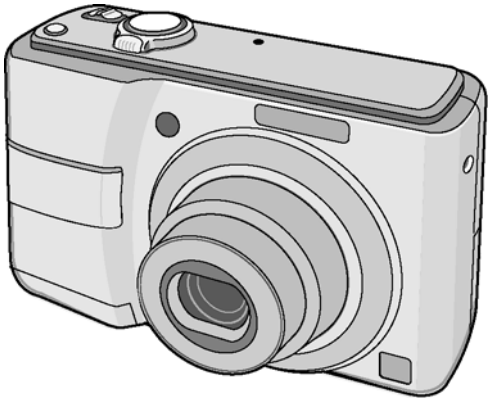
ORDER NO. DSC0802001CE
B26

Service Manual

Digital Camera

LUMIX



Model No. DMC-LS80P
DMC-LS80PC
DMC-LS80PL
DMC-LS80E
DMC-LS80EB
DMC-LS80EE
DMC-LS80EF
DMC-LS80EG
DMC-LS80GC
DMC-LS80GK
DMC-LS80GN

Vol. 1

Colour
(S).....Silver Type (except DMC-LS80EF)
(K).....Black Type (except DMC-LS80EB/GK/GN)
(P).....Pink Type (except DMC-LS80EF/PC/GC/GN)

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

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

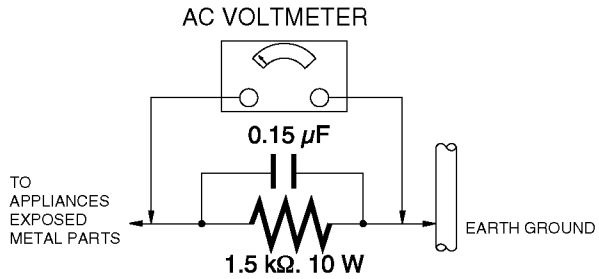


Figure. 1

1.4. How to Discharge the Capacitor on Flash Top PCB

CAUTION:

1. **Be sure to discharge the capacitor on FLASH TOP PCB.**
2. **Be careful of the high voltage circuit on FLASH TOP PCB when servicing.**

[Discharging Procedure]

1. Refer to the disassemble procedure and Remove the necessary parts/unit.
2. Put the insulation tube onto the lead part of Resistor (ERG5SJ102:1kΩ /5W).
   (an equivalent type of resistor may be used.)
3. Put the resistor between both terminals of capacitor on FLASH TOP PCB for approx. 5 seconds.
4. After discharging confirm that the capacitor voltage is lower than 10V using a voltmeter.

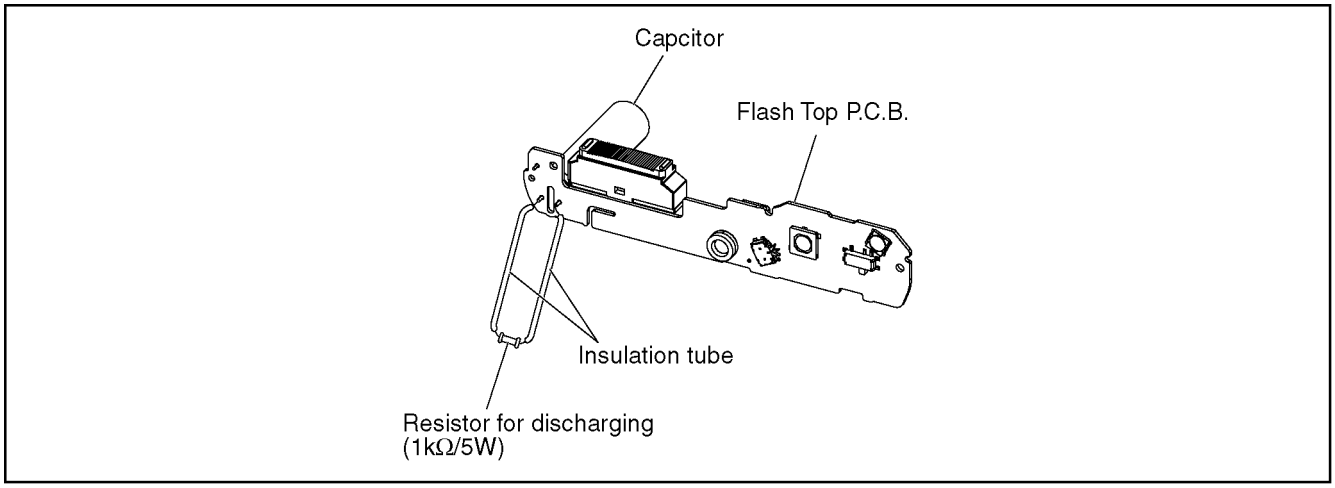


Fig. F1

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).

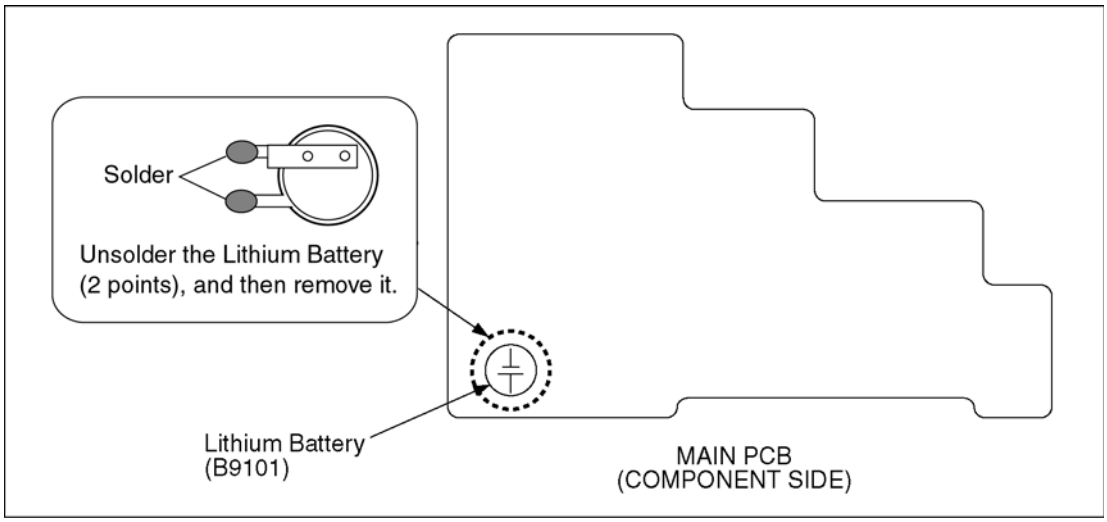
2.2. How to Replace the Lithium Battery

2.2.1. Replacement Procedure

1. Remove the Main PCB. (Refer to Disassembly Procedures.)
2. Unsolder the each soldering point of electric lead terminal for Lithium battery (Ref. No. “B9101” at component side of Main PCB) and remove the Lithium battery together with electric lead terminal. Then replace it into new one.

NOTE:

The Type No. ML614S/F9FE includes electric lead terminals.



NOTE:

This Lithium battery is a critical component.
(Type No.: ML614S/F9FE **Manufactured by Matsushita Battery Industrial Co.,Ltd.**)
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in requirement designed specifically for its use.
Replacement batteries must be of same type and manufacture.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the old battery or re-use it for any other purpose.
It should be disposed of in waste products destined for burial rather than incineration.

(For English)

CAUTION

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

(For German)

ACHTUNG

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

(For French)

MISE EN GARDE

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

NOTE:

Above caution are also applicable for below batteries which is for DMC-LS80 all series, as well.

1. AA Oxyride batteries
2. AA Alkaline batteries
3. AA Rechargeable Ni-MH (nickel-metal hydride) batteries

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. 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 PCB Lead Free Solder being used

The letter of "PbF" is printed either foil side or components side on the PCB 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 PCB 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 PCB 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.
  RFKZ03D01K----------(0.3mm 100g Reel)
  RFKZ06D01K----------(0.6mm 100g Reel)
  RFKZ10D01K----------(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%

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

1. The service manual does not contain the following information, because of the impossibility of servicing at component level without concerned equipment/facilites.
   a. Schematic diagram, Block Diagram and PCB layout of MAIN PCB.
   b. Parts list for individual parts for MAIN PCB.
   When a part replacement is required for repairing MAIN PCB, replace as an assembled parts. (Main PCB)
2. The following category is/are recycle module part. please send it/them to Central Repair Center.
   - MAIN PCB (DMC-LS80: VEP56056A)
     : Excluding replacement of Lithium Battery

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

There are five kinds of DMC-LS80, regardless of the colours.

- a) DMC-LS80S
- b) DMC-LS80P, LS80PC
- c) DMC-LS80EB/EG/E/GN, LS80EF
- d) DMC-LS80EE
- e) DMC-LS80PL/GC/GK

(DMC-LS80S is exclusively Japan domestic model.)

What is the difference is that the “INITIAL SETTINGS” data which is stored in Flash ROM mounted on Main PCB.

3.4.1. Defining methods:

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

a) DMC-LS80S

DMC-LS80S is exclusively Japan domestic model.

b) DMC-LS80P, LS80PC

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

c) DMC-LS80EB/EG/E/GN/EF

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

d) DMC-LS80EE

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

e) DMC-LS80PL/GC/GK

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

NOTE:

After replacing the MAIN PCB, be sure to achieve adjustment.

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

3.4.2. INITIAL SETTINGS:

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

1. IMPORTANT NOTICE:

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

> **CAUTION 1 (Inltlal Settings)**
> DO NOT select NONE(JAPAN)" or "P" (North America) if need to select "EG/E/PL/GC/GK/EF/EB/EE/GN and PC".
> Otherwise,once "NONE(JAPAN)" or "P" (North America) are selected, "EG/E/PL/GC/GK/EF/EB/EE/GN and PC" will not displayed, thus, RE-Settings (changing area) can not be made.

> **CAUTION 2 (Picture back up from "Built-in Memory")**
> This unit employs "Built-in Memory" for picture image data recording.(Approx.24MB) Be sure to make picture data back up (i.e., Copying to SD memory card), before proceeding "INITIAL SETTINGS".
> Once "INITIAL SETTINGS" has been carried out, all image data stored at "Built-in Memory" is erased.

2. PROCEDURES:

- Precautions: Proceed the picture back up from the unit. (Refer to above "CAUTION 2")
- **Preparation. Set the Recording mode to "Normal Picture Mode".**

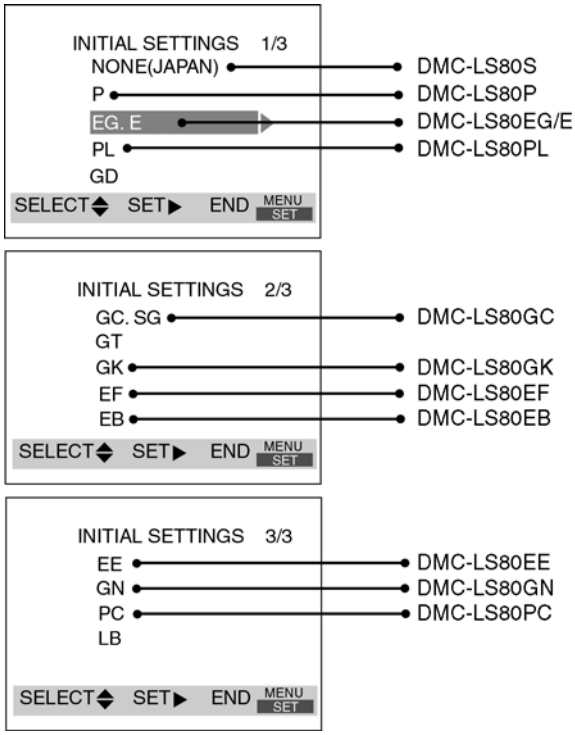
  Set the Recording/playback switch to “[Recording mode] (camera mark (UP))”.
  Turn on the power and then press the [MODE] button.
  Select the “NORMAL PICTURE MODE" using “[UP] ▲ / [DOWN] ▼ of Cursor button”.
  Press [MENU/SET] button, then turn the power off.
- **Step 1. The temporary cancellation of initial setting:**

  Set the Recording/playback switch to “[Recording mode] (camera mark (UP))”.
  While keep pressing [E.ZOOM], [MENU] and “[UP] ▲ of Cursor button” simultaneously, turn the Power on.
- **Step 2. The cancellation of initial setting:**

  Set the Recording/playback switch to “[Playback (Down)]”.
  Press [E.ZOOM], [MENU] and “[UP] ▲ of Cursor button” simultaneously, then turn the Power off.
- **Step 3. Turn the Power on:**

  Set the Recording/playback switch to “[Recording mode] (camera mark (UP))”, and then turn the Power on.
- **Step 4. Display the INITIAL SETTING:**

  While keep pressing [MENU] and “[RIGHT] ▶ of Cursor button” simultaneously, turn the Power off.

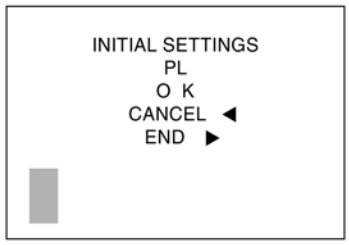


- **Step 5. Set the INITIAL SETTING: (Refer to “CAUTION 1”)**

[Caution for befor settings]

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

Select the area with pressing “[UP] ▲ / [DOWN] ▼ of Cursor button”, and then press the “[RIGHT] ▶ of Cursor button”.



The only set area is displayed, and then press the “[RIGHT] ▶ of Cursor button” after confirmation.
(The unit is powered off automatically.)
Confirm the display of “PLEASE SET THE CLOCK” in English when the unit is turned on again.

- **Step 6. CONFIRMATION:**

The display shows “PLEASE SET THE CLOCK” when turn the Power on again.
When the unit is connected to PC with USB cable, it is detected as removable media.
(When the “GK” model suffix is selected, the display shows “PLEASE SET THE CLOCK” in Chinese.)

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

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

	MODEL	VIDEO OUTPUT	LANGUAGE	DATE	REMARKS
a)	DMC-LS80S	NTSC	Japanese	Year/Month/Date	
b)	DMC-LS80P, DMC-LS80PC/PL	NTSC	English	Month/Date/Year	
c)	DMC-LS80EB/EG/E/GC/GN	PAL	English	Date/Month/Year	
d)	DMC-LS80EF	PAL	French	Date/Month/Year	
e)	DMC-LS80EE	PAL	Russian	Date/Month/Year	
f)	DMC-LS80GK	PAL	Chinese (simplified)	Year/Month/Date	

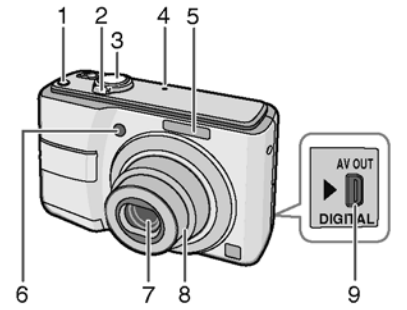
4 Specifications

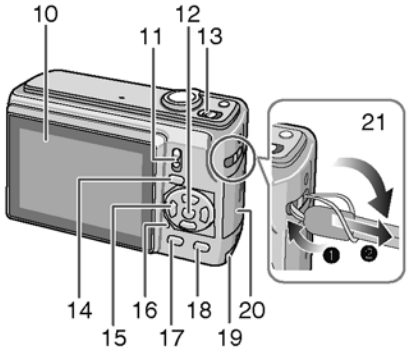
Digital Camera:	Information for your safety
Power Source:	DC 3 V
Power Consumption:	1.5 W (When recording) 0.6 W (When playing back)
Camera Effective pixels:	8,100,000 pixels
Image sensor:	1/2.5″ CCD
Total pixels:	8,320,000 pixels Primary color filter
Lens:	Optical 3 × zoom, f=5.5 to 16.5 mm [35 mm film camera equivalent: 33 to 100 mm] / F2.8 to F5.1
Digital zoom:	Max. 4 ×
Extended optical zoom:	Max. 4.8 ×
Focus:	Normal / Macro 5-area-focusing / 1-area-focusing (high speed) / 1-area-focusing
Focus range:	Normal : 50 cm (1.64 feet) to ∞ Macro / Intelligent: 5 cm (0.16 feet) (Wide) / 30 cm (0.98 feet) (Tele) to ∞ Scene mode: settings may be different to those shown above
Shutter system:	Electronic shutter+Mechanical shutter
Motion picture recording:	Aspect ratio [4:3]: 640 × 480 pixels (30 frames/second, 10 frames/second) (When a card is used.) / 320 × 240 pixels (30 frames/second, 10 frames/second) Aspect ratio [16:9]: 848 × 480 pixels (30 frames/second, 10 frames/second) (When a card is used.) With audio
Burst recording	
Burst speed:	Approx. 2.5 pictures/second (NORMAL), Approx. 2 pictures/second (Unlimited)
Number of recordable pictures:	Max. 7 pictures (Standard), max. 4 pictures (Fine), Depends on the remaining capacity of the built-in memory or the card (Unlimited).
Hi-speed burst	
Burst speed:	Approx. 5.5 pictures/second
Picture size:	2M (4:3), 2.5M (3:2), 2M (16:9)
ISO sensitivity:	AUTO/ 100 / 200 / 400 / 800 / 1600 [HIGH SENS.] mode: 1600 to 6400
Shutter speed:	8 seconds to 1/2,000th of a second [STARRY SKY] mode:15 seconds, 30 seconds, 60 seconds
White balance:	Auto white balance / Daylight / Cloudy / Shade / Halogen / White set

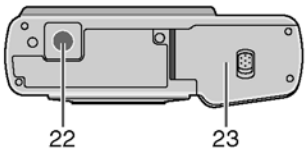
Exposure (AE):	Program AE Exposure compensation (1/3 EV Step, -2 EV to +2 EV)
Metering mode:	Multiple
LCD monitor:	TFT LCD 2.5″ (Approx. 230,000 dots) (field of view ratio about 100%)
Flash:	Flash range: Approx. 30 cm (0.98 feet) to 5.9 m (15.42 feet) (Wide [ISO AUTO] mode) AUTO, AUTO / Red-eye reduction, Forced ON (Forced ON / Red-eye reduction), (Slow sync. / Red-eye reduction), Forced OFF
Microphone:	Monaural
Recording media:	Built-in Memory (Approx. 24 MB) / SD Memory Card / SDHC Memory Card/MultiMediaCard (Still pictures only)
Picture size:	
Still picture:	Aspect ratio [4:3]: 3264 × 2448 pixels, 2560 × 1920 pixels, 2048 × 1536 pixels, 1600 × 1200 pixels, 640 × 480 pixels Aspect ratio [3:2]: 3264 × 2176 pixels, 2560 × 1712 pixels, 2048 × 1360 pixels Aspect ratio [16:9]: 3264 × 1840 pixels, 2560 × 1440 pixels, 1920 × 1080 pixels
Motion picture:	Aspect ratio [4:3]: 640 × 480 pixels (Only when using an SD Memory card / SDHC Memory Card), 320 × 240 pixels Aspect ratio [16:9]: 848 × 480 pixels (Only when using an SD Memory card / SDHC Memory Card)
Quality:	Fine / Standard
Recording file format	
Still Picture:	JPEG (Design rule for Camera File system, based on Exif 2.21 standard), DPOF corresponding
Motion pictures:	"QuickTime Motion JPEG" (motion pictures with audio)
Interface	
Digital:	USB 2.0 (Full Speed)
Analog video / audio:	NTSC / PAL Composite (Switched by menu), Audio line output (monaural)
Terminal	
DIGITAL/AV OUT:	Dedicated jack (8 pin)
DC IN:	Type1 jack (Only when using DC coupler)
Dimensions:	3.77″ (W) × 2.44″ (H) × 1.23″ (D) (95.7 mm (W) × 62.0 mm (H) × 31.2 mm (D)) (excluding the projection part)
Mass (Weight):	Approx. 0.28 lb/129 g (excluding Memory Card and battery) Approx. 0.39 lb/177 g (with Memory Card and battery)
Operating Temperature:	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity:	10 % to 80 %

5 Location of Controls and Components

Names of the Components

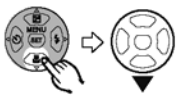






1 [E. ZOOM] (Easy zoom) button
2 Zoom lever
3 Shutter button
4 Microphone
5 Flash
6 Self-timer indicator
AF assist lamp
7 Lens part
8 Lens barrel
9 [AV OUT/DIGITAL] socket
10 LCD monitor
11 Recording/playback switch
12 [MENU/SET] button
13 Camera ON/OFF switch
14 [MODE] button
15 Cursor buttons
◀ /Self-timer button
▼ /Macro button
▶ /Flash mode button
▲ /Exposure compensation /Auto bracket /Backlight compensation button
• In these operating instructions, operations using the cursor buttons are described as follows.

e.g.: When you press the ▼ button.



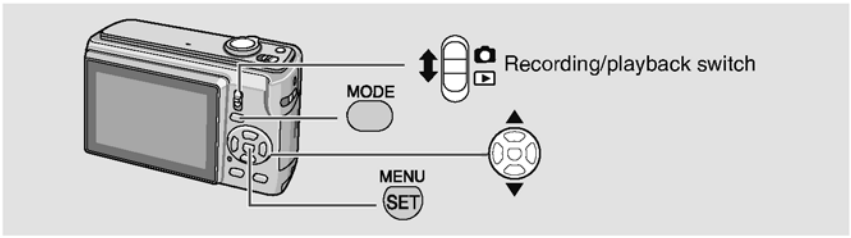
16 Status indicator
17 [DISPLAY] button
18 [Q.MENU] /Delete button
19 DC coupler door
20 Card door
21 Strap eyelet
• Attach the strap when using the camera to prevent it from dropping.

22 Tripod receptacle
• When you use a tripod, make sure the tripod is stable with the camera attached to it.
23 Battery door

Basics of Modes

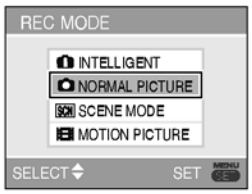
About the mode

Selecting recording modes or playback mode.



1 **Slide the recording/playback switch to (up) or (down).**
: Recording mode
: Playback mode

2 **Press [MODE] to display the mode selection screen.**
(Example: Normal picture mode)



3 **Select a mode using ▲/▼ and press [MENU/SET] to close the menu.**

Recording mode

Intelligent mode
Taking pictures easily.
Normal picture mode
Taking pictures in the desired setting.
Scene mode
Taking pictures according to the scene.
Motion pictures mode
This mode allows you to record motion pictures.

Playback mode

Normal playback mode
Playing back the pictures normally.
Slide show mode
Playing back the pictures continuously.
Category playback mode
Playing back the pictures by recorded information.
★ Favorite playback mode
Playing back the pictures set as your favorite. • Pictures do not appear when the [FAVORITE] is set to [OFF]

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 (when the unit is powered on by the battery, the battery is pulled out) because the error code is memorized to FLASH ROM when the unit is powered off normally.
2. **How to display**
   The error code can be displayed by the following procedure:
   Before perform the error code memory function, connect the AC adaptor or insert the battery.
   (Since this unit has built-in memory, this error code memory function can be performed without inserting SD memory card.)

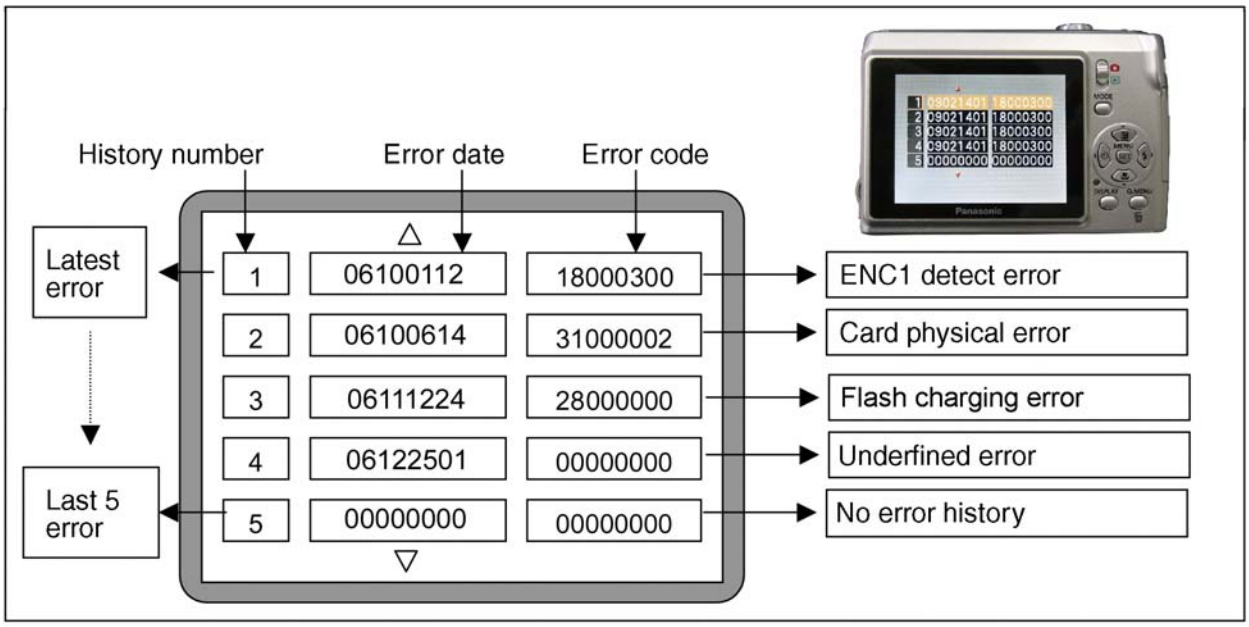
• **1. The temporary cancellation of initial setting:**

Set the recording/playback switch to “[Recording mode] (camera mark (UP))” and press the mode button to select [NORMAL PICTURE]

While keep pressing [E.ZOOM], [MENU] and “[UP ▲] of Cursor button” simultaneously, turn the Power on.

• **2. The display of error code:**

Press [E.ZOOM], [MENU] and “[LEFT ◀] of Cursor button” simultaneously with the step 1 condition.
The display is changed as shown below when the above buttons is pressed simultaneously.
Normal display → Error code display → Operation history display → Normal display → .....



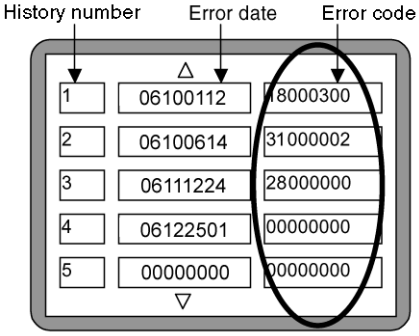
Example of Error Code Display

• **3. The change of display:**
The error code can be memorized 16 error codes in sequence, however it is displayed 5 errors on the LCD.
Display can be changed by the following procedure:
“[UP ▲] or [DOWN ▼] of Cursor button” : It can be scroll up or down one.
“[LEFT ◀] or [RIGHT ▶] of Cursor button” : It can be display last 5 error or another 5 error.

• **4. How to read the error date:**
The error date code is displayed from the left in order at the year, month, day, time.
Error date information is acquired from "Clock setting" information when the error occurs. When the clock had been not setting, it is displayed as “00000000”.

• **5. How to read the error code:**

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



Attribute	Main item	Sub item	Error code		Contents (Upper)
			High 4 bits	Low 4 bits	Check point (Lower)
LENS	Lens drive	OIS	18*0	1000	PSD (X) error. Hall element (X axis) position detect error in OIS unit.
					OIS Unit
				2000	PSD (Y) error. Hall element (Y axis) position detect error in OIS unit.
					OIS Unit
				3000	GYRO (X) error. Gyro (IC7102: X axis) detect error on Main P.C.B..
					IC7102 (Gyro element) or IC6001 (VENUS 3)
				4000	GYRO (Y) error. Gyro (IC7101: Y axis) detect error on Main P.C.B..
					IC7101 (Gyro element) or IC6001 (VENUS 3)
				5000	MREF error (Reference voltage error).
					IC9101 (LENS drive) or IC6001 (VENUS 3)
				6000	Drive voltage (X) error.
					VENUS 3 AD value error, LENS Unit, LENS flex breaks etc.
				7000	Drive voltage (Y) error.
					VENUS 3 AD value error, LENS Unit, LENS flex breaks etc.
		C.B./Zoom		0100	HP Low detect error (C.B. encoder (full retract) always Low detect).
					FP9001-(1,4) signal line or IC6001 (VENUS 3)
				0200	HP High detect error (C.B. encoder (full retract) always High detect).
					FP9001-(2,5) signal line or IC6001 (VENUS 3)
				0300	ENC1 detect error (C.B. motor encoder detect error).
					FP9001-(4) signal line or IC6001 (VENUS 3)
				0400	ENC2 detect error (C.B. motor encoder detect error).
					FP9001-(1) signal line or IC6001 (VENUS 3)
		Focus		0001	HP Low detect error (Focus encoder always Low detect error).
					FP9001-(31) signal line or IC6001 (VENUS 3)
				0002	HP High detect error (Focus encoder always High detect error).
					FP9001-(32) signal line or IC6001 (VENUS 3)
		Lens	18*1	0000	Power ON time out error.
					Lens drive system
			18*2	0000	Power OFF time out error.
					Lens drive system
	Adj.History	OIS	19*0	2000	OIS adj. Yaw direction amplitude error (small)
				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

Attribute	Main item	Sub item	Error code		Contents (Upper)
			High 4 bits	Low 4 bits	Check point (Lower)
HARD	VENUS A/D	Flash	20*0	0000	Flash charging error.
					IC6001-(247) signal line or Flash charging circuit
	FLASH ROM (EEPROM Area)	FLASH ROM (EEPROM Area)	2B*0	0001, 0003, 0004	EEPROM read error
					IC6002 (FLASH ROM)
				0002	EEPROM write error
					IC6002 (FLASH ROM)
	SYSTEM	RTC	2C*0	0001	SYSTEM IC initialize failure error
					Communication between IC6001 (VENUS 3) and IC9101 (SYSTEM)
SOFT	CPU	Reset	30*0	0001 | 0007	NMI reset Non Mask-able Interrupt (30000001-30000007 are caused by factors)
	Card	Card	31*0	0001	Card logic error
					SD memory card data line or IC6001 (VENUS 3)
				0002	Card physical error
					SD memory card data line or IC6001 (VENUS 3)
				0004	Write error
					SD memory card data line or IC6001 (VENUS 3)
			39*0	0005	Format error
	CPU, ASIC hard	Stop	38*0	0001	Camera task finish process time out.
					Communication between Lens system and IC6001 (VENUS 3)
				0002	Camera task invalid code error.
					IC6001 (VENUS 3)
				0100	File time out error in recording motion image
					IC6001 (VENUS 3)
				0200	File data send error in recording motion image
					IC6001 (VENUS 3)
				0300	Single or burst recording brake time out.
	Operation	Power on	3B*0	0000	FLASHROM processing early period of camera during movement.
	Zoom	Zoom	3C*0	0000	Inperfect zoom lens processing.
					Zoom lens
			35*0	-	Software error. (0-7bit : command, 8-15bit : status)
			35*1	0000	Though record preprocessing is necessary, it is not called.
			35*2	0000	Though record preprocessing is necessary, it is not completed.

About "*" indication in the above table:

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.

• **6. How to returned to Normal Display:**

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

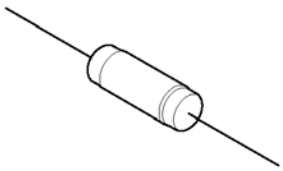
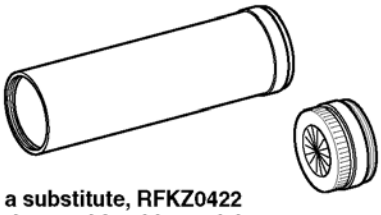
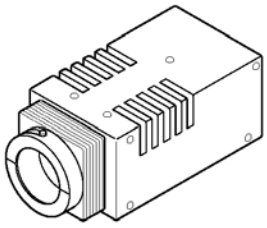
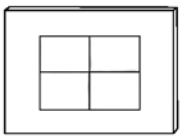
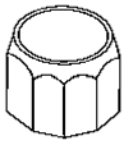
NOTE:

The error code can not be initialized.

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.**	 **As a substitute, RFKZ0422 can be used for this model.**	 **※ with DC Cable**
TR Chart RFKZ0443	**Lens Cleaning Kit (BK)** VFK1900BK	**Grease (for lens)** RFKZ0472
	 *** Only supplied as 10 set/box.**	
Furoyl grease (for focus motor) **VFK1850**	**Dome type magnifying glass** **VFK1835**	
		

7.2. When Replacing the Main PCB

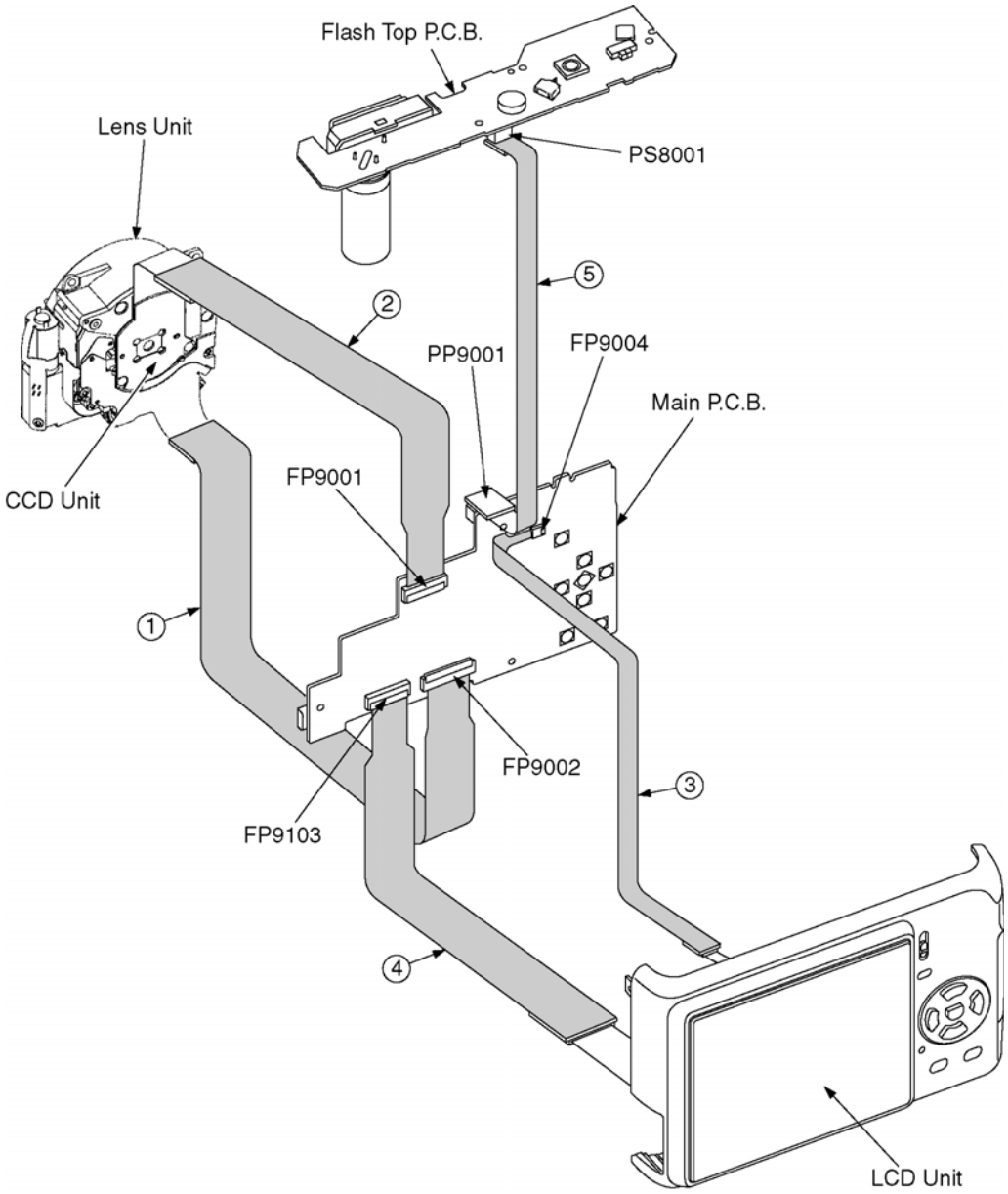
After replacing the MAIN PCB, be sure to achieve adjustment.
The adjustment instruction is available at “software download” on the “Support Information from NWBG/VDBG-PAVC” web-site in “TSN system”, together with Maintenance software.

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	VFK1951	FP9002 (MAIN) - LENS UNIT	39PIN 0.3 FFC
2	VFK1951	FP9001 (MAIN) - CCD UNIT	39PIN 0.3 FFC
3	VFK1974	FP9004 (MAIN) - LCD UNIT	4PIN 0.3 FFC
4	RFKZ0354	FP9103 (MAIN) - LCD UNIT	37PIN 0.5 FFC
5	VFK1906	PP9001 (MAIN) - PS8001 (FLASH TOP)	20PIN B to B

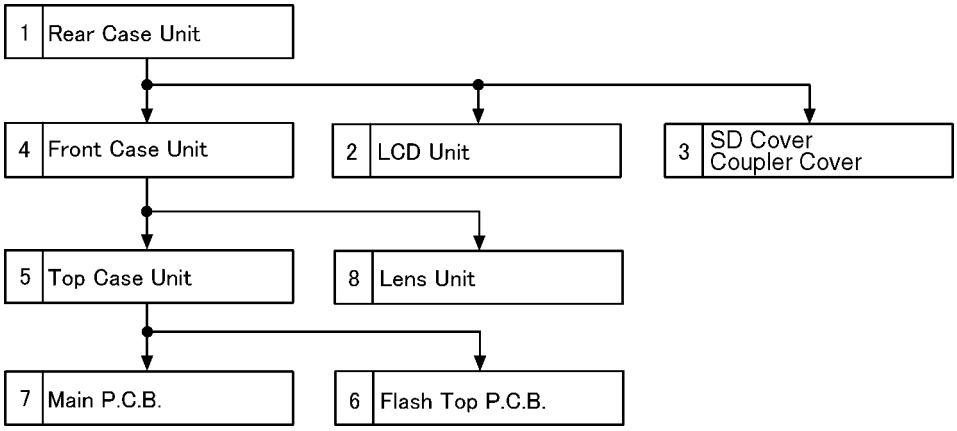


CAUTION-1. (When servicing FLASH TOP PCB)

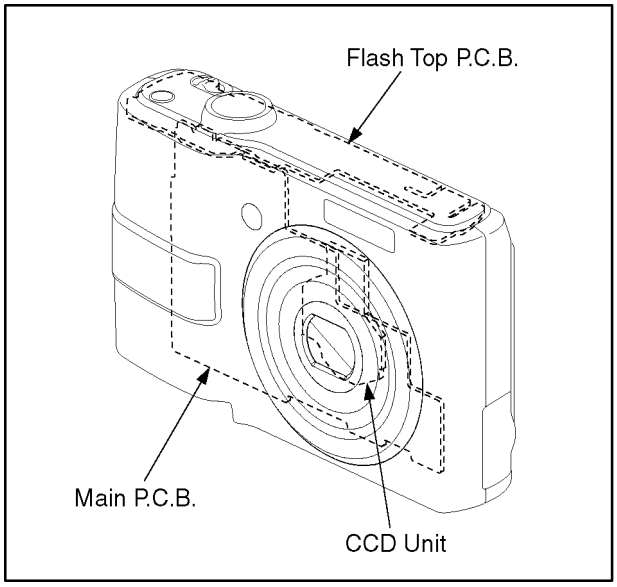
1. Be sure to discharge the capacitor on FLASH TOP PCB.
   Refer to “HOW TO DISCHARGE THE CAPACITOR ON FLASH TOP PCB”.
   The capacitor voltage is not lowered soon even if the AC Cord is unplugged or the battery is removed.
2. Be careful of the high voltage circuit on FLASH TOP PCB.
3. DO NOT allow other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

8 Disassembly and Assembly Instructions

8.1. Disassembly Flow Chart



8.2. PCB Location



8.3. Disassembly Procedure

No.	Item	Fig	Removal
1	Rear Case Unit	Fig. D1	Card
			Battery
			5 Screws (A)
			FP9103(Flex)
			FP9004(Flex)
			Rear Case Unit
2	LCD Unit	Fig. D2	1 Screw (B)
			LCD Holder
			LCD Unit
3	SD Cover	Fig. D3	Rear Knob
			LED Panel R
			SD Earth Plate
			Shaft
			SD Cover
			MODE button
4	Front Case Unit	Fig. D4	1 Screw (C)
			FP9001(Flex)
			FP9002(Flex)
			Front Case Unit
5	Top Case Unit	Fig. D5	PP9001(Connector)
			Top Case Unit
			PS8001(Connector)
6	Flash Top P.C.B.	Fig. D6 Fig. D7	3 Screws (D)
			Top Case
			Flash Top P.C.B.
7	Main P.C.B.	Fig. D8	3 Screws (E)
			Solder (5 points)
			Main P.C.B.
8	Lens Unit	Fig. D9	3 Screws (F)
			Lens Unit

8.3.1. Removal of the Rear Case Unit

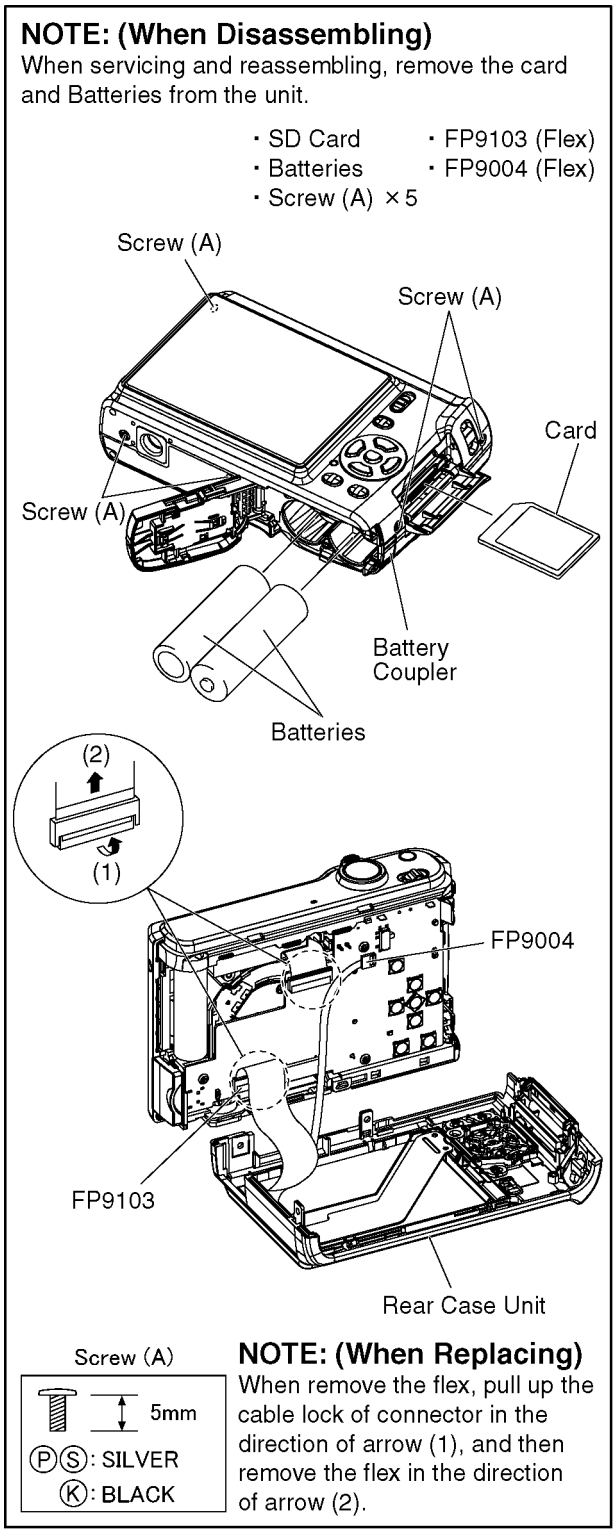
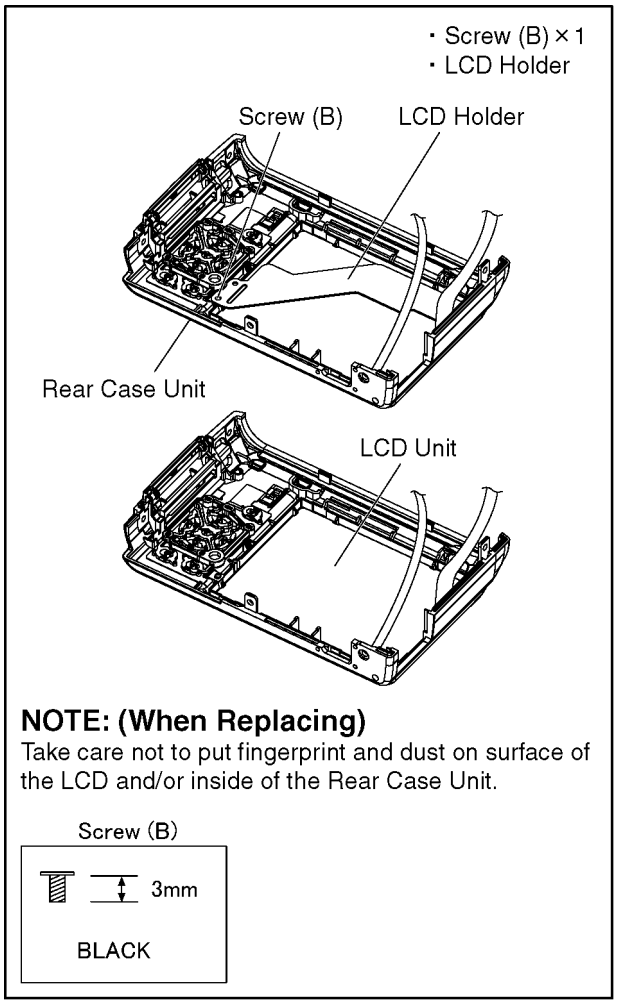


Fig. D1

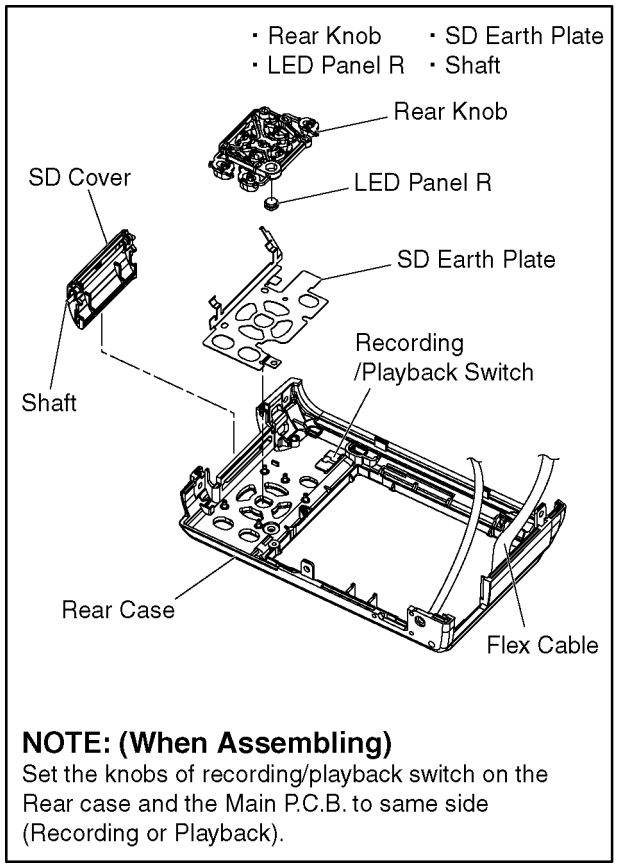
8.3.2. Removal of the LCD Unit



NOTE: (When Replacing)
Take care not to put fingerprint and dust on surface of the LCD and/or inside of the Rear Case Unit.

Fig. D2

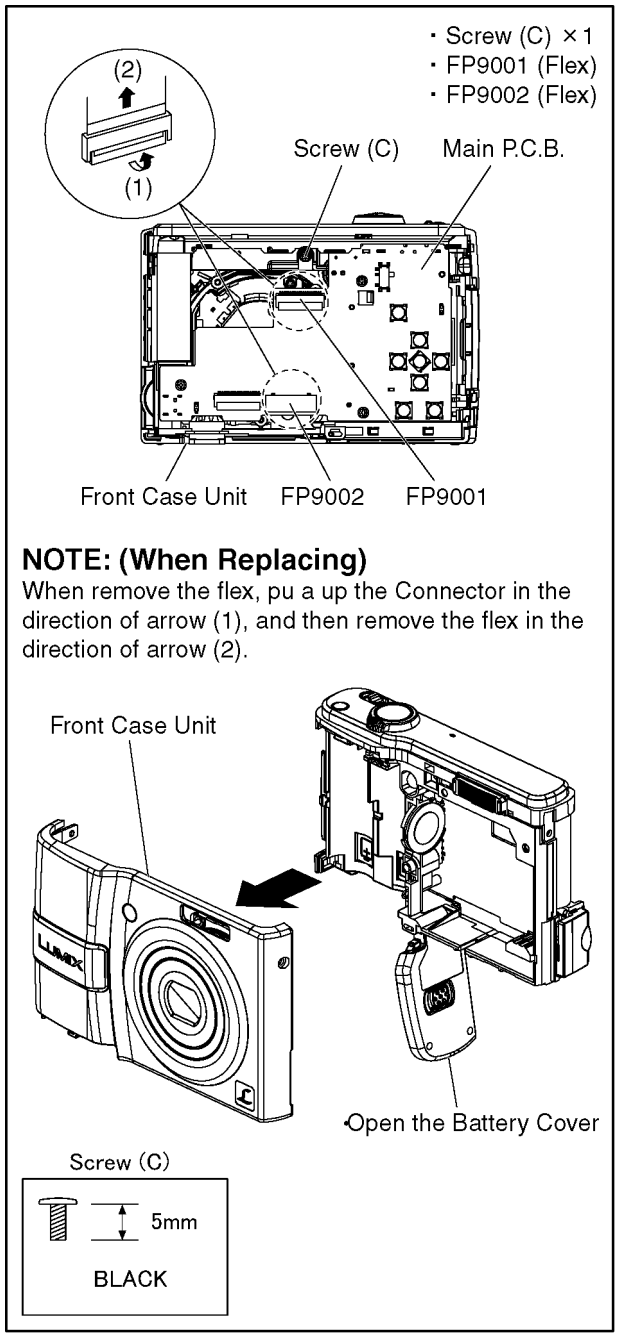
8.3.3. Removal of the SD Cover



NOTE: (When Assembling)
Set the knobs of recording/playback switch on the Rear case and the Main P.C.B. to same side (Recording or Playback).

Fig. D3

8.3.4. Removal of the Front Case Unit



NOTE: (When Replacing)

When remove the flex, pu a up the Connector in the direction of arrow (1), and then remove the flex in the direction of arrow (2).

Fig. D4

8.3.5. Removal of the Top Case Unit

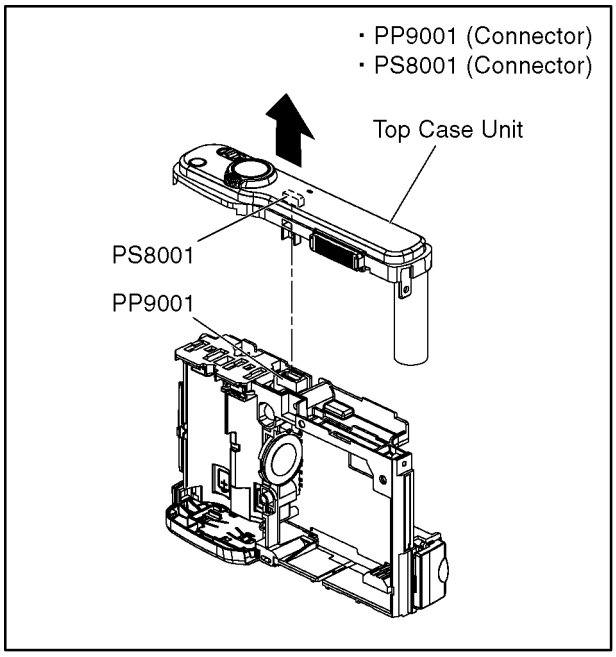


Fig. D5

8.3.6. Removal of the Flash Top P.C.B.

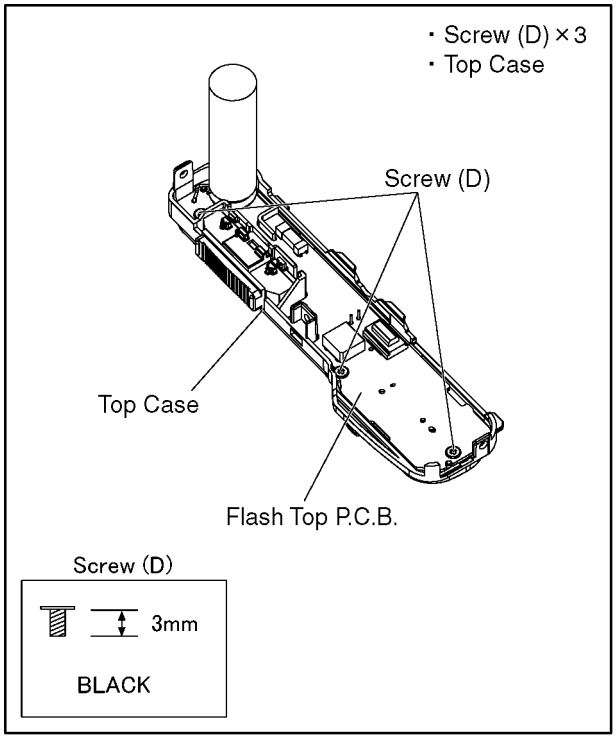
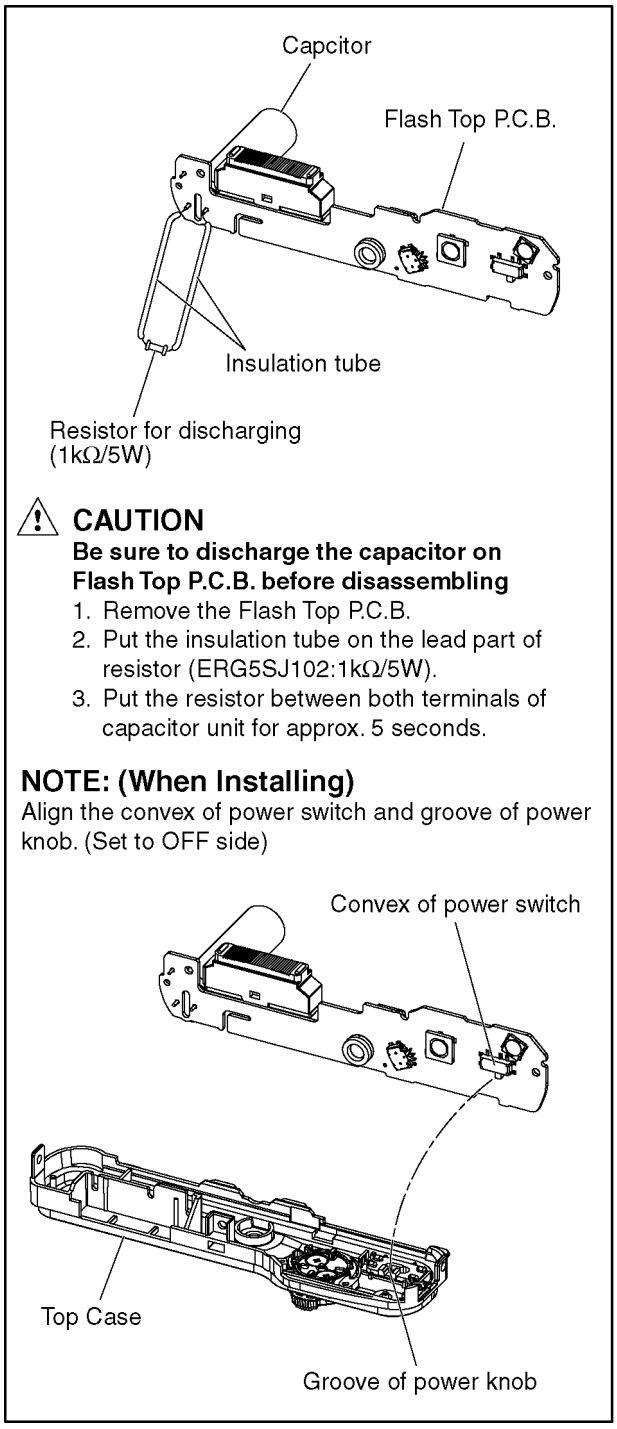


Fig. D6



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 groove of power knob. (Set to OFF side)

Fig. D7

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

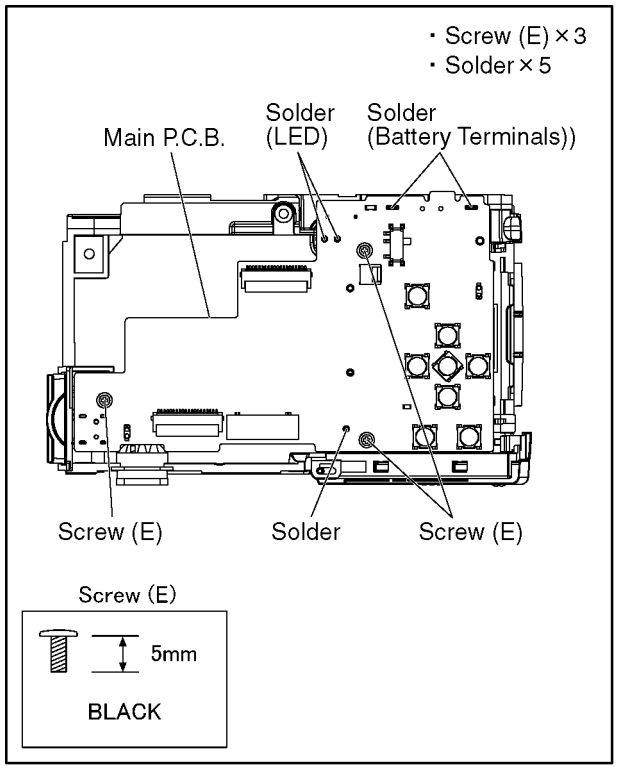


Fig. D8

8.3.8. Removal of the Lens Unit

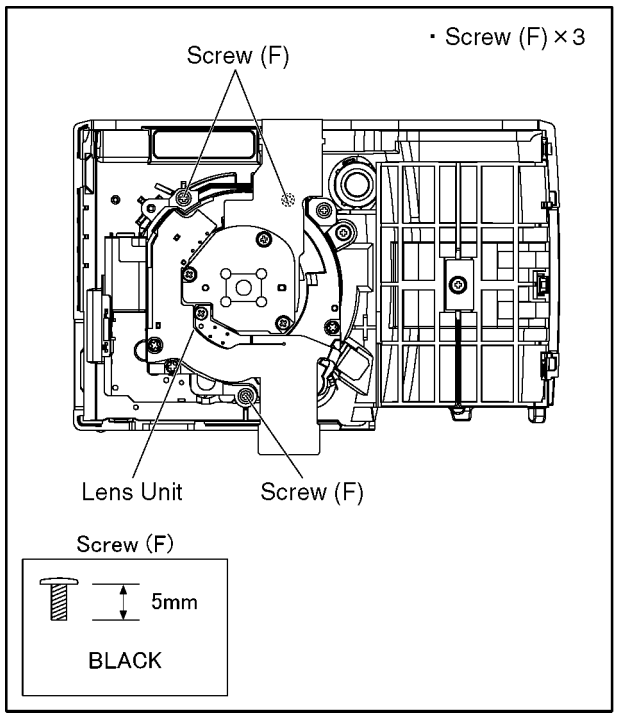


Fig. D9

NOTE: (When Assembling)

Be sure to confirm the following points when assembling.

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

8.4. Disassembly Procedure for the Lens

NOTE: When Disassembling and Assembling for the Lens

1. To minimize the possibility of the CCD being dirt, perform disassemble and/or assemble under the condition of the CCD is being mounted.
   Disassembling procedures for the CCD unit, refer to item 8.6.
2. Take care that the dust and dirt are not entered into the lens.
   In case of the dust is putted on the lens, blow off them by airbrush.
3. Do not touch the surface of lens.
4. Perform disassembly and assembly in Power off condition.
5. Use lens cleaning KIT (BK)(VFK1900BK).
6. Apply the grease to the point where is shown to" Grease apply" in the figure.

8.4.1. Removal of Lens Flex (1) Unit, Master Flange Unit and Zoom Motor Unit

1. Remove the barrier sheet (two peacies on the flex, one peace on the Zoom motor Unit.
2. Remove solder (on the Master Flange Unit, the Zoom motor and the Focus Motor).
3. Remove 4 screws (A).

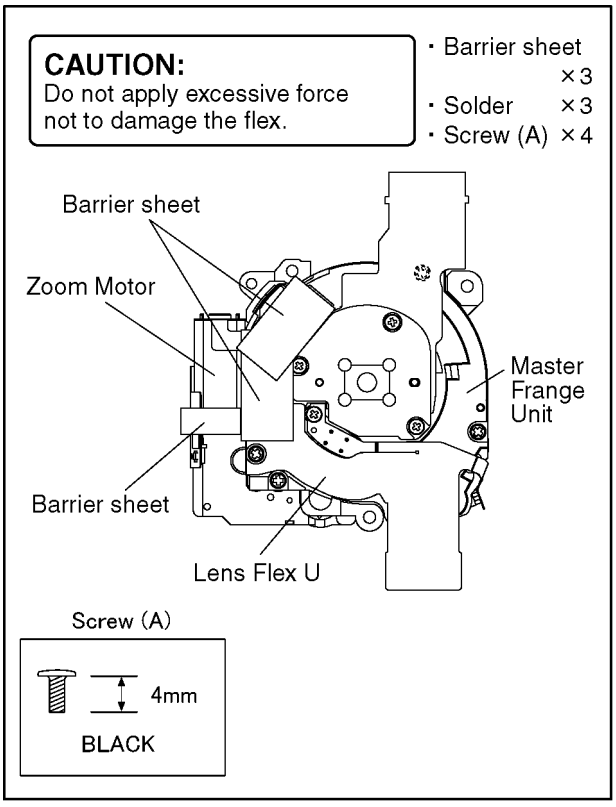


Fig. L1-1

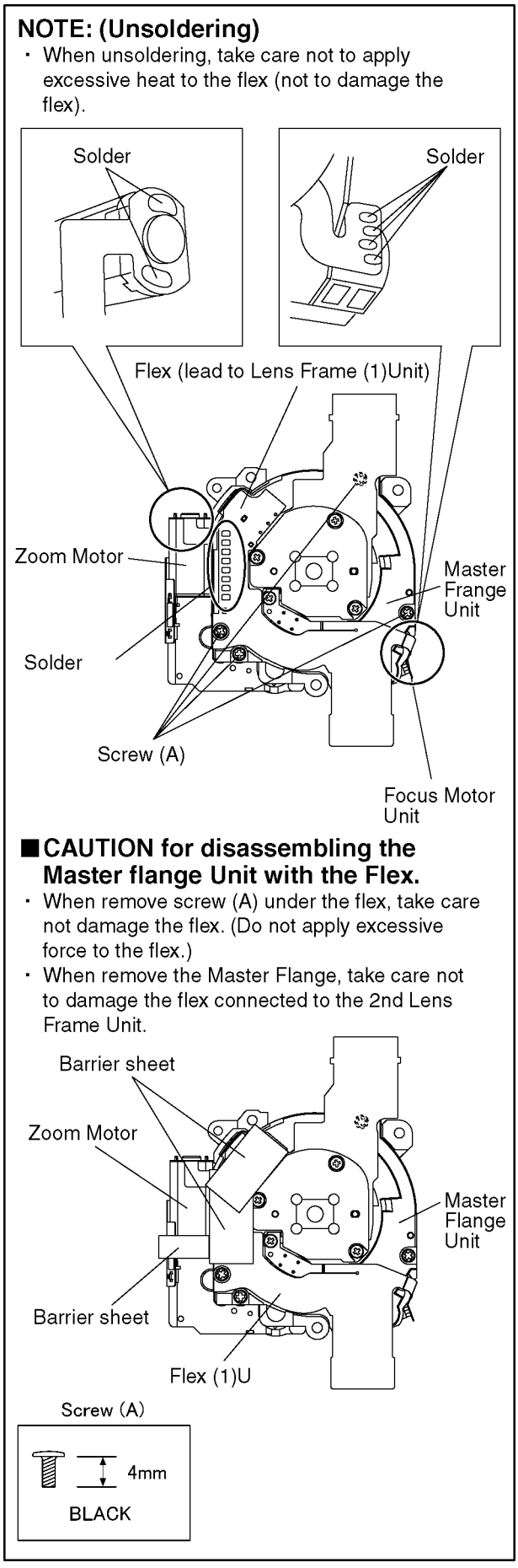


Fig. L1-2

• CONNECTION OF FLEX TO THE ZOOM MOTOR

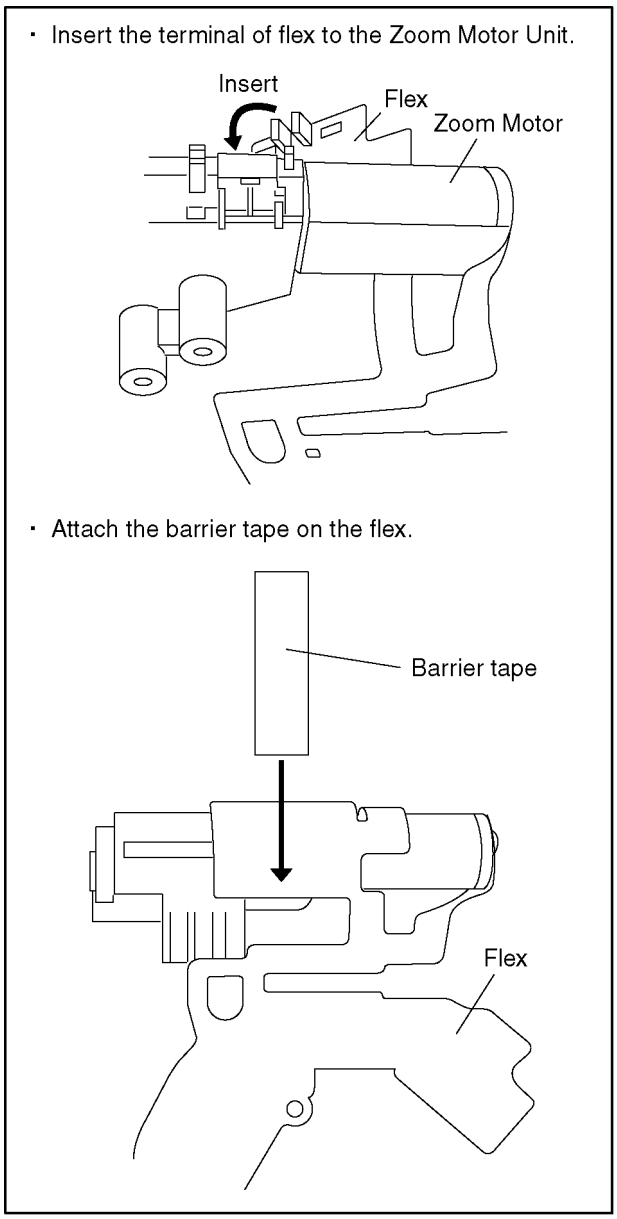


Fig. L2

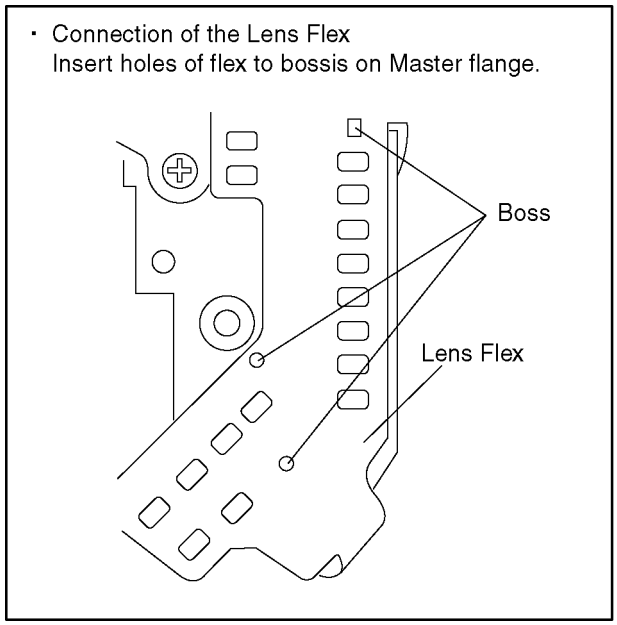


Fig. L3

8.4.2. Removal of the Drive/Direct Frame Unit

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

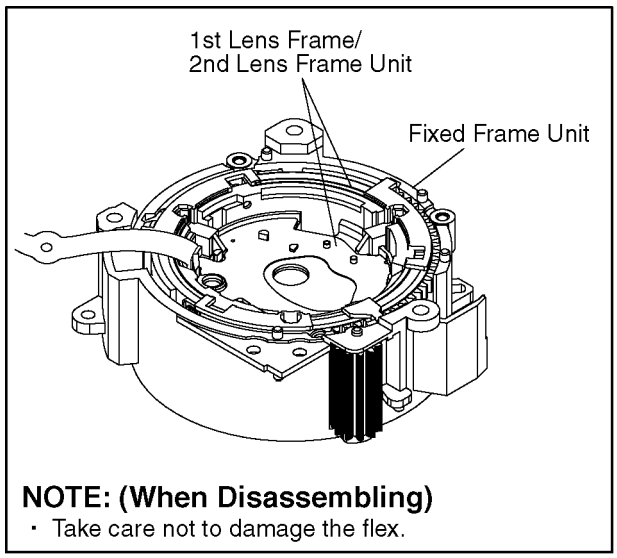
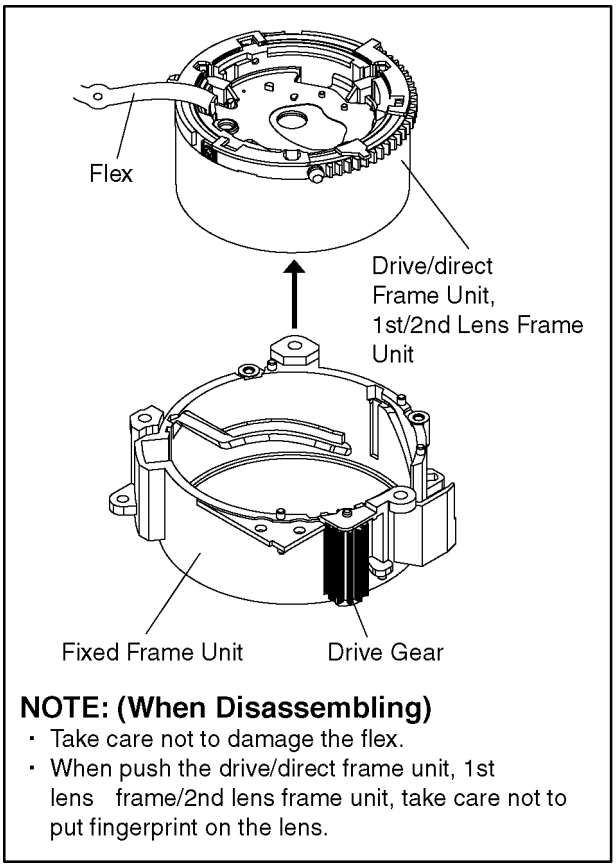


Fig. L4



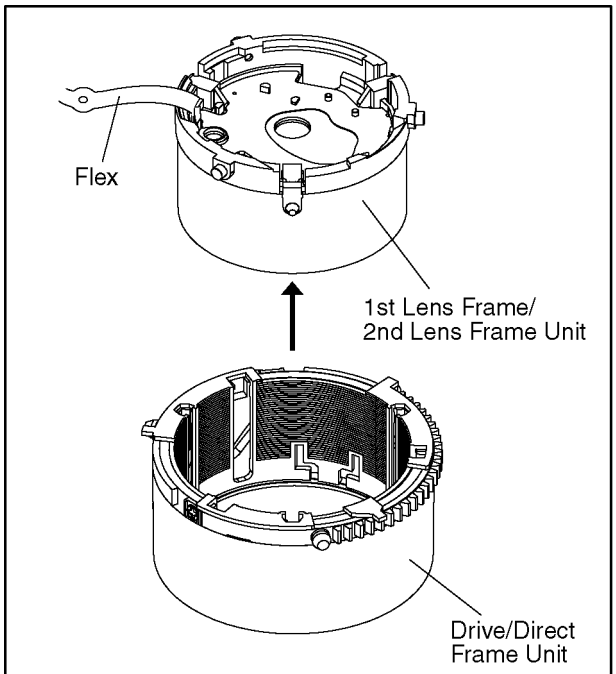
NOTE: (When Disassembling)

- Take care not to damage the flex.
- When push the drive/direct frame unit, 1st lens frame/2nd lens frame unit, take care not to put fingerprint on the lens.

Fig. L5

8.4.3. Removal of 1st/2nd Lens Frame Unit

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

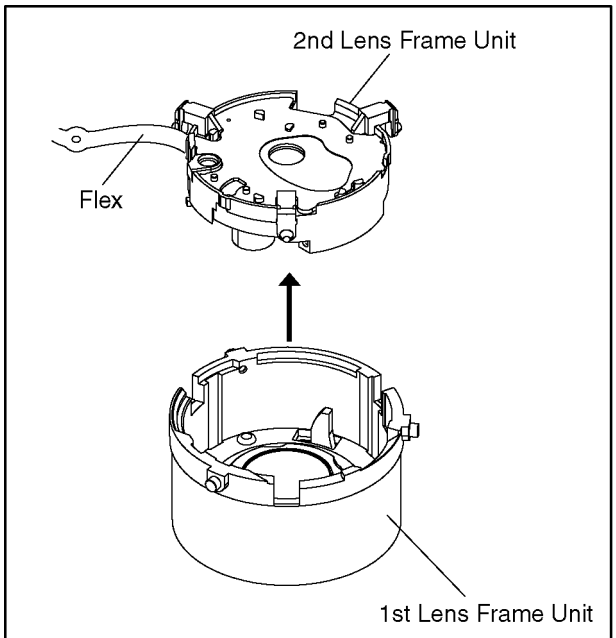


NOTE: (When Disassembling)

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

Fig. L6

8.4.4. Removal of the 2nd Lens Frame Move Unit



NOTE: (When Disassembling)

- Take care not to damage the flex.

Fig. L7

8.5. Assembly Procedure for the Lens Section

8.5.1. Phase alignment of the Direct Frame and Drive Frame Unit

- Move the Direct Frame Unit so that "CAV" number is stayed between 2 grooves at left end side of the Drive Gear.
- Then, confirm the phase of six grooves of the Drive Frame Unit and the Direct Frame Unit are aligned.

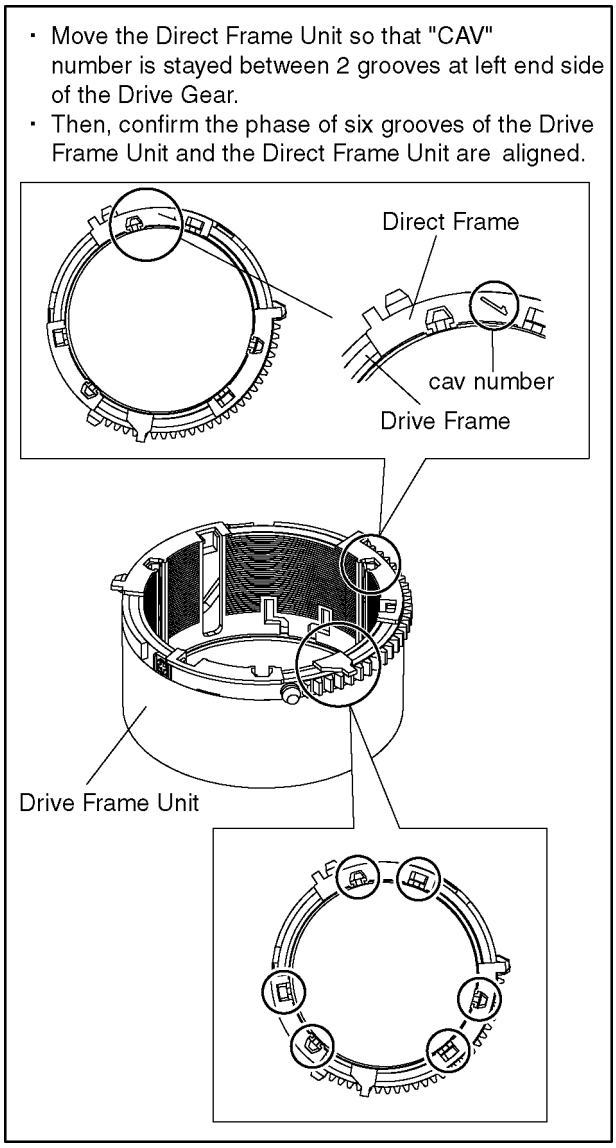


Fig. L8

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

- When aligning the phase of 3 projection of the drive frame unit and 3 slant grooves and then 3 projection of the Direct frame unit and 3 strait groove, confirm the gear of drive/direct frame unit is engaged with the drive gear of the fixed frame unit firmly.

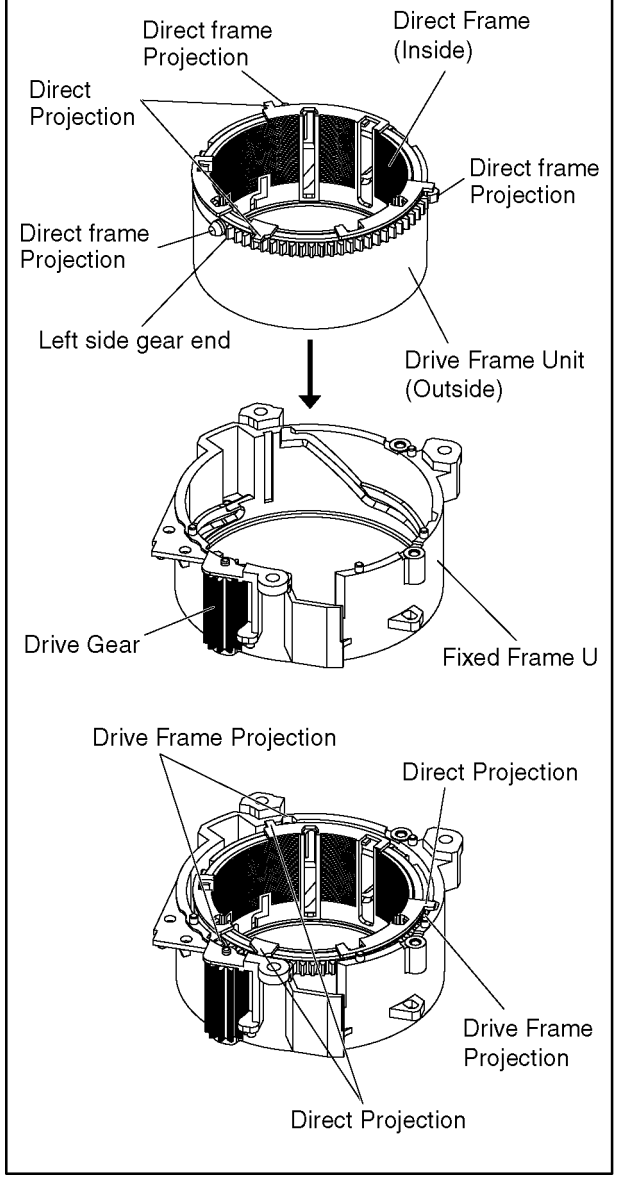
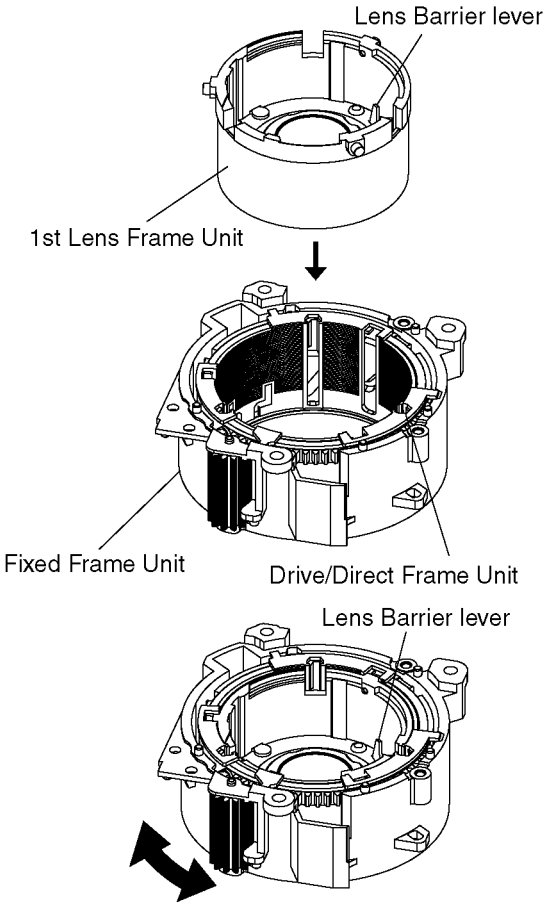


Fig. L9

8.5.3. Assembly for the 1st Lens Frame Unit

- Place the lens barrier lever of 1st lens frame unit at right end side of the gear on drive frame unit and insert 3 projections of the 1st lens frame unit into the wider straight groove of the direct frame of the drive/direct frame unit.



- After assembly completed, rotate the drive gear on the fixed frame unit and confirm the 1st lens frame unit and the drive/direct frame unit move smoothly.

FRONT VIEW

- Install the 1st lens frame unit so that the "LUMIX DC VARIO" charactor may become the position of the figure below.

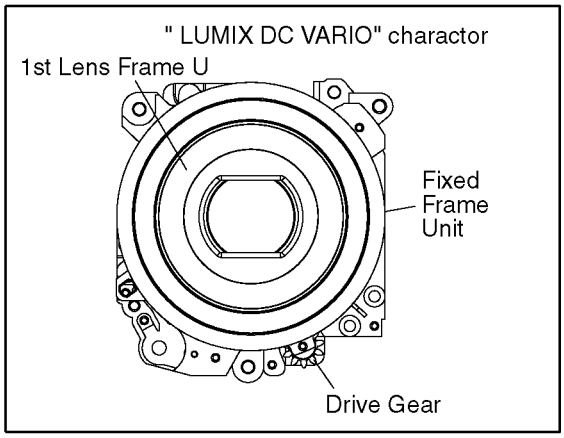
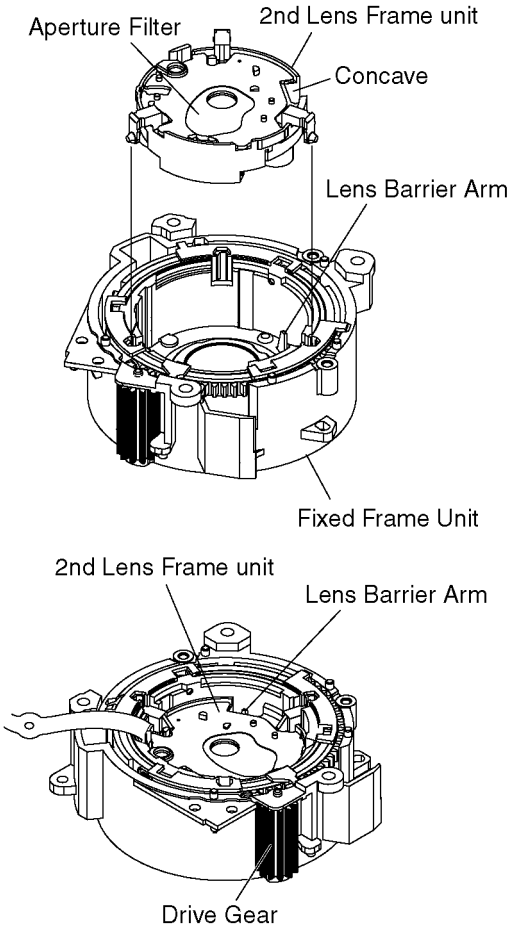


Fig. L10

8.5.4. Assembly for the 2nd Lens Frame Unit and the Master Flange Unit



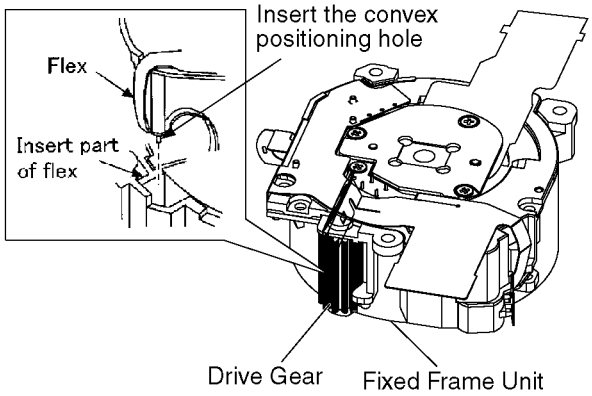
NOTE: (When Installing)

- Do not touch the aperture filter.
- When the 2nd lens frame unit is inserted to the 1st lens frame unit, the lens barrier lever of the 1st lens farme unit shoud be placed in the Concave of the 2nd lens frame unit.
- Take care not to damage the flex.
- Refer to "THE APPLYMENT OF GREASE METHOD" when installing the master flange unit.
- After assembly completed, rotate the drive gear on the fixed frame unit and confirm the system assembled oprates smoothly.

Fig. L11

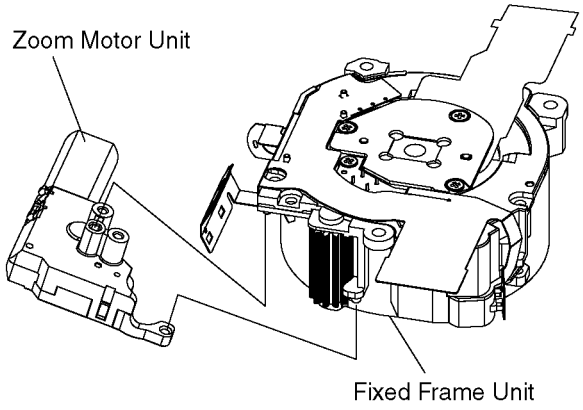
8.5.5. Assembly of the Master Flange Unit

- Assembly of the master flange unit is completed confirm the lens barrier is closed.
- Insert the boss of FPC guide to the hole of FPC and assemble the master flange unit that the FPC guide is installed in the housing of FPC guide.
- Align the boss on fixed frame unit to the hole of master frame unit and make the master flange assembling.



NOTE: (When Installing)

- Align the convex of fixed frame unit and concave of cover. and then install them.



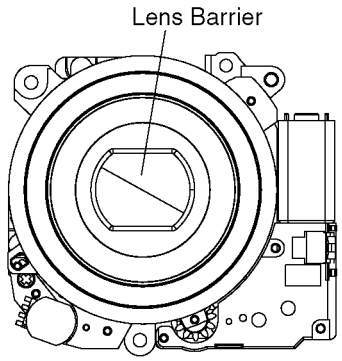
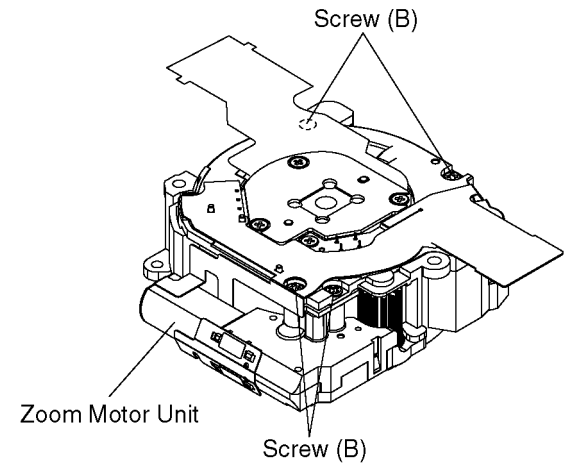


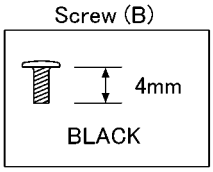
Fig. L12

- Screw (B) ×4



NOTE: (When Installing)

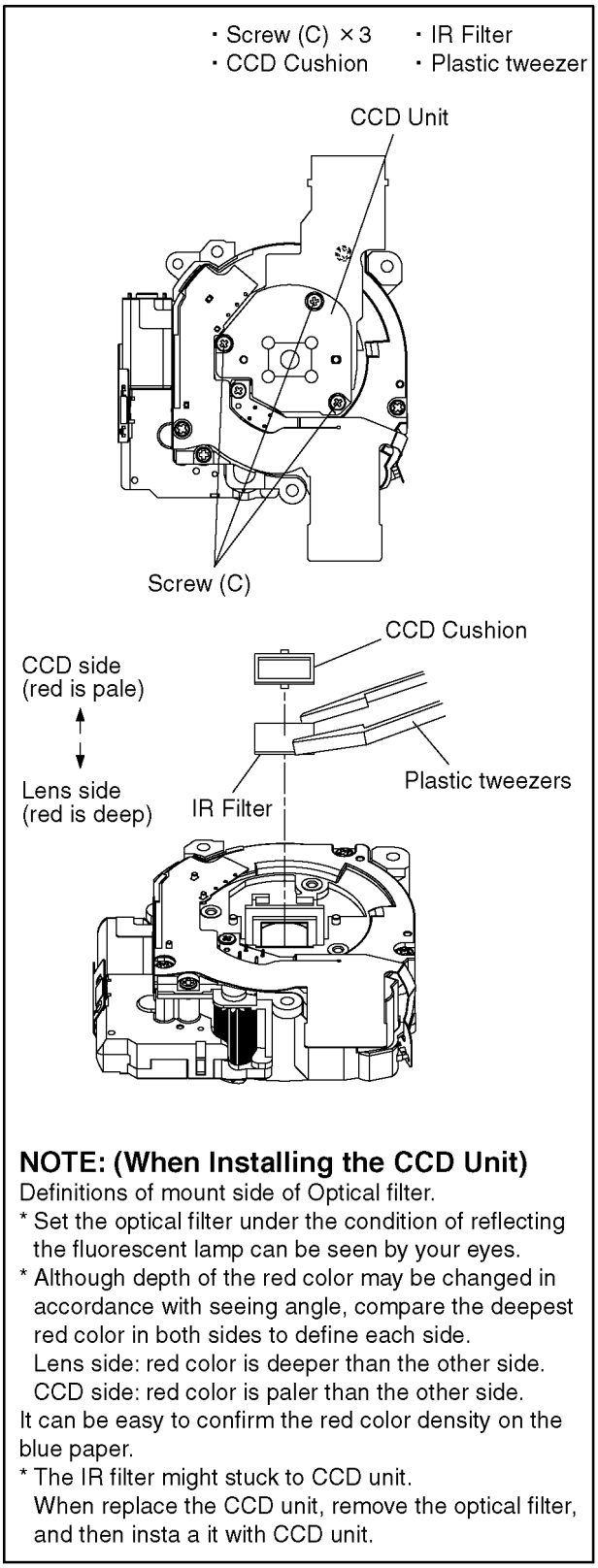
- Fix the flex by adhesive tape.
- Do not bend the flex excessively and handle the flex with care, to prevent any damage.



L13

8.6. Removal of the CCD Unit

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



NOTE: (When Installing the CCD Unit)

Definitions of mount side of Optical filter.

* Set the optical filter under the condition of reflecting the fluorescent lamp can be seen by your eyes.
* Although depth of the red color may be changed in accordance with seeing angle, compare the deepest red color in both sides to define each side.
  Lens side: red color is deeper than the other side.
  CCD side: red color is paler than the other side.

It can be easy to confirm the red color density on the blue paper.

* The IR filter might stuck to CCD unit.
  When replace the CCD unit, remove the optical filter, and then insta a it with CCD unit.

Fig. L14

8.7. Removal of the Focus Motor

1. Unscrew the 1 screw (D).
2. Unsolder (4 points).
3. Remove the focus motor.

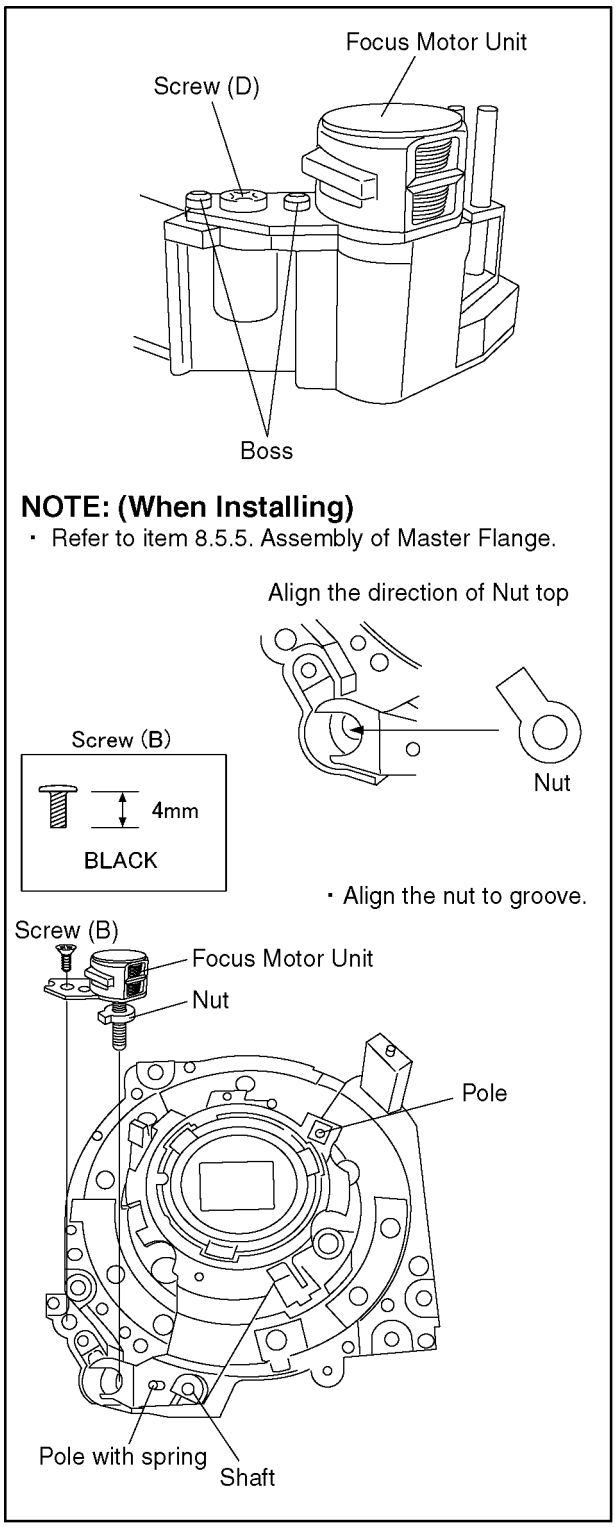


Fig. L15

8.8. The Applyment of Grease Method

The grease apply point 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.

- Lead screw of Focus motor
  - Grease: VFK1850 (Furoyl type)
  - Amount of apply: 2 - 4 mg
- Guide pole
  - Grease: RFKZ0472
  - Amount of apply: 2 - 4 mg
- Concave (A)
  - Grease: RFKZ0472
  - Amount of apply: 2-4 mg

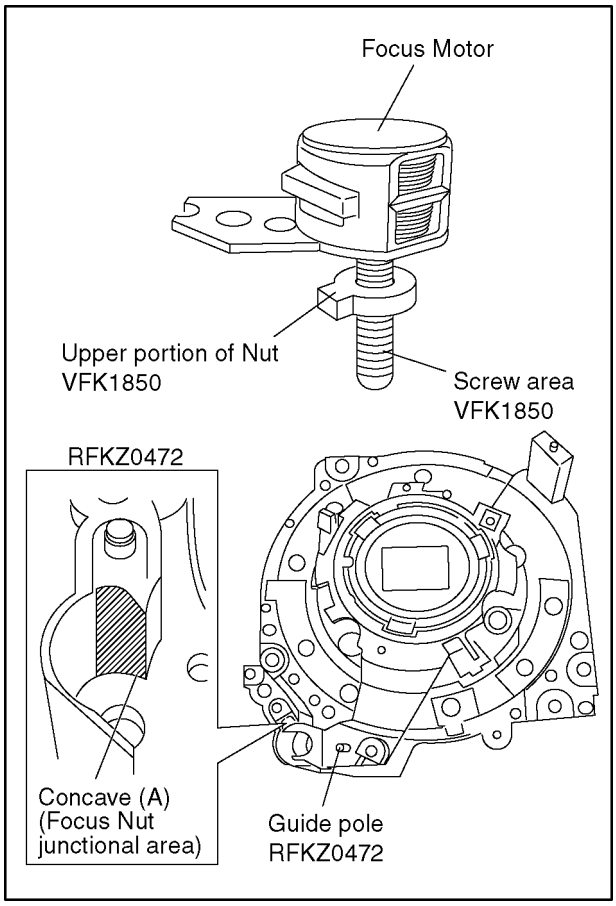


Fig. L16

9 Measurements and Adjustments

9.1. Matrix Chart for Replaced Part and Necessary Adjustment

The relation between Replaced part and Necessary Adjustment is shown in the following table.
When concerned part is replaced, be sure to achieve the necessary adjustment(s).
As for Adjustment condition/procedure, consult the “Adjustment Manual” which is available in Adjustment software.
The Adjustment software is available at “TSN Website”, therefore, access to “TSN Website” at “Support Information from NWBG/VDBG-PAVC”.

NOTE:

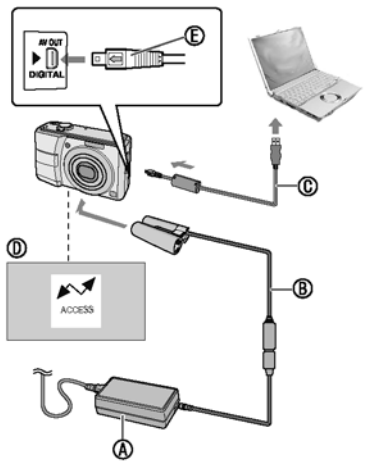
After adjustments have been terminated, make sure to achieve “INITIAL SETTINGS”.

Adjustment Item		Replaced Part				
		Main P.C.B.	VENUS (IC6001)	Flash-ROM (IC6002)	Lens Part (Excluding CCD)	CCD Unit
Camera Section	OIS hall element adjustment (OIS)	O	O	O	O	-
	Back focus adjustment (BF)	O	O	O	O	O*1
	Shutter adjustment (SHT)	O	O	O	O	O
	ISO sensitivity adjustment (ISO)	O	O	O	O	O
	AWB adjustment High brightness coloration inspection (WBL)	O	O	O	O	O
	CCD white scratch compensation (WKI)	O	O	O		O*1
	CCD Black scratch compensation (BKI)	O	O	O		O*1

*1: This adjustment is necessary, not only replacing CCD unit but also removing it from the lens unit.

NOTE:

*There is no LCD adjustment in this model.



Ⓐ AC adaptor (DMW-AC6PP: optional)
Ⓑ DC coupler (DMW-DCC2: optional)
- Use batteries with sufficient battery power or the AC adaptor Ⓐ and the DC coupler Ⓑ.
- Always use a genuine Panasonic AC adaptor (DMW-AC6PP: optional) and DC coupler (DMW- DCC2: optional).
- Make sure this unit is off before connecting or disconnecting the AC adaptor.

Ⓒ USB connection cable (supplied)
- Connect the USB connection cable with the [◀] mark facing the [▶] mark on the [DIGITAL] socket.

Ⓓ This message appears during data transfer.

Ⓔ Check the facing of the connector and push straight in.
- Hold Ⓔ and then insert or pull the USB connection cable straight. Do not try to force the connector in backwards or sideways. This can damage this unit and the equipment you are connecting.

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 their surface.
Note:

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

DSC0802001CE

Service Manual

Diagrams and Replacement Parts List

Digital Camera

Model No.

DMC-LS80P	DMC-LS80EF
DMC-LS80PC	DMC-LS80EG
DMC-LS80PL	DMC-LS80GC
DMC-LS80E	DMC-LS80GK
DMC-LS80EB	DMC-LS80GN
DMC-LS80EE	

Vol. 1
Colour
(S).....Silver Type (except EF)
(K).....Black Type (except EB/GK/GN)
(P).....Pink Type (except EF/PC/GC/GN)

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.

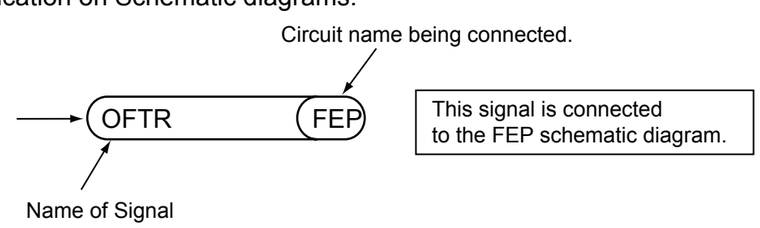
3.The voltage being indicated on the schematic diagram is measured in "Standard-Playback" mode when there is no specify mode is mentioned.

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

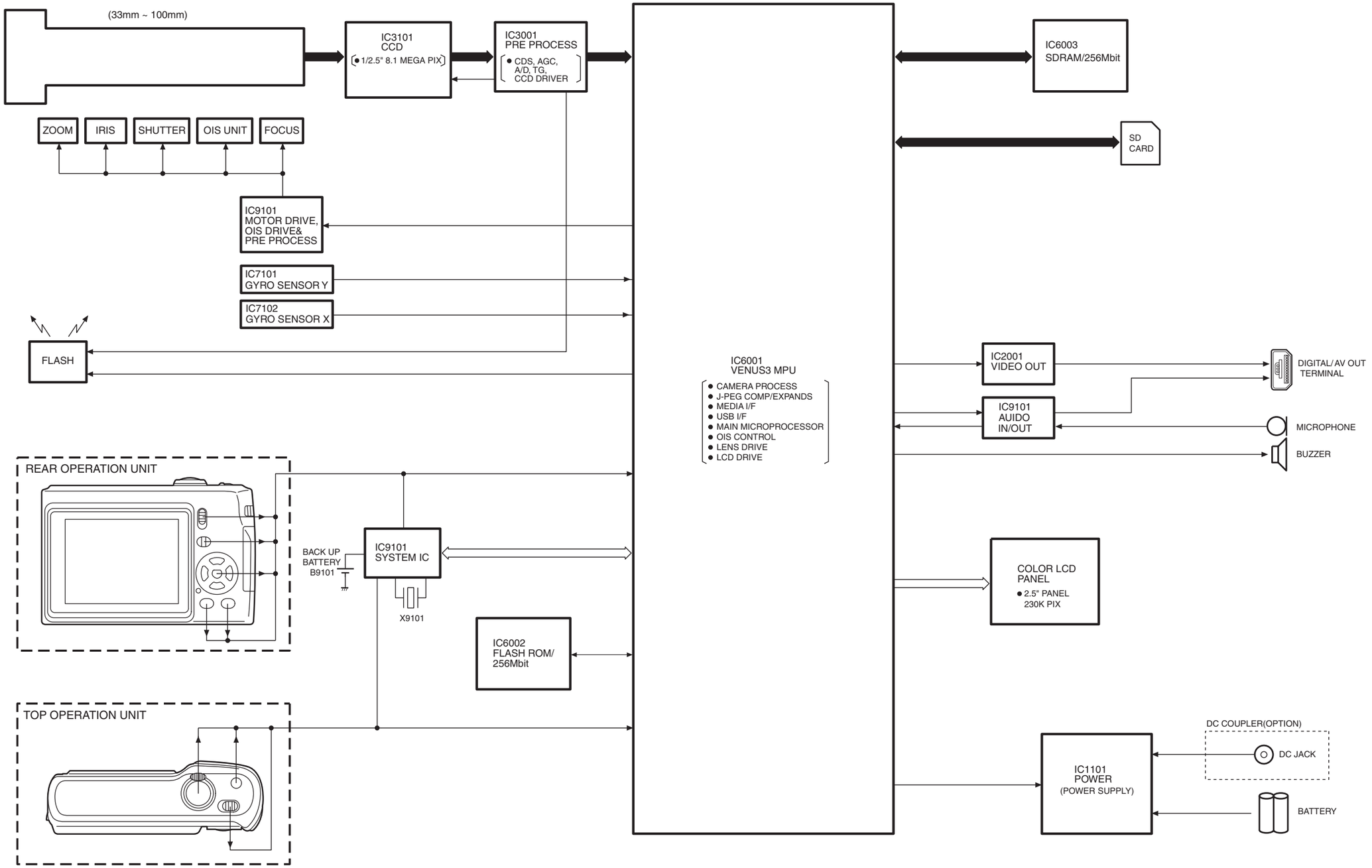
Note) Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard.
Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

S2.1. Flash Top P.C.B.

REF No.	PIN No.	POWER ON
Q8001	1	2.7
Q8001	2	2.7
Q8001	3	0.1
Q8001	4	0.4
Q8001	5	2.7
Q8001	6	2.7
Q8002	1	0
Q8002	2	0
Q8002	3	0
Q8002	4	2.8
Q8002	5	0.4
Q8002	6	0.4
Q8002	7	0.4
Q8002	8	0.4
Q8021	1	245
Q8021	2	245
Q8021	3	245
Q8021	4	245
Q8021	5	0
Q8021	6	0
Q8021	7	0
Q8021	8	0

S3. Block Diagram

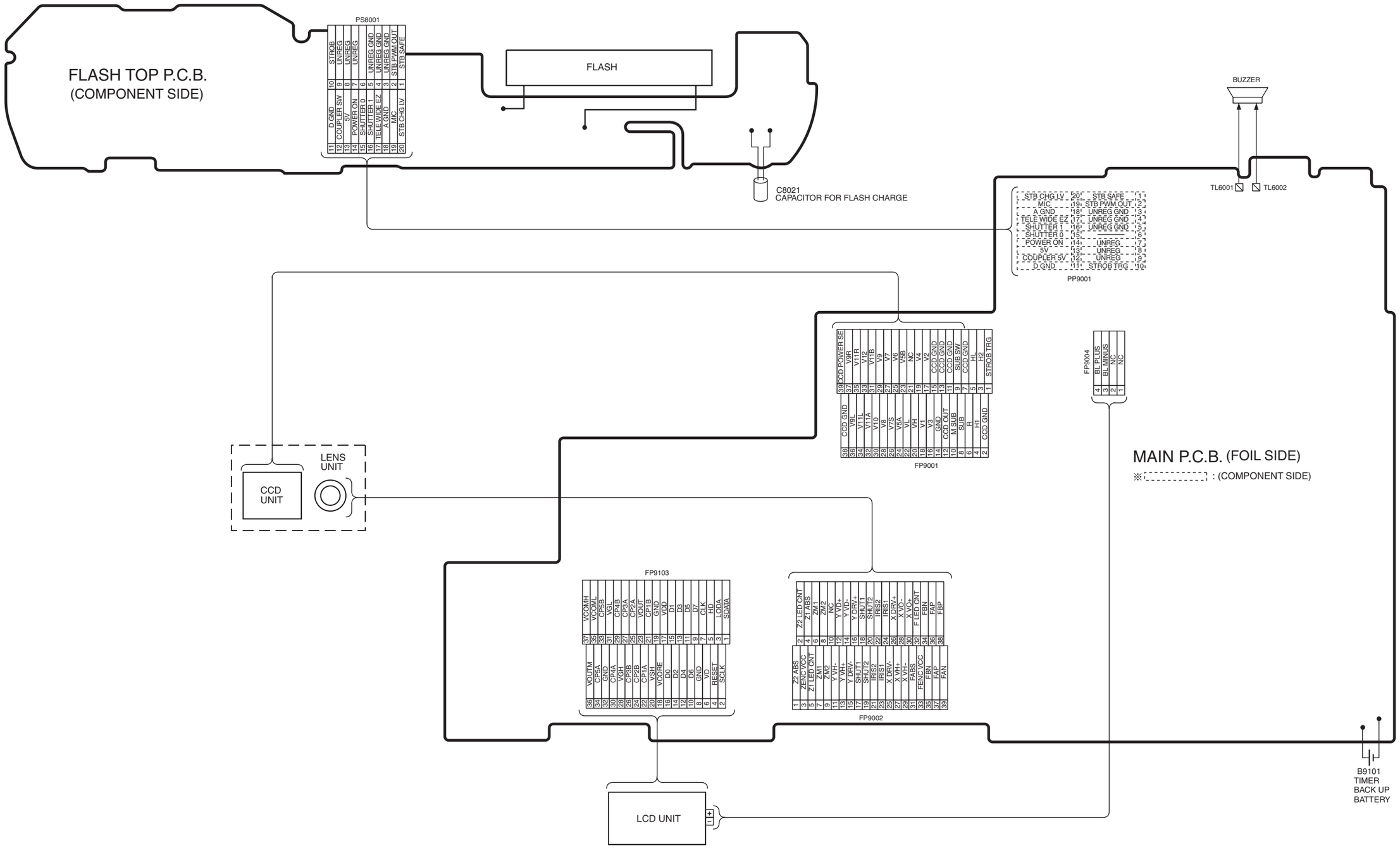
S3.1. Overall Block Diagram



DMC-LS80 OVERALL BLOCK DIAGRAM

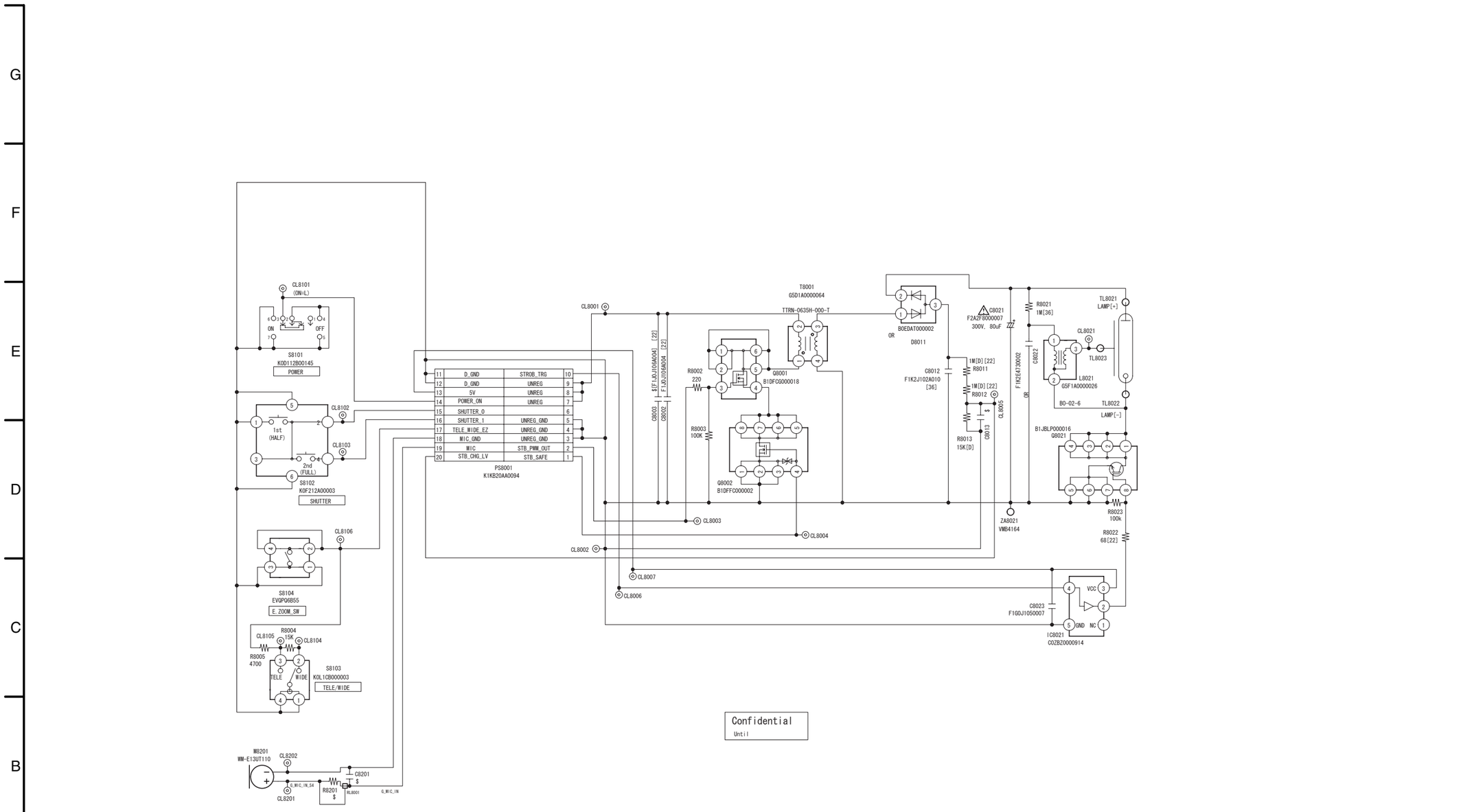
S4. Schematic Diagram

S4.1. Interconnection Diagram



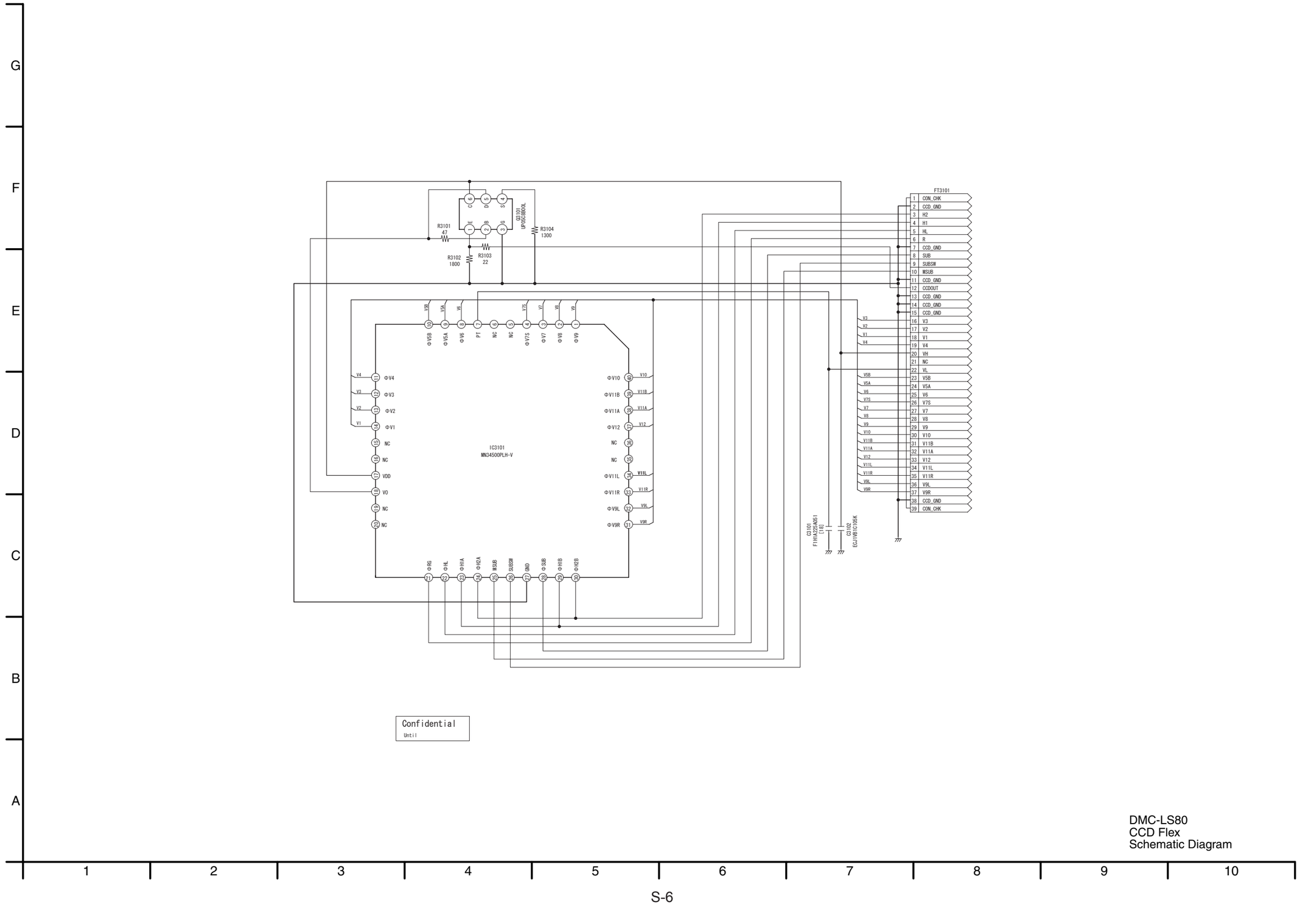
DMC-LS80 INTERCONNECTION DIAGRAM

S4.2. Flash Top Schematic Diagram

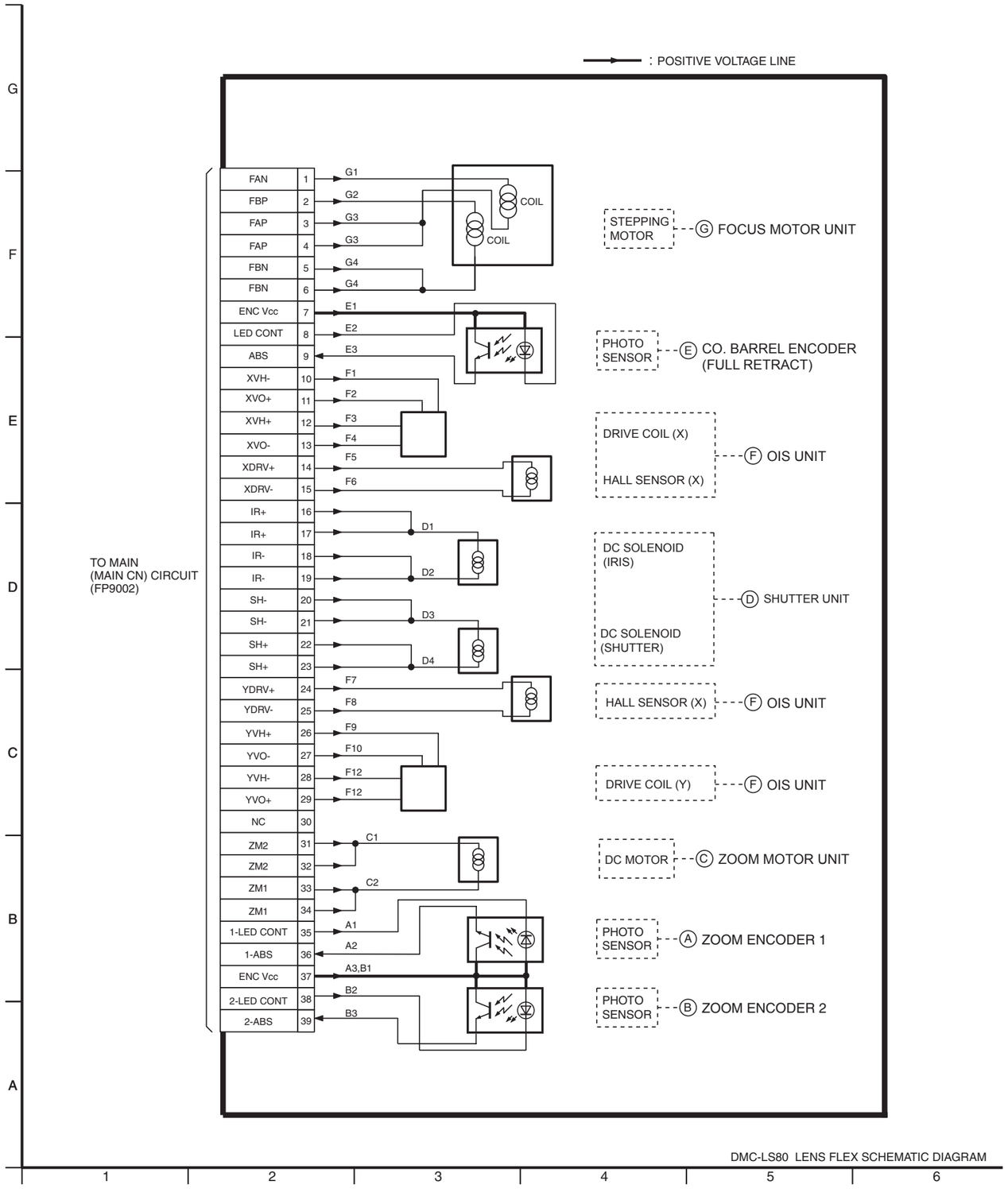


	D_GND	STROB_TRG	
11	D_GND	STROB_TRG	10
12	D_GND	UNREG	9
13	5V	UNREG	8
14	POWER_ON	UNREG	7
15	SHUTTER_0		6
16	SHUTTER_1	UNREG_GND	5
17	TELE_WIDE_EZ	UNREG_GND	4
18	MIC_GND	UNREG_GND	3
19	MIC	STB_PWM_OUT	2
20	STB_CHG_LV	STB_SAFE	1

S4.3. CCD Flex Schematic Diagram



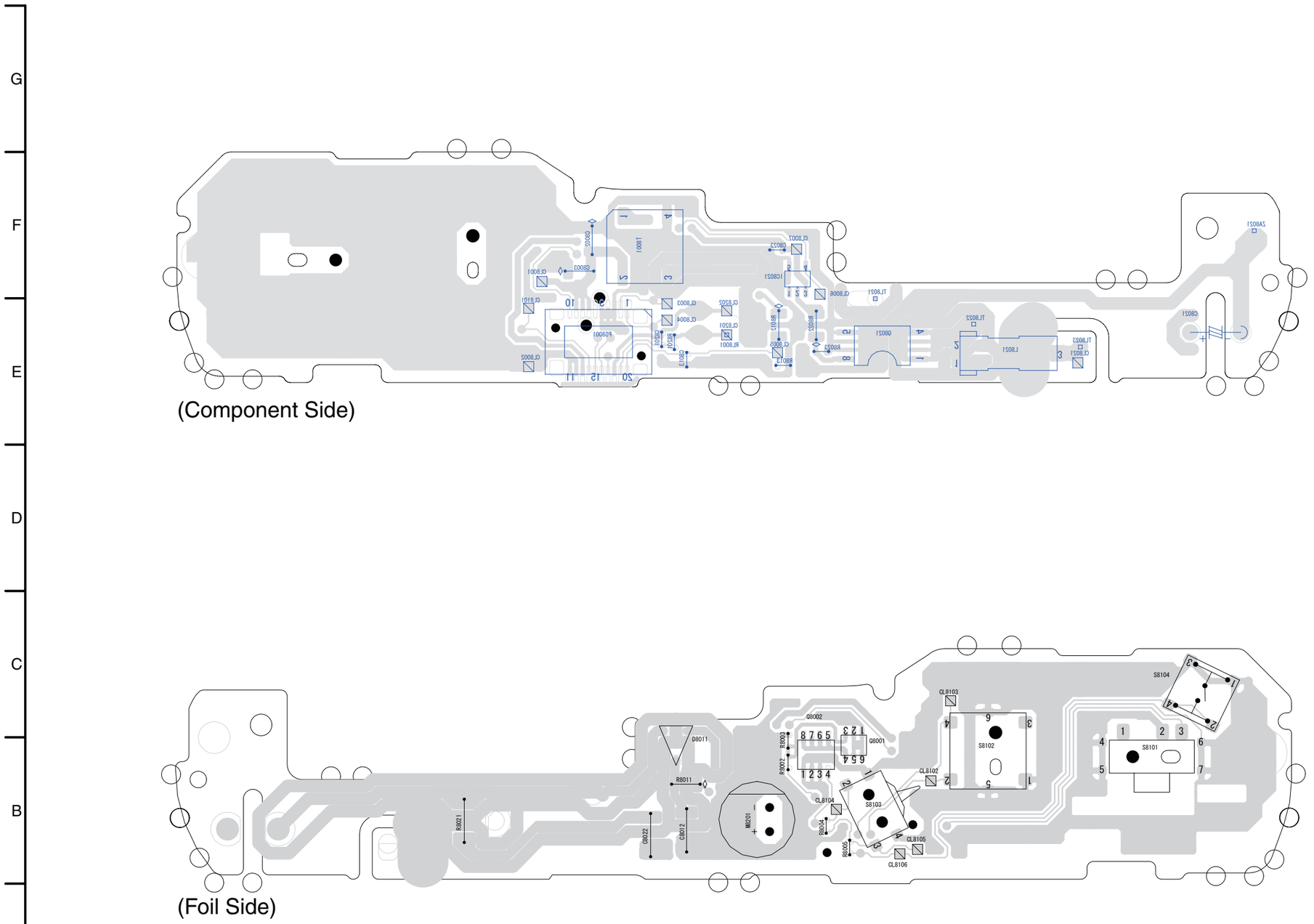
S4.4. Lens Flex Schematic Diagram



DMC-LS80 LENS FLEX SCHEMATIC DIAGRAM

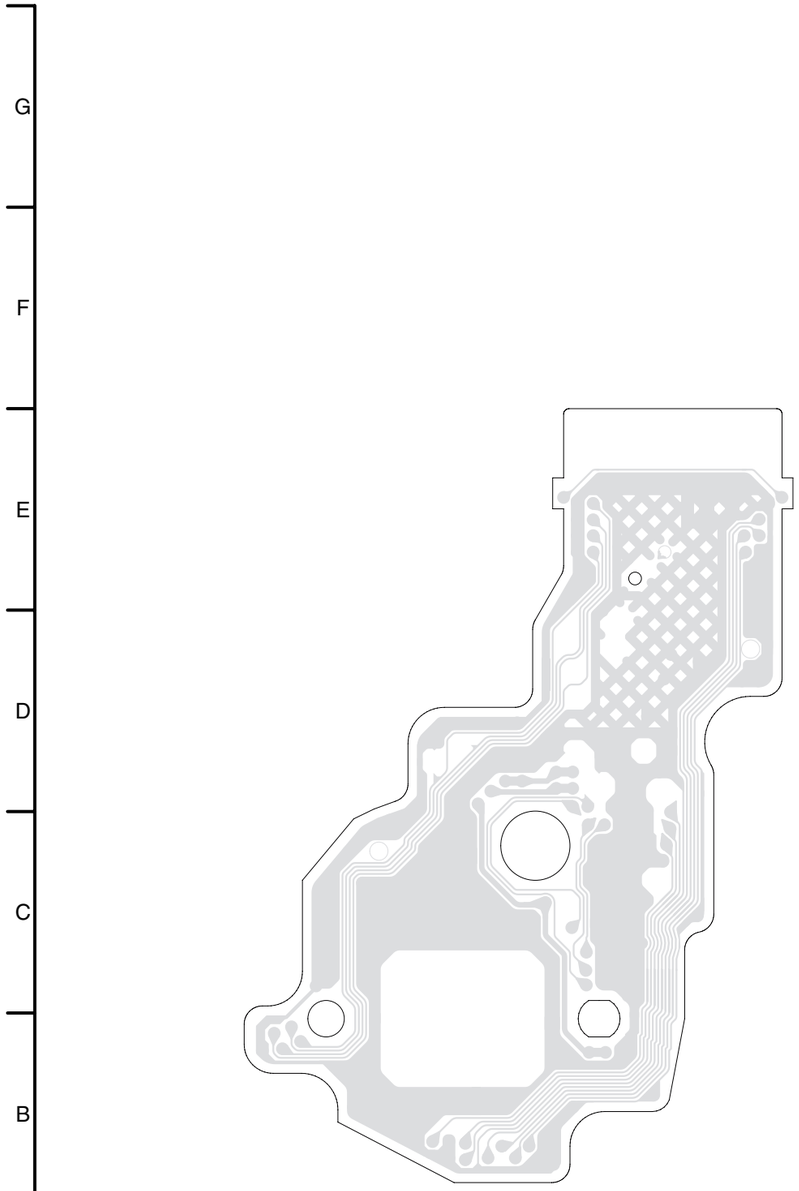
S5. Print Circuit Board

S5.1. Flash Top P.C.B

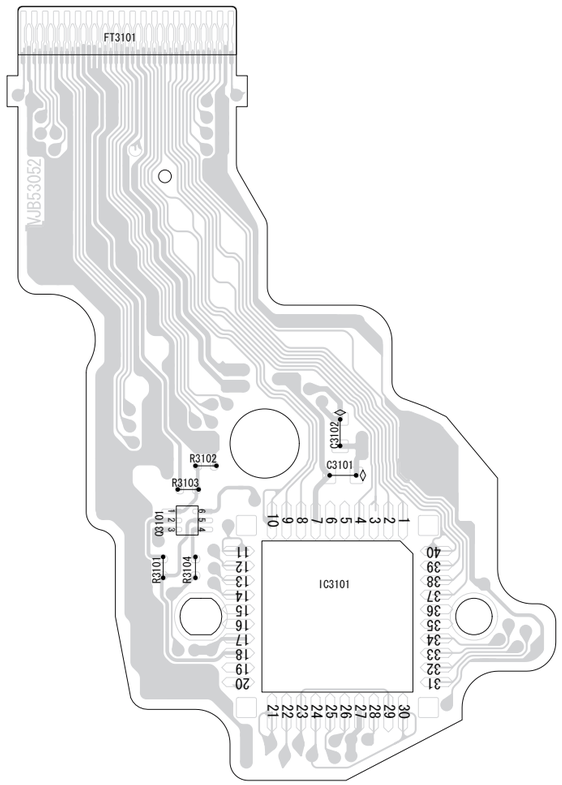


DMC-LS80
Flash Top P.C.B.

S5.2. CCD Flex P.C.B.



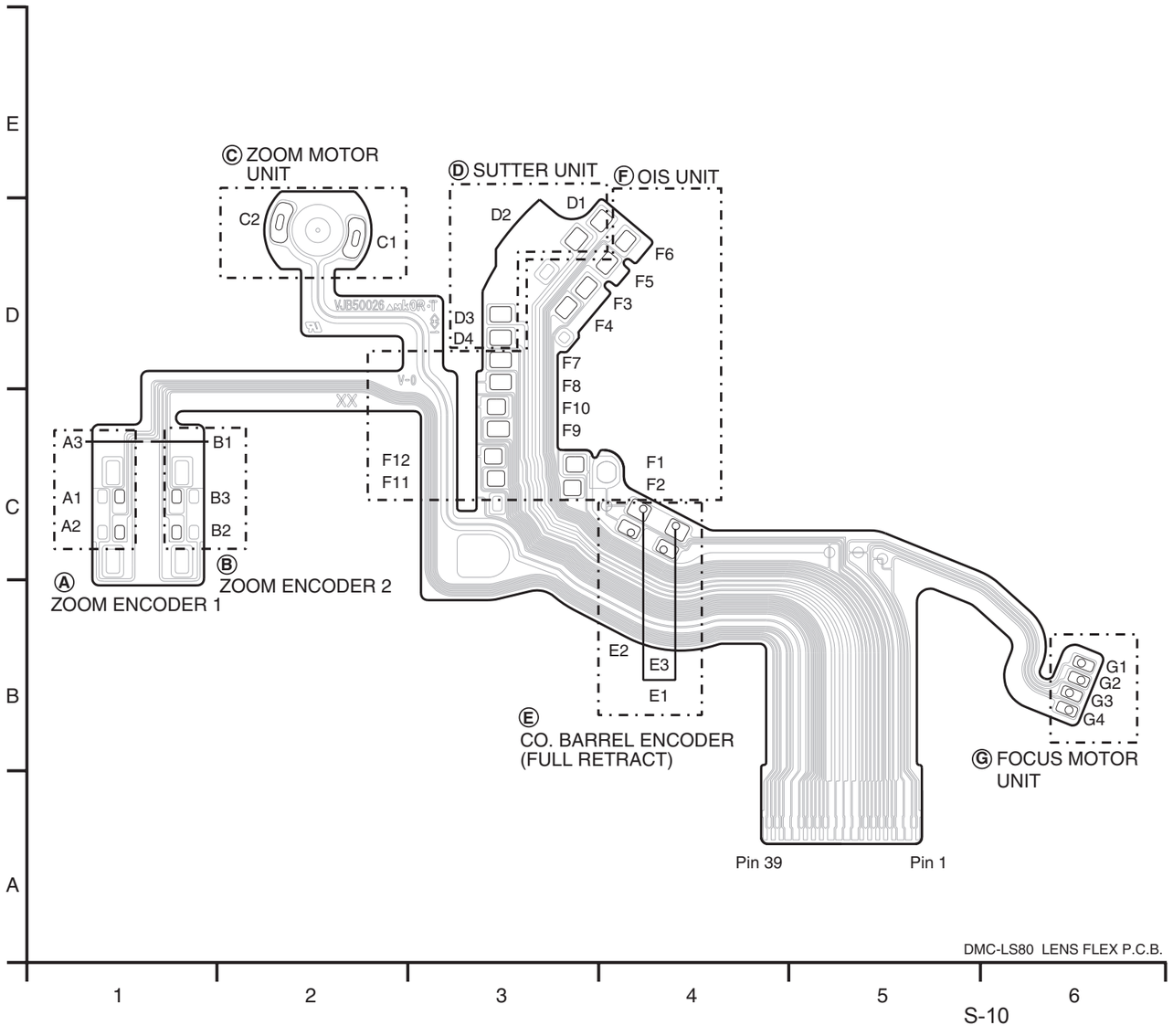
(Component Side)



(Foil Side)

DMC-LS80
CCD Flex P.C.B.

S5.3. 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 [MBI] in the remarks column are supplied from Matsushita Battery Industrial Co., Ltd.**
2. **Parts marked with [PAVC-CSG] in the remarks column are supplied from PAVC COMPANY CS Group (PAVC-CSG).**
   Others are supplied from PAVCSG (ASPC).

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		------ P.C.B. LIST ------		
	VEP58051A	FLASH TOP PCB	1	(RTL) E.S.D.
	VEK0L85	CCD FLEX UNIT	1	E.S.D.[PAVC-CSG]
		--- INDIVIDUAL PARTS ---		
⚠ C8021	F2A2F8000007	E.CAPACITOR 300V 80U	1	
M8201	WM-E13UT110	MICROPHONE	1	
		--- ELEC. COMPONENTS ---		
	VEP58051A	FLASH TOP PCB		(RTL)
C8002	F1J0J106A004	C.CAPACITOR CH 6.3V 10U	1	
C8012	F1K2J102A010	C.CAPACITOR 630V 1000P	1	
C8022	F1K2E4730002	C.CAPACITOR 250V 0.047U	1	
C8023	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
D8011	B0EDAT000002	DIODE	1	E.S.D.
IC8021	C0ZBZ0000914	IC	1	E.S.D.
L8021	G5F1A0000026	CHIP INDUCTOR	1	
PS8001	K1KB20AA0094	CONNECTOR 20P	1	
Q8001	B1DFCG000018	TRANSISTOR	1	
Q8002	B1DFFC000002	TRANSISTOR	1	
Q8021	B1JBLP000016	TRANSISTOR	1	
R8002	ERJ2GEJ221X	M.RESISTOR CH 1/16W 220	1	
R8003	ERJ2GEJ104X	M.RESISTOR CH 1/16W 100K	1	
R8004	ERJ2GEJ153X	M.RESISTOR CH 1/16W 15K	1	
R8005	ERJ2GEJ472X	M.RESISTOR CH 1/16W 4.7K	1	
R8011	ERJ6RED105V	M.RESISTOR CH 1/16W 1M	1	
R8012	ERJ6RED105V	M.RESISTOR CH 1/16W 1M	1	
R8013	ERJ2RHD153X	M.RESISTOR CH 1/16W 15K	1	
R8021	ERJ8GEYJ105V	M.RESISTOR CH 1/8W 1M	1	
R8022	ERJ6GEYJ680V	M.RESISTOR CH 1/10W 68	1	
R8023	ERJ2GEJ104X	M.RESISTOR CH 1/16W 100K	1	
S8101	K0D112B00145	SWITCH	1	
S8102	K0F212A00003	SWITCH	1	
S8103	K0L1CB000003	SWITCH	1	
S8104	EVQPQ6B55	SWITCH	1	
T8001	G5D1A0000064	DC-DC TRANSFORMER	1	
	VEK0L85	CCD FLEX UNIT		E.S.D.[PAVC-CSG]
C3101	F1H1A225A051	C.CAPACITOR CH 10V 2.2U	1	[PAVC-CSG]
C3102	ECJ1VB1C105K	C.CAPACITOR CH 16V 1U	1	[PAVC-CSG]
Q3101	UP05C8B00L	TRANSISTOR	1	E.S.D.[PAVC-CSG]
R3101	ERJ2GEJ470	M.RESISTOR CH 1/16W 100K	1	[PAVC-CSG]
R3102	ERJ2GEJ182	M.RESISTOR CH 1/16W 1.8K	1	[PAVC-CSG]
R3103	ERJ2GEJ220	M.RESISTOR CH 1/16W 22	1	[PAVC-CSG]
R3104	ERJ2GEJ132	M.RESISTOR CH 1/16W 1.3K	1	[PAVC-CSG]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	VKF4285	COUPLER COVER	1	(-S)
1	VKF4315	COUPLER COVER	1	(-K)
1	VKF4319	COUPLER COVER	1	(-P)
2	B3ADA0000215	AF LED	1	
3	L0DCDD000006	BUZZER	1	
4	VKF4283	JACK DOOR	1	(-S)
4	VKF4313	JACK DOOR	1	(-K)
4	VKF4317	JACK DOOR	1	(-P)
5	VMB4161	EARTH SPRING	1	
6	VMP9031	FRAME	1	
7	VMS7699	BATT.DOOR SHAFT	1	
8	VXQ1419	BATT TERMINAL (+) U	1	
9	VXQ1566	BATT TERMINAL (-) U	1	
10	VYF3172	BATT DOOR UNIT	1	(-S)
10	VYF3173	BATT DOOR UNIT	1	(-K)
10	VYF3174	BATT DOOR UNIT	1	(-P)
11	VYK2K43	FRONT CASE UNIT	1	(-S)
11	VYK2K51	FRONT CASE UNIT	1	(-K)
11	VYK2K55	FRONT CASE UNIT	1	(-P)
11-1	VGL1272	AF PANEL	1	
12	VYK2K44	REAR CASE UNIT	1	(-S)
12	VYK2K52	REAR CASE UNIT	1	(-K)
12	VYK2K56	REAR CASE UNIT	1	(-P)
12-1	VGL1231	LED PANEL (R)	1	
12-2	VGU0C24	CURSOR BUTTON	1	(-S/-P)
12-2	VGU0C38	CURSOR BUTTON	1	(-K)
12-3	VKF4282	SD COVER	1	(-S)
12-3	VKF4312	SD COVER	1	(-K)
12-3	VKF4316	SD COVER	1	(-P)
12-4	VMA0V92	EARTH PLATE	1	
12-5	VMS7812	SD SHAFT	1	
13	VMA0V91	LCD HOLDER	1	
14	VYQ4219KIT	LCD UNIT	1	
15	EFN-AMY60ZD	FLASH	1	
⚠ 16	F2A2F8000007	E.CAPACITOR 300V 80U	1	(C8021)
17	VEP58051A	FLASH TOP PCB	1	(RTL) E.S.D.
18	VYK2Q72	TOP CASE ASSY	1	
19	VGU0A90	POWER KNOB	1	
20	VGU0C29	E ZOOM BUTTON	1	
21	VMB4164	C EARTH SPRING	1	
22	VMT1735	MIC DUMPER	1	
23	VMX3664	MIC CUSHION	1	
24	WM-E13UT110	MICROPHONE	1	(M8201)
25	VGH5014	CAUTION LABEL B	1	PC-S/P-S/P-P
25	VGH5015	CAUTION LABEL C	1	GK-P/GK-S
25	VGH5016	CAUTION LABEL B	1	PC-K/P-K
26	VEP56056A	MAIN PCB	1	(RTL) E.S.D.
⚠ 27	ML-614S/F9FE	BUTTON BATTERY	1	(B9101)[MBI]
28	VGQ9895	SP SHEET	1	
201	VDL1950	IR FILTER	1	[PAVC-CSG]
202	VEK0L85	CCD FLEX PCB	1	[PAVC-CSG]E.S.D.
203	VMX3658	CCD CUSHION	1	[PAVC-CSG]
204	VXW0921	LENS UNIT (W/O CCD)	1	[PAVC-CSG]
205	L6DA8BEC0003	ZOOM MOTOR	1	[PAVC-CSG]
206	VEK0L86	LENS FLEX U	1	[PAVC-CSG]
206-1	B3NAA0000132	PHOTO SENSOR	1	[PAVC-CSG]
206-2	B3NBA0000011	PHOTO SENSOR	1	[PAVC-CSG]
206-3	B3NBA0000011	PHOTO SENSOR	1	[PAVC-CSG]
207	VXP2893	1ST LENS FRAME UNIT	1	[PAVC-CSG]
208	VXP2896	2ND MOVING FRAME UNIT	1	[PAVC-CSG]
209	VXP2898	DRIVE DIRECT FREME UNIT	1	[PAVC-CSG]
210	VXP2899	FIX FRAME UNIT	1	[PAVC-CSG]
211	VXP2902	MASTER FLANGE UNIT	1	[PAVC-CSG]
211-1	L6HA66NC0013	FOCUS MOTOR	1	[PAVC-CSG]
211-2	VMB4173	FOCUS SPRING	1	[PAVC-CSG]
211-3	VXP2900	3RD LENS FRAME UNIT	1	[PAVC-CSG]
212	VZT0815	BARRIER	1	[PAVC-CSG]
213	VZT0814	BARRIER	1	[PAVC-CSG]
214	VZT0814	BARRIER	1	[PAVC-CSG]
B1	XQN16+BJ5FJK	SCREW	1	
B2	XQN16+BJ5FJK	SCREW	1	
B3	XQN16+BJ5FJK	SCREW	1	
B4	XQN16+BJ5FJK	SCREW	1	

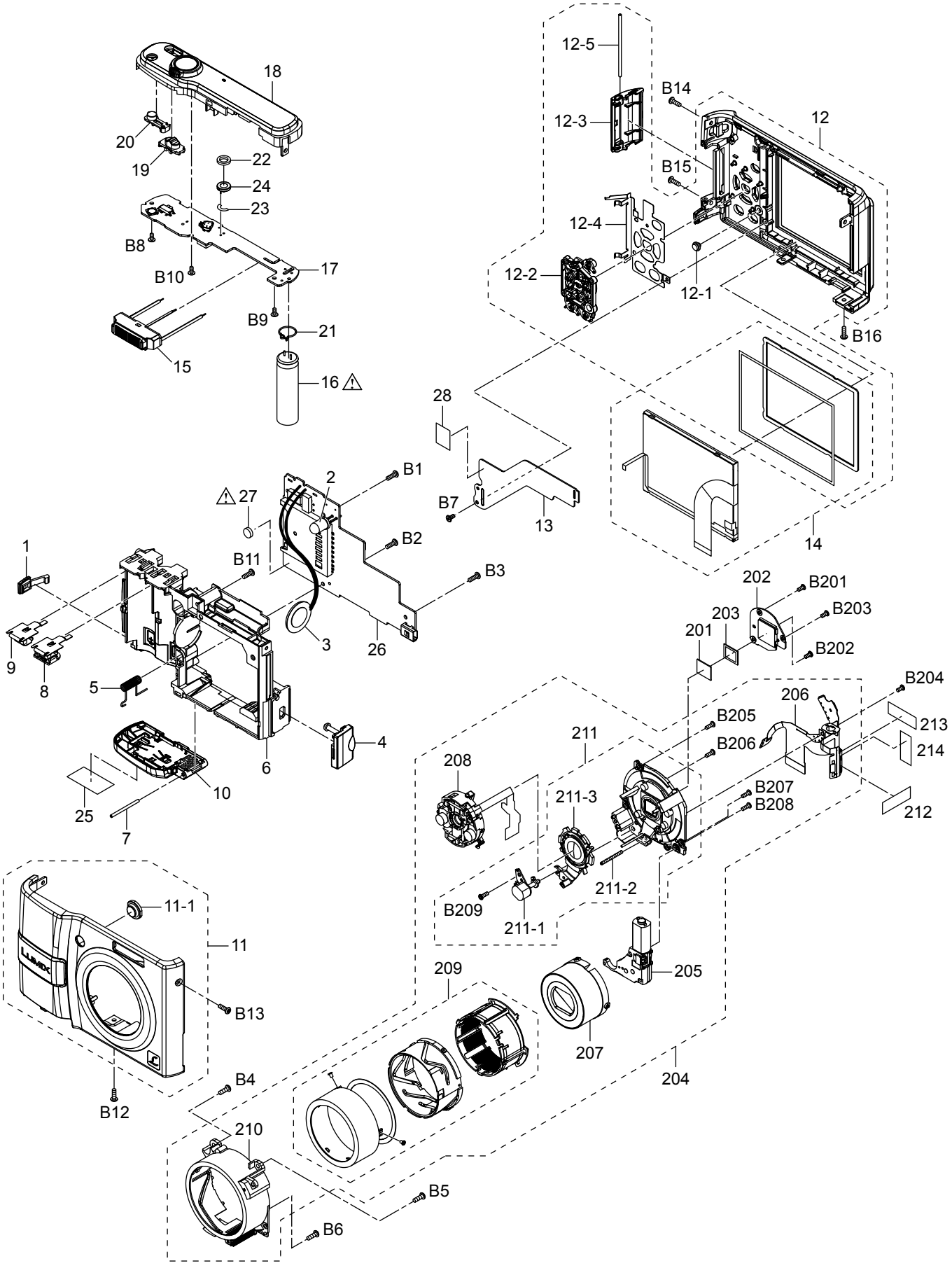
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
B5	XQN16+BJ5FJK	SCREW	1	
B6	XQN16+BJ5FJK	SCREW	1	
B7	VHD1909	SCREW	1	
B8	VHD1909	SCREW	1	
B9	VHD1909	SCREW	1	
B10	VHD1909	SCREW	1	
B11	XQN16+BJ5FJK	SCREW	1	
B12	XQN16+BJ5FN	SCREW	1	(-S/-P)
B12	XQN16+BJ5FJK	SCREW	1	(-K)
B13	XQN16+BJ5FN	SCREW	1	(-S/-P)
B13	XQN16+BJ5FJK	SCREW	1	(-K)
B14	XQN16+BJ5FN	SCREW	1	(-S/-P)
B14	XQN16+BJ5FJK	SCREW	1	(-K)
B15	XQN16+BJ5FN	SCREW	1	(-S/-P)
B15	XQN16+BJ5FJK	SCREW	1	(-K)
B16	XQN16+BJ5FN	SCREW	1	(-S/-P)
B16	XQN16+BJ5FJK	SCREW	1	(-K)
B201	VHD1871	SCREW	1	[PAVC-CSG]
B202	VHD1871	SCREW	1	[PAVC-CSG]
B203	VHD1871	SCREW	1	[PAVC-CSG]
B204	VHD1871	SCREW	1	[PAVC-CSG]
B205	XQN14+CJ4FN	SCREW	1	[PAVC-CSG]
B206	XQN14+CJ4FN	SCREW	1	[PAVC-CSG]
B207	XQN14+CJ4FN	SCREW	1	[PAVC-CSG]
B208	XQN14+CJ4FN	SCREW	1	[PAVC-CSG]
B209	XQN14+CJ4FN	SCREW	1	[PAVC-CSG]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
⚠ 102	VFF0403	CD-ROM (INSTRUCTION BOOK)	1	EG/E/GC/PL
103	K1HA08CD0023	USB CABLE	1	K1HA08CD0007
104	K1HA08CD0027	AUDIO/VIDEO CABLE	1	K1HA08CD0008
105	VFC4297-A	HAND STRAP	1	
106	VFF0400-S	CD-ROM	1	[PAVC-CSG]PC/P
				See "Notes"
106	VFF0401-S	CD-ROM	1	[PAVC-CSG](EXCEPT:PC/P)
				See "Notes"
107	VPF1100	BAG, POLYETHYLENE	1	
⚠ 108	VQT1L50	INSTRUCTION BOOK	1	PC/P
		(ENGLISH)		
⚠ 108	VQT1L51	INSTRUCTION BOOK	1	P
		(SPANISH)		
⚠ 108	VQT1L52	INSTRUCTION BOOK	1	PC
		(CANADIAN-FRENCH)		
⚠ 108	VQT1L53	SIMPLIFIED O/I	1	PL
		(ENGLISH/SPANISH)		
⚠ 108	VQT1L54	SIMPLIFIED O/I	1	PL
		(PORTUGUESE)		
⚠ 108	VQT1L55	SIMPLIFIED O/I	1	EG
		(GERMAN/FRENCH)		
⚠ 108	VQT1L56	SIMPLIFIED O/I	1	EG
		(ITALIAN/DUTCH)		
⚠ 108	VQT1L57	SIMPLIFIED O/I	1	EG
		(SPANISH/PORTUGUESE)		
⚠ 108	VQT1L58	SIMPLIFIED O/I	1	E
		(SWEDISH/DANISH)		
⚠ 108	VQT1L59	SIMPLIFIED O/I	1	E
		(POLISH/CZECH)		
⚠ 108	VQT1L60	SIMPLIFIED O/I	1	E
		(HUNGARIAN/FINNISH)		
⚠ 108	VQT1L61	INSTRUCTION BOOK	1	EF
		(FRENCH)		
⚠ 108	VQT1L62	INSTRUCTION BOOK	1	EB
		(ENGLISH)		
⚠ 108	VQT1L63	INSTRUCTION BOOK	1	EE
		(RUSSIAN)		
⚠ 108	VQT1L64	INSTRUCTION BOOK	1	EE
		(UKRANIAN)		
⚠ 108	VQT1L65	SIMPLIFIED O/I	1	GC
		(ENGLISH/		
		CHINESE(TRADITIONAL))		
⚠ 108	VQT1L66	SIMPLIFIED O/I	1	GC
		(ARABIC/PERSIAN)		
⚠ 108	VQT1L67	INSTRUCTION BOOK	1	GK
		(CHINESE(SIMPLIFIED))		
⚠ 108	VQT1L68	INSTRUCTION BOOK	1	GN
		(ENGLISH)		
109	VQT1M47	O/I SOFTWARE	1	PC/P
		(ENGLISH/CANADIAN FRENCH))		
109	VQT1M48	O/I SOFTWARE	1	PL
		(ENGLISH/SPANISH/		
		PORTUGUESE)		
109	VQT1M49	O/I SOFTWARE	1	EG
		(GERMAN/FRENCH/ITALIAN/		
		DUTCH/SPANISH/PORTUGUESE)		
109	VQT1M50	O/I SOFTWARE	1	E
		(FINNISH/SWEDISH/DANISH/		
		POLISH/CZECH/HUNGARIAN)		
109	VQT1M51	O/I SOFTWARE	1	EF
		(FRENCH)		
109	VQT1M52	O/I SOFTWARE	1	EB/GN
		(ENGLISH)		
109	VQT1M53	O/I SOFTWARE	1	EE
		(RUSSIAN/UKRANIAN)		
109	VQT1M54	O/I SOFTWARE	1	GC
		(ENGLISH/		
		CHINESE(TRADITIONAL)/		
		ARABIC/PERSIAN)		
109	VQT1R29	O/I SOFTWARE	1	GK
		(CHINESE(SIMPLIFIED))		

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
110	VPK3427	PACKING CASE	1	PC-S/P-S
110	VPK3428	PACKING CASE	1	EB-S/EE-S/EG-S/E-S/
				GC-S/GN-S/PL-S
110	VPK3429	PACKING CASE	1	GK-S
110	VPK3457	PACKING CASE	1	PC-K/P-K
110	VPK3458	PACKING CASE	1	EE-K/EF-K/EG-K/E-K/
				GC-K/PL-K
110	VPK3459	PACKING CASE	1	P-P
110	VPK3460	PACKING CASE	1	EB-P/EE-P/EG-P/E-P/PL-P
110	VPK3461	PACKING CASE	1	GK-P
111	VPF1301	PE BAG	1	
112	VPN6652	PULP MOULD	1	
113	VQL1L48	OPERATION LABEL	1	PC

S7. Exploded View

S7.1. Frame and Casing Section



S7.2. Packing Parts and Accessories Section