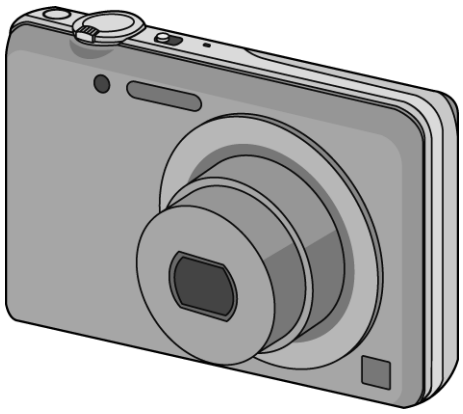
ORDER NO. DSC1202005CE
B26

Service Manual

Digital Camera

LUMIX



Model No. DMC-FH8P
DMC-FH8PC
DMC-FH8PU
DMC-FH8GA
DMC-FH8GC
DMC-FH8GF
DMC-FH8GK
DMC-FH8GN
DMC-FS45EB
DMC-FS45EE
DMC-FS45EF
DMC-FS45EG
DMC-FS45EP

Colour
[DMC-FH8]
(S).....Silver Type (except PC)
(K).....Black Type
(N).....Gold Type (except P/PC/PU)
(R).....Red Type (except P/PC)
(V).....Violet Type (except GK)
[DMC-FS45]
(S).....Silver Type (except EE/EF)
(K).....Black Type
(N).....Gold Type (except EE)
(R).....Red Type (except EP)
(V).....Violet Type

⚠ 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.

Panasonic

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

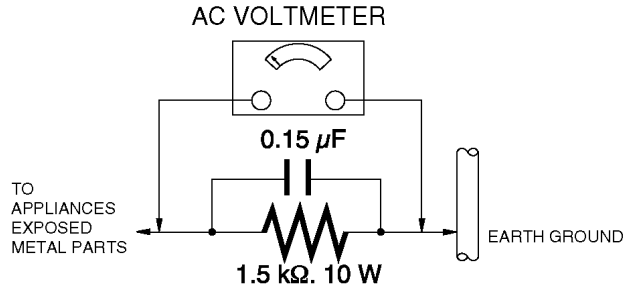


Figure. 1

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.

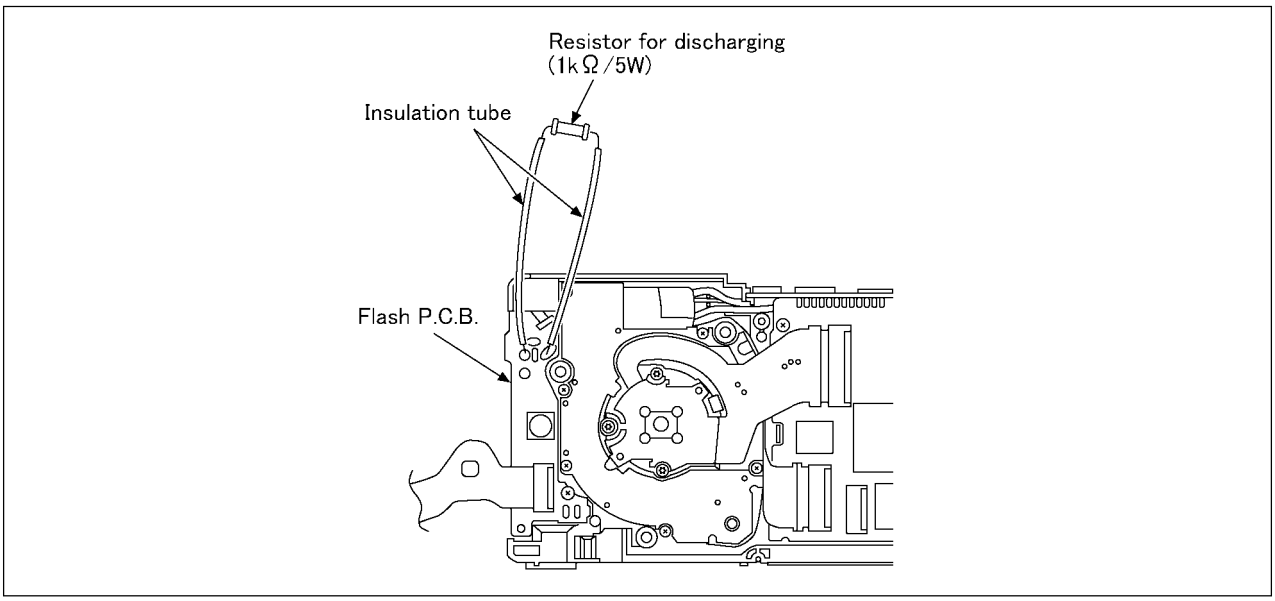


Fig. F1

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.

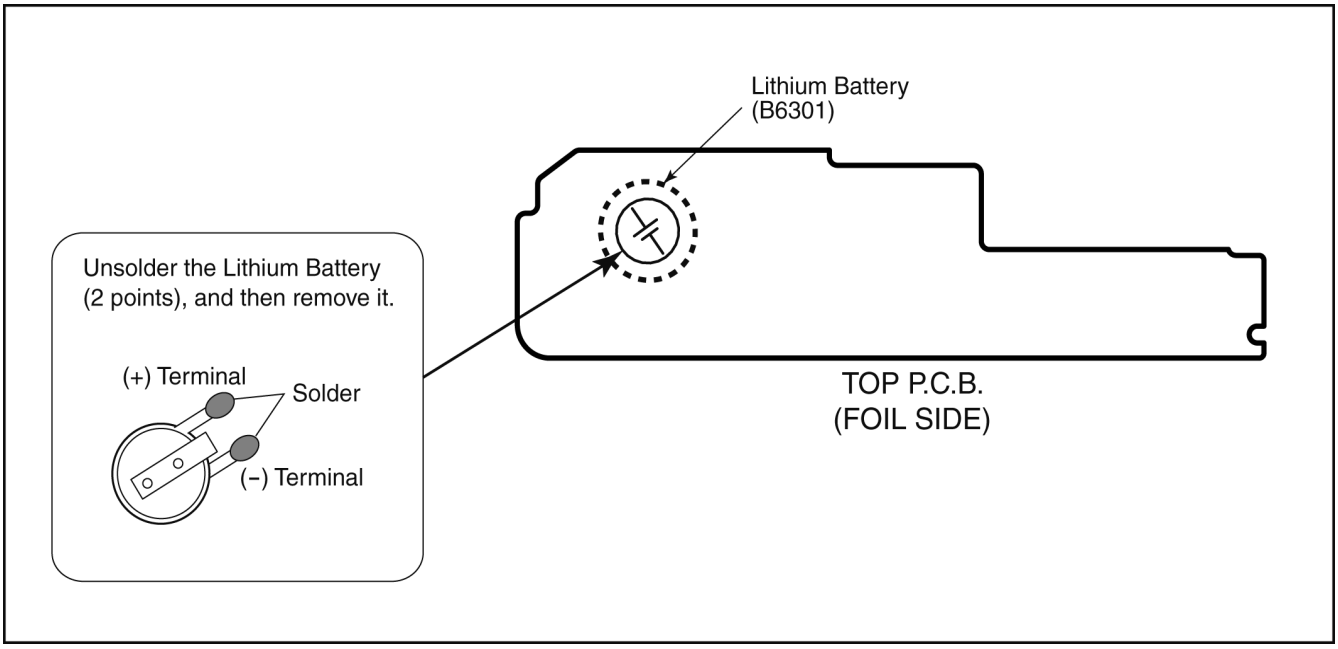
2.3. How to Replace the Lithium Battery

2.3.1. 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-FH8/FS45 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

3.2.1. CCD UNIT:

- The image sensor (CCD) unit which are connected to the lens unit with 3 screws.
  These screws are adjusted for the Optical tilt.
  During servicing, if one of CCD fixing screws are loosened, the Optical tilt adjustment must be performed.
  About the Optical tilt adjustment, refer to the "9.3.2 Adjustment Specifications" for details.

3.2.2. MAIN P.C.B.:

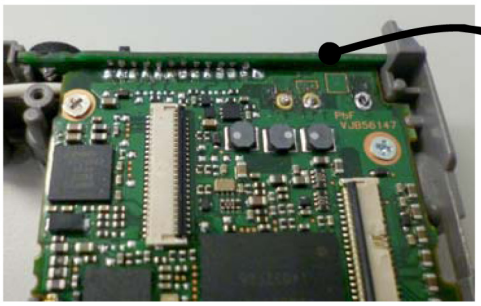
- The MAIN P.C.B. is handled as the smallest replacement part for this unit.
  Therefore if any component on the MAIN P.C.B. is/are defective, replace whole MAIN P.C.B. as a unit.

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 *.Shutter button
*.Back-up battery *.Microphone *.Zoom lever
*.Motion picture button

When inspecting which PCB is defective, use the "Check terminals" and confirm the each signal.
(From RL6301 to RL6312)

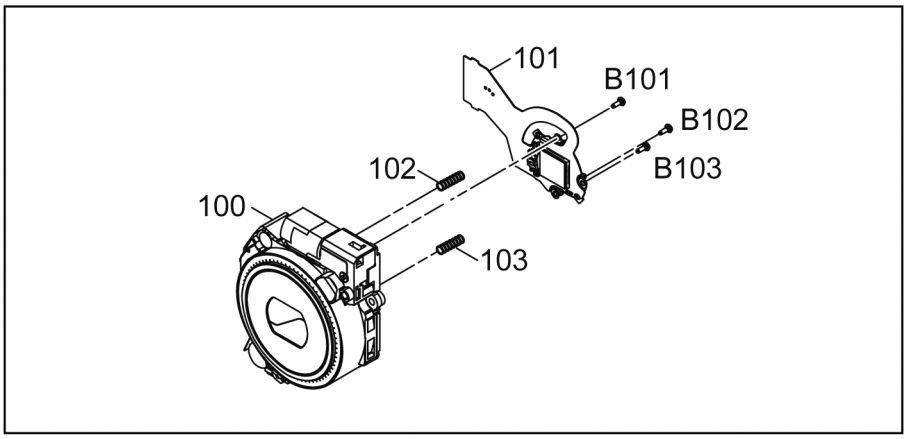
Top P.C.B. side
Check Terminals(From RL6301 to RL6312).



Terminal No.	Terminal Name	Description
RL6301	D_GND	GND
RL6302	MOVIE	Motion picture button
RL6303	TELE_WIDE	Zoom lever (TELE:Low)
RL6304	CLOCK	Back-up battery
RL6305	CATHODE	Cathode for Self-timer LED.
RL6306	AF3R4V	Anode for Self-timer LED.
RL6307	SHUTTER_0	Half-shutter (ON :Low)
RL6308	SHUTTER_1	Shutter release (ON :Low)
RL6309	POWER_ON_L	Power button (ON :Low)
RL6310	D_GND	GND
RL6311	MIC_IN	Microphone (+)
RL6312	MIC_GND	Microphone (-)

3.2.3. LENS UNIT:

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.



3.2.4. 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 seven kinds of DMC-FH8 and DMC-FS45, regardless of the colours.

- a) DMC-FH8 (Japan domestic model)
- b) DMC-FH8P/PC
- c) DMC-FS45EB/EF/EG/EP
- d) DMC-FS45EE
- e) DMC-FH8GK
- f) DMC-FH8GN
- g) DMC-FH8PU/GA/GC/GF

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

3.4.1. Defining methods:

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

a) DMC-FH8 (Japan domestic model)

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

b) DMC-FH8P/PC

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

c) DMC-FS45EB/EF/EG/EP

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

d) DMC-FS45EE

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

e) DMC-FH8GK

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

f) DMC-FH8GN

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

g) DMC-FH8PU/GA/GC/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. (Approx.70MB)
After proceeding "INITIAL SETTINGS", the picture image data stored in the unit is erased.

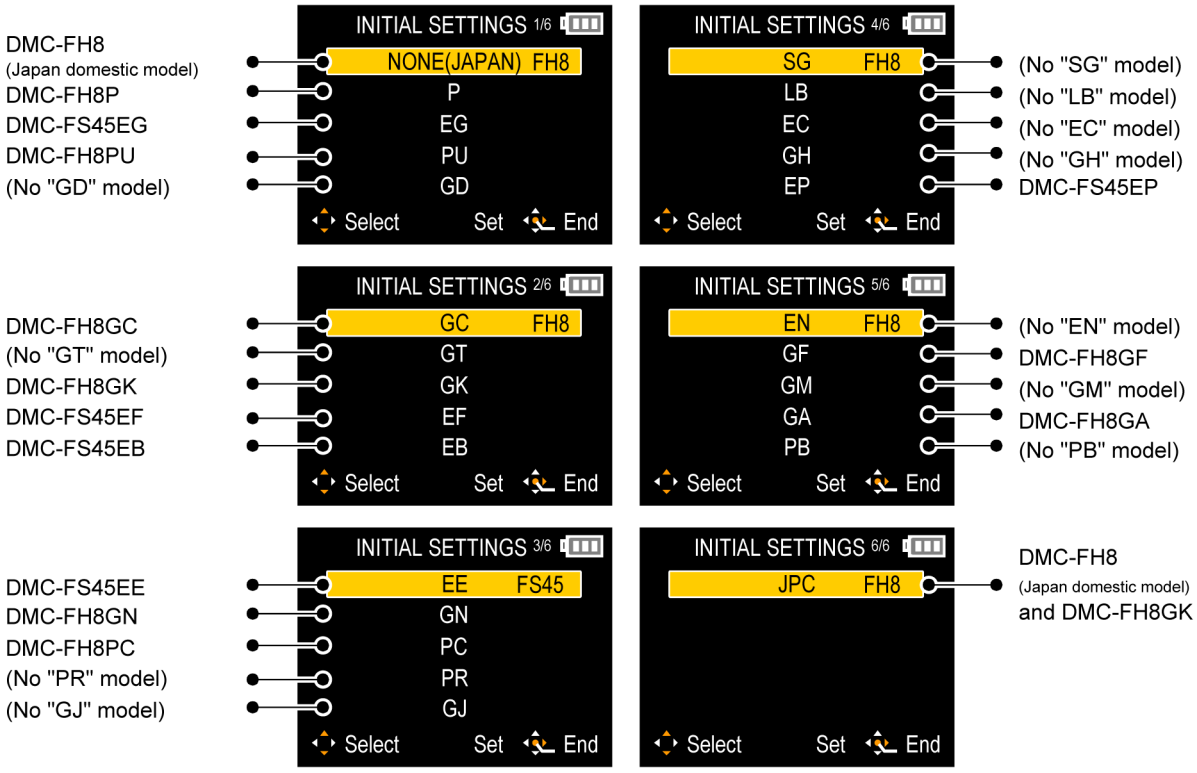
2. PROCEDURES:

- Precautions: Read the above "CAUTION 1" and "CAUTION 2", carefully.
- Preparation:
  - 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. Set the REC/PLAY switch to “[REC] (Camera mark)”, and then 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”:**
  Set the REC/PLAY switch to “[REC] (Camera mark)”.
  While pressing “[UP] of Cursor button” and [MOTION PICTURE] button simultaneously, turn the Power on.
- **Step 2. The cancellation of “INITIAL SETTINGS”:**
  Set the REC/PLAY switch to “[PLAY]”.
  Press “[UP] of Cursor button” and [MOTION PICTURE] button simultaneously, turn the Power off.

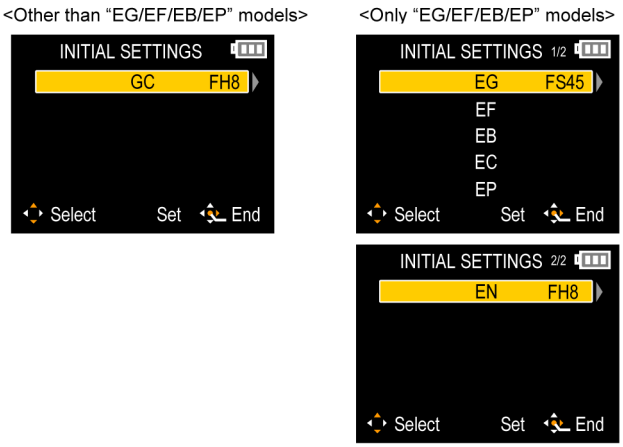
  The LCD displays the " ! " mark before the unit powers down.

- **Step 3. Turn the Power on:**
  Set the REC/PLAY switch to “[REC] (Camera mark)”, and then 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)



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



- **Step 5. Choose the model suffix in “INITIAL SETTINGS”: (Refer to “CAUTION 1”)**

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

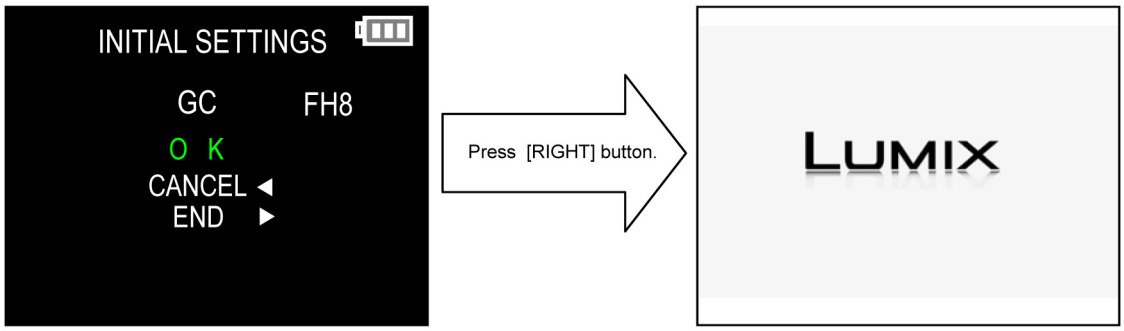
The model suffix can been chosen, **JUST ONE TIME**.

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.)



• **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 “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-FH8(Japan domestic model)	NTSC	Japanese	Year/Month/Date	
b)	DMC-FH8P	NTSC	English	Month/Date/Year	
c)	DMC-FH8PC	NTSC	English	Month/Date/Year	
d)	DMC-FH8PU	NTSC	Spanish	Month/Date/Year	
e)	DMC-FS45EG	PAL	English	Date/Month/Year	
f)	DMC-FS45EP	PAL	English	Date/Month/Year	
g)	DMC-FS45EF	PAL	French	Date/Month/Year	
h)	DMC-FS45EB	PAL	English	Date/Month/Year	
i)	DMC-FS45EE	PAL	Russian	Date/Month/Year	
j)	DMC-FH8GC	PAL	English	Date/Month/Year	
k)	DMC-FH8GF	PAL	English	Date/Month/Year	
l)	DMC-FH8GA	PAL	English	Date/Month/Year	
m)	DMC-FH8GK	PAL	Chinese (simplified)	Year/Month/Date	
n)	DMC-FH8GN	PAL	English	Date/Month/Year	

4 Specifications

Digital Camera:
Information for your safety

Power Source:	DC 5.1 V
Power Consumption:	1.1 W (When recording) 0.6 W (When playing back)

Camera effective pixels	16,100,000 pixels	
Image sensor	1/2.33″ CCD, total pixel number 16,600,000 pixels, Primary color filter	
Lens	Optical 5× zoom, f=4.3 mm to 21.5 mm (35 mm film camera equivalent: 24 mm to 120 mm)/F2.5 (Wide) to F6.4 (Tele)	
Image stabilizer	Optical method	
Focus range	Normal	50 cm (1.6 feet) (Wide)/1 m (3.3 feet) (Tele) to ∞
	Macro/ Intelligent auto/ Motion picture	5 cm (0.16 feet) (Wide)/1 m (3.3 feet) (Tele) to ∞
	Scene Mode	There may be differences in the above settings.
Shutter system	Electronic shutter+Mechanical shutter	
Minimum Illumination	Approx. 8 lx (when i-low light is used, the shutter speed is 1/30th of a second)	
Shutter speed	8 seconds to 1/1600th of a second	
Exposure (AE)	Auto (Program AE)	
Metering mode	Multiple	
LCD monitor	3.0″ TFT LCD (4:3) (Approx. 230,000 dots) (field of view ratio about 100%)	
Microphone	Monaural	
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)/DPOF corresponding	
Motion pictures	MP4	
Audio compression format	AAC	

Interface	
Digital	“USB 2.0” (High Speed)
Analog video	[NTSC areas] NTSC Composite [PAL areas] NTSC/PAL Composite
Audio	Audio line output (monaural)
Terminal	
[AV OUT/DIGITAL]	Dedicated jack (8 pin)
Dimensions (excluding the projecting parts)	Approx. 96.0 mm (W)×57.1 mm (H)×19.4 mm (D) [3.78″(W)×2.25″(H)×0.77″(D)]
Mass (weight)	Approx. 123 g/0.28 lb (with card and battery) Approx. 106 g/0.24 lb (excluding card and battery)
Operating temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating humidity	10%RH to 80%RH

AC Adaptor:
Information for your safety

Input:	~ 110 V to 240 V, 50/60 Hz, 0.2 A
Output:	⎓ 5 V, 800 mA

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

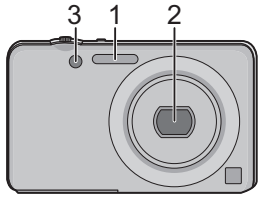
Voltage/capacity:	3.6 V/680 mAh

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

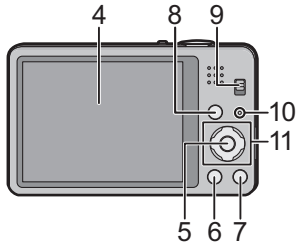
- Data from the PC can not be written to the camera using the USB connection cable.

5 Location of Controls and Components

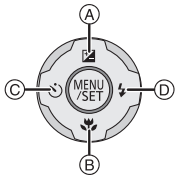
1 Flash
2 Lens
3 Self-timer indicator
AF Assist Lamp



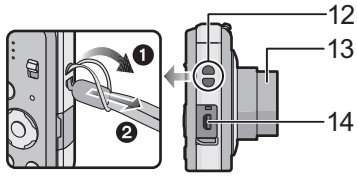
4 LCD monitor
5 [MENU/SET] button
6 [DISP.] button
7 [Q.MENU]/[🗑/⮌] (Delete/Cancel) button
8 [MODE] button
9 REC/PLAY switch
10 Charging lamp



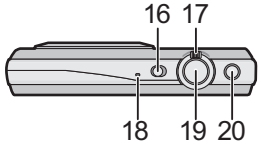
11 Cursor buttons
Ⓐ: ▲/Exposure compensation
Ⓑ: ▼/Macro Mode
AF Tracking
Ⓒ: ◀/Self-timer
Ⓓ: ▶/Flash setting

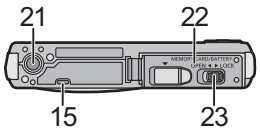


12 Strap eyelet
• Be sure to attach the strap when using the camera to ensure that you will not drop it.
13 Lens barrel
14 [AV OUT/DIGITAL] socket



15 Speaker
• Be careful not to cover the speaker with your finger. Doing so may make sound difficult to hear.
16 Camera ON/OFF switch
17 Zoom lever
18 Microphone
19 Shutter button
20 Motion picture button
21 Tripod receptacle
22 Card/Battery door
23 Release lever

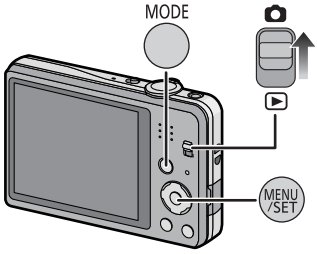




Selecting the Recording Mode

1 **Slide the REC/PLAY switch to [📷].**

2 **Press [MODE].**



3 **Press ▲/▼/◀/► to select the Recording Mode.**

4 **Press [MENU/SET].**

■List of Recording Modes

iA	**Intelligent Auto Mode**
The subjects are recorded using settings automatically selected by the camera.	
	Normal Picture Mode
The subjects are recorded using your own settings.	
	Miniature Effect Mode
This is an imaging effect which defocuses the surroundings to make it look like a diorama. (also known as Tilt Shift Focus)	
SCN	**Scene Mode**
This allows you to take pictures that match the scene being recorded.	

Note

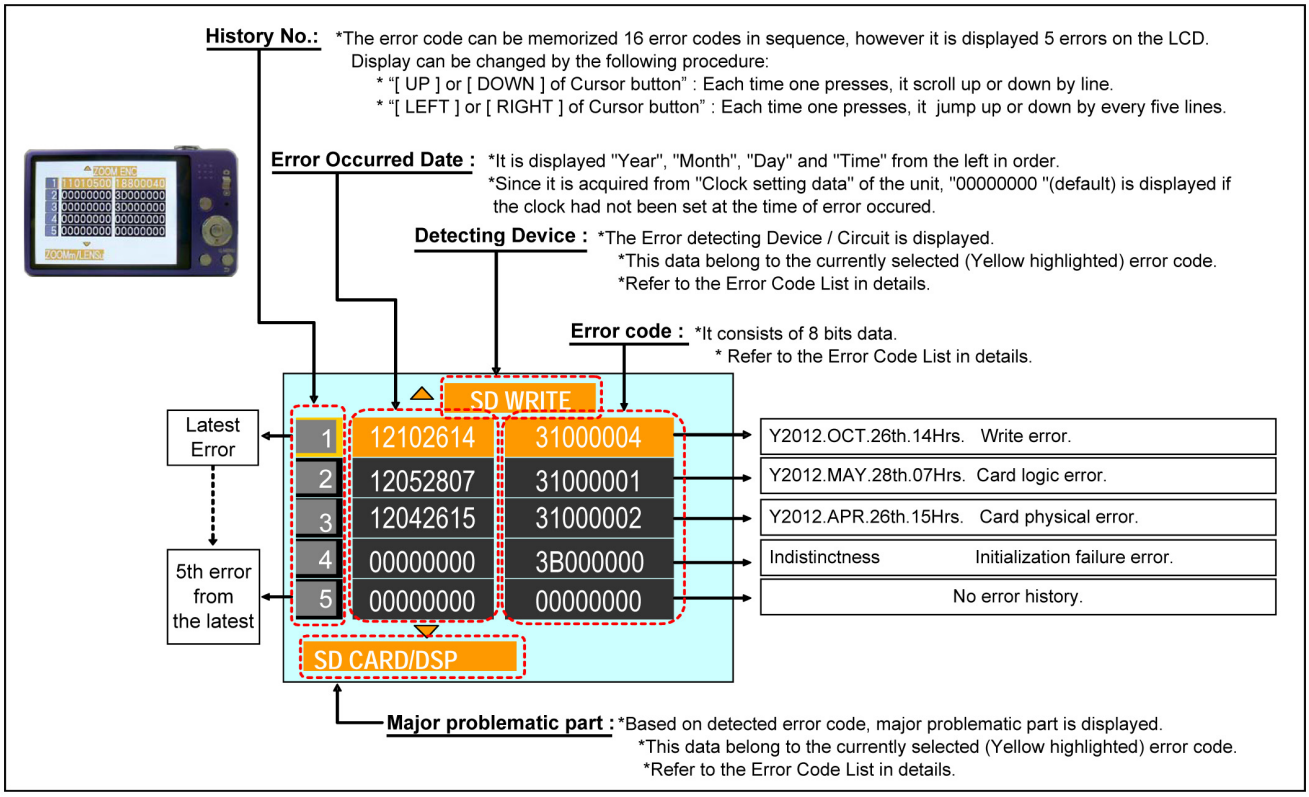
- When the mode has been switched from Playback Mode to Recording Mode, the previously set Recording Mode will be set.

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. Set the REC/PLAY switch to “[REC] (Camera mark)”, and then 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"**:
  Set the REC/PLAY switch to “[REC] (Camera mark)”.
  While pressing “[UP] of Cursor button” and [MOTION PICTURE] button simultaneously, turn the Power on.
- **Step 2. Execute the error code display mode:**
  Press the "[LEFT] of Cursor button" , [MENU/SET] button and [MOTION PICTURE] button simultaneously.
  The display is changed as shown below when the above buttons are pressed simultaneously.
  Normal display → Error code display → Operation history display →Normal display →.....



Example of Error Code Display

• 3. Error Code List

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

Attribute	Main item	Sub item	Error code		Contents (Upper line)	Error Indication	
			High 4 bits	Low 4 bits	Problematic Part & Check point (Lower line)	Detecting device	Problematic Part/Circuit
LENS	Lens drive	OIS	18*0	1000	PSD (X) error. Hall element (X axis) position detect error in OIS unit.	OIS X	LENSu NG
					Lens Unit.		
				2000	PSD (Y) error. Hall element (Y axis) position detect error in OIS unit.	OIS Y	
					Lens Unit.		
				3000	GYRO (X) error.	GYRO X	GYRO NG
					Main P.C.B..		
				4000	GYRO (Y) error.	GYRO Y	
					Main P.C.B..		
				6000	Drive voltage (X) error.	OISX REF	LENSu/LENS FPC
					LENS Unit, LENS flex breaks, etc.		
				7000	Drive voltage (Y) error.	OISY REF	
					LENS Unit, LENS flex breaks, etc.		
				8000	OIS GYRO-Digital communication error	(No indication)	(No indication)
					Main P.C.B..		
		Zoom		0?10	Collapsible barrel Low detect error (Collapsible barrel encoder always detects Low.)	ZOOM L	ZOOMm/LENSu
					Lens Unit, Main P.C.B..		
				0?20	Collapsible barrel High detect error (Collapsible barrel encoder always detects High.)	ZOOM H	
					Lens Unit, Main P.C.B..		
				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.	(No indication)	(No indication)
					Lens Unit		
		Focus		0?01	HP Low detect error (Focus encoder always detects High, and not becomes Low)	FOCUS L	LENS FPC/DSP
					Lens Unit, Main P.C.B..		
				0?02	HP High detect error (Focus encoder always detects Low, and not becomes High)	FOCUS H	
					Lens Unit, Main P.C.B..		
		Lens	18*1	0000	Power ON time out error.	LENS DRV	LENSu
					Lens Unit, Main P.C.B..		
			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.	STRB CHG	STRB PCB/FPC
					Flash charging circuit		
	FLASH ROM (EEPROM Area)	FLASH ROM (EEPROM Area)	2B*0	0001	EEPROM read error	FROM RE	FROM
					Main P.C.B..		
				0002	EEPROM write error	FROM WR	FROM
					Main P.C.B..		
				0005	Firmware viersion up error	(No indication)	(No indication)
					Replace the firmware file in the SD memory card.		
	SYSTEM	RTC	2C*0	0001	SYSTEM IC initialize failure error	SYS INIT	MAIN PCB
					Main P.C.B..		
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 COM	LENSu/DSP
					Lens Unit, Main P.C.B..		
				0002	Camera task invalid code error.	DSP	DSP
					Main P.C.B..		
				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	(No indication)	(No indication)
					USB cable, Main P.C.B..		
	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	ZOOM	ZOOMm/LENSu
					Lens Unit.		
			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.		
			35*2	0000	Though record preprocessing is necessary, it is not completed.	(No indication)	(No indication)

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.)

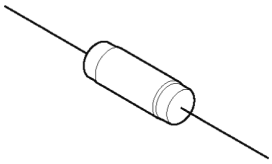
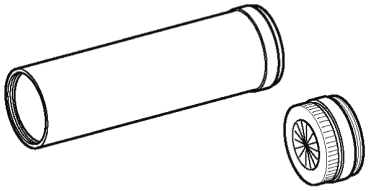
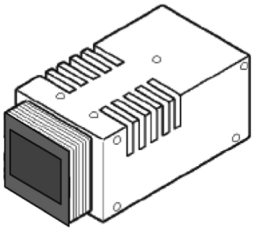
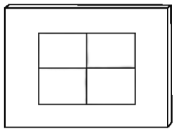
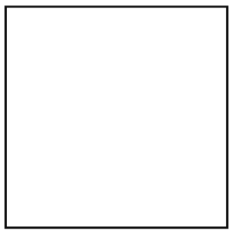
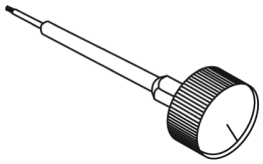
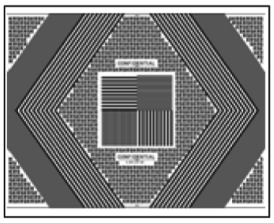
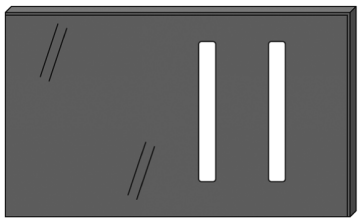
NOTE:

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**	Driver (for optical axis adjustment) **RFKZ0569**	Optical axis adjustment chart **RFKZ0570**
		
Camera stand **RFKZ0333J**		
		

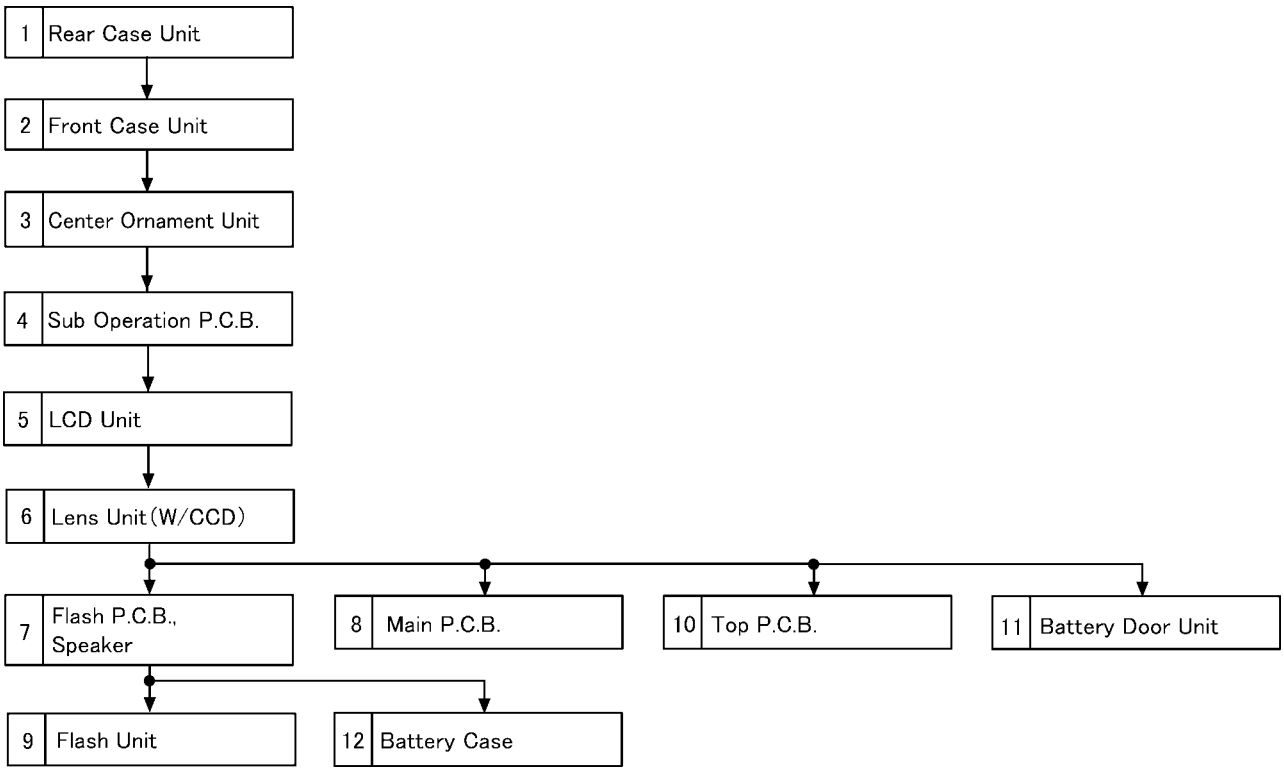
7.2. When Replacing the Main P.C.B.

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”.

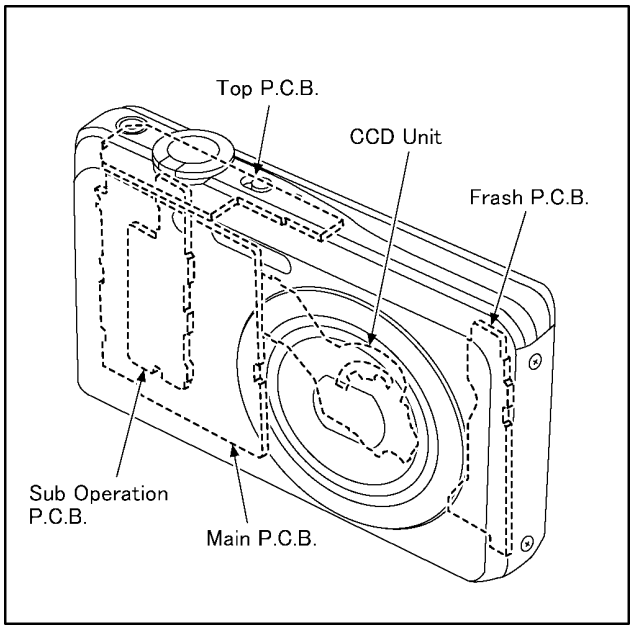
8 Disassembly and Assembly Instructions

8.1. Disassembly Flow Chart

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



8.2. P.C.B. Location



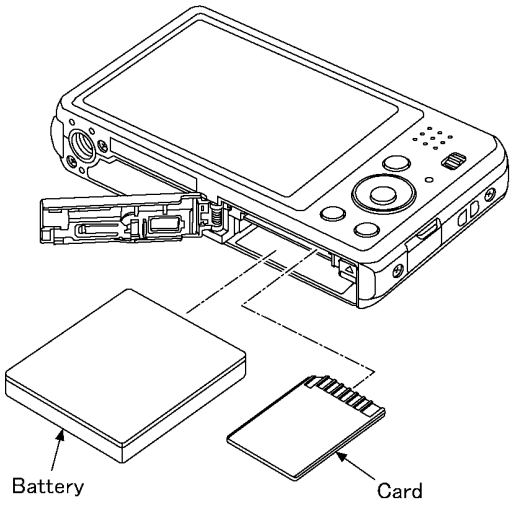
8.3. Disassembly Procedure

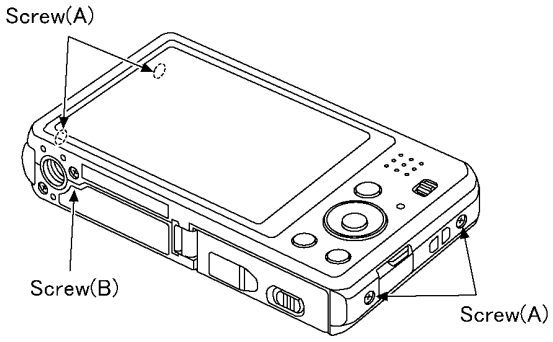
No.	Item	Fig	Removal
1	Rear Case Unit	Fig. D1	Card
			Battery
			4 Screws (A)
			1 Screw (B)
		Fig. D2	5 Locking tabs
			Rear Case Unit
2	Front Case Unit	Fig. D3	1 Screw (C)
		Fig. D4	1 Locking tab
			Front Case Unit
3	Center Ornament Unit	Fig. D5	Center Ornament Unit
		Fig. D6	NOTE: (When Installing)
4	Sub Operation P.C.B.	Fig. D7	Connector(A)
		Fig. D8	2 Convexes
			Sub Operation P.C.B.
5	LCD Unit	Fig. D9	1 Locking tab
			Mode Knob Unit
		Fig. D10	1 Locking tab
			Connector(B)
			LCD Unit
6	Lens Unit (W/CCD)	Fig. D11	1 Screw (D)
			2 Locking tabs
			Frame Plate
		Fig. D12	Connector(C)
			Connector(D)
			Connector(E)
			Lens Unit (W/CCD)
		Fig. D13	Discharge the E.Capacitor
7	Flash P.C.B. Speaker	Fig. D14	FP8001(Flex)
			1 Screw (E)
			1 Rib
		Fig. D15	Solder (5 points)
			Flash P.C.B.
			Speaker
		Fig. D16	Wiring methods
8	Main P.C.B.	Fig. D17	Solder (15 points)
			1 Screw (F)
			1 Screw (G)
			Main P.C.B.
9	Flash Unit	Fig. D18	2 Locking tabs
			Flash Unit
10	Top P.C.B.	Fig. D19	Sheet
			1 Screw (H)
			1 Convex
			1 Hooking part
			Top P.C.B.
11	Battery Door Unit	Fig. D20	Battery Door Shaft
			Battery Door Spring
			Battery Door Unit
12	Battery Case	Fig. D21	4 Locking tabs
		Fig. D22	Battery Lock Knob
			Battery Lock Spring
			Battery Spring
			Battery Case

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) × 4
・Battery ・Screw(B) × 1





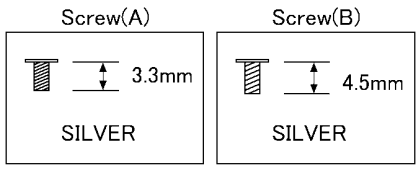


Fig. D1

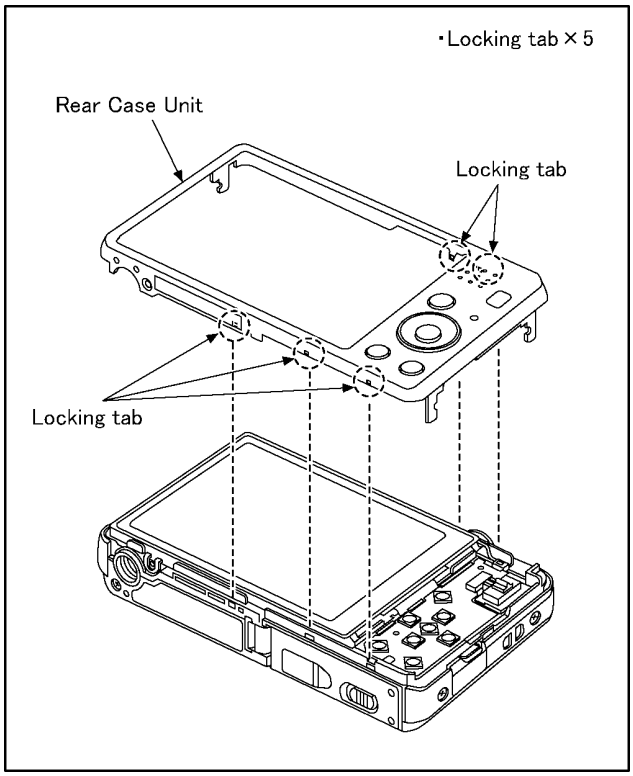


Fig. D2

8.3.2. Removal of the Front Case Unit

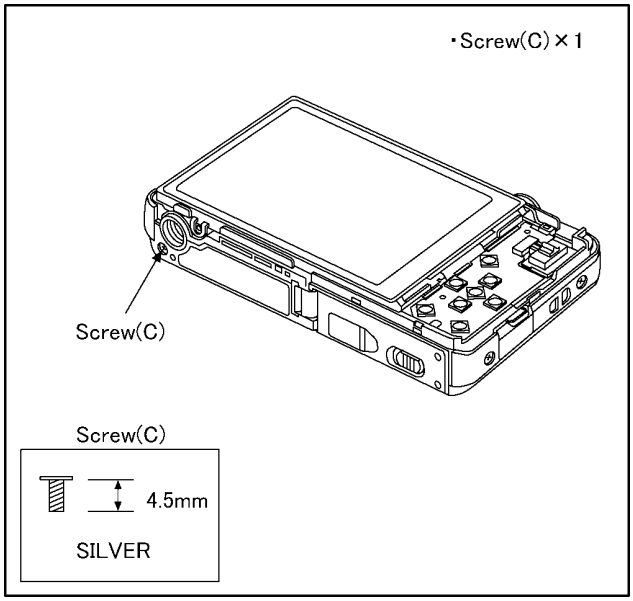


Fig. D3

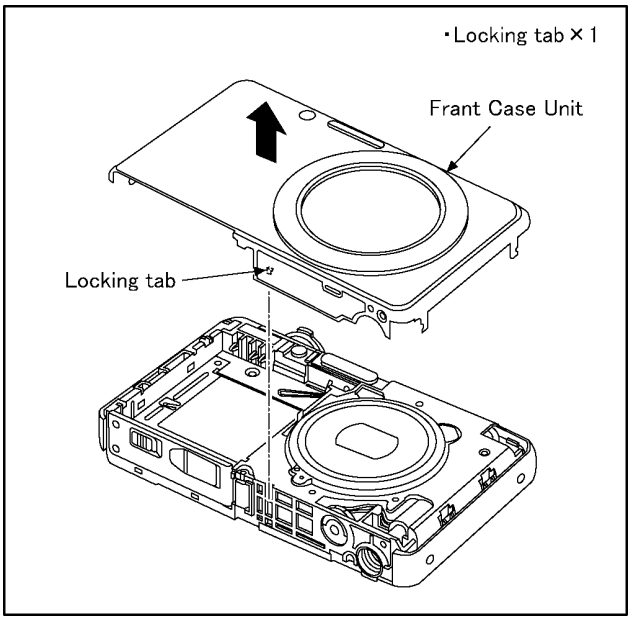


Fig. D4

8.3.3. Removal of the Center Ornament Unit

NOTE: (When Replacing)

- While spreads on both sides of the bottom of the center ornament unit and remove upwards.

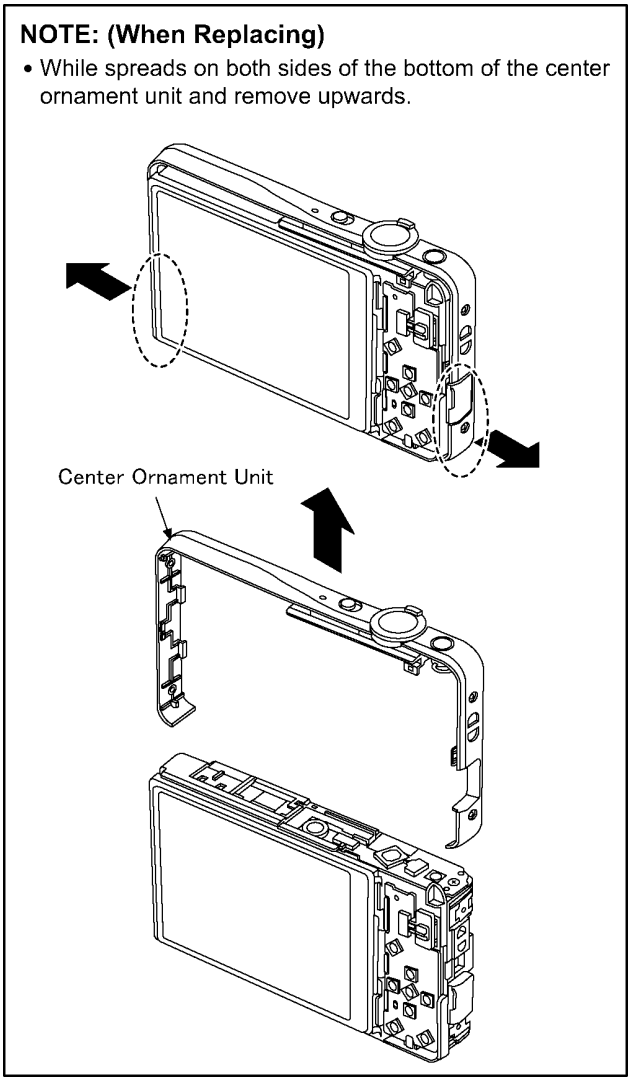


Fig. D5

NOTE: (When Installing)

1. When install the center ornament unit, align the hole and the convex of center ornament unit.
2. Align the convex of power switch and concave of power knob.

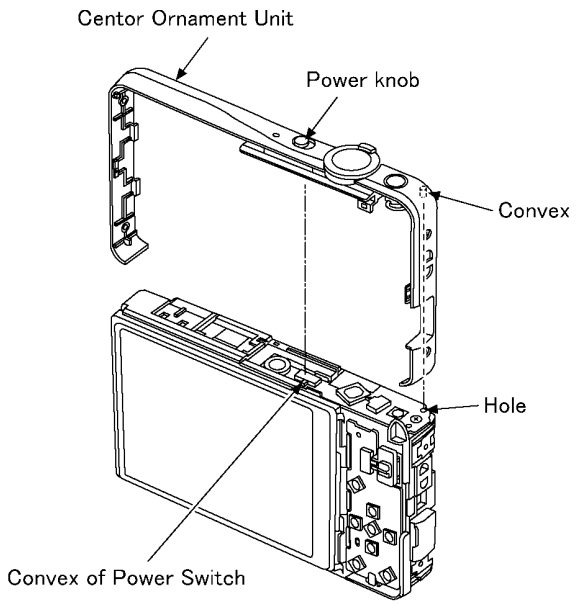


Fig. D6

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

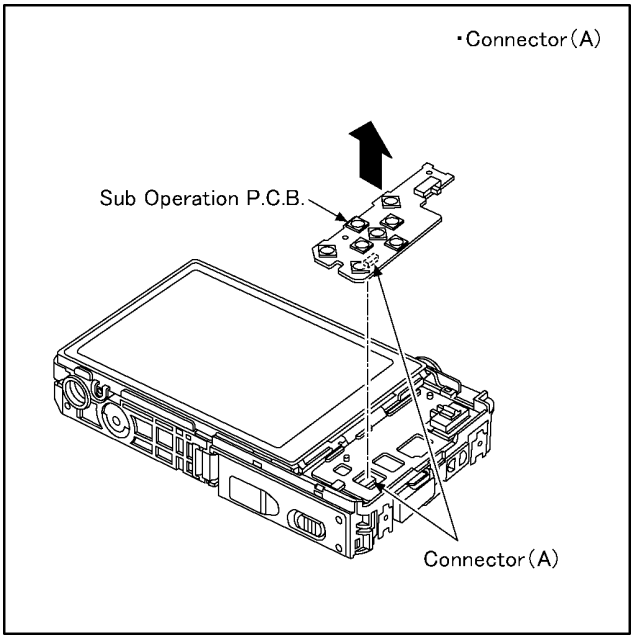


Fig. D7

NOTE: (When Installing)

1. When install the sub operation P.C.B., align the hole of sub operation P.C.B. and the convex of swtch holder.
2. Align the convex of REC/PLAY switch and concave of REC/PLAY knob.

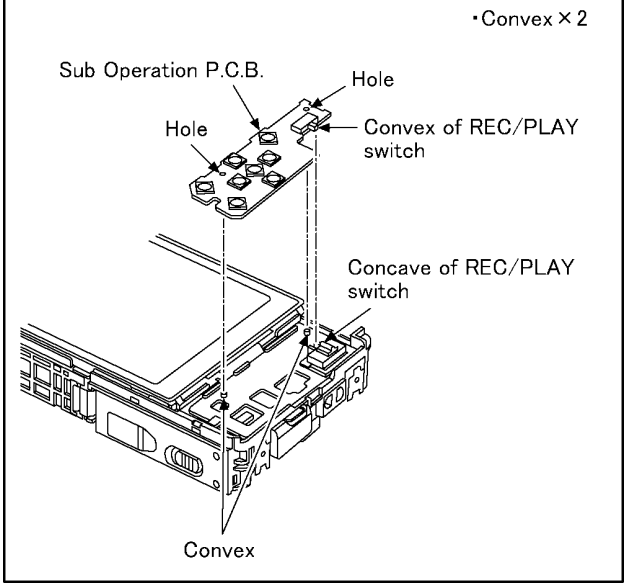


Fig. D8

8.3.5. Removal of the LCD Unit

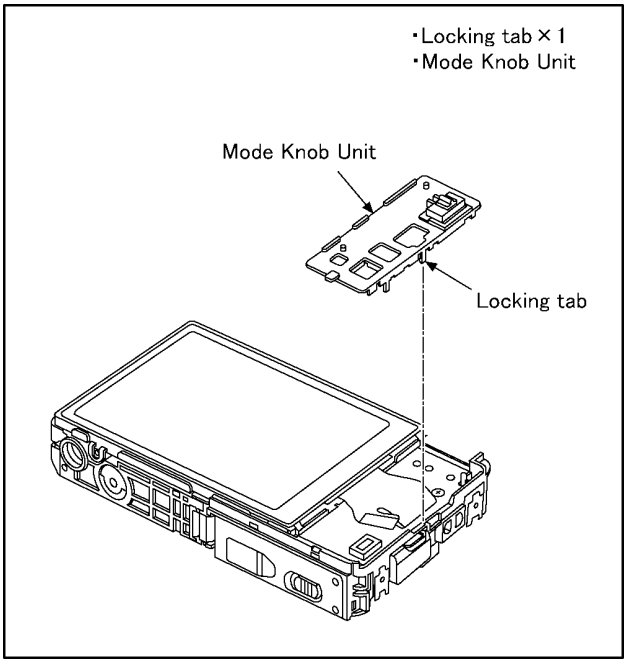
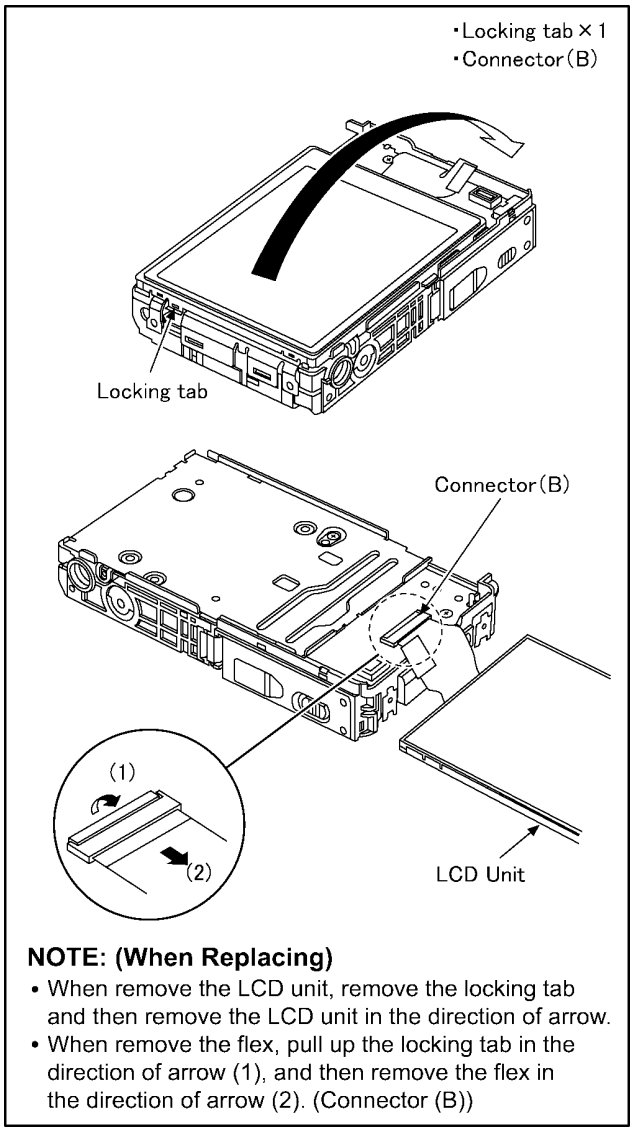


Fig. D9



NOTE: (When Replacing)

- When remove the LCD unit, remove the locking tab and then remove the LCD unit in the direction of arrow.
- 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. D10

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

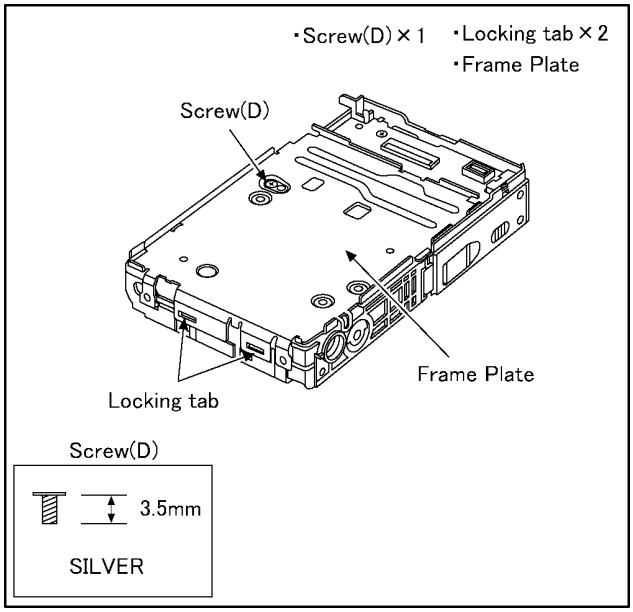
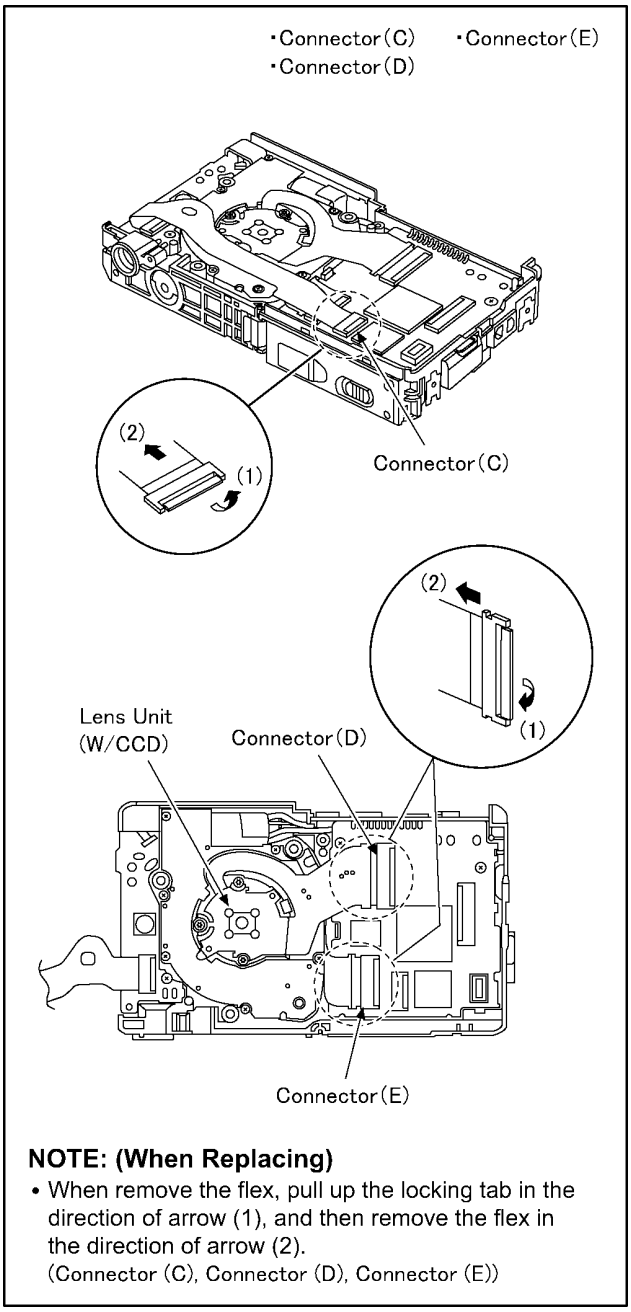


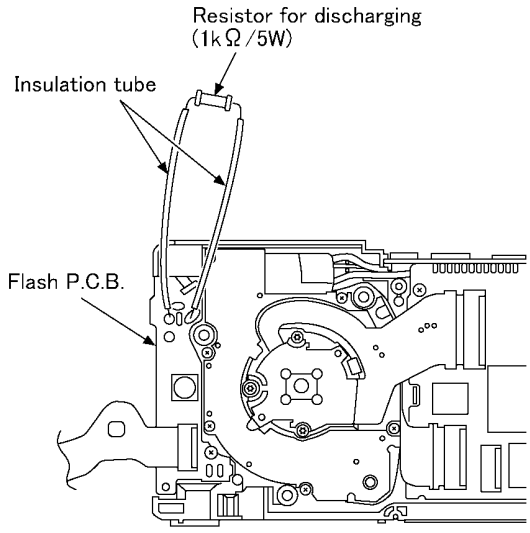
Fig. D11



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), Connector (D), Connector (E))

Fig. D12



⚠ 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 capacitor unit for approx. 5 seconds.

Fig. D13

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

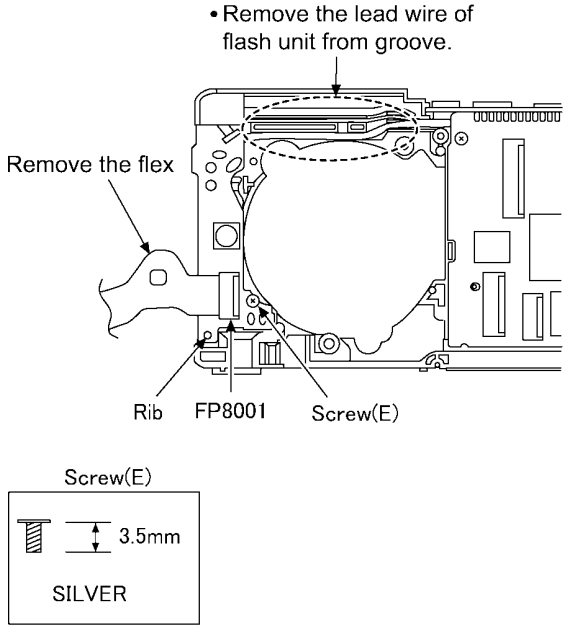


Fig. D14

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

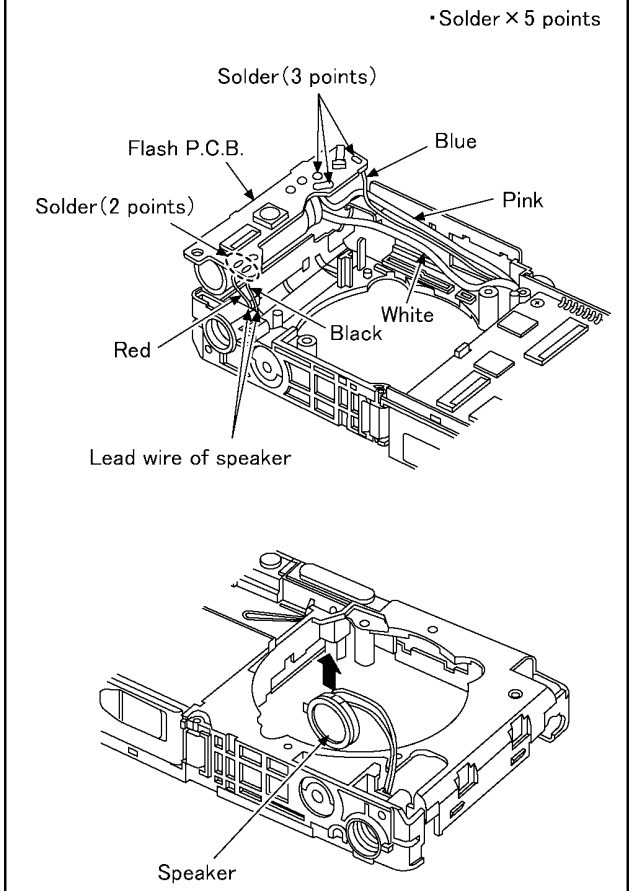
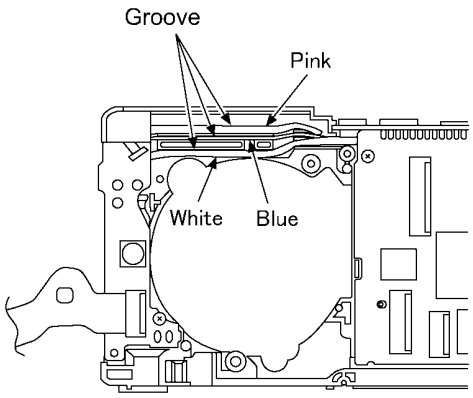


Fig. D15

Wiring methods

1. Wiring the flash unit lead wire to groove.



2. The projection part of a speaker is carried out just beside, and it pushes in until the convex part of the frame.
3. Wiring the lead wire of speaker to groove of the frame.

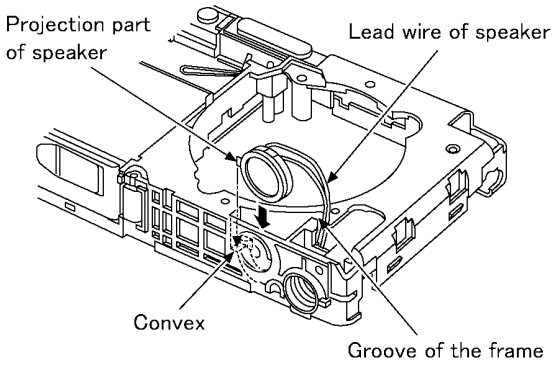


Fig. D16

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

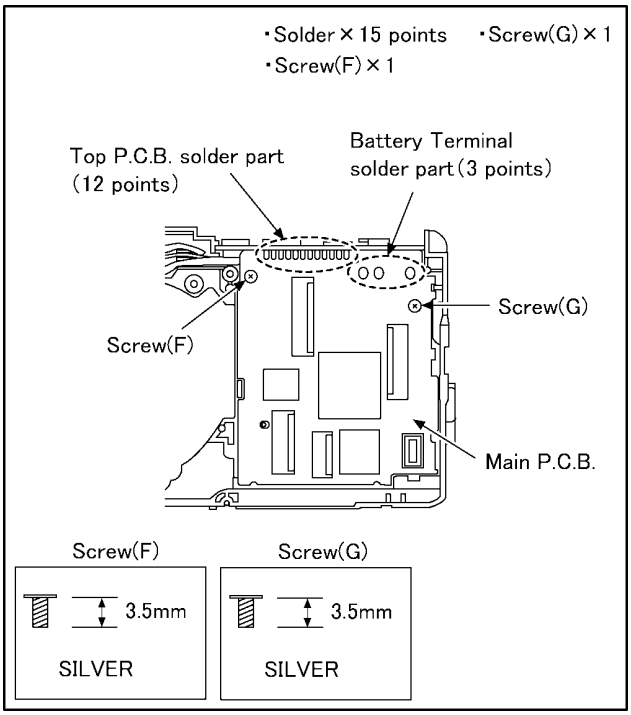
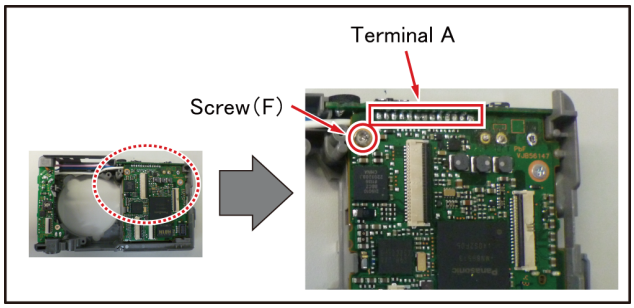


Fig. D17

[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 (F)" 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.



8.3.9. Removal of the Flash Unit

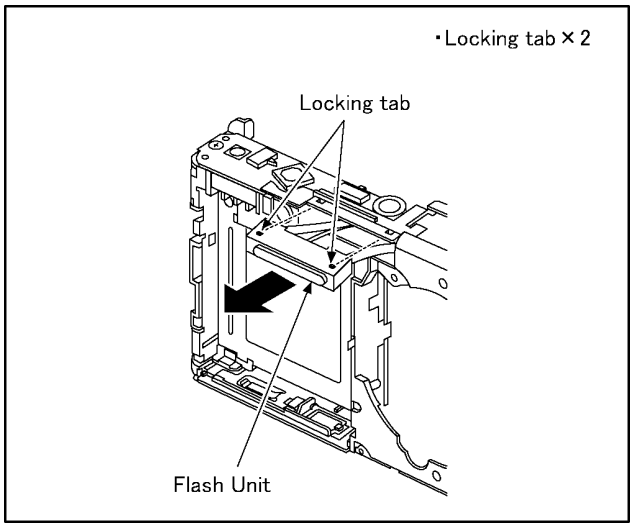


Fig. D18

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

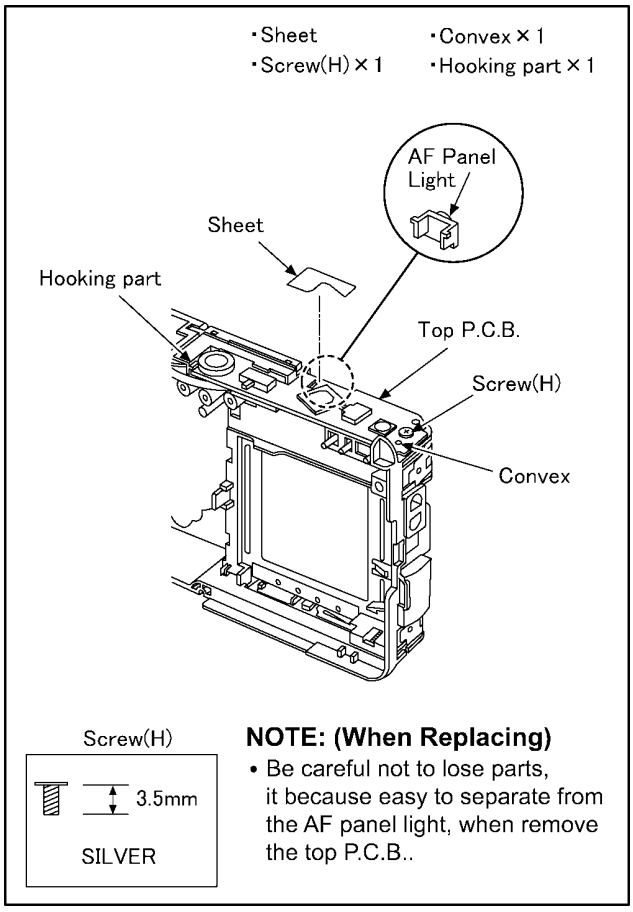


Fig. D19

8.3.11. Removal of the Battery Door Unit

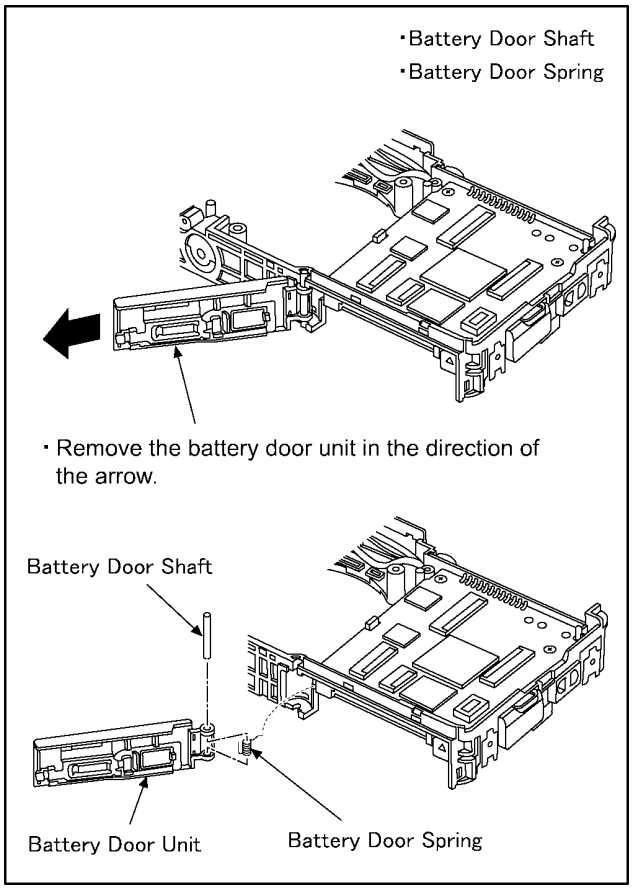


Fig. D20

8.3.12. Removal of the Battery Case

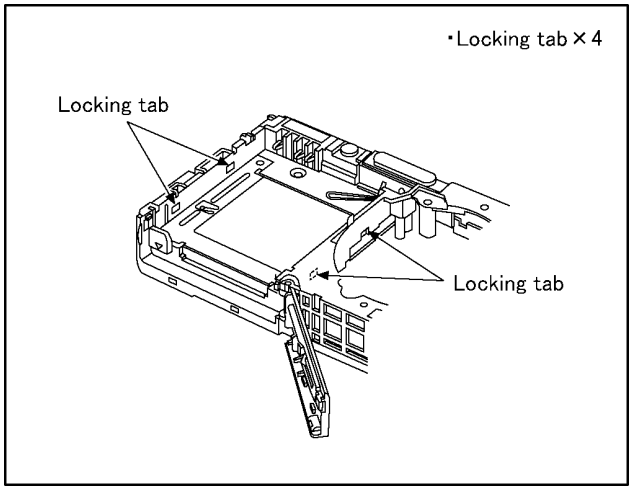


Fig. D21

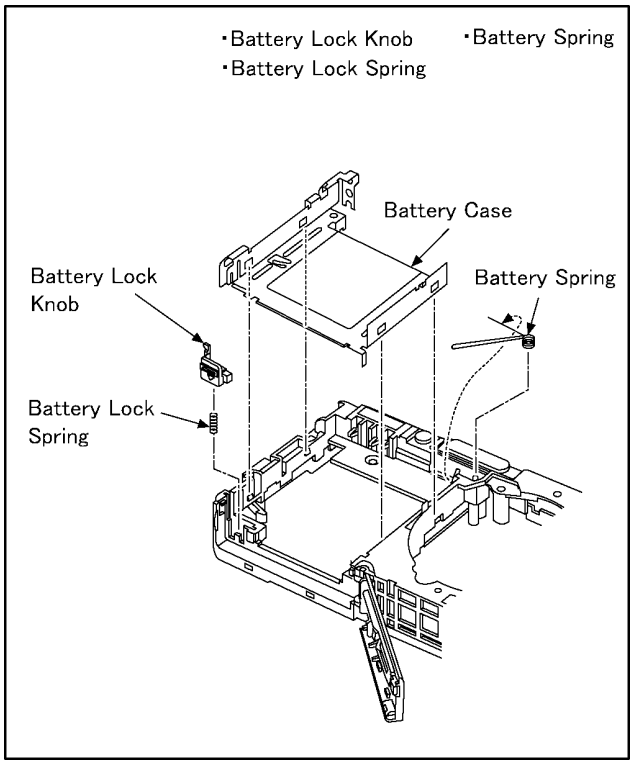


Fig. D22

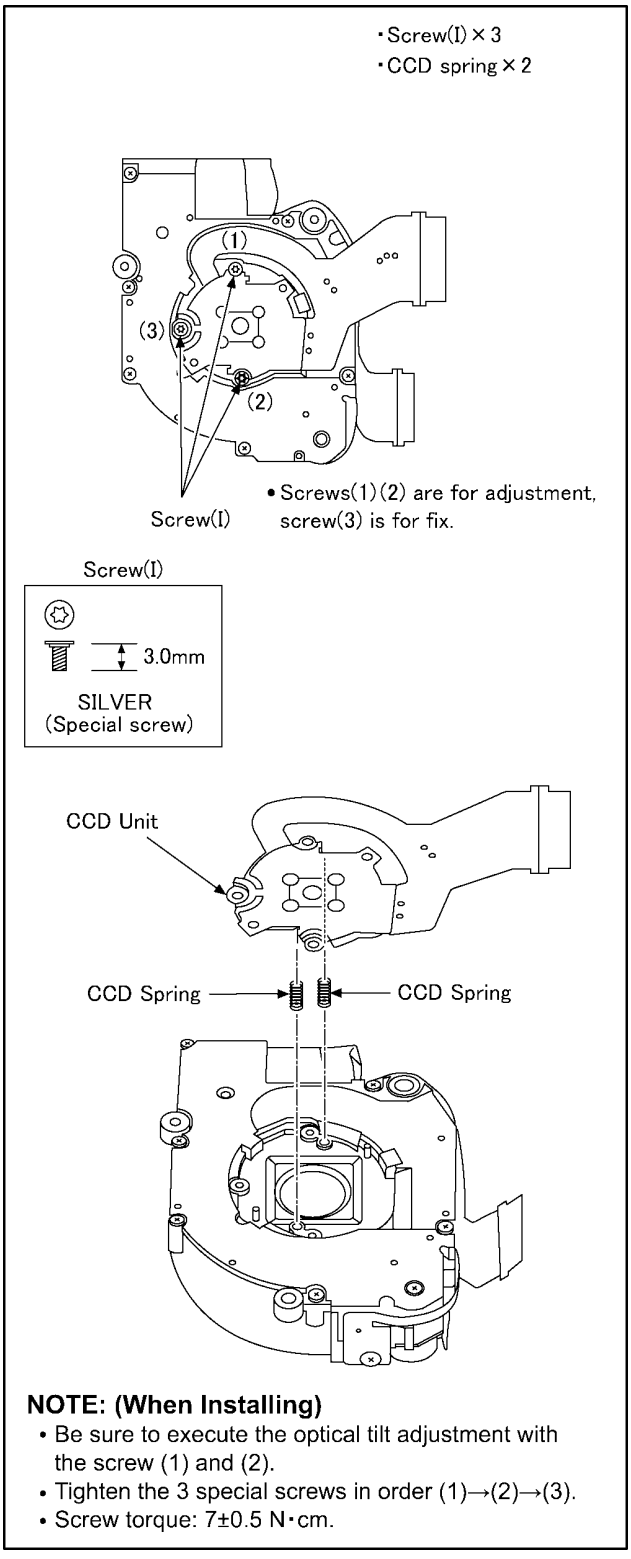
NOTE: (When Installing)

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

When remove the CCD unit once (the screw(I) is loosened even a little), the optical tilt adjustment is required.
When loosen the screw(I), necessary the optical tilt adjustment at the end of assembling. (Refer to item "9.3.2.")
To prevent the CCD unit from catching the dust and dirt, do not remove the CCD unit except for replacing.



NOTE: (When Installing)

- Be sure to execute the optical tilt adjustment with the screw (1) and (2).
- Tighten the 3 special screws in order (1)→(2)→(3).
- Screw torque: 7±0.5 N・cm.

Fig. D23

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)

NOTE: (When replacing the Lens unit and CCD unit)

- When the CCD unit is unavoidably removed for Lens unit and CCD unit replaced, an optical tilt adjustment is necessary after parts are exchanged.
- The adjustment software (DSC_Tilt) is necessary to execute an optical tilt adjustment.
- The adjustment software “DSC_Tilt” is available at “TSN Website”, therefore, access to “TSN Website” at “Support Information from NWBG/VDBG-AVC”.

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.

1. Set the REC/PLAY switch to “[REC] (Camera mark)”, and then 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”:

Set the REC/PLAY switch to “[REC] (Camera mark)”.
While pressing “[UP] of Cursor button” and [MOTION PICTURE] button simultaneously, turn the Power on.

Step 2. Cancellation of “INITIAL SETTINGS”:

Set the REC/PLAY switch to “[PLAY]”.
Press “[UP] of Cursor button” and [MOTION PICTURE] button simultaneously, 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.

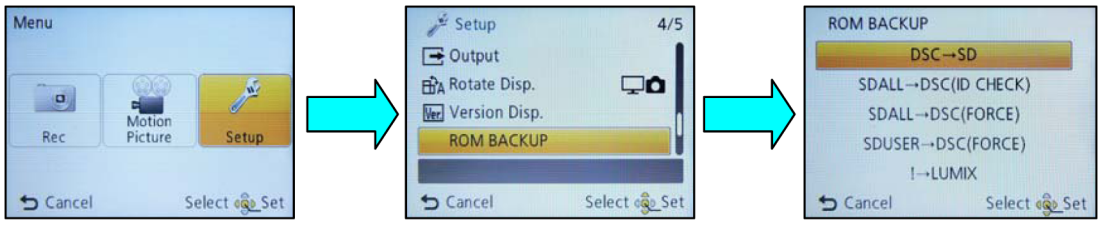


Fig.2-1 Fig.2-2 Fig.2-3

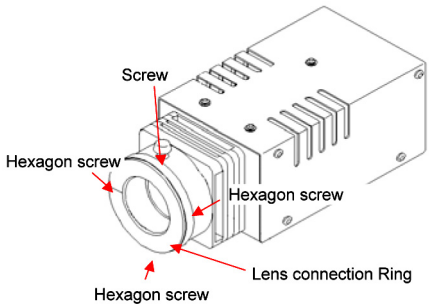
Item	Function	Details
DSC → SD	Save all the DSC's Flash-rom data to SD-CARD	*DSC's Flash-rom data is saved to the SD-CARD as a data file by the same format as the TATSUJIN software for the previous models. (DATA BACKUP) -File location: ROOT DIRECTORY in SD-CARD. -File Name: 1) User Setup Information 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. *FORCE: Even if the model ID is different, data is transferred. ※If the main PCB is replaced, select “SDALL → DSC (FORCE)”.
SDALL→ DSC (FORCE)	Write the all data to DSC's Flash-rom from SD-CARD	
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. Set the REC/PLAY switch to “[REC] (Camera mark)”, and then turn the Power on.
   b. Press the [MODE] button, and select the [NORMAL PICTURE] mode by Cursor button, then press the [MENU/SET] button.
   c. Set the REC/PLAY switch to “[REC] (Camera mark)”, and then turn the Power off.
   d. Turn the Power on pressing [MENU/SET] and [MOTION PICTURE] simultaneously.
   LCD monitor displays “SERVICE MODE”.(Refer to Fig. 3-1)

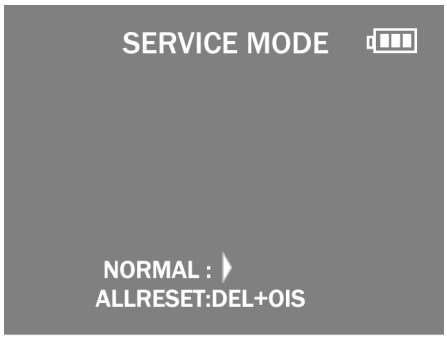


Fig.3-1

9.3.1.2. Status Adjustment Flag Setting

Reset (Not yet adjusted) the status flag condition.

1. After pressing the [DISP.] 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 [Q.MENU]/[Delete/Cancel] 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.

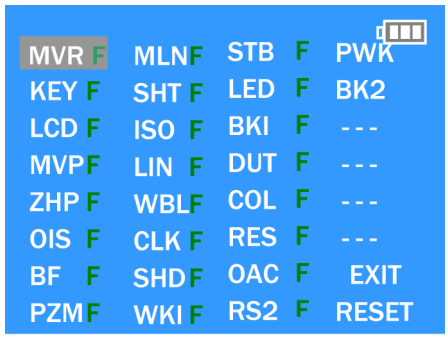


Fig.3-2

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

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

1. Perform step “9.3.1.1.” to “9.3.1.2.”, to reset the OIS flag status “F” (Set) to “0” (Reset)
2. Press [DISP.] 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)

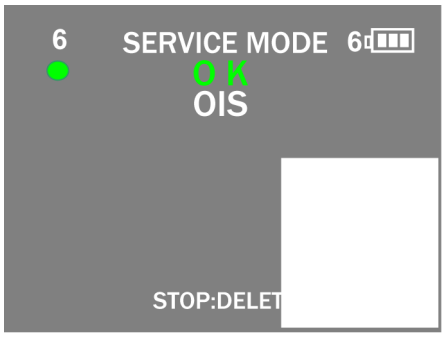


Fig.3-4

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.

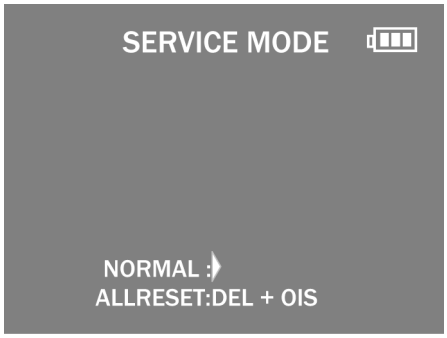


Fig.3-5

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 “[Q.MENU]/[Delete/Cancel] of Cursor button”.
   (2) 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.

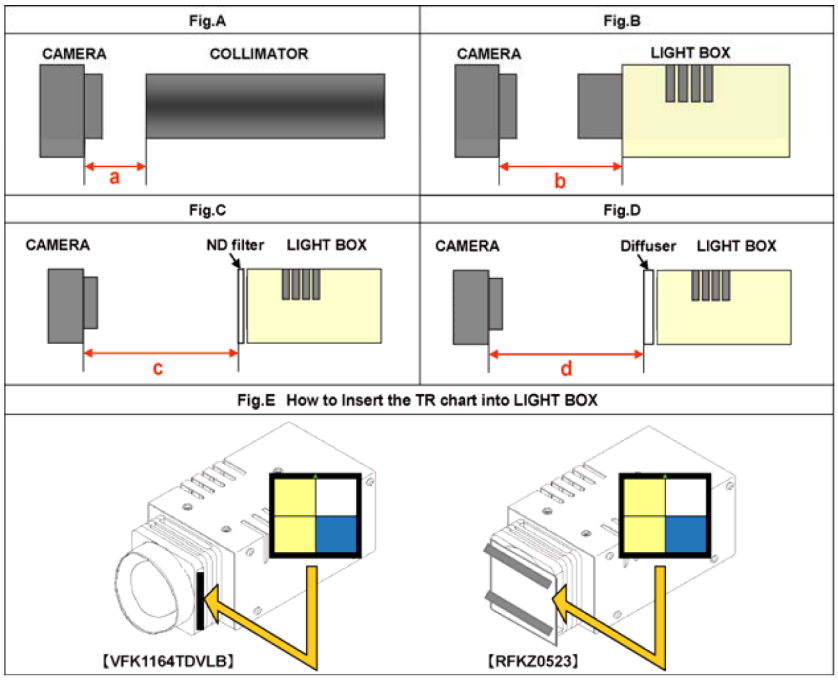
9.3.2. Adjustment Specifications

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	Replacing Parts					JIG/TOOLS	SET UP	How to Operate
				MAIN P.C.B.	Lens part (Include CCD U)	MIC	Flash Part	LCD			
1	Optical Tilt Adjustment		Adjustment of image sensor installation angle to lens	–	○	–	–	–	Please execute the adjustment by using optical tilt adjustment software"DSC_Tilt" for DMC-FH8/FS45. The adjustment software "DSC_Tilt" is available at "TSN Website", therefore, access to "TSN Website" at "Support Information from NWBG/VDBG-AVC".		
2	LCD Flicker adjustment	LCD	LCD Flicker adjustment	○	–	–	–	○	NONE	NONE	1)Set in the mode which presses the right-and-left key and screen flicker chooses the fewest mode. 2)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 3)After completed, the"OK" message appears.
3	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. ※Comparatively high voice is Ideal. (Standard:1Khz) 3)After completed, the"OK" message appears.
4	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.
5	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 2.5 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)A star chart changes into the state where it is reflected to the center. 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.
6	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.
7	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 2.5 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.
8	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.
9	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 9 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.
10	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.
11	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.
12	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.

Adjustment order	Adjustment Item	FLAG	Purpose	Replacing Parts					JIG/TOOLS	SET UP	How to Operate
				MAIN P.C.B.	Lens part (Include CCD U)	MIC	Flash Part	LCD			
13	Flash adjustment	STB	Flash adjustment	○	–	–	○	–	NONE	NONE	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)Check that a flash shines.(It is different for every mode how many times it shines.) ※When a flash does not shine, there is a possibility that the flash unit is out of order. 3)Check a test result.※Results of the tests are usually NG. (When a result is OK, it is the completion of an inspection.) 4)When a result is NG, rewrite STB flag to an「adjustment」using DIAS. ※STB is an item which checks shines operation of a flash automatically at a Manufacturing facility.For this reason, Except environment for exclusive use, a result will be NG, but it is no problem if shines operation can be checked visually.
14	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.
		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.)								
15	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.).
16	OIS Act adjustment	OAC	OIS performance/Lens flare/ghost adjustment	○	○	–	–	–	NONE	1)Set the camera on plane.	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)After completed, the"OK" message appears.

※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.



■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.

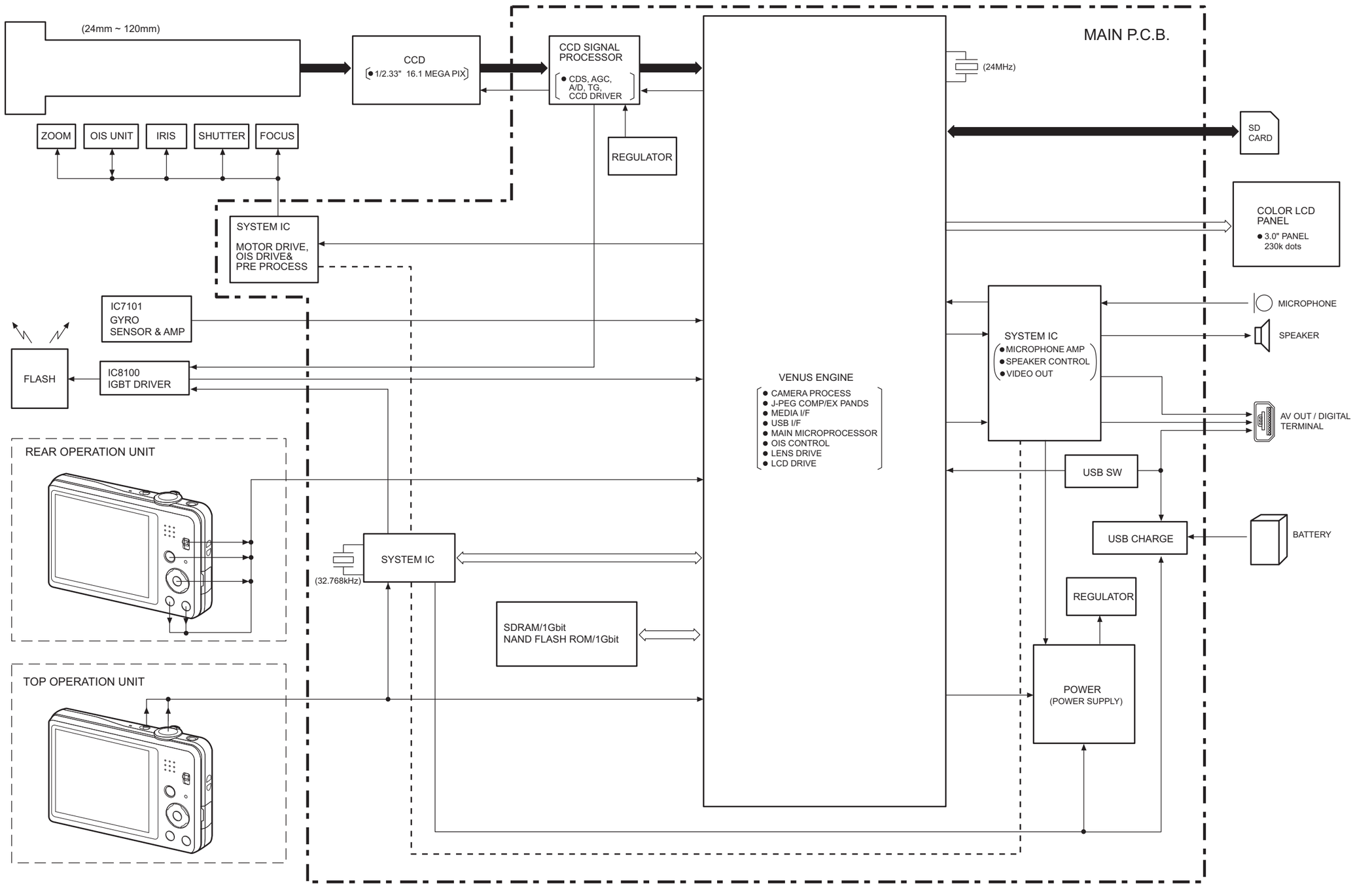
Note:

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

11 Block Diagram

11.1. Overall Block Diagram

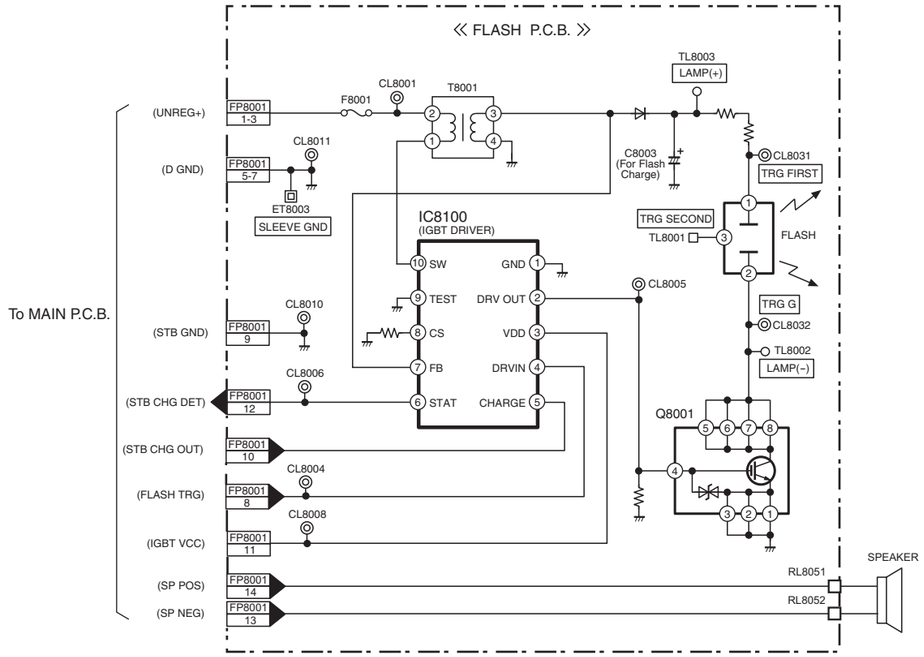
◆ OVERALL BLOCK DIAGRAM



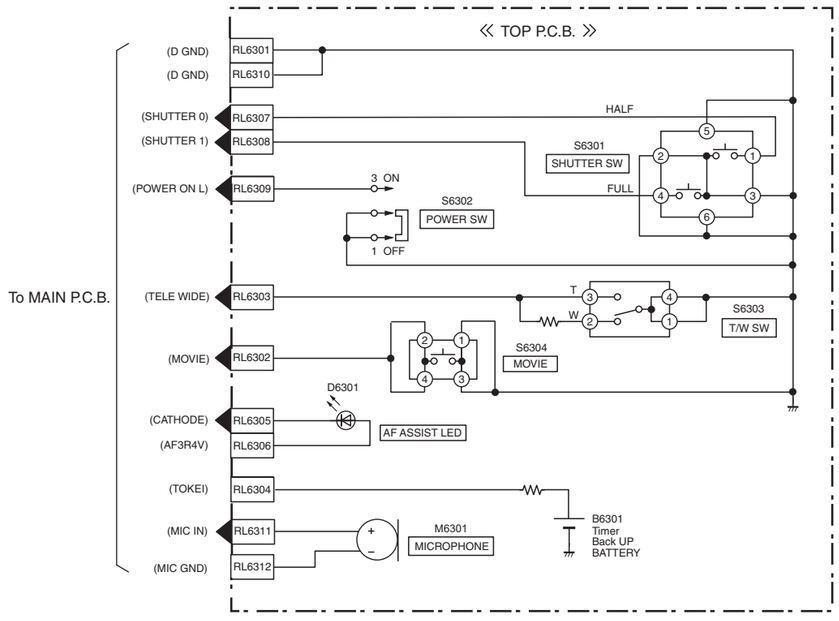
DMC-FH8/FS45 OVERALL BLOCK DIAGRAM

11.2. Flash / Top Block Diagram

◆ FLASH BLOCK DIAGRAM

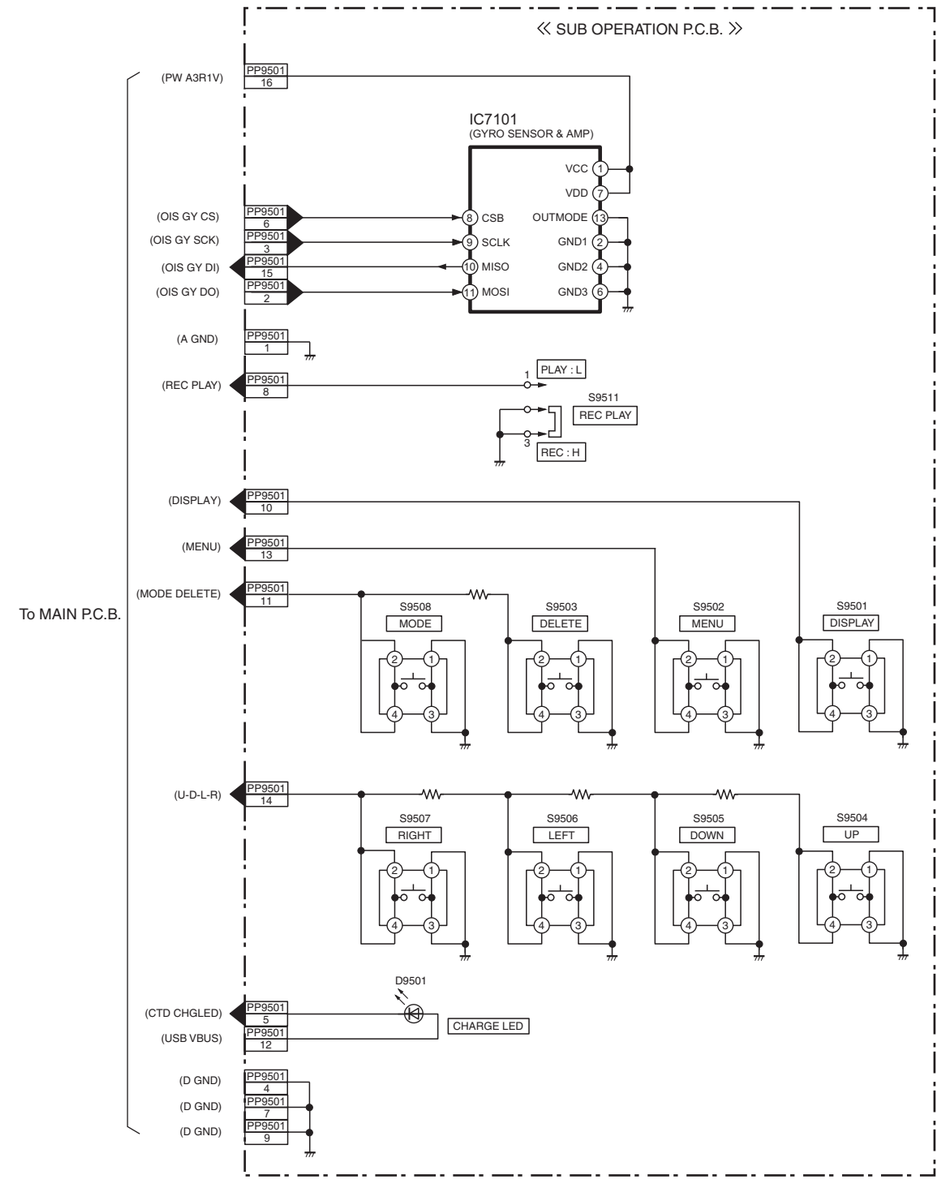


◆ TOP BLOCK DIAGRAM



11.3. Sub Operation Block Diagram

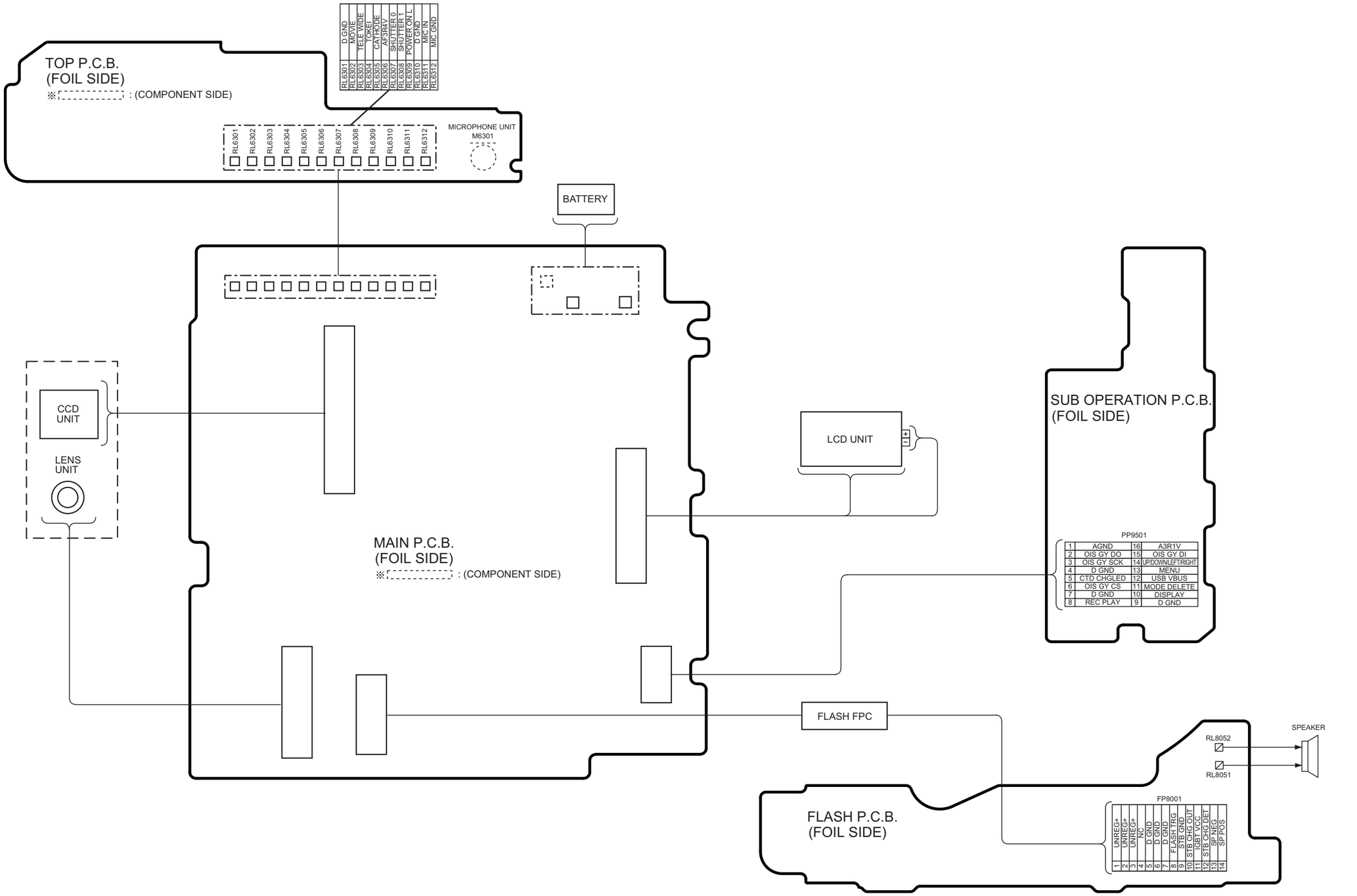
◆ SUB OPERATION BLOCK DIAGRAM



12 Wiring Connection Diagram

12.1. Interconnection Diagram

◆ INTERCONNECTION DIAGRAM



DMC-FH8/FS45 INTERCONNECTION DIAGRAM

IMPORTANT SAFETY NOTICE:

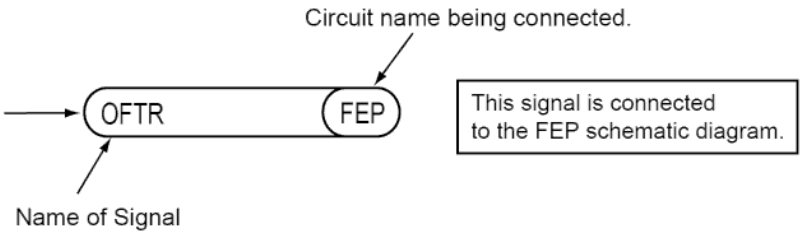
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS USE ONLY THE SAME TYPE.

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:



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

Model No. : DMC-FH8/FS45 Parts List Note

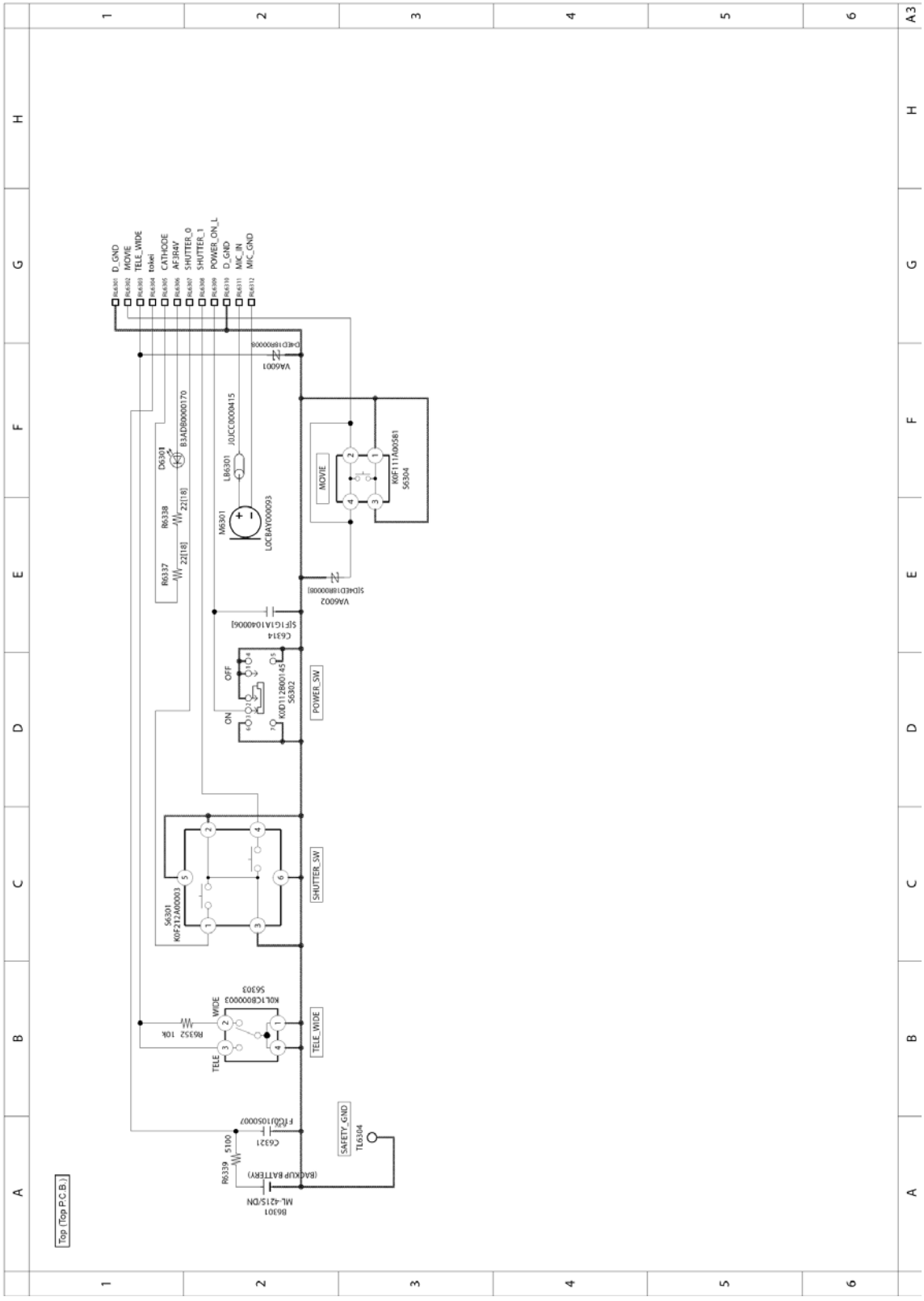
Note:
1. * Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
   Components identified with the mark ⚠ have the special characteristics for safety.
   When replacing any of these components, use only the same type.
3. Unless otherwise specified,
   All 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.

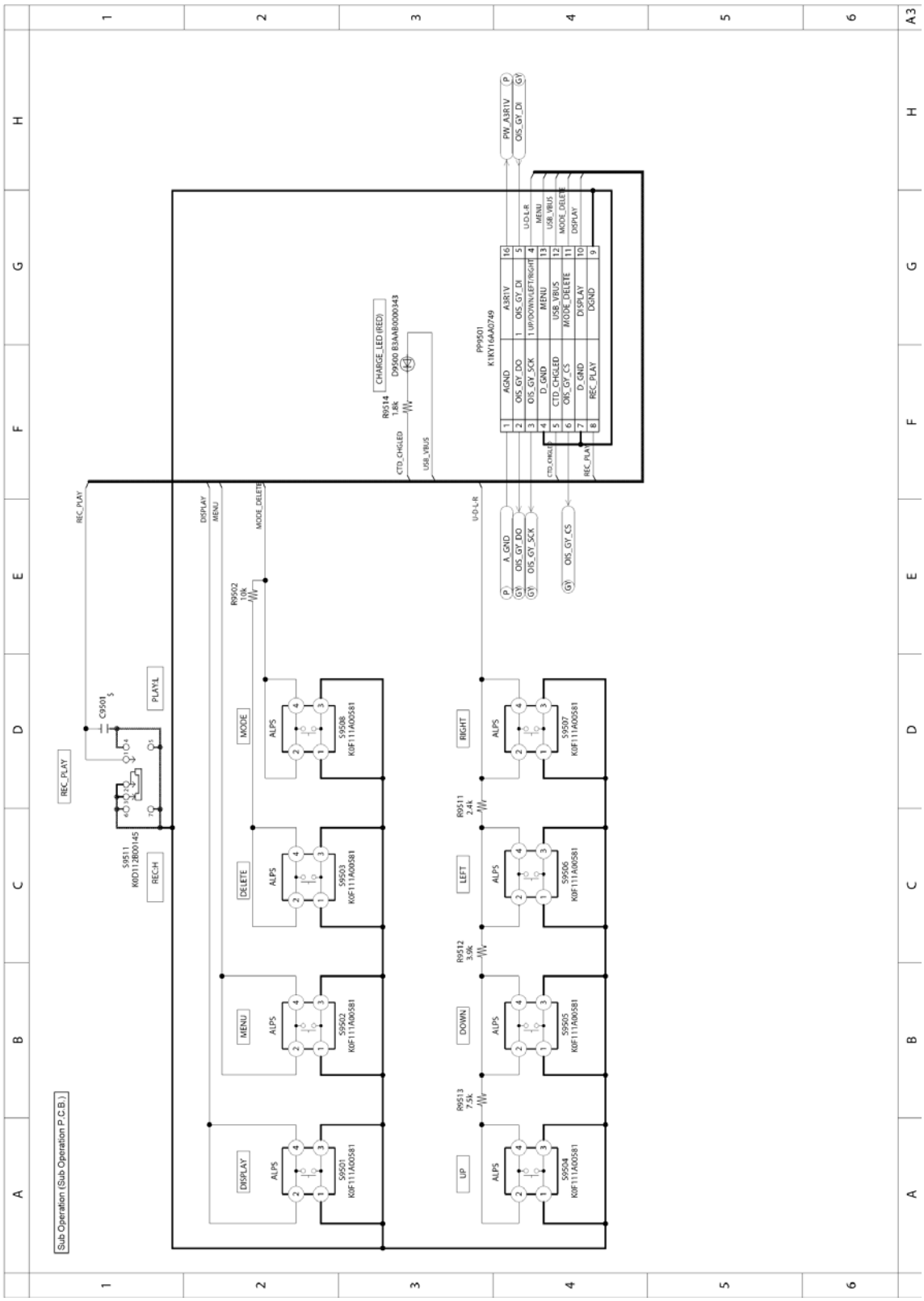
Definition of Parts supplier:

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.**

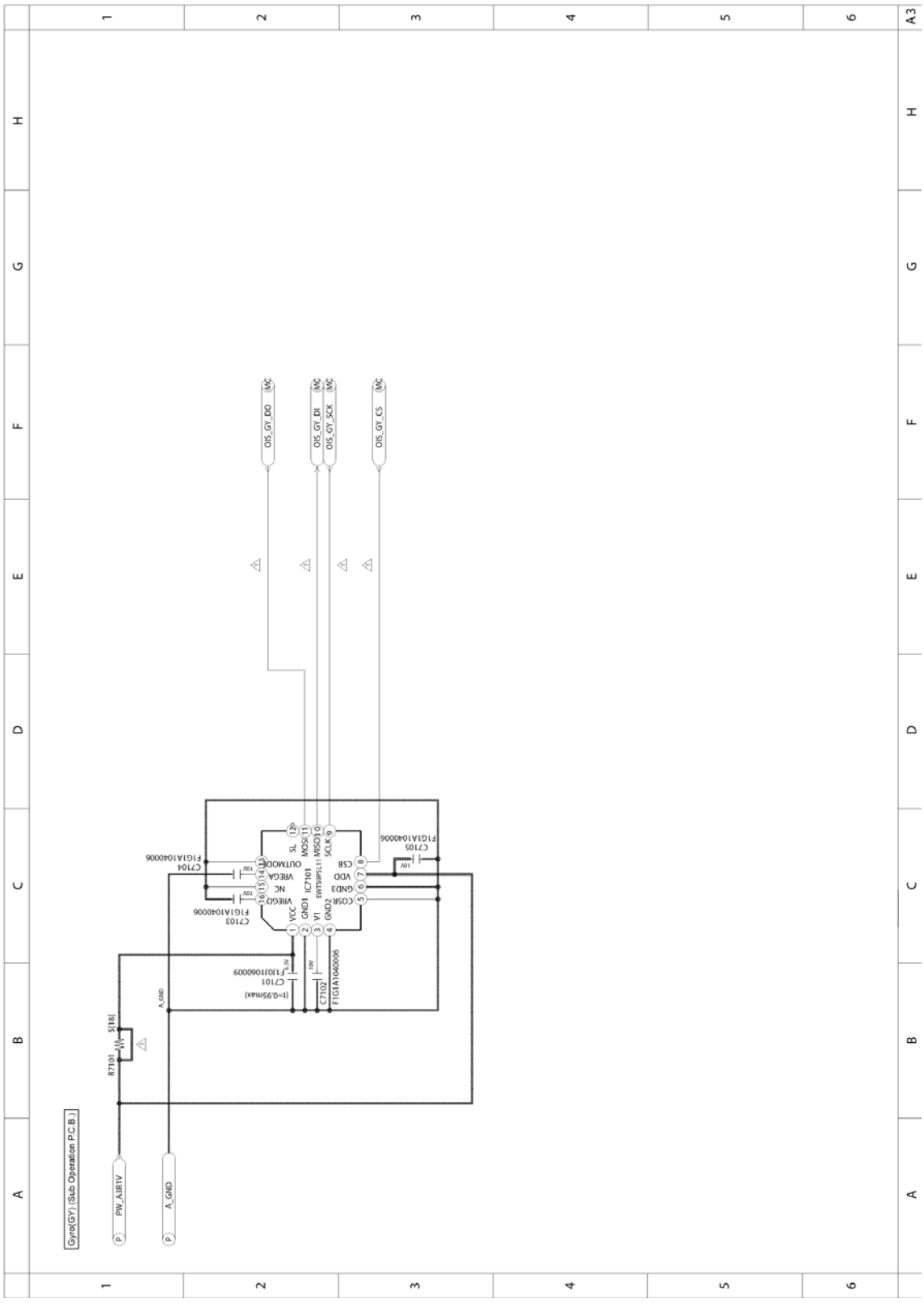
Model No. : DMC-FH8/FS45 Top (Top P.C.B.)



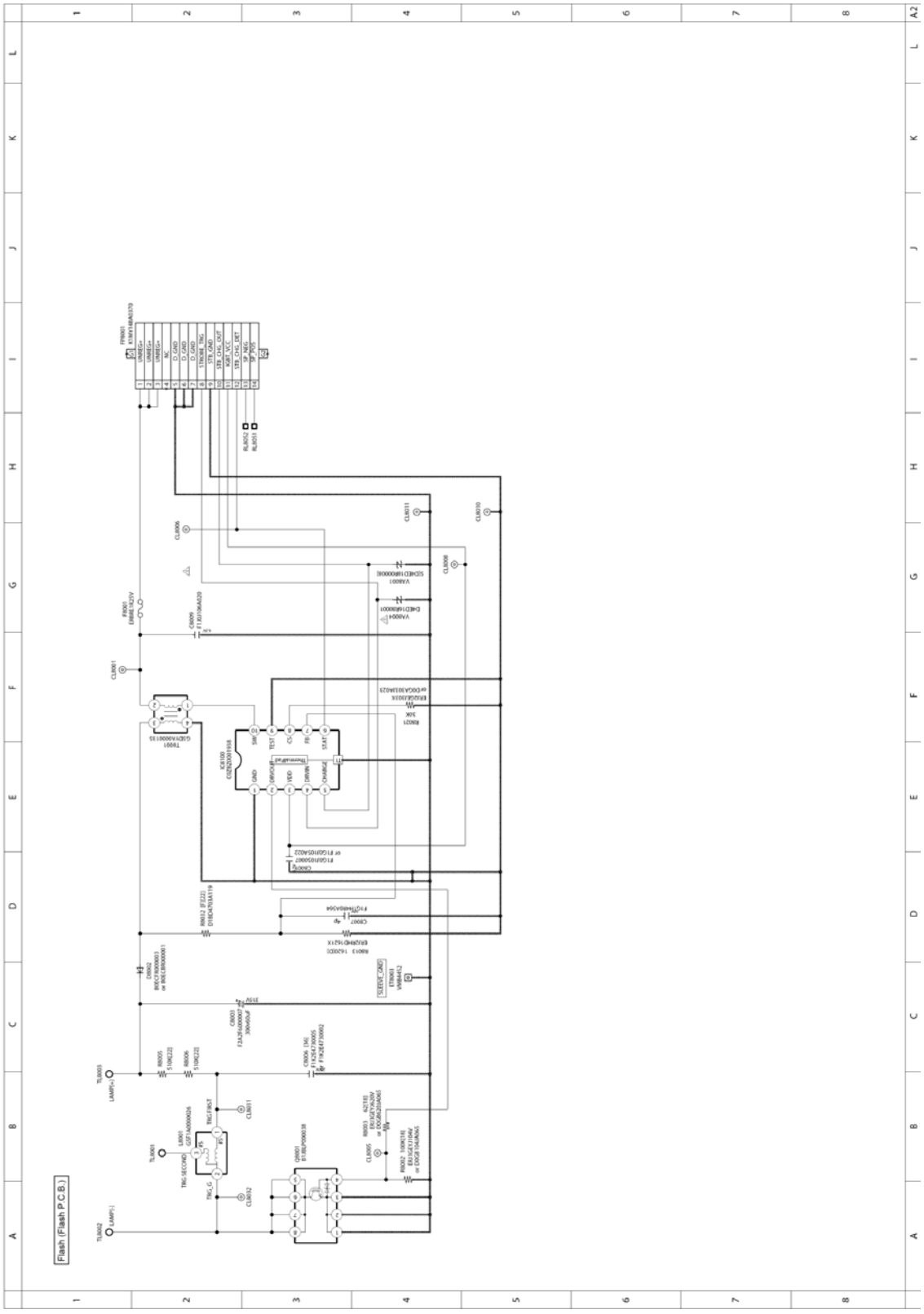
Model No. : DMC-FH8/FS45 Sub Operation (Sub Operation P.C.B.)



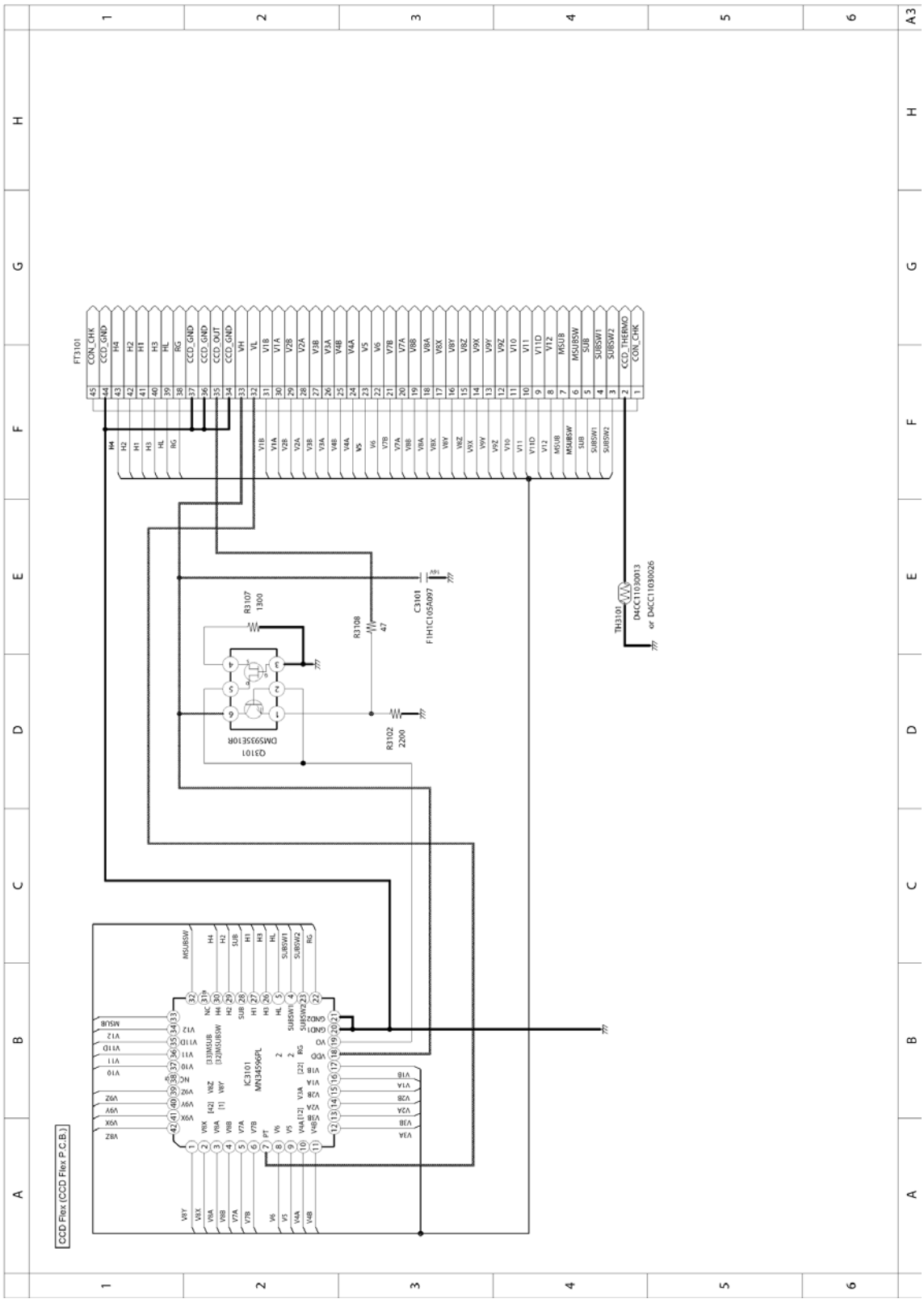
Model No. : DMC-FH8/FS45 Gyro (GY) (Sub Operation P.C.B.)



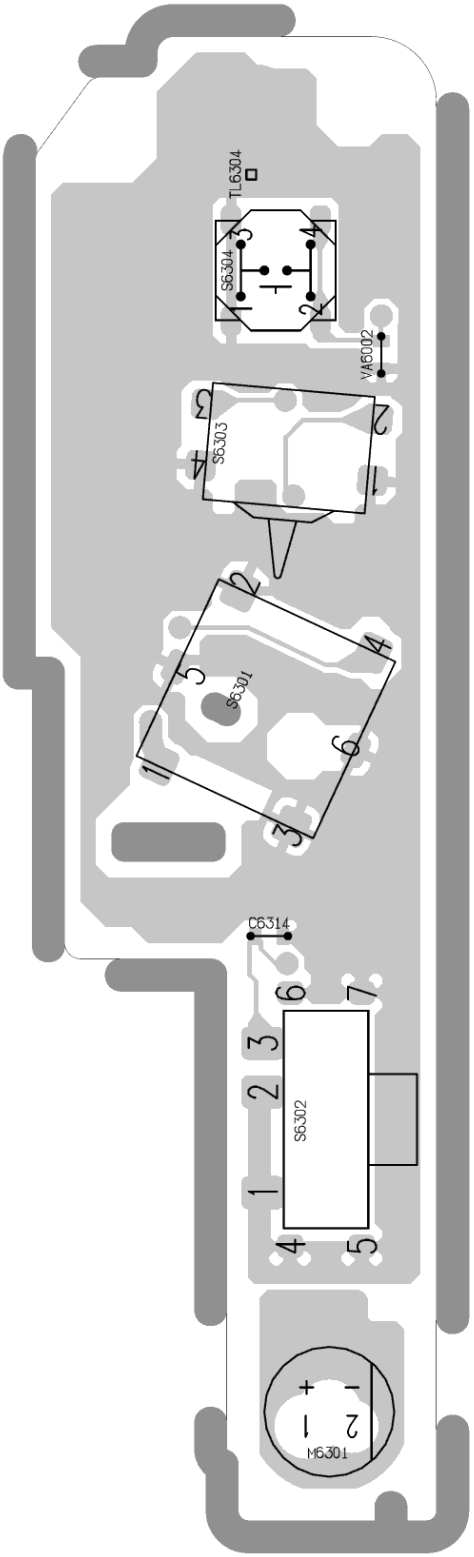
Model No. : DMC-FH8/FS45 Flash (Flash P.C.B.)



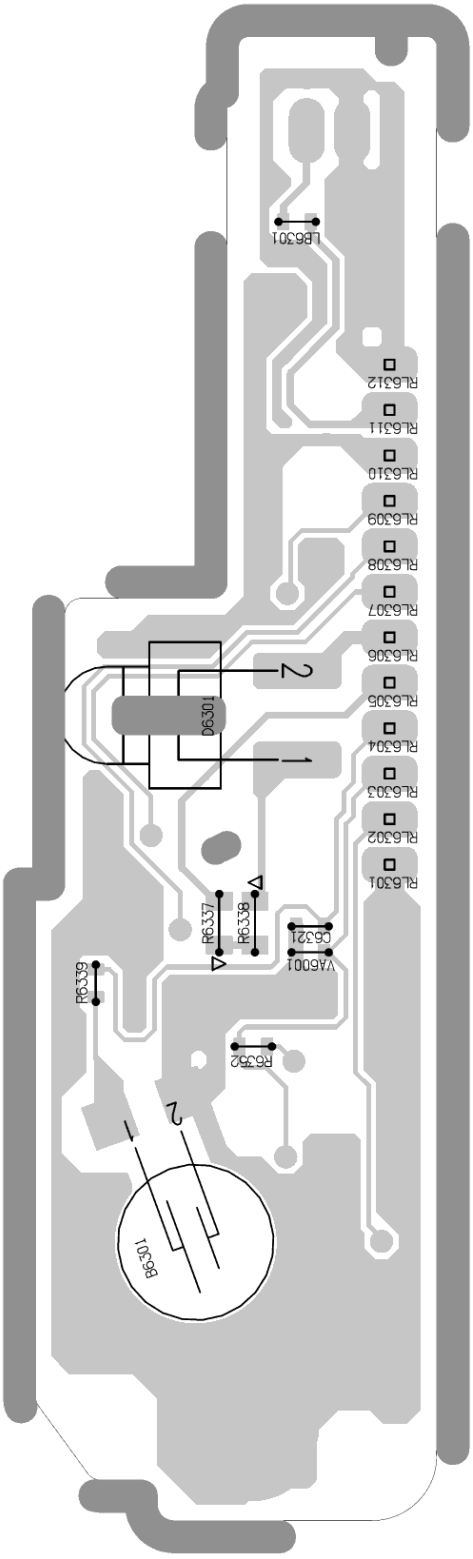
Model No. : DMC-FH8/FS45 CCD Flex (CCD Flex P.C.B.)



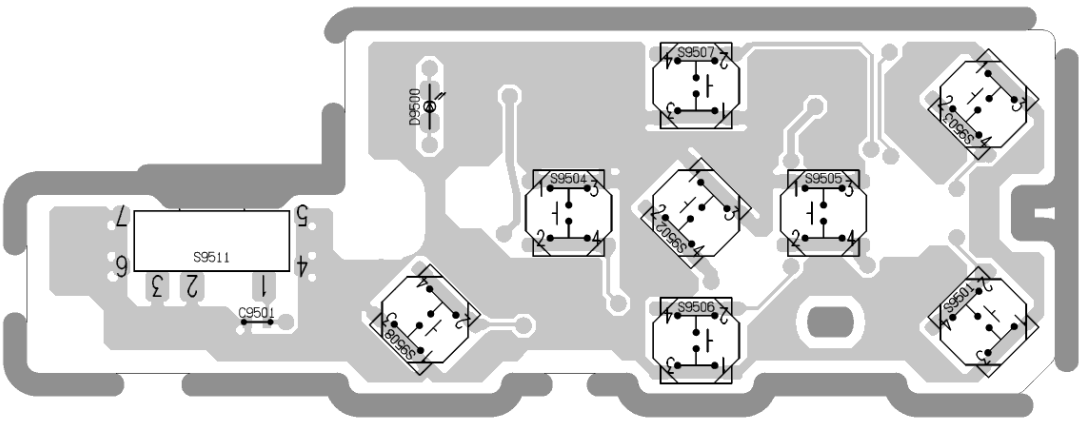
Model No. : DMC-FH8/FS45 Top P.C.B. (Component Side)



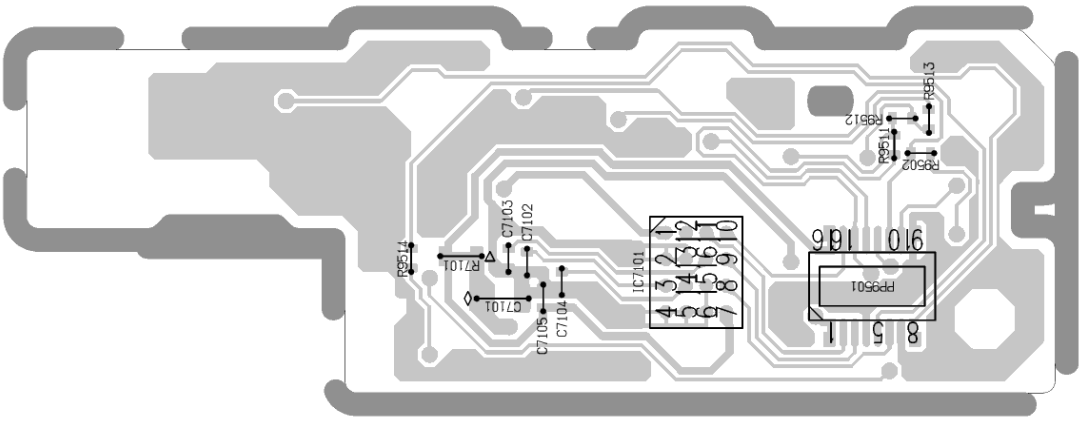
Model No. : DMC-FH8/FS45 Top P.C.B. (Foil Side)



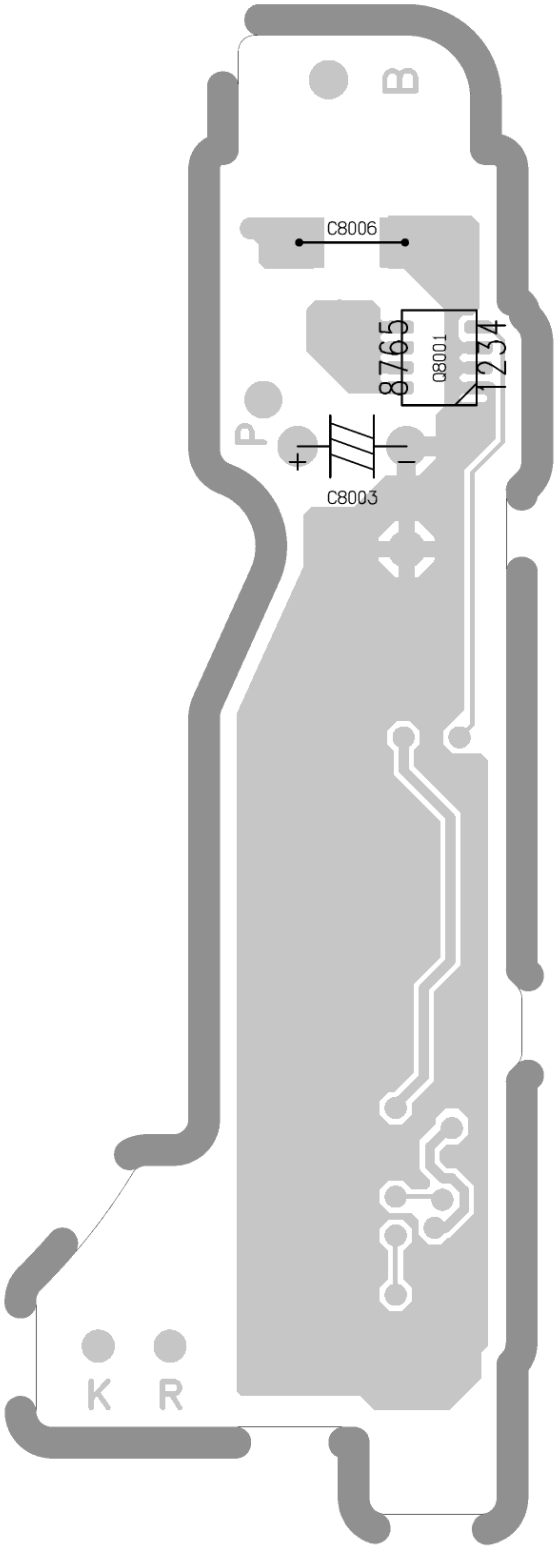
Model No. : DMC-FH8/FS45 Sub Operation P.C.B. (Component Side)



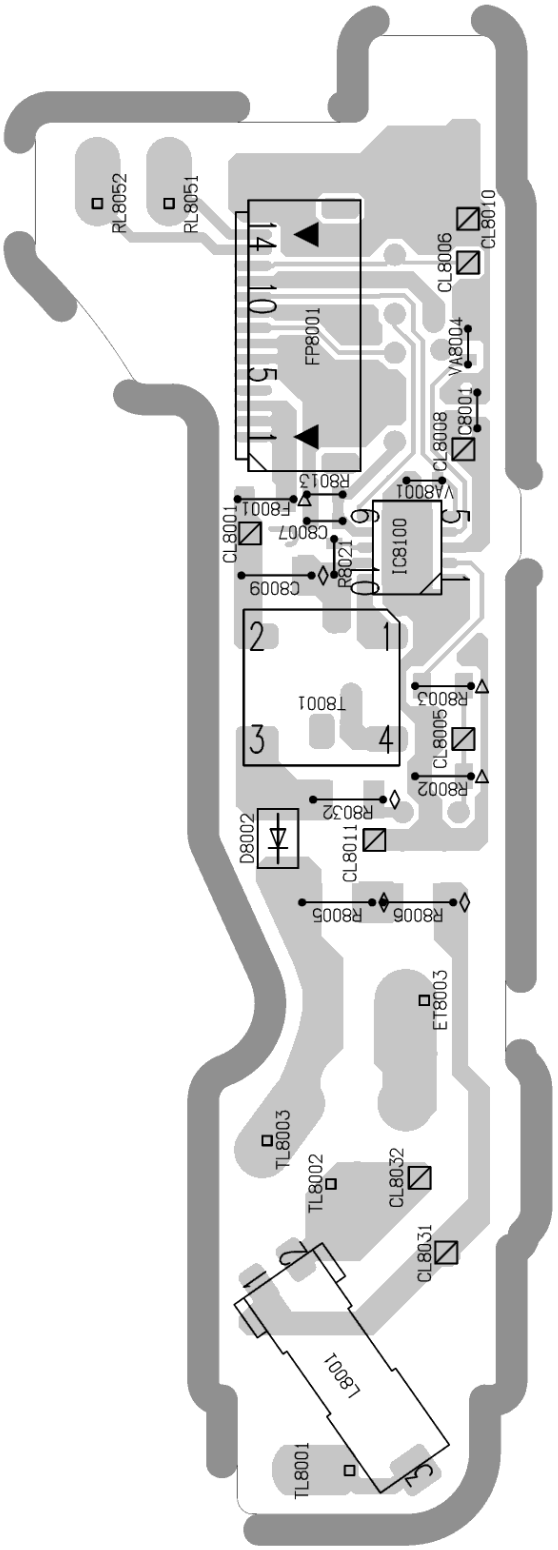
Model No. : DMC-FH8/FS45 Sub Operation P.C.B. (Foil Side)



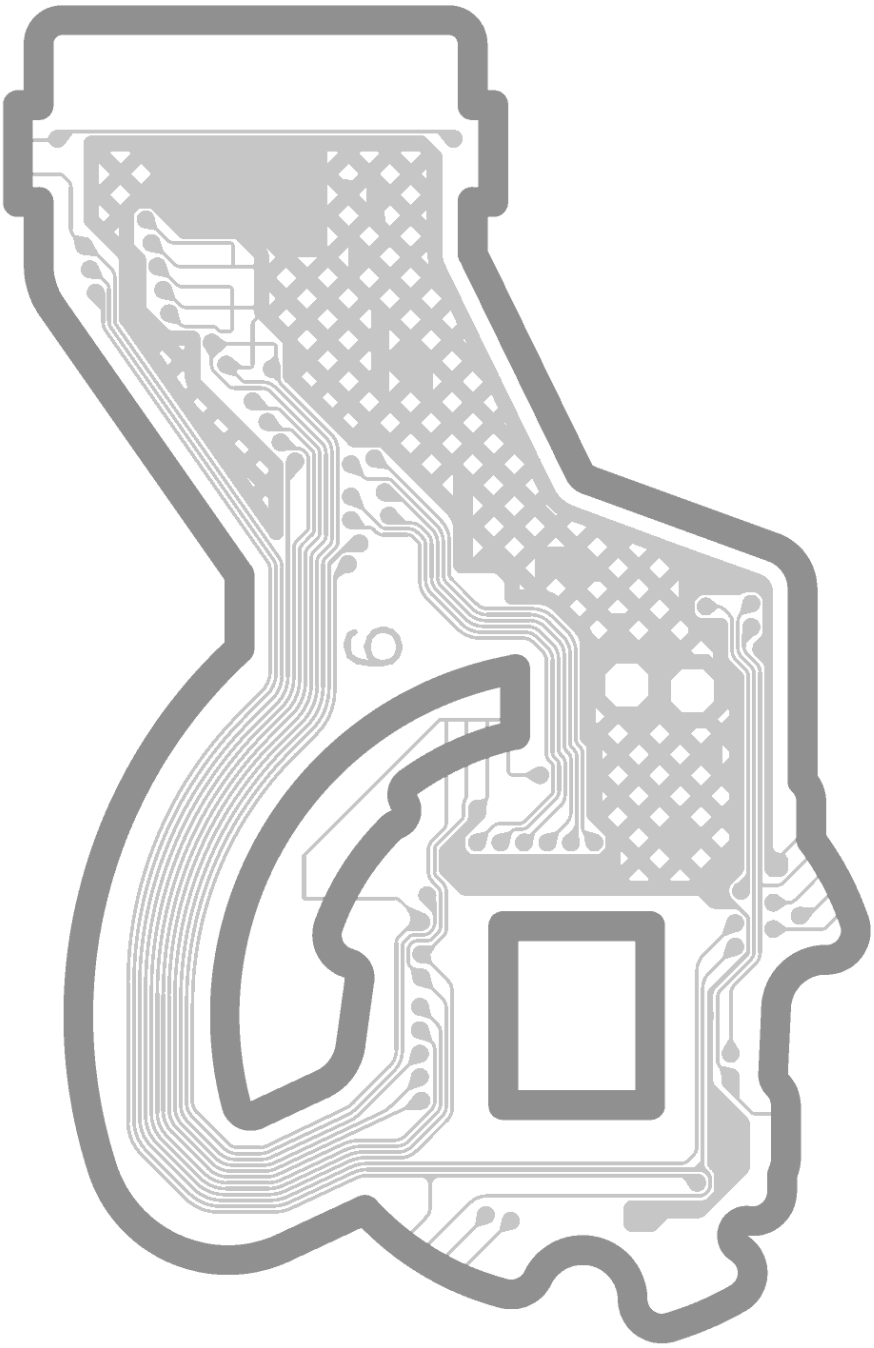
Model No. : DMC-FH8/FS45 Flash P.C.B. (Component Side)



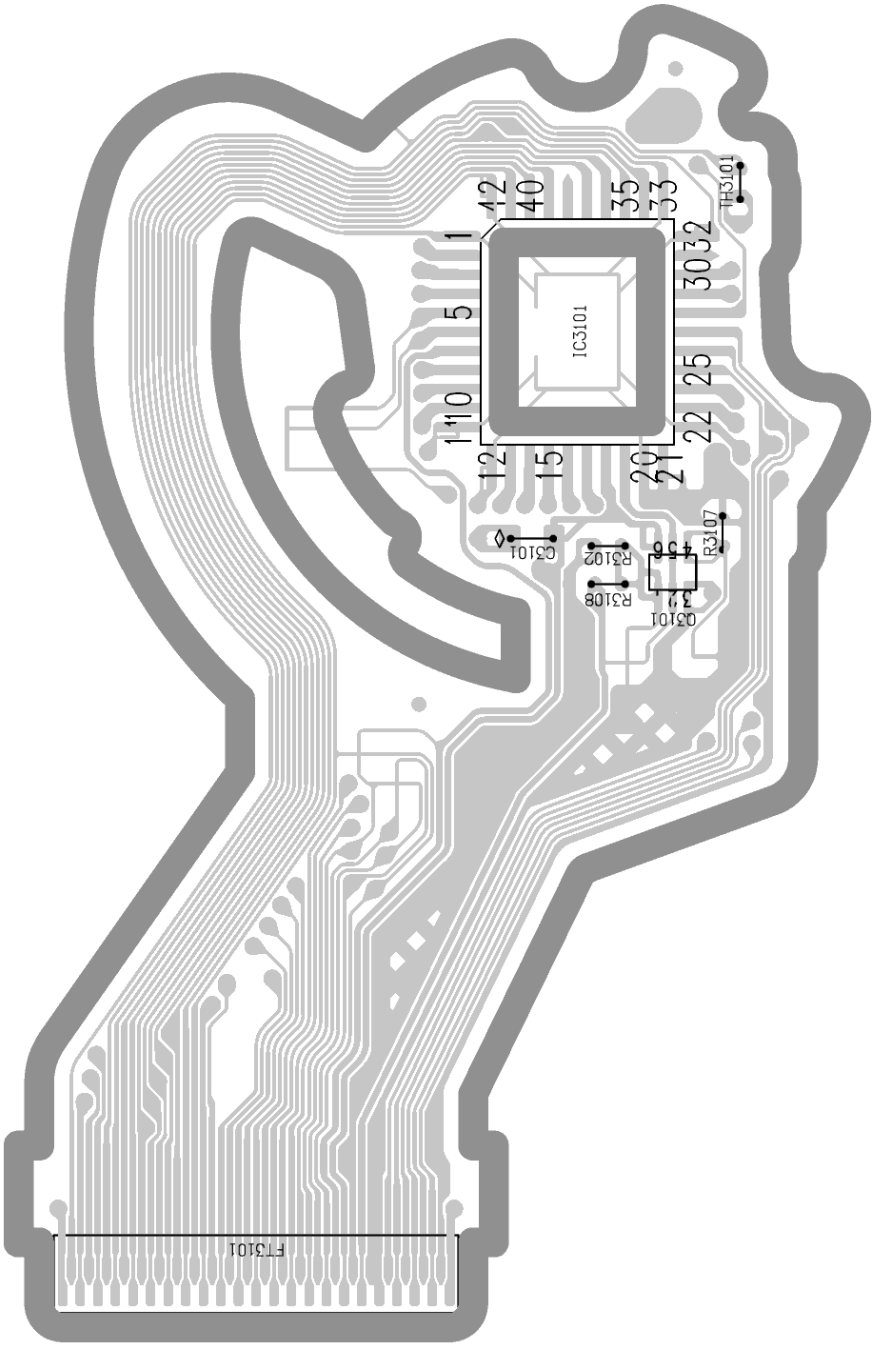
Model No. : DMC-FH8/FS45 Flash P.C.B. (Foil Side)



Model No. : DMC-FH8/FS45 CCD Flex P.C.B. (Component Side)



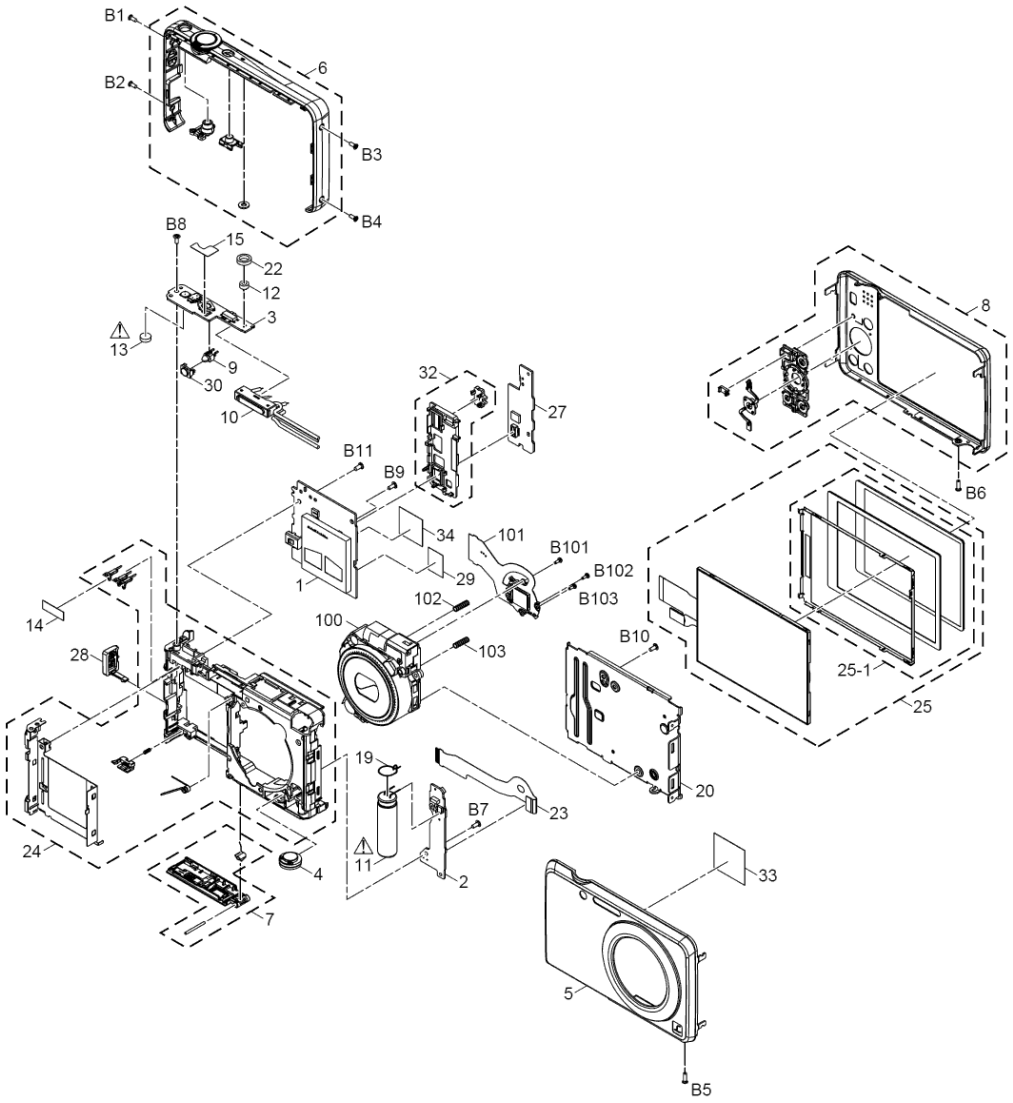
Model No. : DMC-FH8/FS45 CCD Flex P.C.B. (Foil Side)



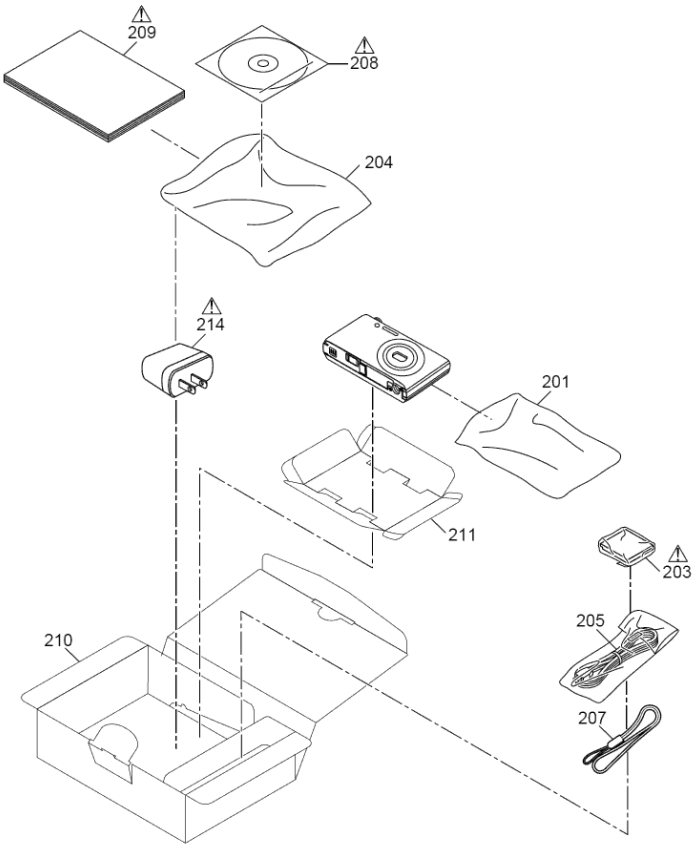
Model No. : DMC-FH8/FS45 Parts List

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	
	C7101	F1J0J1060009	C.CAPACITOR CH 6.3V 10U	1	
	C7102	F1G1A1040006	C.CAPACITOR CH 10V 0.1U	1	
	C7103	F1G1A1040006	C.CAPACITOR CH 10V 0.1U	1	
	C7104	F1G1A1040006	C.CAPACITOR CH 10V 0.1U	1	
	C7105	F1G1A1040006	C.CAPACITOR CH 10V 0.1U	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.
	D9500	B3AAB0000343	LED	1	E.S.D.
⚠	F8001	ERBRE1R25V	FUSE 32V 1.25A	1	
	FP8001	K1MY14BA0370	CONNECTOR 14P	1	
	IC7101	EWTS9PSL1A	IC	1	E.S.D.,[SPC]
	IC8100	C0ZBZ0001938	IC	1	E.S.D.
	L8001	G5F1A0000026	CHIP INDUCTOR	1	
	LB6301	J0JCC0000415	FILTER	1	
	PP9501	K1KY16AA0749	CONNECTOR 16P	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	ERJ2GEJ470X	M.RESISTOR CH 1/16W 47	1	
	R6337	D0GB220JA065	CHIP RESISTOR	1	
	R6338	D0GB220JA065	CHIP RESISTOR	1	
	R6339	D0GA512JA023	CHIP RESISTOR	1	
	R6352	D0GA103JA023	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	
	R9502	D0GA103JA023	CHIP RESISTOR	1	
	R9511	D0GA242JA023	CHIP RESISTOR	1	
	R9512	D0GA392JA023	CHIP RESISTOR	1	
	R9513	D0GA752JA023	CHIP RESISTOR	1	
	R9514	D0GA182JA023	CHIP RESISTOR	1	
	S6301	K0F212A00003	SWITCH	1	
	S6302	K0D112B00145	SWITCH	1	
	S6303	K0L1CB000003	SWITCH	1	
	S6304	K0F111A00581	SWITCH	1	
	S9501	K0F111A00581	SWITCH	1	
	S9502	K0F111A00581	SWITCH	1	
	S9503	K0F111A00581	SWITCH	1	
	S9504	K0F111A00581	SWITCH	1	
	S9505	K0F111A00581	SWITCH	1	
	S9506	K0F111A00581	SWITCH	1	
	S9507	K0F111A00581	SWITCH	1	
	S9508	K0F111A00581	SWITCH	1	
	S9511	K0D112B00145	SWITCH	1	
	T8001	G5DYA0000135	TRANSFORMER	1	
	TH3101	D4CC11030013	NTC THERMISTORS	1	
	VA6001	D4ED18R00008	VARISTOR	1	
	VA8004	D4ED16R80001	CHIP VARISTOR	1	

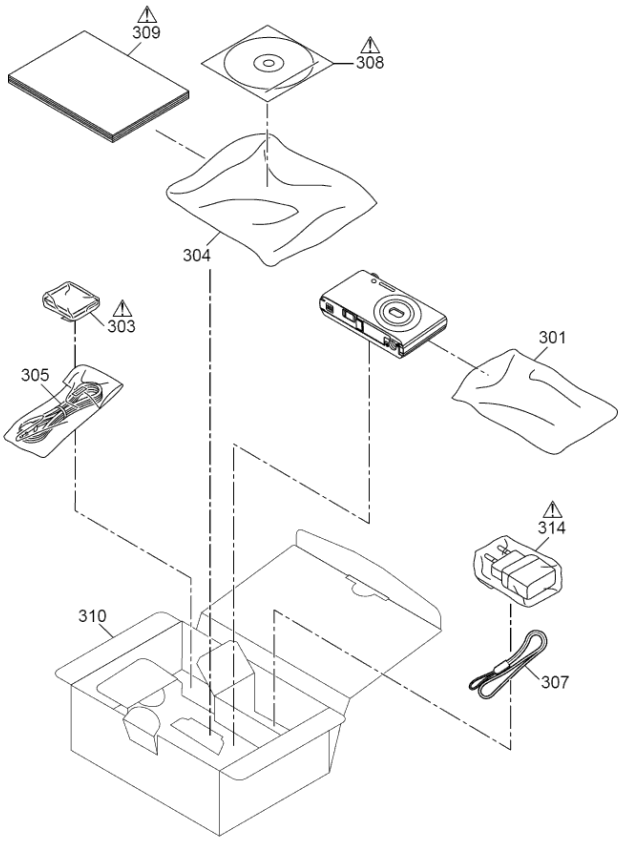
Model No. : DMC-FH8/FS45 Frame and Casing Section



Model No. : DMC-FH8/FS45 Packing Parts and Accessories Section (1)



Model No. : DMC-FH8/FS45 Packing Parts and Accessories Section (2)



Model No. : DMC-FH8/FS45 Parts List

Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
	1	VEP56147A	MAIN P.C.B.	1	E.S.D.
	2	VEP58165A	FLASH P.C.B.	1	(RTL) E.S.D.
	3	VEP58164A	TOP P.C.B.	1	(RTL)
	4	L0AA01A00102	SPEAKER	1	
	5	VYK5R15	FRONT CASE UNIT	1	P-S
	5	VYK5R10	FRONT CASE UNIT	1	P-K
	5	VYK5R64	FRONT CASE UNIT	1	P-V
	5	VYK5R06	FRONT CASE UNIT	1	PC-K,PU-K,GC-K,GF-K,GA-K, GK-K, GN-K, EG -K, EP-K, EF-K, EB-K,EE-K
	5	VYK5R33	FRONT CASE UNIT	1	PC-V,PU-V,GC-V,GF-V,GA-V, GN-V,EG-V,EP -V,EF-V,EB-V, EE-V
	5	VYK5R19	FRONT CASE UNIT	1	PU-S,GC-S,GF-S,GA-S,GK-S, GN-S,EG-S,EP -S,EB-S
	5	VYK5R24	FRONT CASE UNIT	1	(-R)
	5	VYK5H82	FRONT CASE UNIT	1	(-N)
	6	VYK5H84	CENTER ORNAMENT UNIT	1	FH8
	6	VYK5Q95	CENTER ORNAMENT UNIT	1	FS45
	7	VYK5R17	BATTERY DOOR UNIT	1	(-S)
	7	VYK5R08	BATTERY DOOR UNIT	1	(-K)
	7	VYK5R35	BATTERY DOOR UNIT	1	(-V)
	7	VYK5R26	BATTERY DOOR UNIT	1	(-R)
	7	VYK5H83	BATTERY DOOR UNIT	1	(-N)
	8	VYK5R16	REAR CASE UNIT	1	(-S)
	8	VYK5R07	REAR CASE UNIT	1	(-K)
	8	VYK5R34	REAR CASE UNIT	1	(-V)
	8	VYK5R25	REAR CASE UNIT	1	(-R)
	8	VYK5M70	REAR CASE UNIT	1	(-N)
	9	B3ADB0000170	AF LED	1	E.S.D.,(D6301)
	10	EFN-AMCJ5ZD	FLASH UNIT	1	
⚠	11	F2A2F6000007	E.CAPACITOR	1	(C8003)
	12	L0CBAY000093	MIC UNIT	1	(M6301)
⚠	13	ML-421S/DN	BUTTON BATTERY	1	(B6301), [ENERGY]
	14	VGQ1D61	TERMINAL SHEET	1	
	15	VGQ1C21	TOP P.C.B. SHEET	1	
	19	VMB4452	EARTH SPRING	1	(ET8003)
	20	VMP0C03	FRAME PLATE	1	
	22	VMT2136	MIC DUMPER	1	
	23	VWJ2325	FLASH FPC	1	
	24	VYK5H85	FRAME UNIT	1	
	25	VYK5M72	LCD UNIT	1	
	25-1	VYQ7848	LCD PANEL UNIT	1	
	27	VEP50097A	SUB P.C.B.	1	(RTL) E.S.D.
	28	VKF4988	JACK DOOR	1	
	29	VGQ1D49	FPC TAPE	1	
	30	VGL1365	AF PANEL LIGHT	1	
	32	VYQ7337	MODE KNOB UNIT	1	
	33	VMT2137	IRIS DUMPER	1	
	34	VGQ0V91	DPR SHEET	1	
	100	VXW1375	LENS UNIT(W/O CCD)	1	(-S)
	100	VXW1379	LENS UNIT(W/O CCD)	1	(-V)
	100	VXW1378	LENS UNIT(W/O CCD)	1	(-R)
	100	VXW1376	LENS UNIT(W/O CCD)	1	(-N)
	100	VXW1377	LENS UNIT(W/O CCD)	1	(-K)
	101	VEK0S61	CCD UNIT	1	
	102	VMB4580	CCD SPRING	1	
	103	VMB4580	CCD SPRING	1	
	201	VPF1372-A	CAMERA BAG	1	P,PC,PU
⚠	203	-----	BATTERY	1	P,PC,PU
	204	VPF1378	BAG, POLYETHYLENE	1	P,PC,PU
	205	K1HY08YY0015	USB CABLE W/PLUG	1	P,PC,PU
	207	VFC4297-B	HAND STRAP	1	P,PC,PU
⚠	208	VFF0940-S	CD-ROM (SOFT/OWNER'S MANUAL)	1	P,PC,PU [SPC] See "Notes"

Model No. : DMC-FH8/FS45 Parts List

Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
⚠	209	VQT3Z30	BASIC O/I (ENGLISH/SPANISH)	1	P
⚠	209	VQT3Z31	BASIC O/I (ENGLISH/CANADIAN FRENCH)	1	PC
⚠	209	VQT3Z32	BASIC O/I (SPANISH/PORTUGUESE)	1	PU
	210	VYQ7577	PACKING CASE	1	P-S
	210	VYQ7571	PACKING CASE	1	P-K,PC-K
	210	VYQ7597	PACKING CASE	1	P-V,PC-V
	210	VYQ7578	PACKING CASE	1	PU-S
	210	VYQ7572	PACKING CASE	1	PU-K
	210	VYQ7591	PACKING CASE	1	PU-R
	210	VYQ7598	PACKING CASE	1	PU-V
	211	VPN7248	CUSHION	1	P,PC,PU
⚠	214	VSK0768	AC ADAPTOR	1	P,PC,PU
	301	VPF1372-A	CAMERA BAG	1	(EXECT P,PC,PU)
⚠	303	-----	BATTERY	1	(EXECT P,PC,PU)
	304	VPF1378	BAG, POLYETHYLENE	1	(EXECT P,PC,PU)
	305	K1HY08YY0015	USB CABLE W/PLUG	1	(EXECT P,PC,PU)
	307	VFC4297-B	HAND STRAP	1	(EXECT P,PC,PU)
⚠	308	VFF0944-S	CD-ROM (SOFT/OWNER'S MANUAL)	1	GF,GA,GN [SPC] See "Notes"
⚠	308	VFF0946-S	CD-ROM (SOFT/OWNER'S MANUAL)	1	GK [SPC] See "Notes"
⚠	308	VFF0941-S	CD-ROM (SOFT/OWNER'S MANUAL)	1	EG [SPC] See "Notes"
⚠	308	VFF0942-S	CD-ROM (SOFT/OWNER'S MANUAL)	1	EP,EF,EB [SPC] See "Notes"
⚠	308	VFF0943-S	CD-ROM (SOFT/OWNER'S MANUAL)	1	EE [SPC] See "Notes"
⚠	308	VFF0947-S	CD-ROM (SOFT/OWNER'S MANUAL)	1	GC [SPC] See "Notes"
⚠	309	VQT3Z44	BASIC O/I (ENGLISH/CHINESE(TRADITIONAL))	1	GF,GA,GC
⚠	309	VQT3Z45	BASIC O/I (ARABIC/PERSIAN)	1	GF,GC
⚠	309	VQT3Z46	BASIC O/I (VIETNAMESE)	1	GA
⚠	309	VQT3Z48	BASIC O/I (CHINESE(SIMPLIFIED))	1	GK
⚠	309	VQT3Z49	BASIC O/I (ENGLISH)	1	GN
⚠	309	VQT3Z34	BASIC O/I (GERMAN/FRENCH)	1	EG
⚠	309	VQT3Z35	BASIC O/I (ITALIAN/DUTCH)	1	EG
⚠	309	VQT3Z36	BASIC O/I (SPANISH/PORTUGUESE)	1	EG
⚠	309	VQT3Z37	BASIC O/I (TURKISH)	1	EG
⚠	309	VQT3Z38	BASIC O/I (SWEDISH/DANISH)	1	EP
⚠	309	VQT3Z39	BASIC O/I (POLISH/CZECH)	1	EP
⚠	309	VQT3Z40	BASIC O/I (HUNGARIAN/FINNISH)	1	EP
⚠	309	VQT3Z41	BASIC O/I (FRENCH)	1	EF
⚠	309	VQT3Z42	BASIC O/I (ENGLISH)	1	EB
⚠	309	VQT3Z43	BASIC O/I (RUSSIAN/UKRAINIAN)	1	EE
	310	VYQ7586	PACKING CASE	1	GA-N,GN-N
	310	VYQ7574	PACKING CASE	1	GA-K,GN-K
	310	VYQ7581	PACKING CASE	1	GF-S
	310	VYQ7587	PACKING CASE	1	GF-N
	310	VYQ7575	PACKING CASE	1	GF-K
	310	VYQ7594	PACKING CASE	1	GF-R
	310	VYQ7601	PACKING CASE	1	GF-V
	310	VYQ7580	PACKING CASE	1	GA-S,GN-S
	310	VYQ7593	PACKING CASE	1	GA-R,GN-R
	310	VYQ7600	PACKING CASE	1	GA-V,GN-V
	310	VYQ7582	PACKING CASE	1	GK-S
	310	VYQ7588	PACKING CASE	1	GK-N
	310	VYQ7576	PACKING CASE	1	GK-K
	310	VYQ7595	PACKING CASE	1	GK-R
	310	VYQ7579	PACKING CASE	1	EG-S,EP-S,EB-S
	310	VYQ7585	PACKING CASE	1	EG-N,EP-N,EF-N,EB-N
	310	VYQ7573	PACKING CASE	1	EG-K,EP-K,EF-K,EB-K,EE-K
	310	VYQ7592	PACKING CASE	1	EG-R,EF-R,EB-R,EE-R
	310	VYQ7599	PACKING CASE	1	EG-V,EP-V,EF-V,EB-V,EE-V
	310	VPK5339	PACKING CASE	1	GC-S [SPC]
	310	VPK5340	PACKING CASE	1	GC-N [SPC]
	310	VPK5338	PACKING CASE	1	GC-K [SPC]
	310	VPK5341	PACKING CASE	1	GC-R [SPC]
	310	VPK5342	PACKING CASE	1	GC-V [SPC]

Model No. : DMC-FH8/FS45 Parts List

Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
⚠	314	VSK0772	AC ADAPTOR	1	GF,GA,EG,EP,EF,EE
⚠	314	VSK0770	AC ADAPTOR	1	GK
⚠	314	VSK0776	AC ADAPTOR	1	GN
⚠	314	VSK0775	AC ADAPTOR	1	EB,GC
	B1	VHD2205	SCREW	1	P,PC,PU,GF,GA,GK,GN,EG,EP, EF,EB,EE
	B2	VHD2205	SCREW	1	
	B3	VHD2205	SCREW	1	
	B4	VHD2205	SCREW	1	
	B5	VHD2290	SCREW	1	P,PC,PU,GF,GA,GK,GN,EG,EP, EF,EB,EE
	B6	VHD2290	SCREW	1	
	B7	VHD1759	SCREW	1	
	B8	VHD1759	SCREW	1	
	B9	VHD1759	SCREW	1	
	B10	VHD1759	SCREW	1	
	B11	VHD2301-A	SCREW	1	
	B101	VHD2388	SCREW	1	
	B102	VHD2388	SCREW	1	
	B103	VHD2388	SCREW	1	