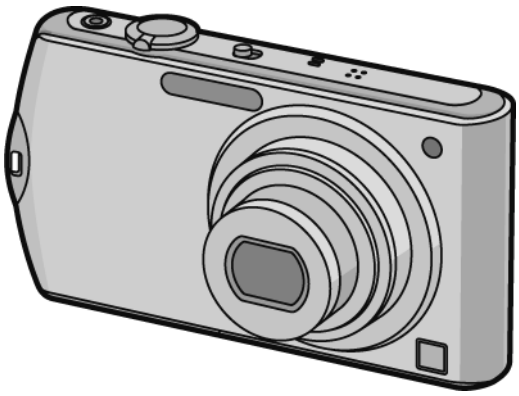
ORDER NO. DSC1007039CE
B26

Service Manual

Digital Camera

LUMIX



Model No. DMC-FX70EB
DMC-FX70EE
DMC-FX70EF
DMC-FX70EG
DMC-FX70EP
DMC-FX70SG
DMC-FX75P
DMC-FX75PU
DMC-FX75GC
DMC-FX75GD
DMC-FX75GH
DMC-FX75GK
DMC-FX75GN
DMC-FX75GT

Vol. 1

Colour

[DMC-FX70]
(S).....Silver Type (only EG/SG)
(K).....Black Type
(A).....Blue Type (only SG)
(N).....Gold Type (only SG)
(P).....Pink Type (only SG)

[DMC-FX75]
(S).....Silver Type (only P/GC/GH/GK)
(K).....Black Type
(N).....Gold Type (only GC/GD/GH/GT)
(P).....Pink Type (except P/PU/GN)
(V).....Violet Type (only PU/GK/GT)

Panasonic

⚠ 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

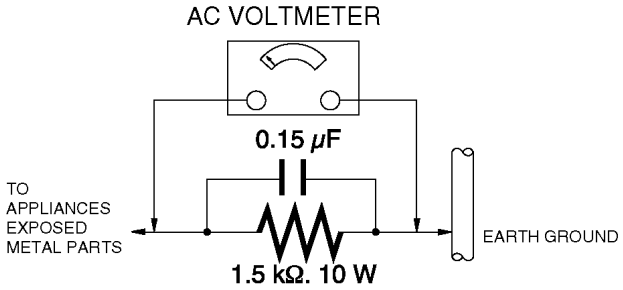


Figure. 1

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

CAUTION:

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

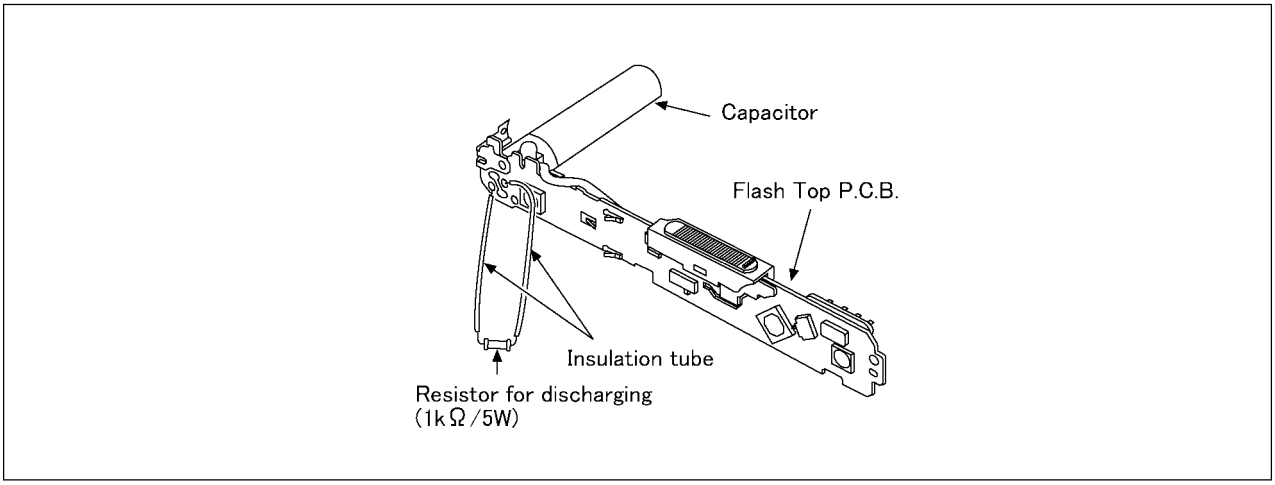


Fig. F1

2 Warning

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

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

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

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

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

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

ENGLISH

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

FRANÇAIS

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

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

2.3.1. Information for Your Safety

IMPORTANT

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

WARNING

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

CAUTION

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

FOR YOUR SAFETY

DO NOT REMOVE THE OUTER COVER

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

2.3.2. Caution for AC Mains Lead

For your safety, please read the following text carefully.

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

ASTA mark	BSI mark

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.

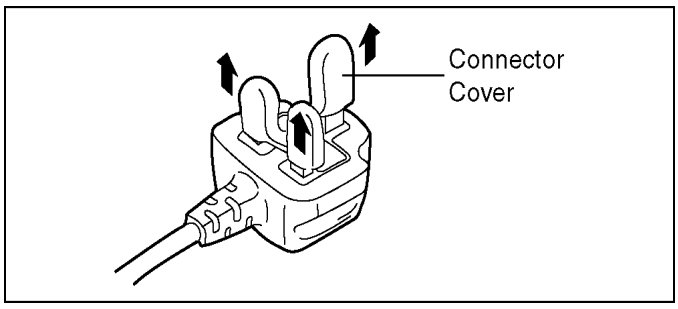
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

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.

Earth Symbol	⏚

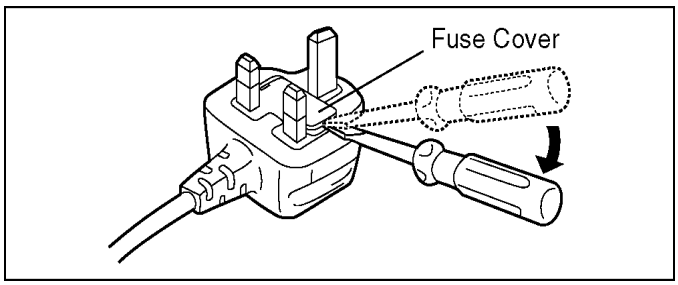
2.3.2.2. Before Use

Remove the Connector Cover as follows.

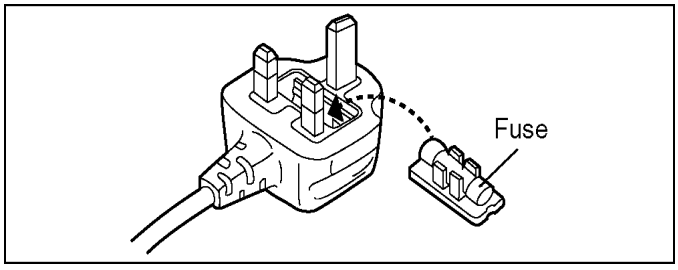


2.3.2.3. How to Replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



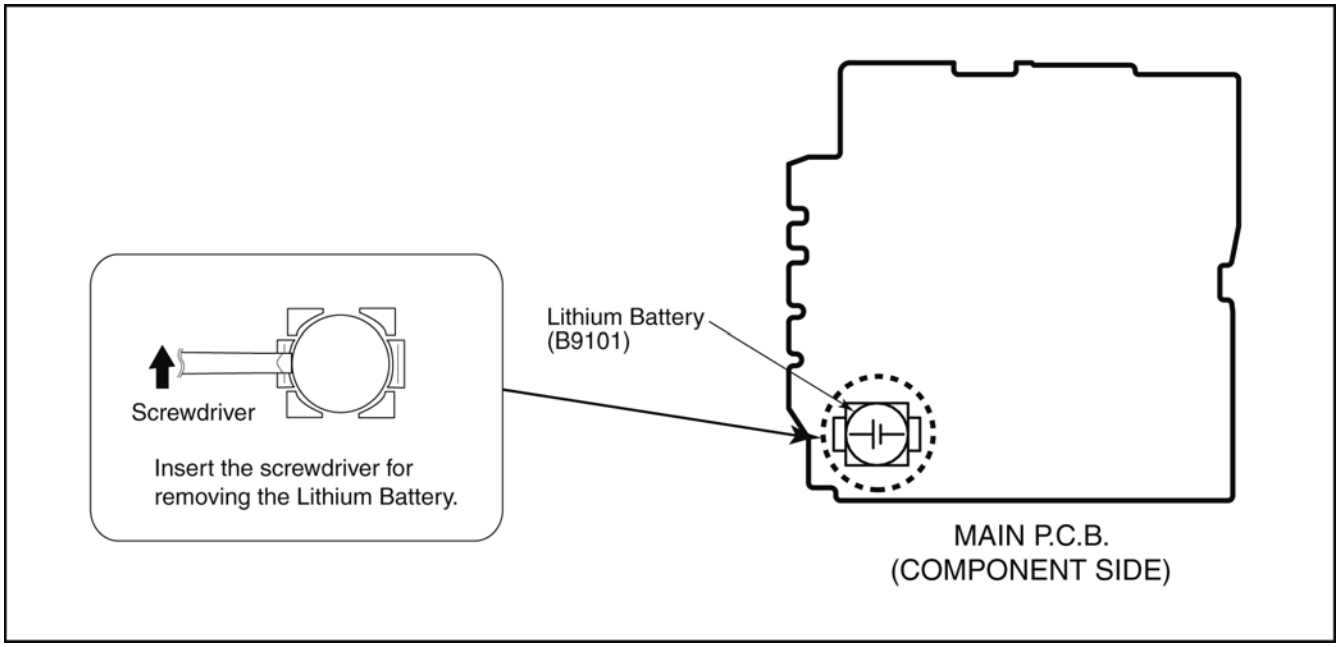
2. Replace the fuse and attach the Fuse cover.



2.4. How to Replace the Lithium Battery

2.4.1. Replacement Procedure

1. Remove the MAIN P.C.B.. (Refer to Disassembly Procedures.)
2. Remove the Lithium battery (Ref. No. “B9101” at component side of MAIN P.C.B.) and then replace it into new one.



NOTE:

This Lithium battery is a critical component.
(Type No.: ML421 **Manufactured by Energy Company, Panasonic Corporation.**)
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in requirement designed specifically for its use.
Replacement batteries must be of same type and manufacture.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the old battery or re-use it for any other purpose.
It should be disposed of in waste products destined for burial rather than incineration.

(For English)

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer’s instructions.

(For German)

ACHTUNG

Explosionsgefahr bei falschem Anbringen der Batterie. Ersetzen Sie nur mit einem äquivalentem vom Hersteller empfohlenem Typ.
Behandeln Sie gebrauchte Batterien nach den Anweisungen des Herstellers.

(For French)

MISE EN GARDE

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

NOTE:

Above caution is applicable for a battery pack which is for DMC-FX70, FX75 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. About lens block

- The image sensor (CCD) unit which are connected to the lens unit with 3 screws. These screws are locked with the screw locking glue, after performing the Optical tilt adjustment.
  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.

3.3. 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. Important Notice 1:(Other than U.S.A. and Canadian Market)

1. The service manual does not contain the following information because of issues servicing to component level without necessary equipment/facilities.
   a. Schematic diagram, Block Diagram and P.C.B. layout of MAIN P.C.B..
   b. Parts list for individual parts for MAIN P.C.B..
   When a part replacement is required for repairing MAIN P.C.B., replace as an assembled parts. (MAIN P.C.B.)
2. The following category is/are recycle module part. please send it/them to Central Repair Center.
   - MAIN P.C.B. (VEP56110A: P/PU/GC/GD/GT/GK/EE/GN/SG/GH): Excluding replacement of Lithium Battery.
   - MAIN P.C.B. (VEP56110B: EG/EF/EB/EP): Excluding replacement of Lithium Battery.

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

There are nine kinds of DMC-FX70/FX75, regardless of the colours.

- a) DMC-FX70 (Japan domestic model), DMC-FX70SG
- b) DMC-FX75P
- c) DMC-FX70EB/EF/EG/EP
- d) DMC-FX70EE
- e) DMC-FX75GT
- f) DMC-FX75GK
- g) DMC-FX75GD
- h) DMC-FX75GN
- i) DMC-FX75PU/GC/GH

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

3.5.1. 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-FX70 (Japan domestic model), DMC-FX70SG

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

b) DMC-FX75P

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

c) DMC-FX70EB/EF/EG/EP

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

d) DMC-FX70EE

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

e) DMC-FX75GT

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

f) DMC-FX75GK

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

g) DMC-FX75GD

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

h) DMC-FX75GN

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

i) DMC-FX75PU/GC/GH

The nameplate for these models do not show any above Safety registration mark.

NOTE:

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

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

3.5.2. INITIAL SETTINGS:

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

1. IMPORTANT NOTICE:

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

CAUTION 1:(INITIAL SETTINGS)

---AFTER REPLACING THE MAIN P.C.B. and/or FLASH-ROM ---

[Except "EG, EF, EB and EP" models : (VEP56110A is used as a Main P.C.B.)]

*.The model suffix can be chosen **JUST ONE TIME.**
(Effective model suffix : " P/PU/GD/GC/GT/GK/EE/GN/SG/GH and NONE (JAPAN)")

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

[Only for "EG, EF, EB and EP" models : (VEP56110B is used as a Main P.C.B.)]

*.From the beginning, only "EG, EF, EB and EP" are displayed as model suffix lists, and these are displayed from the second times as well.

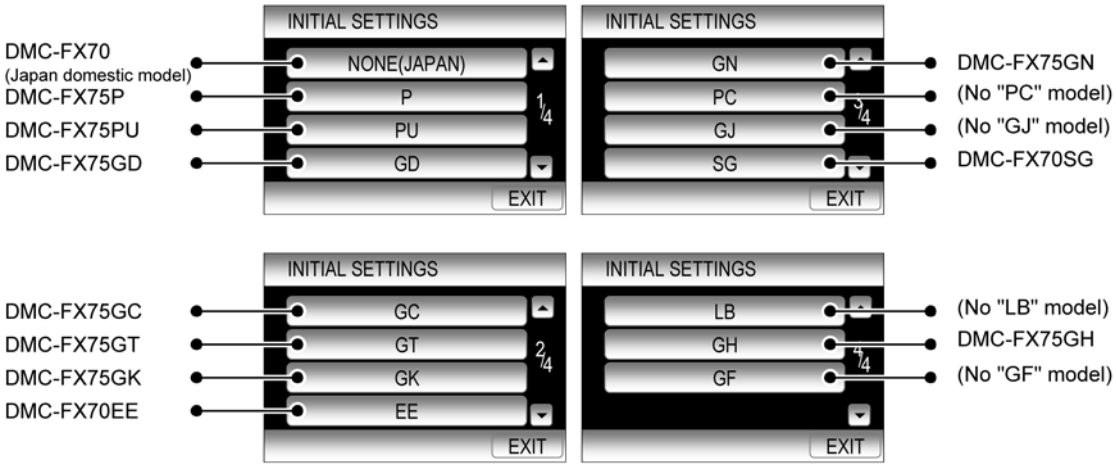
CAUTION 2:(Stored picture image data in the unit)

This unit employs "Built-in Memory" for picture image data recording.(Approx.40MB)
After proceeding "INITIAL SETTINGS", the picture image data stored in the unit is erased.

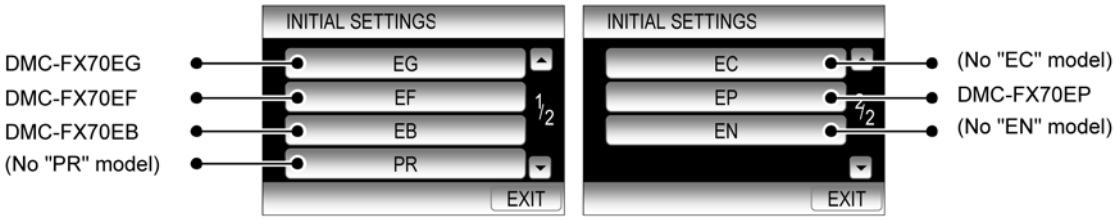
2. PROCEDURES:

- Precautions: Read the above "CAUTION 1" and "CAUTION 2", carefully.
- Preparation:
  - 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 then touch the [NORMAL PICTURE] on the touch panel.
    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]/[PLAYBACK] selector switch to “[REC] (Camera mark)”.
  While keep pressing “[WIDE] of Zoom lever” and [MODE] button simultaneously, turn the Power on.
- **Step 2. The cancellation of “INITIAL SETTINGS”:**
  Set the [REC]/[PLAYBACK] selector switch to “[PLAYBACK]”.
  Press “[WIDE] of Zoom lever” and [MODE] button simultaneously, then turn the Power off.
- **Step 3. Turn the Power on:**
  Set the [REC]/[PLAYBACK] selector switch to “[REC] (Camera mark)”, and then turn the Power on.
- **Step 4. Display the INITIAL SETTING:**
  While keep pressing “[WIDE] of Zoom lever” and [MODE] 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.]
[Except “EG, EF, EB and EP” models: (VEP56110A is used as a Main P.C.B.]
When MAIN P.C.B. has just been replaced, all of the model suffix is displayed as follows. (Four pages in total)

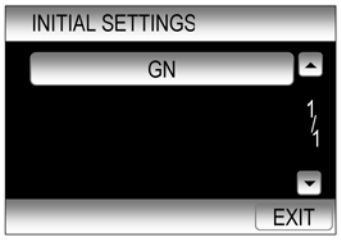


[Only “EG, EF, EB and EP” models: (VEP56110B is used as a Main P.C.B.]
When MAIN P.C.B. has just been replaced, only 7 model suffix are displayed as follows. (Two pages in total)

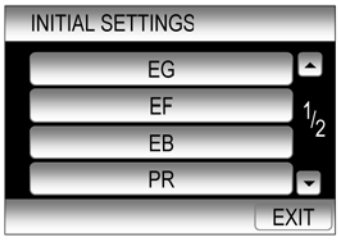


[CASE 2. Other than “After replacing MAIN P.C.B.”]

<Other than “EG/EF/EB/EP” models>

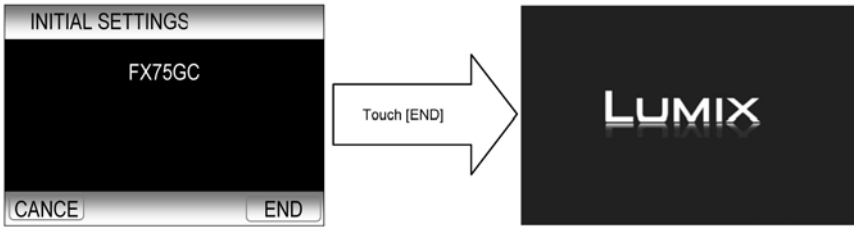


<Only “EG/EF/EB/EP” models>



- **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 touch the [UP] / [DOWN] on the touch panel.

- **Step 6. Set the model suffix in “INITIAL SETTINGS”:**
- The only set area is displayed, and then touch the [END] on the touch panel after confirmation.
  (The unit is powered off automatically.)



• **Step 7. CONFIRMATION:**
Confirm the display of “PLEASE SET THE CLOCK” in concernd language when the unit is turned on again.
When the unit is connected to PC with USB cable, it is detected as removable media.

1) As for your reference, major default setting condition is as shown in the following table.

• **Default setting (After “INITIAL SETTINGS”)**

	MODEL	VIDEO OUTPUT	LANGUAGE	DATE	REMARKS
a)	DMC-FX70 (Japan domestic model)	NTSC	Japanese	Year/Month/Date	
b)	DMC-FX75P	NTSC	English	Month/Date/Year	
c)	DMC-FX75PU	NTSC	English	Month/Date/Year	
d)	DMC-FX75GD	NTSC	Korean	Year/Month/Date	
e)	DMC-FX75GC	PAL	English	Date/Month/Year	
f)	DMC-FX75GT	NTSC	Chinese (traditional)	Year/Month/Date	
g)	DMC-FX75GK	PAL	Chinese (simplified)	Year/Month/Date	
h)	DMC-FX70EE	PAL	Russian	Date/Month/Year	
i)	DMC-FX75GN	PAL	English	Date/Month/Year	
j)	DMC-FX70SG	PAL	English	Date/Month/Year	
k)	DMC-FX75GH	PAL	English	Date/Month/Year	
l)	DMC-FX70EG	PAL	English	Date/Month/Year	
m)	DMC-FX70EF	PAL	French	Date/Month/Year	
n)	DMC-FX70EB	PAL	English	Date/Month/Year	
o)	DMC-FX70EP	PAL	English	Date/Month/Year	

4 Specifications

Digital Camera: Information for your safety

Power Source:	DC 5.1 V
Power Consumption:	1.2 W (When recording) 0.6 W (When playing back)

Camera effective pixels: 14,100,000 pixels
Image sensor: 1/2.33″ CCD, total pixel number 14,500,000 pixels, Primary color filter
Lens: Optical 5×zoom, f=4.3 mm to 21.5 mm (35 mm film camera equivalent: 24 mm to 120 mm)/F2.2 to F5.9
Digital zoom: Max. 4×
Extended optical zoom: Max. 10.5×
Focus range: Normal: 50 cm (1.64 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞
Macro/Intelligent Auto:
3 cm (0.10 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞
Scene Mode: There may be differences in the above settings.
Shutter system: Electronic shutter+Mechanical shutter
Burst recording
Burst speed: Approx. 1.8 pictures/second
Number of recordable pictures: Max. 5 pictures (Standard), max. 3 pictures (Fine).
Hi-speed burst
Burst speed: Approx. 10 pictures/second (Speed priority)
Approx. 6 pictures/second (Image priority)
[3M (4:3), 2.5M (3:2), 2M (16:9) or 2.5M (1:1) is selected as the picture size.]
Number of recordable pictures: Approx. 15 to 100
Shutter speed: 8 seconds to 1/2000th of a second
[STARRY SKY] Mode: 15 seconds, 30 seconds, 60 seconds
Exposure (AE): Program AE
Exposure compensation (1/3 EV Step, −2 EV to +2 EV)
Metering mode: Multiple
LCD monitor: 3.0″ TFT LCD
(Approx. 230,000 dots) (field of view ratio about 100%)
Touch panel
Flash: Flash range: [ISO AUTO]
Approx. 60 cm (1.97 feet) to 7.4 m (24.2 feet) (Wide)
Microphone: Monaural
Speaker: Monaural
Recording media: Built-in Memory (Approx. 40 MB)/SD Memory Card/SDHC Memory Card/SDXC Memory Card

Recording file format
Still Picture: JPEG (based on “Design rule for Camera File system”, based on “Exif 2.3” standard)/DPOF corresponding
Pictures with audio: JPEG (based on “Design rule for Camera File system”, based on “Exif 2.3” standard)+“QuickTime”
Motion pictures with audio: AVCHD Lite/QuickTime Motion JPEG
Interface
Digital: “USB 2.0” (High Speed)
Analog video/ audio: [for NTSC areas]
NTSC
Audio line output (monaural)
[for PAL areas]
NTSC/PAL Composite (Switched by menu)
Audio line output (monaural)
Terminal
[AV OUT/DIGITAL]: Dedicated jack (8 pin)
[HDMI]: MiniHDMI TypeC
Dimensions: Approx. 102.5 mm (W)×55.0 mm (H)×22.8 mm (D) [4.04″ (W)×2.17″(H)×0.9″ (D)]
(excluding the projecting parts)
Mass (weight): Approx. 165 g/0.36 lb (with card and battery)
Approx. 144 g/0.32 lb (excluding card and battery)
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:	110 V to 240 V ~ 50/60 Hz, 0.2 A
Output:	4.2 V ⎓ 0.65 A

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

Voltage/capacity:	3.6 V/940 mAh

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

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

Motion pictures

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

- Motion pictures can be recorded continuously for up to 29 minutes 59 seconds.

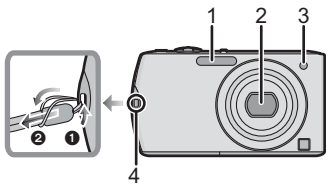
(Except "EB/EG/EF/EP" models:)

- Motion picture recorded continuously in [MOTION JPEG] is up to 2 GB. Only the maximum recordable time for 2 GB is displayed on the screen.

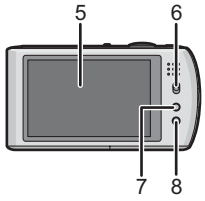
5 Location of Controls and Components

Names of the Components

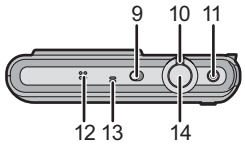
1 Flash
2 Lens
3 Self-timer indicator
AF Assist Lamp
4 Hand strap eyelet
• Be sure to attach the hand strap when using the camera to ensure that you will not drop it.



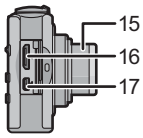
5 Touch panel/LCD monitor
6 [REC]/[PLAYBACK] selector switch
7 [MODE] button
8 [MENU] button



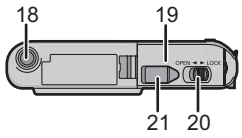
9 Camera ON/OFF switch
10 Zoom lever
11 Motion picture button
12 Speaker
13 Microphone
14 Shutter button



15 Lens barrel
16 [HDMI] socket
17 [AV OUT/DIGITAL] socket



18 Tripod receptacle
• When you use a tripod, make sure the tripod is stable when the camera is attached to it.
19 Card/Battery door
20 Release lever



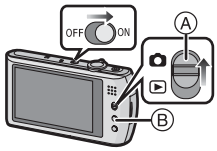
21 DC coupler cover
• When using an AC adaptor, ensure that the Panasonic DC coupler and AC adaptor are used.
• Always use a genuine Panasonic AC adaptor (DMW-AC5PP; optional).
• We recommend you use a battery with sufficient battery power or the AC adaptor when recording motion pictures.
• If while recording motion pictures using the AC adaptor the power supply is cut off due to a power cut or if the AC adaptor is disconnected etc., the motion picture being recorded will not be recorded.

Mode switching

Selecting the [REC] Mode

1 **Turn the camera on.**

Ⓐ [REC]/[PLAYBACK] selector switch
Ⓑ [MODE] button



2 **Slide the [REC]/[PLAYBACK] selector switch to [📷], and then press [MODE].**

3 **Touch the mode.**

■List of [REC] Modes

iA [INTELLIGENT AUTO]

The subjects are recorded using settings automatically selected by the camera.

[NORMAL PICTURE]

The subjects are recorded using your own settings.

[COSMETIC MODE]

Takes a picture adjusting the skin texture.

SCN [SCENE MODE]

This allows you to take pictures that match the scene being recorded.

About the Battery

• The camera has a function for distinguishing batteries which can be used safely. The dedicated battery supports this function. The only batteries suitable for use with this unit are genuine Panasonic products and batteries manufactured by other companies and certified by Panasonic. (Batteries which do not support this function cannot be used). Panasonic cannot in any way guarantee the quality, performance or safety of batteries which have been manufactured by other companies and are not genuine Panasonic products.

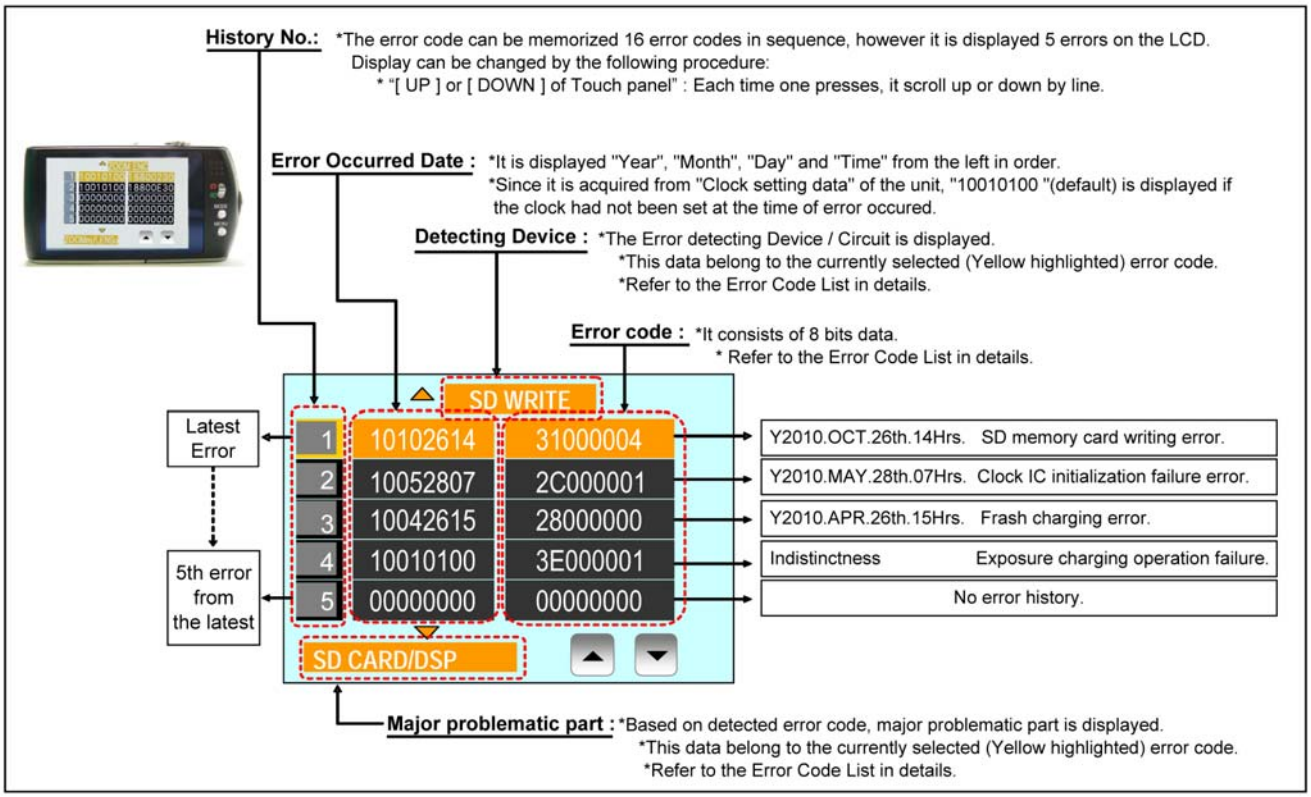
It has been found that counterfeit battery packs which look very similar to the genuine product are made available to purchase in some markets. Some of these battery packs are not adequately protected with internal protection to meet the requirements of appropriate safety standards. There is a possibility that these battery packs may lead to fire or explosion. Please be advised that we are not liable for any accident or failure occurring as a result of use of a counterfeit battery pack. To ensure that safe products are used we would recommend that a genuine Panasonic battery pack is used.

6 Service Mode

6.1. Error Code Memory Function

1. **General description**
   This unit is equipped with history of error code memory function, and can be memorized 16 error codes in sequence from the latest. When the error is occurred more than 16, the oldest error is overwritten in sequence.
   The error code is not memorized when the power supply is shut down forcibly (i.e.,when the unit is powered on by the battery, the battery is pulled out) The error code is memorized to FLASH-ROM when the unit has just before powered off.
2. **How to display**
   The error code can be displayed by ordering the following procedure:

- **Preparation:**
  1. Attach the Battery or AC Adaptor with a DC coupler to the unit.
  NOTE:
  *Since this unit has built-in memory, it can be performed without inserting SD memory card.
  *Set the mode dial to “Normal picture mode”, to display the error code.
- **Step 1. The temporary cancellation of “INITIAL SETTINGS”:**
  Set the [REC]/[PLAYBACK] selector switch to “[REC] (Camera mark)”.
  While keep pressing “[WIDE] of Zoom lever” and [MODE] button simultaneously, turn the Power on.
- **Step 2. Execute the error code display mode:**
  Press the [MOTION PICTURE] button, [MODE] button and [MENU] button simultaneously.
  The display is changed as shown below when the above buttons are pressed simultaneously.
  Normal display → Error code display → Operation history display → Normal display → .....



Example of Error Code Display

• **3. Error Code List**

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

Attribute	Main item	Sub item	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 Unit	OIS X	LENSu NG
				2000	PSD (Y) error. Hall element (Y axis) position detect error in OIS unit. OIS Unit	OIS Y	
				3000	GYRO (X) error. Gyro (IC7301: X axis) detect error on Flash Top P.C.B.. IC7301 (Gyro element) or IC6001 (VENUS HD2)	GYRO X	GYRO NG
				4000	GYRO (Y) error. Gyro (IC9701: Y axis) detect error on Sub Operation FPC P.C.B.. IC9701 (Gyro element) or IC6001 (VENUS HD2)	GYRO Y	
				5000	MREF error (Reference voltage error). IC9101 (SYSTEM) or IC6001 (VENUS HD2)	OIS REF	LENSSd/DSP NG
				6000	Drive voltage (X) error. LENS Unit, LENS flex breaks, IC6001 (VENUS HD2) AD value error, etc.	OISX REF	LENSu/LENS FPC
				7000	Drive voltage (Y) error. LENS Unit, LENS flex breaks, IC6001 (VENUS HD2) AD value error, etc.	OISY REF	
		Zoom		0?10	Collapsible barrel Low detect error (Collapsible barrel encoder always detects Low.) Mechanical lock, FP9002-(45) signal line or IC6001 (VENUS HD2)	ZOOM L	ZOOMm/LENSu
				0?20	Collapsible barrel High detect error (Collapsible barrel encoder always detects High.) Mechanical lock, FP9002-(45) signal line or IC6001 (VENUS HD2)	ZOOM H	
				0?30	Zoom motor sensor error. Mechanical lock, FP9002-(26), (29) signal line or IC6001 (VENUS HD2)	ZOOM ENC	
				0?40	Zoom motor sensor error. (During monitor mode.) Mechanical lock, FP9002-(26), (29) signal line or IC6001 (VENUS HD2)		
				0?50	Zoom motor sensor error. (During monitor mode with slow speed.) Mechanical lock, FP9002-(26), (29) signal line or IC6001 (VENUS HD2)		
		Focus		0?01	HP High detect error (Focus encoder always detects High, and not becomes Low) Mechanical lock, FP9002-(45) signal line or IC6001 (VENUS HD2)	FOCUS L	LENS FPC/DSP
				0?02	HP Low detect error (Focus encoder always detects Low, and not becomes High) Mechanical lock, FP9002-(45) signal line or IC6001 (VENUS HD2)	FOCUS H	
		Lens	18*1	0000	Power ON time out error. Lens drive system	LENS DRV	LENSu
			18*2	0000	Power OFF time out error. Lens drive system		
	Adj. History	OIS	19*0	2000	OIS adj. Yaw direction amplitude error (small)	OIS ADJ	OIS ADJ
				3000	OIS adj. Pitch direction amplitude error (small)		
				4000	OIS adj. Yaw direction amplitude error (large)		
				5000	OIS adj. Pitch direction amplitude error (large)		
				6000	OIS adj. MREF error		
				7000	OIS adj. time out error		
				8000	OIS adj. Yaw direction off set error		
				9000	OIS adj. Pitch direction off set error		
				A000	OIS adj. Yaw direction gain error		
				B000	OIS adj. Pitch direction gain error		
				C000	OIS adj. Yaw direction position sensor error		
				D000	OIS adj. Pitch direction position sensor error		
				E000	OIS adj. other error		
HARD	VENUS A/D	Flash	28*0	0000	Flash charging error. IC6001-(AC16) signal line or Flash charging circuit	STRB CHG	STRB PCB/FPC
	FLASH ROM (EEPRO MArea)	FLASH ROM (EEPRO M Area)	2B*0	0001	EEPROM read error IC6002 (FLASH ROM)	FROM RE	FROM
				0002	EEPROM write error IC6002 (FLASH ROM)	FROM WR	FROM
				0005	Firmware viersion up error Replace the firmware file in the SD memory card.	(No indication)	(No indication)
				0008 0009	SDRAM error SDRAM Mounting defective		
	SYSTEM	RTC	2C*0	0001	SYSTEM IC initialize failure error Communication between IC6001 (VENUS HD2) and IC9101 (SYSTEM)	SYS INIT	MAIN PCB
SOFT	CPU	Reset	30*0	0001 | 0007	NMI reset Non Mask-able Interrupt (30000001-30000007 are caused by factors)	NMI RST	MAIN PCB
	Card	Card	31*0	0001	Card logic error SD memory card data line or IC6001 (VENUS HD2)	SD CARD	SD CARD/DSP
				0002	Card physical error SD memory card data line or IC6001 (VENUS HD2)		
				0004	Write error SD memory card data line or IC6001 (VENUS HD2)	SD WRITE	
			39*0	0005	Format error	INMEMORY	FROM
	CPU, ASIC hard	Stop	38*0	0001	Camera task finish process time out. Communication between Lens system and IC6001 (VENUS HD2)	LENS COM	LENSu/DSP
				0002	Camera task invalid code error. IC6001 (VENUS HD2)	DSP	DSP
				0100	File time out error in recording motion image IC6001 (VENUS HD2)		
				0200	File data cue send error in recording motion image IC6001 (VENUS HD2)		
				0300	Single or burst recording brake time out.		
		Memory area	3A*0	0008	USB work area partitioning failure USB dynamic memory securing failure when connecting	(No indication)	(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 Zoom lens	ZOOM	ZOOMm/LENSu
			35*0	0000 | FFFF	Software error (0-7bit : command, 8-15bit : status)	DSP	DSP
			35*1	0000	Though record preprocessing is necessary, it is not called.		
			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?50"):

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

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

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

NOTE:

The error code can not be initialized.

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

1. **General description**

This unit is equipped with ICS (ICS: Indication of additional Camera Settings when picture was taken) function by playing back the concerned picture on the LCD display.
(This function is achieved by utilizing "maker note" data stored in Exif data area of recorded picture file.)
To proceed failure diagnosis, use this ICS function together with "displaying the recorded picture with picture information " function.

NOTE:

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

2. **How to display**

The ICS data is displayed by ordering the following procedure:

- **Preparation:**

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

NOTE:

Set the mode dial to “Normal picture mode”, to display the ICS data.

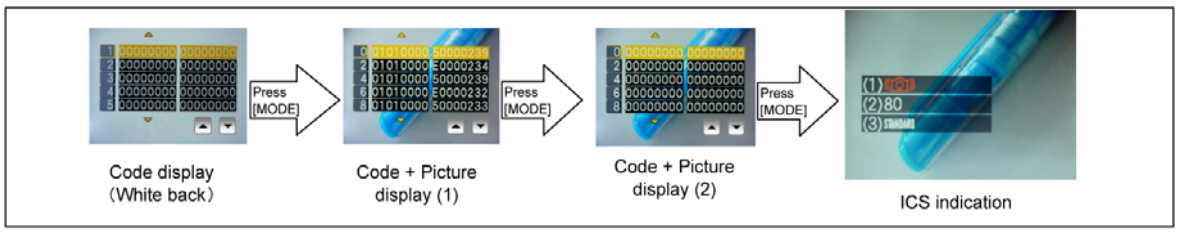
- **Step 1. The temporary cancellation of "INITIAL SETTINGS":**

Set the [REC]/[PLAYBACK] selector switch to “ [REC] (Camera mark)”.
While keep pressing “[WIDE] of Zoom lever” and [MODE] button simultaneously, turn the Power on.

- **Step 2. Execute the ICS display mode:**

Set the [REC]/[PLAYBACK] selector switch to [PLAYBACK].
Select the concerned picture.
Press the [MOTION PICTURE] button, [MODE] button and [MENU] button simultaneously.
Press the [MODE] button, 3 times.
The display condition is changed as shown below when the [MODE] button is pressed.

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



3. **How to read**

(1). Jitter alert was displayed or not:

This part shows that the "Jitter alert" mark was displayed or not when the picture has just before been taken.
+.With "Jitter alert" mark : The "Jitter alert" mark was displayed.
+.Without "Jitter alert" mark: The "Jitter alert "mark was not displayed.
[About "Jitter alert" mark]
Due to lacking the enough light amount etc, shooting condition prone to make a "hand jitter", the "Jitter alert" mark is displayed.
[Reference Guide]
(Applicable settings : Normal picture mode, ISO100, WIDE edge, Flash OFF)
+.The "Jitter alert" mark is displayed when the shutter speed is 1/15th and below.

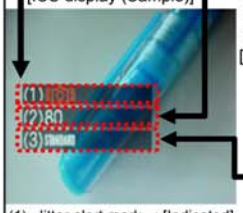
Normal playback screen
(Recorded picture with information)

*In playback mode, the picture information is displayed when pressing the [MODE] button. (It can be confirmed at user as well.)
*Use this indication together with ICS function

(2). ISO Sensitivity Setting condition:

This part shows that the "ISO Sensitivity" setting condition when the picture had been taken.
(Note: The [i ISO] is displayed when the "Intelligent ISO" was selected.)
For instance, when the recorded picture information shows [ISO80], it can be confirmed the ISO setting condition ; [AUTO], [INTELLIGENT ISO] or [ISO 80](Fixed: set by user).
[Point for Confirmation]
*The symptom is "Picture with "hand jitter". Subject is not clearly stopped." in darker scene, does the picture was taken with lower ISO setting mode?
*The symptom is "Noisy picture. Rough picture image" in brighter scene, does the picture was taken with higher ISO setting mode?

[ICS display (Sample)]



(1). Jitter alert mark : [Indicated]
(2). ISO sens. setting : ISO80 (Fixed)
(3). Color mode setting: Standard

(3). Color mode Setting condition:

This part shows that the "Color mode" setting condition when the picture had been taken.
[Point for Confirmation]
*The symptom is "Color is strange. The picture is bluish (Yellowish) ", does the picture was taken with [SEPIA] /[COOL] / [WARM] settings?
NOTE: As for the symptom related with the color, confirm the picture information which is displayed in normal playback screen as well.
(In normal playback screen, the setting condition of "White balance" and "WB Adjustment "can be confirmed.)

[Reference Guide : Settings "When taking picture"]

<ISO SENSITIVITY>

*This allows the sensitivity to light (ISO sensitivity) to be set. Setting to a higher figure enables pictures to be taken even in dark places without the resulting pictures coming out dark.
*In this unit, it can be set one of the [AUTO], [i ISO], [80], [100], [200], [400], [800] and [1600] in "Normal shooting" mode.
*When setting to [AUTO], the ISO sensitivity is automatically adjusted to a maximum of [ISO400] according to the brightness. (It can be adjusted to a maximum of [ISO1600] when using the flash.)
*When setting to [iISO], ISO sensitivity will adjust automatically depending on brightness within the maximum setting of [ISO1600].
*The ISO sensitivity will be set to [AUTO] when recording motion pictures. Also, [ISO LIMIT SET] will not work.
*The higher the value set for the ISO sensitivity, the more the jitter is reduced but the greater theamount of picture noise.
*Depending on the brightness and how fast the subject is moving, jitter may not be avoided even if [iISO] is selected.
*Movements may not be detected when a moving subject is small, when a moving subject is at the edge of the screen or when a subject has moved at the very moment when the shutter button was pressed fully.
*The setting is fixed to [iISO] in the following cases.
-In [SPORTS], [BABY1]/[BABY2], [PET] and [FLASH BURST] in Scene Mode
*To avoid picture noise, we recommend that you either reduce the ISO sensitivity level or set [COLOR MODE] to [NATURAL], and then take pictures.

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

ISO sensitivity	Settings
AUTO	The ISO sensitivity is automatically adjusted according to the brightness.
iSO (Intelligent)	The ISO sensitivity is adjusted according to the movement of the subject and the brightness.
80/100/200/400/800/1600	The ISO sensitivity is fixed to various settings.

<COLOR MODE>

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

[STANDARD]	: This is the standard setting.	[B/W]	: The picture becomes black and white.
[Happy]*1	: Image with enhanced brightness and vividness.	[SEPIA]	: The picture becomes sepia.
[NATURAL]*2	: The picture becomes softer.	[COOL]*2	: The picture becomes bluish.
[VIVID]*2	: The picture becomes sharper.	[WARM]*2	: The picture becomes reddish.

*1 This can be set only when Intelligent Auto Mode is set.
*2 This can be set only during Normal Picture Mode.

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

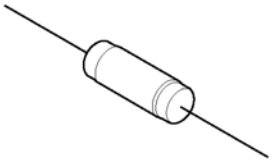
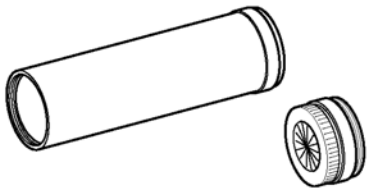
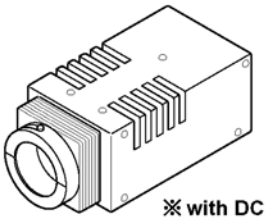
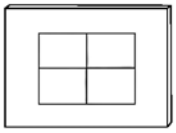
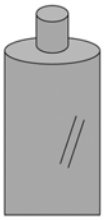
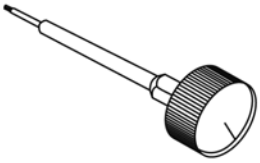
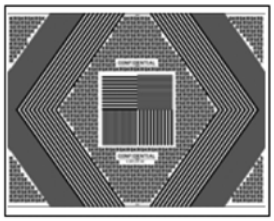
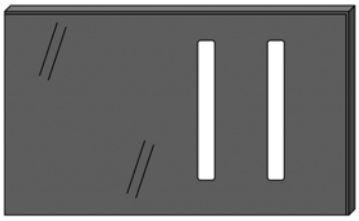
4. **How to exit:**

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

7 Service Fixture & Tools

7.1. Service Fixture and Tools

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

Resistor for Discharging **ERG5SJ102**	**Infinity Lens (with Focus Chart)** **VFK1164TCM02**	**LIGHT BOX** **VFK1164TDVLB**
 **An equivalent type of Resistor may be used.**	 *** VFK1164TCM03 can be used.** *** RFKZ0422 can be used.**	 **※ with DC Cable** *** RFKZ0523 can be used.**
TR Chart RFKZ0443	**Lens Cleaning Kit (BK)** **VFK1900BK**	**Grease (for lens)** **RFKZ0472**
	 *** Only supplied as 10 set/box.**	
Screw locking glue **RFKZ0573**	Driver (for optical axis adjustment) **RFKZ0569**	Optical axis adjustment chart **RFKZ0570**
		
Camera stand **RFKZ0333J**		
		

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

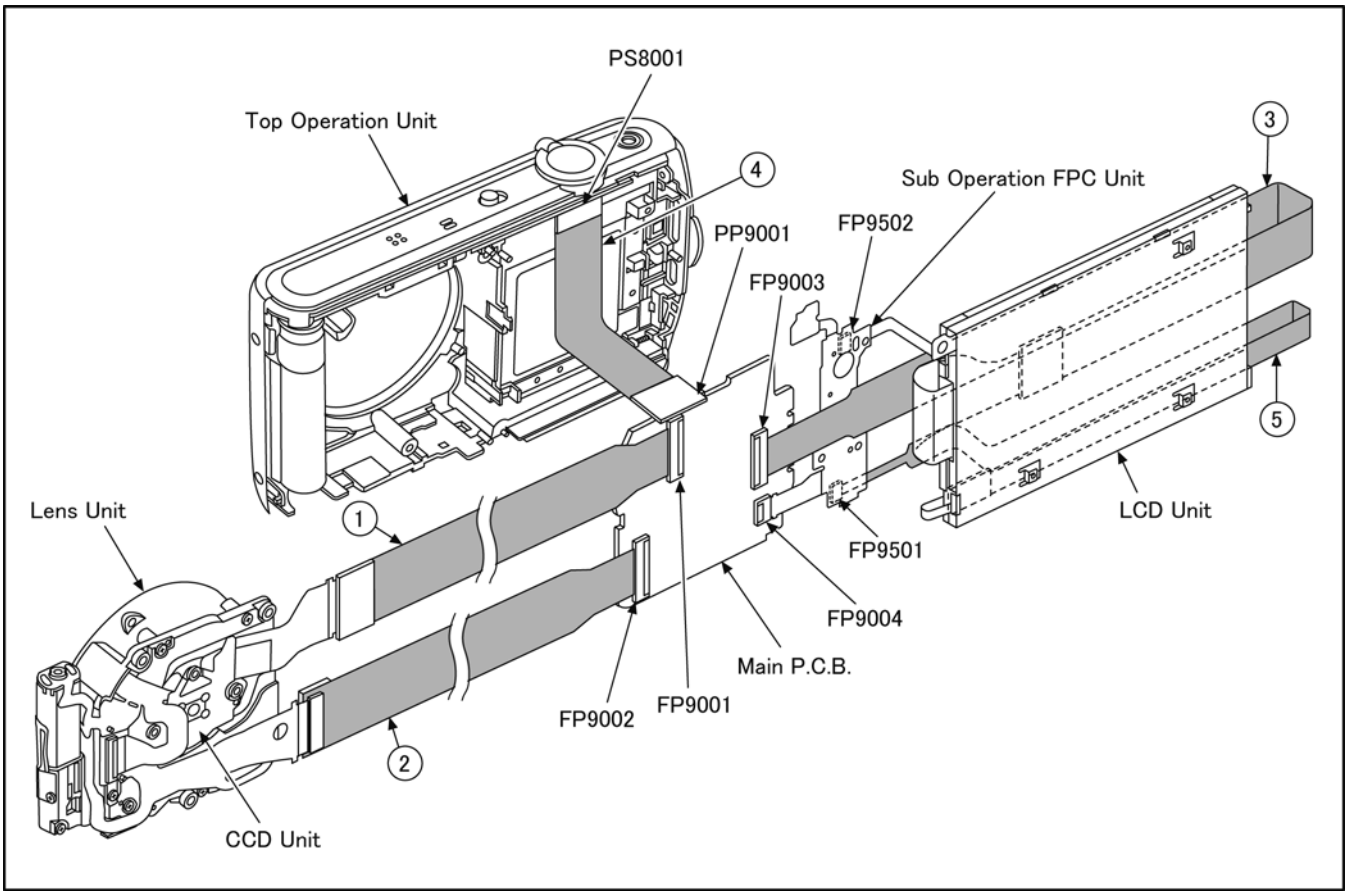
After replacing the MAIN P.C.B., be sure to achieve adjustment.
The adjustment instruction is available at “software download” on the “Support Information from NWBG/VDBG-AVC” web-site in “TSN system”, together with Maintenance software.

7.3. Service Position

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

Table S1 Extension Cable List

No.	Parts No.	Connection	Form
1	RFKZ0477	FP9001 (MAIN) - CCD UNIT	45PIN 0.3 FFC
2	RFKZ0477	FP9002 (MAIN) - LENS UNIT	45PIN 0.3 FFC
3	VFK1951	FP9003 (MAIN) - LCD UNIT	39PIN 0.3 FFC
4	RFKZ0545	PP9001 (MAIN) - PS8001 (FLASH TOP)	34PIN B to B
5	VFK1974	FP9501 (SUB OPERATION UNIT) - LCD UNIT	4PIN 0.5 FFC



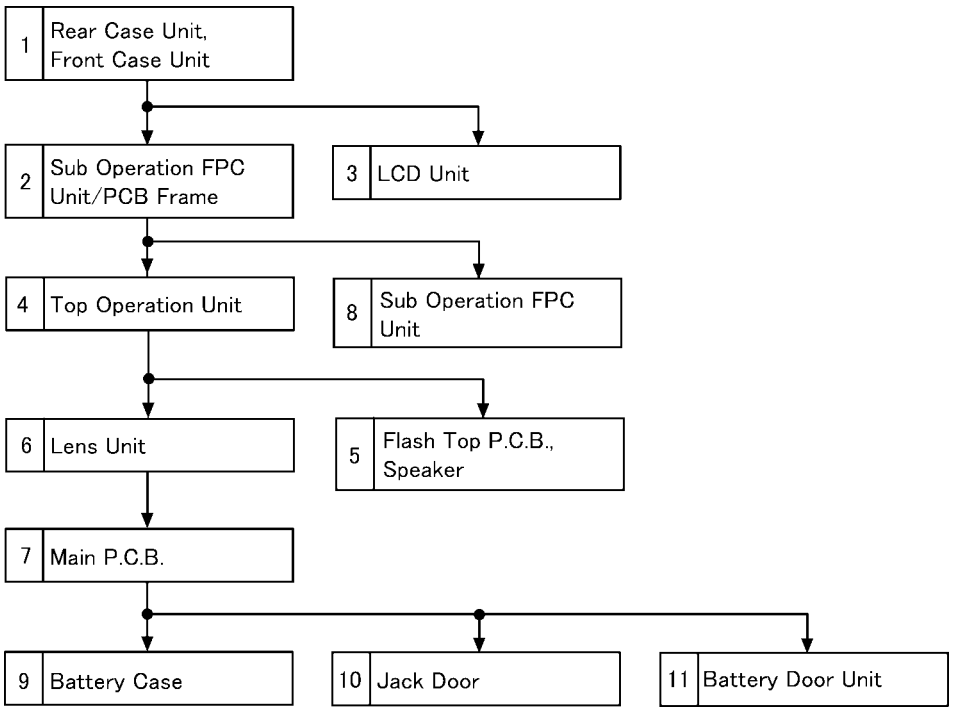
CAUTION-1. (When servicing FLASH TOP P.C.B.)

1. Be sure to discharge the capacitor on FLASH TOP P.C.B..
   Refer to “HOW TO DISCHARGE THE CAPACITOR ON FLASH TOP P.C.B.”.
   The capacitor voltage is not lowered soon even if the AC Cord is unplugged or the battery is removed.
2. Be careful of the high voltage circuit on FLASH TOP P.C.B..
3. DO NOT allow other parts to touch the high voltage circuit on FLASH TOP P.C.B..

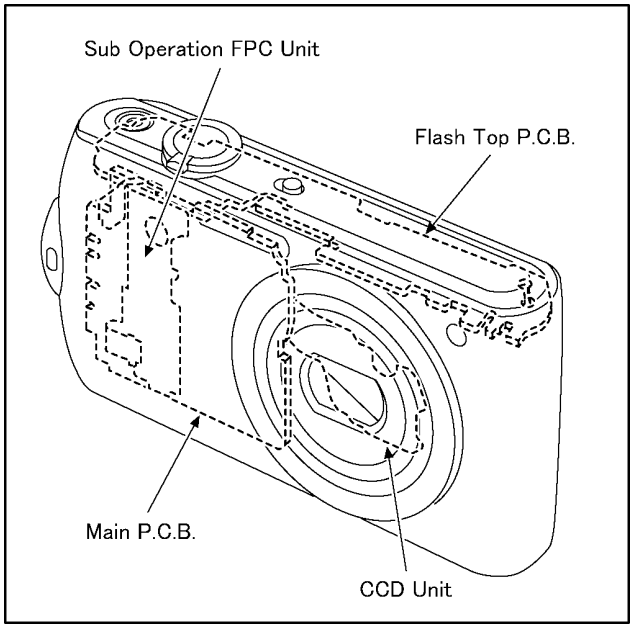
8 Disassembly and Assembly Instructions

8.1. Disassembly Flow Chart

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



8.2. P.C.B. Location



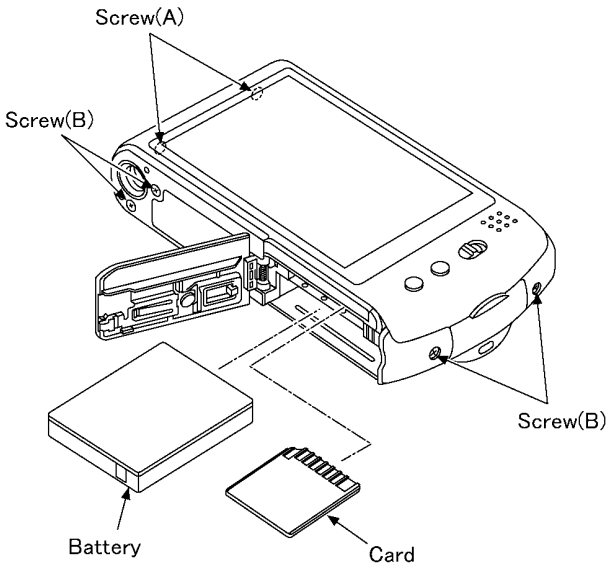
8.3. Disassembly Procedure

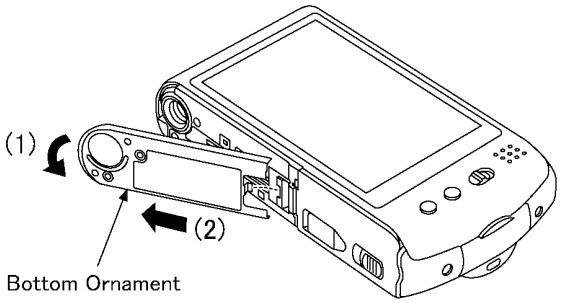
No.	Item	Fig	Removal
1	Rear Case Unit Front Case Unit	(Fig. D1)	Card
			Battery
			2 Screws (A)
			4 Screws (B)
			Bottom Ornament
		(Fig. D2)	6 Locking tabs
			Rear Case Unit
			Front Case Unit
2	Sub Operation FPC Unit/PCB Frame	(Fig. D3)	FP9501(Flex)
			FP9502(Flex)
			1 Locking tab
			3 Ribs
			FP9004(Flex)
			Sub Operation FPC Unit/ PCB Frame
3	LCD Unit	(Fig. D4)	1 Screw (C)
			3 Hanging parts
			FP9003(Flex)
			LCD Unit
4	Top Operation Unit	(Fig. D5)	3 Screws (D)
			Frame Plate
			Tripod
			1 Locking tab
			PS8001(Connector)
			Top Operation Unit
5	Flash Top P.C.B. Speaker	(Fig. D6)	2 Locking tabs
			AF Panel Light
			FP8001(Flex)
			2 Screws (E)
			4 Locking tabs
			MIC Unit
			Power Knob Base
			Power Knob
			Flash Top P.C.B.
			Speaker
		(Fig. D7)	Discharge of the capacitor
			NOTE: (When Installing)
6	Lens Unit	(Fig. D8)	FP9001(Flex)
			FP9002(Flex)
			Lens Unit
7	Main P.C.B.	(Fig. D9)	1 Screw (F)
			1 Locking tab
			Main P.C.B.
8	Sub Operation FPC Unit	(Fig. D10)	4 Locking tabs
			REC/PLAYBACK Selector Knob
			2 pins
			4 Projection parts
			PCB Frame
			Sub Operation FPC Unit
9	Battery Case	(Fig. D11)	5 Locking tabs
			Side Ornament (L)
			Strap Holder
		(Fig. D12)	Battery Out Spring
			Battery Case
10	Jack Door	(Fig. D13)	Jack Door Shaft
			Jack Door
11	Battery Door Unit	(Fig. D14)	Battery Door Shaft
			Battery Door Spring
			Battery Door Unit

8.3.1. Removal of the Rear Case Unit and Front Case Unit

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

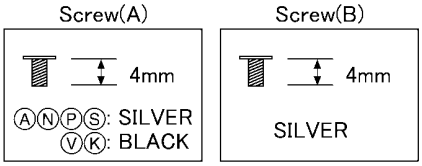
- Card
- Battery
- Screw(A) × 2
- Screw(B) × 4
- Bottom Ornament



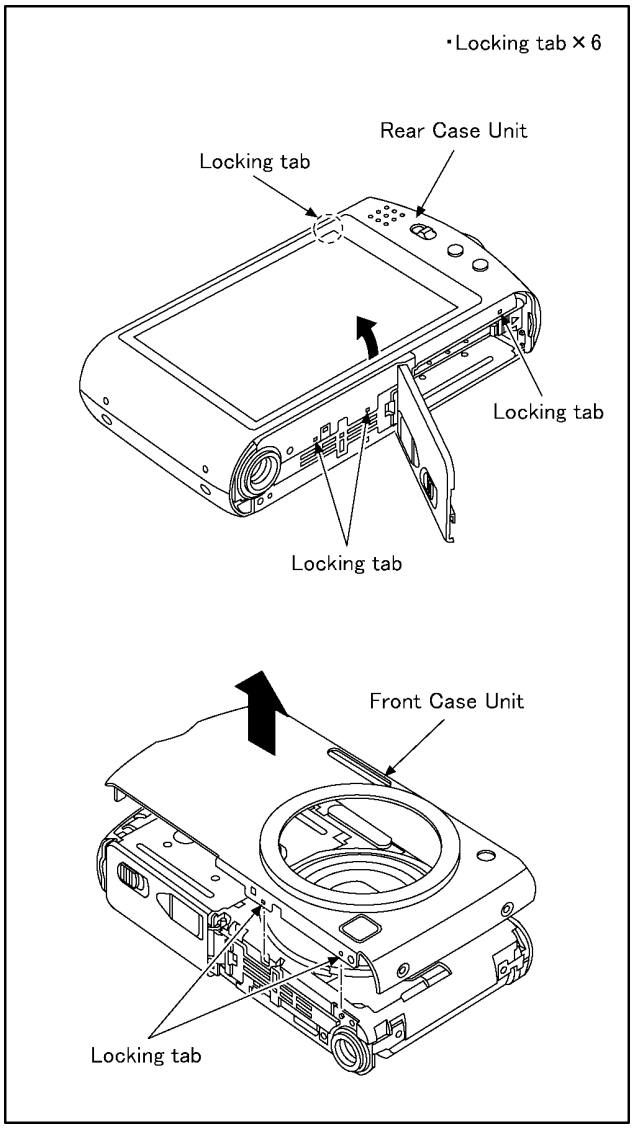


NOTE: (When Replacing)

- When remove the bottom ornament, pull up the bottom ornament in the direction of arrow (1) a little, and then remove the bottom ornament in the direction of arrow (2).

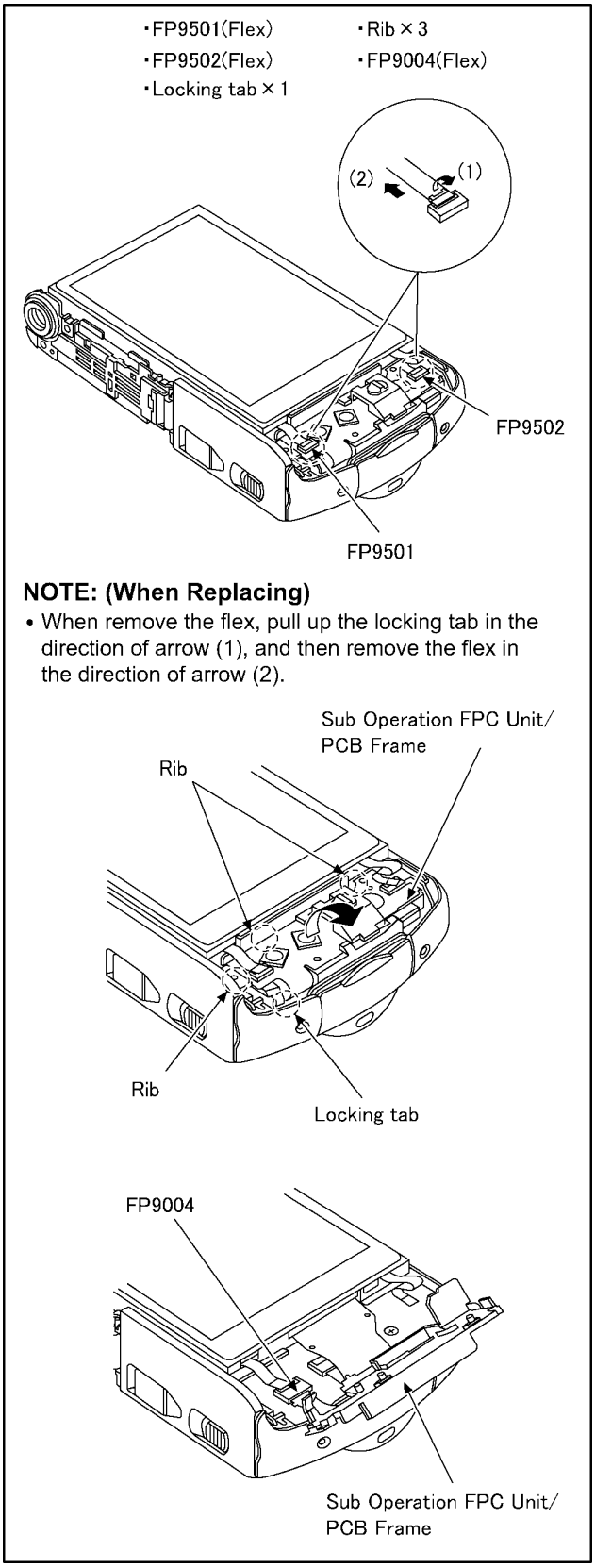


(Fig. D1)



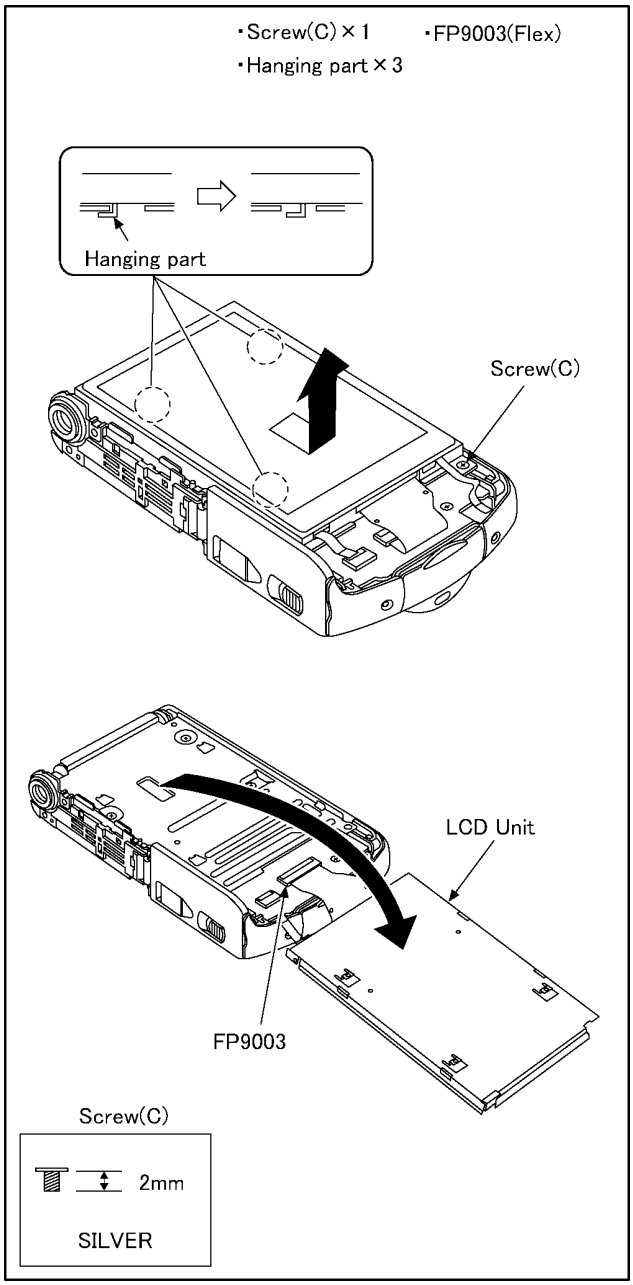
(Fig. D2)

8.3.2. Removal of the Sub Operation FPC Unit/PCB Frame



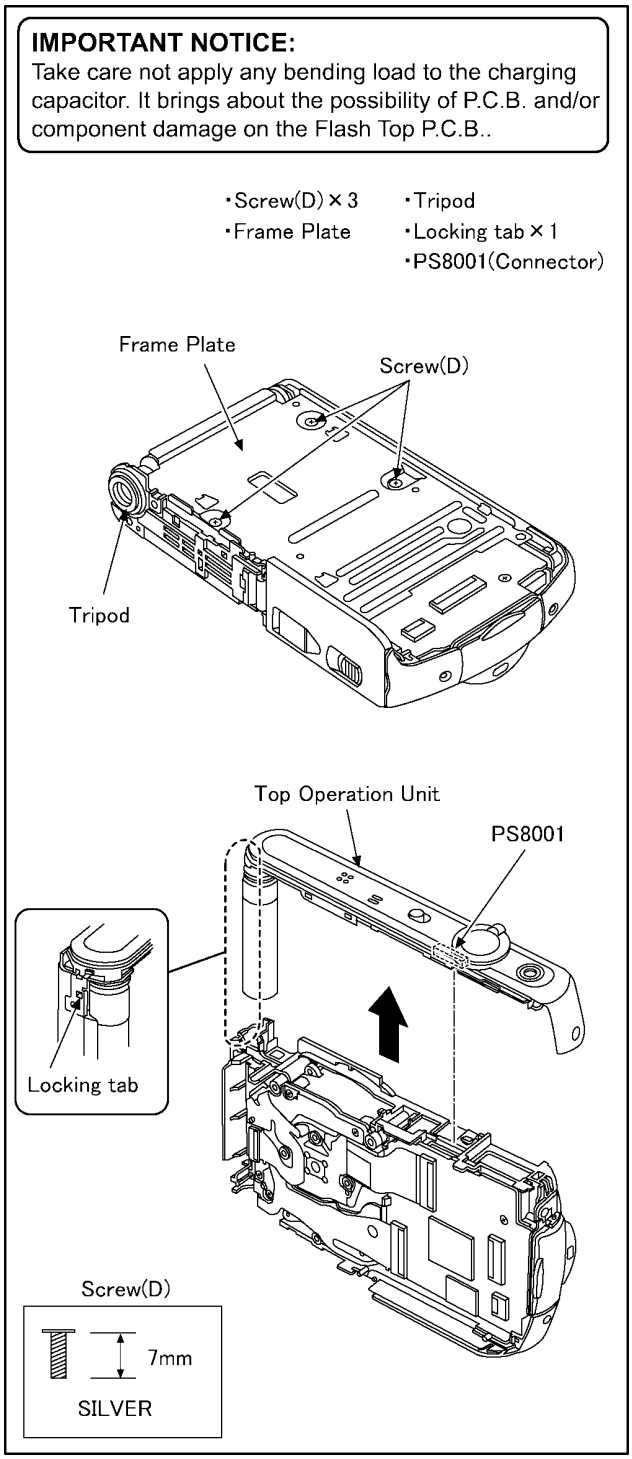
(Fig. D3)

8.3.3. Removal of the LCD Unit



(Fig. D4)

8.3.4. Removal of the Top Operation Unit

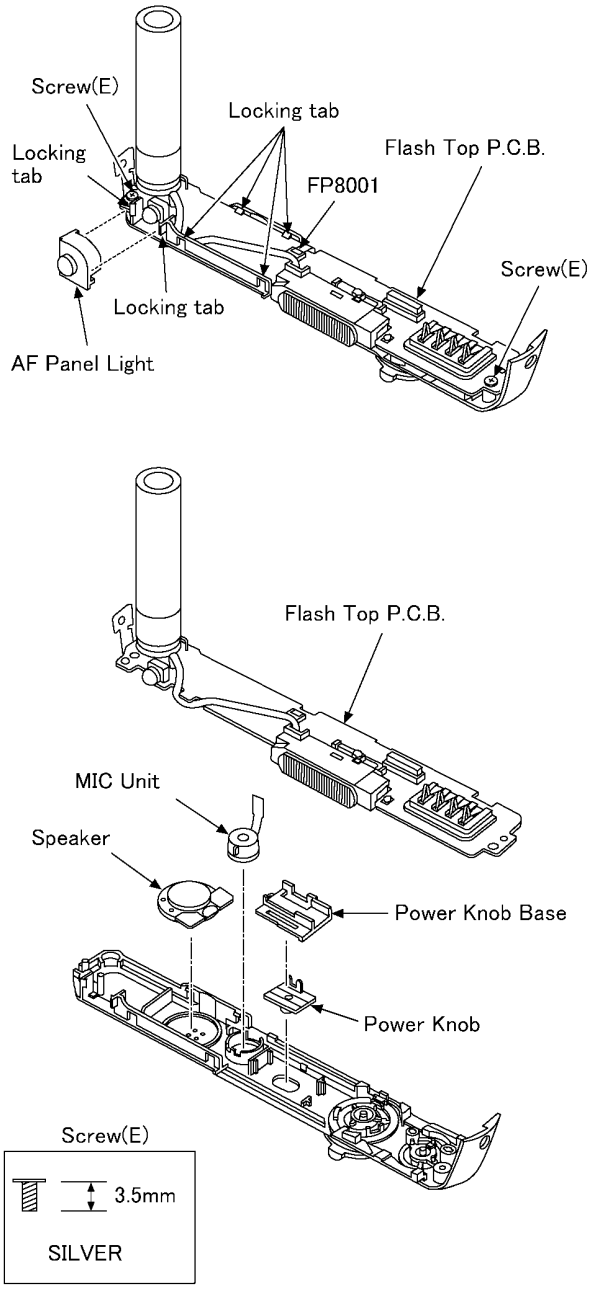


(Fig. D5)

8.3.5. Removal of the Flash Top P.C.B. and Speaker

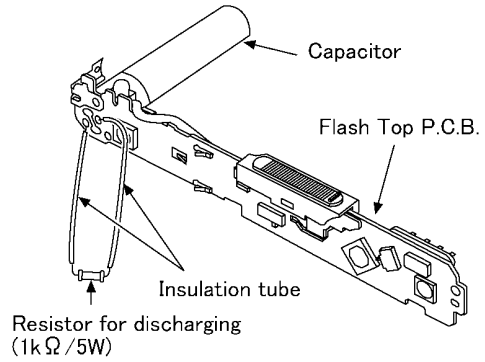
IMPORTANT NOTICE:
Take care not apply any bending load to the charging capacitor. It brings about the possibility of P.C.B. and/or component damage on the Flash Top P.C.B..

- Locking tab × 2
- Screw(E) × 2
- Power Knob Base
- AF Panel Light
- Locking tab × 4
- Power Knob
- FP8001(Flex)
- MIC Unit



(Fig. D6)

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 Top P.C.B..



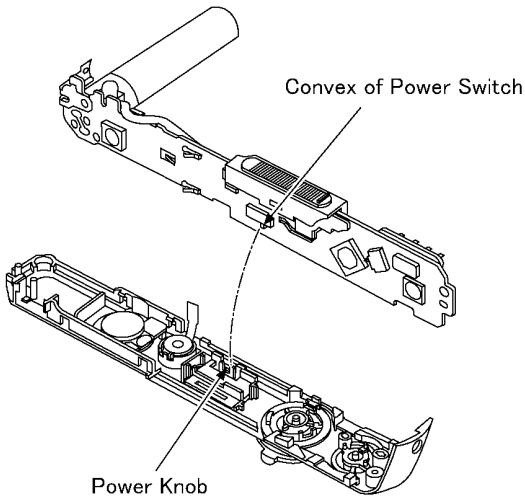
⚠ CAUTION

Be sure to discharge the capacitor on Flash Top P.C.B. before disassembling.

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

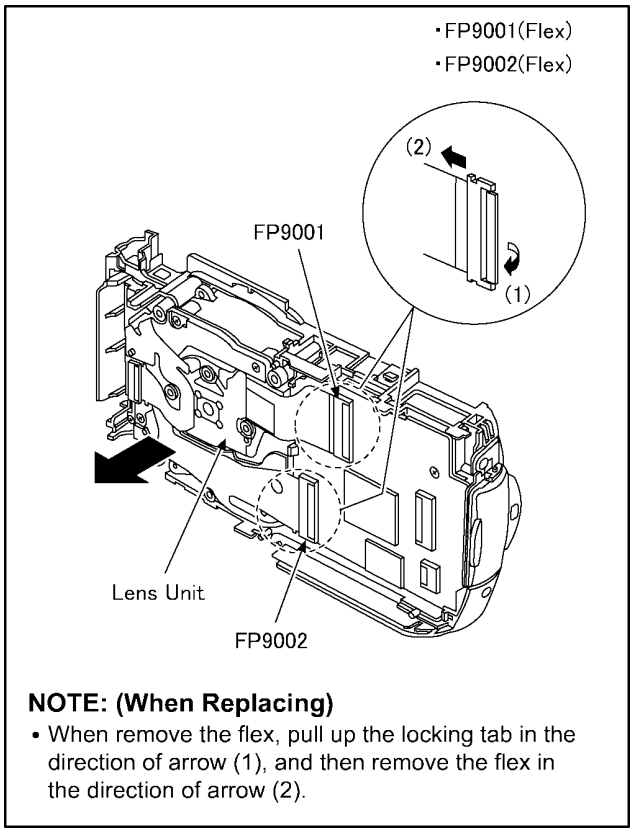
NOTE: (When Installing)

- Align the convex of power switch and the groove of power knob.



(Fig. D7)

8.3.6. Removal of the Lens Unit

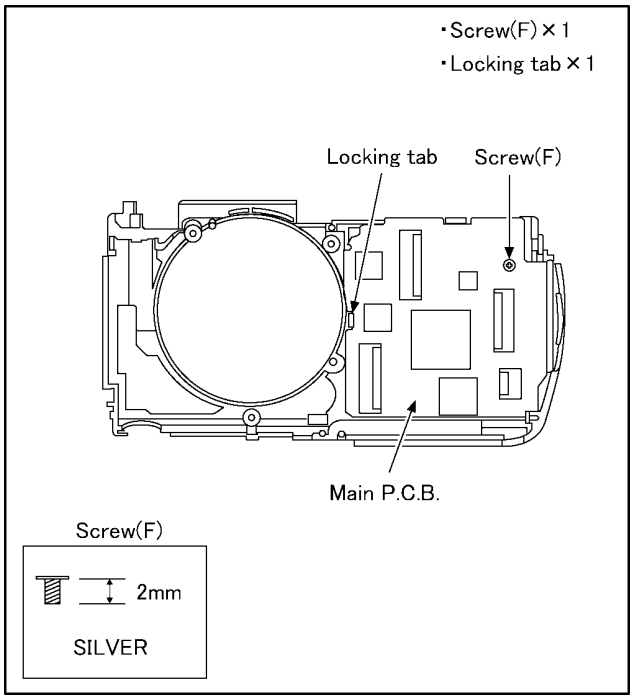


NOTE: (When Replacing)

- 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).

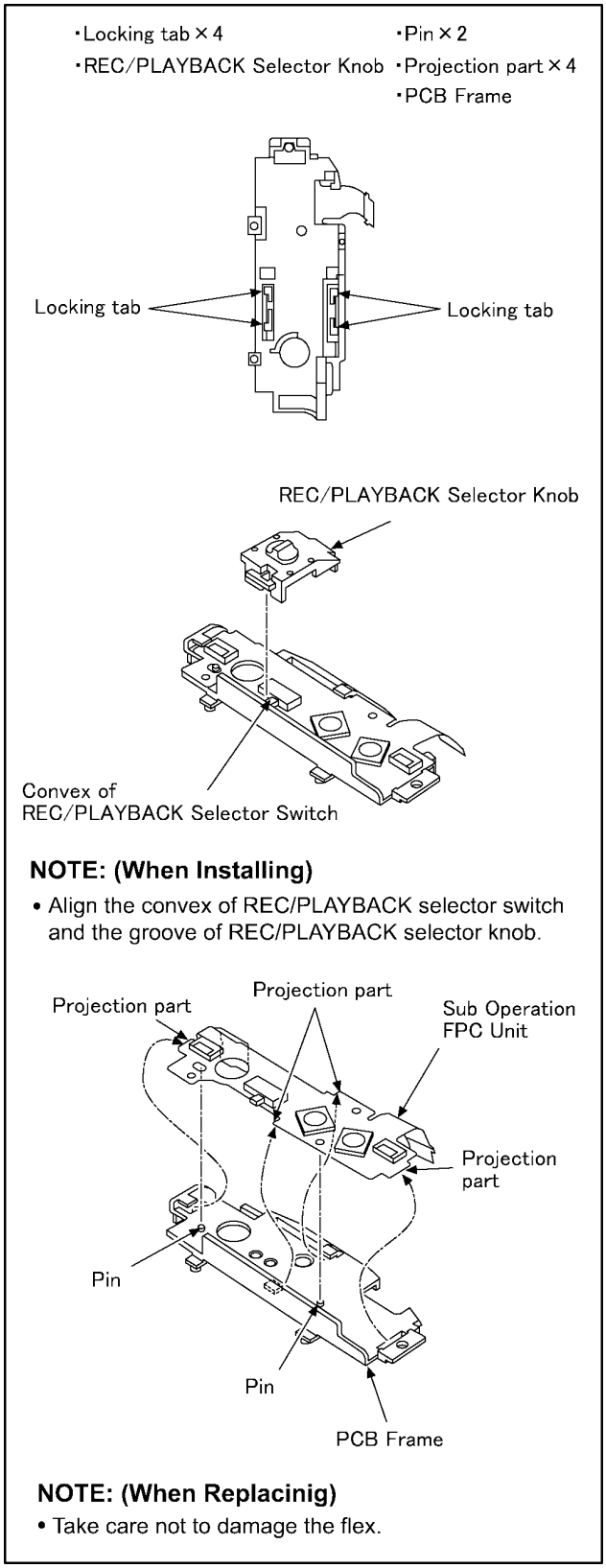
(Fig. D8)

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



(Fig. D9)

8.3.8. Removal of the Sub Operation FPC Unit



NOTE: (When Installing)

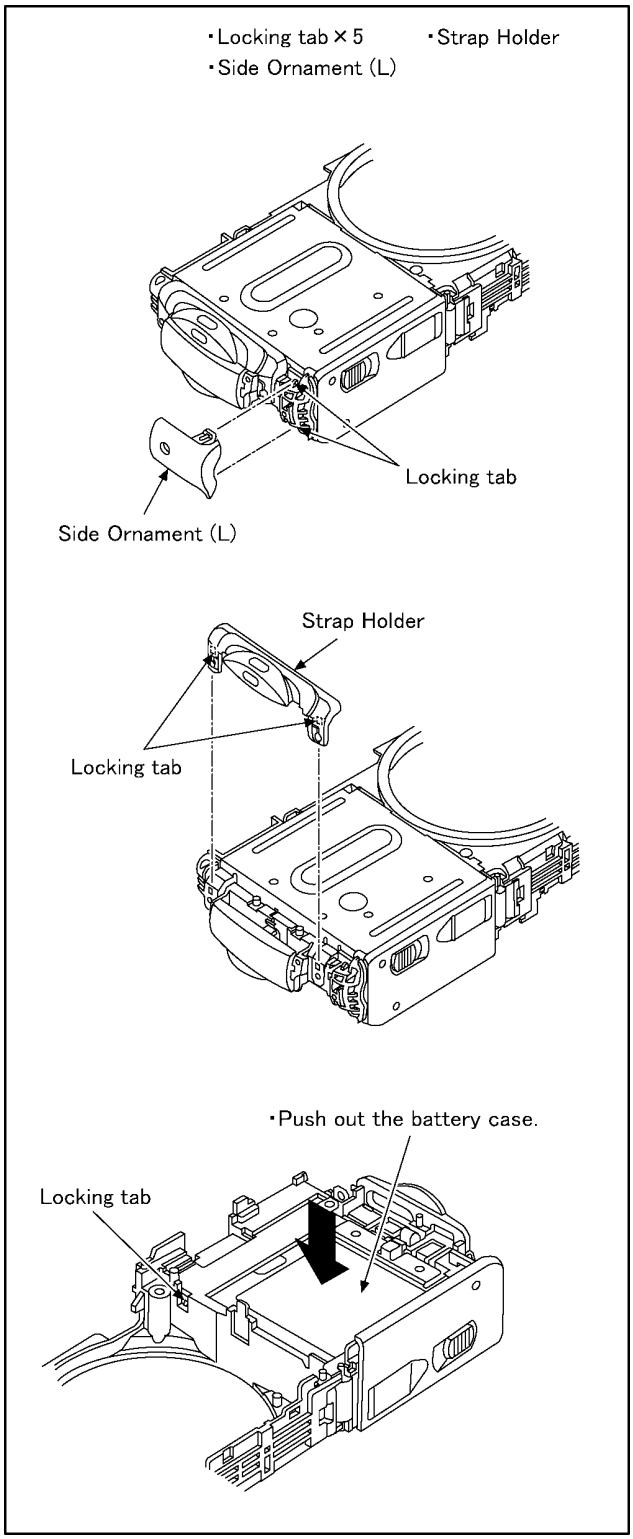
- Align the convex of REC/PLAYBACK selector switch and the groove of REC/PLAYBACK selector knob.

NOTE: (When Replacinig)

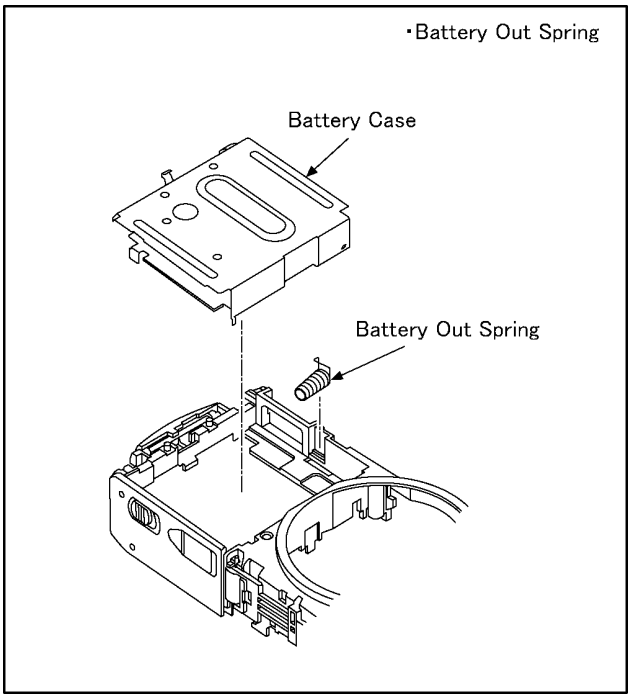
- Take care not to damage the flex.

(Fig. D10)

8.3.9. Removal of the Battery Case

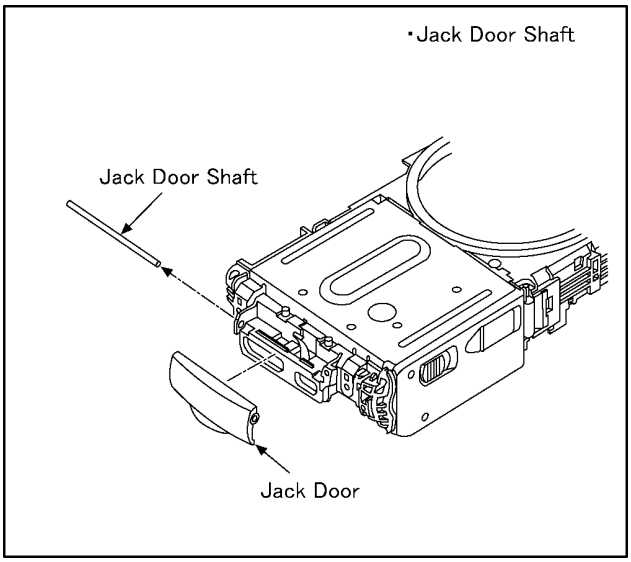


(Fig. D11)



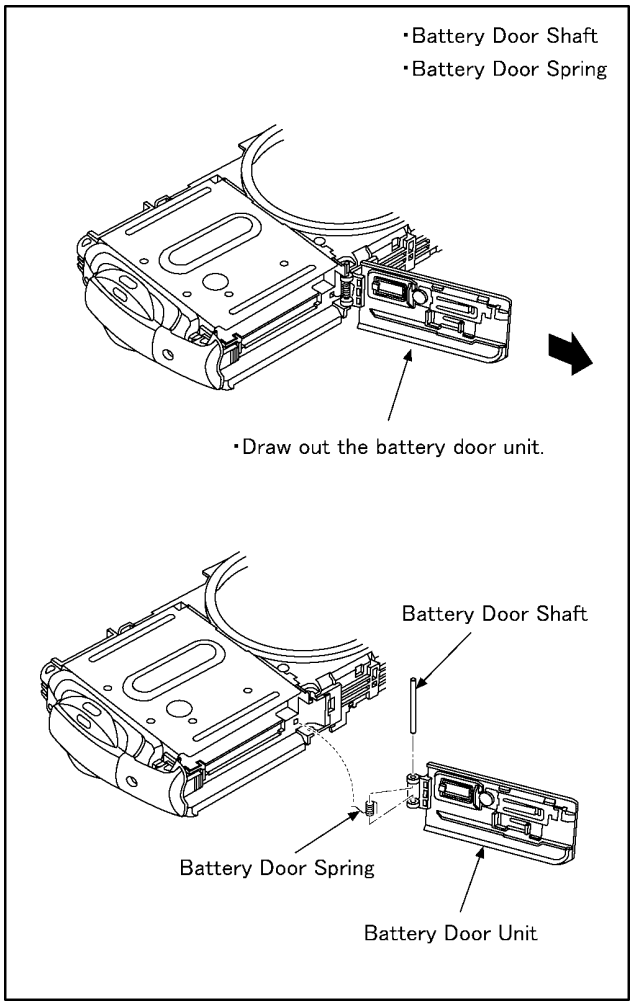
(Fig. D12)

8.3.10. Removal of the Jack Door



(Fig. D13)

8.3.11. Removal of the Battery Door Unit



(Fig. D14)

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.)

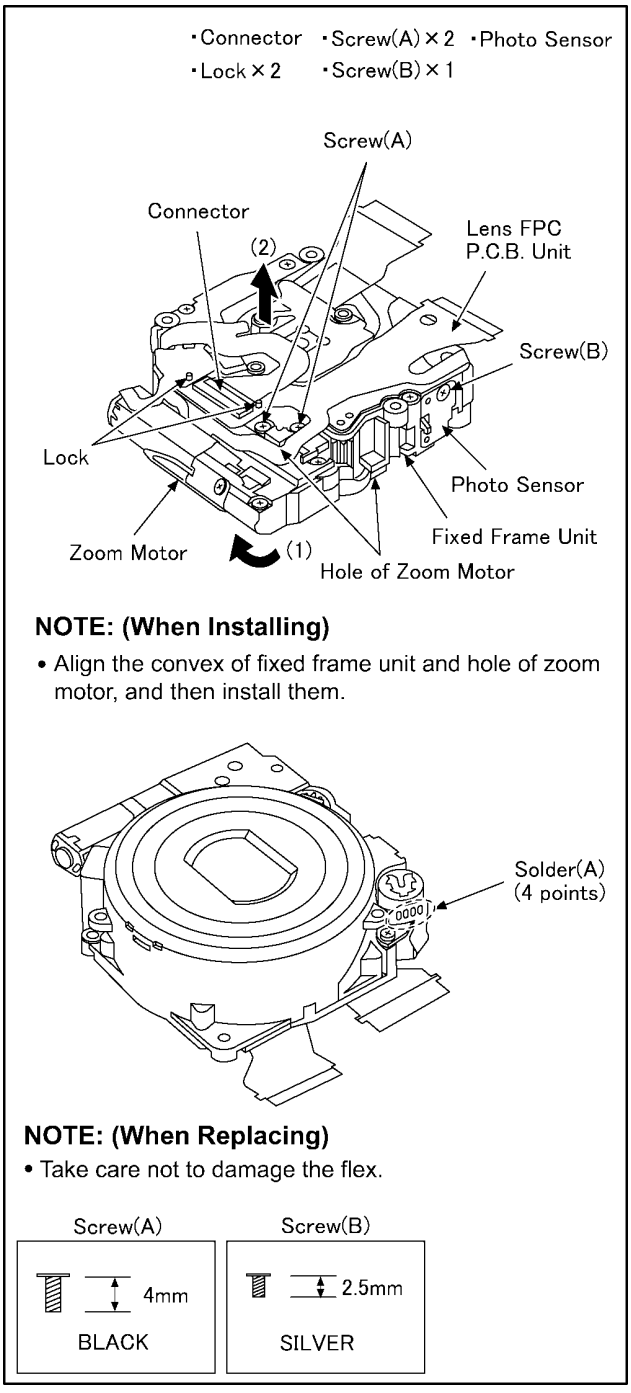
8.4. Lens Disassembly Procedure

Precaution:

1. Do not remove the CCD unit when disassembling or re-assembling the lens in order to maintain it clean.
   The screw fitting the CCD unit to the master flange unit is fixed by the bond lock with the adjustment of the installation angle of the CCD unit against the lens (optical axis adjustment) finished.
   When remove it, refer to item "8.6.".
2. Keep dust or dirt away from the lens.
   To remove dirt or dust from the lens, blow with dry air.
3. Do not touch the lens surface.
4. Use lens cleaning KIT (VFK1900BK).
5. Apply grease (RFKZ0472) as shown on "THE APPLICATION OF GREASE METHOD" in the figure.
6. The fixed frame unit, drive frame unit, penetration cam frame unit, cam frame unit and direct frame should be replaced as a unit.

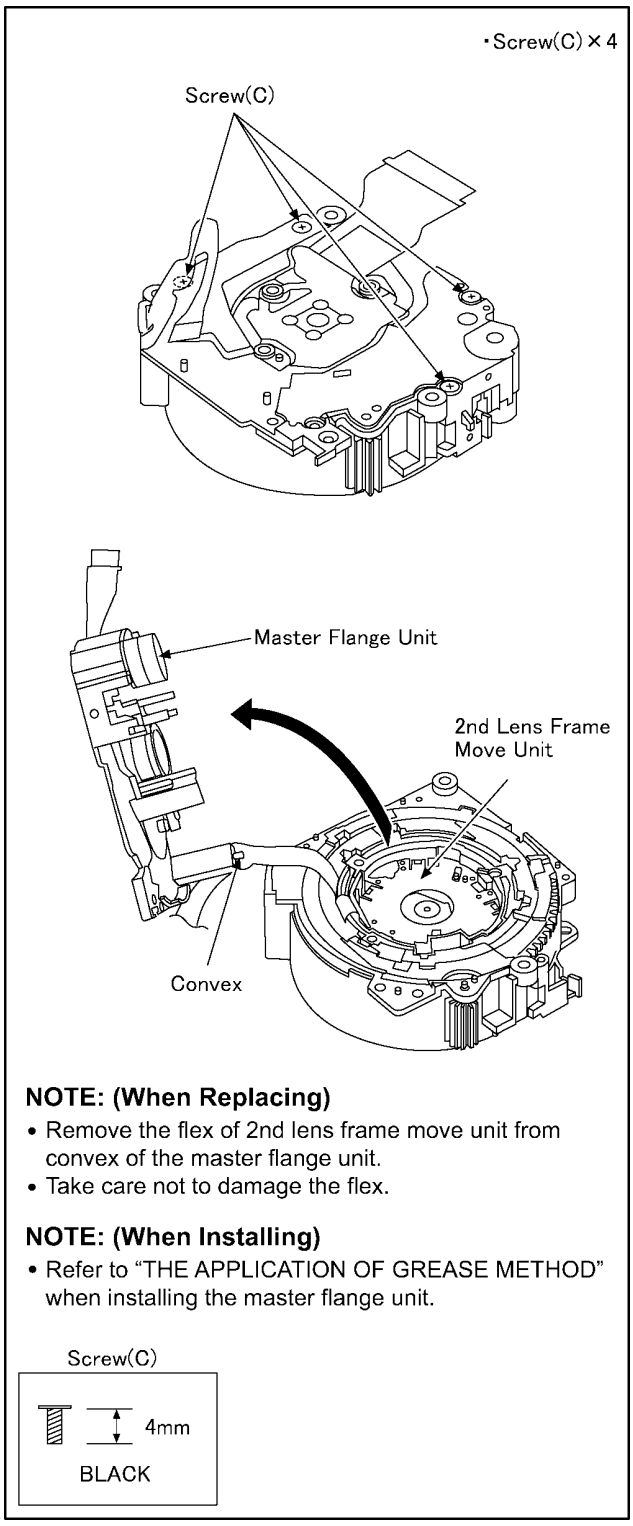
8.4.1. Removal of the Zoom Motor and Lens FPC P.C.B. Unit

1. Remove the Connector.
2. Remove the 2 locks.
3. Unscrew the 2 screws (A).
4. Remove the zoom motor to the direction of arrow (1).
5. Unscrew the 1 screw (B).
6. Remove the photo sensor.
7. Remove the 4 solders (A).
8. Remove the lens FPC P.C.B. unit to the direction of arrow (2).



8.4.2. Removal of the Master Flange Unit

1. Unscrew the 3 screws (C).
2. Remove the master flange unit.



NOTE: (When Replacing)

- Remove the flex of 2nd lens frame move unit from convex of the master flange unit.
- Take care not to damage the flex.

NOTE: (When Installing)

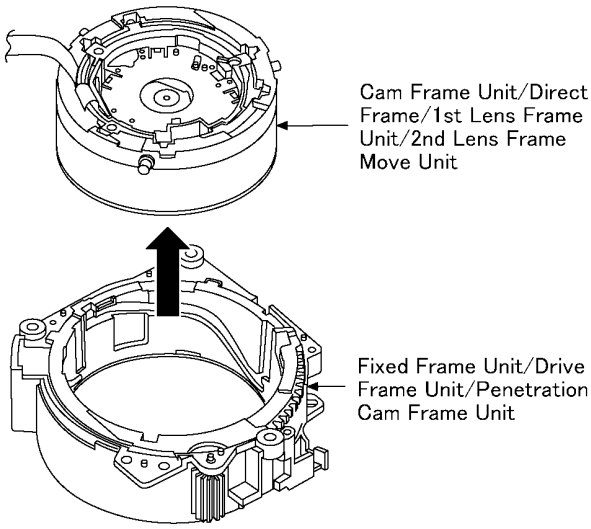
- Refer to “THE APPLICATION OF GREASE METHOD” when installing the master flange unit.

8.4.3. Removal of the Cam Frame Unit/ Direct Frame/1st Lens Frame Unit/ 2nd Lens Frame Move Unit

1. Push the cam frame unit from the lens front side in the direction of arrow, and then remove the unit of cam frame unit/direct frame/1st lens frame unit/2nd lens frame move unit from the fixed frame unit/drive frame unit/penetration cam frame unit.

■ CAUTION

- Fixed Frame Unit/Drive Frame Unit/Penetration Cam Frame Unit/Cam Frame Unit/Direct Frame cannot exchange single part because of original performance maintenance.
  Necessary unit exchange by using the repair parts (Fixed/Drive/Cam Frame Unit).



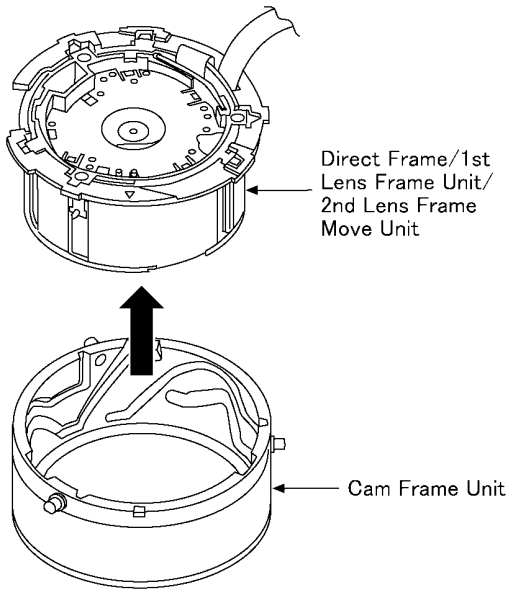
NOTE: (When Replacing)

- Take care not to damage the flex.
- When lift the cam frame unit/direct frame/1st lens frame unit/2nd lens frame move unit, take care not to put fingerprint of the lens.

8.4.4. Removal of the Direct Frame/1st Lens Frame Unit/2nd Lens Frame Move Unit

1. Push the 1st lens frame unit from the lens front side in the direction of arrow, and then remove the unit of direct frame/1st lens frame unit/2nd lens frame move unit from the cam frame unit.

■ **CAUTION**
- Fixed Frame Unit/Drive Frame Unit/Penetration Cam Frame Unit/Cam Frame Unit/Direct Frame cannot exchange single part because of original performance maintenance.
  Necessary unit exchange by using the repair parts (Fixed/Drive/Cam Frame Unit).

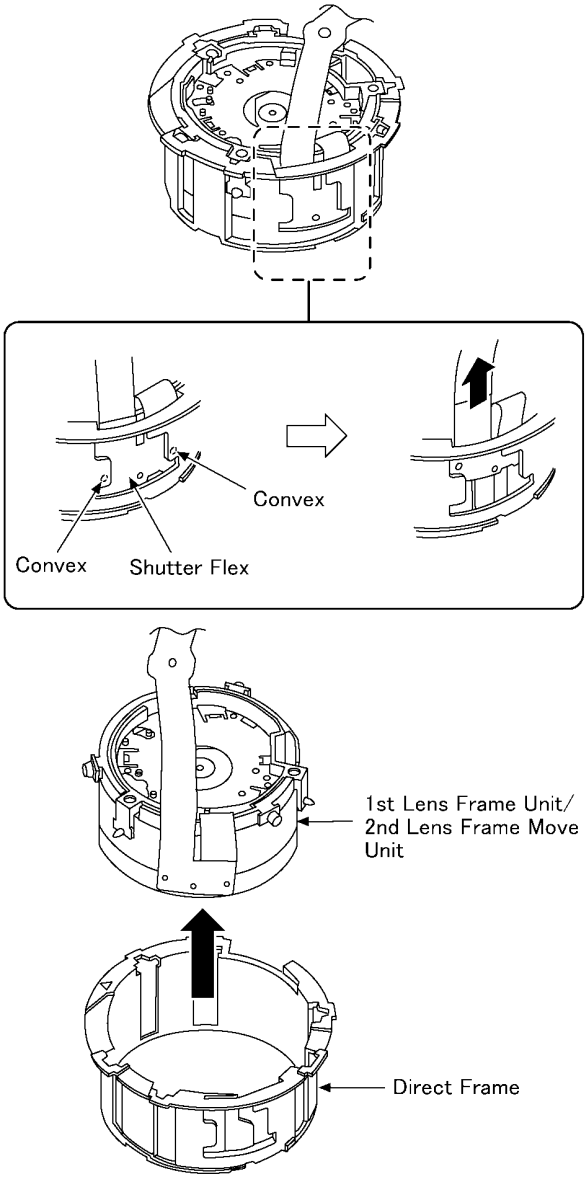


NOTE: (When Replacing)
- Take care not to damage the flex.
- When lift the direct frame/1st lens frame unit/2nd lens frame move unit, take care not to put fingerprint of the lens.

8.4.5. Removal of the 1st Lens Frame Unit/2nd Lens Frame Move Unit

1. Detach the shutter flex from 2 convexes of direct frame and pull it up.
2. Push the 1st lens frame unit from the lens front side in the direction of arrow, and then remove the unit of 1st lens frame unit/2nd lens frame move unit from the direct frame.

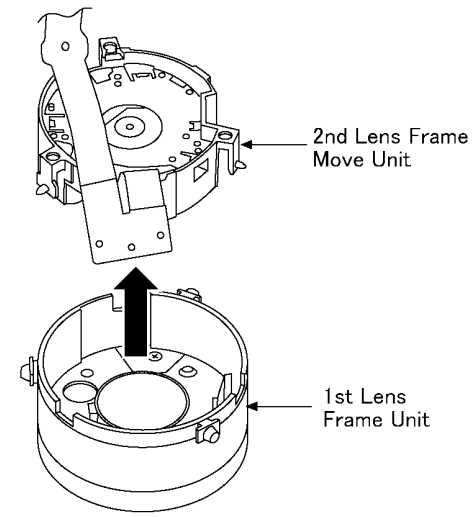
■ **CAUTION**
- Fixed Frame Unit/Drive Frame Unit/Penetration Cam Frame Unit/Cam Frame Unit/Direct Frame cannot exchange single part because of original performance maintenance.
  Necessary unit exchange by using the repair parts (Fixed/Drive/Cam Frame Unit).



NOTE: (When Replacing)
- Take care not to damage the flex.
- When lift the 1st lens frame unit/2nd lens frame move unit, take care not to put fingerprint of the lens.

8.4.6. Removal of the 2nd Lens Frame Move Unit

1. Remove the 2nd Lens frame move unit in the direction of the arrow.



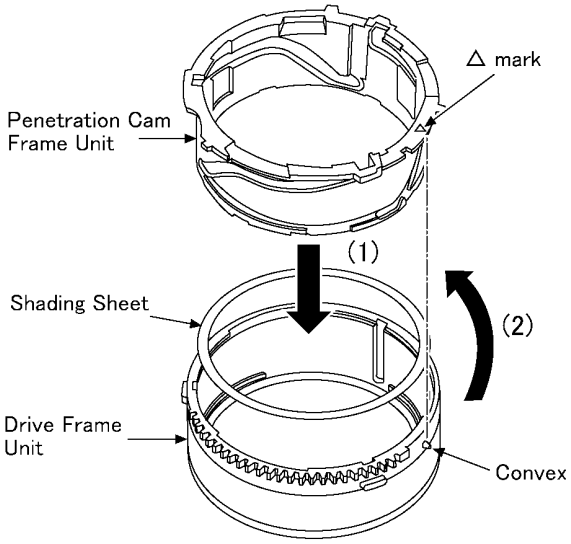
NOTE: (When Replacing)

- Take care not to damage the flex.
- Take care not to put fingerprint of the lens.

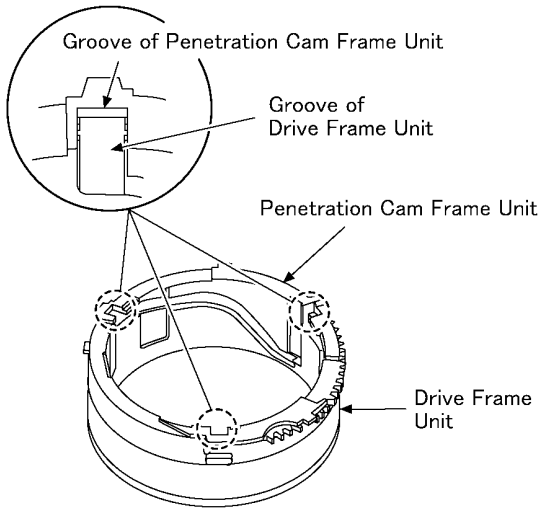
8.5. Assembly Procedure for the Lens

8.5.1. Phase alignment of the Drive Frame Unit and Penetration Cam Frame Unit

- Insert the shading sheet to drive frame unit. (When insert the shading sheet, so that the luster side facing to subject side.)
- Align the △ mark of penetration cam frame unit and the convex of drive frame unit, and then install the penetration cam frame unit to drive frame unit.

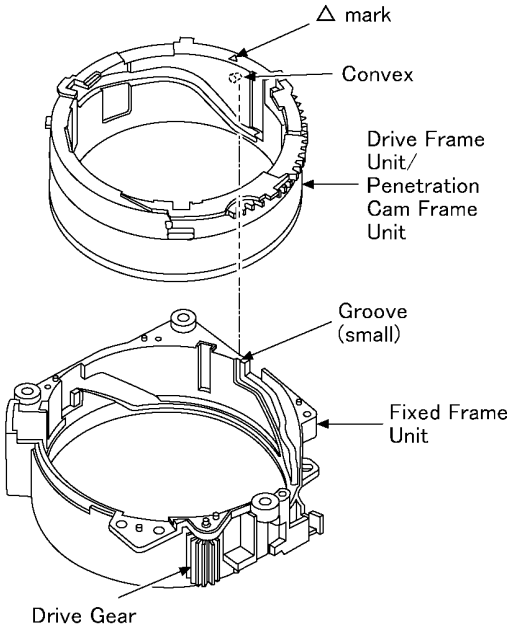


- Turn the penetration cam frame unit in the direction of arrow (2) to align the phase of the groove of penetration cam frame unit and the groove of drive frame unit (3 points).



8.5.2. Phase alignment of the Drive Frame Unit/Penetration Cam Frame Unit and Fixed Frame Unit

• Align the △ mark of penetration cam frame unit (the convex of drive frame unit) and the groove (small) of fixed frame unit, and then install the drive frame unit/penetration cam frame unit to fixed frame unit.

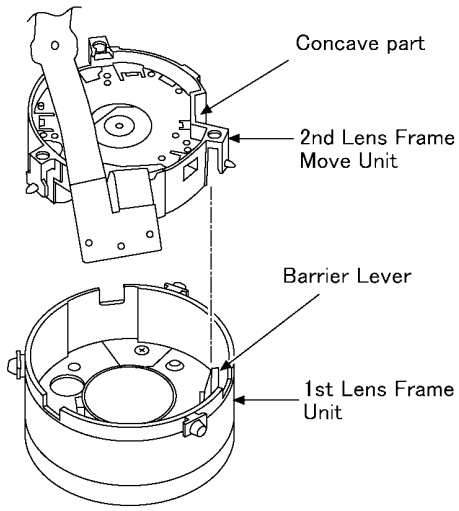


NOTE: (When Installing)

• With aligning the phase of the drive frame unit/ penetration cam frame unit and the fixed frame unit, confirm the gear of drive frame unit is engaged with the gear of fixed frame unit firmly.

8.5.3. Install of the 2nd Lens Frame Move Unit

• Align the concave part of 2nd lens frame move unit and the barrier lever of 1st lens frame unit, and then install the 2nd lens frame move unit to 1st lens frame unit.

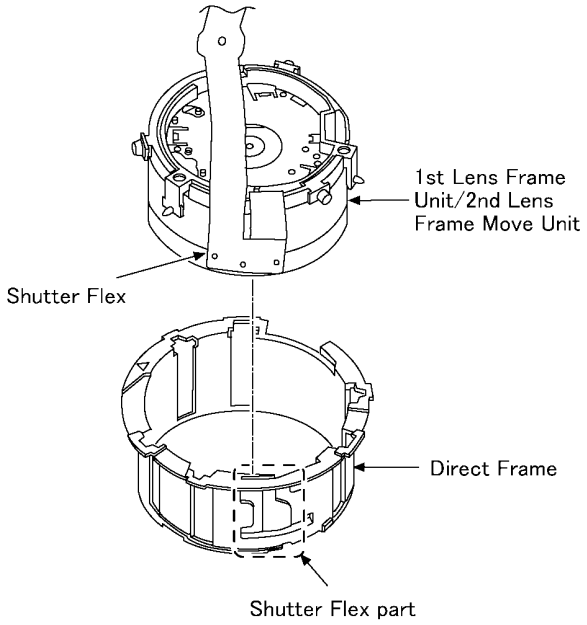


NOTE: (When Installing)

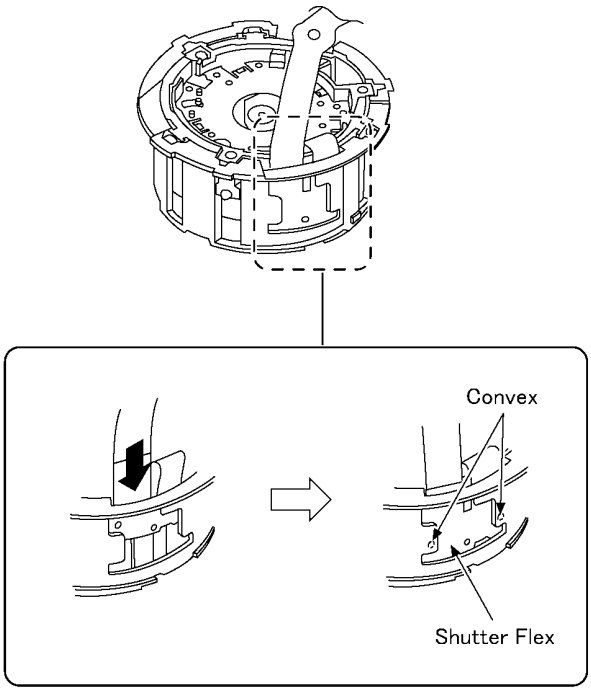
• Take care not to put fingerprint of the lens.

8.5.4. Install of the 1st Lens Frame Unit/ 2nd Lens Frame Move Unit

• Align the shutter flex of 1st lens frame unit/2nd lens frame move unit and the shutter flex part of direct frame and then install the 1st lens frame unit/2nd lens frame move unit to direct frame.



• Install the shutter flex to the direct frame and then insert the convex of direct frame to hole of shutter flex. (Confirm the shutter flex snaps.)

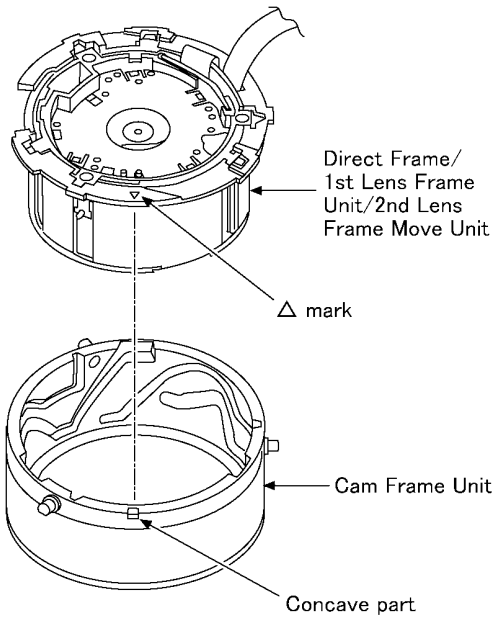


NOTE: (When Installing)

• Take care not to damage the flex.
• Take care not to put fingerprint of the lens.

8.5.5. Phase alignment of the Direct Frame/1st Lens Frame Unit/2nd Lens Frame Move Unit and Cam Frame Unit

• Align the △ mark of direct frame/1st lens frame unit/ 2nd lens frame move unit and the concave part of cam frame unit and then install the direct frame/1st lens frame unit/2nd lens frame move unit to cam frame unit.

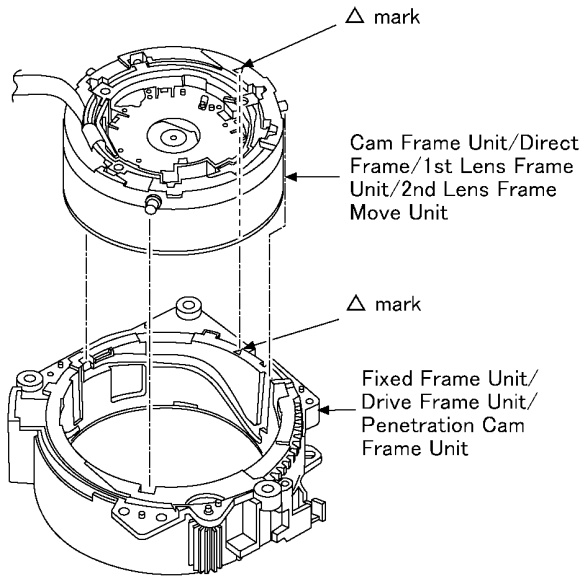


NOTE: (When Installing)

• Take care not to put fingerprint of the lens.

8.5.6. Phase alignment of the Cam Frame Unit/Direct Frame/1st Lens Frame Unit/2nd Lens Frame Move Unit and Fixed Frame Unit/Drive Frame Unit/ Penetration Cam Frame Unit

• Align the △ mark of cam frame unit/direct frame/1st lens frame unit/2nd lens frame move unit and the △ mark of fixed frame unit/drive frame unit/penetration cam frame unit and then install the cam frame unit/direct frame/ 1st lens frame unit/2nd lens frame move unit to fixed frame unit/drive frame unit/penetration cam frame unit.

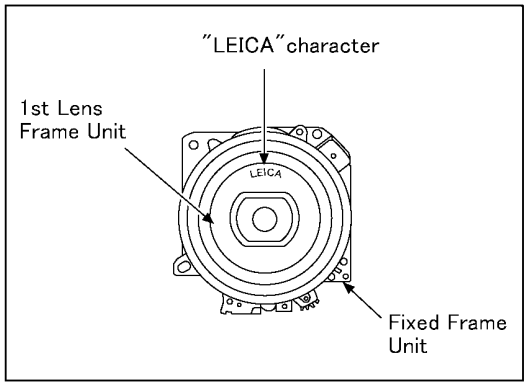


NOTE: (When Installing)

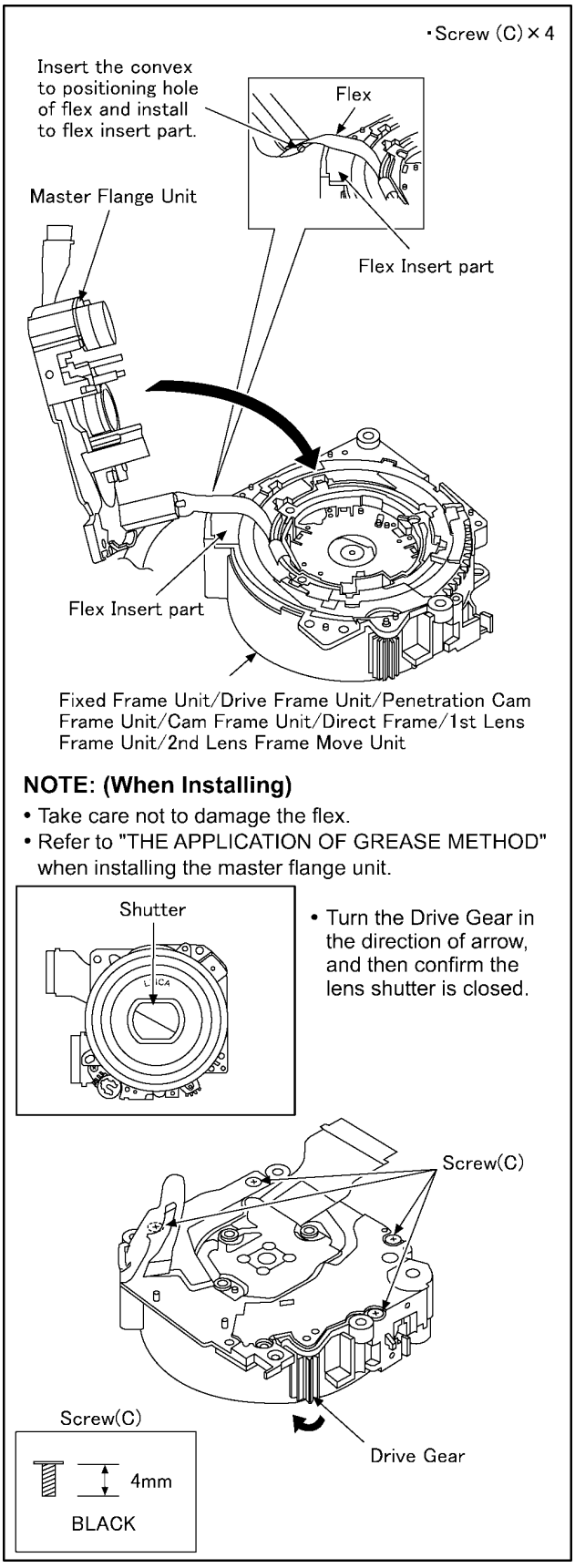
• Take care not to put fingerprint of the lens.

FRONT VIEW

• Install the 1st lens frame unit so that the "LEICA" character may become the position of the figure below.



8.5.7. Install of the Master Flange Unit



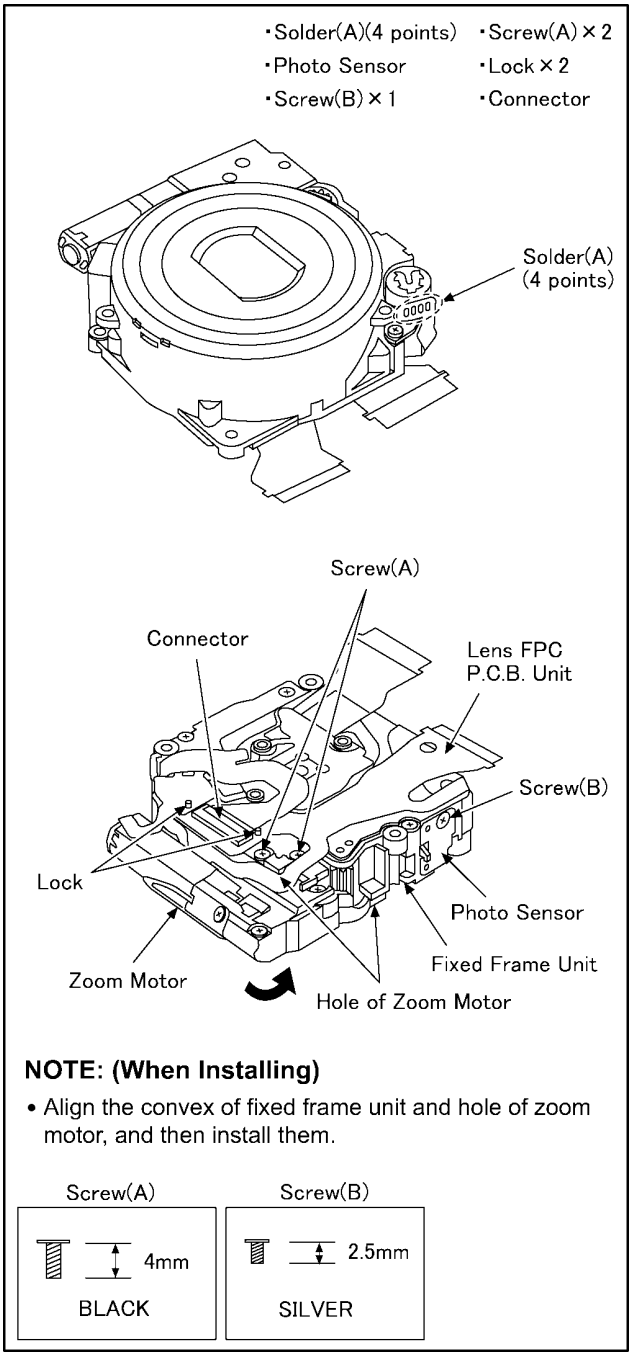
NOTE: (When Installing)

• Take care not to damage the flex.

• Refer to "THE APPLICATION OF GREASE METHOD" when installing the master flange unit.

• Turn the Drive Gear in the direction of arrow, and then confirm the lens shutter is closed.

8.5.8. Install of the Lens FPC P.C.B. Unit and Zoom Motor



NOTE: (When Installing)

- Align the convex of fixed frame unit and hole of zoom motor, and then install them.

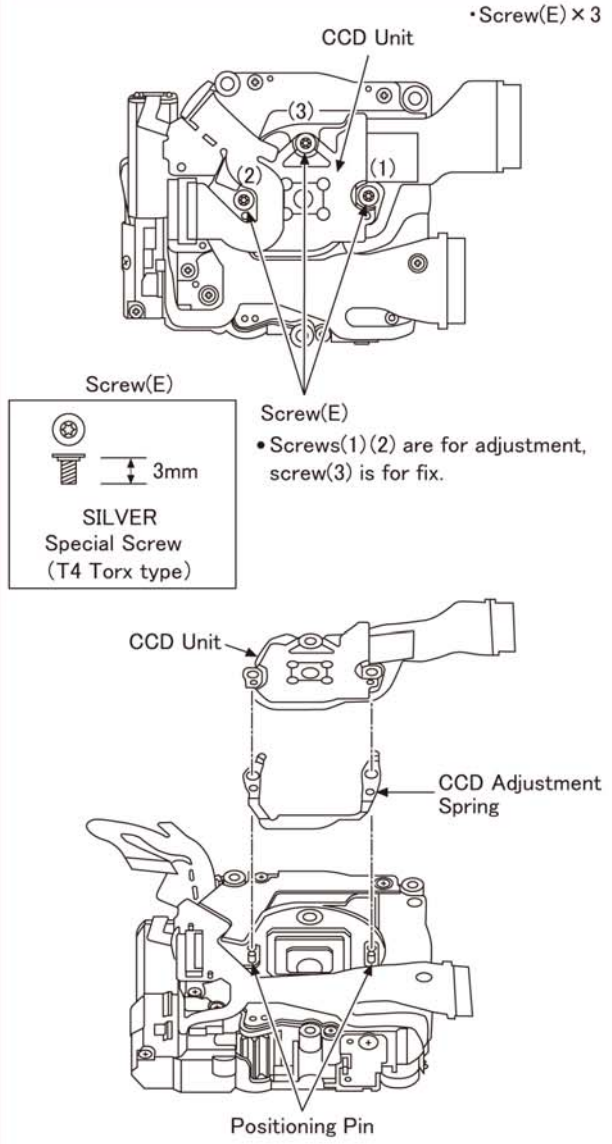
Screw(A)	Screw(B)
4mm, BLACK	2.5mm, SILVER

8.6. Removal of the CCD Unit

When remove the CCD unit once (the screw(E) is loosened even a little), the optical tilt adjustment is required.
When loosen the screw(E), 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.

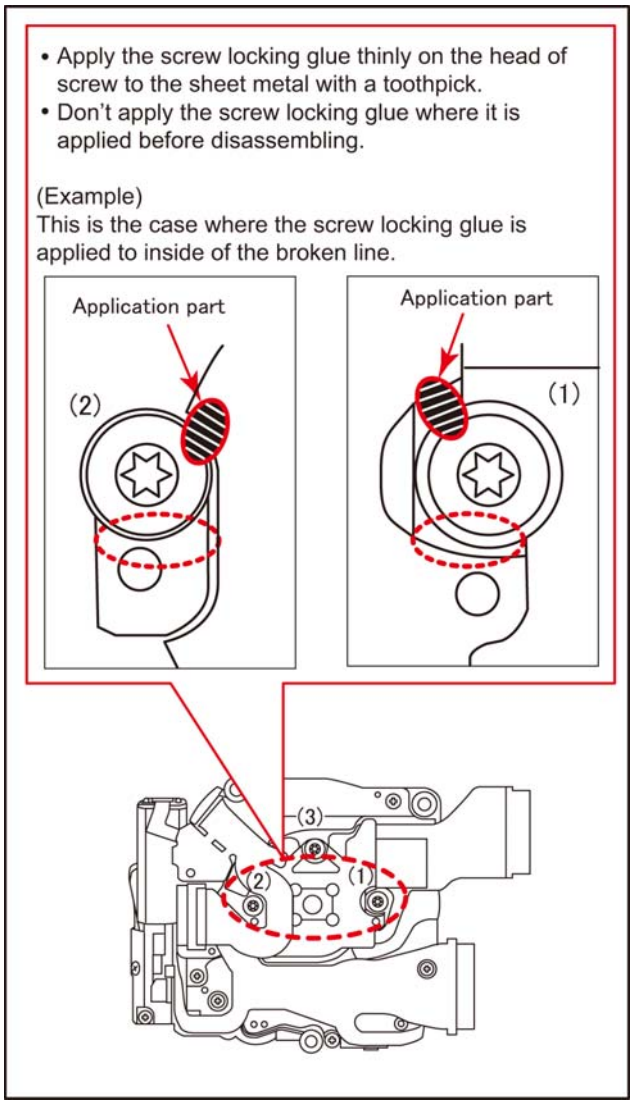
■ CAUTION

- The screw(E) is fixed by the screw locking glue with the optical tilt adjustment finished. When remove the CCD unit, wipe the screw locking glue away carefully.
- Don't reuse the screw(E) that the screw locking glue adheres to keep dust or dirt away from the CCD unit. (When installing, use new screw(E).)

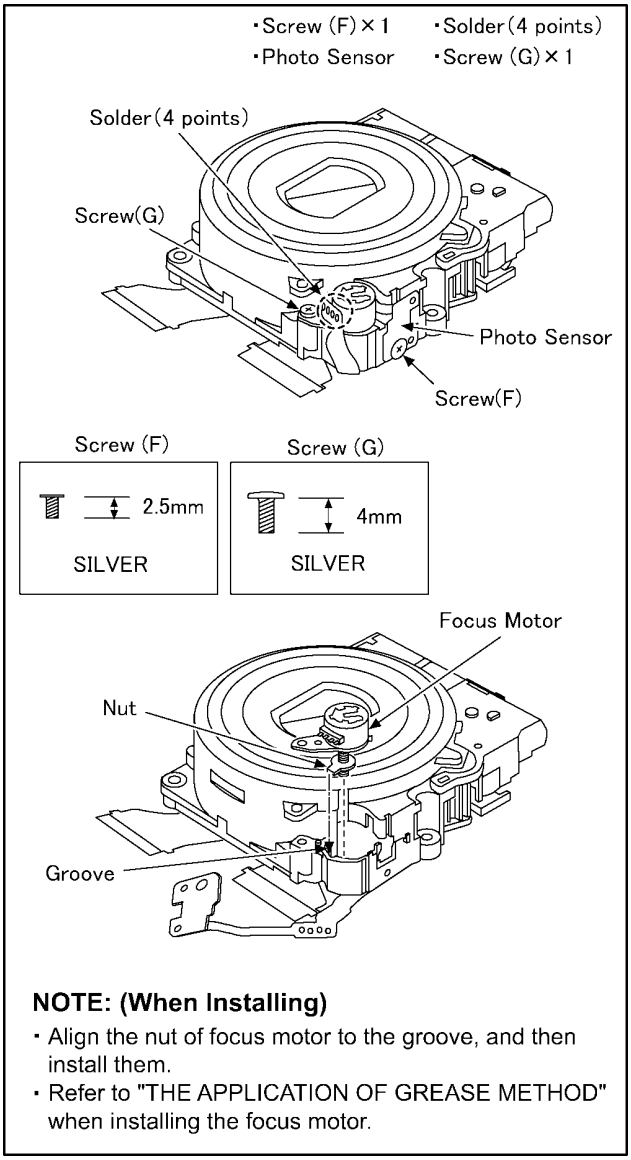


NOTE: (When Installing)

- Take new screw. (Don't reuse the screw that the screw locking glue adheres.)
- 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±2 N・cm.
- After the adjustment is finished, apply the screw locking glue as shown on the next item in the figure.



8.7. Removal of the Focus Motor



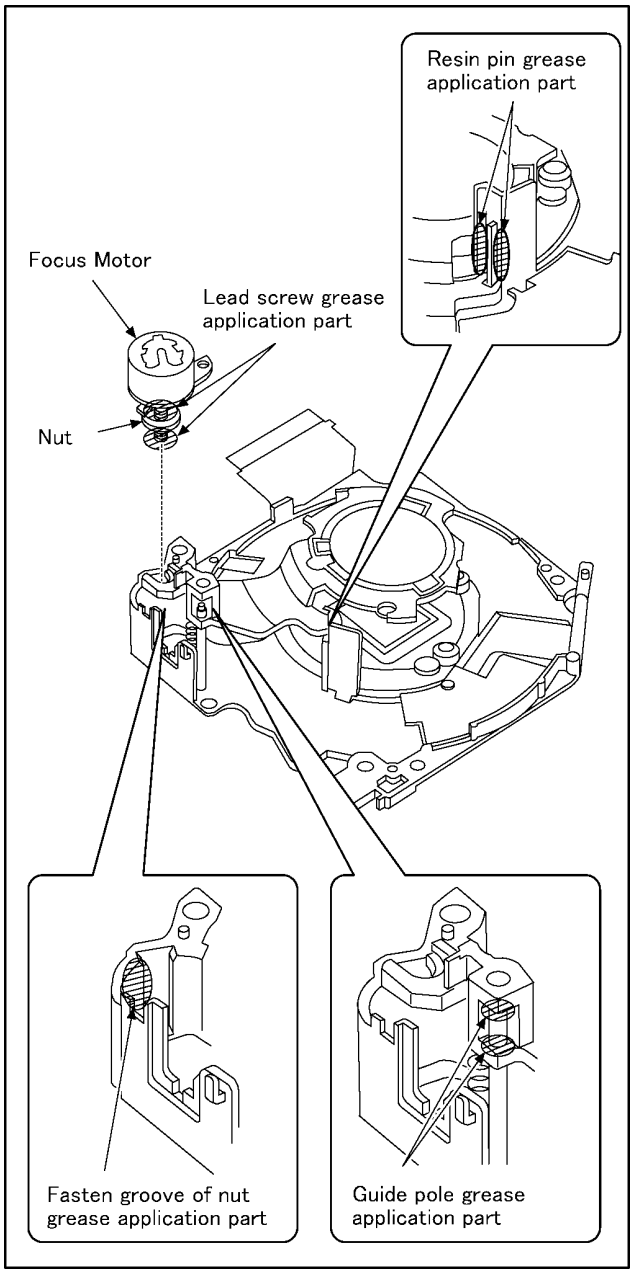
NOTE: (When Installing)

- Align the nut of focus motor to the groove, and then install them.
- Refer to "THE APPLICATION OF GREASE METHOD" when installing the focus motor.

8.8. The Application of Grease Method

The grease application parts of lens unit are as follows.
Apply grease additionally in the specified position if necessary.
When the grease is applied, use a toothpick and apply thinly.

- Focus motor (lead screw)/Fasten groove of nut/Guide pole
  - Grease: RFKZ0472
  - Amount of application: 2 - 4 mg
- Resin pin
  - Grease: RFKZ0472
  - Amount of application: 1 - 2 mg



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, Master flange unit and CCD unit)

- When the CCD unit is unavoidably removed for Lens unit, Master flange 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.
  (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 then touch the [NORMAL PICTURE] on the touch panel.
  3. Turn the Power off.
     (Rotate the Mode dial to adjust to the [NORMAL PICTURE] mode. (Camera mark))

Step 1. Temporary cancellation of “INITIAL SETTINGS”:

Set the [REC]/[PLAYBACK] selector switch to “[REC] (Camera mark)”.
While keep pressing “[WIDE] of Zoom lever” and [MODE] button simultaneously, turn the Power on.

Step 2. Cancellation of “INITIAL SETTINGS”:

Set the [REC]/[PLAYBACK] selector switch to “[PLAYBACK]”.
Press “[WIDE] of Zoom lever” and [MODE] button simultaneously. (The camera will beep after this.)
Turn the Power off. (The warning symbol “ ! ” is displayed on the LCD monitor.)

9.2.2. Flash-Rom Data Backup

When trouble occurs, it is recommended to backup the Flash-rom data before disassembling the unit.
There are two kinds of Flash-rom data backup methods:

[ROM_BACKUP (Method of Non-PC backup)]

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

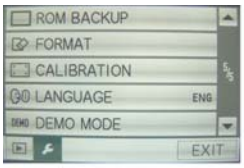


Fig.2-1

Fig.2-2

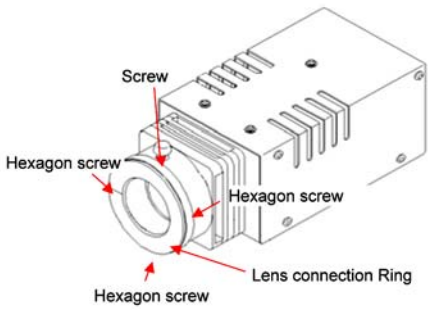
Item	Function	Details
DSC → SD	Save all the DSC's Flash-rom data to SD-CARD	*DSC's Flash-rom data is saved to the SD-CARD as a data file by the same format as the TATSUJIN software for the previous models. (DATA BACKUP) -File location: ROOT DIRECTORY in SD-CARD. -File Name: 1) User Setup Information 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 mode into [NORMAL PICTURE] mode.
   b. Turn the Power off.
   c. Turn the Power on pressing [MENU] and [MODE] simultaneously.
   LCD monitor displays “SERVICE MODE”.(Refer to Fig. 3-1)

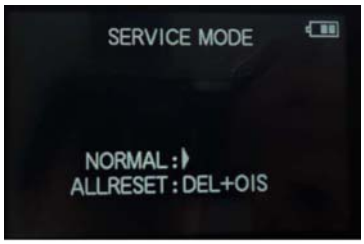


Fig.3-1

9.3.1.2. Status Adjustment Flag Setting

Reset (Not yet adjusted) the status flag condition.

1. After pressing the [MODE] button, the LCD monitor displays the Flag status screen (Refer to Fig.3-2)
2. Select item by pressing the Zoom lever. (Gray cursor is moved accordingly.)
3. Press the [MENU] 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.

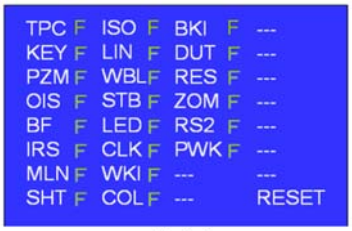


Fig.3-2

- 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 [MODE] 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.

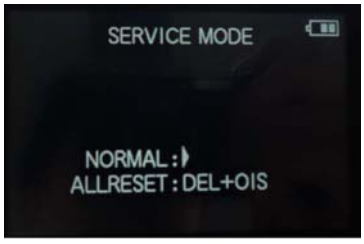


Fig.3-5

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 [MENU] 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 PCB	VENUS(IC6001)	MCP(IC6002)	Lens Parts(except for CCD)	CCD Unit	T.PANEL DRIVER	T.PANEL	GYRO IC			
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-FX70/75. The adjustment software "DSC_Tilt" is available at "TSN Website", therefore, access to "TSN Website" at "Support Information from NWBG/VDBG-AVC".		
2	Touch Panel Control	TPC	Touch Panel Inspection	○	○	○	–	–	○	○	–	Touch Pen	NONE	1)Touches sequentially + mark with the touch pen on the display. 2)If OK is displayed, it is adjustment completion.
3	Venus Zoom	PZM	Venus Zoom Inspection	○	○	○	–	–			–	NONE	NONE	1)Press Shutter Button 2)After displaying "PZM", press Shutter Button again. 3)After completed, the"OK" menu 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" menu 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 from collimator to camera becomes about 3 cm as shown in Fig.A. 【NOTE】 Please notice ! "NG" might happen while auto adjusting. - Do not put the black colored stuff at the back side of collimator near hunching chart to get some certain brightness. - Make sure the hunching chart has no dust and dirty condition. - Not connect the USB cable at this stage.	1)Press Shutter Button (Do not apply any shock and vibration for the camera while adjusting) 2)After completed, the "OK" menu appears.
6	Iris	IRS	Iris adjustment	○	○	○	○	○			–	・LIGHT BOX RFKZ0523 (VFK1164TDVLB)	1)Set the camera in front of LIGHTBOX so that the distance from collimator to camera becomes about 7.5 cm as shown in Fig.B.	1)Press Shutter Button 2)After completed, the"OK" menu appears.
7	Monitor Linearity	MLN	Monitor Linearity adjustment	○	○	○	○	○			–			1)Press Shutter Button 2)After completed, the "OK" menu appears.
8	Shutter	SHT	Shutter speed adjustment	○	○	○	○	○			–	・LIGHT BOX RFKZ0523 (VFK1164TDVLB) ・TR CHART (RFKZ0443)	1) Insert the TR chart into the slot of LIGHTBOX. 2) Set the camera in front of LIGHTBOX so that the distance from LIGHTBOX to camera becomes about 12 cm as shown in FigB. 3) Set the camera angle so that the color chart is displayed on the LCD monitor fully. 【NOTE】 - Since the lens position is automatically set into certain position after executing auto adjustment, confirm the angle after stopping the lens zoom position. - It is no problem even though the chart on to the LCD monitor slightly cut at the corner. - It is no problem even though the focusing slightly becomes out of focusing condition. - Not connect the USB cable at this stage.	1)Press Shutter Button 2)After completed, the "OK" menu appears.
9	ISO	ISO	ISO sensitivity adjustment	○	○	○	○	○			–			1)Press Shutter Button 2)After completed, the "OK" menu appears.
10	White Balance	WBL	White balance adjustment under various color temperature	○	○	○	○	○			–			1)Press Shutter Button 2)After completed, the "OK" menu appears.
11	High brightness coloration	LIN	High brightness coloration adjustment	○	○	○	○	○			–			1)Press Shutter Button 2)After completed, the "OK" menu appears.
12	CCD Missing Pixels (White)	WKI	Compensation of CCD Missing Pixels (White)	○	○	○	–	○ ※1			–	NONE	NONE	1)Press Shutter Button 2)After completed, the "OK" menu appears.
13	Color reproduction inspection and Microphone check	COL	Color reproduction inspection and Microphone check	○	○	○	○	○			–	NONE	NONE	1)Press Shutter Button 2)After completed, the "OK" menu appears.
14	CCD Missing Pixels (Black)	BKI	Compensation of CCD Missing Pixels (Black)	○	○	○	–	○ ※1			–	・LIGHT BOX RFKZ0523 (VFK1164TDVLB)	1)Set the camera in front of LIGHTBOX so that the distance from collimator to camera becomes about 7.5 cm as shown in Fig.B.	1)Press Shutter Button 2)After completed, the "OK" menu appears.

※1：Execute the adjustment when remove the CCD unit and replace 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.).

※Touch panel adjustment screen
Touch with the touch pen + mark on the upper side of the left.
To similar, touch with the touch pen + mark sequentially lower side of the left, lower side of the right, upper side of the right and center.
If OK is displayed, it is adjustment completion.

Fig.A

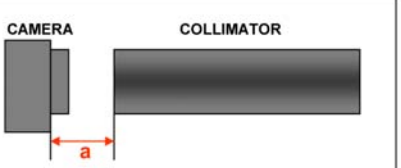


Fig.B

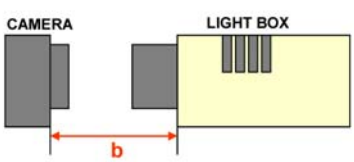
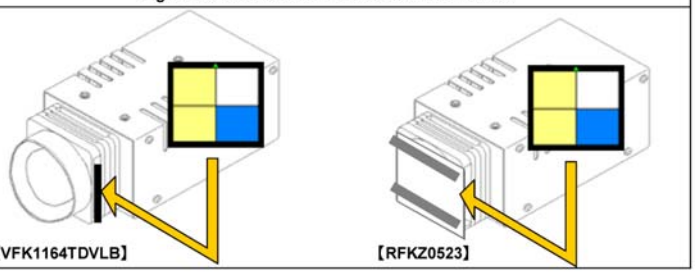


Fig.C How to Insert the TR chart into LIGHTBOX



■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 “3.5.2. INITIAL SETTINGS” for details.

[IMPORTANT]

1. The initial setting should be done again after completing the alignment. Otherwise, the camera will not work properly.
   Therefore as a warning, the camera display a warning symbol “ ! ” on the LCD monitor every time the camera is turned off.
2. Confirm that status of all adjustment flag show “F”. Even if one of the adjustment flag shows “0”, initial setting programmed is never executed.
3. Adjustment software “DIAS” is able to control the status of the adjustment flags.
   The Adjustment software “DIAS” and “DSC_TILT” are available at “TSN Website”, therefore, access to “TSN Website” at “Support Information from NWBG/VDBG-AVC”.

10 Maintenance

10.1. Cleaning Lens and LCD Panel

Do not touch the surface of lens and LCD Panel with your hand.
When cleaning the lens, use air-Blower to blow off the dust.
When cleaning the LCD Panel, dampen the lens cleaning paper with lens cleaner, and the gently wipe the its surface.
Note:

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

DSC1007039CE

Service Manual

Diagrams and Replacement Parts List

Digital Camera

Model No.

DMC-FX70EB	DMC-FX75P	DMC-FX75GN
DMC-FX70EE	DMC-FX75PU	DMC-FX75GT
DMC-FX70EF	DMC-FX75GC	
DMC-FX70EG	DMC-FX75GD	
DMC-FX70EP	DMC-FX75GH	
DMC-FX70SG	DMC-FX75GK	

Vol. 1
Colour

[DMC-FX70]
(S).....Silver Type (only EG/SG)
(K).....Black Type
(A).....Blue Type (only SG)
(N).....Gold Type (only SG)
(P).....Pink Type (only SG)

[DMC-FX75]
(S).....Silver Type (only P/GC/GH/GK)
(K).....Black Type
(N).....Gold Type (only GC/GD/GH/GT)
(P).....Pink Type (except P/PU/GN)
(V).....Violet Type (only PU/GK/GT)

Table of contents

S1. About Indication of The Schematic Diagram

S1.1. 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.

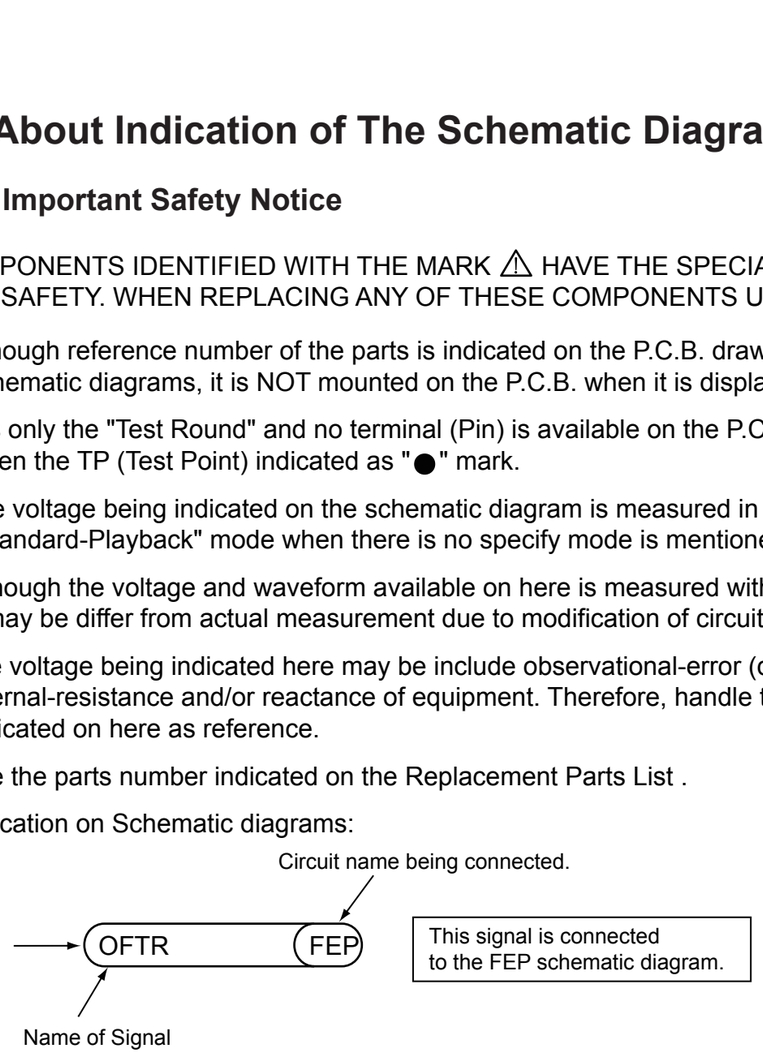
3.The voltage being indicated on the schematic diagram is measured in "Standard-Playback" mode when there is no specify mode is mentioned.

4.Although the voltage and waveform available on here is measured with standard frame, it may be differ from actual measurement due to modification of circuit and so on.

5.The voltage being indicated here may be include observational-error (deviation) due to internal-resistance and/or reactance of equipment. Therefore, handle the value indicated on here as reference.

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

7.Indication on Schematic diagrams:



S2. Voltage Chart

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

S2.1. Sub Operation Flex P.C.B.

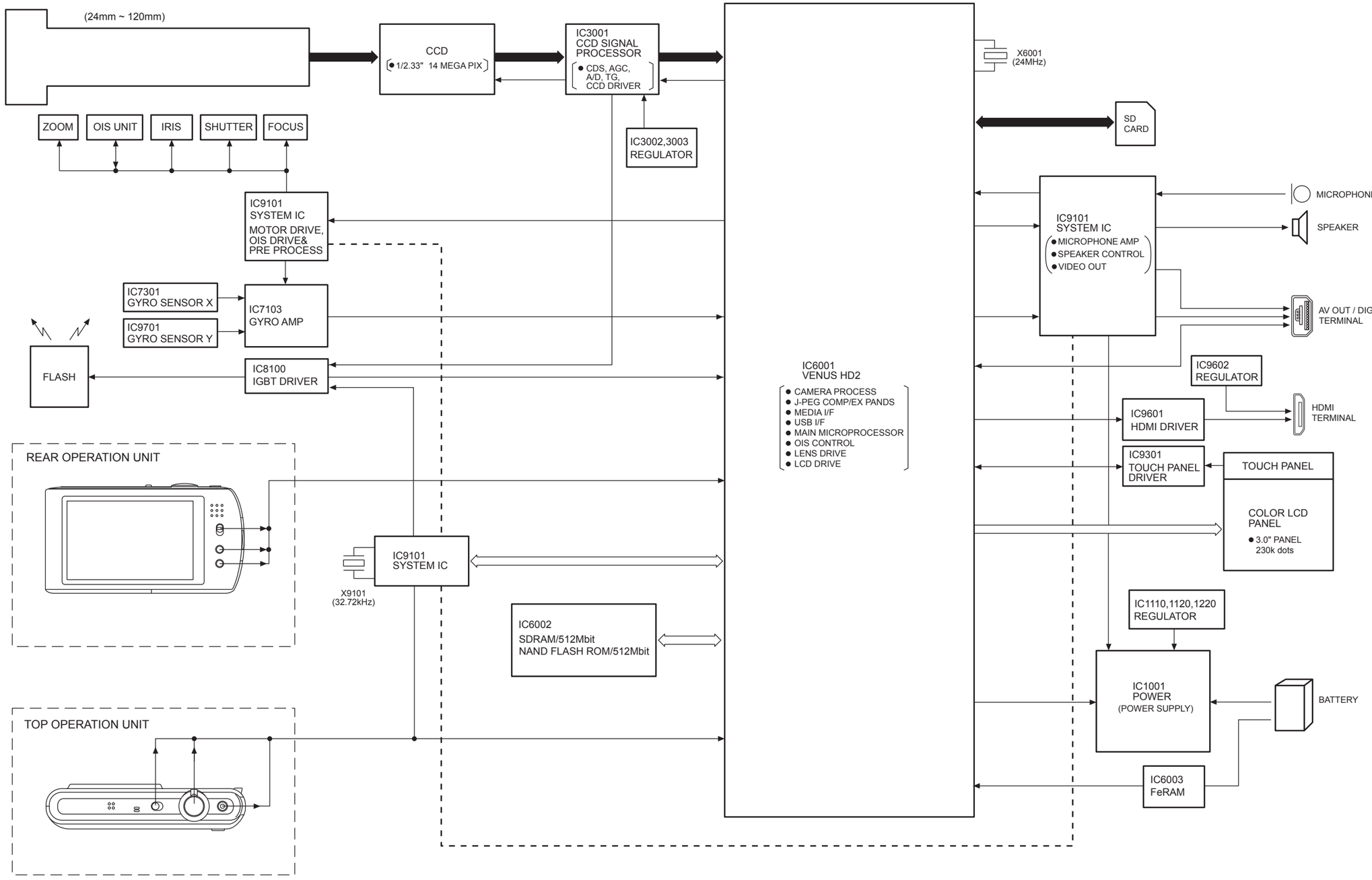
REF No.	PIN No.	POWER ON
IC9701	1	-
IC9701	2	-
IC9701	3	-
IC9701	4	0
IC9701	5	1.4
IC9701	6	1.4
IC9701	7	0
IC9701	8	3.1

S2.2. Flash Top P.C.B.

REF No.	PIN No.	POWER ON
IC8100	1	0
IC8100	2	0
IC8100	3	0
IC8100	4	0
IC8100	5	3.4
IC8100	6	0
IC8100	7	0
IC8100	8	0
IC8100	9	3.1
IC8100	10	8.9

S3. Block Diagram

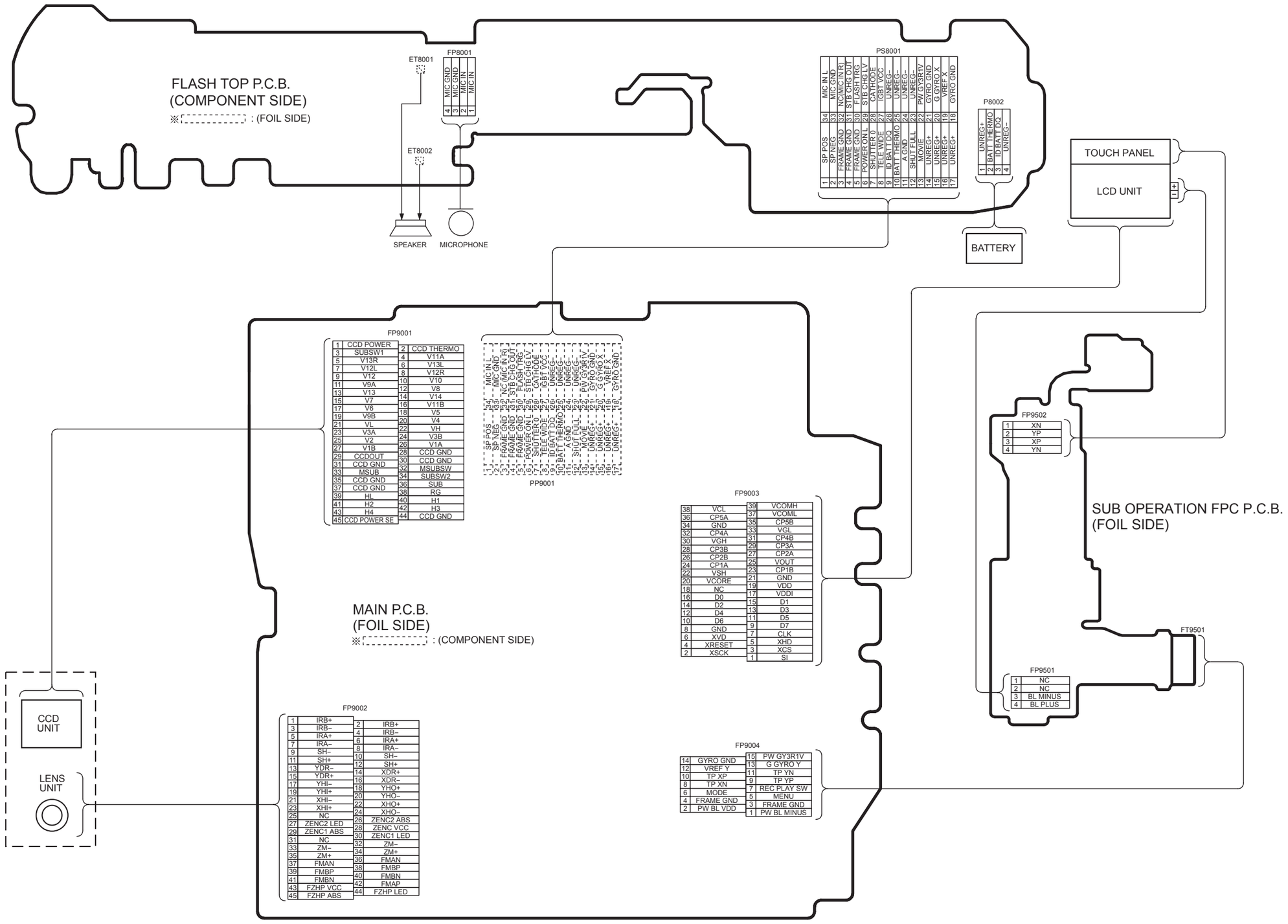
S3.1. Overall Block Diagram



DMC-FX70/FX75 OVERALL BLOCK DIAGRAM

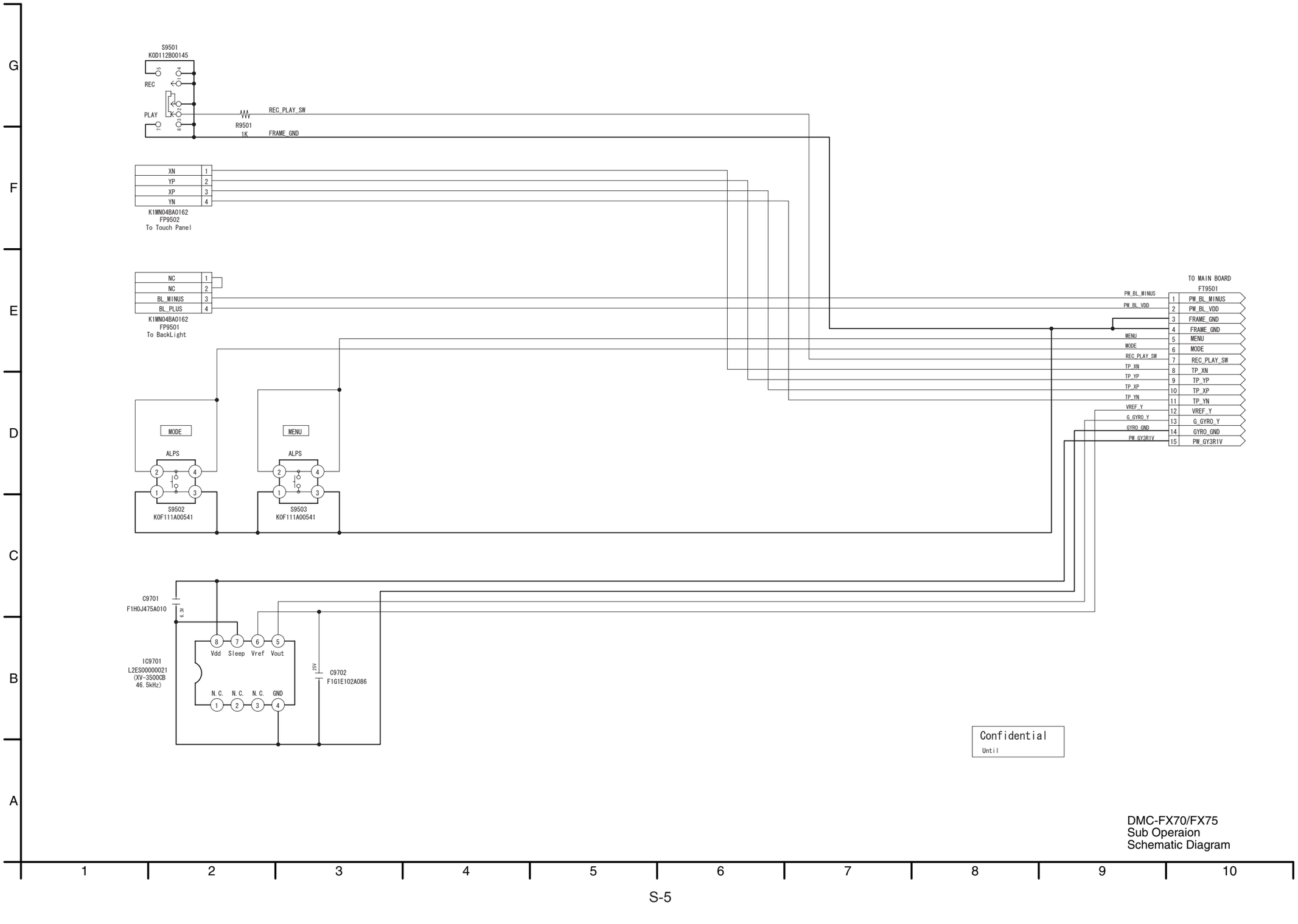
S4. Schematic Diagram

S4.1. Interconnection Diagram

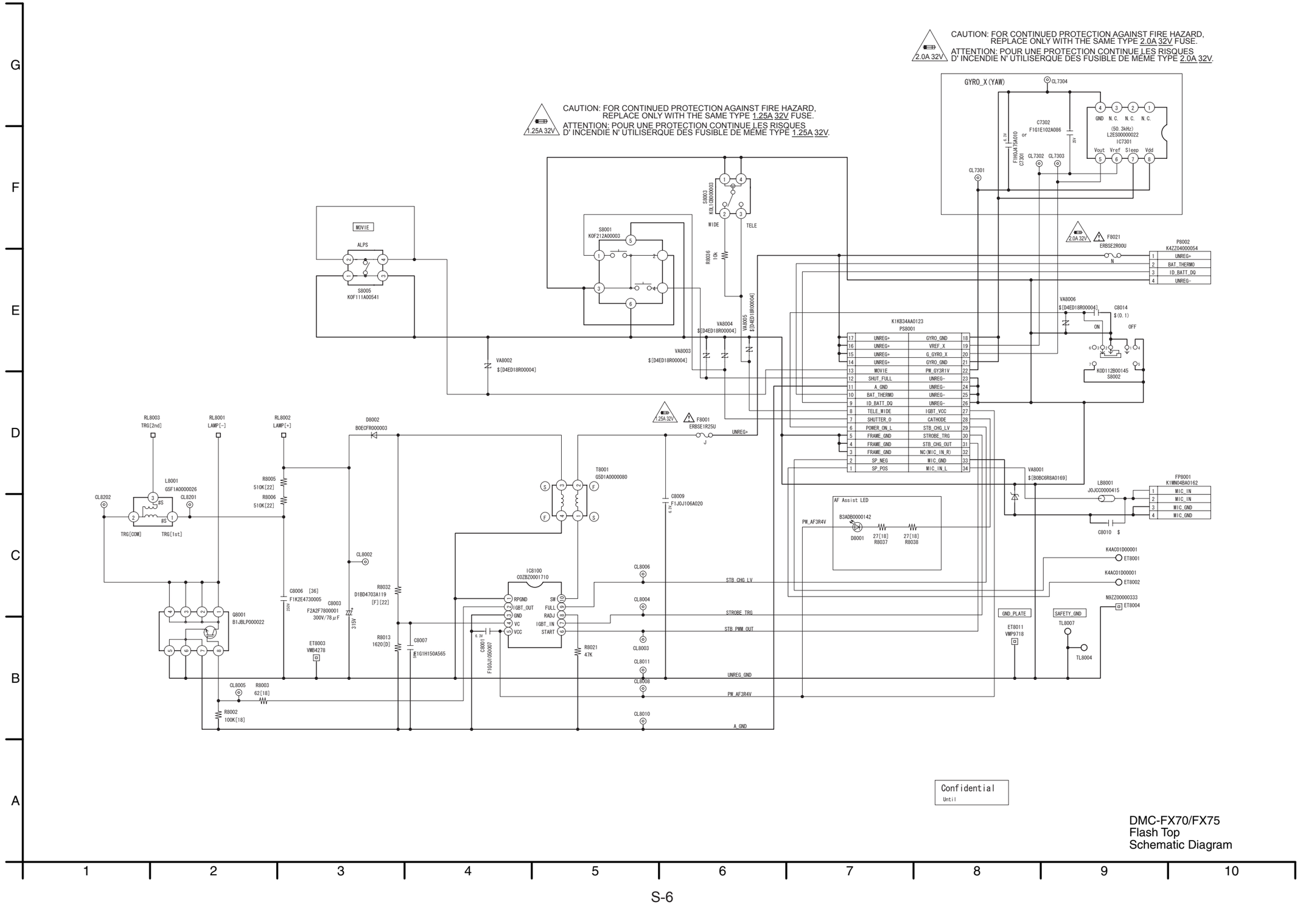


DMC-FX70/FX75 INTERCONNECTION DIAGRAM

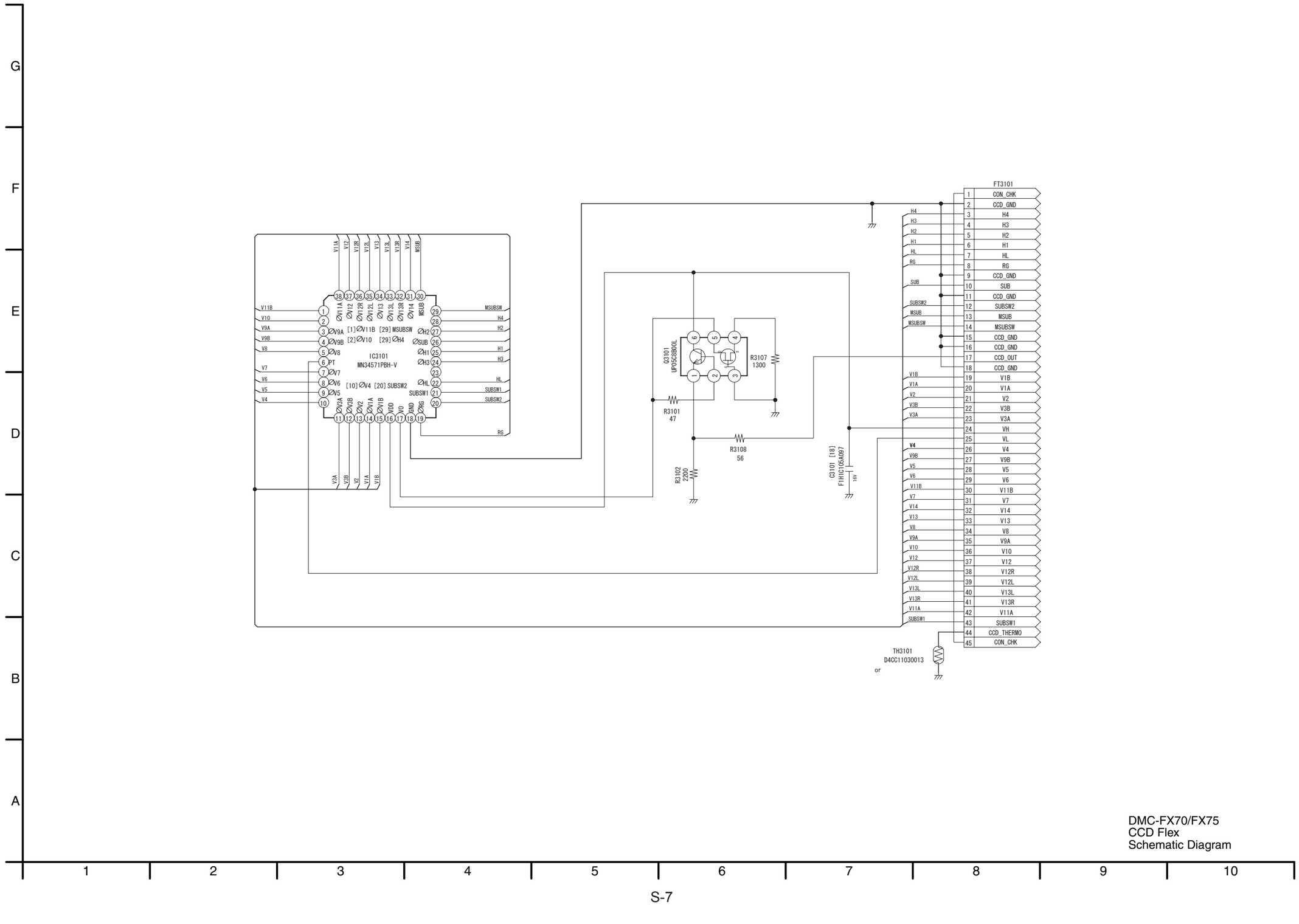
S4.2. Sub Operation Schematic Diagram



S4.3. Flash Top Schematic Diagram

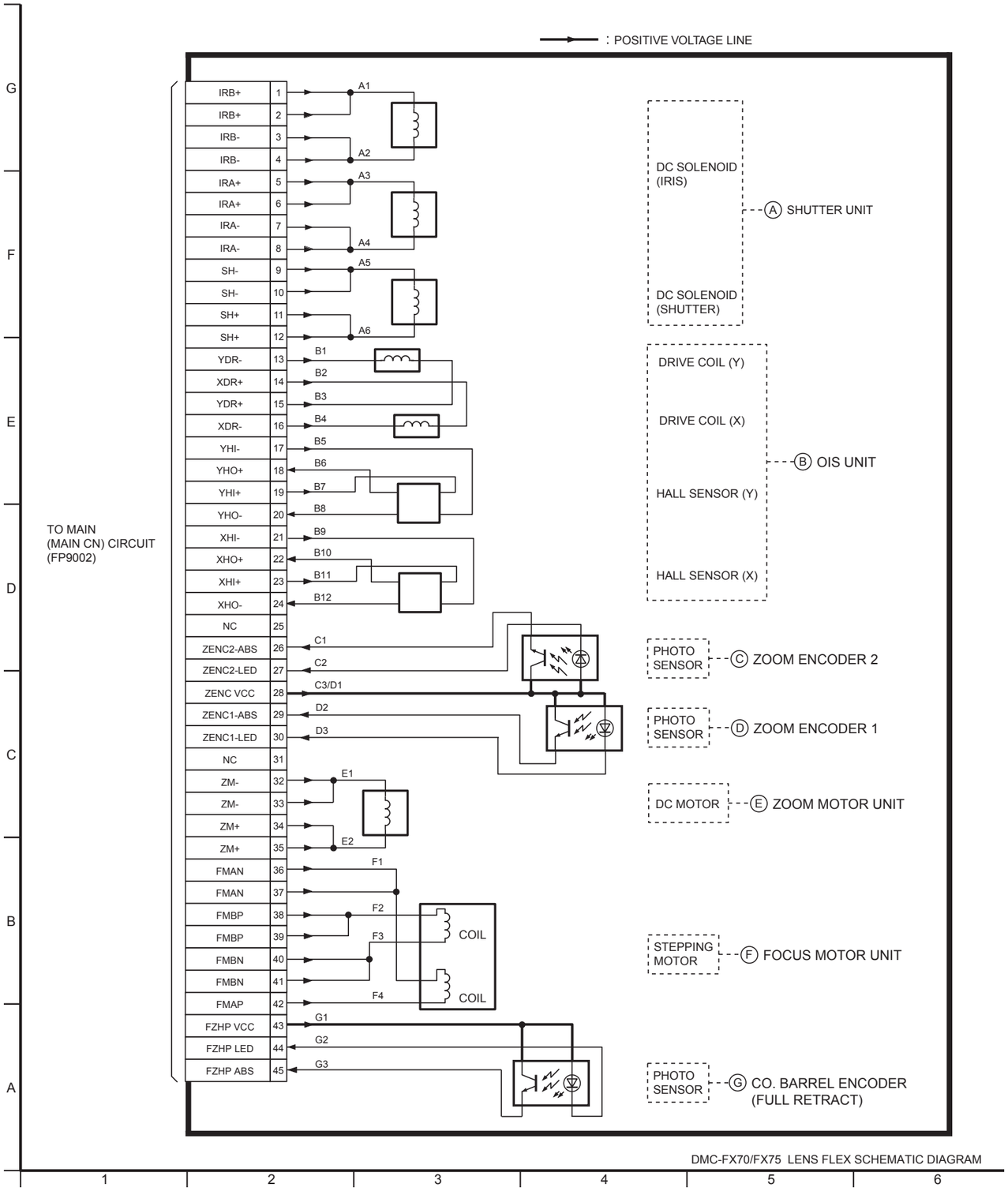


S4.4. CCD Flex Schematic Diagram



DMC-FX70/FX75
CCD Flex
Schematic Diagram

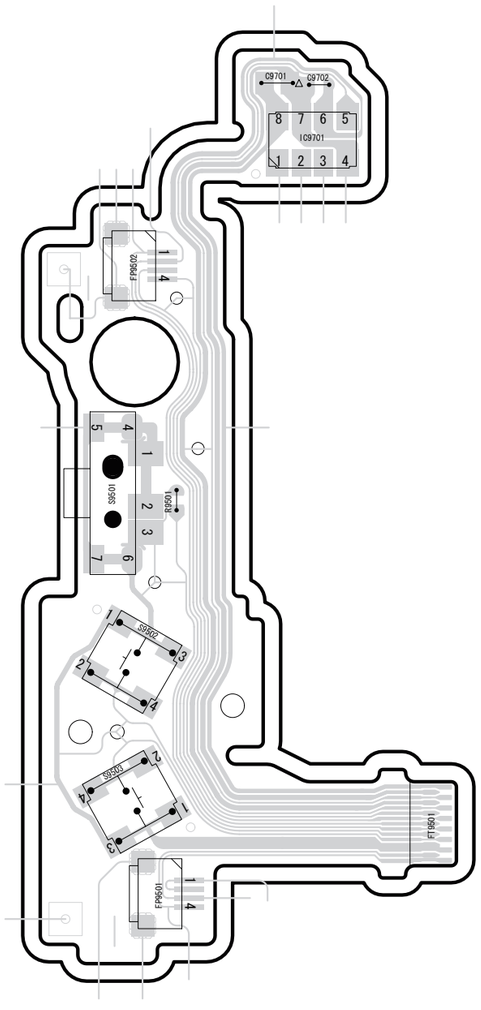
S4.5. Lens Flex Schematic Diagram



DMC-FX70/FX75 LENS FLEX SCHEMATIC DIAGRAM

S5. Print Circuit Board

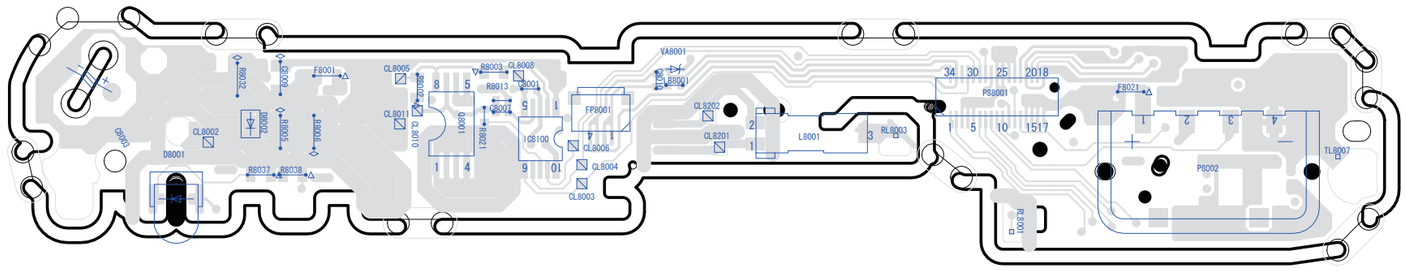
S5.1. Sub Operation Flex P.C.B.



(Foil Side)

DMC-FX70/FX75
Sub Operation Flex P.C.B.

S5.2. Flash Top P.C.B.

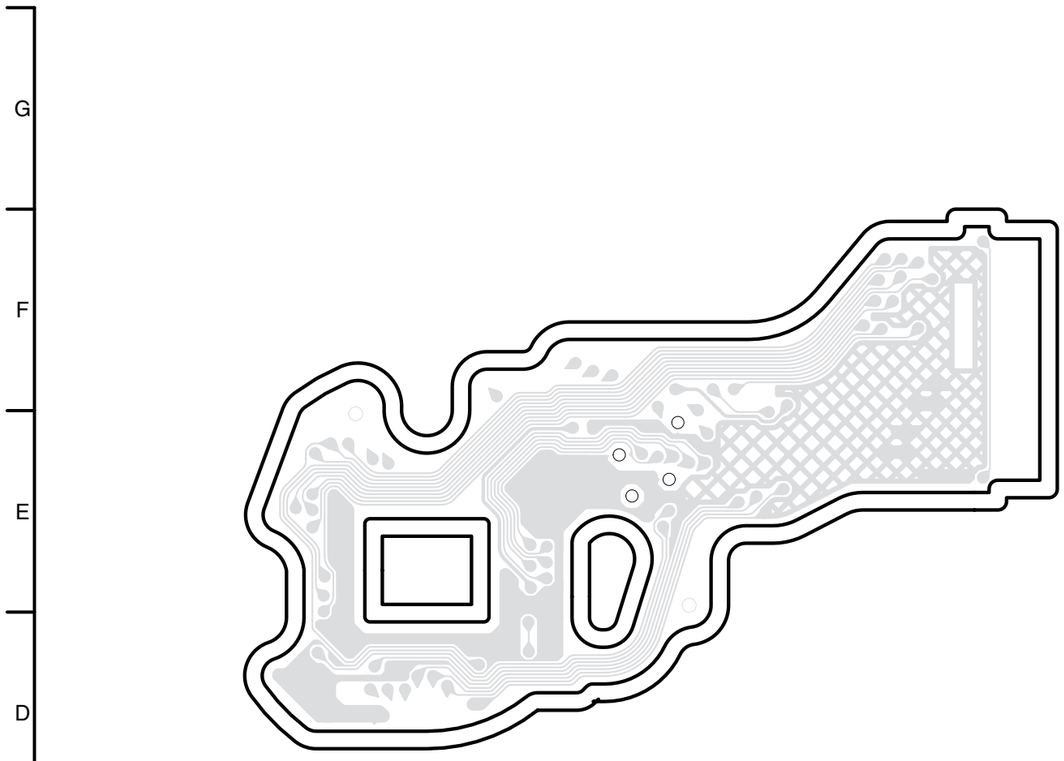


(Component Side)

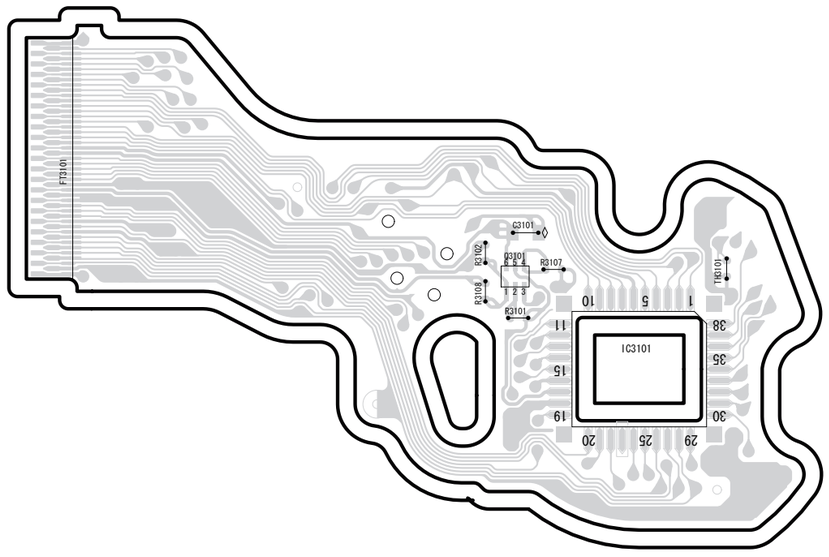
(Foil Side)

DMC-FX70/FX75
Flash Top P.C.B.

S5.3. CCD Flex P.C.B.



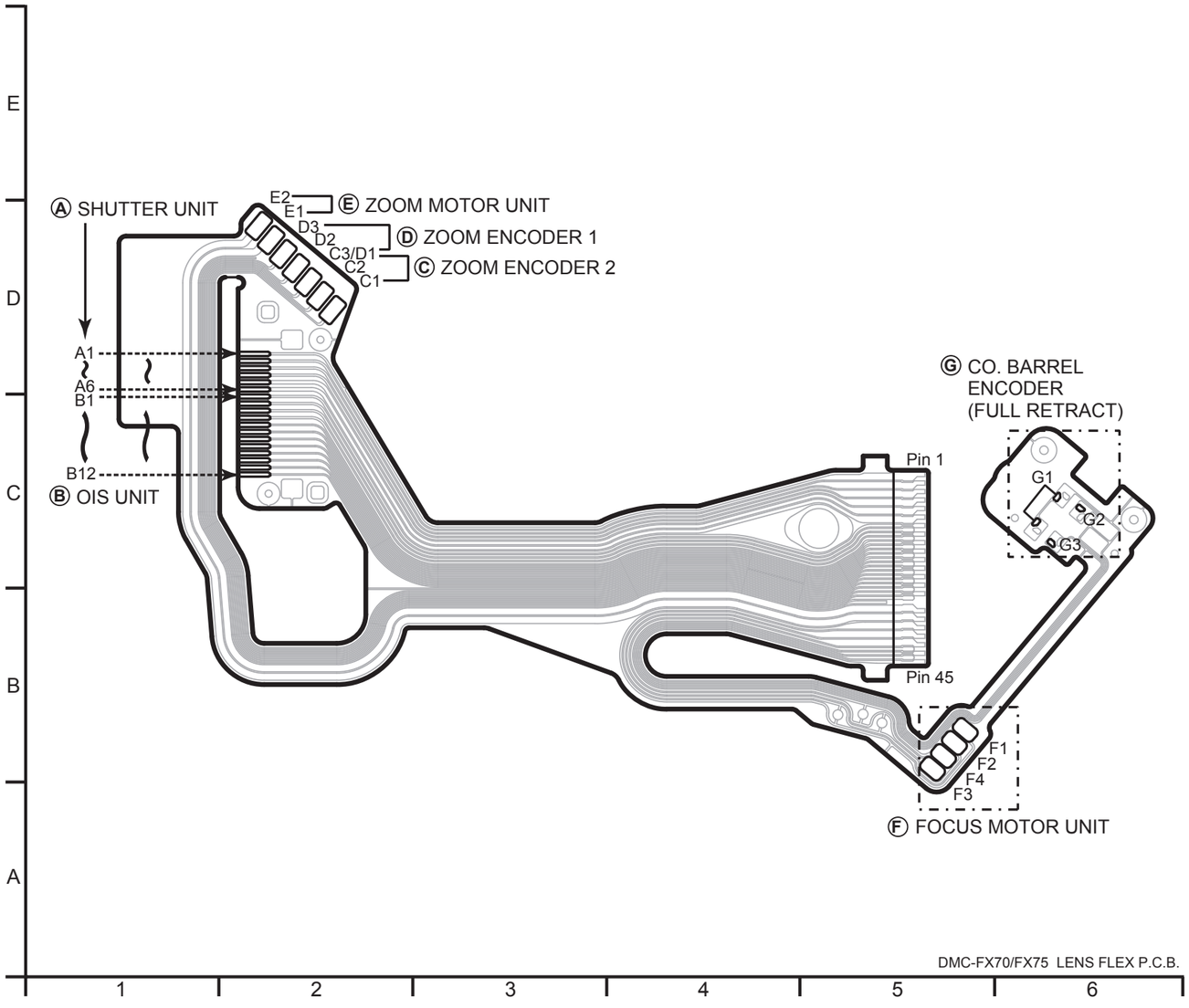
(Component Side)



(Foil Side)

DMC-FX70/FX75
CCD Flex P.C.B.

S5.4. Lens Flex P.C.B.



S6. Replacement Parts List

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

E.S.D. standards for Electrostatically Sensitive Devices, refer to PREVENTION OF ELECTROSTATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES section.

Definition of Parts supplier:

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

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
##	VEP56110A	MAIN P.C.B.	1	EXCEPT EG,EP,EF,EB
				(RTL) E.S.D.
##	VEP56110B	MAIN P.C.B.	1	EG,EP,EF,EB (RTL) E.S.D.
##	VEP50066A	SUB OPERATION FPC UNIT	1	(RTL) E.S.D.
##	VEP58125A	FLASH TOP P.C.B.	1	(RTL) [PAVCSG] E.S.D.
##	VEK0Q96	CCD UNIT	1	E.S.D.
##	VEP50066A	SUB OPERATION FPC UNIT		(RTL) E.S.D.
C9701	F1H0J475A010	C.CAPACITOR CH 6.3V 4.7U	1	
C9702	F1G1H1020008	C.CAPACITOR CH 50V 1000P	1	
FP9501	K1MN04BA0162	CONNECTOR 4P	1	
FP9502	K1MN04BA0162	CONNECTOR 4P	1	
IC9701	L2ES00000021	IC	1	E.S.D.
R9501	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	
S9501	K0D112B00145	SWITCH	1	
S9502	K0F111A00541	SWITCH	1	
S9503	K0F111A00541	SWITCH	1	
##	VEP58125A	FLASH TOP P.C.B.		(RTL) [PAVCSG] E.S.D.
C7301	F1H0J475A010	C.CAPACITOR CH 6.3V 4.7U	1	[PAVCSG]
C7302	F1G1E102A086	C.CAPACITOR CH 25V 1000P	1	[PAVCSG]
C8001	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	[PAVCSG]
C8006	F1K2E4730005	C.CAPACITOR 250V 0.047U	1	[PAVCSG]
C8007	F1G1H150A565	C.CAPACITOR CH 50V 15	1	[PAVCSG]
C8009	F1J0J106A016	C.CAPACITOR CH 6.3V 10U	1	[PAVCSG]
D8001	B3ADB0000142	DIODE	1	[PAVCSG] E.S.D.
D8002	B0ECFR000003	DIODE	1	[PAVCSG] E.S.D.
ET8001	K4AC01D00001	EARTH SPRING	1	[PAVCSG]
ET8002	K4AC01D00001	EARTH SPRING	1	[PAVCSG]
ET8004	N9ZZ00000333	EARTH SPRING	1	[PAVCSG]
⚠ F8001	ERBSE1R25U	FUSE 32V 1.25A	1	[PAVCSG]
⚠ F8021	ERBSE2R00U	FUSE 32V 2.0A	1	[PAVCSG]
FP8001	K1MN04BA0162	CONNECTOR 4P	1	[PAVCSG]
IC7301	L2ES00000022	IC	1	[PAVCSG] E.S.D.
IC8100	C0ZBZ0001710	IC	1	[PAVCSG] E.S.D.
L8001	G5F1A0000026	COIL	1	[PAVCSG]
LB8001	J0JCC0000415	FILTER	1	[PAVCSG]
P8002	K4ZZ04000054	CONNECTOR 4P	1	[PAVCSG]
PS8001	K1KB34AA0123	CONNECTOR 34P	1	[PAVCSG]
Q8001	B1JBLP000022	TRANSISTOR	1	[PAVCSG] E.S.D.
R8002	ERJ3GEYJ104V	M.RESISTOR CH 1/10W 100K	1	[PAVCSG]
R8003	ERJ3GEYJ620V	M.RESISTOR CH 1/10W 62	1	[PAVCSG]
R8005	ERJ6GEYJ514V	M.RESISTOR CH 1/10W 514K	1	[PAVCSG]
R8006	ERJ6GEYJ514V	M.RESISTOR CH 1/10W 514K	1	[PAVCSG]
R8013	ERJ2RHD1621X	RESISTOR	1	[PAVCSG]
R8021	ERJ2GEJ473X	M.RESISTOR CH 1/16W 47K	1	[PAVCSG]
R8032	D1BD4703A119	RESISTOR	1	[PAVCSG]
R8036	ERJ2GEJ103X	M.RESISTOR CH 1/10W 10K	1	[PAVCSG]
R8037	ERJ3GEYJ270V	M.RESISTOR CH 1/10W 27	1	[PAVCSG]
R8038	ERJ3GEYJ270V	M.RESISTOR CH 1/10W 27	1	[PAVCSG]
S8001	K0F212A00003	SWITCH	1	[PAVCSG]
S8002	K0D112B00145	SWITCH	1	[PAVCSG]
S8003	K0L1CB000003	SWITCH	1	[PAVCSG]
S8005	K0F111A00541	SWITCH	1	[PAVCSG]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
T8001	G5D1A0000080	TRANSFORMER	1	[PAVCSG]
##	VEK0Q96	CCD UNIT		E.S.D.
C3101	F1H1C105A161	C.CAPACITOR CH 16V 1U	1	
Q3101	UP05C8B00L	TRANSISTOR	1	E.S.D.
R3101	ERJ2GEJ470	M.RESISTOR CH 1/16W 47	1	
R3102	ERJ2GEJ222	M.RESISTOR CH 1/10W 2.2K	1	
R3107	ERJ2GEJ132	M.RESISTOR CH 1/10W 1.3K	1	
R3108	ERJ2GEJ560X	M.RESISTOR CH 1/10W 56	1	
TH3101	D4CC11030013	THERMISTOR	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
⚠ 1	ML-421S/ZTK	BUTTON BATTERY	1	[ENERGY] (B9101)
2	VEP56110B	MAIN P.C.B.	1	EG,EP,EF,EB (RTL) E.S.D.
2	VEP56110A	MAIN P.C.B.	1	EXCEPT EG,EP,EF,EB
				(RTL) E.S.D.
3	VEP50066A	SUB OPERATION FPC UNIT	1	(RTL) E.S.D.
4	VGQ0N42	PCB FRAME	1	
5	VGU0G44	REC/PLAYBACK SELECTOR KNOB	1	
6	VYK4E27	REAR CASE UNIT	1	(-S)
6	VYK4E32	REAR CASE UNIT	1	(-K)
6	VYK4E30	REAR CASE UNIT	1	(-P)
6	VYK4E28	REAR CASE UNIT	1	(-N)
6	VYK4E29	REAR CASE UNIT	1	(-A)
6	VYK4E31	REAR CASE UNIT	1	(-V)
6-1	VGU0G43	CURSOR BUTTON	1	
7	VYK4E33	LCD UNIT	1	
7-1	VYK4K16	TOUCH PANEL UNIT	1	
11	VGK3652	SIDE ORNAMENT (L)	1	
12	VGQ0M00	BATTERY LOCK KNOB	1	
13	VKF4729	JACK DOOR	1	
14	VKH0456	STRAP HOLDER	1	
15	VMB3962	BATTERY LOCK SPRING	1	
16	VMB4395	BATTERY OUT SPRING	1	
17	VMP9714	BATTERY CASE	1	
18	VMP9715	FRAME	1	
19	VMS8049	JACK DOOR SHAFT	1	
20	VMP9716	TRIPOD	1	
21	VMP9717	BOTTOM ORNAMENT	1	
22	VYK4E47	FRONT CASE UNIT	1	EG-S,SG-S,GC-S,GH-S,GK-S
22	VYK4E52	FRONT CASE UNIT	1	EG-K,EP-K,EF-K,EB-K,EE-K,
				SG-K,PU-K,GC-K,GH-K,GT-K,
				GK-K,GN-K,GD-K
22	VYK4E50	FRONT CASE UNIT	1	(-P)
22	VYK4E48	FRONT CASE UNIT	1	(-N)
22	VYK4E49	FRONT CASE UNIT	1	(-A)
22	VYK4E53	FRONT CASE UNIT	1	P-S
22	VYK4E58	FRONT CASE UNIT	1	P-K
22	VYK4E51	FRONT CASE UNIT	1	(-V)
23	VMP9713	FRAME PLATE	1	
50	VGL1290	AF PANEL LIGHT	1	[PAVCSG]
51	VYK4E43	TOP CASE UNIT	1	(DMC-FX70) [PAVCSG]
51	VYK4E44	TOP CASE UNIT	1	(DMC-FX75) [PAVCSG]
51-1	VGQ0F94	POWER KNOB BASE	1	[PAVCSG]
51-2	VGU0F42	POWER KONB	1	[PAVCSG]
51-3	VGU0G45	REC BUTTON	1	[PAVCSG]
52	WM-G10DT651	MIC UNIT	1	[PAVCSG]
53	VEK0Q50	FLASH UNIT	1	[PAVCSG]
⚠ 54	F2A2F7800001	E.CAPACITOR	1	[PAVCSG] (C8003)
55	L0AA01A00032	SPEAKER	1	[PAVCSG]
56	VEP58125A	FLASH TOP P.C.B.	1	(RTL) [PAVCSG] E.S.D.
57	VMB4278	EARTH SPRING	1	[PAVCSG] (ET8003)
58	VMP9718	TOP PLATE	1	[PAVCSG] (ET8011)
59	VGQ0Q77	TOP CUSHION	1	[PAVCSG]
70	VYK4E38	BATTERY DOOR UNIT	1	[PAVCSG]
70-1	VMB4332	BATTERY DOOR SPRING	1	[PAVCSG]
70-2	VMS7863	BATTERY DOOR SHAFT	1	[PAVCSG]
100	VXW1193	LENS UNIT (W/O CCD)	1	
101	VMA0X49	CCD ADJUSTMENT SPRING	1	
102	VEK0Q96	CCD UNIT	1	E.S.D.
103	L6DA8DGD0001	ZOOM MOTOR	1	
104	VEK0Q55	LENS FPC P.C.B. UNIT	1	
104-1	B3NBA0000018	PHOTO SENSOR	1	
105	VXP3520	1ST LENS FRAME UNIT	1	
106	VXP3466	2ND LENS FRAME UNIT	1	
107	VXP3471	FIXED/DRIVE/CAM FRAME UNIT	1	
108	VXQ1922	MASTER FLANGE UNIT	1	
108-1	L6HA64NC0022	FOCUS MOTOR UNIT	1	
108-2	VMB4308	FOCUS SPRING	1	
108-3	VXP3477	3RD LENS FRAME UNIT	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
B1	VHD1876	SCREW	1	
B2	VHD1876	SCREW	1	
B3	VHD2239	SCREW	1	
B4	VHD2239	SCREW	1	
B5	VHD2239	SCREW	1	
B6	VHD2239	SCREW	1	
B7	VHD2240	SCREW	1	(-K,-V)
B7	VHD2239	SCREW	1	(-A/N/P/S)
B8	VHD2240	SCREW	1	(-K,-V)
B8	VHD2239	SCREW	1	(-A/N/P/S)
B9	XQN16+BJ7FJK	SCREW	1	
B10	XQN16+BJ7FJK	SCREW	1	
B11	XQN16+BJ7FJK	SCREW	1	
B50	VHD1998	SCREW	1	[PAVCSG]
B51	VHD1998	SCREW	1	[PAVCSG]
B101	VHD2244	SCREW	1	
B102	VHD2244	SCREW	1	
B103	VHD2244	SCREW	1	
B105	VHD2011	SCREW	1	
B106	XQN14+BJ4FNK	SCREW	1	
B107	XQN14+BJ4FNK	SCREW	1	
B108	XQN14+BJ4FNK	SCREW	1	
B109	XQN14+BJ4FNK	SCREW	1	
B110	XQN14+BJ4FNK	SCREW	1	
B111	XQN14+BJ4FNK	SCREW	1	
B112	XQN14+BJ4FNK	SCREW	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
200	VPF1317	CAMERA BAG	1	P,PU
⚠ 201	DE-A59BB	BATTERY CHARGER	1	P,PU
⚠ 202	-----	BATTERY	1	P,PU
204	K1HA08AD0002	USB CABLE W/PLUG	1	P,PU
205	K1HA08CD0028	AV CABLE W/PLUG	1	P,PU
206	VFC4297	HAND STRAP	1	P,PU
⚠ 207	VFF0650-S	CD-ROM	1	P,PU
		(SOFTWARE/INSTRUCTION BOOK)		See "Notes"
208	VGQ0D56	BATTERY PROTECTION CASE	1	P,PU
210	VPF1230	BAG, POLYETHYLENE	1	P,PU
⚠ 212	VQT2V46	SIMPLIFIED O/I	1	P
		(ENGLISH/SPANISH)		
⚠ 212	VQT2V48	SIMPLIFIED O/I	1	PU
		(SPANISH/PORTUGUESE)		
213	VQC7823	O/I SOFTWARE	1	P
		(ENGLISH/CANADIAN FRENCH)		
213	VQC7824	O/I SOFTWARE	1	PU
		(SPANISH/PORTUGUESE)		
214	VPK4512	PACKING CASE	1	P-S
214	VPK4517	PACKING CASE	1	P-K
214	VPK4519	PACKING CASE	1	PU-K Please use the attached
				Ref. No.225 (NTSC LABEL).
214	VPK4526	PACKING CASE	1	PU-V Please use the attached
				Ref. No.225 (NTSC LABEL).
215	VPN7070	CUSHION	1	P,PU
218	VGQ0C14	TOUCH PEN	1	P,PU
223	VPN7104	PAD	1	P,PU
225	VQL1Z22	NTSC LABEL	1	PU

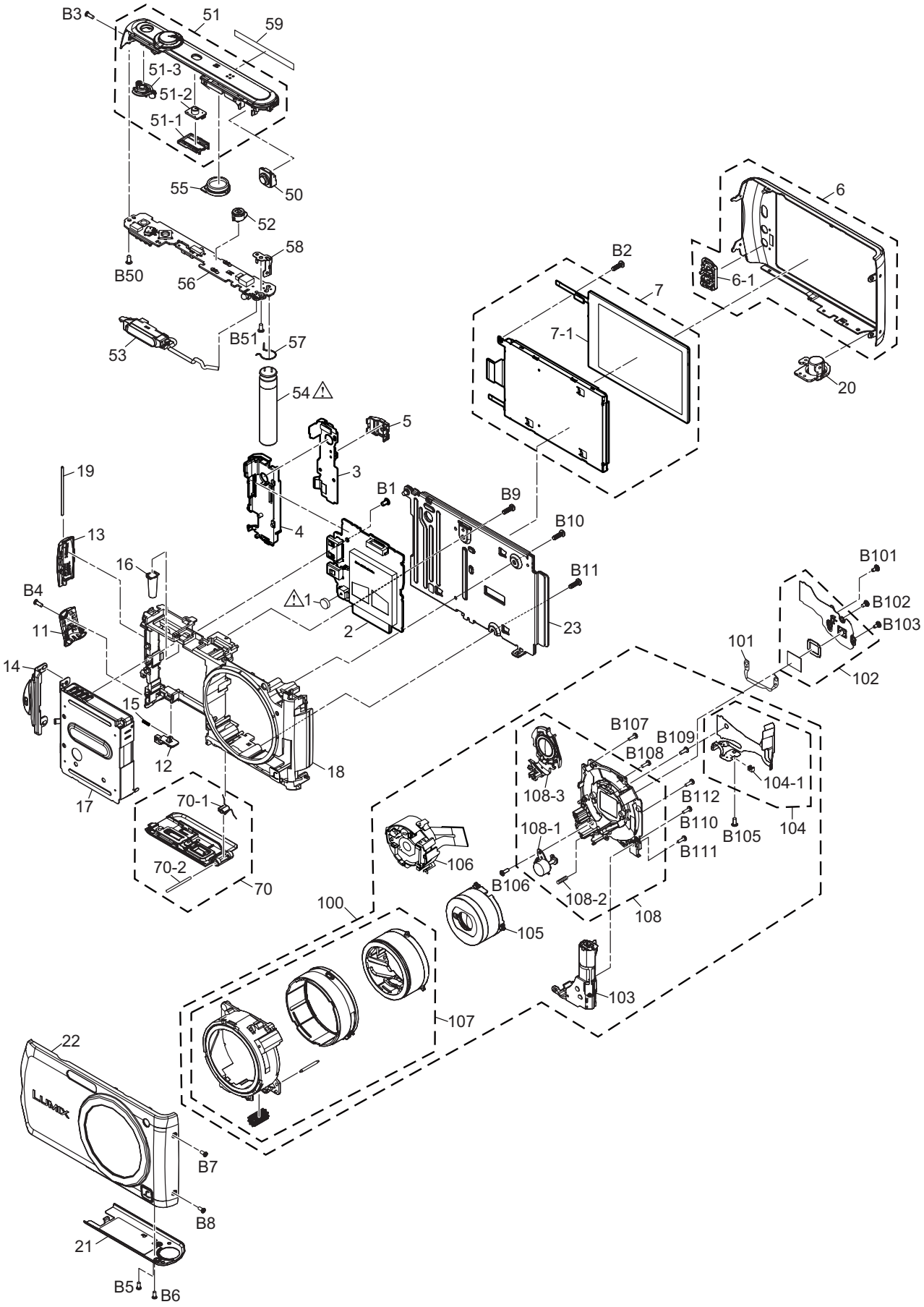
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
300	VPF1317	CAMERA BAG	1	EXCEPT P,PU
⚠ 301	DE-A60AA	BATTERY CHARGER	1	EG,EP,EF,EB,GN
⚠ 301	DE-A60BB	BATTERY CHARGER	1	EE,GC,GH,GK,GD
⚠ 301	DE-A60EA	BATTERY CHARGER	1	SG
⚠ 301	DE-A60CA	BATTERY CHARGER	1	GT
⚠ 302	-----	BATTERY	1	EXCEPT P,PU
304	K1HA08AD0002	USB CABLE W/PLUG	1	EXCEPT P,PU
305	K1HA08CD0028	AV CABLE W/PLUG	1	EXCEPT P,PU
306	VFC4297	HAND STRAP	1	EXCEPT P,PU
⚠ 307	VFF0651-S	CD-ROM	1	EG,EP,EF,EB
		(SOFTWARE/INSTRUCTION BOOK)		See "Notes"
⚠ 307	VFF0652-S	CD-ROM	1	EE,SG
		(SOFTWARE/INSTRUCTION BOOK)		See "Notes"
⚠ 307	VFF0653-S	CD-ROM	1	GC,GH,GN
		(SOFTWARE/INSTRUCTION BOOK)		See "Notes"
⚠ 307	VFF0654-S	CD-ROM	1	GT,GD
		(SOFTWARE/INSTRUCTION BOOK)		See "Notes"
⚠ 307	VFF0655-S	CD-ROM	1	GK
		(SOFTWARE/INSTRUCTION BOOK)		See "Notes"
308	VGQ0D56	BATTERY PROTECTION CASE	1	EXCEPT P,PU
310	VPF1230	BAG, POLYETHYLENE	1	EXCEPT P,PU
⚠ 312	VQT2V49	SIMPLIFIED O/I	1	EG
		(GERMAN/FRENCH)		
⚠ 312	VQT2V50	SIMPLIFIED O/I	1	EG
		(ITALIAN/DUTCH)		
⚠ 312	VQT2V51	SIMPLIFIED O/I	1	EG
		(SPANISH/PORTUGUESE)		
⚠ 312	VQT2V52	SIMPLIFIED O/I	1	EG
		(TURKISH)		
⚠ 312	VQT2V53	SIMPLIFIED O/I	1	EP
		(SWEDISH/DANISH)		
⚠ 312	VQT2V54	SIMPLIFIED O/I	1	EP
		(POLISH/CZECH)		
⚠ 312	VQT2V55	SIMPLIFIED O/I	1	EP
		(HUNGARIAN/FINNISH)		
⚠ 312	VQT2V56	SIMPLIFIED O/I	1	EF
		(FRENCH)		
⚠ 312	VQT2V57	SIMPLIFIED O/I	1	EB
		(ENGLISH)		
⚠ 312	VQT2V58	SIMPLIFIED O/I	1	EE
		(RUSSIAN/UKRAINIAN)		
⚠ 312	VQT2V59	SIMPLIFIED O/I	1	SG,GC,GH
		(ENGLISH/		
		CHINESE(TRADITIONAL))		
⚠ 312	VQT2V60	SIMPLIFIED O/I	1	GC
		(ARABIC/PERSIAN)		
⚠ 312	VQT2V61	SIMPLIFIED O/I	1	GT
		(CHINESE(TRADITIONAL))		
⚠ 312	VQT2V62	SIMPLIFIED O/I	1	GK
		(CHINESE(SIMPLIFIED))		
⚠ 312	VQT2V63	SIMPLIFIED O/I	1	GN
		(ENGLISH)		
⚠ 312	VQT2W13	SIMPLIFIED O/I	1	GD
		(KOREAN)		
313	VQC7825	O/I SOFTWARE	1	EG
		(GERMAN/FRENCH/ITALIAN/		
		DUTCH/SPANISH/PORTUGUESE/		
		TURKISH)		
313	VQC7826	O/I SOFTWARE	1	EP
		(SWEDISH/DANISH/POLISH/		
		CZECH/HUNGARIAN/FINNISH)		
313	VQC7827	O/I SOFTWARE	1	EF
		(FRENCH)		
313	VQC7828	O/I SOFTWARE	1	EB,GN
		(ENGLISH)		
313	VQC7829	O/I SOFTWARE	1	EE
		(RUSSIAN/UKRAINIAN)		
313	VQC7830	O/I SOFTWARE	1	SG,GC,GH
		(ENGLISH/		
		CHINESE(TRADITIONAL)/		
		ARABIC/PERSIAN)		
313	VQC7831	O/I SOFTWARE	1	GT
		(CHINESE(TRADITIONAL))		
313	VQC7832	O/I SOFTWARE	1	GK
		(CHINESE(SIMPLIFIED))		

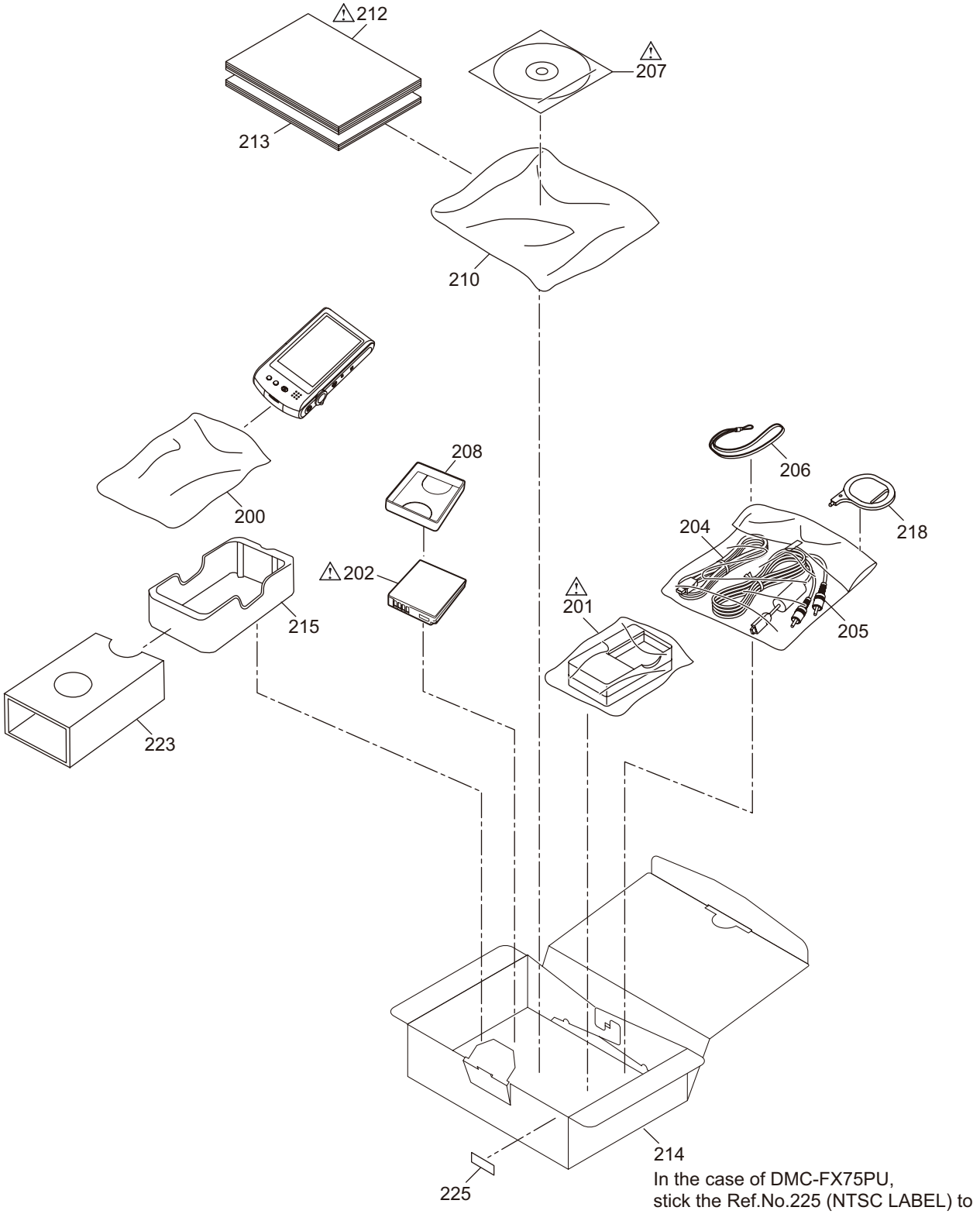
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
313	VQC7833	O/I SOFTWARE	1	GD
		(KOREAN)		
314	VPK4513	PACKING CASE	1	EG-S,SG-S
314	VPK4518	PACKING CASE	1	EG-K,EP-K,EF-K,EB-K,EE-K,
				SG-K
314	VPK4522	PACKING CASE	1	SG-P
314	VPK4528	PACKING CASE	1	SG-N
314	VPK4530	PACKING CASE	1	SG-A
314	VPK4514	PACKING CASE	1	GC-S,GH-S
314	VPK4523	PACKING CASE	1	GC-P,GH-P
314	VPK4529	PACKING CASE	1	GC-N,GH-N
314	VPK4519	PACKING CASE	1	GC-K,GH-K,GN-K
314	VPK4515	PACKING CASE	1	GK-S
314	VPK4520	PACKING CASE	1	GK-K
314	VPK4524	PACKING CASE	1	GK-P
314	VPK4527	PACKING CASE	1	GK-V
314	VPK4519	PACKING CASE	1	GT-K,GD-K Please use the
				attached Ref.No.325 (NTSC
				LABEL).
314	VPK4523	PACKING CASE	1	GT-P,GD-P Please use the
				attached Ref.No.325 (NTSC
				LABEL).
314	VPK4526	PACKING CASE	1	GT-V Please use the attached
				Ref.No.325 (NTSC LABEL).
314	VPK4529	PACKING CASE	1	GT-N,GD-N Please use the
				attached Ref.No.325 (NTSC
				LABEL).
315	VPN7070	CUSHION	1	EXCEPT P,PU
318	VGQ0C14	TOUCH PEN	1	EXCEPT P,PU
⚠ 319	K2CT39A00002	AC CORD W/PLUG	1	EB,GC,GH
⚠ 320	K2CQ29A00002	AC CORD W/PLUG	1	EG,EP,EF,EE,GC
⚠ 320	K2CR29A00001	AC CORD W/PLUG	1	GD
⚠ 321	K2CJ29A00002	AC CORD W/PLUG	1	GN
⚠ 322	K2CA29A00023	AC CORD W/PLUG	1	SG
⚠ 322	K2CA29A00021	AC CORD W/PLUG	1	GT
⚠ 322	K2CA2YY00070	AC CORD W/PLUG	1	GK
323	VPN7104	PAD	1	EXCEPT P,PU
324	VQL2C68-1	OPERATING LABEL	1	GT
325	VQL1Z22	NTSC LABEL	1	GT,GD

S7. Exploded View

S7.1. Frame and Casing Section



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



In the case of DMC-FX75PU,
stick the Ref.No.225 (NTSC LABEL) to
printed “PAL” of the packing case.

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