Service Manual

Digital Camera

LUMIX

SD XC™

Model No. DMC-S2P
DMC-S2PU
DMC-S2EB
DMC-S2EE
DMC-S2EF
DMC-S2EG
DMC-S2EP
DMC-S2GA
DMC-S2GC
DMC-S2GF
DMC-S2GK
DMC-S2GN
DMC-S2GT
DMC-S5PU
DMC-S5EB
DMC-S5EE
DMC-S5EF
DMC-S5EG
DMC-S5GA
DMC-S5GF
DMC-S5GN

Panasonic®

Colour

[DMC-S2]
(K)...........Black Type
(W)..........White Type (except P/EP)
(P)...........Pink Type (except P/EP)
(V)...........Violet Type (except EE/EP/GK)
(R)...........Red Type (only EB)

[DMC-S5]
(K)...........Black Type
(S)...........Silver Type (except EB/EE/EF)
(R)...........Red Type (except EF)

⚠ 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.

TABLE OF CONTENTS

1 Safety Precautions

1.1. General Guidelines

1. **IMPORTANT SAFETY NOTICE**
   There are special components used in this equipment which are important for safety. These parts are marked by

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

2. An Isolation Transformer should always be used during the servicing of AC Adaptor whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect AC Adaptor from being damaged by accidental shorting that may occur during servicing.

3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.

4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.

5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.2. Leakage Current Cold Check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.

2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1 MΩ and 5.2 MΩ. When the exposed metal does not have a return path to the chassis, the reading must be infinity.

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

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.

2. Connect a 1.5 kΩ, 10 W resistor, in parallel with a 0.15 μF 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 kΩ/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
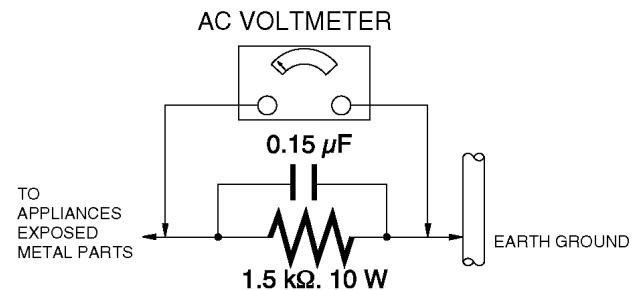
Figure. 1

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

CAUTION:
1. **Be sure to discharge the E.capacitor on FLASH P.C.B..**
2. **Be careful of the high voltage circuit on FLASH P.C.B. when servicing.**

[Discharging Procedure]
1. Refer to the disassemble procedure and remove the necessary parts/unit.
2. Install the insulation tube onto the lead part of resistor (ERG5SJ102:1kΩ /5W).
   (An equivalent type of resistor may be used.)
3. Place a resistor between both terminals of E.capacitor on the FLASH P.C.B. for approx. 5 seconds.
4. After discharging, confirm that the E.capacitor voltage is lower than 10V by using a voltmeter.
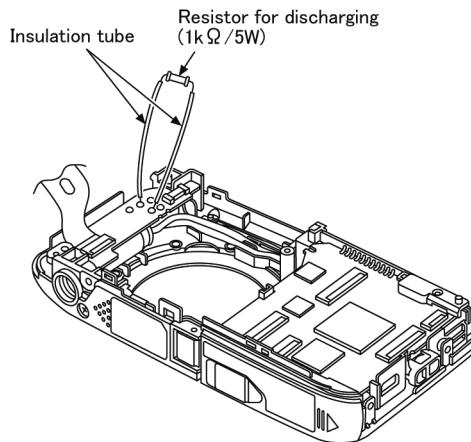
Fig. F1

2 Warning

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

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

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

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

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an antistatic solder removal device. Some solder removal devices not classified as "antistatic (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION :
   Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

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

ENGLISH

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

FRANÇAIS

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

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

2.3.1. Information for Your Safety

IMPORTANT

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

WARNING

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

CAUTION

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

FOR YOUR SAFETY

DO NOT REMOVE THE OUTER COVER

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

2.3.2. Caution for AC Mains Lead

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three-pin mains plug for your safety and convenience.
A 5-ampere fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amperes and it is approved by ASTA or BSI to BS1362
Check for the ASTA mark or the BSI mark on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover, the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local Panasonic Dealer.

If the fitted moulded plug is unsuitable for the socket outlet in your home then the fuse should be removed and the plug cut off and disposed of safety.
There is a danger of severe electrical shock if the cut off plug is inserted into any 13-ampere socket.

If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt, please consult a qualified electrician.

2.3.2.1. Important

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

Blue	Neutral
Brown	Live

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

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

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

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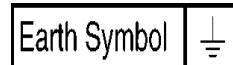
2.3.2.2. Before Use

Remove the Connector Cover as follows.
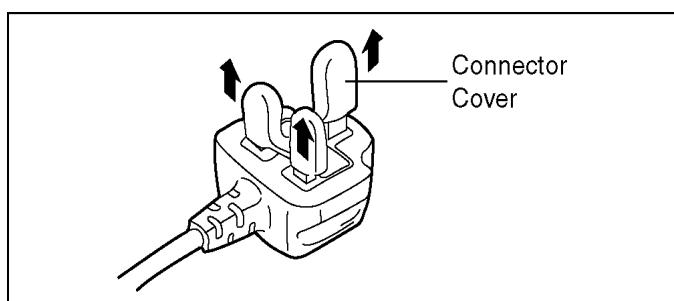
2.3.2.3. How to Replace the Fuse

1. Remove the Fuse Cover with a screwdriver.
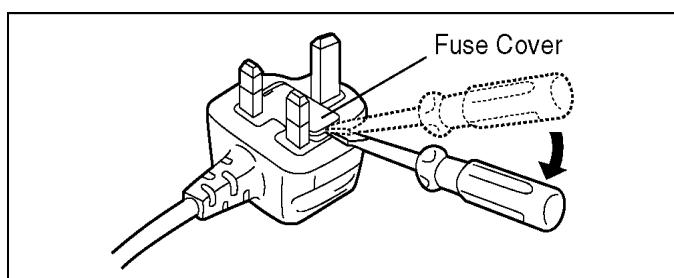
2. Replace the fuse and attach the Fuse cover.
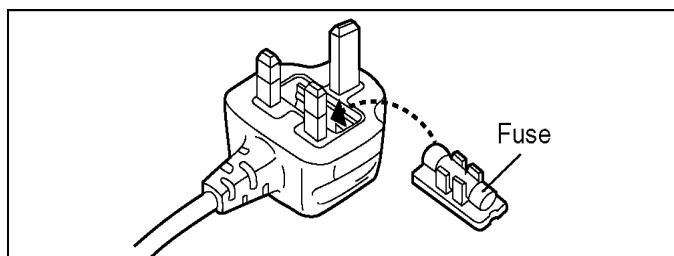
2.4. How to Replace the Lithium Battery

2.4.1. Replacement Procedure

1. Remove the TOP P.C.B.. (Refer to Disassembly Procedures.)
2. Unsolder the each soldering point of electric lead terminal for Lithium battery (Ref. No. "B6301" at foil side of TOP P.C.B.) and remove the Lithium battery together with electric lead terminal. Then replace it into new one.
    NOTE:
    The Type No. ML421 includes electric lead terminals.
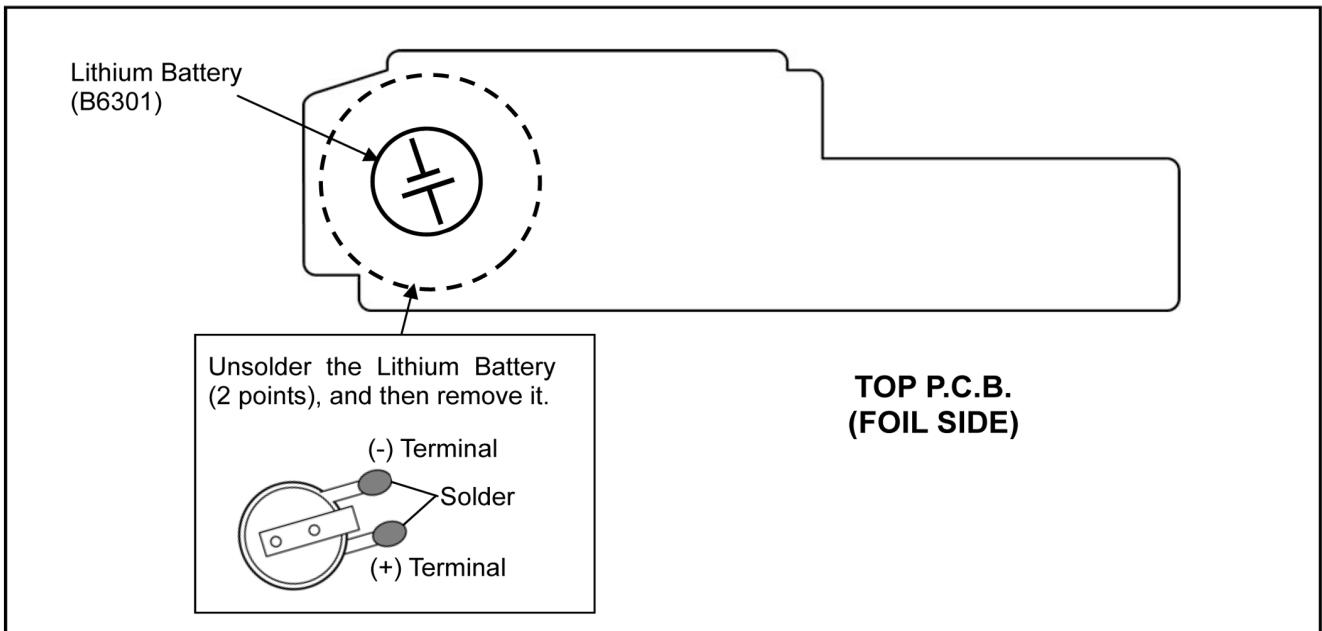
NOTE:
This Lithium battery is a critical component.
(Type No.: ML421 **Manufactured by Energy Company, Panasonic Corporation.**)
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in requirement designed specifically for its use.
Replacement batteries must be of same type and manufacture.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the old battery or re-use it for any other purpose.
It should be disposed of in waste products destined for burial rather than incineration.

(For English)

> **CAUTION**
> • Danger of explosion if battery is incorrectly replaced. Replace only with the type recommended by the manufacturer.
> • When disposing the batteries, please contact your local authorities or dealer and ask for the correct method of disposal.

(For German)

> **ACHTUNG**
> • Explosionsgefahr bei falschem Anbringen der Batterie. Ersetzen Sie die Batterie nur durch den vom Hersteller empfohlenen Typ.
> • Wenden Sie sich zur Entsorgung der Batterien an die lokalen Behörden oder erfragen Sie die richtige Vorgehensweise zur Entsorgung.

(For French)

> **MISE EN GARDE**
> • Il y a un danger d'explosion si la batterie n'est pas correctement remplacée. Remplacez-la uniquement par le type recommandé par le fabricant.
> • Pour vous débarrasser des batteries, veuillez contacter les autorités locales ou votre revendeur afin de connaître la procédure d'élimination à suivre.

NOTE:
Above caution is applicable for a battery pack which is for DMC-S2/S5 series, as well.

3 Service Navigation

3.1. Introduction

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

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

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

3.2. Important Notice (About minimum replacement part size: MAIN P.C.B. & LENS UNIT)

3.2.1. MAIN P.C.B.:

1. The MAIN P.C.B. is handled as the smallest replacement part for this unit.
   Therefore if any component on the MAIN P.C.B. is/are defective, replace whole MAIN P.C.B. as a unit.

WHICH P.C.B. IS DEFECTIVE? (MAIN P.C.B. or TOP P.C.B.):

The MAIN P.C.B. and TOP P.C.B. are directly connected with solder, without connector.

The TOP P.C.B. consists of the following component part(s).(All of the signal lines are analogue.)

   *.Power button   *.Self-timer indicator /AF assist lamp *.Microphone
   *.Shutter button   *.Back-up battery

When inspecting which PCB is defective, use the "Check terminals" and confirm the each signal.
(From RL6301 to RL6312)
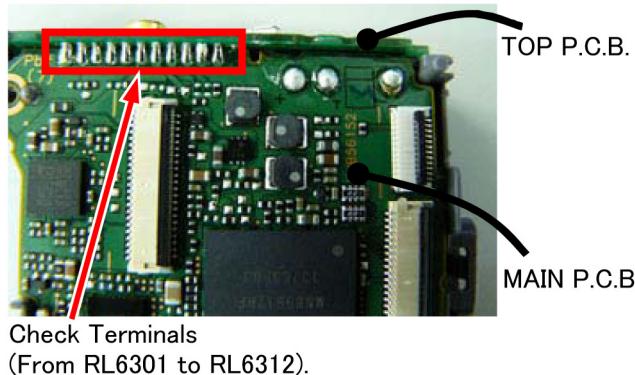
Terminal No.	Terminal Name	Description
RL6301	D_GND	GND
RL6302	SHUTTER_1	Shutter release (ON :Low)
RL6303	SHUTTER_0	Half-shutter (ON :Low)
RL6304	CATHODE	Cathode for Self-timer LED.
RL6305	AF3R4V	AF3.4V
RL6306	N.C.	No connection
RL6307	CLOCK	Back-up battery
RL6308	MIC_IN	Microphone(+)
RL6309	MIC_GND	Microphone(-)
RL6310	POWER_ON_L	Power button (ON :Low)
RL6311	D_GND	GND
RL6312	N.C.	No connection

TOP P.C.B.

MAIN P.C.B.

Check Terminals
(From RL6301 to RL6312).

3.2.2. LENS UNIT:

1. The minimum replacement part size of the Lens part is as shown below.
   When servicing, replace the following numbered replacement part size as the smallest size.
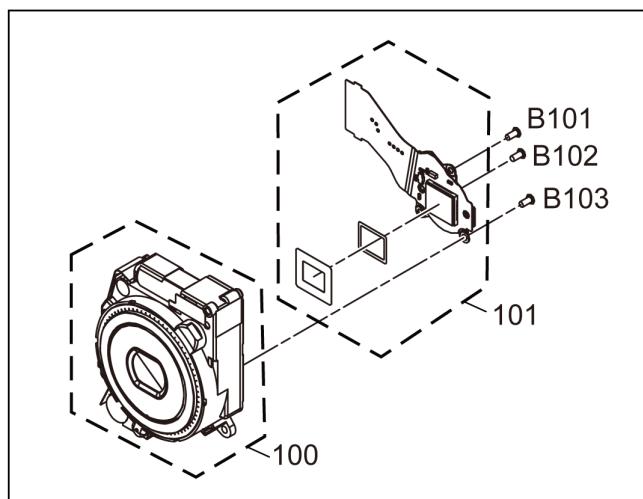
3.2.3. About Flexible Cable and Connector

Do not touch carelessly so that the foreign body should not adhere to the terminal part of flexible cable and connector.

Wipe off with a clean cloth and the cotton bud, etc. when the terminal part is dirty.

3.3.   General Description About Lead Free Solder (PbF)

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

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

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

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

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

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

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

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

There are eight kinds of DMC-S2 and DMC-S5, regardless of the colours.
- a) DMC-S2 (Japan domestic model)
- b) DMC-S2P
- c) DMC-S2EB/EF/EG/EP, DMC-S5EB/EF/EG
- d) DMC-S2EE,DMC-S5EE
- e) DMC-S2GT
- f) DMC-S2GK
- g) DMC-S2GN,DMC-S5GN
- h) DMC-S2PU/GA/GC/GF, DMC-S5PU/GA/GF

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

3.4.1. Defining methods:

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

a) DMC-S2 (Japan domestic model)
The nameplate for this model shows the following Safety registration mark.

b) DMC-S2P
The nameplate for this model shows the following Safety registration mark.

c) DMC-S2EB/EF/EG/EP, DMC-S5EB/EF/EG
The nameplate for these models show the following Safety registration mark.

d) DMC-S2EE, DMC-S5EE
The nameplate for these models show the following Safety registration mark.

e) DMC-S2GT
The nameplate for this model shows the following Safety registration mark.

f) DMC-S2GK
The nameplate for this model shows the following Safety registration mark.

g) DMC-S2GN, DMC-S5GN
The nameplate for these models show the following Safety registration mark.

h) DMC-S2PU/GA/GC/GF, DMC-S5PU/GA/GF
The nameplate for these models do not show any above Safety registration mark.

NOTE:
After replacing the MAIN P.C.B., be sure to achieve adjustment.
The service software is available at "TSN Website". To download, click on "Support Information from NWBG/VDBG-AVC".

3.4.2. INITIAL SETTINGS:

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

1. IMPORTANT NOTICE:

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

CAUTION 1:(INITIAL SETTINGS)

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

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

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

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

This unit employs "Built-in Memory" for picture image data recording.
(DMC-S2/S5: Approx.70MB)
After proceeding "INITIAL SETTINGS", the picture image data stored in the unit is erased.

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2. PROCEDURES:

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

• Preparation:

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

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

 1. Turn the Power on.

 2. Press the [MODE] button, and select the [NORMAL PICTURE] mode by Cursor buttons, then press the [MENU/SET] button.

 3. Turn the Power off.

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

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

 While pressing "[W] side of Zoom button" and "[UP] of Cursor button" simultaneously, turn the Power on.

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

 Press the [PLAYBACK] button.

 While pressing the "[UP] of Cursor button", press and hold the "[W] side of the Zoom button". Release only the "[UP] of Cursor button" once then press the "[UP] of Cursor button" again.

 Release the "[W]" and "[UP]" buttons, then turn the Power off.

 The LCD displays the " ! " mark before the unit powers down.
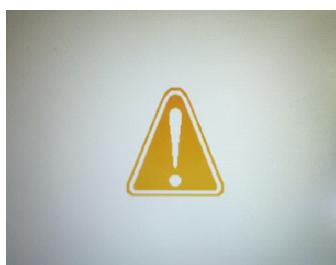
• **Step 3. Turn the Power on:**

 Turn the Power on.

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

 While pressing [MENU/SET] button and "[RIGHT] of Cursor button" simultaneously, turn the Power off.

 The "INITIAL SETTINGS" menu is displayed.

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

[CASE 1. After replacing MAIN P.C.B.]
When MAIN P.C.B. has just been replaced, all of the model suffix is displayed as follows. (Five pages in total)

DMC-S2 Models	DMC-S5 Models

Page 1

DMC-S2 (Japan domestic model) — NONE(JAPAN) S2 / NONE(JAPAN) S5 — (No "JAPAN" model)
DMC-S2P — P / P — (No "P" model)
DMC-S2EG — EG / EG — DMC-S5EG
DMC-S2PU — PU / PU — DMC-S5PU
(No "GD" model) — GD / GD — (No "GD" model)

INITIAL SETTINGS — Select Set End

Page 2

DMC-S2GC — GC S2 / GC S5 — (No "GC" model)
DMC-S2GT — GT / GT — (No "GT" model)
DMC-S2GK — GK / GK — (No "GK" model)
DMC-S2EF — EF / EF — DMC-S5EF
DMC-S2EB — EB / EB — DMC-S5EB

INITIAL SETTINGS — Select Set End

Page 3

DMC-S2EE — EE S2 / EE S5 — DMC-S5EE
DMC-S2GN — GN / GN — DMC-S5GN
(No "PC" model) — PC / PC — (No "PC" model)
(No "PR" model) — PR / PR — (No "PR" model)
(No "GJ" model) — GJ / GJ — (No "GJ" model)

INITIAL SETTINGS — Select Set End

Page 4

(No "SG" model) — SG S2 / SG S5 — (No "SG" model)
(No "LB" model) — LB / LB — (No "LB" model)
(No "EC" model) — EC / EC — (No "EC" model)
(No "GH" model) — GH / GH — (No "GH" model)
DMC-S2EP — EP / EP — (No "EP" model)

INITIAL SETTINGS — Select Set End

Page 5

(No "EN" model) — EN S2 / EN S5 — (No "EN" model)
DMC-S2GF — GF / GF — DMC-S5GF
(No "GM" model) — GM / GM — (No "GM" model)
DMC-S2GA — GA / GA — DMC-S5GA

INITIAL SETTINGS — Select Set End

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

<Other than "EG/EF/EB/EP" models>

DMC-S2 Models	DMC-S5 Models

INITIAL SETTINGS — GC S2 / GN S5

Select Set End

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<Only "EG/EF/EB/EP" models>

DMC-S2 Models	DMC-S5 Models

```
INITIAL SETTINGS  ▯▮▮▮
      EG        S2  ▶
      EF
      EB
      EC
      EP
 ✛ Select     Set  ✍ End
```

```
INITIAL SETTINGS  ▯▮▮▮
      EG        S5  ▶
      EF
      EB
      EC
      EP
 ✛ Select     Set  ✍ End
```

```
INITIAL SETTINGS  ▯▮▮▮
      EN        S2  ▶



 ✛ Select     Set  ✍ End
```

```
INITIAL SETTINGS  ▯▮▮▮
      EN        S5  ▶



 ✛ Select     Set  ✍ End
```
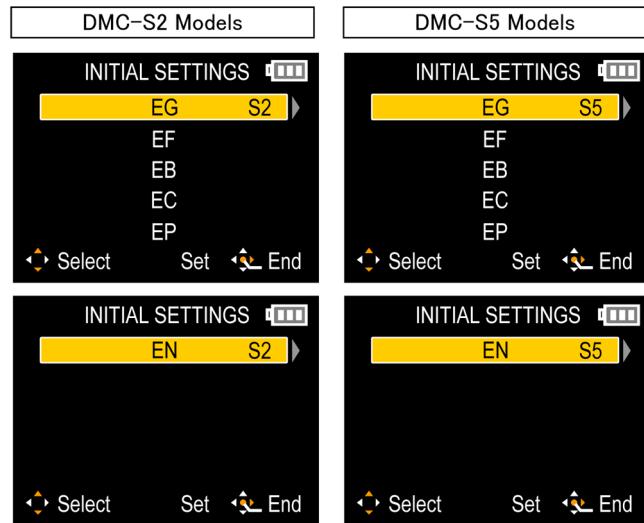
- **Step 5. Choose the model suffix in "INITIAL SETTINGS": (Refer to "CAUTION 1")**
  [Caution: After replacing MAIN P.C.B.]
  > The model suffix can been chosen, **JUST ONE TIME**.
  > Once one of the model suffix have been chosen, the model suffix lists will not be displayed, thus, it can not be changed.
  > Therefore, select the area carefully.

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

- **Step 6. Set the model suffix in "INITIAL SETTINGS":**
  Press the "[RIGHT] of Cursor buttons".
  The only set area is displayed, and then press the "[RIGHT] of Cursor buttons" after confirmation.
  (The unit is powered off automatically.)

```
INITIAL SETTINGS  ▯▮▮▮

      GC        S2

      O K
   CANCEL ◀
   END    ▶
```

Press [RIGHT] button. ⟹

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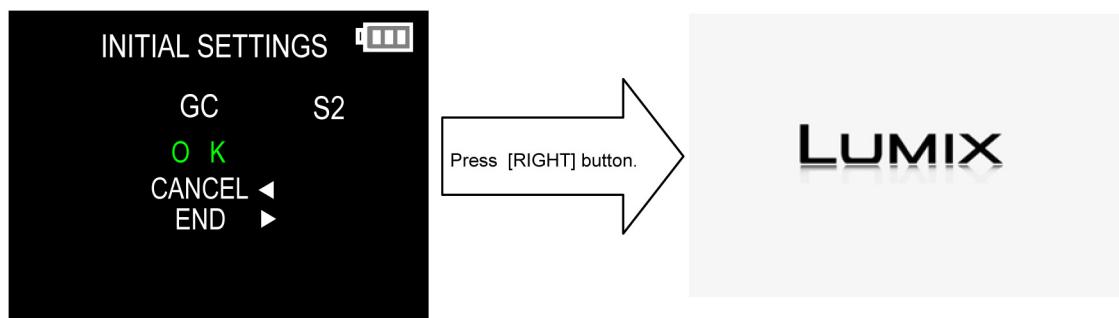
• **Step 7. CONFIRMATION:**
 Confirm the display of "PLEASE SET THE CLOCK" in concerned language when the unit is turned on again.
 When the unit is connected to PC with USB cable, it is detected as removable media.
 (When the "GT" or "GK" model suffix is selected, the display shows "PLEASE SET THE CLOCK" in Chinese.)

1) As for your reference, major default setting condition is as shown in the following table.
 • **Default setting (After "INITIAL SETTINGS")**

	MODEL	VIDEO OUTPUT	LANGUAGE	DATE	REMARKS
a)	DMC-S2(Japan domestic model)	NTSC	Japanese	Year/Month/Date	
b)	DMC-S2P	NTSC	English	Month/Date/Year	
c)	DMC-S2PU/S5PU	NTSC	Spanish	Month/Date/Year	
d)	DMC-S2EG/S5EG	PAL	English	Date/Month/Year	
e)	DMC-S2EP	PAL	English	Date/Month/Year	
f)	DMC-S2EF/S5EF	PAL	French	Date/Month/Year	
g)	DMC-S2EB/S5EB	PAL	English	Date/Month/Year	
h)	DMC-S2EE/S5EE	PAL	Russian	Date/Month/Year	
i)	DMC-S2GC	PAL	English	Date/Month/Year	
j)	DMC-S2GF/S5GF	PAL	English	Date/Month/Year	
k)	DMC-S2GA/S5GA	PAL	English	Date/Month/Year	
l)	DMC-S2GT	NTSC	Chinese (traditional)	Year/Month/Date	
m)	DMC-S2GK	PAL	Chinese (simplified)	Year/Month/Date	
n)	DMC-S2GN/S5GN	PAL	English	Date/Month/Year	

4 Specifications

Digital Camera: Information for your safety

Power Source	DC 5.1 V

Power Consumption	**When recording:**
	`DMC-S2`
	1.0 W
	`DMC-S5`
	1.1 W
	When playing back: 0.6 W

Camera effective pixels	`DMC-S2`
	14,100,000 pixels
	`DMC-S5`
	16,100,000 pixels

Image sensor	`DMC-S2`
	1/2.33" CCD,
	total pixel number 14,500,000 pixels
	Primary colour filter
	`DMC-S5`
	1/2.33" CCD,
	total pixel number 16,600,000 pixels
	Primary colour filter

Lens	Optical 4 x zoom f=5.0 mm to 20.0 mm (35 mm film camera equivalent: 28 mm to 112 mm) / F3.1 (Max. W) to F6.5 (Max. T)
Image stabiliser	Optical method
Focus range	
Intelligent Auto / Normal / Motion Picture	5 cm (0.16 feet) (Wide) / 1 m (3.3 feet) (Tele) to ∞
Scene Mode	There may be difference in above settings.
Shutter system	Electronic shutter + Mechanical shutter
Shutter speed	8 seconds to 1/1600 th of a second
Exposure (AE)	AUTO (Programme AE)
Metering Mode	Multi metering
LCD monitor	2.7" TFT LCD (4:3) (Approx. 230,400 dots) (field of view ratio about 100%)
Microphone / Speaker	Monaural
Recording media	Built-in Memory (Approx. 70 MB) / SD Memory Card / SDHC Memory Card / SDXC Memory Card
Recording file format	
Still picture	JPEG (based on Design rule for Camera File system, based on Exif 2.3 standard)
Motion pictures	QuickTime Motion JPEG (motion pictures with audio)

Interface	
Digital **Analogue video** **Audio**	USB 2.0 (High Speed) [For NTSC areas] NTSC Composite [For PAL areas] NTSC / PAL Composite (Switched by menu) Audio line output (Monaural)
Terminal	AV OUT / DIGITAL: Dedicated jack (8 pin)
Dimensions	Approx. 97.9 mm (W) x 56.6 mm (H) x 20.6 mm (D) [3.9" (W) x 2.2" (H) x 0.81" (D)] (excluding the projection part)
Mass (weight)	With card and battery: Approx. 112 g (0.25 lb) Excluding card and battery: Approx. 95 g (0.21 lb)
Operating temperature	0 °C to 40 °C (32 °F to 104 °F) (Operating humidity: 10%RH to 80%RH)

Battery charger: Information for your safety

Input	AC ~ 110 V to 240 V, 50/60 Hz, 0.2 A
Output	DC === 4.2 V, 0.43 A

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

Voltage / capacity	3.6 V / 680 mAh

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

- Data from the PC can not be written to the camera using the USB connection cable.
- Motion pictures can be recorded continuously for up to 15 minutes.

5 Location of Controls and Components
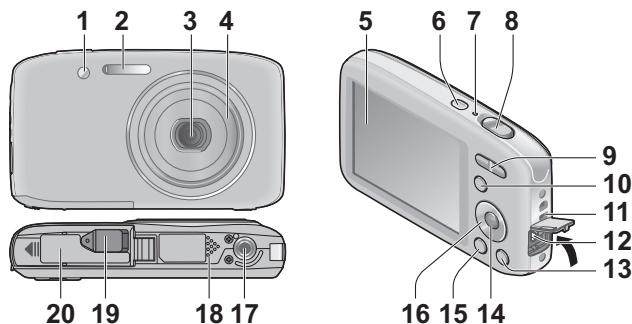
1 Self-timer indicator/AF Assist Lamp
2 Flash
3 Lens
4 Lens barrel
5 LCD monitor
6 Power button
7 Microphone
8 Shutter button
9 Zoom button
10 [MODE] button
11 Hand strap eyelet
12 [AV OUT/DIGITAL] socket
13 [🗑 / ↰] (Delete/Return) button
14 [MENU/SET] button
15 Playback button
16 Cursor button
17 Tripod receptacle
18 Speaker
19 DC coupler cover
20 Card/Battery door

We recommend using the supplied hand strap to avoid dropping the camera.

Cursor button

[MENU/SET]
(menu display/set)

Left cursor button (◄)
• Self-timer

Down cursor button (▼)
• Changing information display

Up cursor button (▲)
• Exposure Compensation

Right cursor button (►)
• Flash
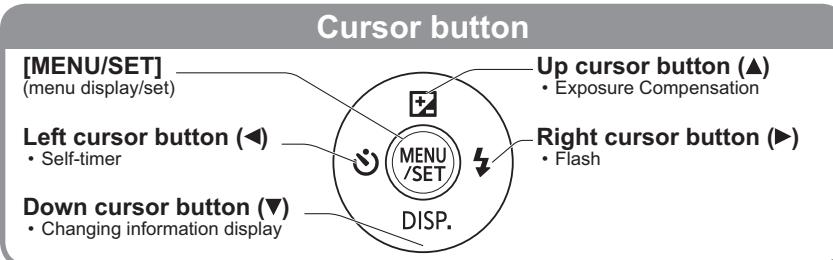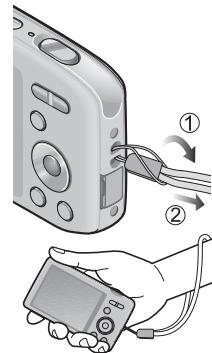
Selecting the Recording Mode

1 | Press the Power button

2 | Press [MODE] button

3 | Use cursor button to select the recording mode and press [MENU/SET]
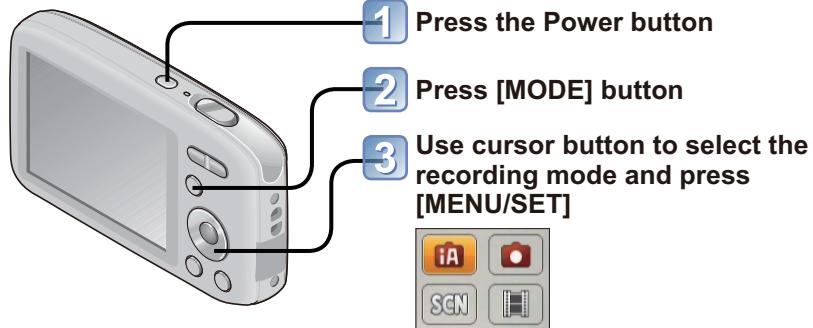
■Recording mode

iA	**[Intelligent Auto] Mode** Take pictures with automatic settings.
📷	**[Normal Picture] Mode** Take pictures with your own settings.
SCN	**[Scene Mode]** Take pictures according to scene.
🎞	**[Motion Picture] Mode** Take motion pictures.

6 Service Mode

6.1.   Error Code Memory Function

1. **General description**

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

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

2. **How to display**

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

   • Preparation:

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

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

    1. Turn the Power on.

    2. Press the [MODE] button, and select the [NORMAL PICTURE] mode by Cursor buttons, then press the [MENU/SET] button.

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

   While pressing "[W] side of Zoom button" and "[UP] of Cursor button" simultaneously, turn the power on.

   • **Step 2. Execute the error code display mode:**

   While pressing the "[W] side of the Zoom button", press the "[LEFT] of Cursor button" and the "[MENU/SET] button simultaneously.

   Every time when performing above operation, the display is changed as shown below.

   Normal display → Error code display → Operation history display →Normal display →.....
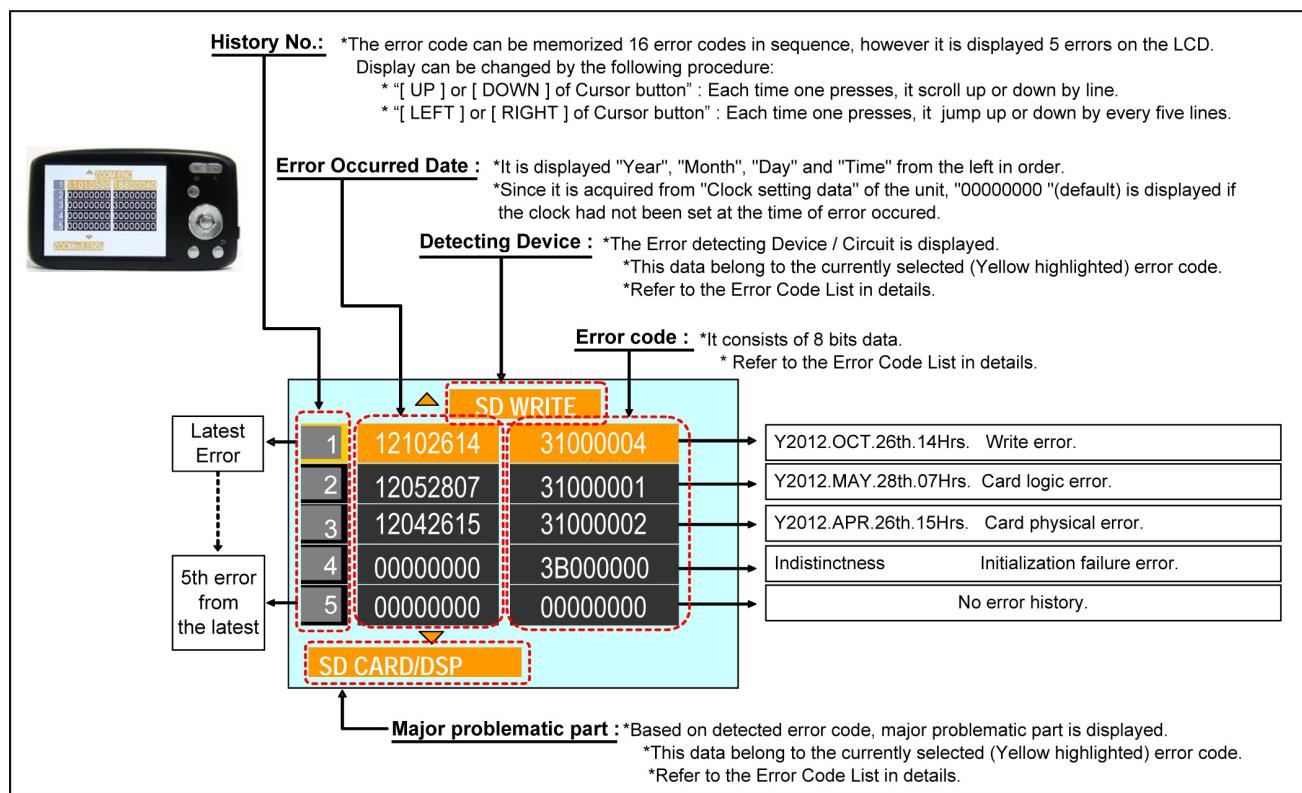
Example of Error Code Display

• 3. Error Code List

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

Attribute	Main item	Sub item	Error code High 4 bits	Error code Low 4 bits	Contents (Upper line) / Problematic Part & Check point (Lower line)	Error Indication Detecting device	Error Indication Problematic Part/Circuit
LENS	Lens drive	OIS	18*0	1000	PSD (X) error. Hall element (X axis) position detect error in OIS unit. / Lens Unit.	OIS X	LENSu NG
				2000	PSD (Y) error. Hall element (Y axis) position detect error in OIS unit. / Lens Unit.	OIS Y	
				3000	GYRO (X) error. / Main P.C.B..	GYRO X	GYRO NG
				4000	GYRO (Y) error. / Main P.C.B..	GYRO Y	
				6000	Drive voltage (X) error. / LENS Unit, LENS flex breaks, etc.	OISX REF	LENSu/LENS FPC
				7000	Drive voltage (Y) error. / LENS Unit, LENS flex breaks, etc.	OISY REF	
				8000	OIS GYRO-Digital communication error / Main P.C.B..	(No indication)	(No indication)
		Zoom		0?10	Collapsible barrel Low detect error (Collapsible barrel encoder always detects Low.) / Lens Unit, Main P.C.B..	ZOOM L	ZOOMm/LENSu
				0?20	Collapsible barrel High detect error (Collapsible barrel encoder always detects High.) / Lens Unit, Main P.C.B..	ZOOM H	
				0?30 | 0?50	Zoom motor sensor error. / Lens Unit, Main P.C.B..	ZOOM ENC	
				0?60	Detection of zoom misregistration by impact such as fails. / Lens Unit	(No indication)	(No indication)
		Focus		0?01	HP Low detect error (Focus encoder always detects High, and not becomes Low) / Lens Unit, Main P.C.B..	FOCUS L	LENS FPC/DSP
				0?02	HP High detect error (Focus encoder always detects Low, and not becomes High) / Lens Unit, Main P.C.B..	FOCUS H	
		Lens	18*1	0000	Power ON time out error. / Lens Unit, Main P.C.B..	LENS DRV	LENSu
			18*2	0000	Power OFF time out error. / Lens Unit, Main P.C.B..		
	Adj. History	OIS	19*0	2000	OIS adj. Yaw direction amplitude error (small)	OIS ADJ	OIS ADJ
				3000	OIS adj. Pitch direction amplitude error (small)		
				4000	OIS adj. Yaw direction amplitude error (large)		
				5000	OIS adj. Pitch direction amplitude error (large)		
				8000	OIS adj. Yaw direction off set error		
				9000	OIS adj. Pitch direction off set error		
				A000	OIS adj. Yaw direction gain error		
				B000	OIS adj. Pitch direction gain error		
				C000	OIS adj. Yaw direction position sensor error		
				D000	OIS adj. Pitch direction position sensor error		
				E000	OIS adj. other error		
HARD	VENUS A/D	Flash	28*0	0000	Flash charging error. / Flash charging circuit	STRB CHG	STRB PCB/FPC
	FLASH ROM (EEPROM Area)	FLASH ROM (EEPROM Area)	2B*0	0001	EEPROM read error / Main P.C.B..	FROM RE	FROM
				0002	EEPROM write error / Main P.C.B..	FROM WR	FROM
				0005	Firmware viersion up error / Replace the firmware file in the SD memory card.	(No indication)	(No indication)
	SYSTEM	RTC	2C*0	0001	SYSTEM IC initialize failure error / Main P.C.B..	SYS INIT	MAIN PCB
SOFT	CPU	Reset	30*0	0001 | 0007	NMI reset Non Mask-able Interrupt (30000001-30000007 are caused by factors)	NMI RST	MAIN PCB
	CPU, ASIC hard	Stop	38*0	0001	Camera task finish process time out. / Lens Unit, Main P.C.B..	LENS COM	LENSu/DSP
				0002	Camera task invalid code error. / Main P.C.B..	DSP	DSP
				0100	File time out error in recording motion image / Main P.C.B..		
				0200	File data cue send error in recording motion image / Main P.C.B..		
				0300	Single or burst recording brake time out.		
		Memory area	3A*0	0008	USB work area partitioning failure / USB cable, Main P.C.B..	(No indication)	(No indication)
	Operation	Power on	3B*0	0000	FLASHROM processing early period of camera during movement.	INIT	(No indication)
	Zoom	Zoom	3C*0	0000	Inperfect zoom lens processing / Lens Unit.	ZOOM	ZOOMm/LENSu
			35*0	0000 | FFFF	Software error (0-7bit : command, 8-15bit : status)	DSP	DSP
			35*1	0000	Though record preprocessing is necessary, it is not called.	(No indication)	(No indication)
			35*2	0000	Though record preprocessing is necessary, it is not completed.		

Important notice about "Error Code List"

1) About "*" indication:

The third digit from the left is different as follows.

- In case of 0 (example: 18**0**01000)

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

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

- In case of 8 (example: 18**8**01000)

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

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

It means that this error is occurred at service side.

2) About "?" indication: ("18*0 0?01" to "18*0 0?60"):

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

• **4. How to exit from Error Code display mode:**

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

NOTE:

The error code can not be initialized.

7 Service Fixture & Tools

7.1. Service Fixture and Tools

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

Resistor for Discharging (1kΩ/5W) **ERG5SJ102**	Collimator (with Focus Chart) **VFK1164TCM02**	LIGHT BOX (with DC Cable) **RFKZ0523**
An equivalent type of Resistor may be used.	*VFK1164TCM03 can be used. *RFKZ0422 can be used.	*VFK1164TDVLB can be used.
TR Chart **RFKZ0443**	Lens Cleaning Kit (BK) **VFK1900BK**	ND Filter (ND0.3) **RFKZ0513**
	*Only supplied 10 set/box.	
Diffuser **RFKZ0591**		
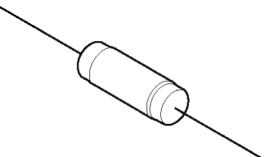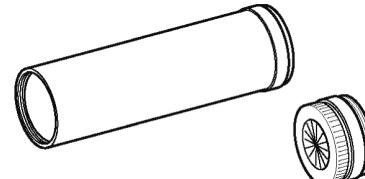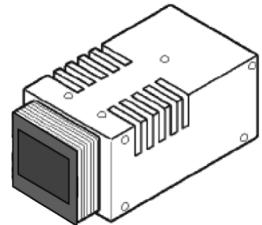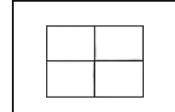
7.2. When Replacing the Main P.C.B.

After replacing the MAIN P.C.B., be sure to achieve adjustment.
The service software is available at "TSN Website". To download, click on "Support Information from NWBG/VDBG-AVC".

8 Disassembly and Assembly Instructions

8.1. Disassembly Flow Chart

This is a disassembling chart.
When assembling, perform this chart conversely.

```
1  Rear Case Unit
        ↓
2  Center Ornament Unit
        ↓
3  Rear Operation Unit
        ↓
4  LCD Unit
        ↓
5  Lens Unit(W/CCD)
        ↓
6  Speaker,
   Flash P.C.B.
        ↓
7  Front Case Unit
        ↓
8  Main P.C.B.          9  Flash Unit        11  Battery Door Unit
        ↓
10 Top P.C.B.
```

8.2. P.C.B. Location

Top P.C.B.

CCD Unit

Flash P.C.B.

Main P.C.B.

Rear Operation Unit
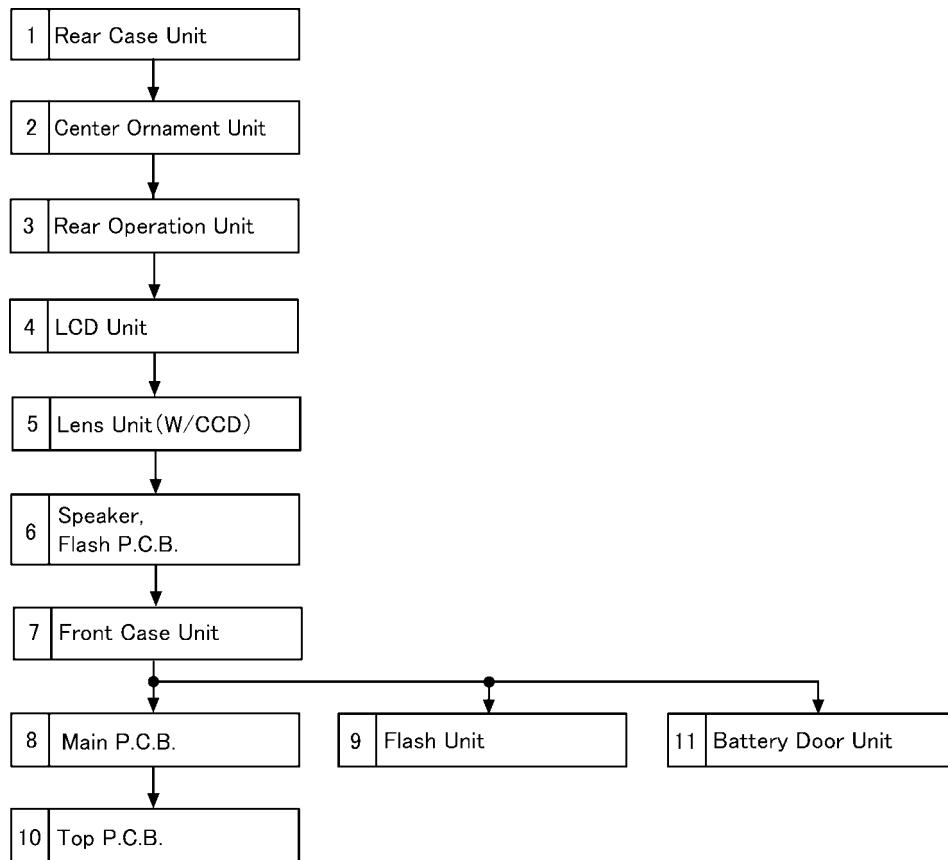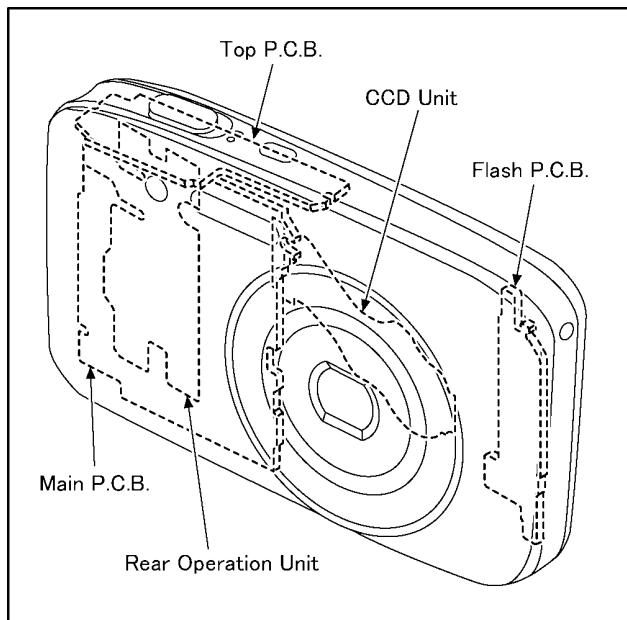
8.3. Disassembly Procedure

No.	Item	Fig	Removal
1	Rear Case Unit	(Fig. D1)	Card
			Battery
			3 Screws (A)
			1 Screw (B)
		(Fig. D2)	5 Locking tabs
			Rear Case Unit
2	Center Ornament Unit	(Fig. D3)	4 Locking tabs
			Center Ornament Unit
3	Rear Operation Unit	(Fig. D4)	1 Screw (C)
			1 Convex
			Connector (A)
			Rear Operation Unit
4	LCD Unit	(Fig. D5)	2 Locking tabs
			Connector (B)
			LCD Unit
5	Lens Unit (W/CCD)	(Fig. D6)	1 Screw (D)
			1 Screw (E)
			3 Locking tabs
			Frame Plate
			Connector (C)
			DPR Sheet A
			Trigger Cover
		(Fig. D7)	Connector (D)
			Connector (E)
			Lens Unit (W/CCD)
6	Speaker Flash P.C.B.	(Fig. D8)	Discharge the E.Capacitor
		(Fig. D9)	FP8001 (Flex)
			1 Screw (F)
			Tripod Frame
			Solder (2 points)
			Speaker
		(Fig. D10)	Solder (3 points)
			Flash P.C.B.
7	Front Case Unit	(Fig. D11)	4 Locking tabs
			Front Case Unit
8	Main P.C.B.	(Fig. D12)	Terminal Cover
			1 Screw (G)
			Solder (14 points)
			1 Convex
			Main P.C.B.
9	Flash Unit	(Fig. D13)	2 Locking tabs
			Flash Unit
10	Top P.C.B.	(Fig. D14)	1 Screw (H)
			Sheet
			2 Convexes
			1 Hooking part
			Top P.C.B.
10	Battery Door Unit	(Fig. D15)	Battery Door Shaft
			Battery Door Unit

8.3.1. Removal of the Rear Case Unit

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

・Card   ・Screw(A) × 3
・Battery   ・Screw(B) × 1

(Fig. D1)

·Locking tab × 5

Rear Case Unit

Locking tab

Locking tab

[MENU/SET] Button

NOTE: (When Replacing)

• Be careful not to lose parts, it because easy to separate from the [MENU/SET] button after removing the rear case unit.

(Fig. D2)

8.3.2. Removal of the Center Ornament Unit

·Locking tab × 4

Locking tab

Locking tab
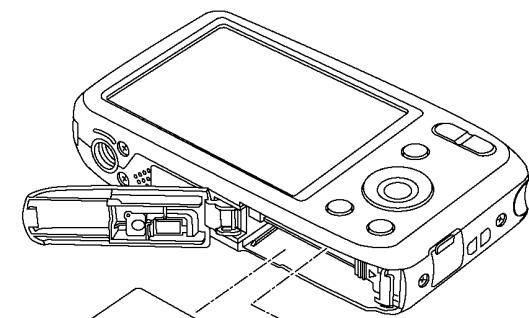
Center Ornament Unit
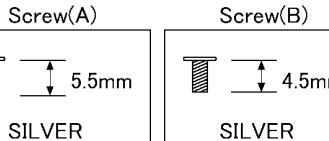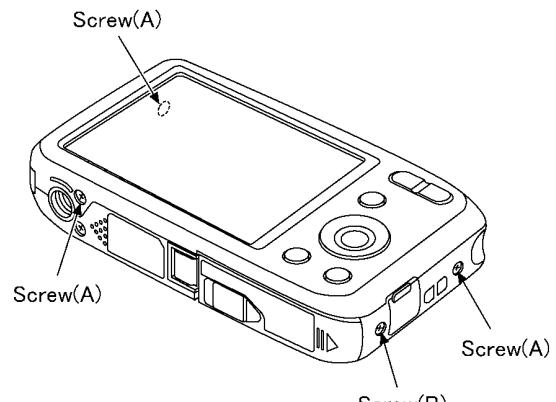
(Fig. D3)

8.3.3. Removal of the Rear Operation Unit

·Screw(C) × 1   ·Convex × 1
·Connector(A)

Screw(C)

Rear Operation Unit

Convex

Flex

Hole

Connector(A)

(2)

(1)

NOTE: (When Replacing)

• Remove the convex of a rear operation unit from the hole.
• When remove the flex, pull up the locking tab in the direction of arrow (1), and then remove the flex in the direction of arrow (2). (Connector (A))

Screw(C)

2mm

SILVER
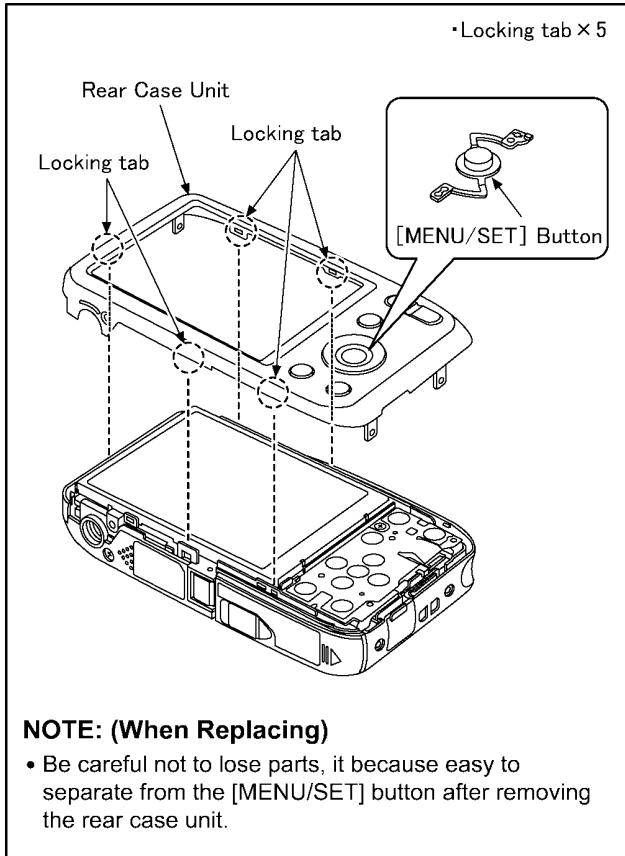
(Fig. D4)

24

8.3.4. Removal of the LCD Unit

・Locking tab × 2
・Connector(B)

Locking tab

Connector(B)

(2)

(1)

LCD Unit

NOTE: (When Replacing)
• When remove the flex, pull up the locking tab in the direction of arrow (1), and then remove the flex in the direction of arrow (2). (Connector (B))

(Fig. D5)

8.3.5. Removal of the Lens Unit (W/CCD)

・Screw(D) × 1   ・Connector(C)
・Screw(E) × 1   ・DPR Sheet A
・Locking tab × 3   ・Trigger Cover
・Frame Plate

Locking tab

Frame Plate

Screw(D)

Screw(E)

Locking tab

Trigger Cover

DPR Sheet A

(2)

(1)

Connector(C)

NOTE: (When Replacing)
• When remove the flex, pull up the locking tab in the direction of arrow (1), and then remove the flex in the direction of arrow (2). (Connector (C))

Screw(D)	Screw(E)
3.5mm	5.5mm
SILVER	SILVER

(Fig. D6)

• Connector(D)
• Connector(E)

Lens Unit (W/CCD)   Connector(D)

Connector(E)

NOTE: (When Replacing)
• When remove the flex, pull up the locking tab in the direction of arrow (1), and then remove the flex in the direction of arrow (2).
(Connector (D), Connector (E))

(Fig. D7)

8.3.6. Removal of the Speaker and Flash P.C.B.

Insulation tube   Resistor for discharging (1kΩ/5W)

Flash P.C.B.

⚠ **CAUTION**
**Be sure to discharge the E.capacitor on Flash P.C.B. before disassembling.**
1. Put the insulation tube on the lead part of resistor (ERG5SJ102 : 1kΩ/5W).
2. Put the resistor between both terminals of E.capacitor unit for approx. 5 seconds.

(Fig. D8)

• FP8001(Flex)   • Tripod Frame
• Screw(F) × 1   • Solder(2 points)

FP8001

Screw(F)

NOTE: (When Replacing)
• When remove the flex, pull up the locking tab in the direction of arrow (1), and then remove the flex in the direction of arrow (2). (FP8001)

Tripod Frame

• Remove the lead wire of flash unit from groove.

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

Flash P.C.B.

Solder(2 points)

Black

Red

Speaker

Screw(F)

4.5mm

SILVER

NOTE: (When Replacing)
• Pull out the flash P.C.B. and Speaker.
• Be careful not to apply stress to the lead wire.

(Fig. D9)

· Solder (3 points)

Solder (3 points)

Flash P.C.B.

White

Blue

Pink

NOTE: (When Installing)

1. Insert the convex of speaker to concave to a downward direction.

Speaker

Convex

Concave

Wiring methods

1. Wiring the lead wire of speaker to groove.
2. Wiring the lead wire of flash unit to groove.

Blue Groove Pink

White

Lead wire of flash unit

Groove

Lead wire of speaker

(Fig. D10)

8.3.7. Removal of the Front Case Unit

· Locking tab × 4

Locking tab

Locking tab

Locking tab

Front Case Unit
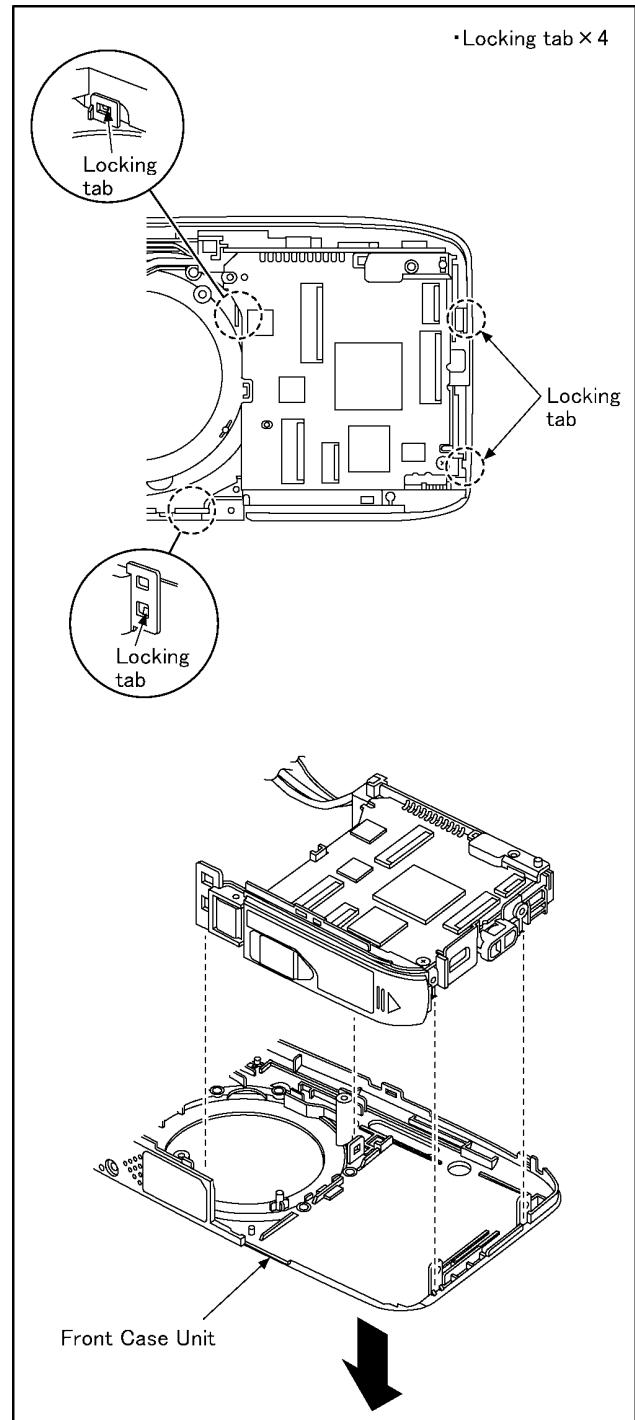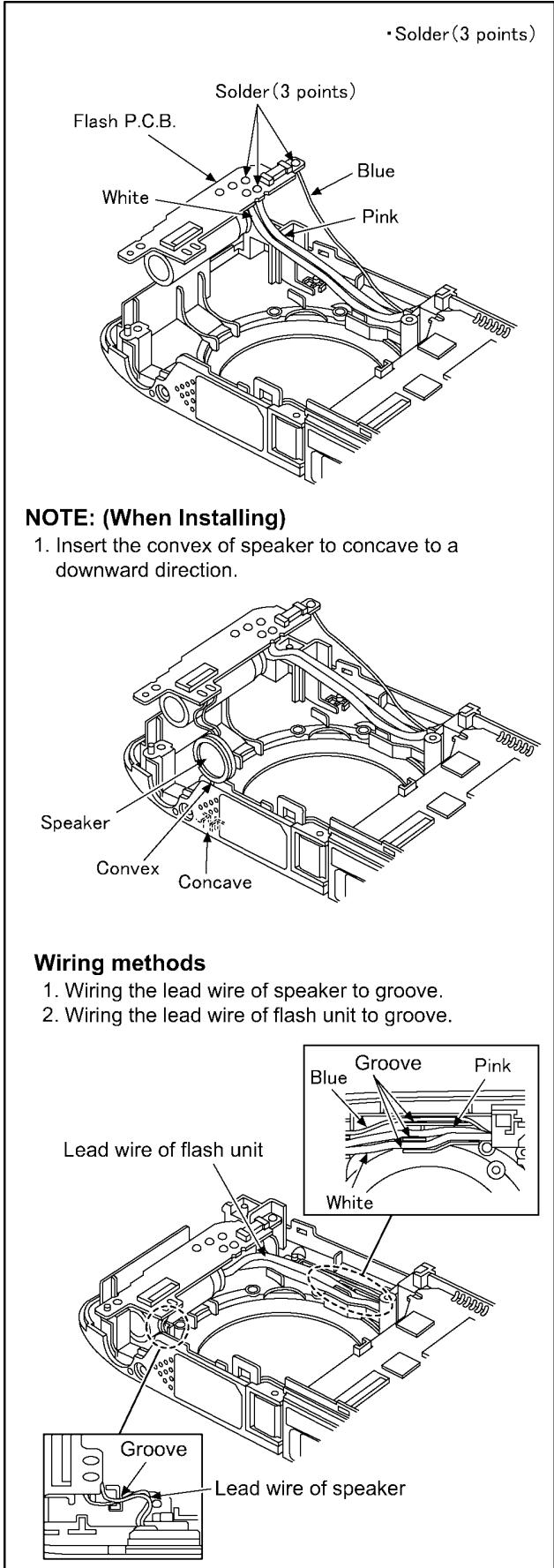
(Fig. D11)

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

・Terminal Cover   ・Solder(14 points)
・Screw(G)×1   ・Convex×1

Terminal Cover

Screw(G)

Top P.C.B. solder part
(11 points)

Battery Terminal
solder part (3 points)

Convex

Screw(G)

Main P.C.B.

Screw(G)

3.5mm

SILVER
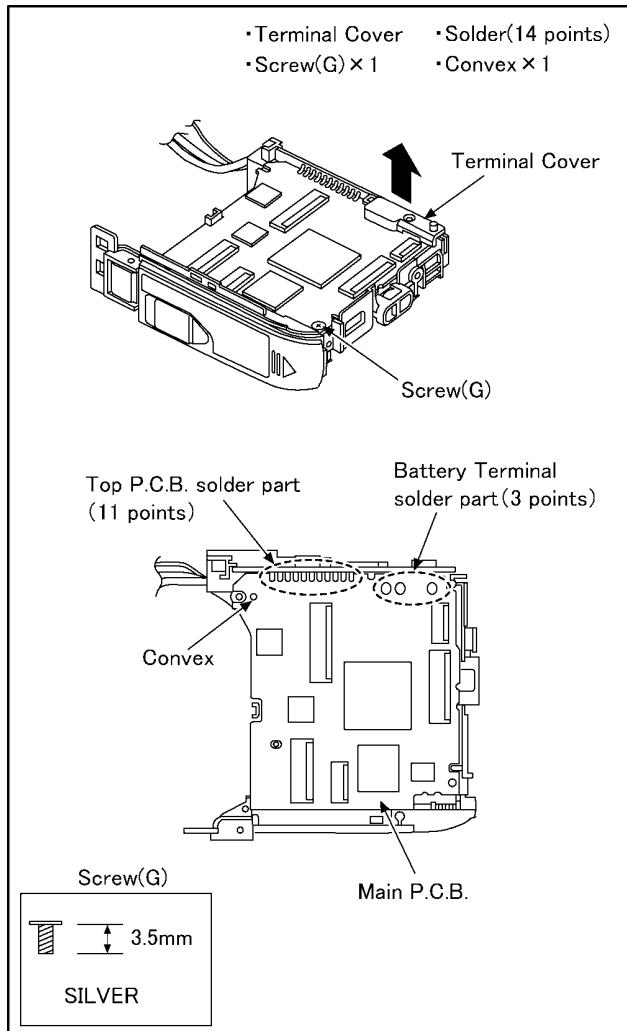
(Fig. D12)

[WHEN ASSEMBLING]
CAUTION: Before soldering the Terminal A (Connecting part of Main P.C.B. and Top P.C.B.)
Before soldering the Terminal A, make sure to tighten the "Screw (D)" first in order to eliminate the gap between Main P.C.B. and Battery Case Unit. Otherwise, soldered terminal A part may be damaged after assembling.
NOTE:
　Since the screw (D) is for fixing the frame plate, the screw (D) has to be removed once, after soldering.

Terminal A
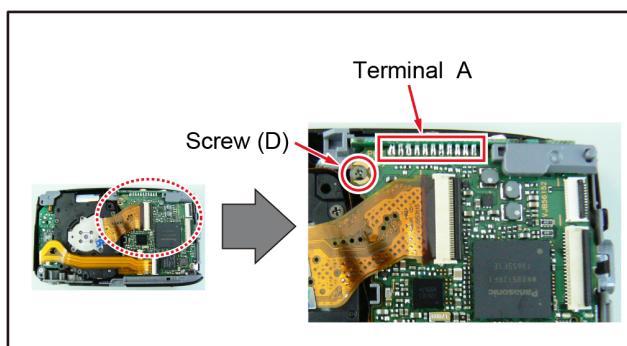
Screw (D)

8.3.9.   Removal of the Flash Unit

・Locking tab×2

Flash Unit

Locking tab
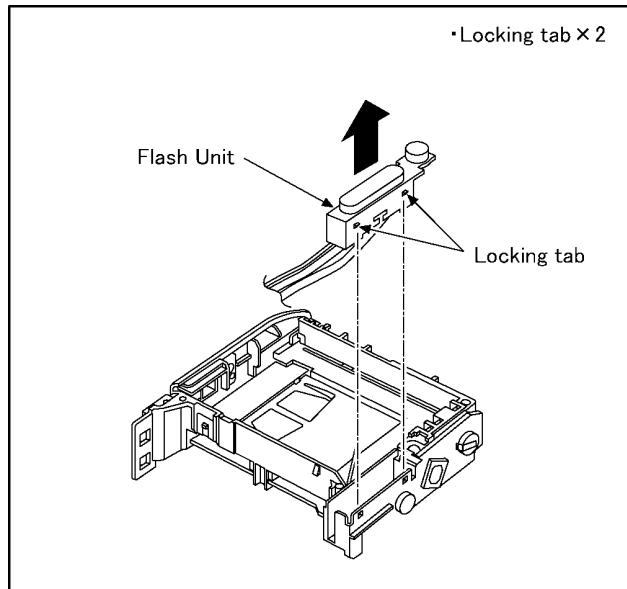
(Fig. D13)

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

・Screw(H)×1   ・Convex×2
・Sheet   ・Hooking part×1

Top P.C.B.

Sheet

Hooking part

Convex

Screw(H)

Convex

Screw(H)

3.5mm

SILVER
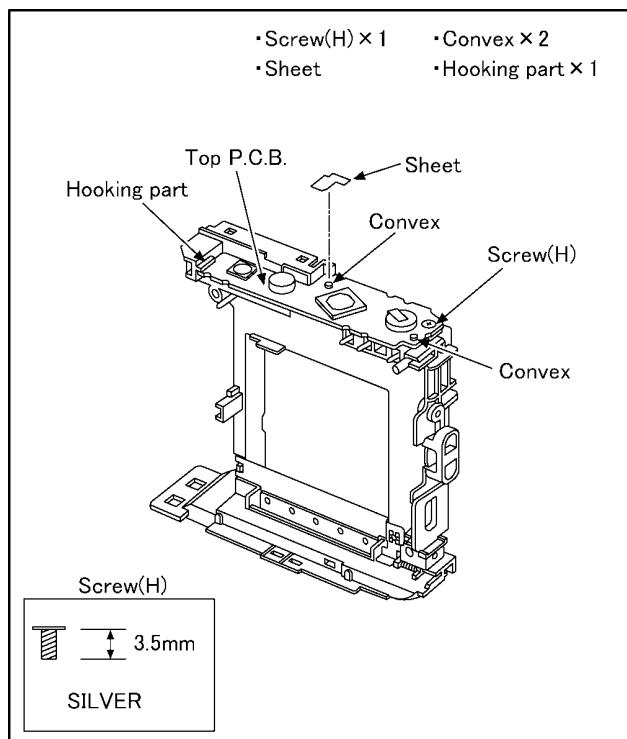
(Fig. D14)

8.3.11. Removal of the Battery Door Unit
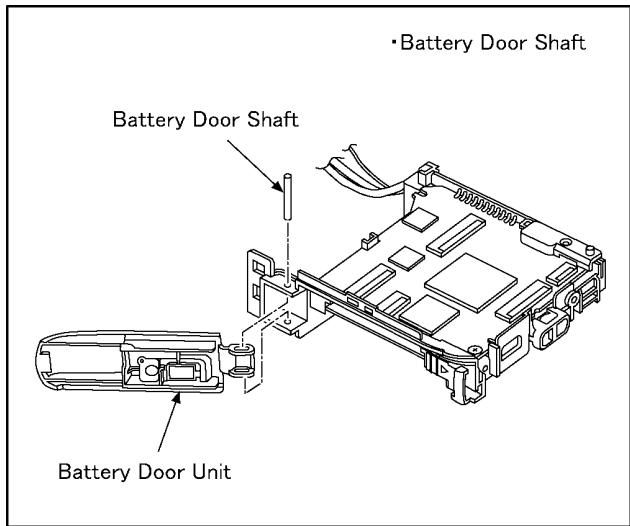

(Fig. D15)

NOTE: (When Installing)

Make sure to confirm the following points when installing:

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

8.4. Removal of the CCD Unit

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

(Fig. D16)

29
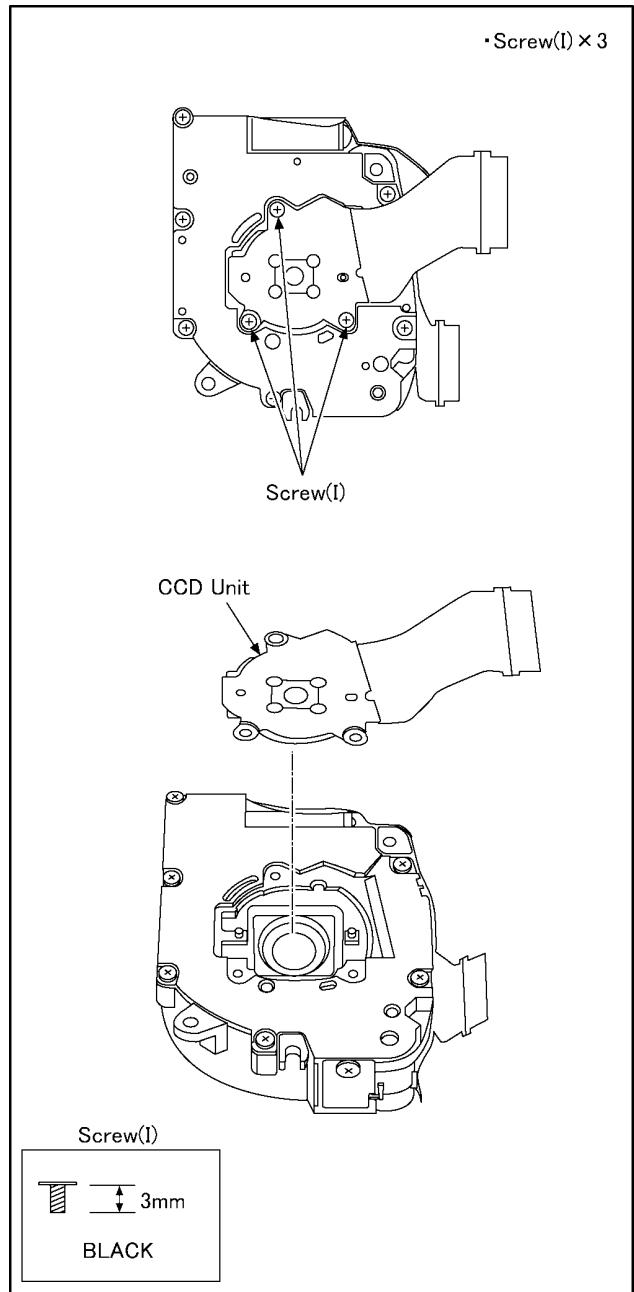
9 Measurements and Adjustments

9.1. Introduction

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

Before disassembling the unit, it is recommended to back up the camera data stored in flash-rom as a data file.

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

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

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

*DIAS (DSC Integrated Assist Software)

9.2. Before Disassembling the unit

9.2.1. Initial Setting Release

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

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

Note:

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

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

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

[How to Release the camera initial setting]

Preparation:

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

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

1. Turn the Power on.
2. Press the [MODE] button, and select the [NORMAL PICTURE] mode by Cursor buttons, then press the [MENU/SET] button.
3. Turn the Power off.

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

Step 1. Temporary cancellation of "INITIAL SETTINGS":

While pressing "[W] side of Zoom button" and "[UP] of Cursor button" simultaneously, turn the Power on.

Step 2. Cancellation of "INITIAL SETTINGS":

Press the [PLAYBACK] button.

While pressing the "[UP] of Cursor button", press and hold the "[W] side of the Zoom button". Release only the "[UP] of Cursor button" once then press the "[UP] of Cursor button" again.

Release the "[W]" and "[UP]" buttons, then turn the Power off.

The LCD displays the " ! " mark before the unit powers down.
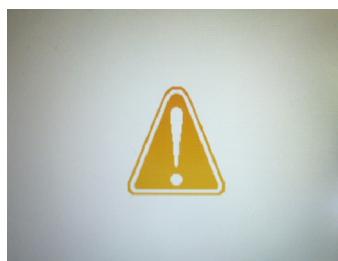
9.2.2. Flash-Rom Data Backup

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

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

[ROM_BACKUP (Method of Non-PC backup)]

1. Insert the SD-card into the camera.
2. Set the camera to "Temporary cancellation of the initial settings".
3. Select the "SETUP" menu.
   From the "SETUP" menu, select "ROM BACKUP".
   NOTE:
   This item is not listed on the customer's "SETUP" menu.
4. When this "ROM_BACKUP" item is selected, the following submenus are displayed.
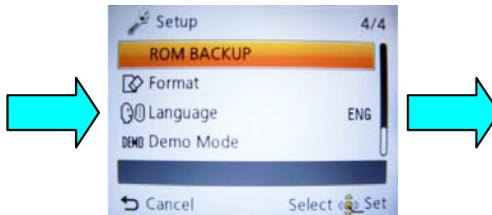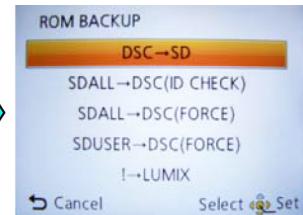
Fig.2-1   Fig.2-2   Fig.2-3

Item	Function	Details
DSC → SD	Save all the DSC's Flash-rom data to SD-CARD	*DSC's Flash-rom data is saved to the SD-CARD as a data file by the same format as the TATSUJIN software for the previous models. (DATA BACKUP) 　-File location: ROOT DIRECTORY in SD-CARD. 　-File Name: 　　1) User Setup Information data: <Model Number>U.txt [Example: DMC-FX66 : "FX66U.txt"] 　　2) Optical Adjustment data: <Model Number>F.txt　　[Example: DMC-FX66 : "FX66F.txt"] *If the concerned file already exists, "OVERWRITE?" message is displayed.
SDALL→ DSC (ID CHECK)	Write the all data to DSC's Flash-rom from SD-CARD	*The backup data being stored in the SD card is transferred to DSC unit. *ID CHECK: When the model ID is different, data is not transferred.
SDALL→ DSC (FORCE)	Write the all data to DSC's Flash-rom from SD-CARD	*FORCE: Even if the model ID is different, data is transferred. 　※If the main PCB is replaced, select "SDALL → DSC (FORCE)".
SDUSER→DSC（FORCE）	Only "User setup information" is written from the saved file in the SD-CARD to DSC's Flash-rom.	*Only the user's "setup" setting condition is transferred to DSC unit. *FORCE: Even if the model ID is different, the data is transferred.
!→LUMIX	Shipping set without initializing "User setup information"	*Initial setting is executed without initializing the user's set up setting condition. ※ The initial setting must be perform while the Self-timer LED is blinking, ※ The picture data stored in the built-in memory of the DSC is not erased, with this operation.

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

Same as TATSUJIN software for previous models.

9.2.3. Light Box

If using VFK1164TDVLB Light Box, remove the lens connection
ring by loosing three hexagon screws.
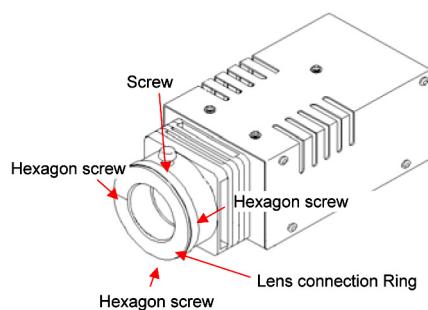
9.3. Details of Electrical Adjustment

9.3.1. How to execute the Electrical Adjustment

It is not necessary to connect the camera to a PC to perform adjustments.
"Flag reset operation" and "Initial setting operation" are required when carrying out the alignment, follow the procedure below.

9.3.1.1. Startup Electrical Adjustment mode

1. Release the initial settings.
2. Insert a recordable SD card.
   (Without a SD card, the automatic adjustment can not executed.)
3. Procedure to set the camera into adjustment mode:
   a. Turn the Power on.
   b. Press the [MODE] button, and select the [NORMAL PICTURE] mode by Cursor buttons, then press the [MENU/SET] button.
   c. Turn the Power off.
   d. Turn the Power on pressing "[W] side of Zoom button" and [MODE] button simultaneously.
   LCD monitor displays "SERVICE MODE".(Refer to Fig. 3-1)

Fig.3-1

9.3.1.2. Status Adjustment Flag Setting

Reset (Not yet adjusted) the status flag condition.

1. After pressing the "[W] side of Zoom button", the LCD monitor displays the Flag status screen (Refer to Fig.3-2)
2. Select item by pressing the Cursor buttons. (Gray cursor is moved accordingly.)
3. Press the [Delete/Return] button.
   NOTE:
   The selected item's flag has been changed from "F (green)" to "0 (yellow)".
   *Flag conditions:
   F (green)
   means that the alignment has been completed and the status flag condition is set. In this case, the flag condition should be reset, if you try to carry out the automatic alignment.
   0 (yellow)
   means that the alignment has been not "completed" and the status flag condition is "reset". In this case, automatic alignment is available.

• In case of setting the status flag into set condition again without completion of the alignment, the status flag should be SET by using PC, or UNDO by using ROM BACKUP function.


Fig.3-2

9.3.1.3. Execute Adjustment
(In case of "OIS Adjustment")

1. Perform step "9.3.1.1." to "9.3.1.2.", to reset the OIS flag status "F" (Set) to "0" (Reset)
2. Press "[W] side of the zoom button" after Flag reset. OIS Adjustment screen is displayed on the LCD panel. (Refer to Fig.3-3)
3. Press the [Shutter] button. The adjustment will start automatically.

Fig.3-3

4. When the adjustment is completed successfully, adjustment report menu appears with Green OK on the LCD monitor. (Refer to Fig.3-4)
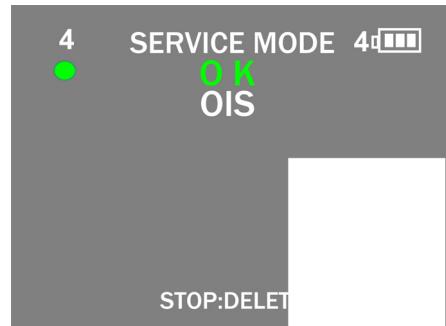

Fig.3-4

9.3.1.4. Attention point during Adjustment

1. Step "9.3.1.3." procedure shows OIS adjustment as an example. To perform the adjustment, refer to the "9.3.2. Adjustment Specifications" table which shows key point for each adjustment.
2. Do not move the light box, the camera or the chart while adjusting. If one of these is moved accidentally, start the adjustment again.
3. Do not press any buttons/keys until the default menu (Fig.3-5) is displayed on the LCD monitor. Otherwise, adjustment data may not be stored properly.
4. If the adjustment is interrupted accidentally, the alignment data may not be properly saved in the Flash-rom.
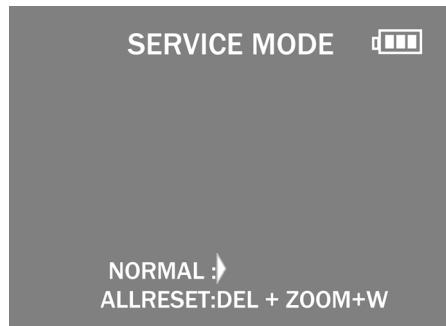
Fig.3-5

9.3.1.5. Finalizing the Adjustment

1. Several adjustment flags can be reset ("F" into "0") at the same time. In this case, when the adjustment has been completed, the screen will change showing the adjustment for the next item until all reset items are completed.
   Also, when the shutter button is pressed, the screen jump to the next adjustment item.
2. To cancel the adjustment mode while in the process of performing the adjustment, follow this procedures.
   (1) Press "[RIGHT] of cursor button".
   NOTE:
   • If adjustment is cancelled with above procedure, adjustment is not completed. Make sure to adjust it later.
   • Adjustment software "DIAS" is able to control the status of the adjustment flags.

9.3.2. Adjustment Specifications

The following matrix table shows the relation between the replaced part and the Necessary Adjustment.
When a part is replaced, make sure to perform the necessary adjustment(s) in the order indicated.
The table below shows all the information necessary to perform each adjustment.

| Adjustment order	Adjustment Item	FLAG	Purpose	MAIN P.C.B.	Lens part (Include CCD U)	MIC	JIG/TOOLS	SET UP	How to Operate
				Replacing Parts					
1	Zoom Home Position and Microphone check	ZHP	Zoom Home Position adjustment	○	○	○	NONE	NONE	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)Voice is uttered for 5 seconds into the microphone, waiting 5 seconds after pushing a shutter release. (Since it will be set to NG if voice is too loud, it is careful.) 3)After completed, the"OK" message appears.
2	OIS sensor	OIS	OIS sensor output level adjustment	○	○	—	NONE	NONE	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)After completed, the"OK" message appears.
3	Backfocus / GYRO	BF	To have the focus tracking curve be appropriate shape and GYRO sensor adjustment	○	○ ※1	—	・COLLIMATOR (VFK1164TCM02 or VFK1164TCM03 or RFKZ0422)	1)Set the camera in front of collimator so that the distance between collimator and camera becomes about 2 cm as shown in Fig.A. 【NOTE】 Please note that "NG" might happen while auto adjusting. - Do not put the black colored stuff at the back side of collimator near hunching chart to get some certain brightness. - Make sure the hunting chart has no dust and dirty condition. - Not connect the USB cable at this stage.	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) (Green●mark is displayed on LCD). 2)A star chart changes into the state where it is reflected to the center. 3)Press shutter button. 4)After completed, the "OK" message appears.
4	Venus Zoom	PZM	Venus Zoom Inspection	○	—	—	NONE	NONE	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)After completed, the"OK" message appears.
5	Monitor Linearity	MLN	Monitor Linearity adjustment	○	○	—	・LIGHT BOX RFKZ0523 (VFK1164TDVLB)	1)Set the camera in front of LIGHT BOX so that the distance between Light box and camera becomes about 6 cm as shown in Fig.B. 【NOTE】 - Not connect the USB cable at this stage.	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)After completed, the"OK" message appears.
6	Shutter	SHT	Shutter speed adjustment	○	○	—		1)Set the camera in front of LIGHT BOX so that the distance between Light box and camera becomes about 12 cm as shown in Fig.B. 【NOTE】 - Not connect the USB cable at this stage.	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)After completed, the"OK" message appears.
7	ISO	ISO	ISO sensitivity adjustment	○	○	—	・LIGHT BOX RFKZ0523 (VFK1164TDVLB) ・ND FILTER (RFKZ0513(ND0.3))	1) Set the ND FILTER (RFKZ0513) to the LIGHT BOX. (The LIGHT BOX "VFK1164TDVLB" can be used if the front hood of VFK1164TDVLB is removed.) 2) Set the camera in front of LIGHT BOX so that the distance between ND FILTER and camera becomes about 12 cm as shown in Fig.C. 【NOTE】 - Not connect the USB cable at this stage.	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)After completed, the"OK" message appears.
8	High brightness coloration	LIN	High brightness coloration adjustment	○	○	—			1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)After completed, the"OK" message appears.
9	White Balance	WBL	White balance adjustment under various color temperature	○	○	—	・LIGHT BOX RFKZ0523 (VFK1164TDVLB) ・TR CHART (RFKZ0443)	1)Insert the TR chart into the slot of light box as shown in Fig.E. 2)Set the camera in front of LIGHT BOX so that the distance between Light box and camera becomes about 15 cm as shown in Fig.B. 【NOTE】 - Not connect the USB cable at this stage.	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)After completed, the"OK" message appears.
10	CCD Missing Pixels (White)※2	WKI	Compensation of CCD Missing Pixels (White)	○	○ ※1	—	NONE	NONE	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)After completed, the"OK" message appears.
11	Color reproduction inspection and Microphone check	COL	Color reproduction inspection and Microphone check	○	○	—	NONE	NONE	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)After completed, the"OK" message appears.

Adjustment order	Adjustment Item	FLAG	Purpose	MAIN P.C.B.	Lens part (Include CCD U)	MIC	JIG/TOOLS	SET UP	How to Operate
				Replacing Parts					

Adjustment order	Adjustment Item	FLAG	Purpose	MAIN P.C.B.	Lens part (Include CCD U)	MIC	JIG/TOOLS	SET UP	How to Operate
		BKI	Do not use "BKI" adjustment flag for this unit. Use "BK2" adjustment flag, instead. (In case of mostDSC models, the adjustment flag for CCD Missing Pixcels is "BKI". But, in this model, "BK2" the adjustment flag for CCD Missing Pixcels.)						
12	CCD Missing Pixels (Black)※3	BK2	Compensation of CCD Missing Pixels (Black)	○	○ ※1	—	・LIGHT BOX RFKZ0523 （VFK1164TDVLB） ・DIFFUSER （RFKZ0591）	1) Prepair the LIGHT BOX (RFKZ0523). (The LIGHT BOX "VFK1164TDVLB" can be used if the front hood of VFK1164TDVLB is removed.) 2) Set the Diffuser (RFKZ0591) to the LIGHT BOX. 3) Set the camera in front of LIGHT BOX so that the distance between Diffuser and camera becomes about 3 cm as shown in Fig.D. 【NOTE】 - Do not use "BKI" adjustment flag for this unit. Use "BK2" adjustment flag, instead.	1)Press Shutter Button after SET UP. (Green●mark is displayed on LCD). 2)Press Shutter Button. (The 1st adjustment is executed, and then green ● mark is displayed on LCD). 3)Press Shutter Button. (Green●mark is displayed on LCD). 4)Press Shutter Button. (The 2nd adjustment is executed, and then green ● mark is displayed on LCD). 5)Press Shutter Button. (Green●mark is displayed on LCD). 6)Press Shutter Button. (The 3rd adjustment is executed, and then "OK" mark is displayed on LCD when the adjustment has been completed successfully.).

※1：This adjustment must be performed not only replacing the CCD unit,
　　　but also simply removing the CCD unit.
※2：The pixel that always lights while shaded is called a white wound.
※3：The pixel that does not light while complete exposed is called a black wound.
*This unit does not have the LCD adjustment of the camera (LCD flicker adjustment etc.).
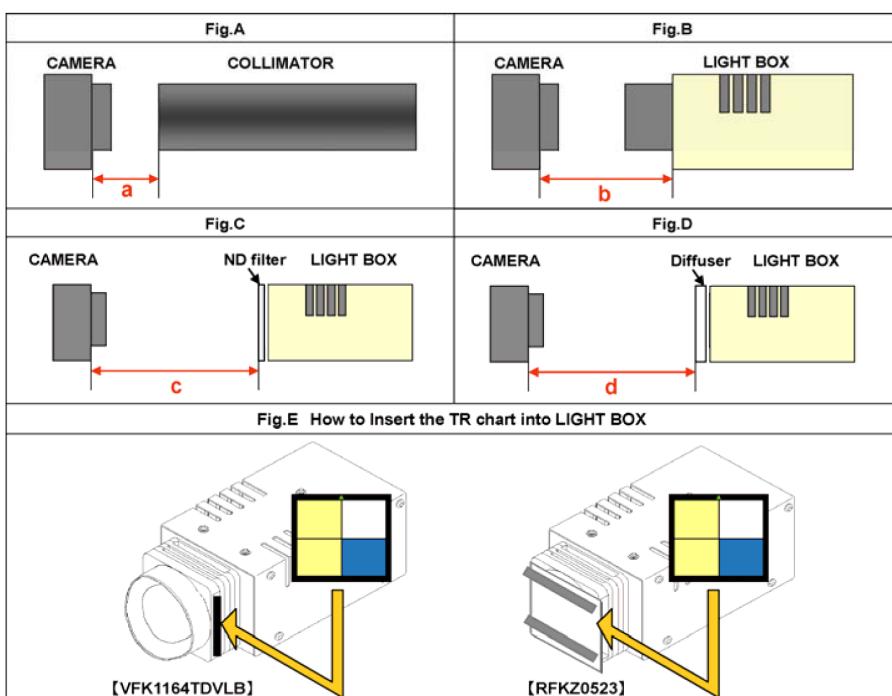
Fig.A | Fig.B

Fig.C | Fig.D

Fig.E How to Insert the TR chart into LIGHT BOX

【VFK1164TDVLB】　　【RFKZ0523】

■IMPORTANT NOTICE (After replacing the MAIN P.C.B.)
 After replacing the MAIN P.C.B., make sure to perform the
"INITIAL SETTINGS" first, then release the "INITIAL SETTINGS"
 in order to proceed the electrical adjustment.
 NOTE:
　1). If electrical adjustment or data re-writing is executed before
　　　"INITIAL SETTINGS", suffix code list is never displayed, and it
　　　cannot be chosen suitable suffix code.
　2). Never remove the battery during initial setting in process.

9.4. After Adjustment

9.4.1. Initial Setting

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

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

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

10 Maintenance

10.1.   Cleaning Lens and LCD Panel

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

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

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

Note:

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

11 Block Diagram

## 11.1. Overall Block Diagram

◆ OVERALL BLOCK DIAGRAM

MAIN P.C.B.

(28mm ~ 112mm)

CCD
- 1/2.33"
- 14.1 MEGA PIX (DMC-S2)
- 16.1 MEGA PIX (DMC-S5)

CCD SIGNAL PROCESSOR
- CDS, AGC, A/D, TG, CCD DRIVER

(24MHz)

ZOOM | OIS UNIT | IRIS | SHUTTER | FOCUS

REGULATOR

SD CARD

MICROPHONE

SPEAKER

SYSTEM IC
MOTOR DRIVE, OIS DRIVE& PRE PROCESS

SYSTEM IC
- MICROPHONE AMP
- SPEAKER CONTROL
- VIDEO OUT

GYRO SENSOR & AMP

AV OUT / DIGITAL TERMINAL

FLASH

IC8100 IGBT DRIVER

VENUS ENGINE
- CAMERA PROCESS
- J-PEG COMP/EX PANDS
- MEDIA I/F
- USB I/F
- MAIN MICROPROCESSOR
- OIS CONTROL
- LENS DRIVE
- LCD DRIVE

COLOR LCD PANEL
- 2.7" PANEL 230k dots

REAR OPERATION UNIT

SYSTEM IC

(32.768kHz)

SDRAM/512Mbit
NAND FLASH ROM/1Gbit

REGULATOR

TOP OPERATION UNIT

POWER
(POWER SUPPLY)

BATTERY

DMC-S2/S5 OVERALL BLOCK DIAGRAM

11.2. Flash / Top Block Diagram

◆ FLASH BLOCK DIAGRAM

◆ TOP BLOCK DIAGRAM
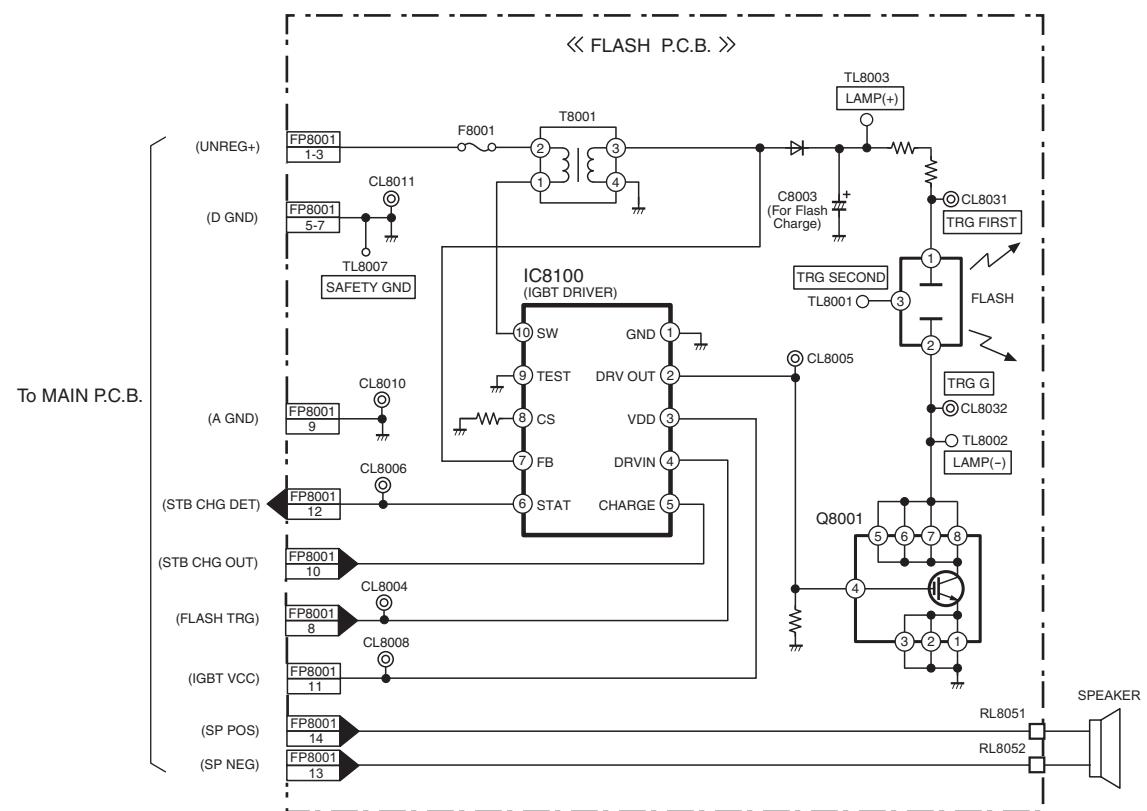
DMC-S2/S5 FLASH AND TOP BLOCK DIAGRAM
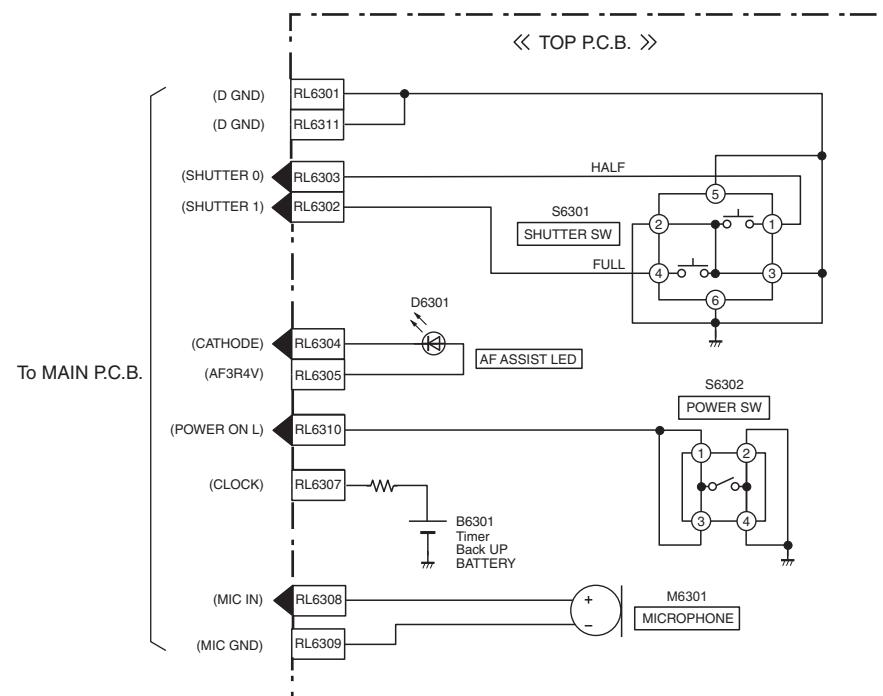
12 Wiring Connection Diagram

12.1. Interconnection Diagram

TOP P.C.B.
(FOIL SIDE)
※ [- - - - - - -] : (COMPONENT SIDE)

M6301
MICROPHONE UNIT

RL6312 RL6301 RL6302 RL6303 RL6304 RL6305 RL6306 RL6307 RL6308 RL6309 RL6310 RL6311

N.C.	D.GND	SHUTTER 1	SHUTTER 0	CATHODE	AF/RAV	N.C.	CLOCK	MIC IN	MIC GND	POWER ON L	D.GND
RL6312	RL6301	RL6302	RL6303	RL6304	RL6305	RL6306	RL6307	RL6308	RL6309	RL6310	RL6311

BATTERY

REAR OPERATION
UNIT

CCD
UNIT

LCD UNIT

LENS
UNIT

MAIN P.C.B.
(FOIL SIDE)
※ [- - - - - - -] : (COMPONENT SIDE)

SPEAKER

RL8052   RL8051

FLASH FPC

FLASH P.C.B.
(FOIL SIDE)

FP8001

|	
1	UNREG+
2	UNREG+
3	UNREG+
4	N.C.
5	D.GND
6	D.GND
7	D.GND
8	FLASH TRG
9	A.GND
10	STB CHG OUT
11	IGBT VCC
12	STB CHG DET
13	SP NEG
14	SP POS

DMC-S2/S5 INTERCONNECTION DIAGRAM

IMPORTANT SAFETY NOTICE:

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

1. Although reference number of the parts is indicated on the P.C.B. drawing and/or
   schematic diagrams, it is NOT mounted on the P.C.B. when it is displayed with "$" mark.

2. It is only the "Test Round" and no terminal (Pin) is available on the P.C.B.
   when the TP (Test Point) indicated as "●" mark.

3. Use the parts number indicated on the Replacement Parts List .

4. Indication on Schematic diagrams:

Circuit name being connected.

OFTR   FEP   This signal is connected
                                   to the FEP schematic diagram.

Name of Signal
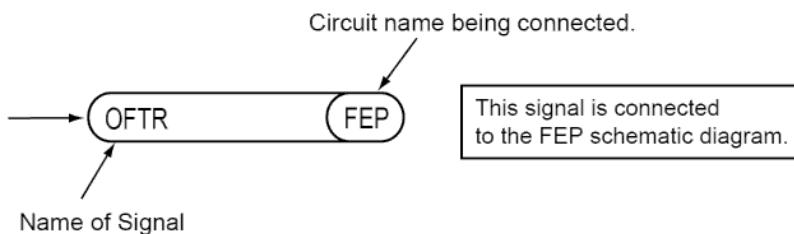
5. It might be taking time for display and/or access of the Schematic Diagrams &
   P. C. B having the heavy data volume.

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

E.S.D. standards for Electrostatically Sensitive Devices, refer to PREVENTION OF
ELECTROSTATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES
section.
Definition of Parts supplier:
1. Parts marked with [ENERGY] in the remarks column are supplied from Panasonic
   Corporation Energy Company.
2. Parts marked with [SPC] in the remarks column are supplied from AVC-CSC-SPC.
   Others are supplied from PAVCX.

Model No. : DMC-S2 Flash (FLASH P.C.B.)

Flash (FLASH P.C.B.)

Top (TOP P.C.B.)

D_GND
SHUTTER_1
SHUTTER_0
CATHODE
AF3RAV
N.C.
tokei
MIC_IN
MIC_GND
POWER_ON_L
D_GND

R6301
R6302
R6303
R6304
R6305
R6306
R6307
R6308
R6309
R6310
R6311

D6301
B3ADB0000169

L6301
J0XCC0000415

R6338
33[18]

R6337
33[18]

M6301
L0KCBAY000093

S6302
K0F111AJ005B1
POWER

1 2 3 4

S6301
K0F212AJ00003
SHUTTER_SW

1 2 3 4 5 6

SAFETY_GND
BATTERY CASE
ET6305
5

C6321
F1RG0105G0007

R6339
5100

TL6304
5

B6301
ML-421S/DN
or N4ECY25V0002
(BACKUP BATTERY)

# Model No. : DMC-S2   CCD Flex (CCD flex P.C.B. of S2)
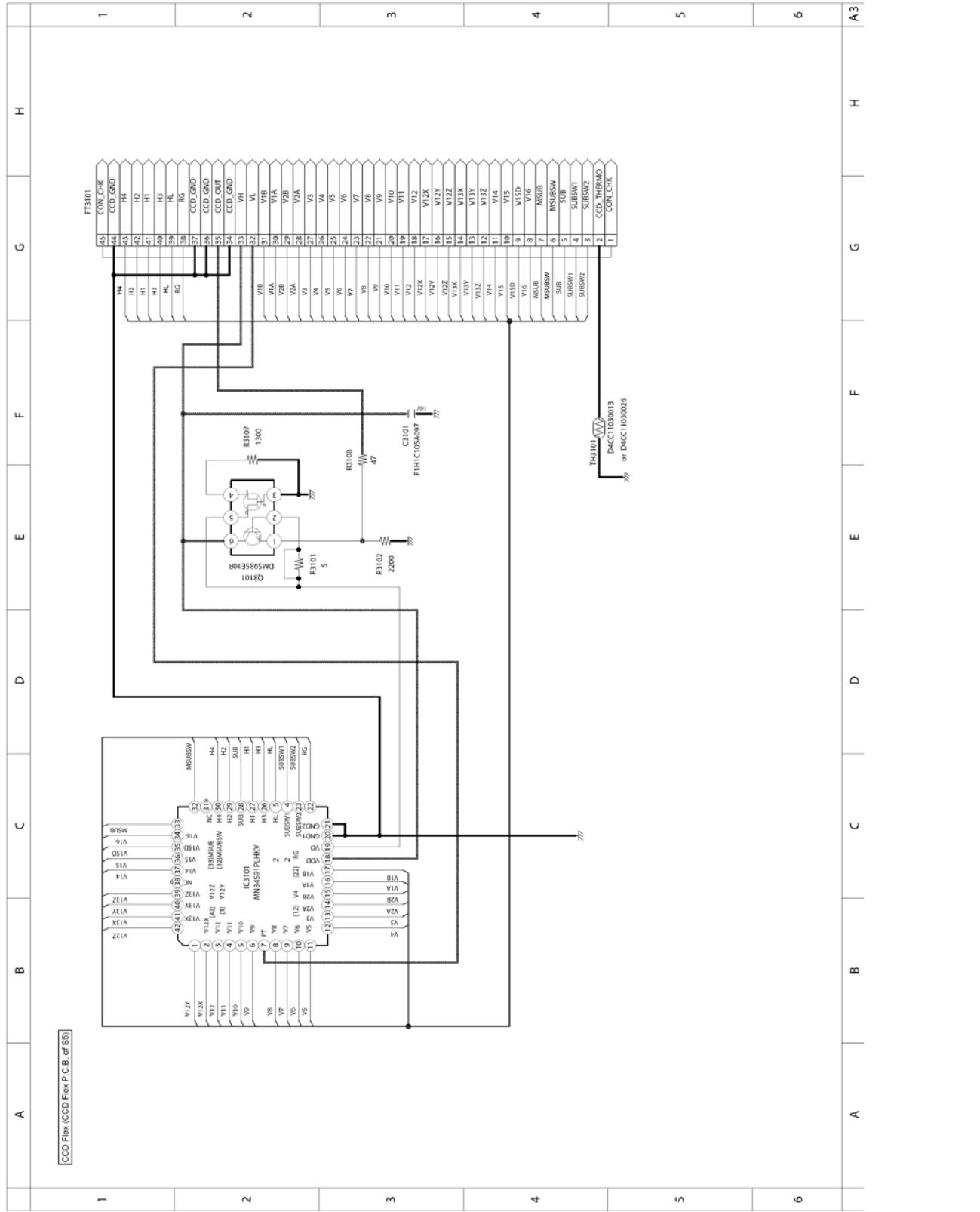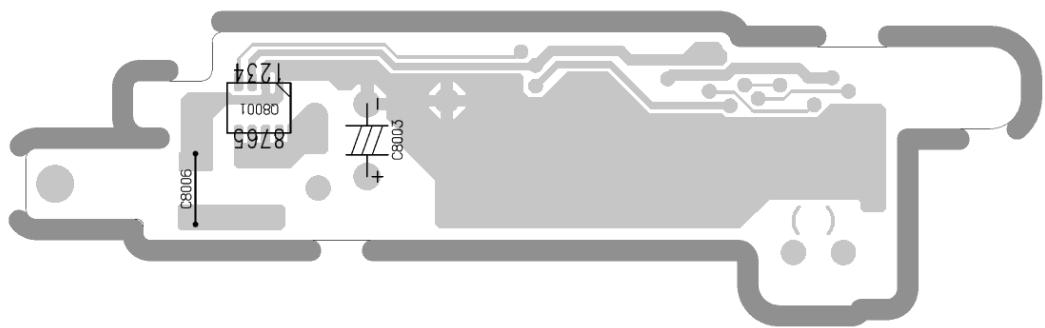
CCD Flex (CCD Flex P.C.B. of S2)

S6301

TL6304

M6301

2   1   +

ET6305

S6302

LB6301

RL6311
RL6310
RL6309
RL6308
RL6307
RL6306
RL6305
RL6304
RL6303
RL6302
RL6301

R6337

D6301

1

2

R6338
C6321
R6339

B6301

2

1
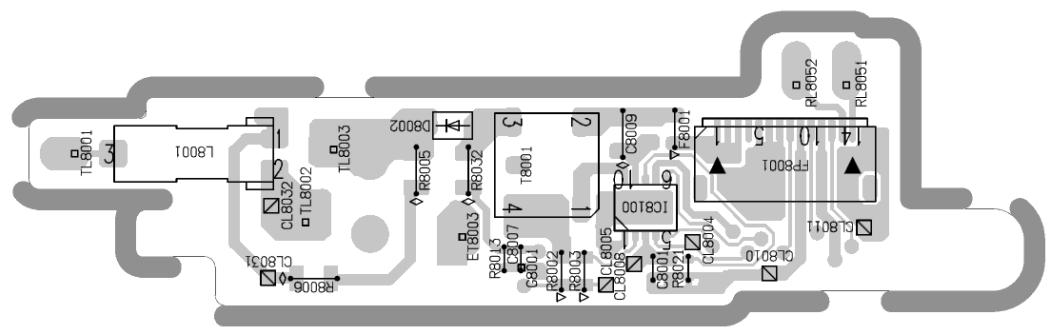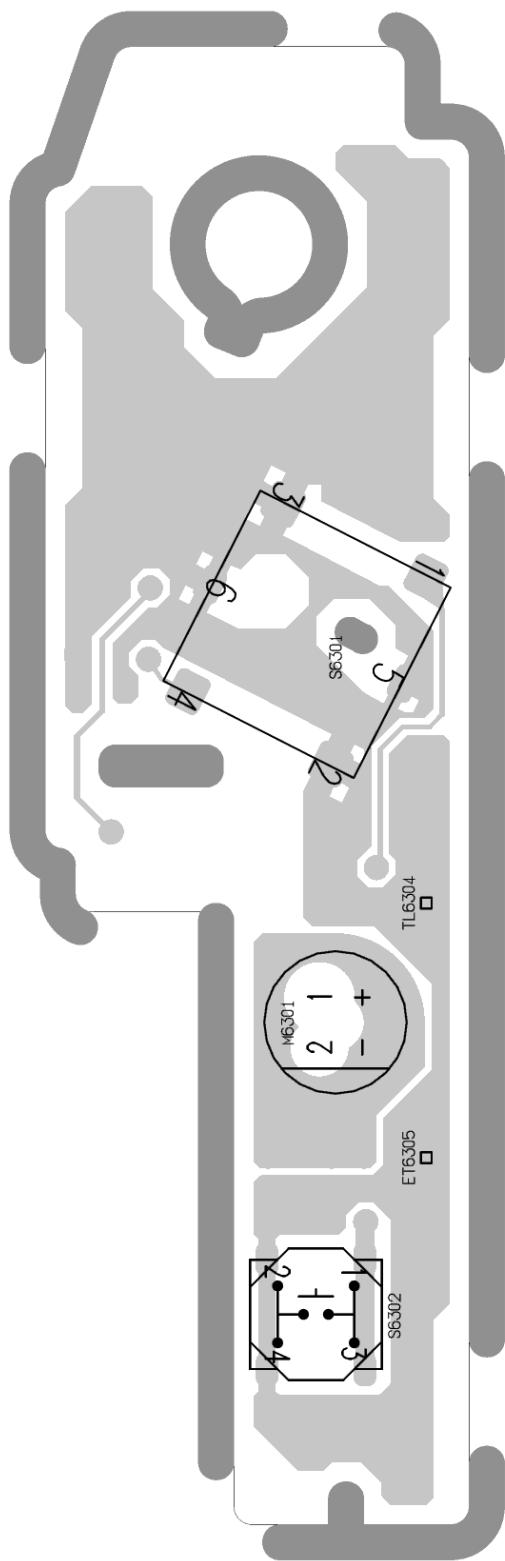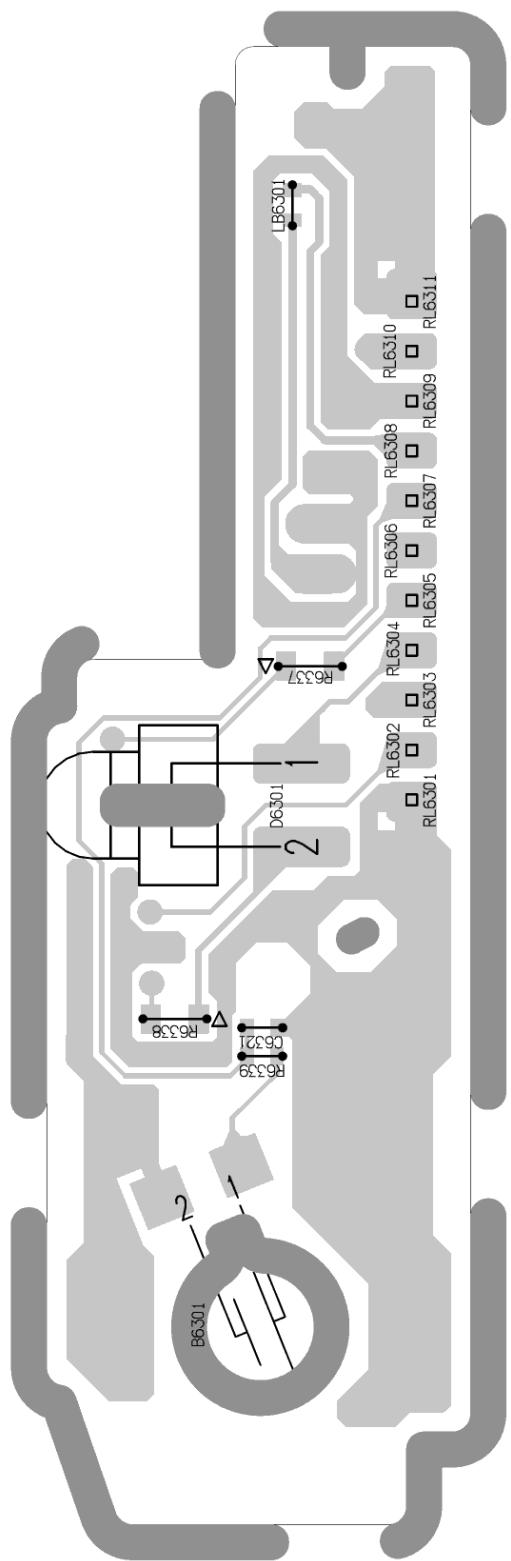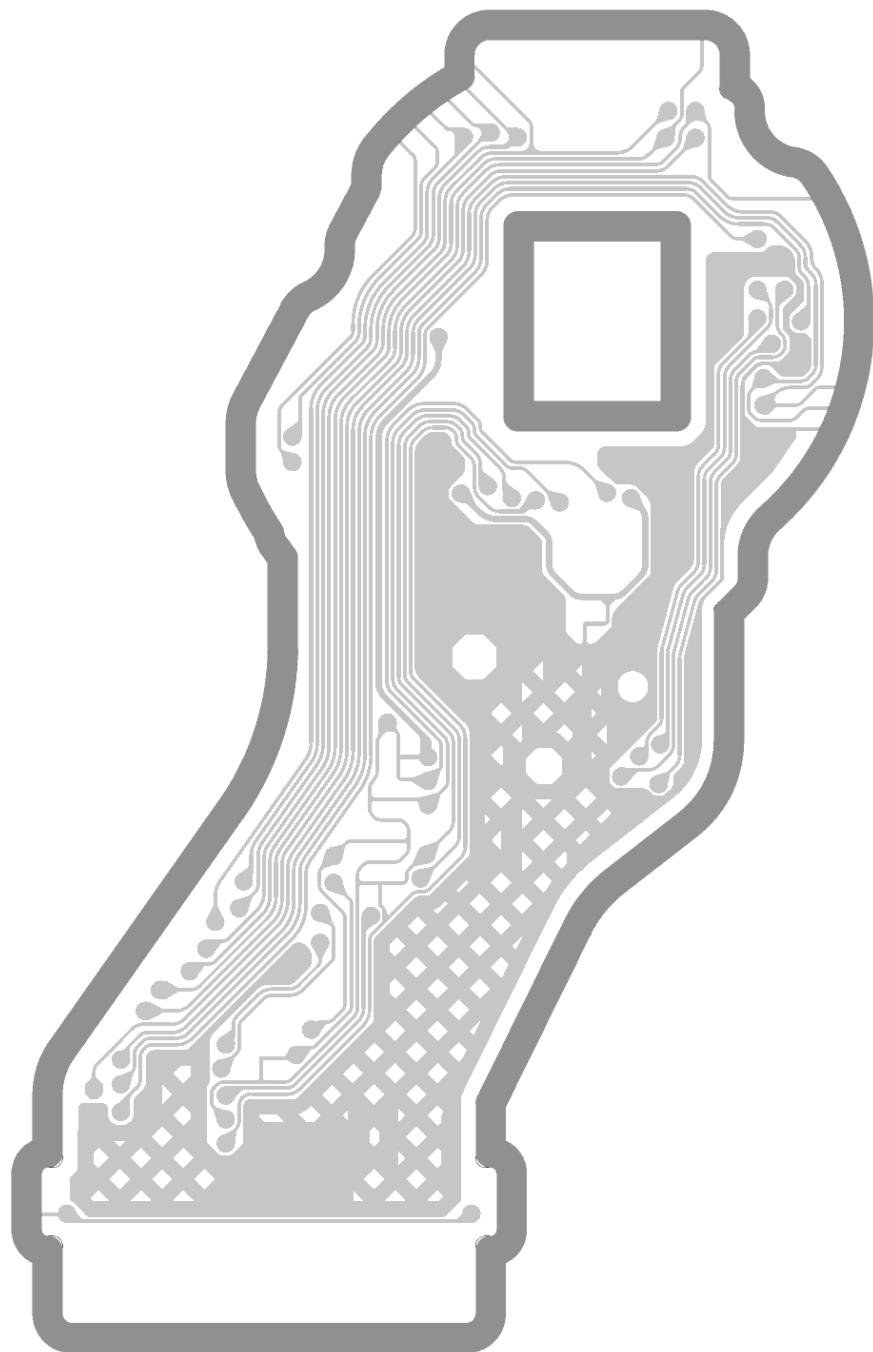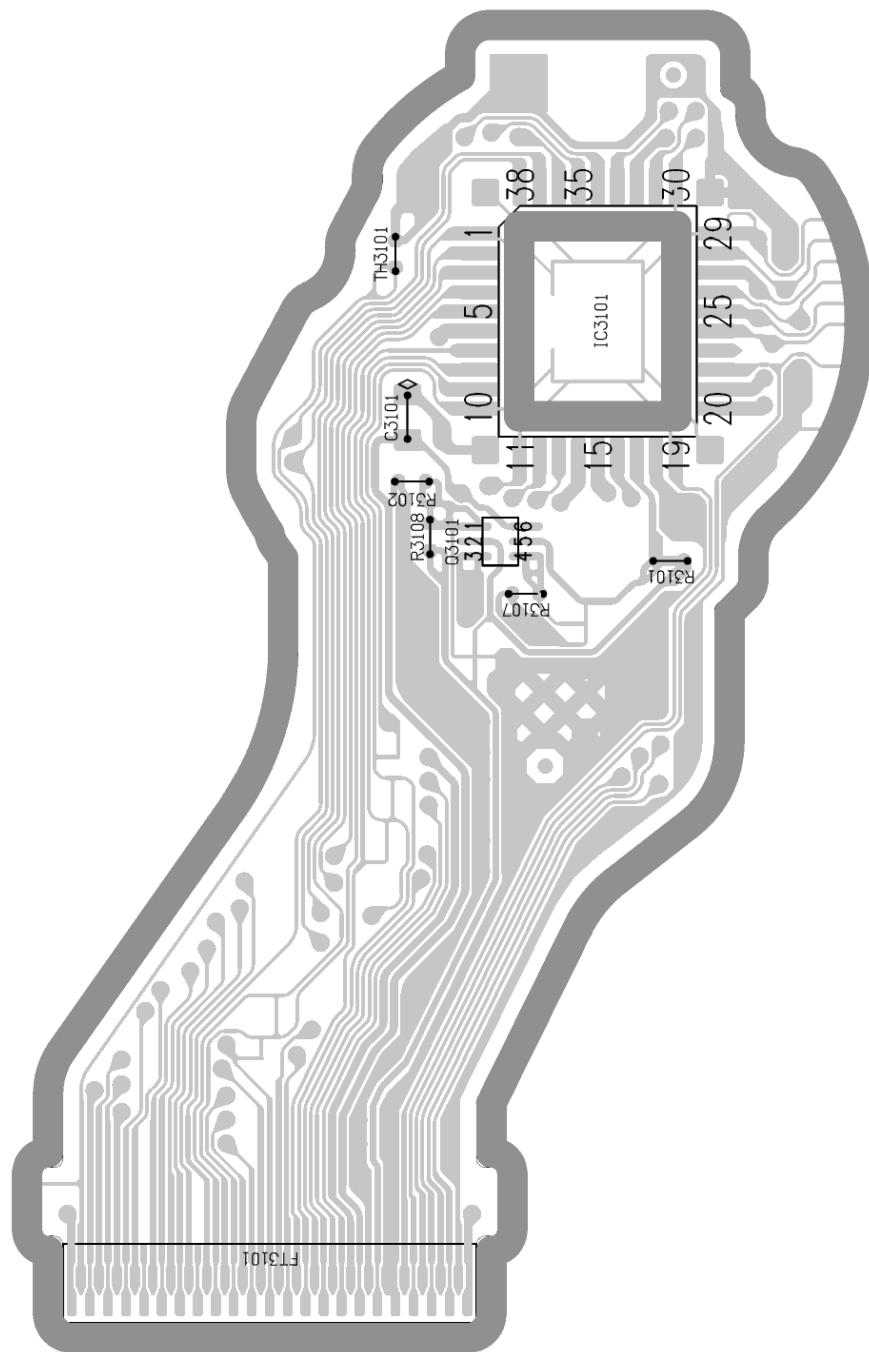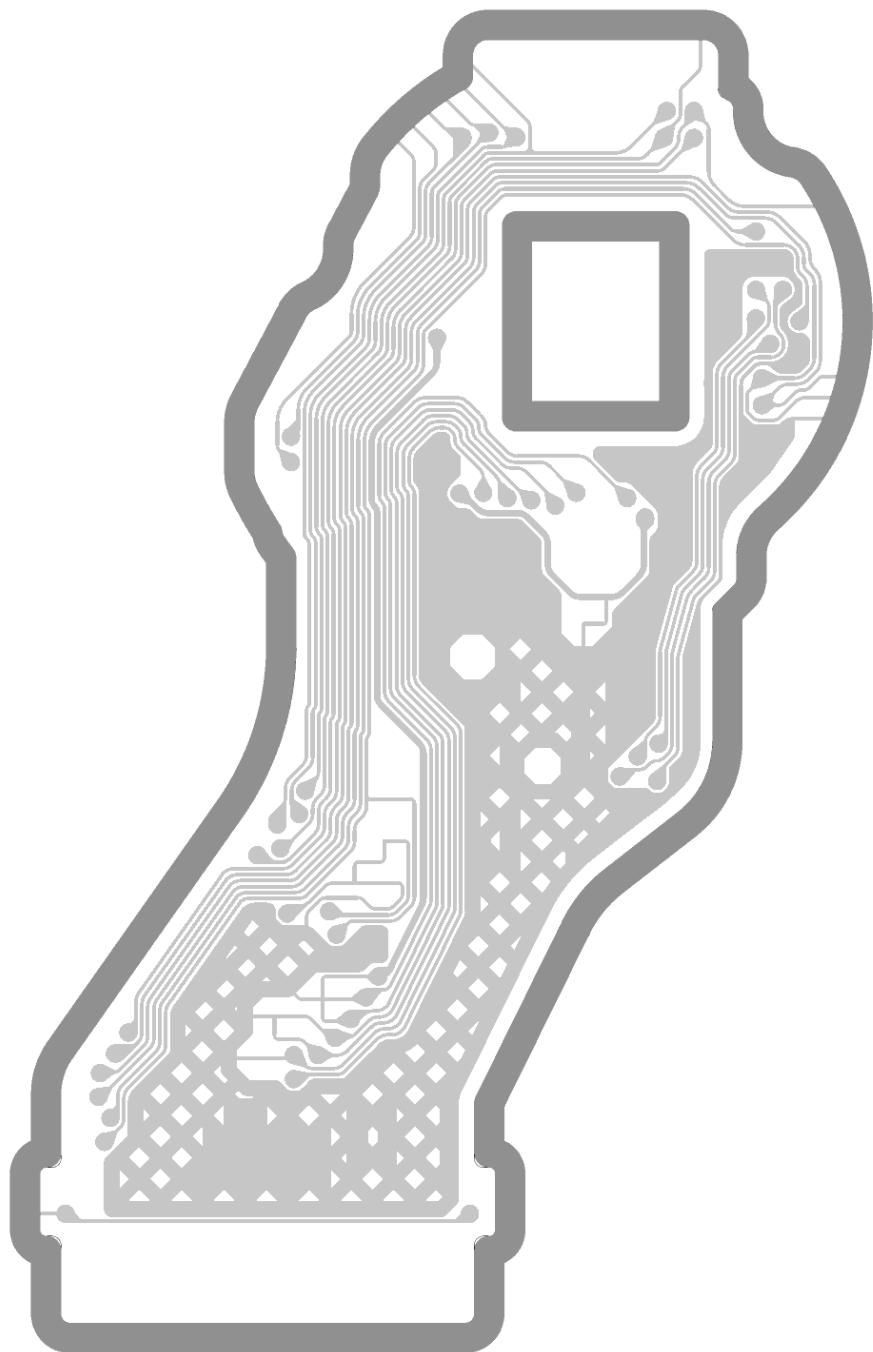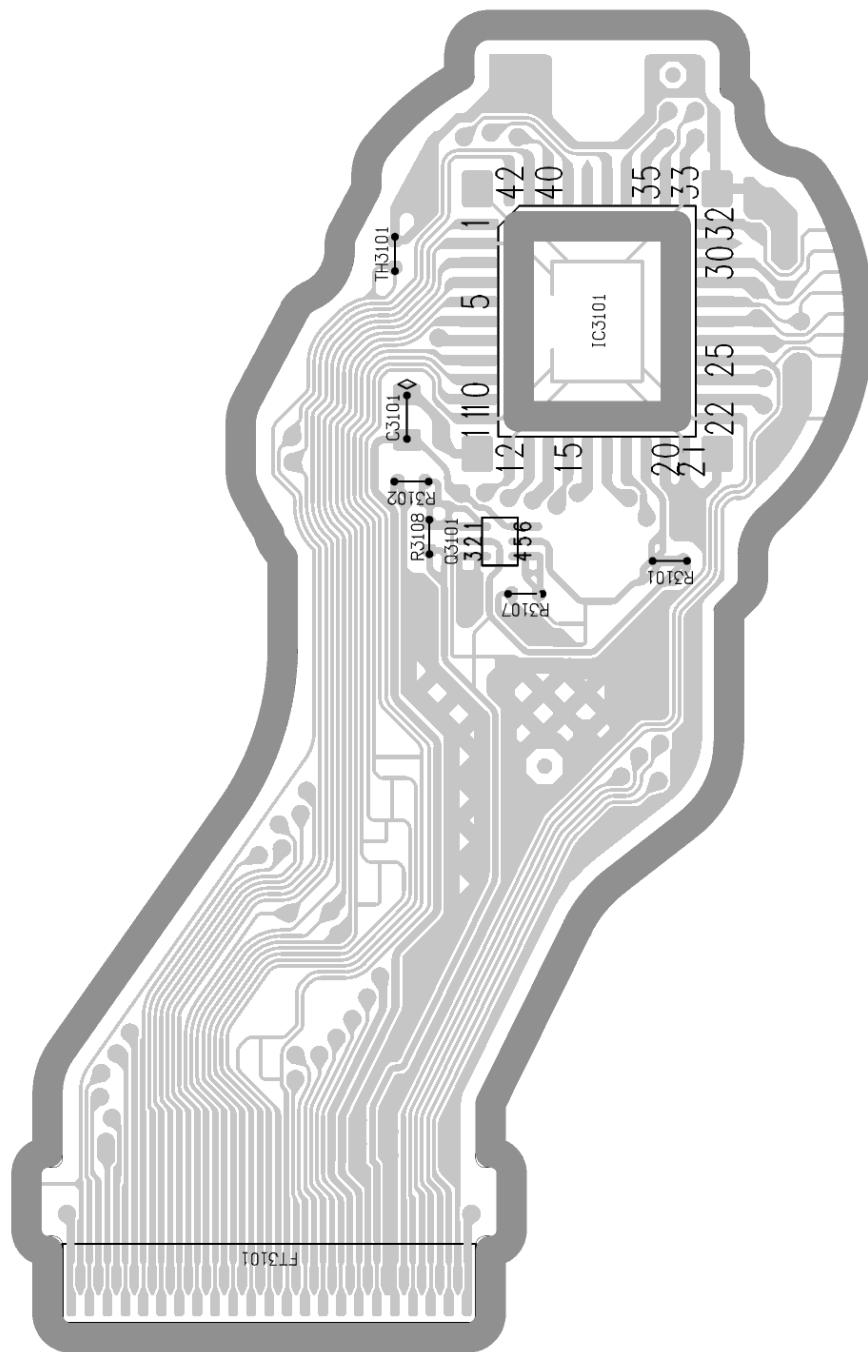
Model No. : DMC-S2   Parts List

Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
	C3101	F1H1C105A097	C.CAPACITOR CH 16V 1U	1	
	C6321	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
	C8001	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
	C8006	F1K2E4730005	C.CAPACITOR 250V 0.047U	1	
	C8007	F1G1H4R0A564	C.CAPACITOR CH 50V 4P	1	
	C8009	F1J0J106A020	C.CAPACITOR CH 6.3V 10U	1	
	D8002	B0ECFR000003	DIODE	1	E.S.D.
⚠	F8001	ERBRE1R25V	FUSE 32V 1.25A	1	
	FP8001	K1MY14BA0370	CONNECTOR 14P	1	
	IC8100	C0ZBZ0001938	IC	1	E.S.D.
	L8001	G5F1A0000026	CHIP INDUCTOR	1	
	LB6301	J0JCC0000415	FILTER	1	
	Q3101	DMS935E10R	TRANSISTOR	1	E.S.D.
	Q8001	B1JBLP000038	TRANSISTOR	1	E.S.D.
	R3102	ERJ2GEJ222X	M.RESISTOR CH 1/16W 2.2K	1	
	R3107	ERJ2GEJ132X	M.RESISTOR CH 1/16W 1.3K	1	
	R3108	ERJ2GEJ150X	M.RESISTOR CH 1/16W 15	1	
	R6337	D0GB330JA065	CHIP RESISTOR	1	
	R6338	D0GB330JA065	CHIP RESISTOR	1	
	R6339	D0GA512JA023	CHIP RESISTOR	1	
	R8002	D0GB104JA065	CHIP RESISTOR	1	
	R8003	D0GB620JA065	CHIP RESISTOR	1	
	R8005	ERJ6GEYJ514V	M.RESISTOR CH 1/8W 510K	1	
	R8006	ERJ6GEYJ514V	M.RESISTOR CH 1/8W 510K	1	
	R8013	ERJ2RHD1621X	M.RESISTOR CH 1/16W 1620	1	
	R8021	D0GA303JA023	CHIP RESISTOR	1	
	R8032	D1BD4703A119	CHIP RESISTOR	1	
	S6301	K0F212A00003	SWITCH	1	
	S6302	K0F111A00581	SWITCH	1	
	T8001	G5DYA0000135	TRANSFORMER	1	
	TH3101	D4CC11030013	NTC THERMISTORS	1	

302

⚠
309

306 ⚠

303 ⚠

(DMC-S2EF/EE/EG/EP/GA/GF
DMC-S5EF/EE/EG/GA/GF)

351 ⚠

308

(DMC-S2GN
DMC-S5GN)

354 ⚠

(DMC-S2GT/GK)

300

353 ⚠

(DMC-S2EB/GC
DMC-S5EB)

331

350 ⚠

301 ⚠

305

330
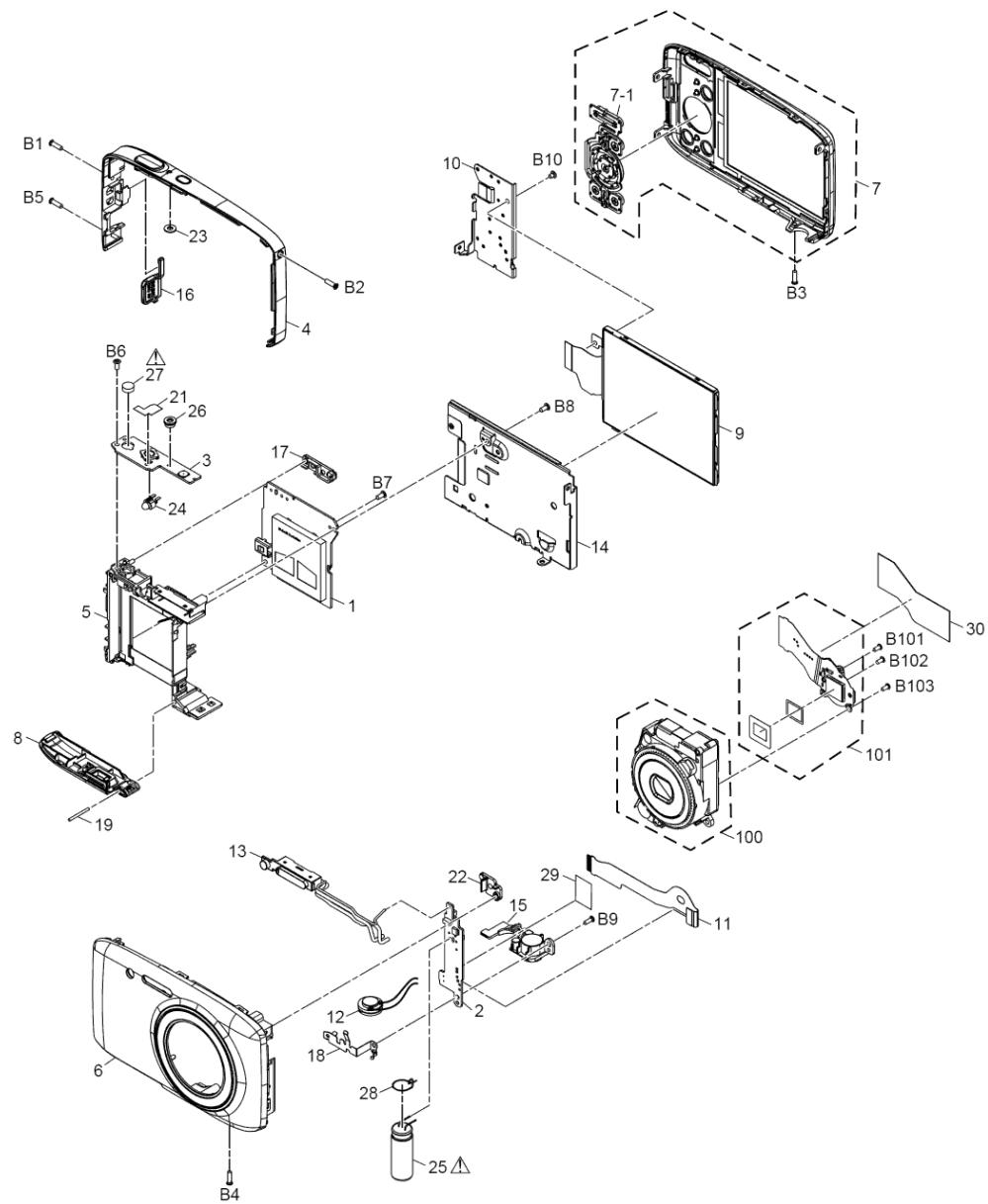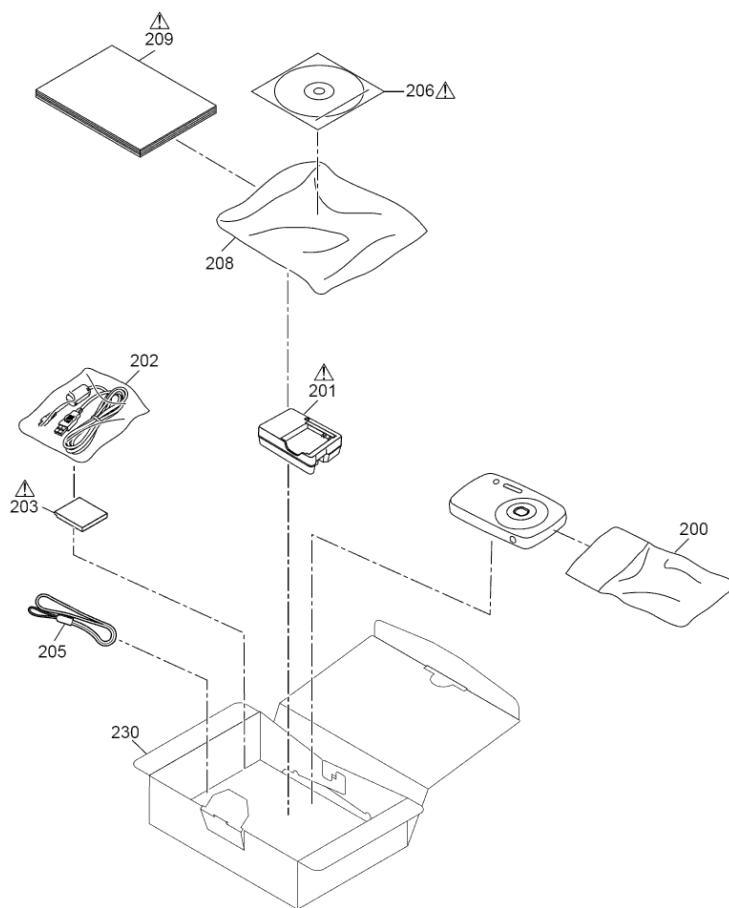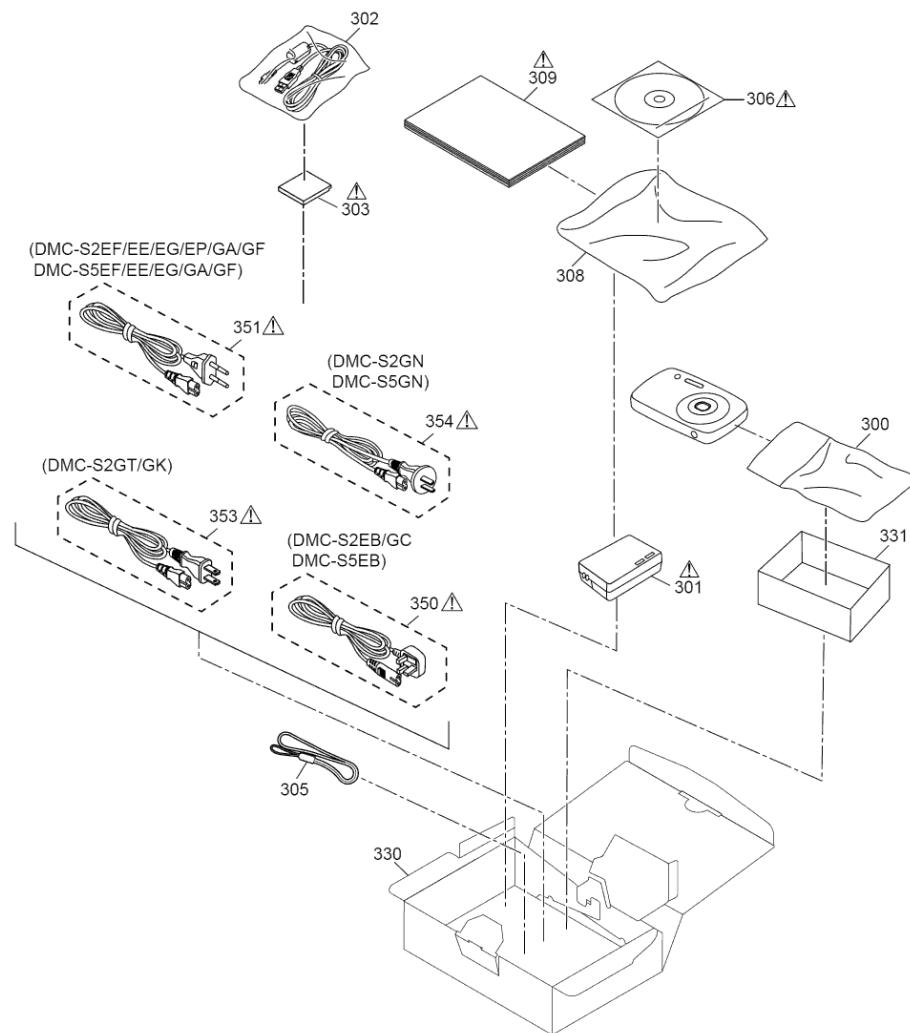
Model No. : DMC-S2　Parts List

Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
	1	VEP56152B	MAIN P.C.B.	1	(DMC-S2) E.S.D.
	1	VEP56152C	MAIN P.C.B.	1	(DMC-S5) E.S.D.
	2	VEP58176A	FLASH P.C.B.	1	(RTL) E.S.D.
	3	VEP58177A	TOP P.C.B.	1	(RTL)
	4	VYK5H87	CENTER ORNAMENT UNIT	1	(DMC-S2)
	4	VYK5H91	CENTER ORNAMENT UNIT	1	(DMC-S5)
	5	VYK5H86	BATTERY CASE UNIT	1	(DMC-S2)
	5	VYK5S02	BATTERY CASE UNIT	1	(DMC-S5)
	6	VYK5H95	FRONT CASE UNIT	1	S2P-K
	6	VYK5H89	FRONT CASE UNIT	1	S2PU-K,EG-K,EP-K,EF-K,EB-K,EE-K,GC-K,GF-K,GA-K,GT-K,GK-K,GN-K
	6	VYK5H92	FRONT CASE UNIT	1	S2(-W)
	6	VYK5H93	FRONT CASE UNIT	1	S2(-P)
	6	VYK5H98	FRONT CASE UNIT	1	S2P-V
	6	VYK5H94	FRONT CASE UNIT	1	S2PU-V,EG-V,EF-V,EB-V,GC-V,GF-V,GA-V,GT-V,GN-V
	6	VYK5U30	FRONT CASE UNIT	1	S2EB-R
	6	VYK5H99	FRONT CASE UNIT	1	S5(-K)
	6	VYK5J00	FRONT CASE UNIT	1	S5(-S)
	6	VYK5J01	FRONT CASE UNIT	1	S5(-R)
	7	VYK5K93	REAR CASE UNIT	1	(-K)
	7	VYK5K94	REAR CASE UNIT	1	(-W)
	7	VYK5K95	REAR CASE UNIT	1	(-P)
	7	VYK5K96	REAR CASE UNIT	1	(-V)
	7	VYK5K97	REAR CASE UNIT	1	(-S)
	7	VYK5K98	REAR CASE UNIT	1	(-R)
	7-1	VYK5H88	CURSOR BUTTON UNIT	1	
	8	VYK5H90	BATTERY DOOR UNIT	1	(-K)
	8	VYK5J02	BATTERY DOOR UNIT	1	(-W)
	8	VYK5J03	BATTERY DOOR UNIT	1	(-P)
	8	VYK5J04	BATTERY DOOR UNIT	1	(-V)
	8	VYK5J06	BATTERY DOOR UNIT	1	(-S)
	8	VYK5J07	BATTERY DOOR UNIT	1	(-R)
	9	VYK5K88	LCD UNIT	1	
	10	VYK5K87	REAR OPERATION UNIT	1	
	11	VWJ2325	FLASH FPC	1	
	12	L0AA01A00107	SPEAKER	1	
	13	EFN-AMDH7ZD	FLASH UNIT	1	
	14	VMP0B62	FRAME PLATE	1	
	15	VKM9690	TRIPOD FRAME	1	
	16	VGQ0Z83	JACK COVER	1	
	17	VGQ1A37	TERMINAL COVER	1	
	18	VMP0C54	FRONT EARTH PLATE	1	
	19	VMS8091	BATTERY DOOR SHAFT	1	
	21	VGQ1C00	SHEET	1	
	22	VGQ1A78	TRIGGER COVER	1	
	23	VMT2136	MIC DUMPER	1	
	24	B3ADB0000169	AF LED	1	(D6301)
⚠	25	F2A2F4000003	E.CAPACITOR	1	(C8003)
	26	L0CBAY000093	MICROPHONE UNIT	1	(M6301)
⚠	27	ML-421S/DN	BUTTON BATTERY	1	(B6301) [ENERGY]
	28	VMB4452	EARTH SPRING	1	(ET8003)
	29	VGQ0W28	COIL CUSHION	1	
	30	VGQ0X87	DPR SHEET A	1	
	100	VXW1461	LENS UNIT (W/O CCD)	1	S2(-K)
	100	VXW1460	LENS UNIT (W/O CCD)	1	S2(-W,-V,-R), S5(-K,-S,-R)
	100	VXW1462	LENS UNIT (W/O CCD)	1	S2(-P)
	101	VEK0S51	CCD UNIT	1	(DMC-S2) E.S.D.
	101	VEK0S52	CCD UNIT	1	(DMC-S5) E.S.D.
	B1	VHD2375	SCREW	1	
	B2	VHD2375	SCREW	1	
	B3	VHD2375	SCREW	1	

Model No. : DMC-S2   Parts List

Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
	B4	VHD2375	SCREW	1	
	B5	VHD2383	SCREW	1	
	B6	VHD1998	SCREW	1	
	B7	VHD1998	SCREW	1	
	B8	VHD1998	SCREW	1	
	B9	VHD2290	SCREW	1	
	B10	VHD2198	SCREW	1	
	B101	VHD1871	SCREW	1	
	B102	VHD1871	SCREW	1	
	B103	VHD1871	SCREW	1	
	200	VPF1458	CAMERA BAG	1	P,PU
⚠	201	DE-A91BA/SX	BATTERY CHARGER	1	P,PU
	202	K1HY08YY0015	USB CABLE W/PLUG	1	
⚠	203	-----	BATTERY	1	P,PU
	205	VFC4297-B	HAND STRAP	1	
⚠	206	VFF1014-S	CD-ROM (SOFT/INSTRUCTION BOOK)	1	P,PU [SPC] See "Notes"
	208	VPF1378	BAG, POLYETHYLENE	1	
⚠	209	VQT4G38	BASIC O/I (ENGLISH/SPANISH)	1	P
⚠	209	VQT4G40	BASIC O/I (SPANISH/PORTUGUESE)	1	PU
	230	VPK5161	PACKING CASE	1	S2P-K
	230	VPK5173	PACKING CASE	1	S2P-V
	230	VPK5162	PACKING CASE	1	S2PU-K
	230	VPK5156	PACKING CASE	1	S2PU-W
	230	VPK5168	PACKING CASE	1	S2PU-P
	230	VPK5174	PACKING CASE	1	S2PU-V
	230	VPK5181	PACKING CASE	1	S5PU-K
	230	VPK5178	PACKING CASE	1	S5PU-S
	230	VPK5184	PACKING CASE	1	S5PU-R
	300	VPF1372-A	CAMERA BAG	1	EXCEPT P,PU
⚠	301	DE-A92AB/SX	BATTERY CHARGER	1	EG,EP,EF,EB,EE,GN
⚠	301	DE-A92CA/SX	BATTERY CHARGER	1	GT
⚠	301	DE-A92BB/SX	BATTERY CHARGER	1	GC,GF,GA,GK
	302	K1HY08YY0015	USB CABLE W/PLUG	1	
⚠	303	-----	BATTERY	1	EXCEPT P,PU
	305	VFC4297-B	HAND STRAP	1	
⚠	306	VFF0909-S	CD-ROM (SOFT/INSTRUCTION BOOK)	1	EG,EP,EF,EB [SPC] See "Notes"
⚠	306	VFF0910-S	CD-ROM (SOFT/INSTRUCTION BOOK)	1	EE [SPC] See "Notes"
⚠	306	VFF0911-S	CD-ROM (SOFT/INSTRUCTION BOOK)	1	GC,GF,GA,GT,GN [SPC] See "Notes"
⚠	306	VFF1015-S	CD-ROM (SOFT/INSTRUCTION BOOK)	1	GK [SPC] See "Notes"
	308	VPF1378	BAG, POLYETHYLENE	1	
⚠	309	VQT3W96	BASIC O/I (GERMAN/FRENCH)	1	EG
⚠	309	VQT3W97	BASIC O/I (ITALIAN/DUTCH)	1	EG
⚠	309	VQT3W98	BASIC O/I (SPANISH/PORTUGUESE)	1	EG
⚠	309	VQT3W99	BASIC O/I (TURKISH)	1	EG
⚠	309	VQT3X00	BASIC O/I (SWEDISH/DANISH)	1	EP
⚠	309	VQT3X01	BASIC O/I (POLISH/CZECH)	1	EP
⚠	309	VQT3X02	BASIC O/I (HUNGARIAN/FINNISH)	1	EP
⚠	309	VQT3X03	BASIC O/I (FRENCH)	1	EF
⚠	309	VQT3X04	BASIC O/I (ENGLISH)	1	EB
⚠	309	VQT3X05	BASIC O/I (RUSSIAN/UKRAINIAN)	1	EE
⚠	309	VQT3X06	BASIC O/I (ENGLISH/CHINESE(TRADITIONAL))	1	GC,GF,GA
⚠	309	VQT3X07	BASIC O/I (ARABIC/PERSIAN)	1	GC,GF
⚠	309	VQT3X08	BASIC O/I (VIETNAMESE)	1	GA
⚠	309	VQT3X09	BASIC O/I (CHINESE(TRADITIONAL))	1	GT
⚠	309	VQT4G42	BASIC O/I (CHINESE(SIMPLIFIED))	1	GK
⚠	309	VQT3X11	BASIC O/I (ENGLISH)	1	GN
	330	VPK5163	PACKING CASE	1	S2EG-K,EP-K,EF-K,EB-K,EE-K,GC-K,GA-K,GT-K,GN-K
	330	VPK5157	PACKING CASE	1	S2EG-W,EF-W,EB-W,EE-W,GC-W,GA-W,GT-W,GN-W
	330	VPK5169	PACKING CASE	1	S2EG-P,EF-P,EB-P,EE-P,GC-P,GA-P,GT-P,GN-P

Model No. : DMC-S2   Parts List

Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
	330	VPK5175	PACKING CASE	1	S2EG-V,EF-V,EB-V,GC-V,GA-V,GT-V,GN-V
	330	VPK5358	PACKING CASE	1	S2EB-R
	330	VPK5164	PACKING CASE	1	S2GF-K
	330	VPK5158	PACKING CASE	1	S2GF-W
	330	VPK5170	PACKING CASE	1	S2GF-P
	330	VPK5176	PACKING CASE	1	S2GF-V
	330	VPK5165	PACKING CASE	1	S2GK-K
	330	VPK5159	PACKING CASE	1	S2GK-W
	330	VPK5171	PACKING CASE	1	S2GK-P
	330	VPK5182	PACKING CASE	1	S5EG-K,EF-K,EB-K,EE-K,GA-K,GN-K
	330	VPK5179	PACKING CASE	1	S5EG-S,GA-S,GN-S
	330	VPK5185	PACKING CASE	1	S5EG-R,EB-R,EE-R,GA-R,GN-R
	330	VPK5188	PACKING CASE	1	S5GF-K
	330	VPK5187	PACKING CASE	1	S5GF-S
	330	VPK5189	PACKING CASE	1	S5GF-R
	331	VPN7243	CUSHION	1	EXCEPT P,PU
⚠	350	K2CT3YY00034	AC CORD W/PLUG	1	EB,GC
⚠	351	K2CQ2YY00082	AC CORD W/PLUG	1	EG,EP,EF,EE,GF,GA
⚠	353	K2CA2YY00129	AC CORD W/PLUG	1	GT
⚠	353	K2CA2YY00130	AC CORD W/PLUG	1	GK
⚠	354	K2CJ2YY00052	AC CORD W/PLUG	1	GN