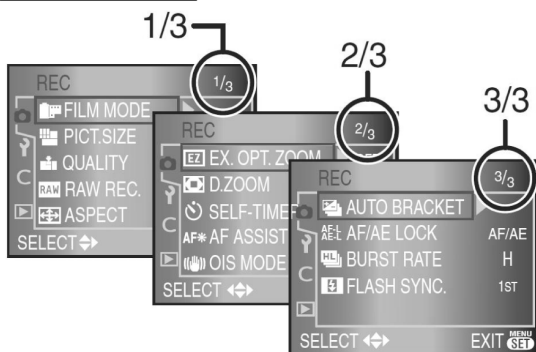
TITLE	ITEMS	DESCRIPTION
Flash	GN (Guide Number) of the Built in Flash.	<p>* There is a formula : <math>F \text{ value} \times \text{Flash reachable distance} = \text{GN [ISO100]}</math>  ISO100 / Wide edge Aperture is F2.8 / Flash reachable distance is 3.5m  <math>[2.8 \times 3.5 = 9.8 \text{---} \text{Approx. "GN10"}]</math>  ISO100 / Tele edge Aperture is F3.5 / Flash reachable distance is 2.8m  <math>[3.5 \times 2.8 = 9.8 \text{---} \text{Approx. "GN10"}]</math></p>
	Some of the Flash setting(s) are not able to select.	*In accordance with the [REC] mode and [FLASH SYNC.] mode, selectable flash settings may be differ.
	[AUTO BRACKET] does not work.	*Only one picture can be taken, when the Flash is fired.
	The subject is too bright (Whitish) / too dark (Blackish) with Flash.	<p>*Confirm that the picture is taken within Flash range or not.  *Confirm that flash output settings. [Adjusting the flash output]</p> 
	The Flash output adjustment does not effect.	*Confirm that the picture is taken within Flash range or not.
	Colour is strange when the Flash is fired.	<p>*The colour of the subject which is other than Flash reachable distance is not coverage of white balance.  *When the [Finley adjusting the White balance] is selected and shifted, it affects to the recording picture.  *It also effects to the Flash recording mode as well.</p> 
EXPOSURE	The appearance of the light source is strange. (The light source appears ahead the subject.)	<p>*Normally, the light source appears ahead of the subject.  (This is the effect of the 1st curtain synchro.)  *The Flash synchro mode can be selected.  !![REC]menu (3/3)---- [FLASH SYNC.](1ST / 2ND)</p> 
	The Exposure condition does not changed	<p>*Focus &amp; Exposure condition is locked when the [AFL / AEL] button is pressed under the condition of [AF / AE LOCK HOLD] is "On".  *It can be reset when [AFL/AEL] button is pressed again.</p>
	Although [AFL/AEL] button is pressed, only focus is locked. (AE is not locked)	<p>*Focus does not hold even if [AF/AE Lock] button is pressed if the [AF/AE LOCK HOLD] is set to [AF].  !![REC] menu (3/3)-----[AF/AE LOCK] settings (AF、AE、AF/AE )  *In the Manual Focus condition, It is only worked as [AE lock] function.</p>
	The pictures recorded with [AUTO BRACKET] function are too dark/bright.	*The [AUTO BRACKET] is selected after setting the [EXPOSURE COMPENSATION], the compensated value is effected for its reference value.
	The Exposure condition is changed extremely.	<p>*When the Metering Mode lever is positioned at [Spot], there is a possibility that the Exposure condition may be changed extremely.  *This metering mode is measuring only the limited narrow area on the centre of the screen.</p>
COLOUR REPRODUCTION	Colour is strange.	<p>*There is a possibility that [Finely adjusting the white balance] is selected/shifted.  *Press the [WB] button, then press the cursor [DOWN] button, the [Finely adjusting the White balance] menu is executed.  *It is resumed/memorized although power turns off/on.  *In the Film mode, [MY FILM1/2] and/or (TEMP) settings is used for recording.</p>
	Colour is strange. (With Flash)	*The flash light does not reach enough to the subject due to the over than flash reachable distance. In this case, white balance may be other than its coverage.
	The colour is strange (On PC monitor/ Printout image.)	<p>*There is a possibility that the picture is captured with [AdobeRGB] setting.  !! [CUSTOM] menu (3/4) ---- [COLOUR SPACE] (sRGB/AdobeRGB )  *To proceed proper colour reproduction for AdobeRGB, the AdobeRGB capable PC and Printer are necessary.  *In accordance with PC environment, it may not be displayed properly when the picture is re-sized with business software.</p>



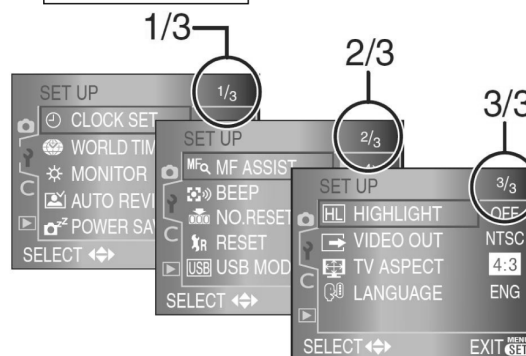
TITLE	ITEMS	DESCRIPTION
COLOUR REPRODUCTION	Colour is strange. (With Flash)	<p>*The colour of the subject which is other than Flash range is out of coverage of white balance.</p> <p>*When the [Finley adjusting White balance] is applied, it affects to the recording picture.</p> <p>*Press the [WB] button, then press the cursor [DOWN] button, the [Finley adjusting the White balance] menu is executed.</p> <p>*It effects to the Flash recording mode as well.</p> 
POWER	The Power is turned off.	<p>*Confirm that the setting condition of [POWER SAVE]. (If the camera has not been used for the time selected on the setting, the power turns off automatically.)</p> <p>!![SETUP] menu (1/3)-----[POWER SAVE](1MIN./2 MIN./5 MIN./10 MIN./OFF)</p>
DISPLAY	<p>Abnormal Picture Effect. Certain part of the picture is flashing in Black &amp; White.</p> <p>There are black bar lines appearing in both Left &amp; Right side of playback picture on LCD. (Picture is rotated in vertically.)</p>	<p>*Confirm that the setting condition of [HIGHLIGHT]. !![SETUP] menu (3/3)-----[HIGH LIGHT] (ON/OFF) The white saturated areas appear blinking in Black and White.</p> <p>*When the [ROTATE DISP.] is selected to [ON], the picture being captured in vertical position is automatically displayed vertically in Playback mode. !![PLAY] menu (1/2)----- [ROTATE DISP.] (ON/OFF)</p>
LENS	It can not release the shutter without lens.	<p>*When the [NO RELEASE WITHOUT LENS] is selected to [OFF], the picture is able to captured although the lens is not attached. !![CUSTOM] menu (4/4)----- [NO RELEASE WITHOUT LENS] (ON/OFF)</p>

## MENU LIST

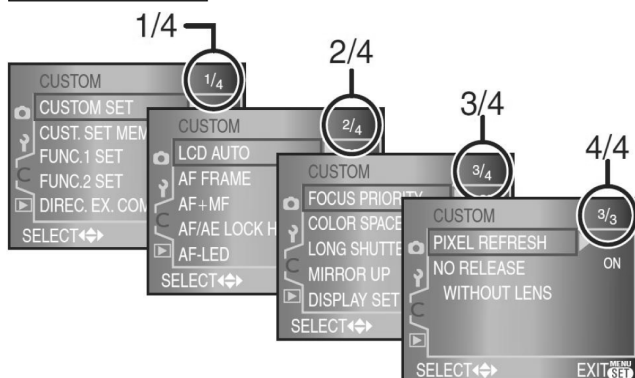
## REC MENU



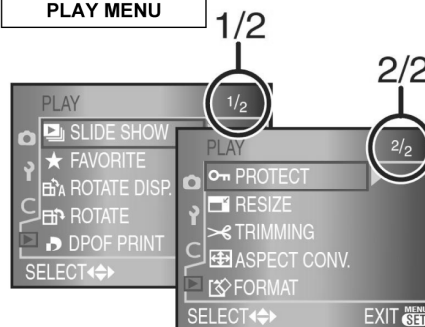
## SETUP MENU



## CUSTOM MENU



## PLAY MENU



## 9 ERROR CODE MEMORY FUNCTION

### 1. General description

This unit is equipped with history of error code memory function, and can be memorized 32 error codes in sequence from the latest. When the error is occurred more than 32, oldest error is overwritten in sequence.

The error code is not memorized when the power supply is shut down forcibly (when the unit is powered on by the battery, the battery is pulled out) because the error code is memorized to FLASH ROM when the unit is powered off.

### 2. How to display

The error code can be displayed by the following procedure:

Before perform the error code memory function, connect the AC adaptor or insert the battery, and insert the SD card.

#### • 1. The temporary cancellation of factory setting:

Set the shutter speed dial to "8".

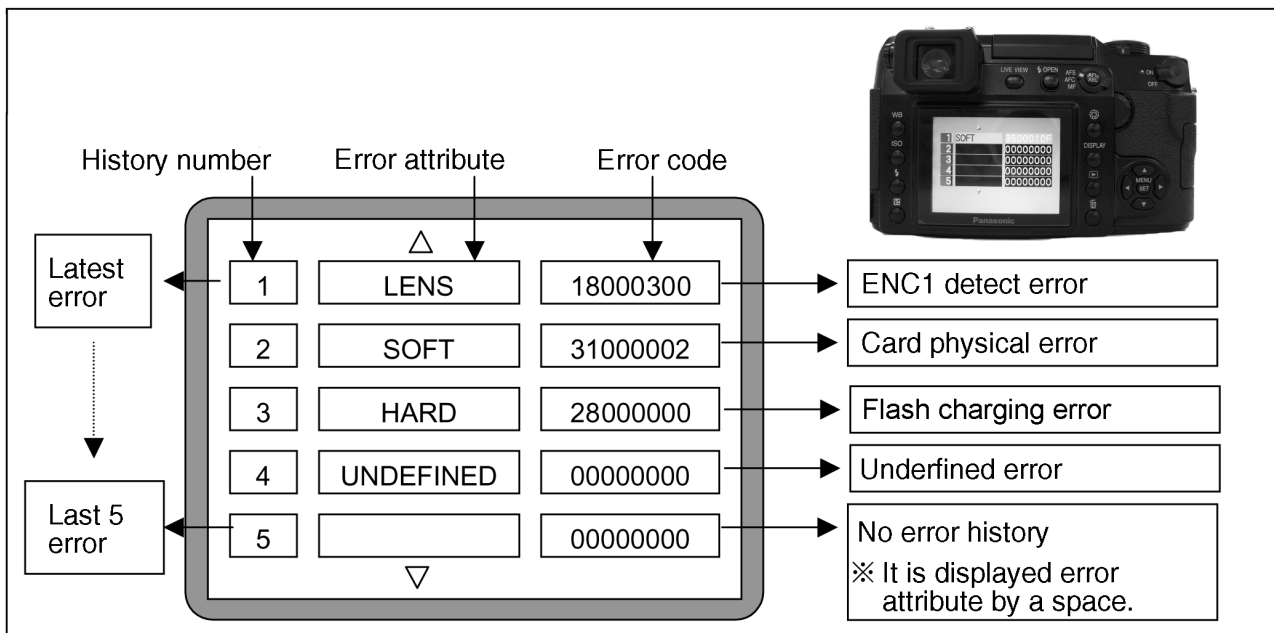
While pressing **[AFL/AEL]**, then turn the Power on.

#### • 2. The display of error code:

Press **[FUNC.2]**, **[MENU/SET]** and "**[LEFT]** of Cursor key" simultaneously with the step 1 condition.

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

Normal display → Error code display → Operation history display → Normal display → .....



Example of Error Code Display

#### • 3. The change of display:

The error code can be memorized 32 error codes in sequence, however it is displayed 5 errors on the LCD.

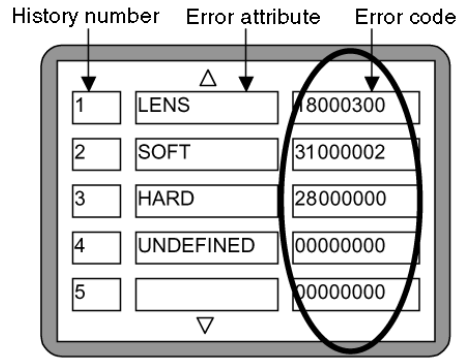
Display can be changed by the following procedure:

"**[UP]** or **[DOWN]** of Cursor key": It can be scroll up or down one.

"**[LEFT]** or **[RIGHT]** of Cursor key": It can be display last 5 error or another 5 error.

#### • 4. How to read the error code:

One error code is displayed for 8 bit, the contents of error codes is indicated the table as shown below.



Attribute	Main item	Sub item	Error code		Contents
			High 4 bits	Low 4 bits	
LENS	Lens communication	Communication	1800	0x01	Serial transmission error
				0x02	Serial receive error
				0x03	Before transmits L2B is not L→H error
				0x04	After transmits L2B is not H→L error
				0x05	Before receives L2B is not L→H error
				0x06	After receives L2B is not H→L error
				0x07	D data before receives L2B is not L→H error
				0x08	B command before execute L2B is not L→H error
				0x09	B command while executing L2B is not H→L error
				0x0A	A command check sum error
				0x0B	B command check sum error
				0x0C	C command check sum error
				0x0D	D command check sum error
				0x0E	C command data check sum error
				0x0F	Reply data number error (except type C)
				0x10	Reply data number error (type C)
HARD	VENUS A/D	Flash	2800	0000	Flash capacitor charge is not completed in time (20 seconds)
	FLASH ROM (EEPROM Area)	FLASH ROM (EEPROM Area)	2B00	0001	EEPROM breakdown (reading : power ON) User setting and storage area of menu information are cannot be normally read
				0002	EEPROM (writing : power OFF and adjustment)
SOFT	SYSTEM	RTC	2C00	0001	Clock IC initialize failure error
	CPU	Reset	3000	0001	NMI reset (30000001-30000007 are caused by factors)
				0007	EEP superscription error factor address is stored in 108-109
	Card	Card	3100	0001	Card logic error
				0002	Card physical error
				0004	Write error
			3900	0005	Internal format error
	CPU, ASIC hard	Stop	3800	0001	Camera task finish process time out
				0002	Camera task invalid code error
				0003	AF time out error
	Operation	Power on	3B00	0000	FLASH ROM processing camera initialization's operating
	Zoom	Zoom	3C00	0000	The camera side doesn't do completion of processing after the fixed time though the zoom stop is done from the sequence
				3500	The dummy processing is executed by the command from the sequence to the camera processing (Illegal command issue)
				3501	The sequence side doesn't respond though the record preprocessing is necessary on the camera side
				3502	The sequence shifted to the record without completing the record preprocessing on the camera side

#### · 5. How to returned to Normal Display:

Turn the power off and on, to exit from Error code display mode.

#### NOTE:

The error code can not be initialized by the unit only.

## 10 CONFIRMATION OF FIRMWARE VERSION

The Firmware version can be confirmed by ordering the following steps:.

• **Step 1. The temporary cancellation of factory setting:**

Insert the SD memory card which has a few photo data.

Set the shutter speed dial to “8”.

While keep pressing **[AFL/AEL]**, then turn the power on.

• **Step 2. Confirm the version:**

Press the “**[Playback]**” button to playback mode, and then press **[DISPLAY]** to switch to LCD with indication. (Fig. A)

Press **[FUNC.2]** and “**[DOWN]**” of Cursor key” simultaneously. (No need to keep pressing.)

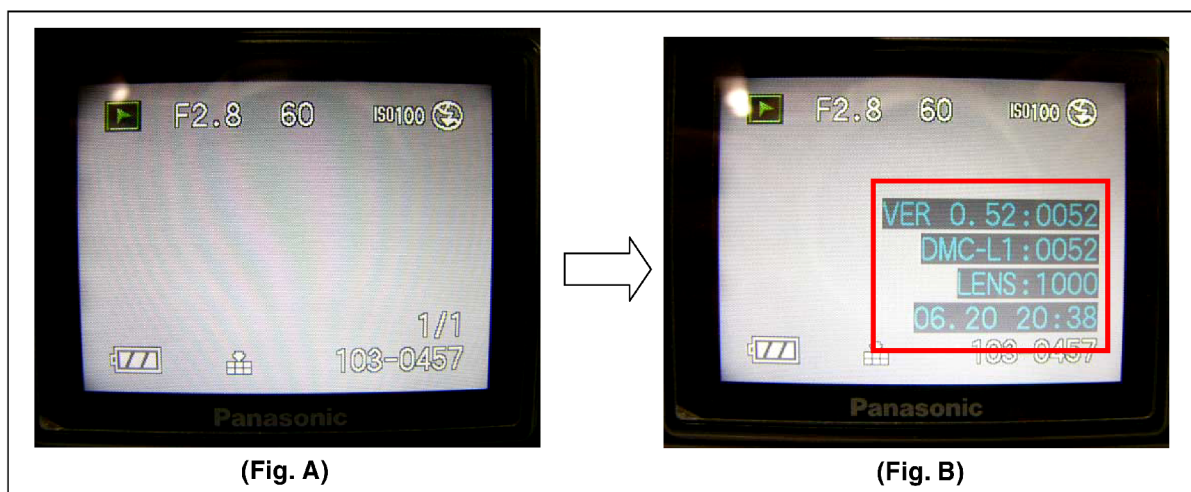
(The version information is displayed on the LCD with light blue colour letters.) (Fig. B)

**CAUTION:**

The version information does not display if the LCD has switched to LCD with indication already.

In this case, press **[DISPLAY]** to switch to LCD with indication.

VER 0.52:0052	← (1) Firmware version: Sub Micro Computer version.....The information of IC9201(Flash-ROM)
DMC-L1:0052	← (2) Model: Local version.....Managed information in factory
LENS:1000	← (3) Lens: Software version
06.20 20:38	← (4) Issued date of firmware development



**<Point>**

- The firmware version and EEPROM version can be confirmed with the information (1).
- The information (2), (3) and (4) are just reference.



# 11 MAINTENANCE

## 1.ABOUT THE LENS:

### DUST/DIRT ON THE OUTER CASING PART(S)

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

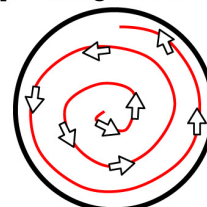
### DUST/DIRT ON THE LENS GLASSES

Define the location of the dust/dirt first, whether it is outside lens surface or not.

#### [1].When it is outside surface of the lens:

1. When the dust and/or dirt gets on the outer side surface of the Lens glasses, order the following procedures.
  - (1). Blow off the dust on the Lens glass surface with the Blower, gently.  
(Do not Blow too strongly.)
  - (2). Wipe out the dirt on the lens glass surface with Lens cleaning KIT (VFK1900BK) if necessary.  
(Consult the Instruction sheet which is included in the Lens cleaning KIT in details.)

#### [Cleaning Instructions]



Wipe the lens surface with cleaning sheet starting from center towards to outside in a circular motion.

#### [2].When it is inside of the lens:

1. It is not allowed to disassemble the Lens outside of the proper Clean facilities.  
Once it is disassembled, proper adjustment/inspection facilities are required which are rather expensive.

## 2.ABOUT THE BODY:

### DUST/DIRT ON THE OUTER CASING PART (S)

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

### DUST/DIRT ON THE IMAGE SENSOR

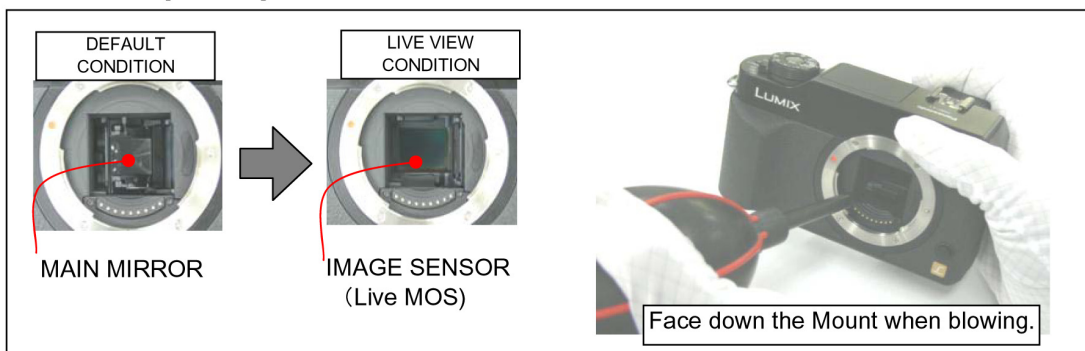
#### [PRECAUTIONS]

To prevent unnecessary shutter curtains and mirror being damaged, order the followings:

1. Use the AC Adaptor as a Power supply when Cleaning.  
(If battery is used and remaining battery is exhausted during cleaning, shutter will close.)
2. Make sure that the [POWER SAVE] is set to "OFF" condition . (It is available on 1/3 page of [SETUP] Menu.)  
(If the Power save is activated during cleaning, shutter will close.)

#### [PROCEDURES]

1. Remove the Lens unit from the Camera Body.
2. Turns on the [POWER] switch.
3. Press the [LIVE VIEW] button.  
(The Shutter curtains and mirror are retracted.)
4. Blow off the dust on the surface of the Image sensor with the Blower. (Refer to the following Figure.)
  - +Keep the Mount Facing down condition towards to floor when cleaning.
  - +Do not put the Blower further inside than the lens mount.
  - +Be careful not to blow too strongly.
5. Press the [LIVE VIEW] button to make the Shutter curtains and mirror closing condition.  
(The Shutter curtains and Mirror will be closed (default) position.)
  - +Be careful that the Blower is never touch to the shutter curtains and mirror.
6. Turn the [POWER] switch off.

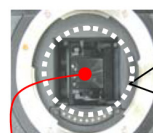


**DUST/DIRT ON THE MAIN MIRROR**

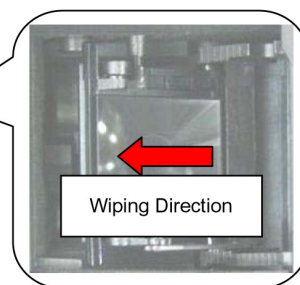
1. When the dust and/or dirt gets on the Main Mirror surface, order the following procedures.

**[PROCEDURES]**

- (1). Blow off the dust on the Lens glass surface with the Blower, gently. (Do not Blow too strongly.)
- (2). Wipe out the dirt on the Main Mirror surface with Lens cleaning KIT (VFK1900BK) by ordering the "Arrow" direction.



MAIN MIRROR



## 12 SERVICE NOTES

### 12.1. ABOUT THE LENS (Being Supplied as a KIT)

To minimize the possibilities of getting the dust/dirt on the lens surface, keep putting the lens cap other than necessary case.

The parts other than listed in replacement parts list are not allowed to disassemble/assemble.

It is not allowed to disassemble the Lens outside of the proper Clean facilities.

Once it is disassembled, proper adjustment/inspection facilities are required which are rather expensive.

### 12.2. ABOUT THE BODY

To squeeze the possibilities of getting the dust/dirt inside of the Mount space, keep putting the lens cap other than necessary case.

The parts other than listed in replacement parts list are not allowed to disassemble/assemble.

Since there is a open space especially in Finder unit, it gets dust/dirt easily.

Therefore, it is not allowed to replace the outer casing parts (such as Front, Rear, Top case and so on ) which are not listed in the Replacement Parts list at the outside of the proper Clean facilities.

Besides, once it is disassembled, proper adjustment/inspection facilities are required which are rather expensive.

**NOTE:**

Some of the outer casing parts can be replaced if the replacement is performed in proper clean facilities.

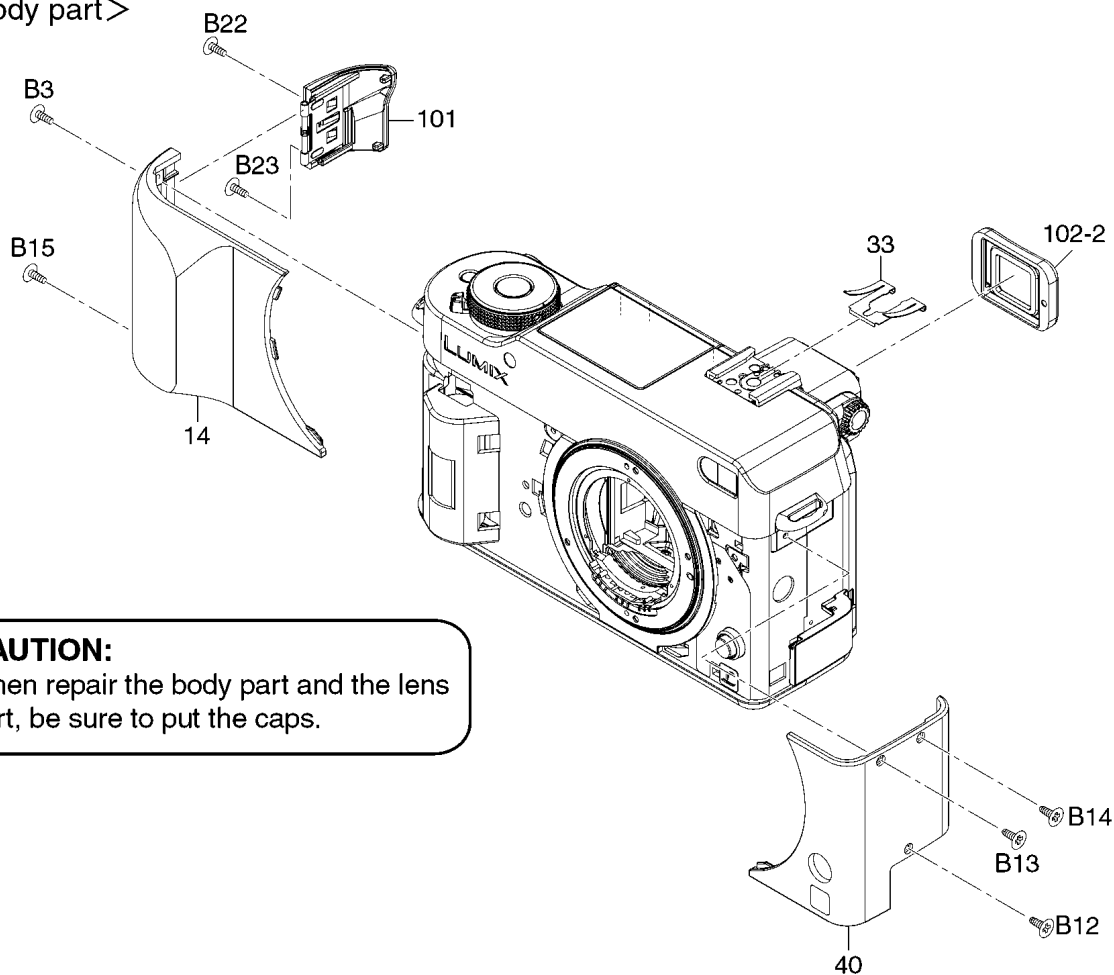
About the replaceable parts under the proper clean facilities are described in Service Manual for DMC-L1K ;  
Order No. DSC0608018CE (Vol.2)

## 13 DISASSEMBLY/ASSEMBLY

Refer to the following table and the illustration for disassembly and assembly.

Part name	Ref. No.	Unscrew
Grip piece front (L)	14	B3, B15
Grip piece front (R) unit	40	B12, B13, B14
SD door unit	101	B22, B23
Shading frame	403	B401, B402, B403

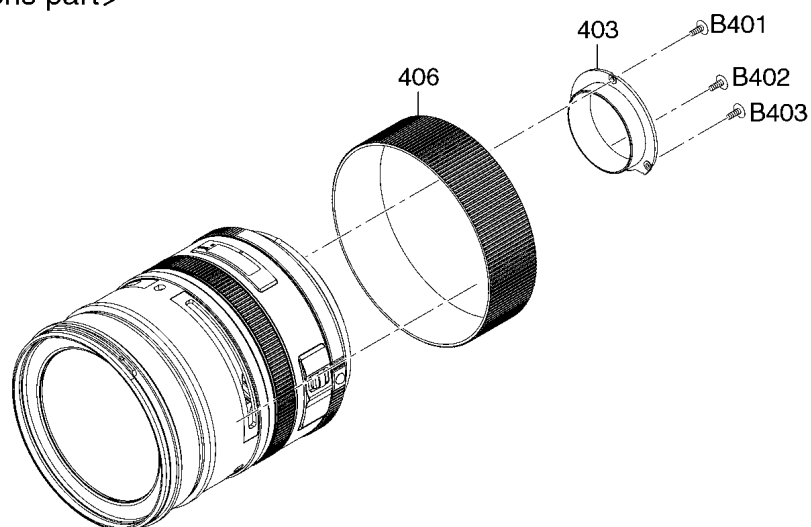
### <Body part>



#### CAUTION:

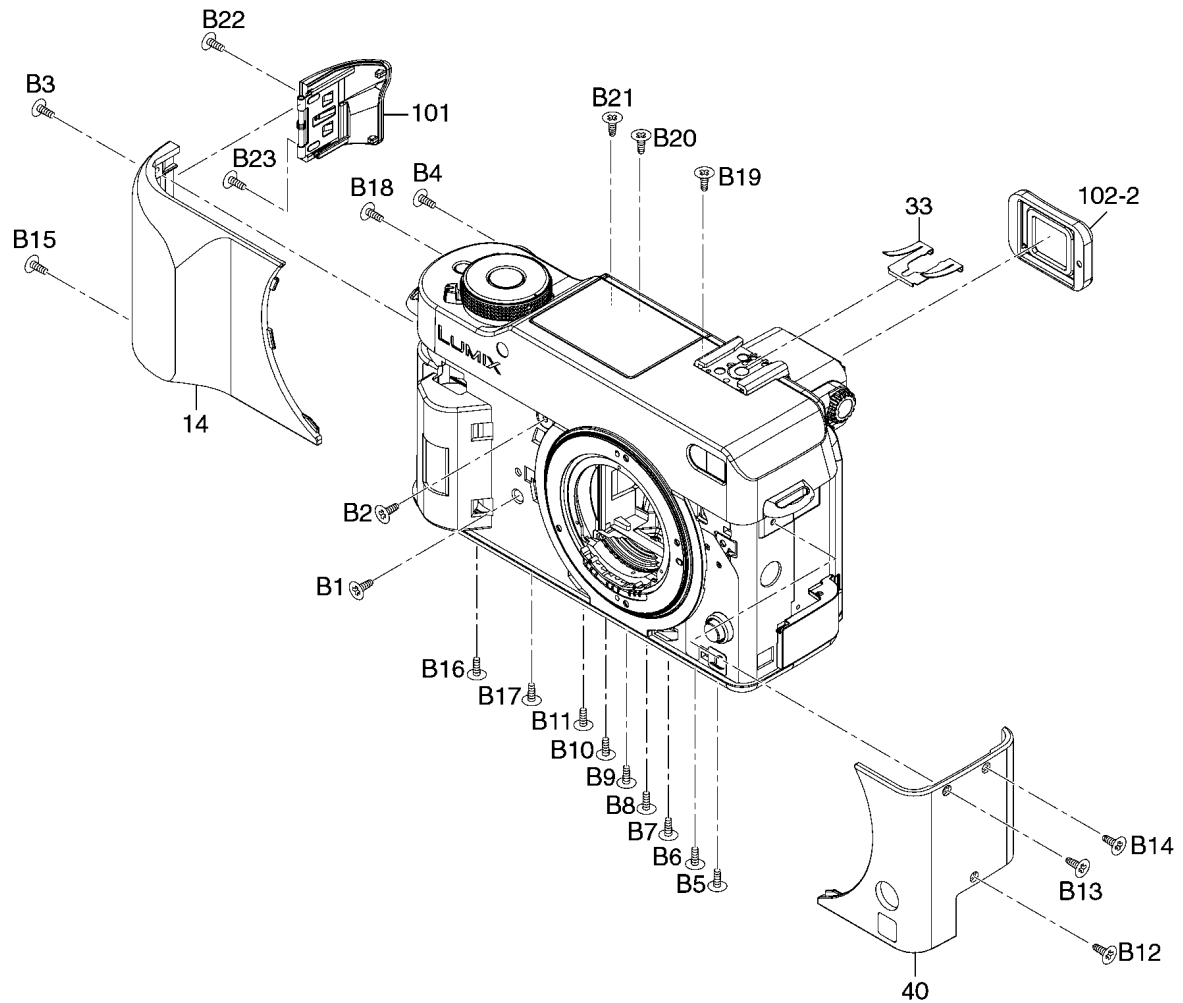
When repair the body part and the lens part, be sure to put the caps.

### <Lens part>



# 14 EXPLODED VIEWS

## 14.1. FRAME & CASING SECTION

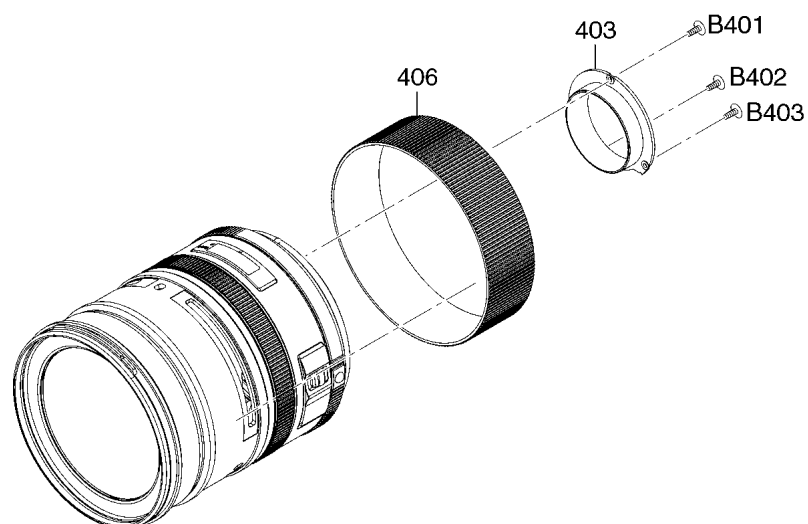


### **CAUTION:**

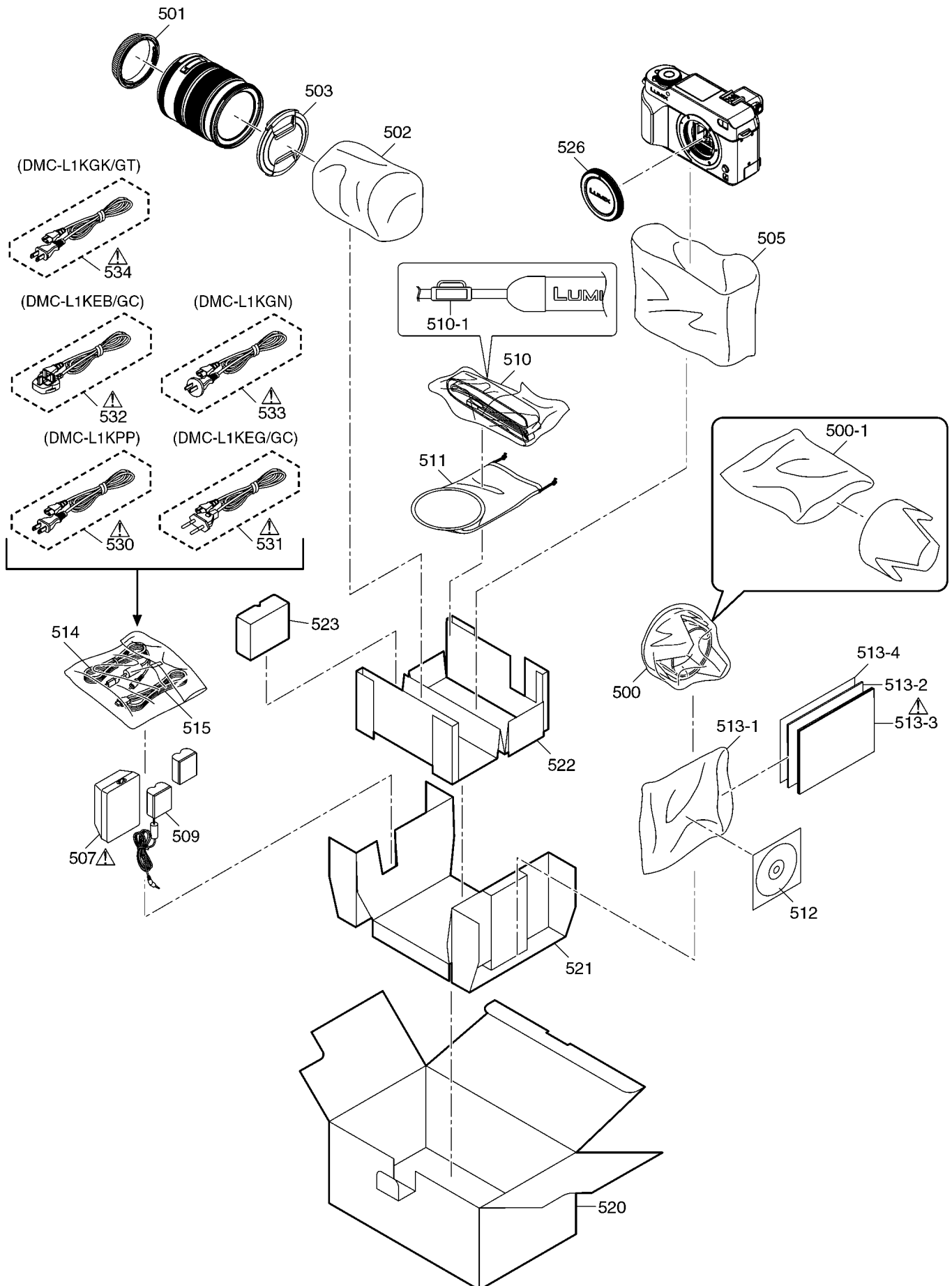
**NEVER** remove the screws, which are not described in disassemble procedures.

For missing screw purposes, some of the screws are listed in the Replacement Parts List, although it does not need for disassembling.

## 14.2. LENS SECTION




## 14.3. PACKING PARTS & ACCESSORIES SECTION



# 15 REPLACEMENT PARTS LIST

## 15.1. MECHANICAL REPLACEMENT PARTS LIST

Notes: 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. 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.			
4. Supply of CD-ROM, in accordance with license protection, is allowable as replacement parts only for customers who accidentally damaged or lost their own.			















### 15.1.1. FRAME & CASING SECTION PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks
14	VGQ8856	GRIP PIECE FRONT (L)	
33	VMC2008	SHOE SPRING	
40	VYF3095	GRIP PIECE FRONT (R) UNIT	
101	VYF3093	SD DOOR UNIT	
102-2	VYQ3887	EYE CUP	
B1	VHD1680	SCREW	
B2	VHD1680	SCREW	
B3	VHD1684	SCREW	
B4	VHD1684	SCREW	
B5	VHD1892	SCREW	
B6	VHD1892	SCREW	
B7	VHD1892	SCREW	
B8	VHD1892	SCREW	
B9	VHD1892	SCREW	
B10	VHD1892	SCREW	
B11	VHD1892	SCREW	
B12	VHD1892	SCREW	
B13	VHD1892	SCREW	
B14	VHD1892	SCREW	
B15	XQN16+BJ5FJK	SCREW	
B16	XQN16+BJ5FJK	SCREW	
B17	XQN16+BJ5FJK	SCREW	
B18	VHD1689	SCREW	
B19	VHD1690	SCREW	
B20	VHD1690	SCREW	
B21	VHD1690	SCREW	
B22	XQN16+B2FN	SCREW	
B23	XQN16+B2FN	SCREW	

### 15.1.2. LENS SECTION PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks
403	VDW1327	SHADING FRAME	
406	VMG1735	ZOOM RUBBER RING	
B401	XQN14+B3FNK	SCREW	
B402	XQN14+B3FNK	SCREW	
B403	XQN14+B3FNK	SCREW	

## 15.1.3. PACKING PARTS & ACCESSORIES SECTION PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks
500	VYC0949	HOOD UNIT	
500-1	VFF1263	HOOD BAG	
501	VFC4185	LENS REAR CAP	
502	VFF1262	LENS BAG (POLYETHYLENE)	
503	VYF3089	LENS FRONT CAP	
505	VFF1166	CAMERA BAG	
507	DE-972AF	AC ADAPTOR	 PP
507	DE-972CE	AC ADAPTOR	 GC, GK
507	DE-972BF	AC ADAPTOR	 GN, EB, EG
507	DE-972FE	AC ADAPTOR	 GT
509	K2GJ2DZ00028	DC CABLE	
510	VFC4189	STRAP	
510-1	VGQ8990	EYEPiece CAP	
511	VFC4206	LENS STORAGE BAG	
512	VFF0330-S	CD-ROM (BUNDLE SOFT)	PP
512	VFF0331-S	CD-ROM (BUNDLE SOFT)	GC, GN, GK, GT, EB, EG
513-1	VFF1100	BAG, POLYETHYLENE	PP
513-1	VFF1166	BAG, POLYETHYLENE	GC, GN, GK, GT, EB
513-2	VQT0W41	O/I PC CONN. (ENGLISH (SPANISH) / CANADIAN FRENCH)	PP
513-2	VQT0W47	O/I PC CONN. (ENGLISH/ARABIC/ CHINESE (TRADITIONAL))	GC
513-2	VQT0Z48	O/I PC CONN. (RUSSIAN)	GC
513-2	VQT0W46	O/I PC CONN. (ENGLISH)	GN, EB
513-2	VQT0W49	O/I PC CONN. (CHINESE (SIMPLIFIED))	GK
513-2	VQT0W48	O/I PC CONN. (CHINESE (TRADITIONAL))	GT
513-2	VQT0W43	O/I PC CONN. (GERMAN/FRENCH/ ITALIAN/DUTCH)	EG
513-2	VQT0W44	O/I PC CONN. (SPANISH/SWEDISH/DANISH/ PORTUGUESE)	EG
513-3	VQT0W82	INSTRUCTION BOOK (ENGLISH (SPANISH))	 PP
513-3	VQT0W83	INSTRUCTION BOOK (CANADIAN FRENCH)	 PP
513-3	VQT0W89	INSTRUCTION BOOK (ENGLISH)	 GC
513-3	VQT0W90	INSTRUCTION BOOK (CHINESE (TRADITIONAL))	 GC
513-3	VQT0W95	INSTRUCTION BOOK (ENGLISH)	 GN
513-3	VQT0W94	INSTRUCTION BOOK (CHINESE (SIMPLIFIED))	 GK
513-3	VQT0W93	INSTRUCTION BOOK (CHINESE (TRADITIONAL))	 GT
513-3	VQT0W88	INSTRUCTION BOOK (ENGLISH)	 EB
513-3	VQT0W84	INSTRUCTION BOOK (GERMAN)	 EG
513-3	VQT0W85	INSTRUCTION BOOK (FRENCH)	 EG
513-4	VQT0Z34	O/I SOFTWARE (ENGLISH/CANADIAN FRENCH)	PP
513-4	VQT0Z37	O/I SOFTWARE (ENGLISH/RUSSIAN/ARABIC/ CHINESE (TRADITIONAL))	GC
513-4	VQT0Z36	O/I SOFTWARE (ENGLISH)	GN, EB
513-4	VQT0Z39	O/I SOFTWARE (CHINESE (SIMPLIFIED))	GK
513-4	VQT0Z38	O/I SOFTWARE (CHINESE (TRADITIONAL))	GT
513-4	VQT0Z35	O/I SOFTWARE (GERMAN/FRENCH/ITALIAN/ DUTCH/PORTUGUESE/SPANISH/ SWEDISH/DANISH)	EG



Ref. No.	Part No.	Part Name & Description	Remarks
514	K1HA05CD0004	USB CABLE	
515	K2KJ2CB00001	AV CABLE	
520	VPK3145	PACKING CASE	PP
520	VPK3146	PACKING CASE	GC, GN, GK, GT, EB, EG
521	VPN6424	CUSHON A	
522	VPN6425	CUSHON B	
523	VPN6447	PAD	
526	VKF4091	BODY CAP	
530	K2CA2CA00019	AC CABLE	△ PP
531	K2CQ2CA00006	AC CORD W/PLUG	△ GC, EG
532	K2CT3CA00004	AC CORD W/PLUG	△ GC, EB
533	K2CJ2DA00008	AC CORD W/PLUG	△ GN
534	K2CA2CA00020	AC CORD W/PLUG	△ GK
534	K2CA2CA00027	AC CORD W/PLUG	△ GT