

Service Manual

Digital Camera/Lens Kit

LUMIX

LEICA
D VARIO-ELMAR



Model No. **DMC-L10KPP**
DMC-L10KE
DMC-L10KEB
DMC-L10KEG
DMC-L10KGC
DMC-L10KGD
DMC-L10KGK
DMC-L10KGN
DMC-L10KGT

Vol. 1

Colour

(K).....Black Type

Panasonic®

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SPECIFICATIONS

Digital Camera Body

(DMC-L10): Information for your safety

Power Source:	DC 9.3 V
Power Consumption:	1.8 W (When taking pictures with the Viewfinder) 3.3 W (When taking pictures with Live View) 1.9 W (When playing back)

Camera effective pixels: 10,100,000 pixels

Image sensor: 4/3" Live MOS sensor, total pixel number 11,760,000 pixels
Primary color filter

Digital zoom: Max. 4×

Extended optical zoom: ON/OFF simple enlargement (compatible with lenses from other manufacturers)
(Except for the maximum picture size for each aspect ratio)

Focus

Phase shift AF: 3 points, AUTO/1 fixed point, right/1 fixed point, center/1 fixed point, left

Contrast AF: Face detection/9-area-focusing/Multi-area-focusing/
3-area-focusing/1-area-focusing/Spot-focusing

Shutter System: Focal-plane shutter

Burst recording

Burst speed: 3 pictures/second (High speed),
2 pictures/second (Low speed)

Number of recordable pictures:

3 pictures (when there are RAW files)
Depends on the capacity of the card
(when there are no RAW files)

ISO sensitivity: AUTO/[160/100/200/400/800/1600]

Shutter speed: B (Bulb) (max. 8 minutes), 60 seconds to
1/4000th of a second

Metering range: EV 0 to EV 20 (When taking pictures with the Viewfinder)

White balance: AUTO/Daylight/Cloudy/Shade/Halogen/Flash/White set 1/
White set 2/Color temperature setting

Exposure (AE): Program AE (P)/Aperture-priority AE (A)/
Shutter-priority AE (S)/Manual exposure (M)/AUTO
Exposure compensation (1/3 EV Step, -2 EV to +2 EV)

Metering mode: Multiple/Center weighted/Spot

LCD monitor: 2.5" low-temperature polycrystalline TFT LCD
(Approx. 207,000 pixels) (field of view ratio about 100%)

Viewfinder: Eye-level single lens method using a pentamirror with diopter
adjustment
(field of view ratio about 95%)
(with diopter adjustment -3 to +1 diopter)

Flash: Built-in pop up flash
Flash range: Approx. 2.0 m (6.6 feet) to 5.5 m (18.0 feet)
(with supplied lens, 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

Flash synchronization speed: Equal to or smaller than 1/160th of a second

Recording media: SD Memory Card/SDHC Memory Card/MultiMediaCard

Picture size

Still picture: When the aspect ratio setting is [4:3]
3648×2736 pixels, 2816×2112 pixels, 2048×1536 pixels
When the aspect ratio setting is [3:2]
3648×2432 pixels, 2816×1880 pixels, 2048×1360 pixels
When the aspect ratio setting is [16:9]
3648×2056 pixels, 2816×1584 pixels, 1920×1080 pixels

Quality: RAW/RAW+ Fine/RAW+ Standard/Fine/Standard
Recording file format: JPEG (based on "Design rule for Camera File system",
based on "Exif 2.21" standard)/DPOF corresponding

Interface

Digital: USB 2.0 (Full speed)

Analog video: NTSC/PAL Composite (Switched by menu)

Terminal

[REMOTE]: ϕ 2.5 mm jack

[DIGITAL/V.OUT]: Dedicated jack (8 pin)

[DC IN]: Dedicated DC cable

Dimensions: Approx. 134.5 mm (W)×95.5 mm (H)×77.5 mm (D)
[5 5/16" (W)×3 13/16" (H)×3 1/16" (D)]
(excluding the projecting parts)

Mass (Weight): Approx. 480 g/16.9 oz (camera body),
Approx. 973 g/34.3 oz (with supplied lens, card and battery)

Operating temperature: 0 °C to 40 °C (32 °F to 104 °F)

Operating humidity: 10% to 80%

AC Adaptor

(Panasonic DE-A38F): Information for your safety

Output:	DIGITAL CAMERA 9.3 V --- 1.2 A CHARGE 8.4 V --- 0.75 A
Input:	110 V to 240 V ~ 50/60 Hz, 0.3 A

Battery Pack

(lithium-ion)

(Panasonic

DMW-BLA13PP): Information for your safety

Voltage/capacity:	7.2 V, 1320 mAh
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Interchangeable Lens

"LEICA D VARIO-ELMAR 14–50 mm/F3.8–5.6/ASPH./MEGA O.I.S."
(L-RS014050)

Focal length	f=14 mm to 50 mm (35 mm film camera equivalent: 28 mm to 100 mm)
Aperture type	7 leaf shutters/iris diaphragm/circular diaphragm
Aperture range	F3.8 (Wide) to F5.6 (Tele)
Lens construction	11 elements in 15 groups (2 aspherical lenses)
In focus distance	0.29 m (0.95 feet) to ∞ (from the focus distance reference line)
Optical image stabilizer	Available
Mount	"Four Thirds Mount"
Max. diameter	74 mm (2.91 inch)
Overall length	Approx. 93 mm (3.66 inch) (from the tip of the lens to the base side of the lens mount)
Mass (Weight)	Approx. 434 g (15.3 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

This Service Manual contains technical information, which allow service personnel 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 Supplement Service Manual.

2 IMPORTANT NOTICE

2.1. CAMERA BODY UNIT

1. When servicing other than the following part disassembling and/or replacement, the clean box which keeps dustproof environment is required. (Satisfied clean level: Less than class 10,000 Federal Standard 209D).
2. Due to above reason, this Service Manual does not contain the following information.
 - a. Disassemble / Assemble procedure for other than the part showing in Fig.S1.
 - b. Schematic diagram and Block diagram.
 - c. Parts list for other than the part showing in Fig.S1.

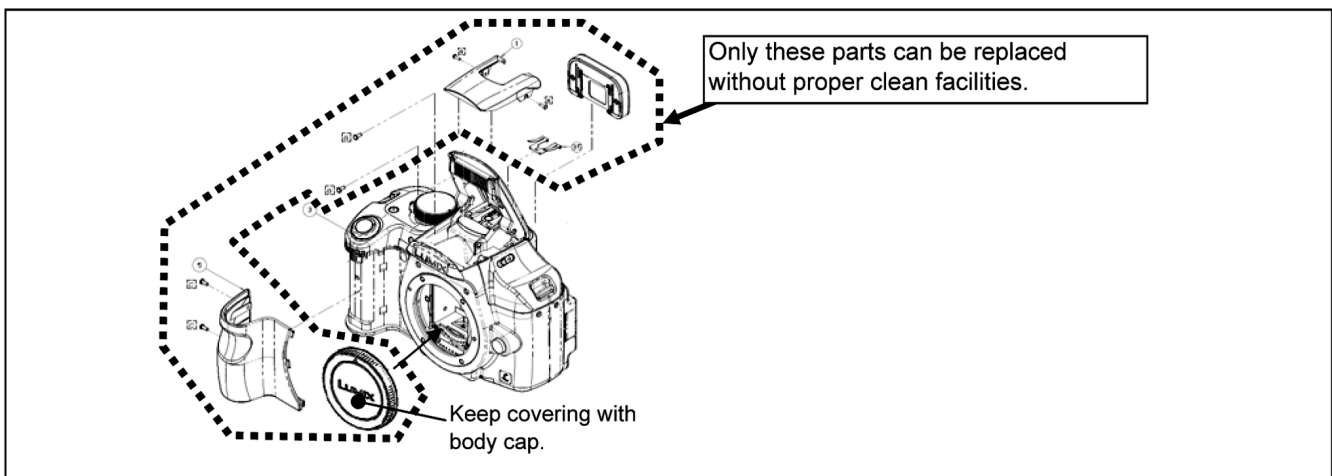


Fig. S1

2.2. LENS UNIT

1. This Service Manual does not contain the repair service information for "LENS MAIN BLOCK UNIT", because it requires special facilities and equipment.
2. For repair of the "LENS MAIN BLOCK UNIT", consult with the service department of sales company.

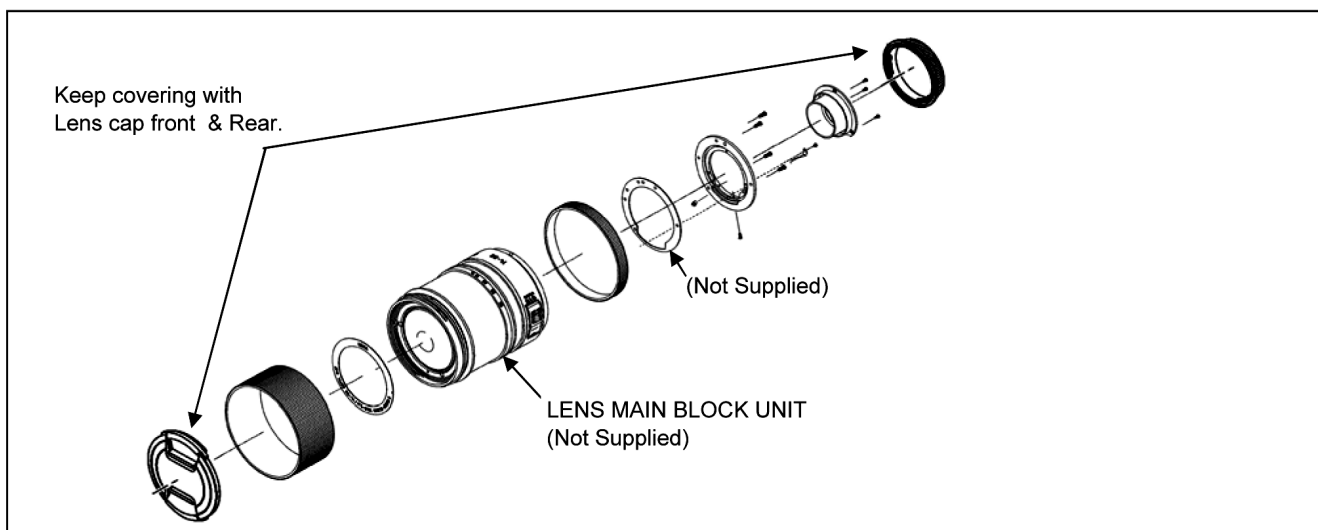


Fig. S2

3 HOW TO DEFINE THE MODEL SUFFIX (NTSC or PAL model)






There are five kinds of DMC-L10K, regardless of the colours.

- a) DMC-L10K (Japan domestic model)
- b) DMC-L10KPP
- c) DMC-L10KE/EB/EG/GN
- d) DMC-L10KGC
- e) DMC-L10KGD/GK/GT

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

3.1. DEFINING METHODS:

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

<p>a) DMC-L10K (Japan domestic model) The nameplate for this model show the following Safety registration mark.</p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; text-align: center;">  </div> <p>b) DMC-L10KPP The nameplate for this model show the following Safety registration mark.</p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; text-align: center;">  </div> <p>c) DMC-L10KE/EB/EG/GN The nameplate for these models show the following Safety registration mark.</p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; text-align: center;">  </div> <p>d) DMC-L10KGC The nameplate for this model show the following Safety registration mark.</p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; text-align: center;">  </div> <p>e) DMC-L10KGD/GT/GK The nameplate for these models show full model number. (with suffix)</p>	<div style="border: 1px solid black; width: 150px; height: 150px; margin: 0 auto;">  </div> <p style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">Safety registration mark</p>
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3.2. INITIAL SETTINGS:

3.2.1. IMPORTANT NOTICE

Before proceeding initial settings, be sure to read the following CAUTION.

CAUTION 1 (Initial Settings)

DO NOT select "NONE(JAPAN)" or "PP"(North America) if need to select "EG/E/GD/GC/GT/GK/EB and GN".

Otherwise, once "NONE(JAPAN)" or "PP"(North America) are selected, "EG/E/GD/GC/GT/GK/EB and GN" will not displayed, thus, RE-Settings (changing area) can not be made.

3.2.2. PROCEDURES:

• Step 1. The temporary cancellation of initial setting:

Set the drive mode lever to "Single".

While keep pressing **AFL/AEL** and **FILM MODE** simultaneously, then turn the Power on.

• Step 2. The cancellation of initial setting:

Press the "Playback" button to playback mode.

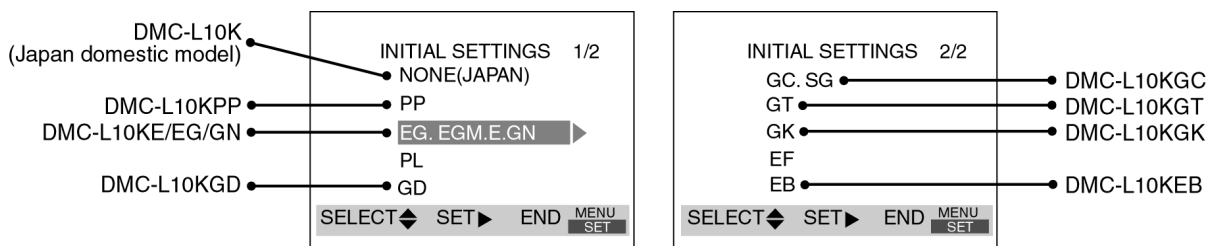
Press **FILM MODE** and "UP" of Cursor key" simultaneously, then turn the Power off.

• Step 3. Turn the Power on:

Set the mode dial to "P", and then turn the Power on.

• Step 4. Display the INITIAL SETTING:

While keep pressing **MENU/SET** and "RIGHT" of Cursor key" simultaneously, turn the Power off.

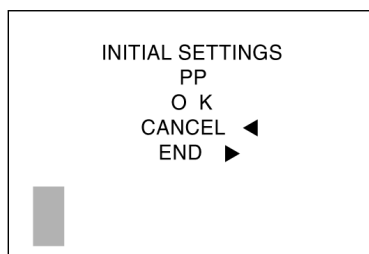


• Step 5. Set the INITIAL SETTING: (Refer to "CAUTION 1")

[Caution for before settings]

Once "NONE(JAPAN)" (Area for Japan) or "PP" (Area for North America) is selected with "INITIAL SETTINGS", other areas will not displayed even if "INITIAL SETTINGS" menu is displayed again, thus, the area can not be changed. Select the area carefully.

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-L10K (Japan domestic model)	NTSC	Japanese	Year/Month/Date	
b)	DMC-L10KPP	NTSC	English	Month/Date/Year	
c)	DMC-L10KE/EB/EG/GC/GN	PAL	English	Date/Month/Year	
d)	DMC-L10KGK	PAL	Chinese (simplified)	Year/Month/Date	
e)	DMC-L10KGT	NTSC	Chinese (traditional)	Year/Month/Date	
f)	DMC-L10KGD	NTSC	Korean	Year/Month/Date	

4 SAFETY PRECAUTIONS

4.1. 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.

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

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

Hot-Check Circuit

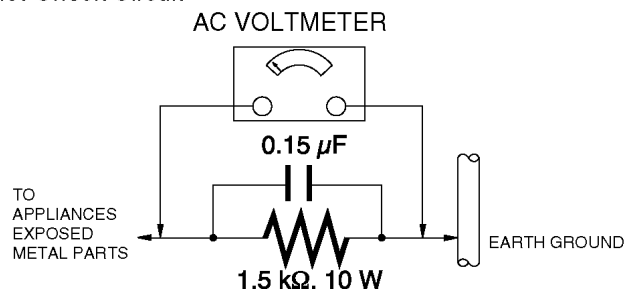


Figure. 1

5 PREVENTION OF ELECTROSTATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

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

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

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

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

CAUTION :

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

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

6 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.

7 CAUTION FOR AC CORD (EB/GC only)

7.1. 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.

7.2. 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.

7.2.1. Important

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

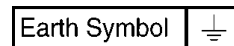
Blue	Neutral
Brown	Live

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.

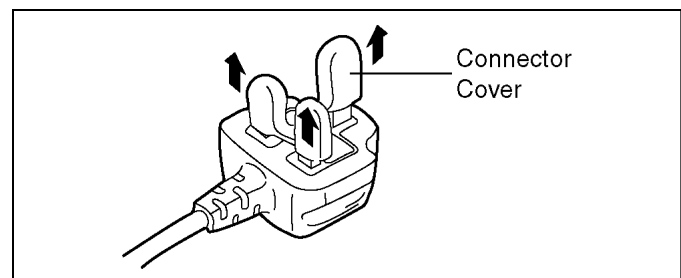
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

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.



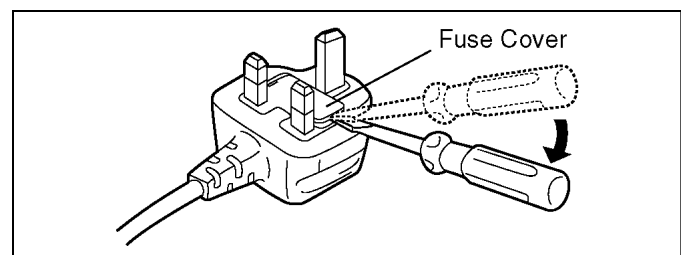
7.2.2. Before use

Remove the Connector Cover as follows.

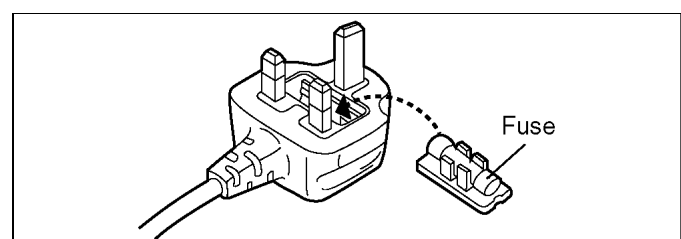


7.2.3. How to replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



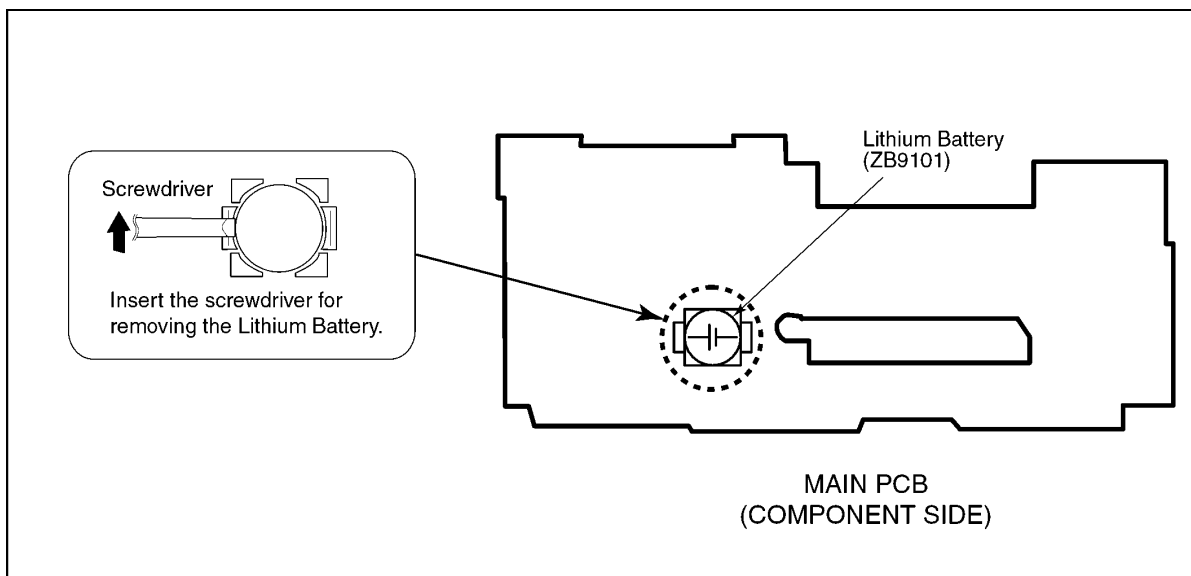
2. Replace the fuse and attach the Fuse cover.



8 HOW TO REPLACE THE LITHIUM BATTERY

8.1. REPLACEMENT PROCEDURE

1. Remove the MAIN PCB. (Refer to Disassembly Procedures.)
2. Remove the Lithium battery (Ref. No. "ZB9101" at component side of MAIN PCB) and then replace it into new one.



NOTE:

This Lithium battery is a critical component.

(Type No.: ML421S/ZT **Manufactured by Matsushita Battery Industrial Co.,Ltd.**) It must never be subjected to excessive heat or discharge.

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

Replacement batteries must be of same type and manufacture.

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

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

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

(For English)

CAUTION

Danger of explosion if battery is incorrectly replaced.

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

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

(For German)

ACHTUNG

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

Behandeln Sie gebrauchte Batterien nach den Anweisungen des Herstellers.

(For French)

MISE EN GARDE

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

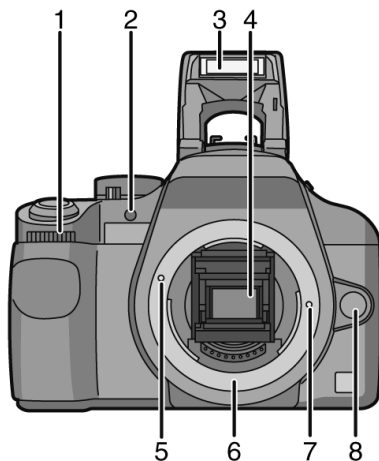
NOTE

Above caution is applicable for a battery pack which is for DMC-L10K series, as well.

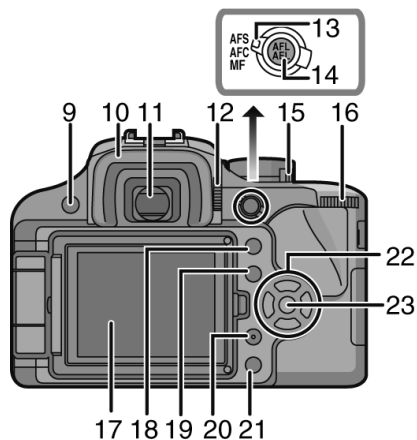
9 OPERATING GUIDE

Names of the Components

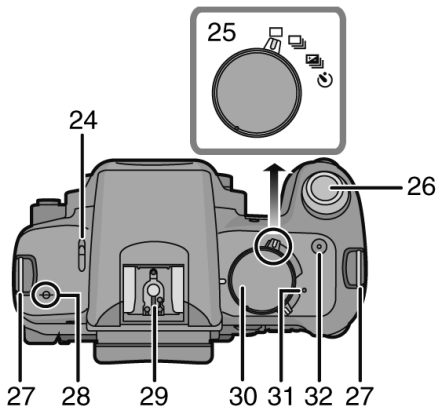
■ Camera body



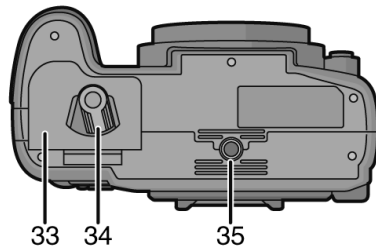
- 1 Front dial
- 2 AF assist lamp
Self-timer indicator
- 3 Flash
- 4 Mirror
- 5 Lens fitting mark
- 6 Mount
- 7 Lens lock pin
- 8 Lens release button



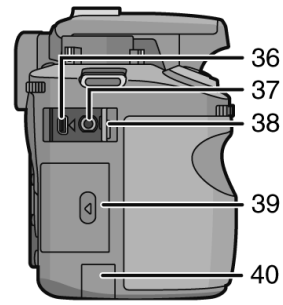
- 9 [LIVE VIEW] button
- 10 Eye cup
- 11 Viewfinder
- 12 Diopter adjustment dial
- 13 Focus mode lever
- 14 [AFL/AEL] button
- 15 Camera ON/OFF switch
- 16 Rear dial
- 17 LCD monitor
- 18 Playback button
- 19 [DISPLAY] button
[LCD MODE] button
- 20 [FUNC] button
- 21 Delete button
- 22 Cursor buttons
 - ▲/ISO
 - ◀/AF mode
 - ▶/Metering mode
 - ▼/WB (White balance)
- 23 [MENU/SET] button



- 24 Flash Open Lever
- 25 Drive mode lever
 - Single: □
 - Burst:
 - Auto bracket:
 - Self-timer:
- 26 Shutter button
- 27 Strap eyelet
- 28 Focus distance reference mark
- 29 Hot shoe
- 30 Mode dial
- 31 Status indicator
- 32 [FILM MODE] button



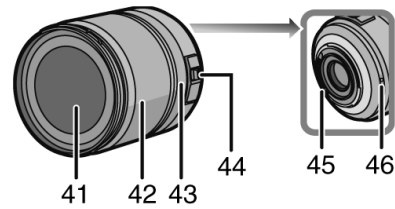
- 33 Battery door
- 34 Open/Close lever
- 35 Tripod receptacle
 - When you use a tripod, make sure it is stable when the camera is attached to it.



- 36 [DIGITAL/V.OUT] socket
- 37 [REMOTE] socket
- 38 Terminal door
- 39 Card door
- 40 DC cable cover

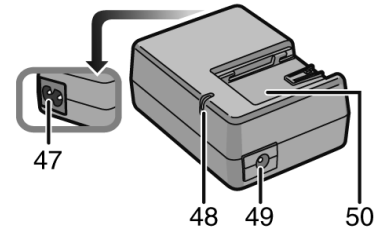
■ Lens

“LEICA D VARIO-ELMAR 14–50 mm/
F3.8–5.6/ASPH./MEGA O.I.S.”



- 41 Lens surface
- 42 Zoom ring
- 43 Focus ring
- 44 [O.I.S.] switch
- 45 Contact point
- 46 Lens fitting mark

■ Battery charger/AC adaptor



- 47 Power input socket [AC IN]
- 48 [CHARGE] indicator
- 49 Power output socket [DC OUT]
- 50 Battery holder

10 OPERATING INFORMATION

Standard Accessories

Check that all the accessories are included before using the camera.

1  DMW-BLA13PP	2 	3 
4  DE-A38F	5  K2CA2EA00002	6  K1HA08CD0015
7  K1HA08CD0013	8 	9  VFC4268
10  VGQ8990	11  VKF4091	12  VYC0972
13  VYC0973	14  VYF3160	15  VFC4185
16  VFC4206		

- 1 Digital Camera Body
(This is referred to as **camera body** in these operating instructions.)
 - 2 Interchangeable Lens
"LEICA D VARIO-ELMAR 14–50 mm/ F3.8–5.6/ASPH./MEGA O.I.S."
(This is referred to as **lens** in these operating instructions.)
 - 3 Battery Pack
(This is referred to as **battery** in these operating instructions.)
 - 4 Battery Charger/AC Adaptor
(This is referred to as **charger** in these operating instructions.)
 - 5 AC Cable
 - 6 Video Cable
 - 7 USB Connection Cable
 - 8 CD-ROM
 - 9 Strap
 - 10 Eyepiece Cap
(This is attached to the strap at the time of purchase.)
 - 11 Body Cap
(This is attached to the camera body at the time of purchase.)
 - 12 Lens Hood
 - 13 Magnifier Eye Cup
 - 14 Lens Cap
(This is attached to the interchangeable lens at the time of purchase.)
 - 15 Lens Rear Cap
(This is attached to the interchangeable lens at the time of purchase.)
 - 16 Lens Storage Bag
- SD Memory Card, SDHC Memory Card and MultiMediaCard are indicated as **card** in the text.
 - **The card is optional.**
 - For information about optional accessories, refer to the "Digital Camera Accessory System".
 - If any accessories are lost, customers in the USA should contact Panasonic's parts department at 1 800 833-9626 and customers in Canada should contact 1 800 99-LUMIX (1-800-995-8649) for further information about obtaining replacement parts.

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.

Select a lens that matches the scene being recorded and your use of the pictures. 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 other than the supplied lens

- Depending on the type of lens, you may not be able to use some functions such as contrast AF, the direction detection function and OIS mode.
- 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.
- The camera automatically switches to phase difference AF [] if you use a lens that does not support contrast AF even if [LIVE VIEW AF] in the [CUSTOM MENU] menu is set to []. Check the following for compatible lenses.

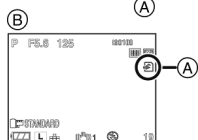
■ Lenses that support contrast AF and the direction detection function (As of October 2007)

The compatible lenses are L-RS014050 (supplied lens) and L-RS014150 (November 2007 planned release). Refer to the catalog, website etc. for the latest information.

About the Card (optional)

■ Access to the card

The card access indication (A) lights when pictures are being recorded onto the card.



- (B) When taking pictures with Live View
When the card access indication lights, pictures are being read or deleted or the card is being formatted. Do not:
- turn the camera off.
 - remove the battery or the card.
 - shake or impact the camera.
 - disconnect the DC cable (DMW-DCC1; optional) if you use the AC adaptor.
- The card and the data may be damaged or the camera may not operate normally.

■ Card (optional)

- The SD Memory Card, SDHC Memory Card and MultiMediaCard are small, lightweight, removable external cards. Read P6 for information about cards that can be used in this unit.
- 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.
- The reading/writing speed of an SD Memory Card and an SDHC Memory Card is fast. Both types of card are equipped with a Write-Protect switch (A) that prevents writing and formatting the card. (If the switch is slid to the [LOCK] side, it is not possible to write or delete data on the card and format it. When the switch is slid to the other side, these functions become available.)



- This unit (SDHC compatible equipment) 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.
- 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. (Always read the operating instructions for the equipment being used. If you also order a photo studio to print pictures, ask the photo studio before printing.)
- Refer to for information about the number of recordable pictures for each card.



- The data on the card may be damaged or lost due to electromagnetic waves, static electricity or breakdown of the camera or the card. We recommend storing important data on a PC etc.
- Do not format the card on your PC or other equipment. Format it on the camera only to ensure proper operation.
- Keep the Memory Card out of reach of children to prevent swallowing.

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 knock or drop the bag/case that you inserted the camera in as the shock may cause damage to the camera, lens or LCD monitor.
- Do not use a paper bag as it can easily rip causing the camera to fall and be damaged.
- We strongly recommend you purchase a good camera bag/case from your local dealer to protect your camera.

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.
- Wipe off any dust or dirt on the zoom ring and the focus ring with a dry, dust cloth.
- Do not use a kitchen detergent or a chemically treated cloth.

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 a sufficiently charged battery or 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.**
 - 2: Turn the camera on.**
 - 3: Press [LIVE VIEW] to switch to the Live View recording screen.**
 - The mirror rises and the shutter curtains open.
 - 4: 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.
 - 5: Turn the camera off.**
 - 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.

About the LCD monitor

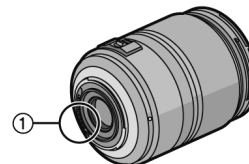
Do not press the LCD monitor with excessive force. Uneven colors may appear on the LCD monitor and it may malfunction.

- 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 screen. 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 rays of light from the sun may cause it to malfunction. Also, be careful when placing 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.



■ Battery

The battery is a rechargeable lithium ion battery.

Its ability to generate power comes from the chemical reaction that takes place inside it. This reaction is susceptible to the surrounding temperature and humidity. If the temperature is too high or too low, the operating time of the battery will become shorter.

After use, be sure to remove the battery.

Bring charged spare batteries when going out.

- Be aware that the operating time of the battery becomes shorter in low temperature conditions such as at a ski resort.
- When you travel, do not forget to bring the charger (supplied) so that you can charge the battery in the country that you are traveling in.

If you drop the battery accidentally, check to see if the body of the battery and the terminals are damaged.

- Inserting a damaged battery in the camera will damage the camera.

Dispose of unusable battery.

- Batteries have a limited life.
- Do not throw batteries into fire because it may cause an explosion.
- Unusable batteries should be discarded in accordance with battery recycling laws. Call the RBRC hotline at 1-800-822-8837 for information.

Do not allow battery terminals to come into contact with metal objects (such as necklaces, hairpins etc.).

- This can cause short circuiting or heat generation and you may be badly burned if you touch a battery.

■ Charger

- If you use the battery charger near a radio, the radio reception may be disturbed.
- Keep the charger 1 m (3.3 feet) or more away from radios.
- When the charger is in use, it may generate whirring sounds. However, this is not a malfunction.
- After use, be sure to disconnect the AC cable from the electrical outlet. (A maximum of about 0.1 W is used if you leave it connected.)
- Keep the terminal of the charger clean.

■ Card

Do not leave the card where the temperature is high, where electromagnetic waves or static electricity are easily generated or exposed to direct sunlight. Do not bend or drop the card.

- The card may be damaged or the recorded content may be damaged or deleted.
- Put the card in the card case or the storage bag after use and when storing or carrying the card.
- Do not allow dirt, dust or water to get into the terminals on the back of the card and do not touch the terminals with your fingers.

■ When not using the camera for a long period of time

- Store the battery in a cool and dry place with a relatively stable temperature. [Recommended temperature: 15 °C to 25 °C (59 °F to 77 °F), Recommended humidity: 40% to 60%]
- Always remove the battery and the card from the camera.
- If the battery is left inserted in the camera, it will discharge even if the camera is turned off. If the battery continues to be left in the camera, it will discharge excessively and may become unusable even if charged.
- When storing the battery for a long period of time, we recommend charging it once a year. Remove the battery from the camera and store it again after it has completely discharged.
- We recommend storing the camera with a desiccant (silica gel) when you keep it in a closet or a cabinet.
- Check all the parts before taking pictures when you have not used the camera for a long period of time.

■ About the recorded data

- Recorded data may be damaged or lost if the camera breaks down due to inappropriate handling. Panasonic will not be liable for any damage suffered due to loss of recorded data.

■ About tripods

- When using a tripod, make sure it is stable when the camera is attached to it.
- You may not be able to remove the battery when using a tripod.
- Make sure that the screw on the tripod is not at an angle when attaching or detaching the camera. You may damage the screw on the camera if you use excessive force when turning it. Also, the camera body and the rating label may be damaged or scratched if the camera is attached too tightly to the tripod.
- Read the operating instructions for the tripod.

■ About the strap

- If you attach a heavy interchangeable lens (more than about 1 kg/35.3 oz) to the camera body, do not carry the camera by the strap. Hold the camera and the lens when carrying them.

Message Display

Confirmation messages or error messages will be displayed on the screen in some cases.

The major messages are described below as examples.

[THIS MEMORY CARD IS LOCKED]

The Write-Protect switch on the SD Memory Card or the SDHC Memory Card is slid to the [LOCK] side. Slide it to the other side to unlock it.

[NO VALID PICTURE TO PLAY]

Record a picture or insert a card with a recorded picture and then play it.

[THIS PICTURE IS PROTECTED]

Delete or overwrite the picture after canceling the protect setting.

[THIS PICTURE CANNOT BE DELETED]/ [SOME PICTURES CANNOT BE DELETED]

Pictures not based on the DCF standard cannot be deleted. If you want to delete some pictures, format the card after saving necessary data on a PC etc.

[NO ADDITIONAL DELETE SELECTIONS CAN BE MADE]

You have exceeded the number of pictures that can be set at once with [MULTI DELETE]. Delete the selected pictures and then select [MULTI DELETE] again to delete any remaining pictures. More than 999 favorites have been set.

[CANNOT BE SET ON THIS PICTURE]

If the pictures are not based on the DCF standard, the DPOF print cannot be set.

[MEMORY CARD ERROR FORMAT THIS CARD?]

The card format cannot be recognized by the camera. Format the card again with the camera after saving necessary data on a PC etc.

[MEMORY CARD PARAMETER ERROR]

Use a card compatible with this unit.

- You can only use an SDHC Memory Card if using cards with 4 GB or more capacity.

[PLEASE TURN CAMERA OFF AND THEN ON AGAIN]

Check that the lens is attached correctly and then turn the camera off and on.

[MEMORY CARD ERROR PLEASE CHECK THE CARD]

An error has occurred accessing the card. Insert the card again.

[READ ERROR PLEASE CHECK THE CARD]

An error has occurred reading the data. Insert the card again. Make sure the card is inserted properly and then play back again.

[WRITE ERROR PLEASE CHECK THE CARD]

An error has occurred writing the data. Turn the camera off and remove the card. Insert the card again and turn the camera on. Make sure the camera is turned off before removing or inserting the card to avoid damage.

[A FOLDER CANNOT BE CREATED]

A folder cannot be created because there are no remaining folder numbers that can be used.

Format the card after saving necessary data on a PC etc. If you execute [NO.RESET] in the [SETUP] menu after formatting, the folder number is reset to 100.

[PICTURE IS DISPLAYED FOR 4:3 TV]/ [PICTURE IS DISPLAYED FOR 16:9 TV]

- The video cable is connected to the camera. Press [MENU/SET] if you want to delete this message at once.
- Select [TV ASPECT] in the [SETUP] menu to change the TV aspect.

- This message also appears when the USB connection cable is connected to the camera only. In this case, connect the other end of the USB connection cable to a PC or a printer.

[CANCEL LIVE VIEW MODE]/[LIVE VIEW MODE CANNOT BE SELECTED]

If you use Live View where the temperature is high or for a long period of time, the temperature of the image sensor will increase and Live View may become unusable. Switch to using the Viewfinder for taking pictures or turn the camera off for a short while.

[PRINTER BUSY]/[PLEASE CHECK THE PRINTER]

The printer cannot print. Check the printer.

[THE LENS IS NOT ATTACHED PROPERLY.]

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

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]** menu to **[OFF]**.

2: Contrast AF cannot be set.

- Are you using the supplied lens?
 - The camera automatically switches to phase difference AF [] if you use a lens that does not support contrast AF even if **[LIVE VIEW AF]** in the **[CUSTOM MENU]** menu is set to [].

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]** 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?
 - 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 SHTR NR]** in the **[REC]** 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

- 1: A flickering vertical line appears on the LCD monitor under fluorescent light.**
- 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 Power LCD 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?
 - Slide the [ OPEN] lever to open the flash.
 - The flash is not activated when the [SCENERY] mode, [NIGHT SCENERY], [ILLUMINATIONS] or [CREATIVE NIGHT SCENERY] in [NIGHT PORTRAIT] mode, or [SUNSET] in scene mode are selected.
- 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 [], Forced ON/Red-eye reduction [] or Slow sync./Red-eye reduction [] is set so the subject should not move until the second flash is activated.
- 3: The flash is activated continuously.**
- When the flash is activated it may be activated continuously. It is activated as an AF assist lamp when phase difference AF is set.

■ Playback

- 1: The picture being played back is not rotated, or is rotated in an unexpected direction, when displayed.**
- 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.] is set to [OFF].
 - You can rotate pictures with the [ROTATE] function.
 - You can only display the pictures rotated if you use a lens that supports the direction detection function and [ROTATE DISP.] is set to [ON].
- 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.
- 5: White round spots like soap bubbles appear on the recorded picture.**

- If you take a picture with the flash in a dark place or indoors, white orbs may appear in the picture because the flash reflects off particles of dust in the air. This is not a malfunction.
- A characteristic of this is that the number of round spots and their position differ in every picture.



■ 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 [] and then select the [] 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.**
- Check the [AF ASSIST LAMP] setting in the [CUSTOM MENU] menu.
 - 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 and the reverse side of the LCD monitor 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.

11 TROUBLESHOOTING

1. INITIAL (DEFAULT) STATUS OF THE LENS UNIT

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

NOTE: Although the lens unit is attached it shows the same condition when the Camera turns off.

- [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 change although Focus ring is rotated. (Free rotation.)

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

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



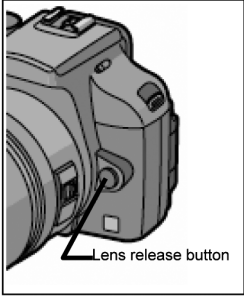
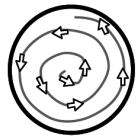
It might be intend to a miss-judgement caused by miss usage of function & settings although the unit is working properly without fault.

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.jp/support/global/cs/dsc/>

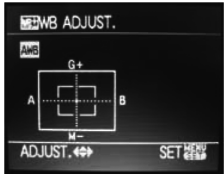

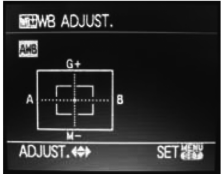
[1]. [LENS RELATIVES]

TITLE	ITEMS	DESCRIPTION
LENS	Aperture size does not changed. (Although aperture value is changed, the physical size of aperture is never changed.)	*Although aperture value is changed, the physical size of aperture is never changed (It keeps the maximum aperture condition) until the shutter release button is fully released. (There is no "aperture stopping down" button and/or function.)
	The Aperture condition does not changed. (Aperture value shows "F0.0")	*The Lens & Body are communicating (serial communication) through mount contacts (9pins). *Confirm that lens & body mount contacts are not dirty. *While keep pressing the [Lens release] button, it makes same situation that Lens does not attached. *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 [- -] is displayed as Lens firmware version.  Aperture value is fixed at [F0.0]  Firmware version shows [LENS FIRMWARE : - -] 
	Although the Focus ring is rotating, it does not change the Focus condition.	*The Focus condition is 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.) !![CUSTOM] menu (2/3)-----MF + AF (ON/OFF)
	No released without lens attachment.	*It is able to release the shutter button without attaching the lens unit. !! [CUSTOM] menu (3/3) ---- [SHOOT W/O LENS] (ON/OFF)
The Dusty and/or dirty of the Lens	*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.)  [Wiping up the lens surface] Like drawing the circle, wipe up the lens surface centre towards to outside slowly.	
It does not become the Shutter speed [B] (Bulb) mode.	*It is only able to select the shutter speed to [B](Bulb) when mode dial is set to [M] (Manual) and drive mode lever is [SINGLE] position.	

[2]. [BODY RELATIVES]

TITLE	ITEMS	DESCRIPTION
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 as "AFS (Auto Focus Single)" mode, but not AFC (Auto Focus Continuous).
	Although shutter sound is heard at once however a picture is not taken.	*When the shutter button is pressed in half way under the condition of Live view with phase difference AF, the mirror is down/up at once to measure the Focus and Exposure. In this case, it makes shutter sound but, picture is not taken at this stage. Also, the picture is not taken when the shutter button is released immediately after pressing it fully.
	A shutter sound is heard twice.	*With live view mode, 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.



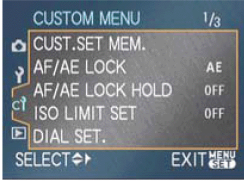




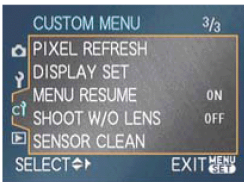

TITLE	ITEMS	DESCRIPTION
FOCUS	The picture is out of focus although the focus is adjusted in MF mode at once.	<ul style="list-style-type: none"> *In the following conditions, the focus may be out of focus, no matter the kind of subject. Therefore, adjust the focus again by rotating the Focus ring. *After "in-focus" condition, Zoom condition has been changed. *Power switch is turned OFF and ON again. *After releasing the Power save.
	Focus does not become in focus condition.	<ul style="list-style-type: none"> *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.	<ul style="list-style-type: none"> *The MF assist function is that the certain area image is able to enrage 8 times to make easier to focus. *It does not work if the [Focus Lever] is positioned other than [MF] position. *It does not work when Digital Zoom function is activated.
	Face detection does not work.	<ul style="list-style-type: none"> *The face detection does not work if the [LIVE VIEW AF] is selected to phase difference AF. !![CUSTOM] menu (2/3) -----LIVE VIEW AF ([AF] / [AF]) (There are two kinds of AF mode, one is phase difference AF and the other one is contrast AF.) *Select AF mode to face detection. (Press the cursor left button to display the AF mode menu.) <p style="text-align: right;">"Face detection" mark </p>
	Contrast AF does not work.	<ul style="list-style-type: none"> *The camera automatically switches to phase difference AF if the lens that does not support contrast AF even if [LIVE VIEW AF] in the [CUSTOM MENU] menu is set to Contrast AF. *Lenses that support contrast AF and the direction detection function are as follows:(As of Oct.2007) L-RS014050 (supplied lens) L-RS014150(November 2007 planned release)
	Focus does not work.	<ul style="list-style-type: none"> *Focus & Exposure condition is locked when the [AFL / AEL] button is pressed under the condition of [AF / AE LOCK HOLD] is "On". !![CUSTOM] menu (1/3)-----AF / AE LOCK HOLD (ON/OFF) *It can be reset when [AFL/AEL] button is pressed again.
	Although [AFL/AEL] button is pressed, it does not hold the Focus, only Exposure is locked.	<ul style="list-style-type: none"> *Focus does not hold even if [AF/AE Lock] button is pressed if the [AF/AE LOCK HOLD] is selected [AE]. !![CUSTOM] menu (1/3)-----AF / AE LOCK (AE, AF, AF/AE) *In the Manual Focus condition, It is only worked as [AE lock] function.
	AFC (Auto Focus Continuous) does not work. (Motion prediction.)	<ul style="list-style-type: none"> *Although the focus mode lever is set to [AFC] position, the [AFC] does not activated when taking pictures with Live view. *Select the viewfinder mode by pressing [LIVE VIEW] button. (When taking pictures of a moving subject, the camera predetects the movement of the subject and focuses on it while the shutter button is pressed halfway.(Motion prediction.))
Flash	GN (Guide Number) of the Built in Flash.	<ul style="list-style-type: none"> * There is a formula : $F \text{ value} \times \text{Flash reachable distance} = \text{GN [ISO100]}$ ISO100 / Wide edge Aperture is F3.8 / Flash reachable distance is 2.8m [3.8 X Approx 2.8 = 10.6---- "GN11"] ISO100 / Tele edge Aperture is F5.6 / Flash reachable distance is 1.9m [5.6 X Approx 1.9 = 10.6---- "GN11"]
	Flash is fired abnormally when the shutter button is pressed halfway.	<ul style="list-style-type: none"> *Illuminating the subject makes it easier for the camera to focus when recording in low light conditions that make focusing difficult. *There are two kinds of "LAMP" working as an [AF ASSIST LAMP], one is the AF assist lamp and the other one is Flash. (In both cases, Flash has to be opened.) *The flash is activated as an AF assist lamp when taking pictures with the Viewfinder or if phase difference AF is activated when taking pictures with Live view.
	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 / too dark with Flash.	<ul style="list-style-type: none"> *Confirm that the picture is taken within Flash range or not. *Confirm that flash output settings. !![REC] menu (2/4) -----FLASH ADJUST. (1/3 EV Step, -2EV to +2EV)
	The Flash adjustment does not effect.	*Confirm that the picture is taken within Flash range or not.

TITLE	ITEMS	DESCRIPTION
Flash	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.</p> <p>*Confirm that [WB Adjustment] setting condition. (Press the cursor [DOWN] (WB) button, then after choosing the WB mode press the cursor [DOWN](WB) button, in order to execute the [WB ADJUST.] screen.</p> <p>*It also effects to the Flash recording mode as well.</p> 
	The appearance of the light source is strange. (The light source appears ahead the subject.)	<p>*Normally, the light source appears ahead the subject. (This is the effect of the 1st curtain synchro.)</p> <p>*The Flash synchro mode can be selected. !![REC]menu (2/4) ---- [FLASH SYNC.](1ST / 2ND)</p>  <p><1st Curtain Sync><2nd Curtain Sync></p>
EXPOSURE	The Exposure condition can not be changed	<p>*Focus & Exposure condition is locked when the [AFL / AEL] button is pressed under the condition of [AF / AE LOCK HOLD] is "On". !![CUSTOM] menu (1/3)-----[AF / AE LOCK HOLD] (ON/OFF)</p> <p>*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]. !![CUSTOM] menu (1/3)-----[AF/AE LOCK] settings (AF, AE, AF/AE)</p> <p>*In the Manual Focus condition, It is only worked as [AE lock] function, regardless any settings.</p>
	The pictures recorded with [AUTO BRACKET] function are too dark/bright.	<p>*The [AUTO BRACKET] is selected after setting the [EXPOSURE COMPENSATION], the compensated value is effected for its reference value.</p>
	The Exposure condition is changed extremely.	<p>*This metering mode is measuring only the limited narrow area on the centre of the screen.</p> <p>*Confirm the setting condition of [EXPOSURE COMPENSATION] (1/3 EV Step, -2EV to +2EV) !!Press the right of the cursor (Metering) button, then select the metering mode.</p>
CAPTURING	Although shutter is released, no picture is captured.	<p>*It can not take a picture until the subject is brought into focus. (It is able to take a picture when the Focus Priority turns [OFF] although focus condition does not perfect.) !![CUSTOM] menu (2/3)-----FOCUS PRIORITY (ON/OFF)</p>
	[AUTO BRACKET] does not work.	<p>*Only single picture is able to captured when flash is fired.</p>
COLOUR REPRODUCTION	Colour is strange.	<p>*There is a possibility that [Finely adjusting the white balance] is selected/shifted.</p> <p>*Confirm that [WB Adjustment] setting condition. (Press the cursor [DOWN] (WB) button, then after choosing the WB mode press the cursor [DOWN](WB) button, in order to execute the [WB ADJUST.] screen.)</p> <p>*It is resumed/memorized although power turns off/on.</p> <p>*Confirm that Film mode, especially, [MY FILM1 &2] settings.</p> 
	Colour is strange. (With Flash)	<p>*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.</p>
	The colour is strange (On PC monitor/ Printout image.)	<p>*There is a possibility that the picture is captured with [AdobeRGB] setting. !! [REC] menu (4/4) ---- [COLOUR SPACE] (sRGB/AdobeRGB)</p> <p>*To proceed proper colour reproduction for AdobeRGB, the AdobeRGB capable PC and Printer are necessary.</p> <p>*In accordance with PC environment, it may not be displayed properly when the picture is re-sized with business software.</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.) !![SETUP] menu (2/4)-----[POWER SAVE](OFF/1MIN./2 MIN./5 MIN./10 MIN.)</p>
DISPLAY	Abnormal Picture Effect. Certain part of the picture is flashing in Black & White.	<p>*Confirm that the setting condition of [HIGHLIGHT]. !![SETUP] menu (3/4)-----[HIGH LIGHT] (ON/OFF)</p> <p>The white saturated areas appear blinking in Black and White.</p>
	There are black bar lines appearing in both Left & Right side of playback picture on the LCD panel. (Picture is rotated in vertically.)	<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> <p>*Lenses that support contrast AF and the direction detection function are as follows:(As of Oct.2007) L-RS014050 (supplied lens) L-RS014150(November 2007 planned release)</p>

MENU LIST

(Quick Reference)

The following menu items are displayed on the LCD monitor.

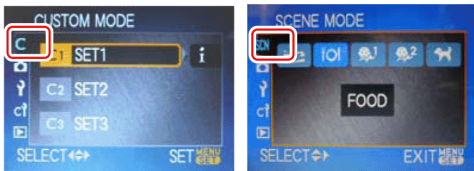
	 [REC]	 [SETUP]	 [CUSTOM]	 [PLAY]
1st Page				
2nd Page				
3rd Page				/
4th Page			/	/

REMARKS:

*When the mode dial is set to [AUTO], only the basic functions appear in the "REC" and "CUSTOM" menu.



*When the mode dial is set to [CUSTOM] or [SCN(SCENE)], extra-menu groups are displayed.



NOTE:

*When set [MENU RESUME] in the [CUSTOM MENU] menu to [ON], the screen shows the last selected menu item when the camera is turned off.
!![CUSTOM] menu (3/3)-----MENU RESUME (OFF/ON)

12 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, 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 initial setting:

Set the drive mode lever to "Single".

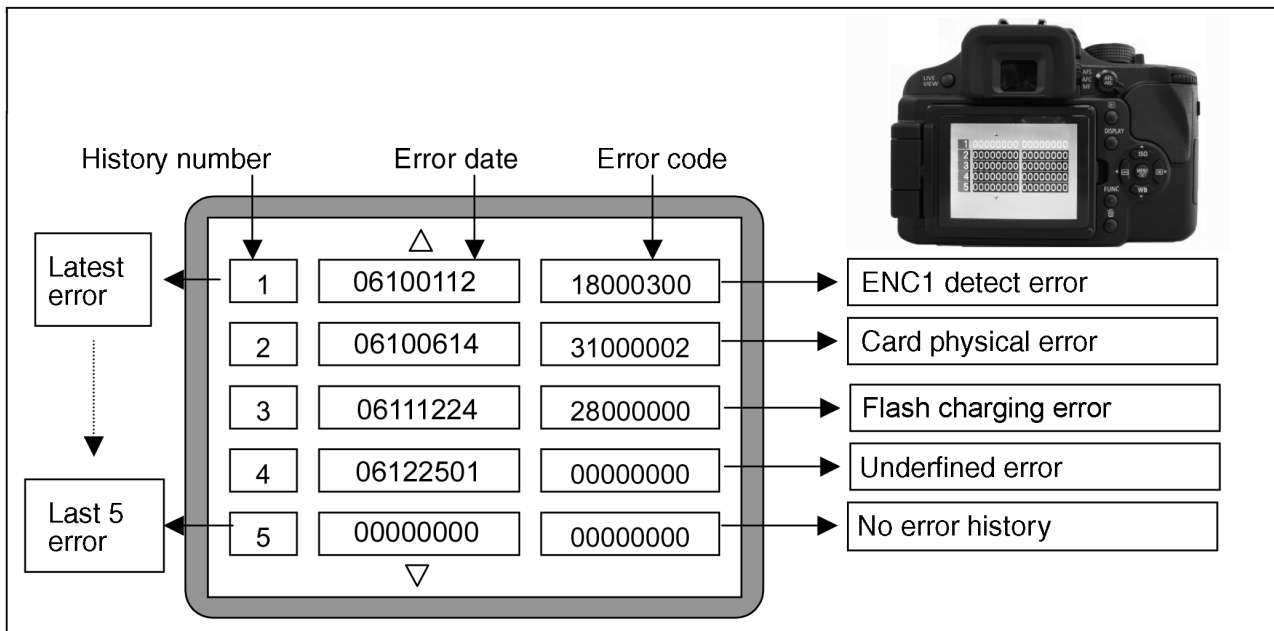
While keep pressing **[AFL/AEL]** and **[FILM MODE]** simultaneously, then turn the Power on.

• 2. The display of error code:

Press **[FILM MODE]**, **[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 16 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 date:

The error date code is displayed from the left in order at the year, month, day, time.

Error date information is acquired from "Clock setting" information when the error occurs. When the clock is not setting, it is displayed as "00000000".

• 5. 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.

History number	Error date	Error code
1	06100112	18000300
2	06100614	31000002
3	06111224	28000000
4	06122501	00000000
5	00000000	00000000

Attribute	Main item	Sub item	Error code		Contents
			High 4 bits	Low 4 bits	
LENS	Lens	Communication	18*0	0000 FFFF	Lens communication error.
HARD	VENUS A/D	Flash	28*0	0000	Flash charging capacitor did not been fully charged within 20 seconds.
	FLASH ROM	Data Area	2B*0	0001	Flash ROM data reading error is detected when the unit turns ON.
		Program Area		0005	Firmware update error.
	SYSTEM IC	Initialization	2C*0	0001	Clock IC initialization failure error.
SOFT	CPU	Reset	30*0	0001 FFFF	System error (NMI reset).
	Recording Media	SD Memory Card	31*0	0001	SD memory card logic error. SD memory card format error. When it is detected, [MEMORY CARD ERROR FORMAT THIS CARD?] is displayed on the screen.
				0002	SD memory card physical error. During formatting the SD memory card, there is no response from the card. If the mini-SD memory card is used, check the SD memory card adaptor.
				0004	SD memory card writing error. Check the SD memory card. It might be damage one.
	CPU	STOP	38*0	0001, 0002	Camera task error.
	ASIC hard			0003	AF time out error.
	Mirror BOX	Mirror up	3E*0	0001	Mirror up operation error. There is no response from mirror unit.
		Mirror down		0002	Mirror down operation error. There is no response from mirror unit.
	Camera	System	3B*0	0000	Initialization failure.
	System	System	35*0	0001 FFFF	System error.
				35*1, 35*2	0000

About "*" indication in the above table:

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.

· 6. How to returned to Normal Display:

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


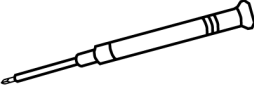


NOTE:

The error code can not be initialized.

13 SERVICE FIXTURE & TOOLS

13.1. SERVICE FIXTURE AND TOOLS

The following service fixture and tools are used for checkig and servicing this unit.

Lens Cleaning Kit (BK) VFK1900BK	Driver (for lens installation screw) VFK1390	Name Ring Fixture RFKZ0423
 <p>* Only supplied as 10 set/box.</p>		
Torque Driver RFKZ0456		
 <p>Spec.:2-30cN · m (Equiv.0.2-3kgf/cm)</p>		

13.2. CLEAN BOX

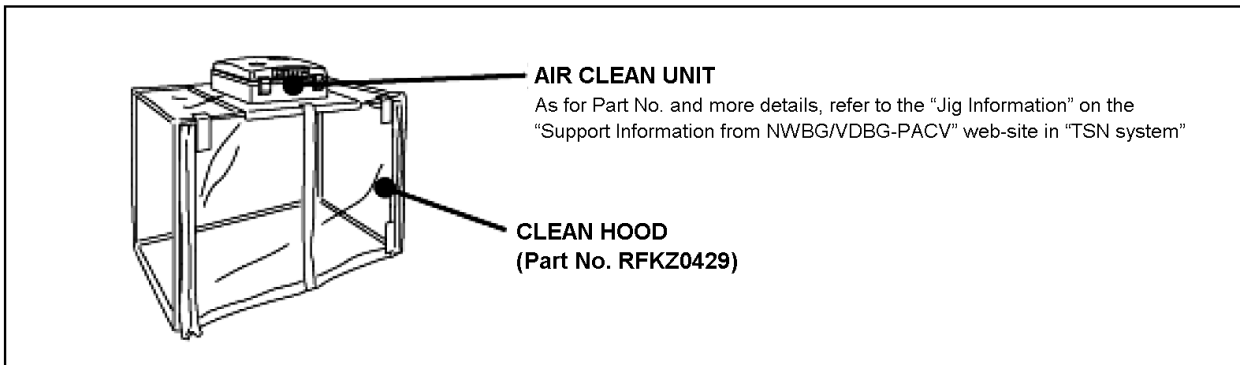
When the part other than described on this service manual is removed, it must be performed at the specified clean environment. (Less than class 10,000 Federal Standard 209D).

13.2.1. Introduction of Clean box

One of our recommended clean box is as shown below.

It consists of "Air clean unit" and "Clean hood".

As for the "Air clean unit", refer to the "Jig Information" on the "Support Information from NWBG/VDBG-PAVC" web-site in "TSN system".



14 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.

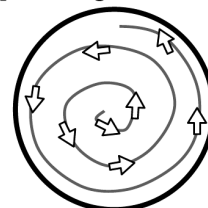
[1].When it is outside surface of the lens:

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.)

[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.

[Cleaning Instructions]



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

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

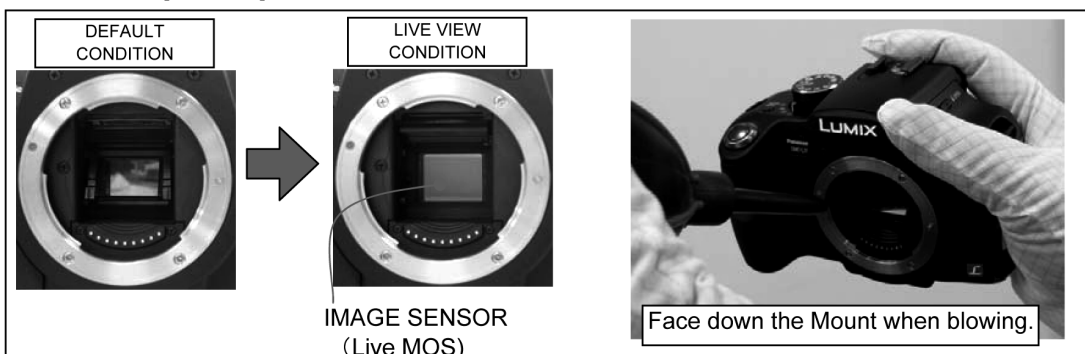
[PRECAUTIONS]

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 2/4 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.

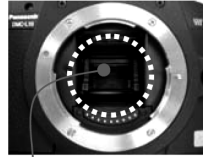


DUST/DIRT ON THE MAIN MIRROR

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



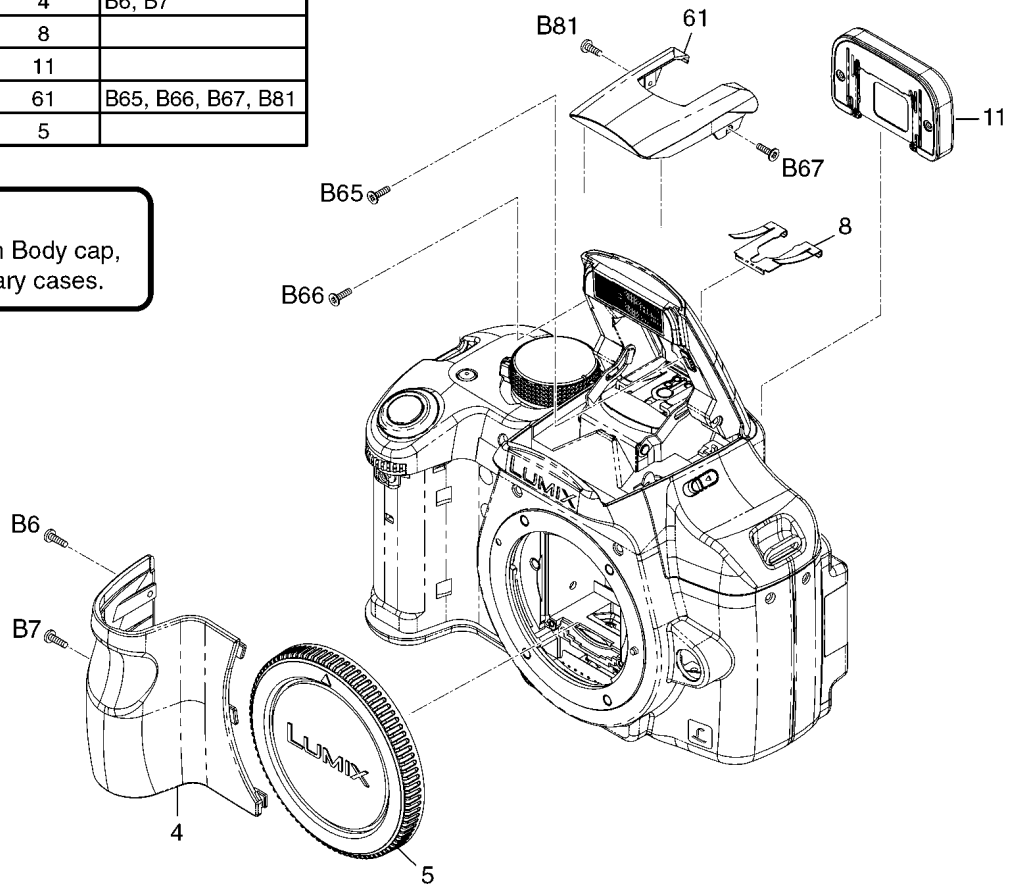
15 DISASSEMBLY AND ASSEMBLY INSTRUCTIONS

15.1. CAMERA BODY UNIT

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

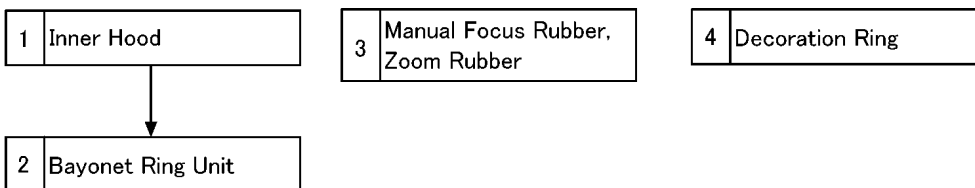
Part name	Ref. No.	Unscrew
Grip piece front	4	B6, B7
Hotshoe spring	8	
Eyecup unit	11	
Flash case top	61	B65, B66, B67, B81
Body cap	5	

CAUTION:
Keep covering with Body cap, other than necessary cases.



15.2. LENS UNIT

15.2.1. Disassembly Flow Chart



15.2.2. Disassembly Procedure

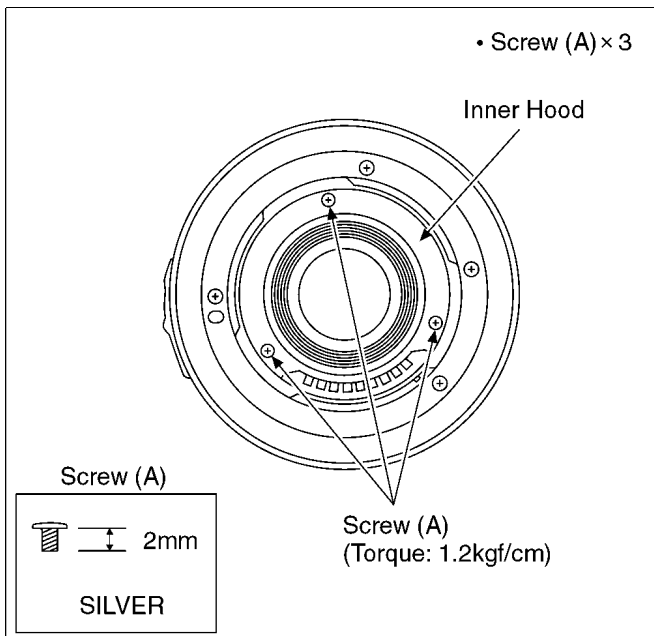
No.	Item	Fig	Removal
1	Inner Hood	(Fig. D1)	3 Screws (A) Inner Hood
2	Bayonet Ring Unit	(Fig. D2)	1 Screw (B)
			1 Screw (C)
		(Fig. D3)	GND Board 4 Screws (D) Mount Washer Bayonet Ring Unit
3	Manual Focus Rubber	(Fig. D4)	Manual Focus Rubber
	Zoom Rubber		Zoom Rubber
4	Decoration Ring	(Fig. D5)	Decoration Ring

NOTE:

When Disassembling and Assembling for the Lens

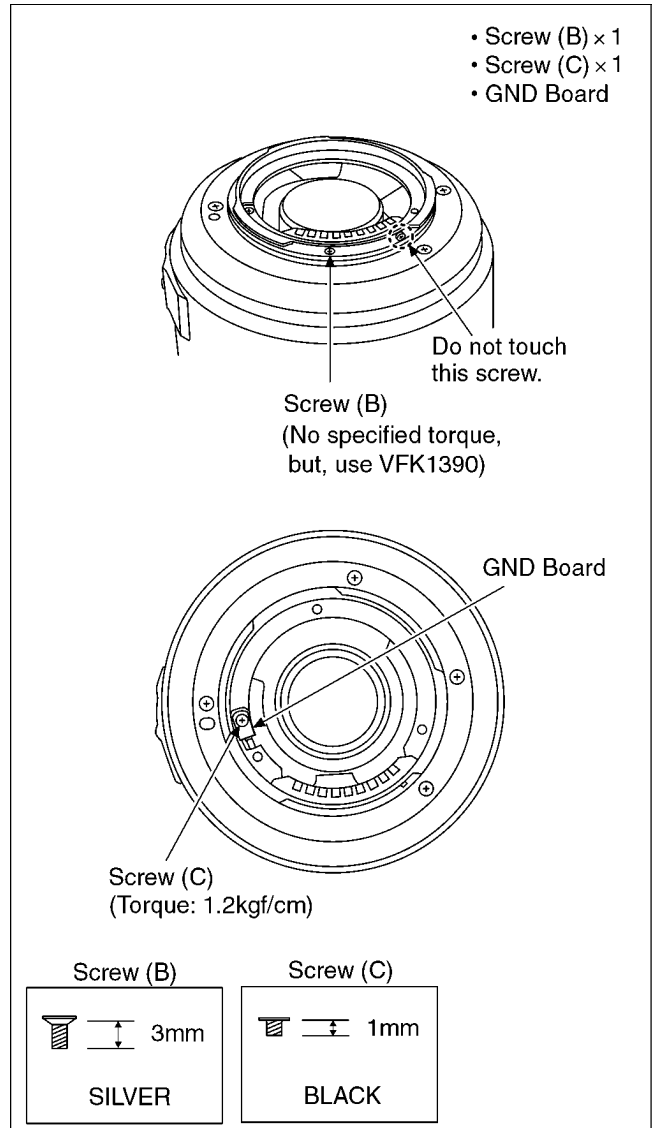
1. To minimize the possibilities of getting the dust/dirt on the lens surface, keep putting the lens cap other than necessary case.
2. The parts other than listed in replacement part list are not allowed to disassemble/assemble.
3. When tighten the screws, use a Torque Driver (RFKZ0456). The Torque specification is indicated in each Figure.
4. 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.
5. Do not touch the surface of lens.
6. Use lens cleaning KIT (BK) (VFK1900BK).

15.2.2.1. Removal of the Inner Hood



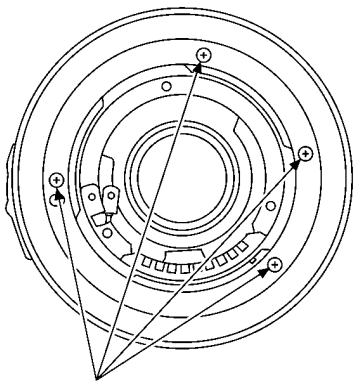
(Fig. D1)

15.2.2.2. Removal of the Bayonet Ring Unit

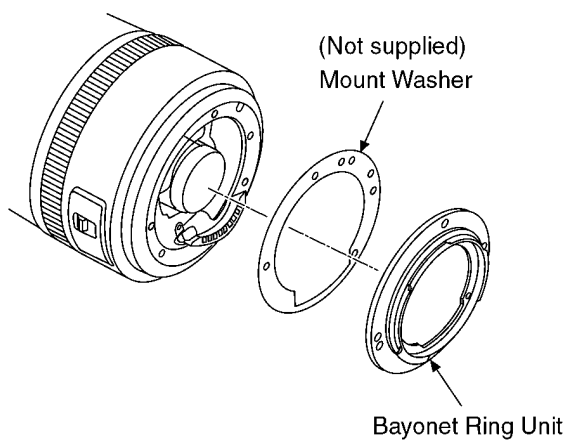


(Fig. D2)

- Screw (D) × 4
- Mount Washer



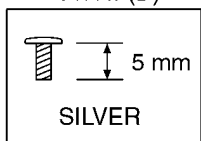
Screw (D)
(Torque: 2.0kgf/cm)



NOTE:

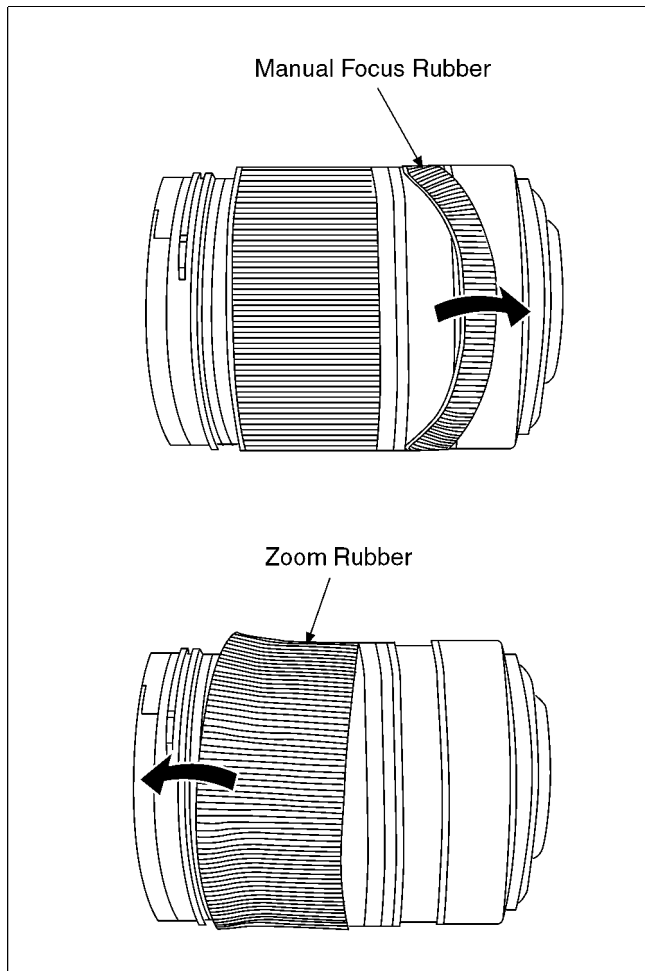
Do not bend the Mount washer.
The number of the Mount washer may be different in accordance with the lens unit.
When assembling, install originally fitted ones as it was.

Screw (D)



(Fig. D3)

15.2.2.3. Removal of the Manual Focus Rubber and Zoom Rubber

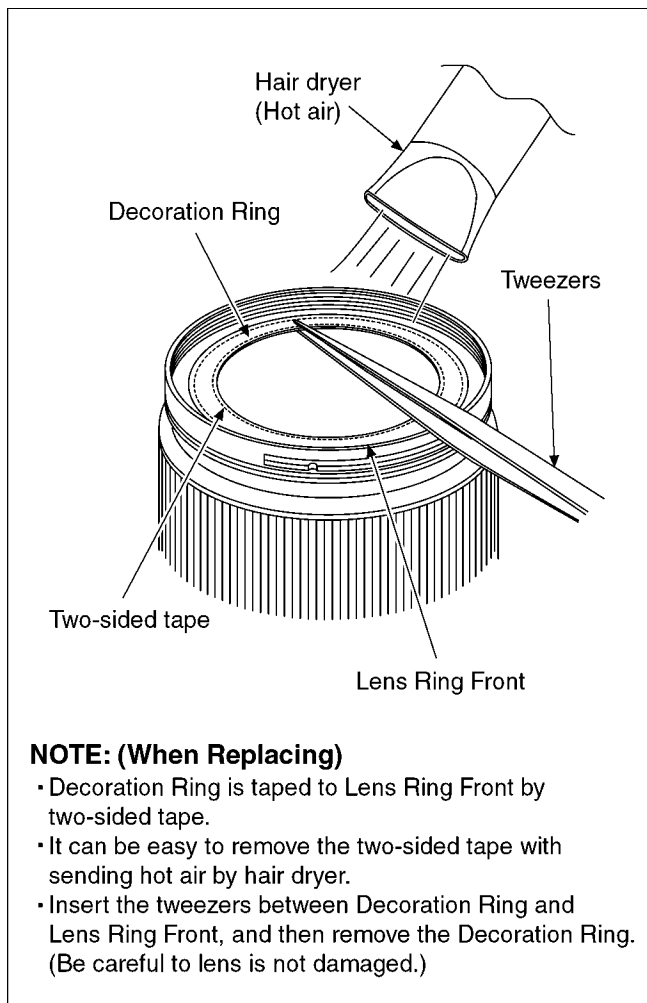


(Fig. D4)

15.2.2.4. Removal of the Decoration Ring

NOTE:

Be careful not touch the lens surface with Tweezers when removing the Decoration Ring.

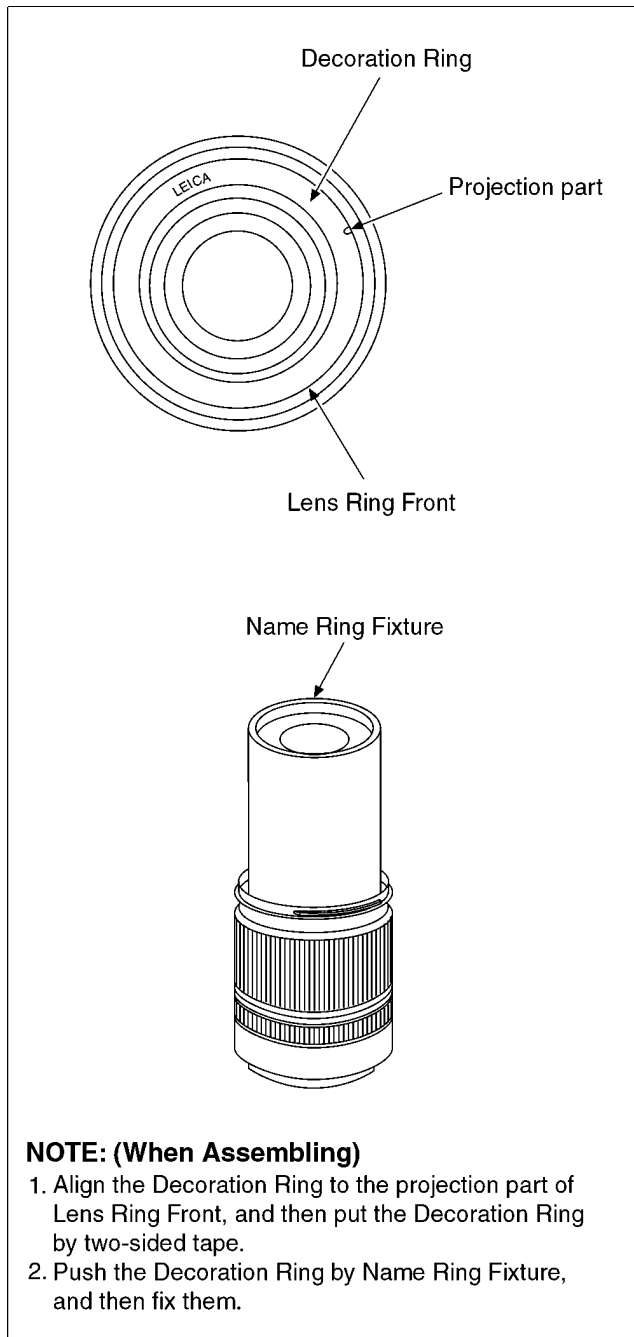


NOTE: (When Replacing)

- Decoration Ring is taped to Lens Ring Front by two-sided tape.
- It can be easy to remove the two-sided tape with sending hot air by hair dryer.
- Insert the tweezers between Decoration Ring and Lens Ring Front, and then remove the Decoration Ring. (Be careful to lens is not damaged.)

(Fig. D5)

15.2.2.5. Phase alignment of the Decoration Ring



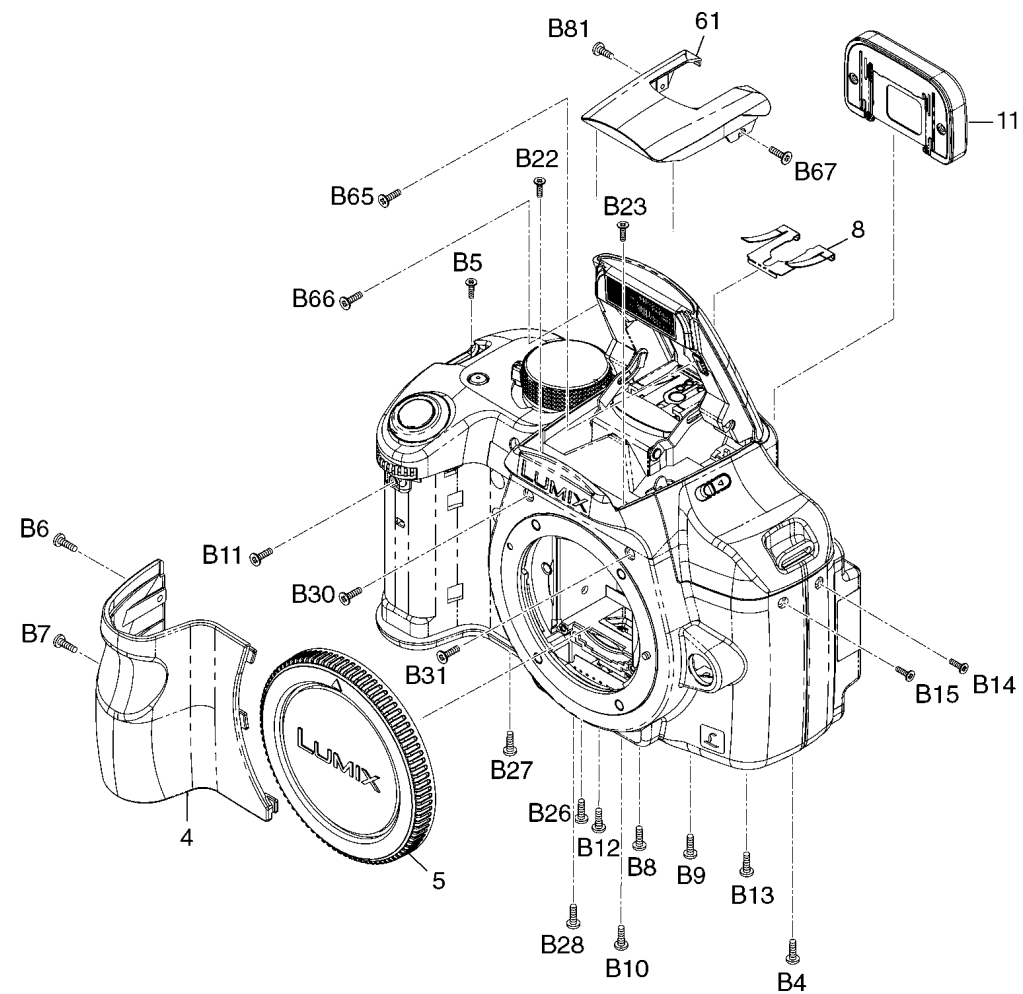
NOTE: (When Assembling)

1. Align the Decoration Ring to the projection part of Lens Ring Front, and then put the Decoration Ring by two-sided tape.
2. Push the Decoration Ring by Name Ring Fixture, and then fix them.

(Fig. D6)

16 EXPLODED VIEWS

16.1. FRAME & CASING SECTION

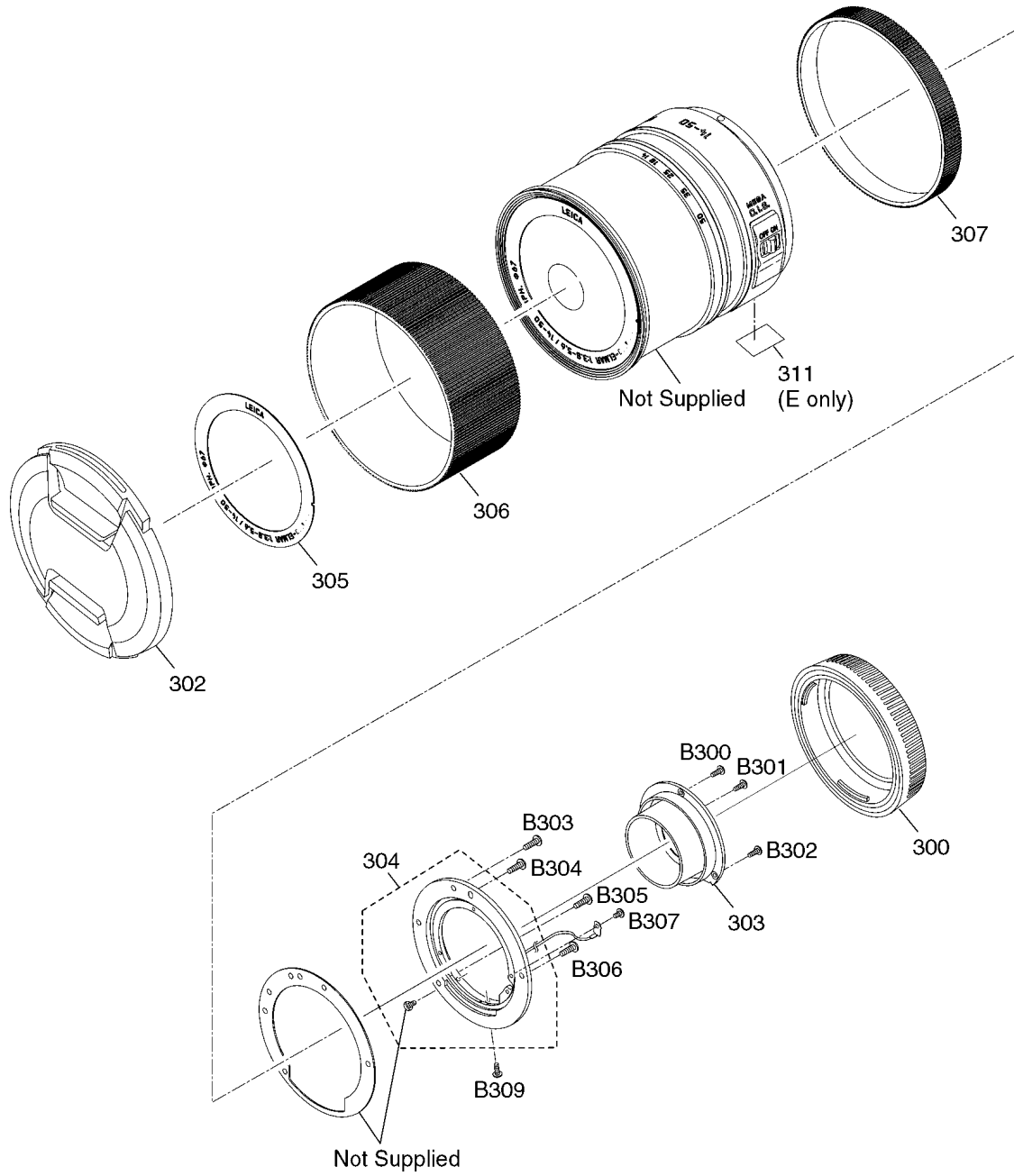


CAUTION:

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.

16.2. LENS SECTION



17 REPLACEMENT PARTS LIST

17.1. 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 \triangle 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.

17.1.1. FRAME & CASING SECTION PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks
4	VGQ9513	GRIP PIECE FRONT	
5	VKF4091	BODY CAP	
8	VMC2008	HOTSHOE SPRING	
11	VYQ4130	EYECUP UNIT	
61	VKM7207	FLASH CASE TOP	
B4	VHD1682	SCREW	
B5	VHD1684	SCREW	
B6	VHD1843	SCREW	
B7	VHD1843	SCREW	
B8	VHD1854	SCREW	
B9	VHD1854	SCREW	
B10	VHD1892	SCREW	
B11	VHD1892	SCREW	
B12	VHD1892	SCREW	
B13	VHD1892	SCREW	
B14	VHD1892	SCREW	
B15	VHD1892	SCREW	
B22	XQN16+BJ5FJK	SCREW	
B23	XQN16+BJ5FJK	SCREW	
B26	XQN16+BJ5FJK	SCREW	
B27	XQN16+BJ5FJK	SCREW	
B28	XQN16+BJ5FJK	SCREW	
B30	XQN2+BJ5FJK	SCREW	
B31	XQN2+BJ5FJK	SCREW	
B65	XQN16+BJ4FJK	SCREW	
B66	XQN16+BJ4FJK	SCREW	
B67	XQN16+BJ4FJK	SCREW	
B81	XQN16+BJ4FJK	SCREW	

17.1.2. LENS SECTION PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks
300	VFC4185	LENS CAP REAR	
302	VYF3160	LENS CAP FRONT	
303	9580290	INNER HOOD	
304	P028H50	BAYONET RING UNIT	
305	P02F310	DECORATION RING	
306	P02B010	ZOOM RUBBER	
307	P02B020	MANUAL FOCUS RUBBER	
311	RQLS0355	WEEE LABEL	E
B300	OHE4025	SCREW	
B301	OHE4025	SCREW	
B302	OHE4025	SCREW	
B303	0242050	SCREW	
B304	0242050	SCREW	
B305	0242050	SCREW	
B306	0242050	SCREW	
B307	0554012	SCREW	
B309	0B44035	SCREW	

17.1.3. PACKING PARTS & ACCESSORIES SECTION PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks
500	VFF1166	CAMERA BAG	
502	DE-A38FA	AC ADAPTOR	\triangle PP
502	DE-A38GA	AC ADAPTOR	\triangle E,EB,EG,GC, GK,GN
502	DE-A38HA	AC ADAPTOR	\triangle GD,GT
503	JSX0102	AC CORD W/PLUG	\triangle PP
504	-----	BATTERY	\triangle
505	VFC4206	LENS STORAGE BAG	
506	VFC4268	STRAP	
506-1	VGQ8990	EYEPiece CAP	
507	VFF0390-S	CD-ROM (USA)	PP See "Notes"
507	VFF0391-S	CD-ROM (OVERSEAS)	E,EB,EG,GC, GD,GK,GN,GT See "Notes"
509	VYC0972	LENS HOOD	
510	VYC0973	MAGNIFIER EYE CUP	
511	K1HA08CD0013	USB CABLE	
512	K1HA08CD0015	VIDEO CABLE	
513	VPK3352	PACKING CASE	
514	VPN6600	CUSHION A	
515	VPN6601	CUSHION B	
518	VFF1262	LENS BAG	
521	VFF1294	BAG, POLYETHYLENE	PP,EB,GD,GK, GN,GT
521	VFF1132	BAG, POLYETHYLENE	E,EG,GC
522	VQT1G28	INSTRUCTION BOOK (ENGLISH)	\triangle PP
522	VQT1G29	INSTRUCTION BOOK (CANADIAN FRENCH)	\triangle PP
522	VQT1G30	INSTRUCTION BOOK (SIMPLE) (SPANISH)	\triangle PP
522	VQT1G35	INSTRUCTION BOOK (SPANISH)	\triangle E
522	VQT1G36	INSTRUCTION BOOK (PORTUGUESE)	\triangle E
522	VQT1G37	INSTRUCTION BOOK (SWEDISH)	\triangle E
522	VQT1G38	INSTRUCTION BOOK (DANISH)	\triangle E
522	VQT1G39	INSTRUCTION BOOK (ENGLISH)	\triangle EB
522	VQT1G31	INSTRUCTION BOOK (GERMAN)	\triangle EG
522	VQT1G32	INSTRUCTION BOOK (FRENCH)	\triangle EG
522	VQT1G33	INSTRUCTION BOOK (ITALIAN)	\triangle EG
522	VQT1G34	INSTRUCTION BOOK (DUTCH)	\triangle EG
522	VQT1G40	INSTRUCTION BOOK (ENGLISH)	\triangle GC
522	VQT1G41	INSTRUCTION BOOK (TRADITIONAL CHINESE)	\triangle GC
522	VQT1G42	INSTRUCTION BOOK (RUSSIAN)	\triangle GC
522	VQT1G43	INSTRUCTION BOOK (ARABIC)	\triangle GC
522	VQT1G47	INSTRUCTION BOOK (KOREAN)	\triangle GD
522	VQT1G45	INSTRUCTION BOOK (SIMPLIFIED CHINESE)	\triangle GK
522	VQT1G46	INSTRUCTION BOOK (ENGLISH)	\triangle GN
522	VQT1G44	INSTRUCTION BOOK (TRADITIONAL CHINESE)	\triangle GT
523	VQT1L22	O/I SOFTWARE (ENGLISH/CANADIAN FRENCH)	PP
523	VQT1L24	O/I SOFTWARE (SPANISH/PORTUGUESE/SWEDISH/DANISH)	E

Ref. No.	Part No.	Part Name & Description	Remarks
523	VQT1L25	O/I SOFTWARE (ENGLISH)	EB,GN
523	VQT1L23	O/I SOFTWARE (GERMAN/FRENCH/ITALIAN/ DUTCH)	EG
523	VQT1L26	O/I SOFTWARE (ENGLISH/ CHINESE (TRADITIONAL)/ RUSSIAN/ARABIC)	GC
523	VQT1G48	O/I SOFTWARE (KOREAN)	GD
523	VQT1L28	O/I SOFTWARE (CHINESE (SIMPLIFIED))	GK
523	VQT1L27	O/I SOFTWARE (CHINESE (TRADITIONAL))	GT
540	K2CQ2CA00006	AC CORD W/PLUG	△ E,EG,GC
541	K2CT3CA00004	AC CORD W/PLUG	△ EB,GC
542	RJA0078-1X	AC CORD W/PLUG	△ GD
543	K2CA2CA00020	AC CORD W/PLUG	△ GK
543	K2CA2CA00027	AC CORD W/PLUG	△ GT
544	K2CJ2DA00008	AC CORD W/PLUG	△ GN