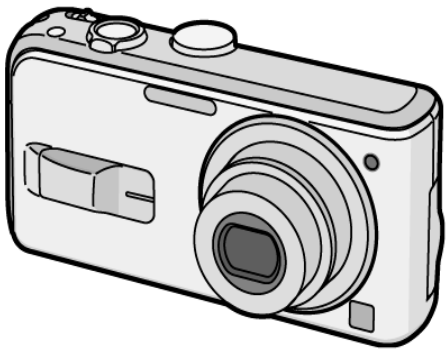
ORDER NO. DSC0602007CE
B26

Service Manual

Digital Camera

LUMIX



DMC-LS2PP
DMC-LS2PL
DMC-LS2EB
DMC-LS2EE
DMC-LS2EF
DMC-LS2EG
DMC-LS2EGM
DMC-LS2GC
DMC-LS2GK
DMC-LS2GN
DMC-LS2GT
DMC-LS2SG
DMC-LS3EF
DMC-LS3EG
DMC-LS3EGM

Vol. 1

Colour
(S).....Silver Type

⚠ WARNING

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

Panasonic

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1 Safety Precaution

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

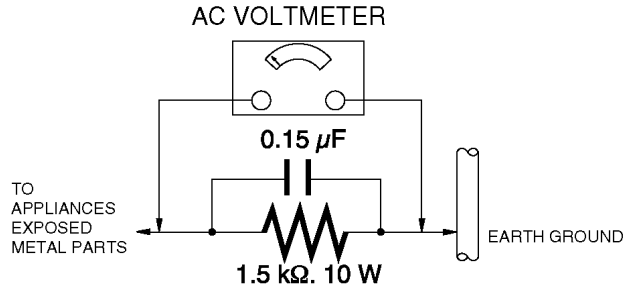


Figure. 1

1.4. How to Discharge the Capacitor on Main PCB

CAUTION:

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

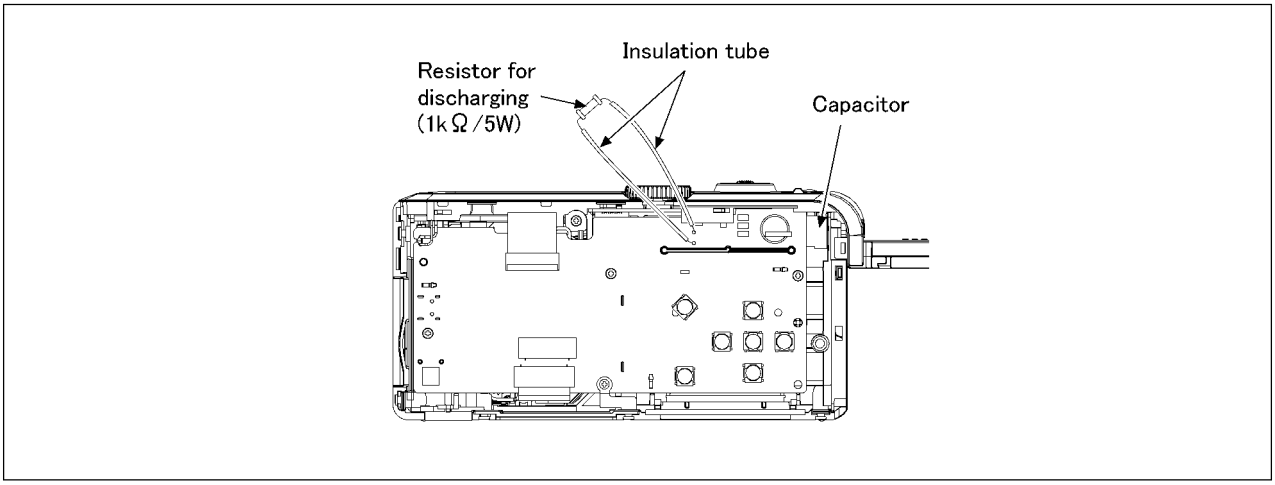


Fig. F1

2 Warning

2.1. Prevention of Electro Static 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.

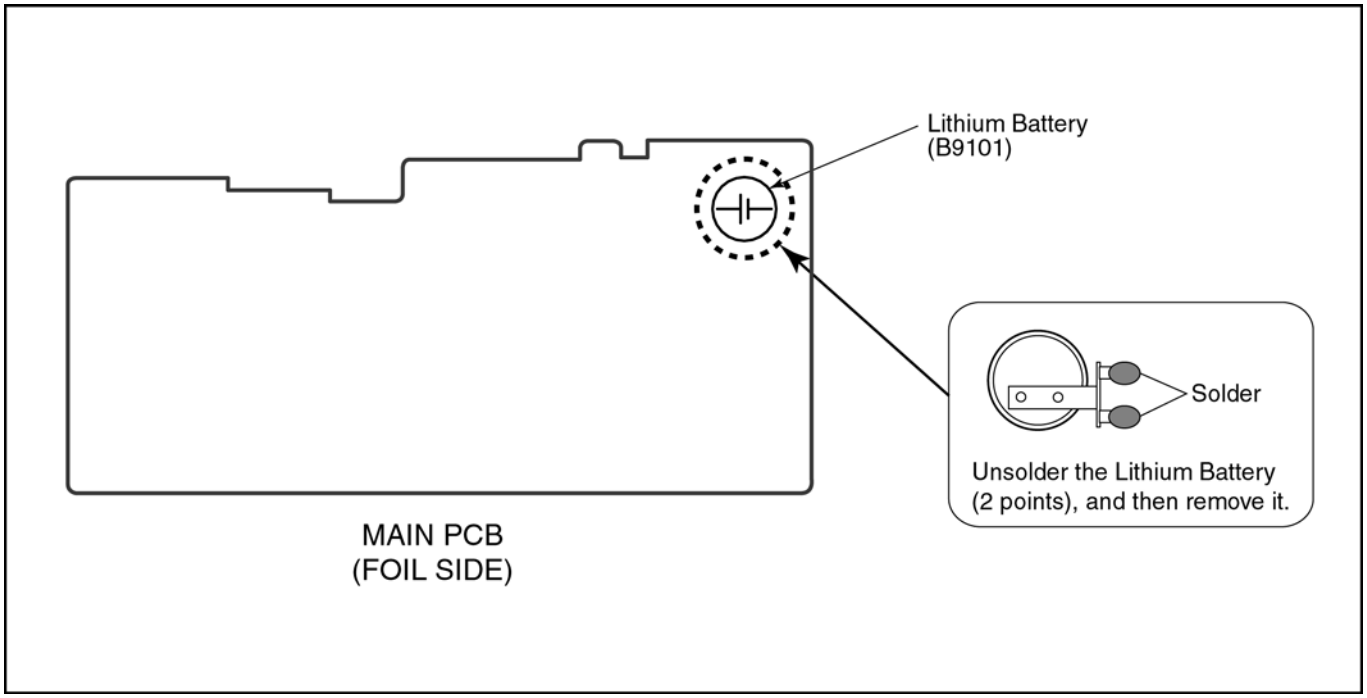
The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

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. Remove the Lithium battery (Ref. No. “B9101” at foil side of Main PCB) and then replace it into new one.



NOTE:

This Lithium battery is a critical component.
(Type No.: ML-614S/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 French)

PRECAUTION

Le fait de remplacer incorrectement la pile peut présenter des risques d'explosion.
Remplacer la pile uniquement par une pile identique ou de type équivalent recommandée par le fabricant. Se débarrasser des piles usagées conformément aux instructions du fabricant.

(For German)

VORSICHT

Bei einer falsch eingesetzten Batterie besteht Explosionsgefahr. Nur mit einer vom Hersteller empfohlenen Batterie vom gleichen Typ ersetzen.
Verbrauchte Battrien beim Fachhändler oder einer Sammelstelle für Sonderstoffe abliefern.

(For Swedish)

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattilverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

(For Norwegian)

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning má kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tibage til leverandøren.

(For Finnish)

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

NOTE:

Above caution are also applicable for below batteries which is for DMC-LS2/LS3 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 of 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 (VEP56027A) : Excluding replacement of Lithium Battery

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

There are six kinds of DMC-LS2/LS3, regardless of the colours.

- a) DMC-LS2S
- b) DMC-LS2PP
- c) DMC-LS2EB/EF/EG/EGM/GN, LS3EF/EG/EGM
- d) DMC-LS2EE
- e) DMC-LS2GT
- f) DMC-LS2PL/GC/GK/SG

(DMC-LS2S 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-LS2S

DMC-LS2S is exclusively Japan domestic model.

b) DMC-LS2PP

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

c) DMC-LS2EB/EF/EG/EGM/GN, LS3EF/EG/EGM

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

d) DMC-LS2EE

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

e) DMC-LS2GT

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

f) DMC-LS2PL/GC/GK/SG

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.

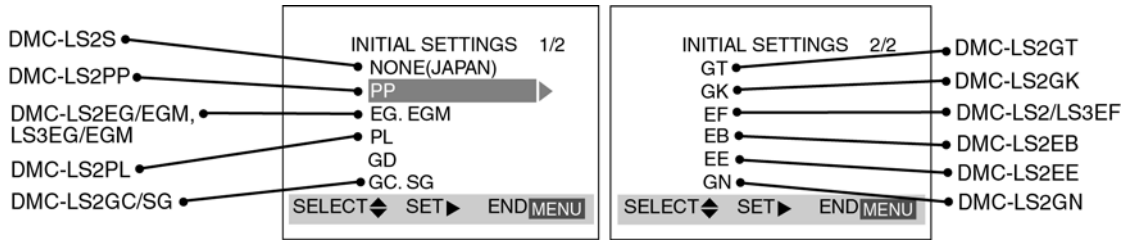
3.4.2. INITIAL SETTINGS:

CAUTION:
The unit employs "Built-in Memory" for picture image data recording. (Approx.14MB)
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 belong to "Built-in Memory" shall be erased.

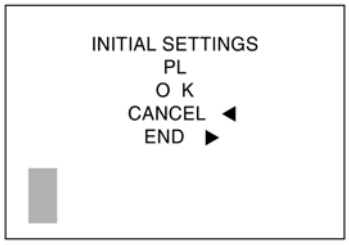
CAUTION:
NEVER select "NONE(JAPAN)" if the unit is other than "JAPAN" model.
Other-wise, it can not be reset to the others.

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.

- **Step 1. The temporary cancellation of factory setting:**
  Set the mode dial to " [Normal picture mode] (Red camera mark)".
  While keep pressing [Optical Image Stabilizer] and "[UP] of Cross key" simultaneously, turn the Power on.
- **Step 2. The cancellation of factory setting:**
  Set the mode dial to "[Playback]".
  Press [Optical Image Stabilizer] and "[UP] of Cross key" simultaneously, then turn the Power off.
- **Step 3. Turn the Power on:**
  Set the mode dial to " [Normal picture mode] (Red camera mark)", and then turn the Power on.
- **Step 4. Display the INITIAL SETTING:**
  While keep pressing [MENU] and "[RIGHT] of Cross key" simultaneously, turn the Power off.



- **Step 5. Set the INITIAL SETTING:**
  Select the area with pressing "[UP] / [DOWN] of Cross key", and then press the "[RIGHT] of Cross key".



  The only set area is displayed, and then press the "[RIGHT] of Cross key" after confirmation.
  (The unit is powered off automatically.)
  Confirm the display of "PLEASE SET THE CLOCK" in English when the unit is turned on again.
- **Step 6. CONFIRMATION:**
  The display shows "PLEASE SET THE CLOCK" when turn the Power on again.
  When the unit is connected to PC with USB cable, it is detected as removable media.
  (When the "GT" or "GK" model suffix is selected, the display shows "PLEASE SET THE CLOCK" in Chinese.)

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

- **Default setting (After "INITIAL SETTINGS")**

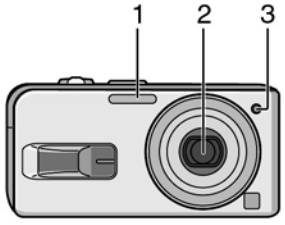
	MODEL	VIDEO OUTPUT	LANGUAGE	DATE	REMARKS
a)	DMC-LS2S	NTSC	Japanese	Year/Month/Date	
b)	DMC-LS2PP	NTSC	English	Month/Date/Year	
c)	DMC-LS2EB/EE/EF/EG/EGM/GC/GN, DMC-LS3EF/EG/EGM	PAL	English	Date/Month/Year	
d)	DMC-LS2GK	PAL	Chinese (simplified)	Year/Month/Date	
e)	DMC-LS2GT	NTSC	Chinese (traditional)	Year/Month/Date	

4 Specifications

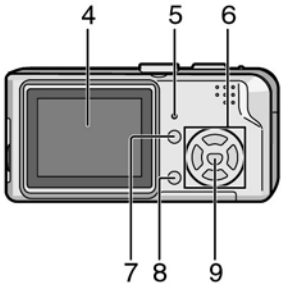
Digital Camera:	Information for your safety
Power Source:	DC 3.0 V
Power Consumption:	1.4 W (When recording) 0.7 W (When playing back)
Camera effective pixels:	5,000,000 pixels
Image sensor:	1/2.5″ CCD, total pixel number 5,360,000 pixels, Primary color filter
Lens:	Optical 3× zoom, f=5.8 mm to 17.4 mm (35 mm film camera equivalent: 35 mm to 105 mm)/F2.8 to F5.0
Digital zoom:	Max. 4×
Extended optical zoom:	Max. 3.8× (Except for the maximum picture size for each aspect ratio)
Focus:	Normal/Macro, 5-area-focusing/3-area-focusing (High speed)/1-area-focusing (High speed)/1-area-focusing/Spot-focusing
Focus range:	Normal: 50 cm (1.64 feet) to ∞ Macro/Simple/Motion picture: 5 cm (0.16 feet) (Wide)/30 cm (0.98 feet) (Tele) to ∞
Shutter system:	Electronic shutter+Mechanical shutter
Burst recording	
Burst speed:	3 frames/second (High speed), 2 frames/second (Low speed), Approx. 1.5 frames/second (Unlimited)
Number of recordable pictures:	Max. 5 frames (Standard), max. 3 frames (Fine), Depends on the remaining capacity of the built-in memory or the card (Unlimited). (Performance in burst recording is only with SD Memory Card. MultiMediaCard performance will be less.)
Motion picture recording:	320×240 pixels (30 or 10 frames/second without audio. The maximum recording time depends on the capacity of the built-in memory or the card.)
ISO sensitivity:	AUTO/80/100/200/400
Shutter speed:	8 to 1/2000th [STARRY SKY] mode: 15 seconds, 30 seconds, 60 seconds Motion picture mode: 1/30th to 1/4000th
White balance:	AUTO/Daylight/Cloudy/Halogen/White set
Exposure (AE):	Program AE Exposure compensation (1/3 EV Step, −2 EV to +2 EV)
Metering mode:	Multiple
LCD monitor:	2.0″ TFT LCD (Approx. 86,000 pixels) (field of view ratio about 100%)
Flash:	Flash range: (ISO AUTO) Approx. 30 cm (0.98 feet) to 3.7 m (12.1 feet) (Wide) AUTO, AUTO/Red-eye reduction, Forced ON (Forced ON/Red-eye reduction), Slow sync./Red-eye reduction, Forced OFF
Recording media:	Built-in Memory (Approx. 14 MB)/SD Memory Card/MultiMediaCard (Still pictures only)
Picture size	
Still picture:	When the aspect ratio setting is [4:3] 2560×1920 pixels, 2048×1536 pixels, 1600×1200 pixels, 1280×960 pixels, 640×480 pixels When the aspect ratio setting is [3:2] 2560×1712 pixels, 2048×1360 pixels When the aspect ratio setting is [16:9] 2560×1440 pixels, 1920×1080 pixels
Motion pictures:	320×240 pixels
Quality:	Fine/Standard
Recording file format	
Still Picture:	JPEG (based on Design rule for Camera File system, based on Exif 2.2 standard)/DPOF corresponding
Motion pictures:	QuickTime Motion JPEG (Motion pictures without audio)
Interface	
Digital:	USB 2.0 (Full Speed)
Analog video:	NTSC/PAL Composite (Switched by menu)
Terminal	
DIGITAL/V.OUT:	Dedicated jack (8 pin)
DC IN:	Type 1 jack
Dimensions:	Approx. 110.5 mm (W)×53.5 mm (H)×30.9 mm (D) [4 3/8″ (W)×2 1/8″ (H)×1 3/16″ (D)] (excluding the projection part)
Mass:	Approx. 138 g/4.87 oz (excluding card and batteries), Approx. 186 g/6.56 oz (with card and batteries)
Operating temperature:	0 °C to 40 °C (32 °F to 104 °F)
Operating humidity:	10% to 80%

5 Location of Controls and Components

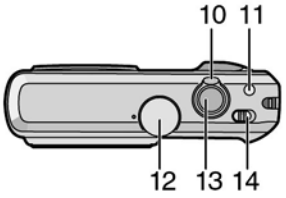
Names of the Components



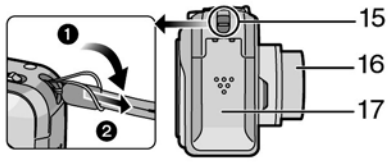
1 Flash
2 Lens
3 Self-timer indicator



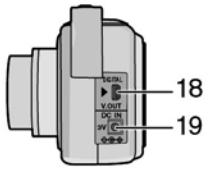
4 LCD monitor
5 Status indicator
6 Cursor buttons
◄/Self-timer button
▼/[REV] button
►/Flash setting button
▲/Exposure compensation/Auto bracket /White balance fine adjustment /Backlight compensation in simple mode button
7 [DISPLAY] /[HIGH ANGLE] button
8 Delete/Single or burst mode button
9 [MENU/SET] button



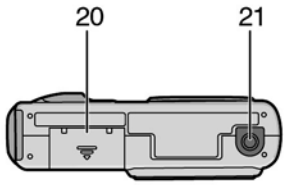
10 Zoom lever
11 Optical image stabilizer button
12 Mode dial
13 Shutter button
14 Camera ON/OFF switch



15 Strap eyelet
16 Lens barrel
17 Battery door



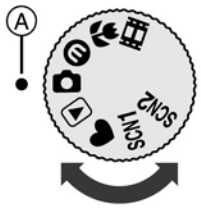
18 [DIGITAL/V.OUT] socket
19 [DC IN] socket
• Always use a genuine Panasonic AC adaptor (DMW-AC6; optional).



20 Card door
21 Tripod receptacle
• When you use a tripod, make sure it is stable when the camera is attached to it.

About The Mode Dial

Adjust part Ⓐ to the desired mode.
The mode dial can be rotated 360°. Rotate it slowly and surely to adjust to each mode. (Do not adjust it to parts where there is no mode.)



: Normal picture mode
Use this mode for normal recording.

: Economy mode
This mode allows you to take pictures while reducing battery power consumption.

: Macro mode
This mode allows you to take a close-up picture of a subject.

: Motion picture mode
This mode allows you to record motion pictures.

SCN1: Scene mode 1
SCN2: Scene mode 2
This mode allows you to match the picture to the scene being recorded.
Two frequently used scenes can be set to the mode dials [SCN1] and [SCN2].

: Simple mode
This mode is recommended for beginners.

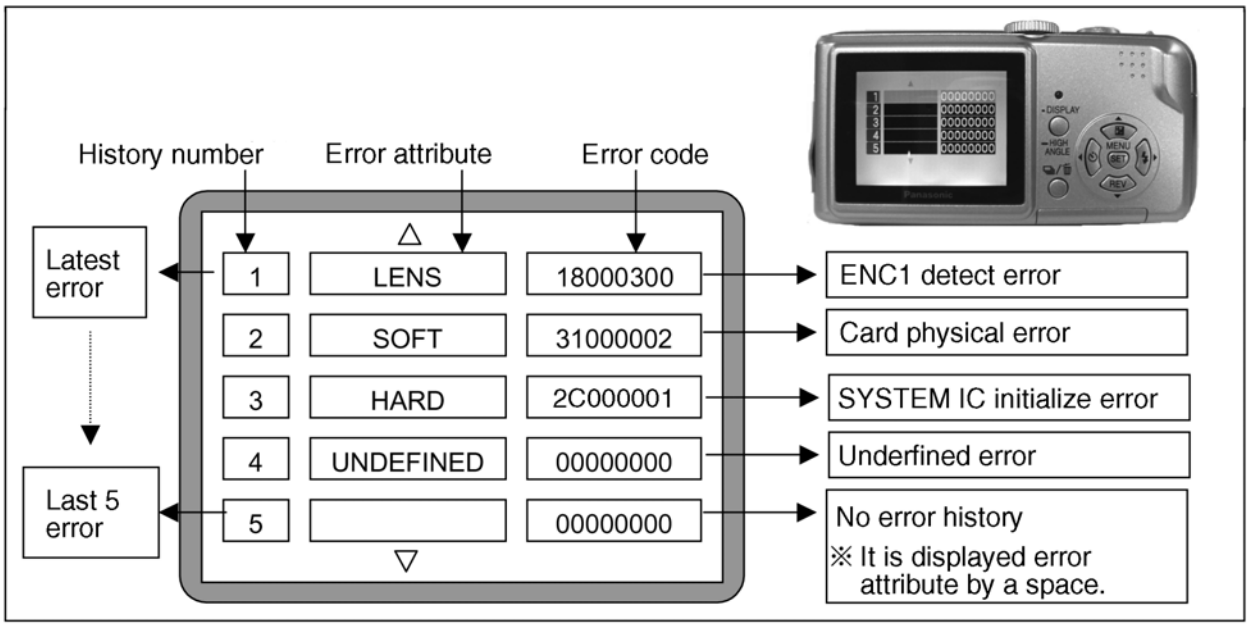
: Playback mode
This mode allows you to play back recorded pictures.

6 Service Mode

6.1. Error Code Memory Function

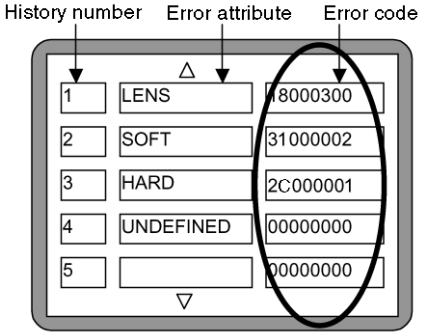
1. **General description**
   This unit is equipped with history of error code memory function, and can be memorized 32 error codes in sequence from the latest. When the error is occurred more than 32, the oldest error is overwritten in sequence.
   The error code is not memorized when the power supply 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.
2. **How to display**
   The error code can be displayed by the following procedure:
   Before perform the error code memory function, connect the AC adaptor or insert the battery, and insert the SD card.

- **1. The temporary cancellation of factory setting:**
  Set the mode dial to " [Normal picture mode] (Red camera mark)".
  While keep pressing [Optical Image Stabilizer Button] and "[UP] of Cross key" simultaneously, turn the Power on.
- **2. The display of error code:**
  Press [Optical Image Stabilizer Button], [MENU] and "[LEFT] of Cross key" simultaneously with the step 1 condition.
  The display is changed as shown below when the above buttons is pressed simultaneously.
  Normal display → Error code display → Operation history display → Normal display → .....



Example of Error Code Display

- **3. The change of display:**
  The error code can be memorized 32 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 Cross key" : It can be scroll up or down one.
  "[LEFT] or [RIGHT] of Cross key" : It can be display last 5 error or another 5 error.
- **4. How to read the error code:**
  One error code is displayed for 8 bit, the contents of error codes is indicated the table as shown below.



Attribute	Main item	Sub item	Error code		Contents (Upper)
			High 4 bits	Low 4 bits	Check point (Lower)
LENS	Lens drive	OIS	1800	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 PLUS)
				4000	GYRO (Y) error. Gyro (IC7101: Y axis) detect error on Main P.C.B..
					IC7101 (Gyro element) or IC6001 (VENUS PLUS)
				5000	MREF error (Reference voltage error).
					IC7002 (LENS drive) or IC6001 (VENUS PLUS)
				6000	Drive voltage (X) error.
					VENUS PLUS AD value error, LENS Unit, LENS flex breaks etc.
				7000	Drive voltage (Y) error.
					VENUS PLUS 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-(2, 10) signal line or IC6001 (VENUS PLUS)
				0200	HP High detect error (C.B. encoder (full retract) always High detect).
					FP9001-(2, 10) signal line or IC6001 (VENUS PLUS)
				0300	ENC1 detect error (C.B. motor encoder detect error).
					FP9001-(2) signal line or IC6001 (VENUS PLUS)
				0400	ENC2 detect error (C.B. motor encoder detect error).
					FP9001-(10) signal line or IC6001 (VENUS PLUS)
		Zoom		0010	HP Low detect error (Zoom encoder always Low detect error).
				0020	HP High detect error (Zoom encoder always High detect error).
				0030	ENC1 detect error (Zoom encoder detect error).
				0040	ENC2 detect error (Zoom encoder detect error).
		Focus		0001	HP Low detect error (Focus encoder always Low detect error).
					FP9001-(27) signal line or IC6001 (VENUS PLUS)
				0002	HP High detect error (Focus encoder always High detect error).
					FP9001-(27) signal line or IC6001 (VENUS PLUS)
		Lens	1801	0000	Power ON time out error.
					Lens drive system
			1802	0000	Power OFF time out error.
					Lens drive system
	Adj.History	OIS	1900	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
HARD	FLASH ROM (EEPROM Area)	FLASH ROM (EEPROM Area)	2B00	0001	EEPROM read error
					IC6002 (FLASH ROM)
				0002	EEPROM write error
					IC6002 (FLASH ROM)
	SYSTEM	RTC	2C00	0001	SYSTEM IC initialize error
					Communication between IC6001 (VENUS PLUS) and IC9101 (SYSTEM)

Attribute	Main item	Sub item	Error code		Contents (Upper)
			High 4 bits	Low 4 bits	Check point (Lower)
SOFT	CPU	Reset	3000	0001 | 0007	NMI reset Non Mask-able Interrupt (30000001-30000007 are caused by factors)
	Card	Card	3100	0001	Card logic error
					SD card data line or IC6001 (VENUS PLUS)
				0002	Card physical error
					SD card data line or IC6001 (VENUS PLUS)
				0004	Write error
					SD card data line or IC6001 (VENUS PLUS)
			3900	0005	Format error
	CPU, ASIC hard	Stop	3800	0001	Camera task finish process time out.
					Communication between Lens system and IC6001 (VENUS PLUS)
				0002	Camera task invalid code error.
					IC6001 (VENUS PLUS)
				0100	File time out error in recording motion image
					IC6001 (VENUS PLUS)
				0200	File data send error in recording motion image
					IC6001 (VENUS PLUS)
	Operation	Power on	3B00	0000	FLASHROM processing early period of camera during movement.
	Zoom	Zoom	3C00	0000	I do not complete zoom lens processing
					Zoom lens
			3500	0000	I jumped into dummy processing
					(0-7bit : command, 8-15bit : Status)
			3501	0000	Though record preprocessing is necessary, it is not called.
			3502	0000	Though record preprocessing is necessary, it is not completed.

- **5. 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.

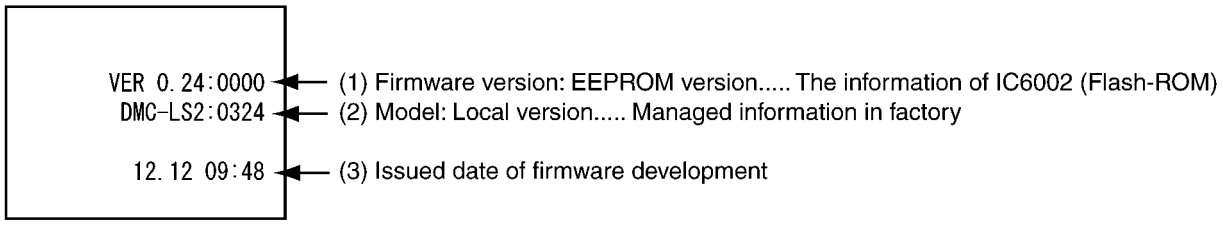
6.2. Confirmation of Firmware Version

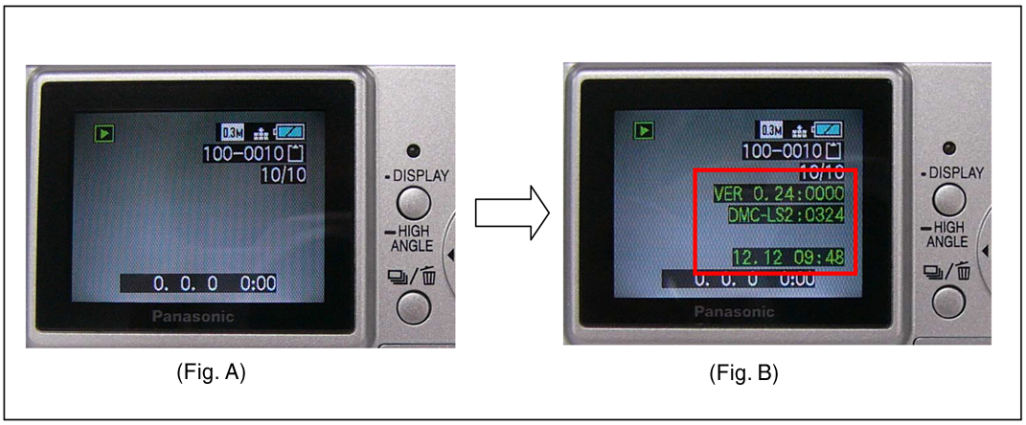
The Firmware version can be confirmed by ordering the following steps:.

- **Step 1. The temporary cancellation of factory setting:**
  Set the mode dial to “[Normal picture mode] (Red camera mark)”.
  Insert the SD memory card which has a few photo data.
  While keep pressing [Optical Image Stabilizer] and “[UP] of Cross key” simultaneously, then turn the power on.
- **Step 2. Confirm the version:**
  Set the mode dial to “[Playback]” and then press [DISPLAY] to switch to LCD with indication. (Fig. A)
  Press [Optical Image Stabilizer] and “[DOWN] of Cross key” simultaneously. (No need to keep pressing.)
  (The version information is displayed on the LCD with green colour letters.) (Fig. B)

CAUTION:

The version information does not display if the LCD has switched to LCD with indication already.
In this case, press [DISPLAY] to switch to LCD with indication.





(Fig. A) (Fig. B)

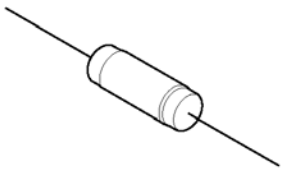
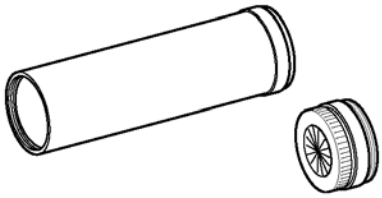
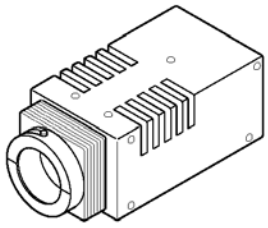
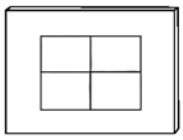
<Point>

- The firmware version and EEPROM version can be confirmed with the information (1).
- The information (2), (3) are just reference.

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.**		 **※ with DC Cable**
TR Chart **VFK1975**	**Lens Cleaning Kit (BK)** **VFK1900BK**	**Grease (for lens)** **VFK1829**
	 *** Only supplied as 10 set/box.**	
Furoyl grease (for focus motor) **VFK1850**	**T3 Trox Driver** **RFKZ0334**	**ND Filter** **ND0.1 Type VFK1164ND01**
		 **An equivalent type of Filter may be used.**

7.2. When Replacing the Main PCB

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

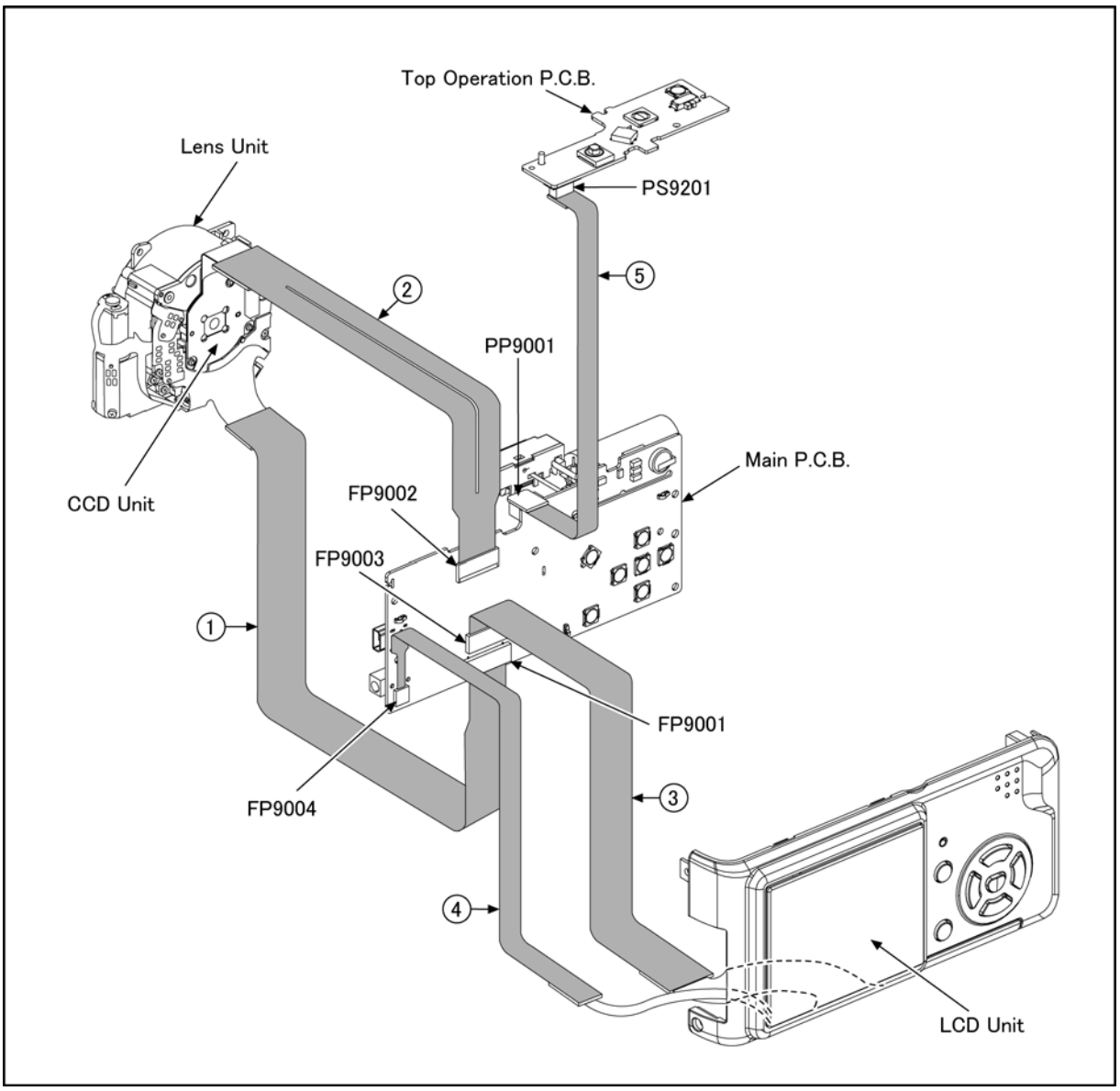
The adjustment instruction is available at “software download” on the “Support Information from NWBG/VDBG-PAVC” web-site in “TSN system”, together with Maintenance software.

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	FP9001 (MAIN) - MASTER FLANGE UNIT	39PIN 0.3 FFC
2	VFK1582A2125	FP9002 (MAIN) - CCD UNIT	21PIN 0.5 FFC
3	RFKZ0354	FP9003 (MAIN) - LCD UNIT	37PIN 0.3 FFC
4	VFK1974	FP9004 (MAIN) - LCD UNIT	4PIN 0.5 FFC
5	VFK1906	PP9001 (MAIN) - PS9201 (TOP OPERATION)	30PIN B to B

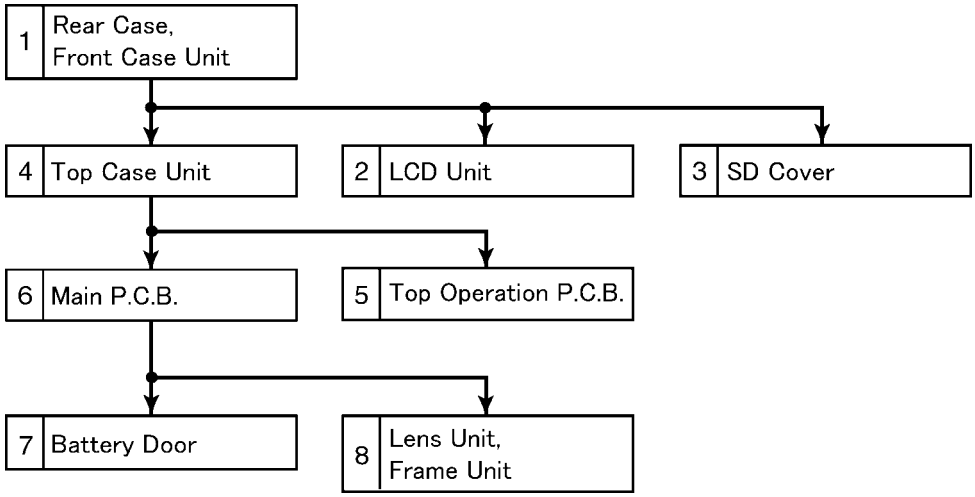


CAUTION-1. (When servicing MAIN PCB)

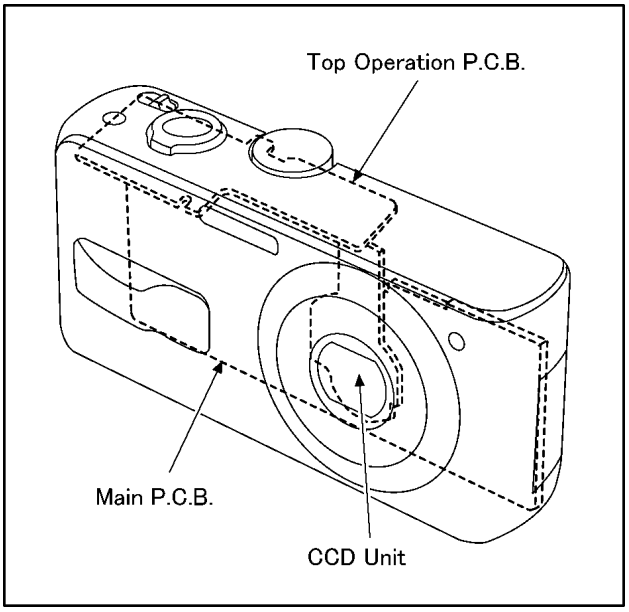
1. Be sure to discharge the capacitor on MAIN PCB.
   Refer to “How to Discharge the Capacitor on Main PCB”.
   The capacitor voltage is not lowered soon even if the AC Cord is unplugged or the battery is removed.
2. Be careful of the high voltage circuit on MAIN PCB.
3. DO NOT allow other parts to touch the high voltage circuit on MAIN PCB.

8 Disassembly and Assembly Instructions

8.1. Disassembly Flow Chart



8.2. PCB Location



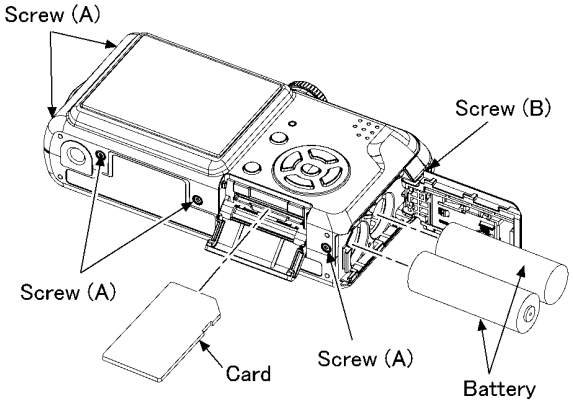
8.3. Disassembly Procedure

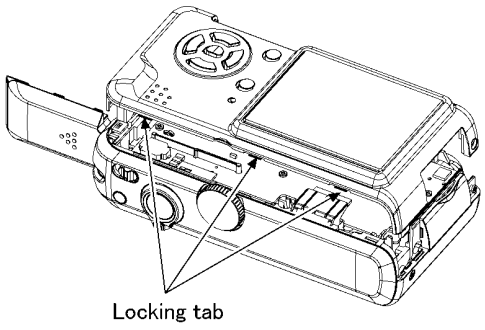
No.	Item	Fig	Removal
1	Rear Case, Front Case Unit	Fig. D1	Card
			Battery
			5 Screws (A)
			1 Screw (B)
			FP9003(Flex)
			FP9004(Flex)
			3 Locking tabs
			Rear Case Unit
		Fig. D2	About the connector
			How to discharge the capacitor
		Fig. D3	1 Screw (C)
			2 Locking tabs
			Front Case Unit
2	LCD Unit	Fig. D4	1 Screw (D)
			LCD Holder
			LCD Unit
3	SD Cover	Fig. D5	SD Cover Spring
			SD Cover
4	Top Case Unit	Fig. D6	1 Screw (E)
			PP9001(Connector)
			Top Case Unit
5	Top Operation PCB	Fig. D7	1 Screw (F)
			2 Locking tabs
			Top Operation PCB
6	Main PCB	Fig. D8	4 Screws (G)
			FP9001(Flex)
			FP9002(Flex)
			4 Solders
			Main PCB
		Fig. D9	About the connector
7	Battery Door	Fig. D10	Shaft
			Battery Door
8	Lens Unit, Frame Unit	Fig. D11	3 Screws (H)
			Lens Unit
			Frame Unit

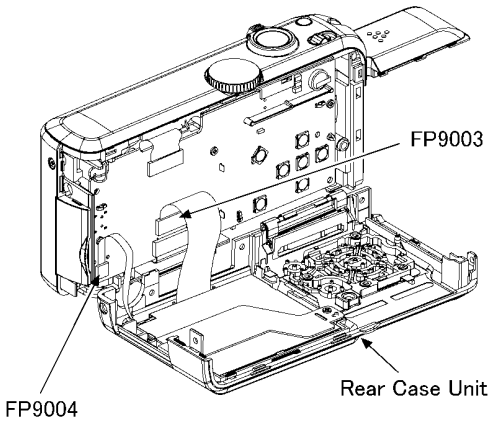
8.3.1. Removal of the Rear Case and Front Case Unit

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

・Card ・Screw (A) × 5 ・FP9003(Flex)
・Battery ・Screw (B) × 1 ・FP9004(Flex)
・Locking tab × 3







CAUTION
Take care to handle the connector (FP9003) because it is easy to be damaged.
(Refer to "About the connector (FP9003)".)

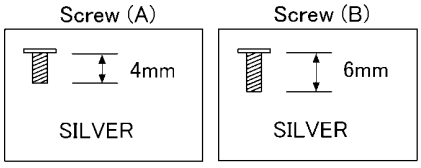
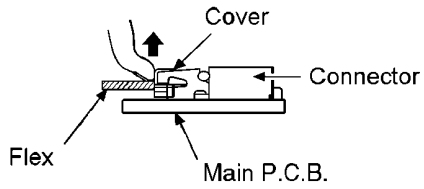


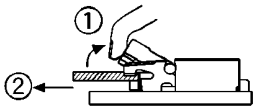
Fig. D1

About the connector (FP9003)

1. Lift the center of cover in the indicated by arrow.

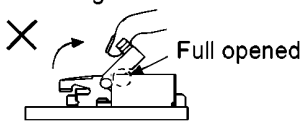


2. Release the lock of cover, and then pull out the flex.

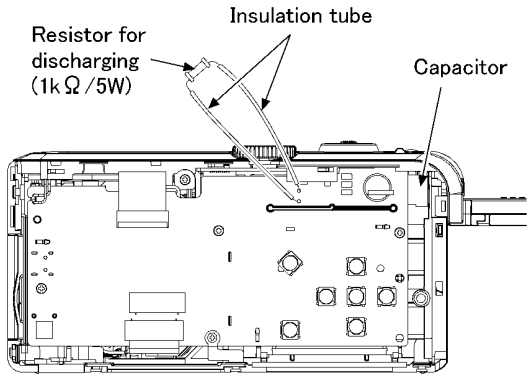


※ It is released the lock to turn the cover until an angle of 40.

NOTE: Do not push the cover over an angle of 135. It is full opened condition. (Refer to the figure as shown below.)



How to discharge the capacitor



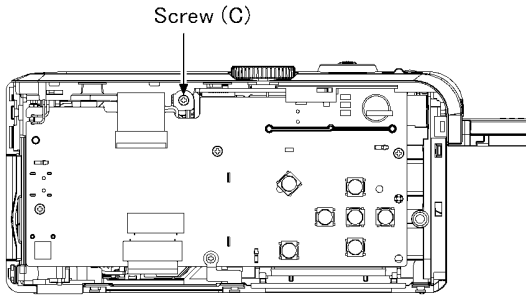
⚠ CAUTION

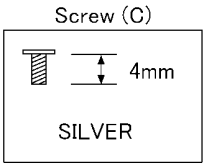
Be sure to discharge the capacitor unit.

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

Fig. D2

・Screw (C) × 1
・Locking tab × 2





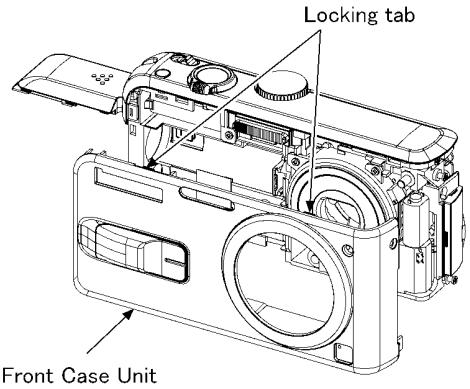


Fig. D3

8.3.2. Removal of the LCD Unit

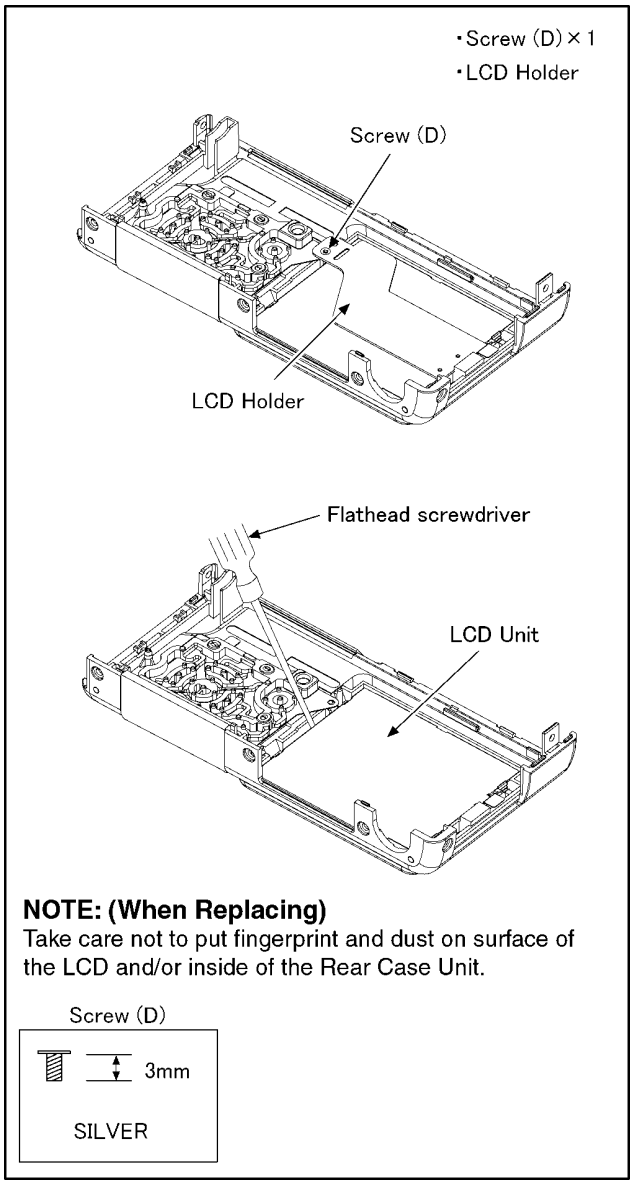


Fig. D4

8.3.3. Removal of the SD Cover

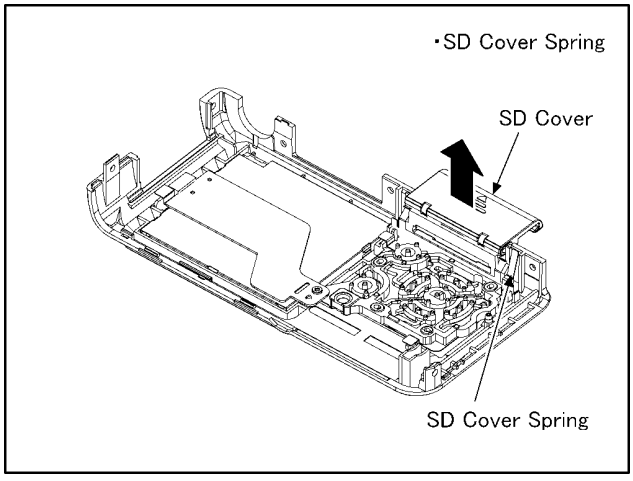


Fig. D5

8.3.4. Removal of the Top Case Unit

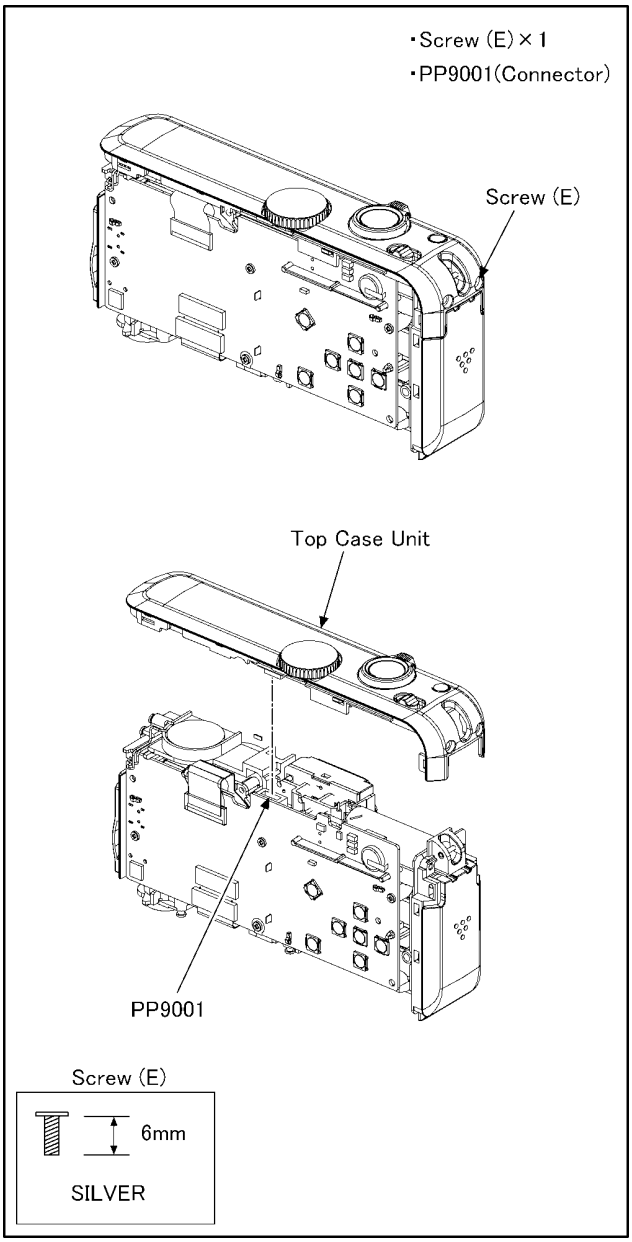
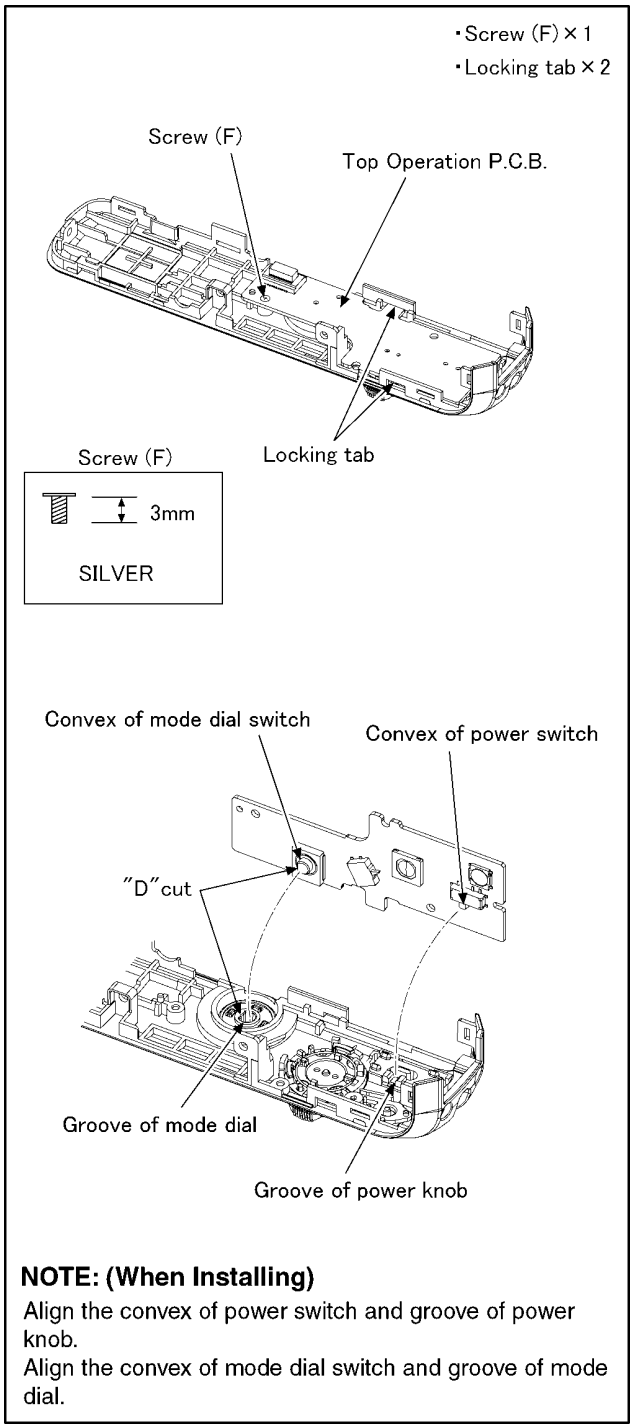


Fig. D6

8.3.5. Removal of the Top Operation PCB



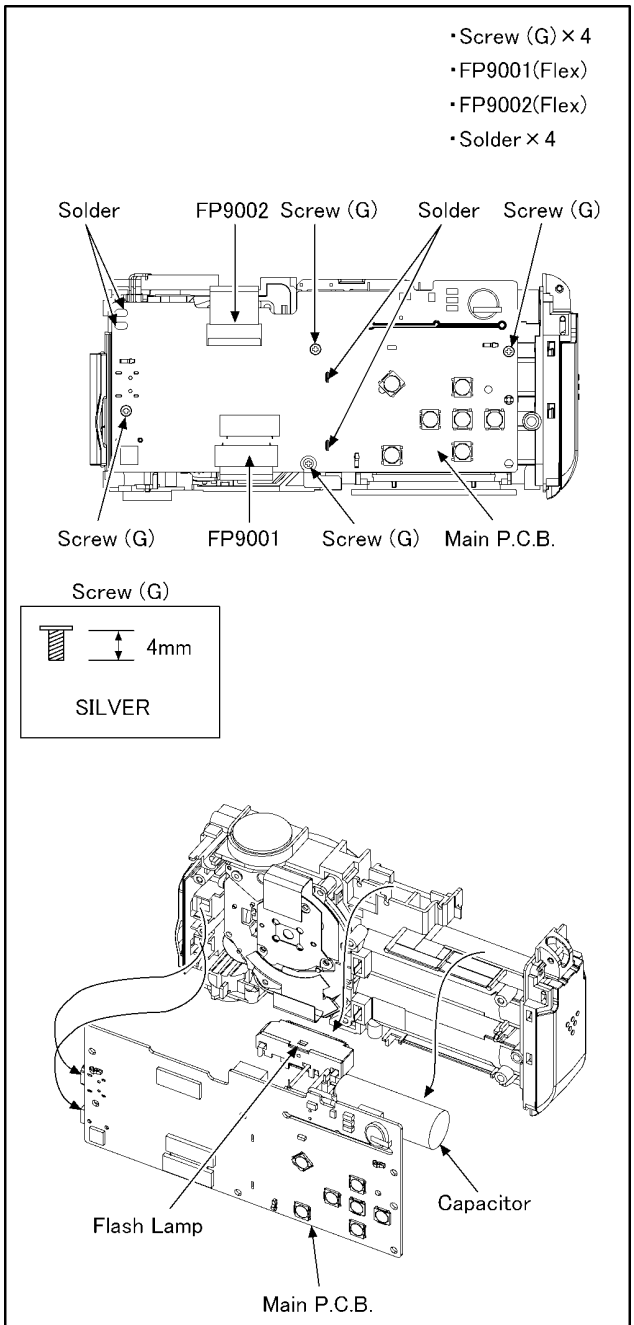
NOTE: (When Installing)

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

Align the convex of mode dial switch and groove of mode dial.

Fig. D7

8.3.6. Removal of the Main PCB



CAUTION

Take care to handle the connector (FP9001) because it is easy to be damaged.

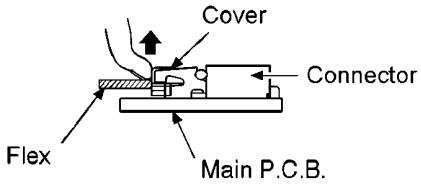
(Refer to "About the connector (FP9001)".)

Removal of the Main P.C.B. while lifting the capacitor and the flash lamp a little.

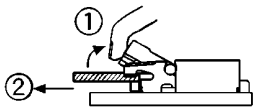
Fig. D8

About the connector (FP9001)

1. Lift the center of cover in the indicated by arrow.



2. Release the lock of cover, and then pull out the flex.



※ It is released the lock to turn the cover until an angle of 40.

NOTE: Do not push the cover over an angle of 135. It is full opened condition. (Refer to the figure as shown below.)

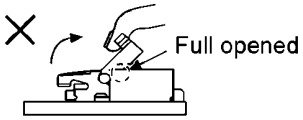


Fig. D9

8.3.7. Removal of the Battery Door

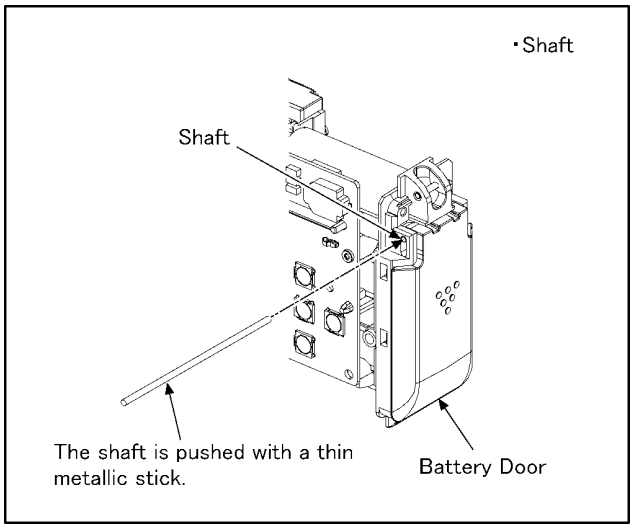


Fig. D10

8.3.8. Removal of the Lens Unit and Frame Unit

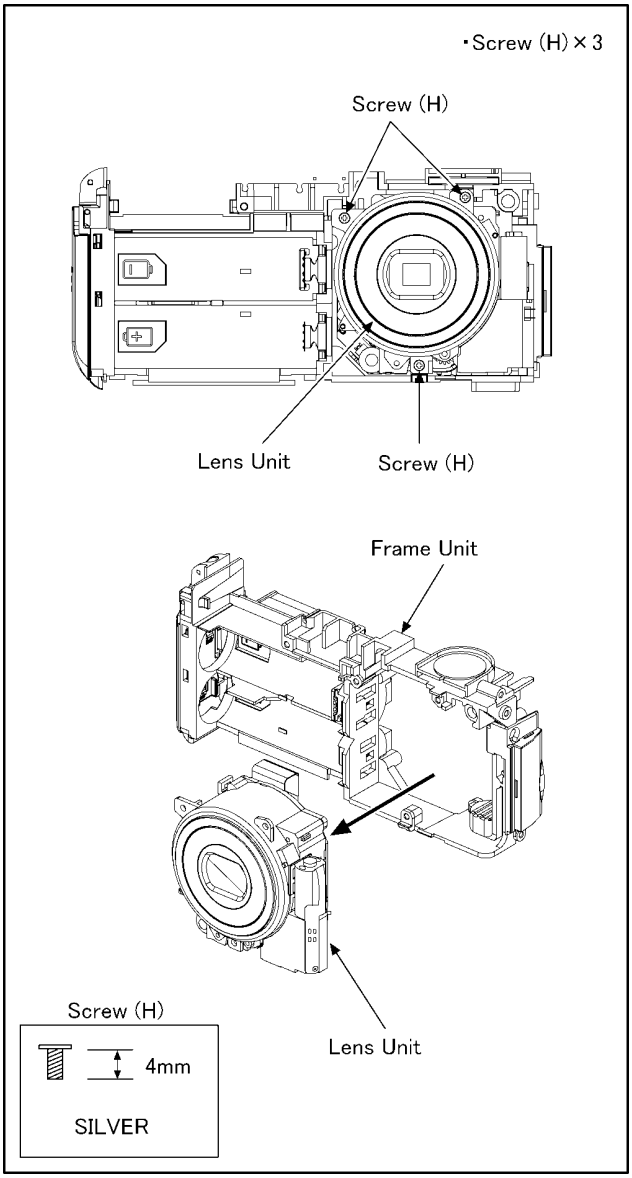


Fig. D11

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.)

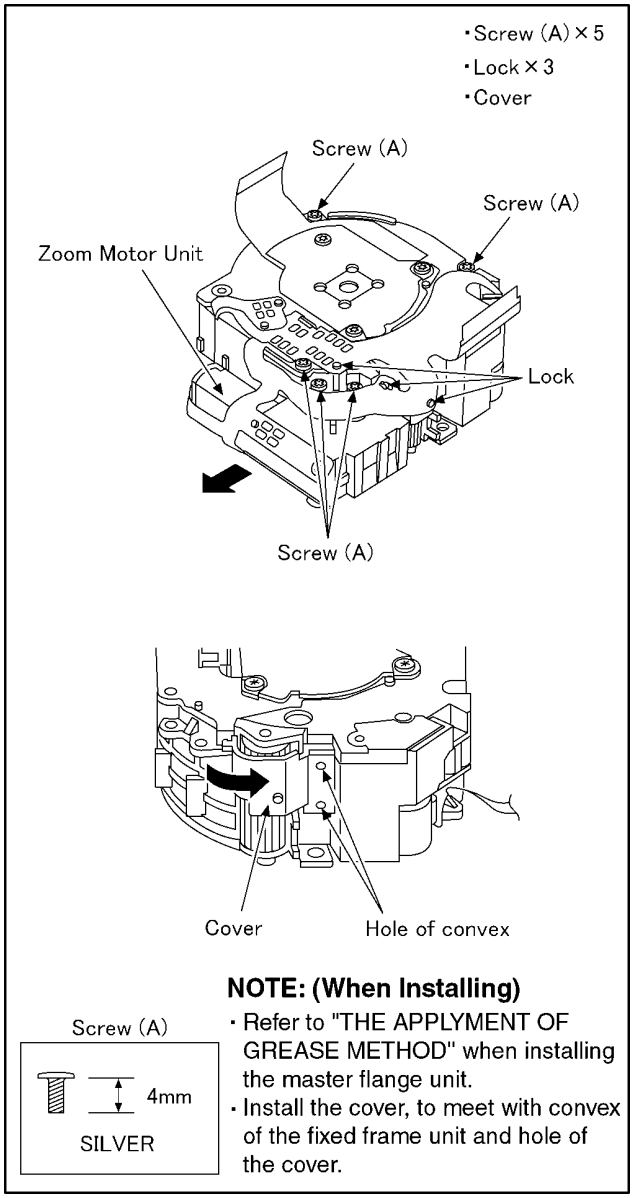
8.4. Disassembly Procedure for the Lens

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.
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. Use lens cleaning KIT (BK)(VFK1900BK).

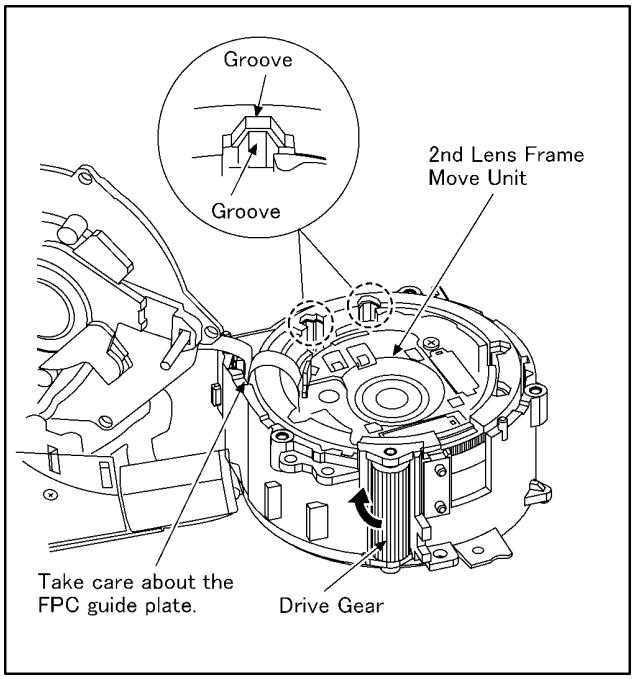
8.4.1. Removal of the Zoom Motor Unit and Master Frange Unit

1. Remove the lock (3 points).
2. Unscrew the 5 screws (A).
3. Remove the Zoom Motor Unit to the indicated by arrow.
4. Remove the Cover to the indicated by arrow.
5. Remove the Master Frange unit.

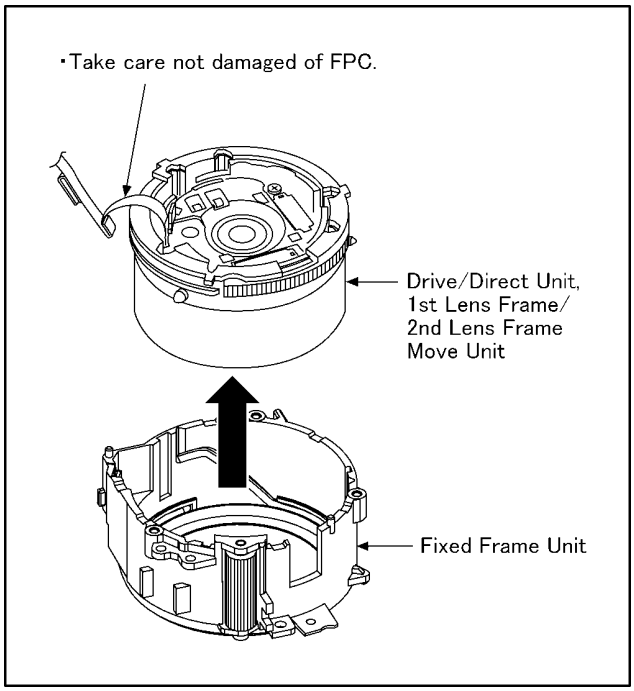


8.4.2. Removal of the Drive/Direct Unit, 1st Lens Frame/2nd Lens Frame Move Unit

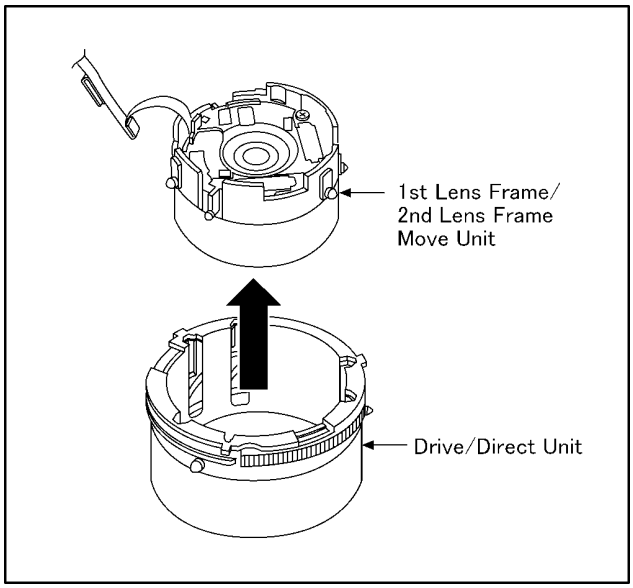
1. Turn the drive gear to the indicated by arrow fully.



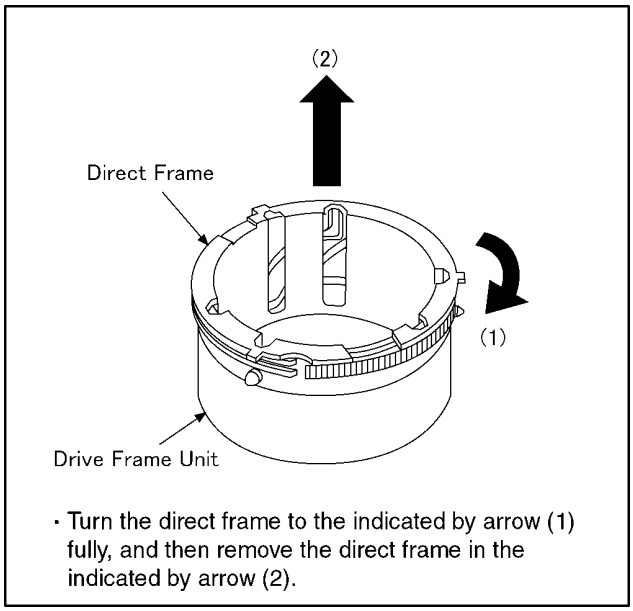
2. Push the drive unit to the indicated by arrow from lens side, and then remove the unit of drive/direct unit, 1st lens frame/2nd lens frame move unit from the fixed frame unit.



3. Push the 1st lens frame unit to the indicated by arrow from lens side, and then remove the unit of 1st lens frame/2nd lens frame move unit from the drive/direct unit.

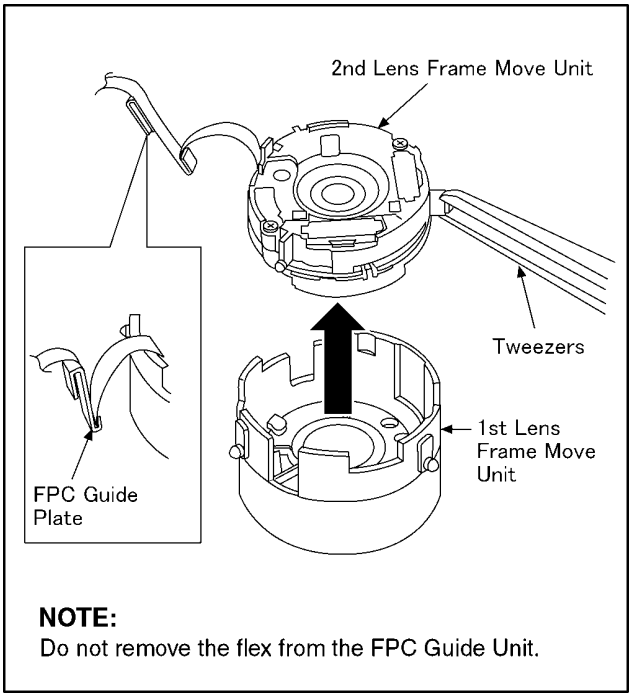


8.4.3. Removal of the Direct Frame



・Turn the direct frame to the indicated by arrow (1) fully, and then remove the direct frame in the indicated by arrow (2).

8.4.4. Removal of the 2nd Lens Frame Move Unit

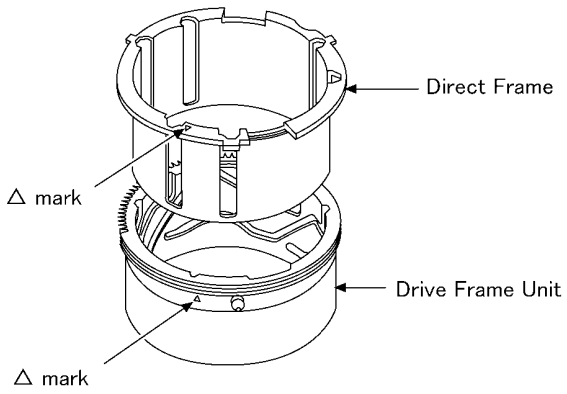


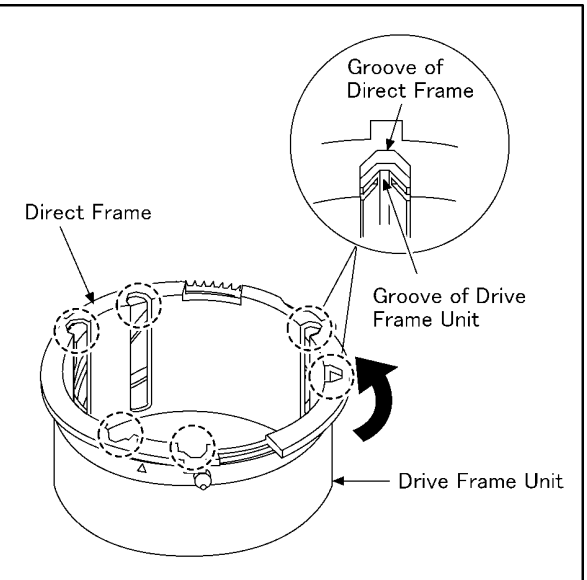
NOTE:
Do not remove the flex from the FPC Guide Unit.

8.5. Assembly Procedure for the Lens

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

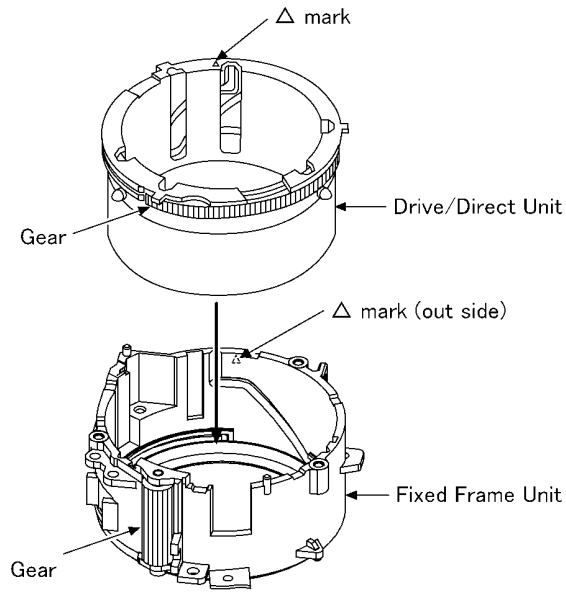
・Align the △ mark, and then install the direct frame to drive frame unit.



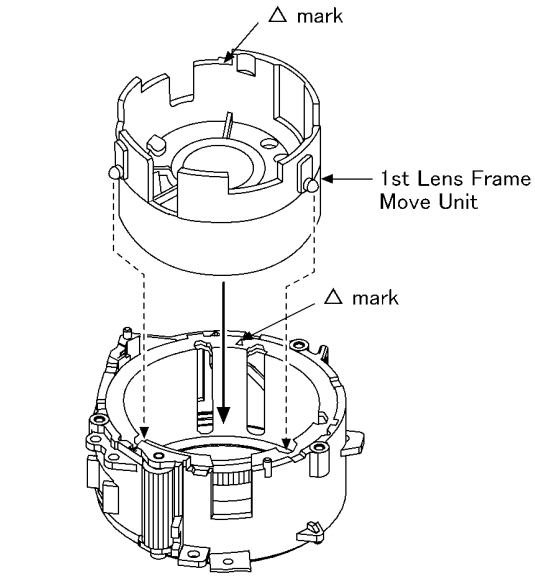


8.5.2. Phase alignment of the Drive/Direct Unit and Fixed Frame

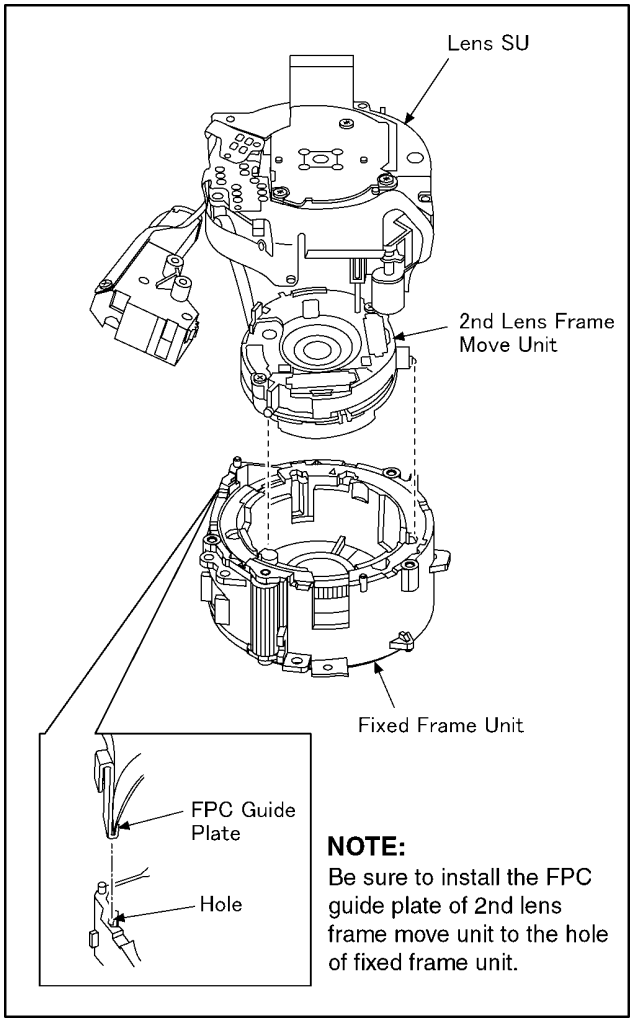
・Align the △ mark, and then install the drive/direct unit to fixed frame unit.
※ With aligning the phase of 6 grooves of the drive/direct unit, confirm the gear of drive unit is engaged with the fixed frame unit firmly.



・Align the △ mark, and then install the 1st lens frame move unit to fixed frame unit.

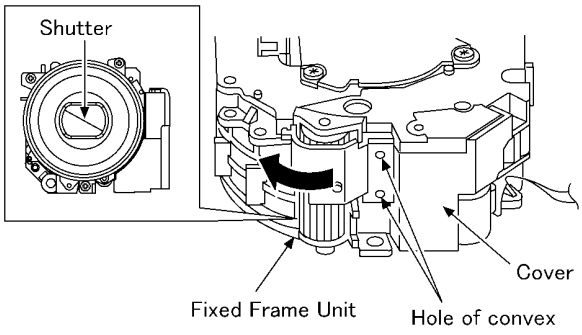


8.5.3. Assembly for the Zoom Motor Unit and Master Flange Unit

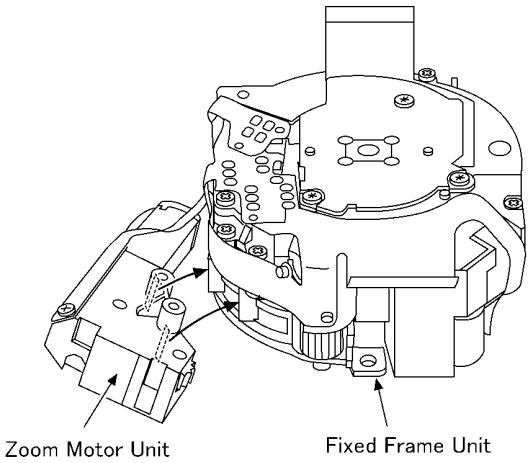


NOTE:
Be sure to install the FPC guide plate of 2nd lens frame move unit to the hole of fixed frame unit.

・Turn the gear to the direction of arrow, and then confirmthe shutter is closed.

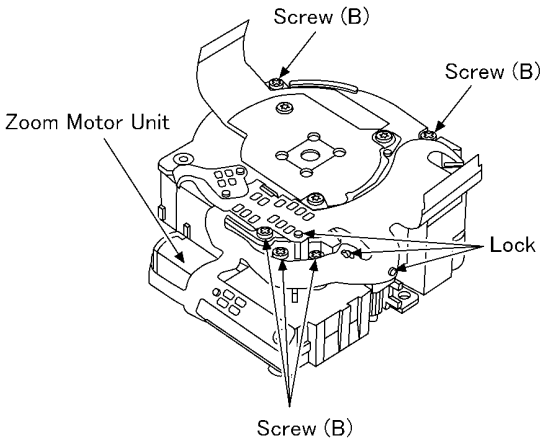


NOTE: (When Installing)
・Align the protrusion of fixed frame unit to the hole of convex on the cover, and then install.



NOTE: (When Installing)
・Align the convex of fixed frame unit to the concave of zoom motor unit, and then install.

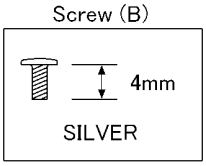
・Screw (B) × 5
・Lock × 3
・Cover



NOTE: (When Installing)

・Fix the flex to the locks.
・Do not bend the flex excessively and handle the flex with care, to prevent any damage.

Screw (B)

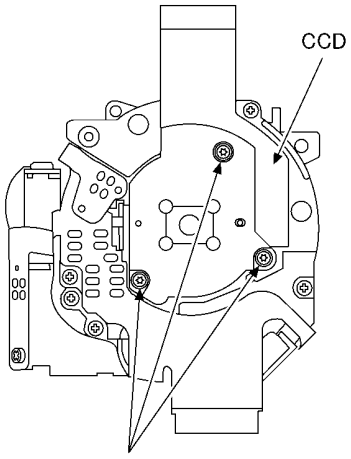


8.6. Removal of the CCD

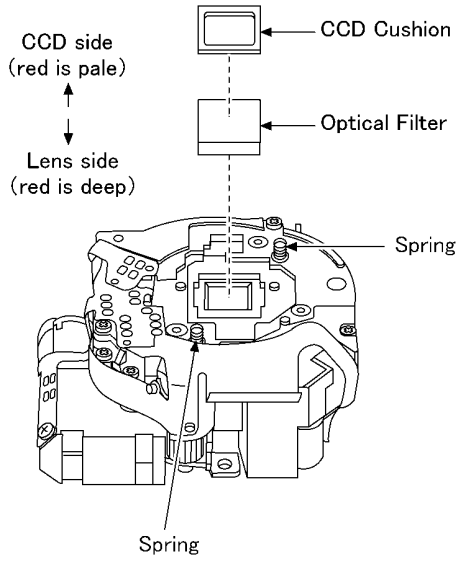
To prevent the CCD unit from catching the dust and dirt, do not remove the CCD unit except for replacing.

- Trox driver (T3): RFKZ0334

・Torx type Screw (C) × 3
・Spring × 2
・CCD Cushion × 1
・Optical Filter × 1



Torx type Screw (C)
(Torx driver (T3) Part No.: RFKZ0334)



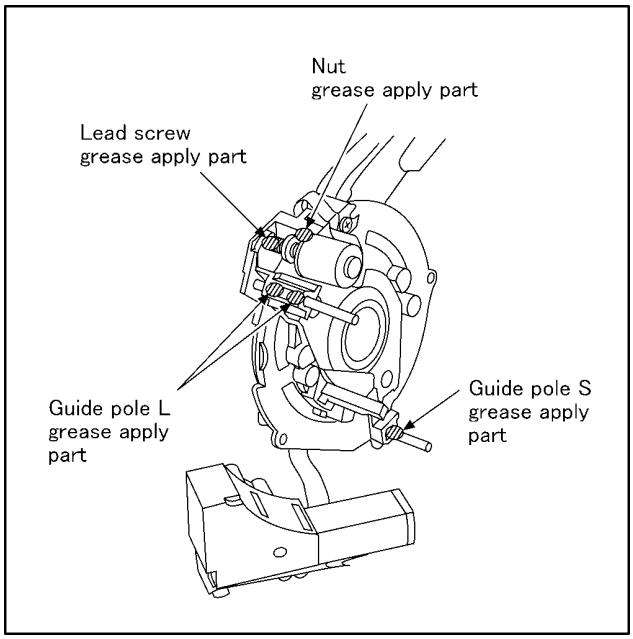
NOTE: (When Installing the CCD Unit)

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.

8.7. The Applyment of Grease Method

The grease apply point of lens unit are as follows.
Apply grease additionally in the specified position if necessary.

- Lead screw, Nut
  - Grease: VFK1850 (Furoyl type)
  - Amount of apply: 2 - 4 mg
- Gide pole S and Guide pole L
  - Grease: VFK1829
  - Amount of apply: 2 - 4 mg



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:

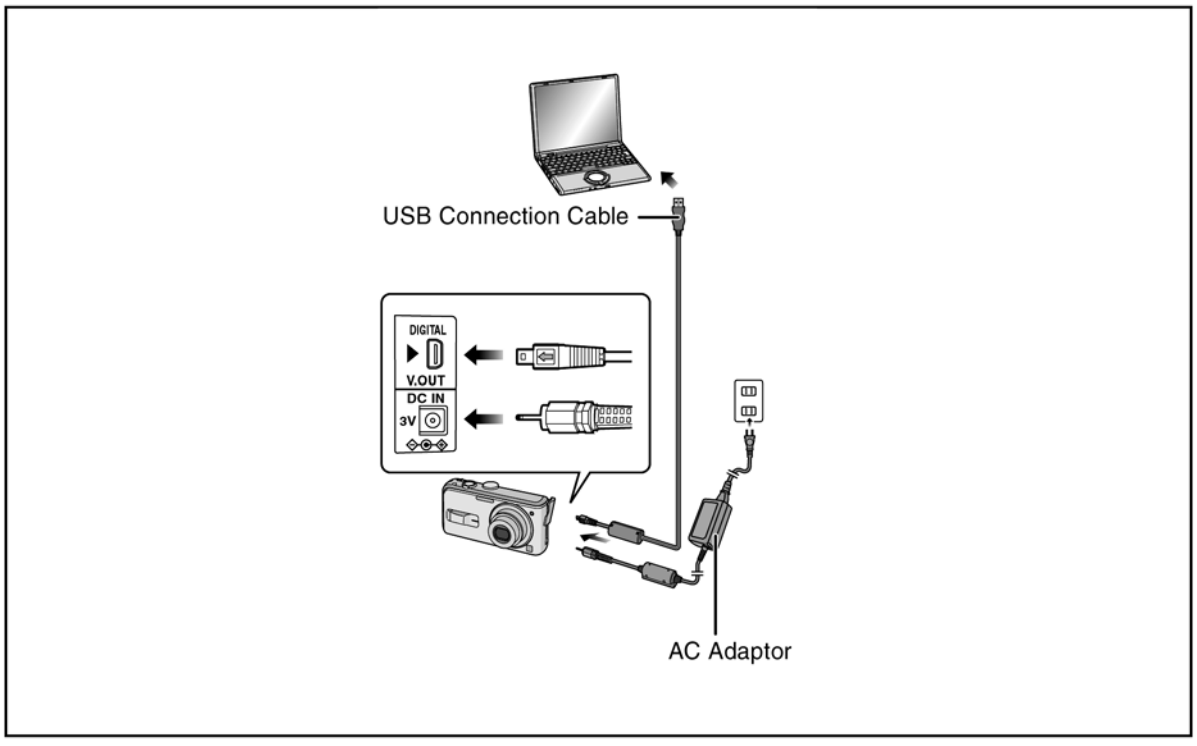
After adjustments have been terminated, make sure to achieve “INITIAL SETTINGS”.

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	
	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

NOTE:

*There is no LCD adjustment in this model.

*There is no CCD Black scratch compensation adjustment (BKI) in this model.



10 Maintenace

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.

DSC0602007CE

Service Manual

Diagrams and Replacement Parts List

Digital Camera

DMC-LS2PP DMC-LS2EGM DMC-LS3EF
DMC-LS2PL DMC-LS2GC DMC-LS3EG
DMC-LS2EB DMC-LS2GK DMC-LS3EGM
DMC-LS2EE DMC-LS2GN
DMC-LS2EF DMC-LS2GT
DMC-LS2EG DMC-LS2SG

Vol. 1
Colour
(S).....Silver Type

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.

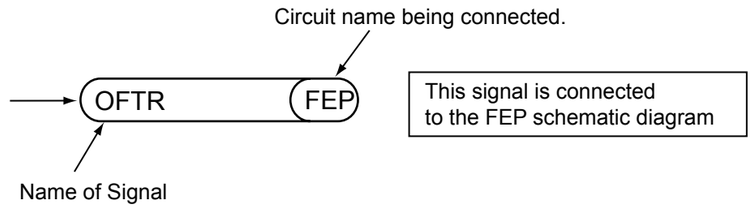
3.The voltage being indicated on the schematic diagram is measured in "Standard-Playback" mode when there is no specify mode is mentioned.

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.

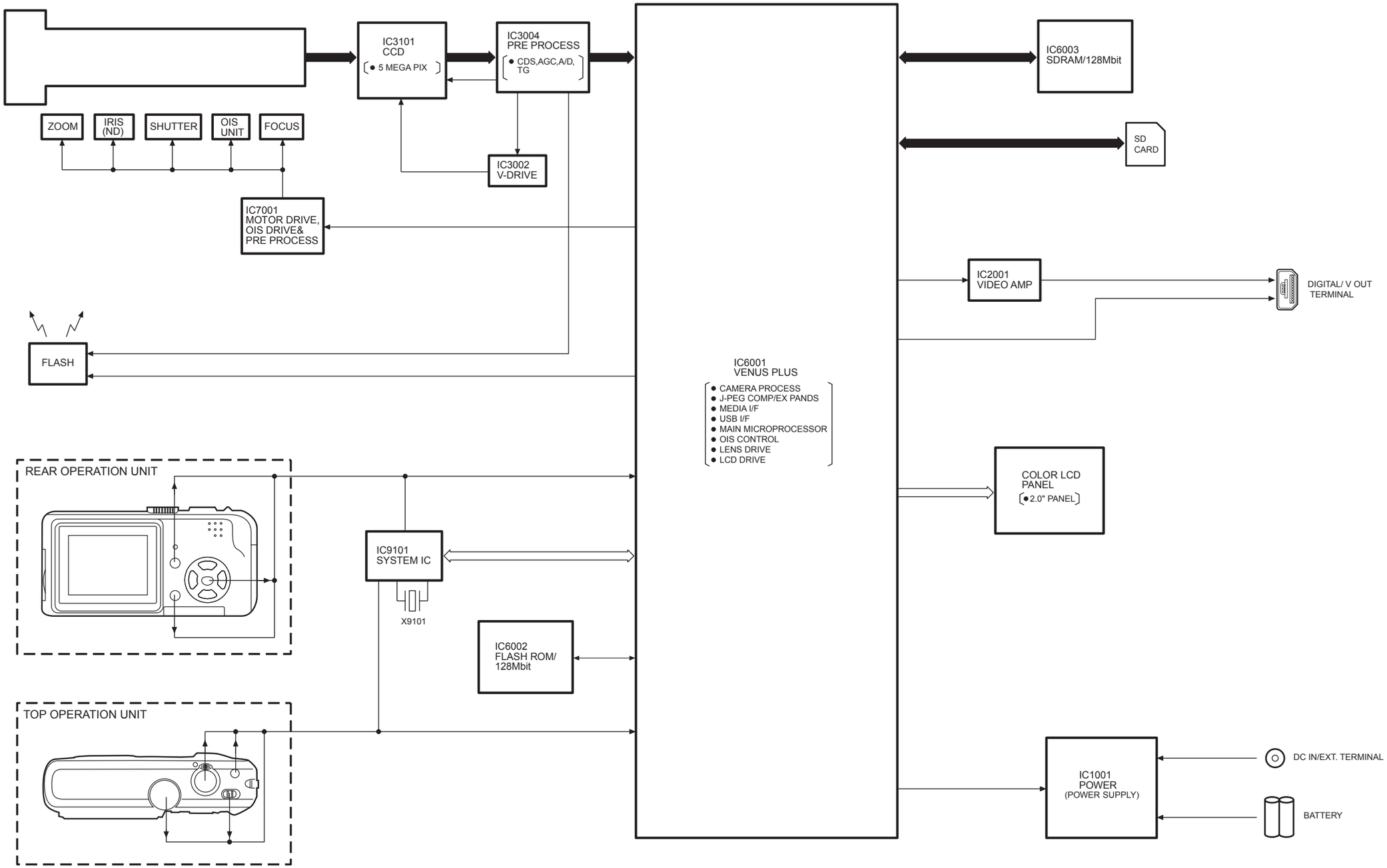
6.Use the parts number indicated on the Replacement Parts List .

7.Indication on Schematic diagrams:



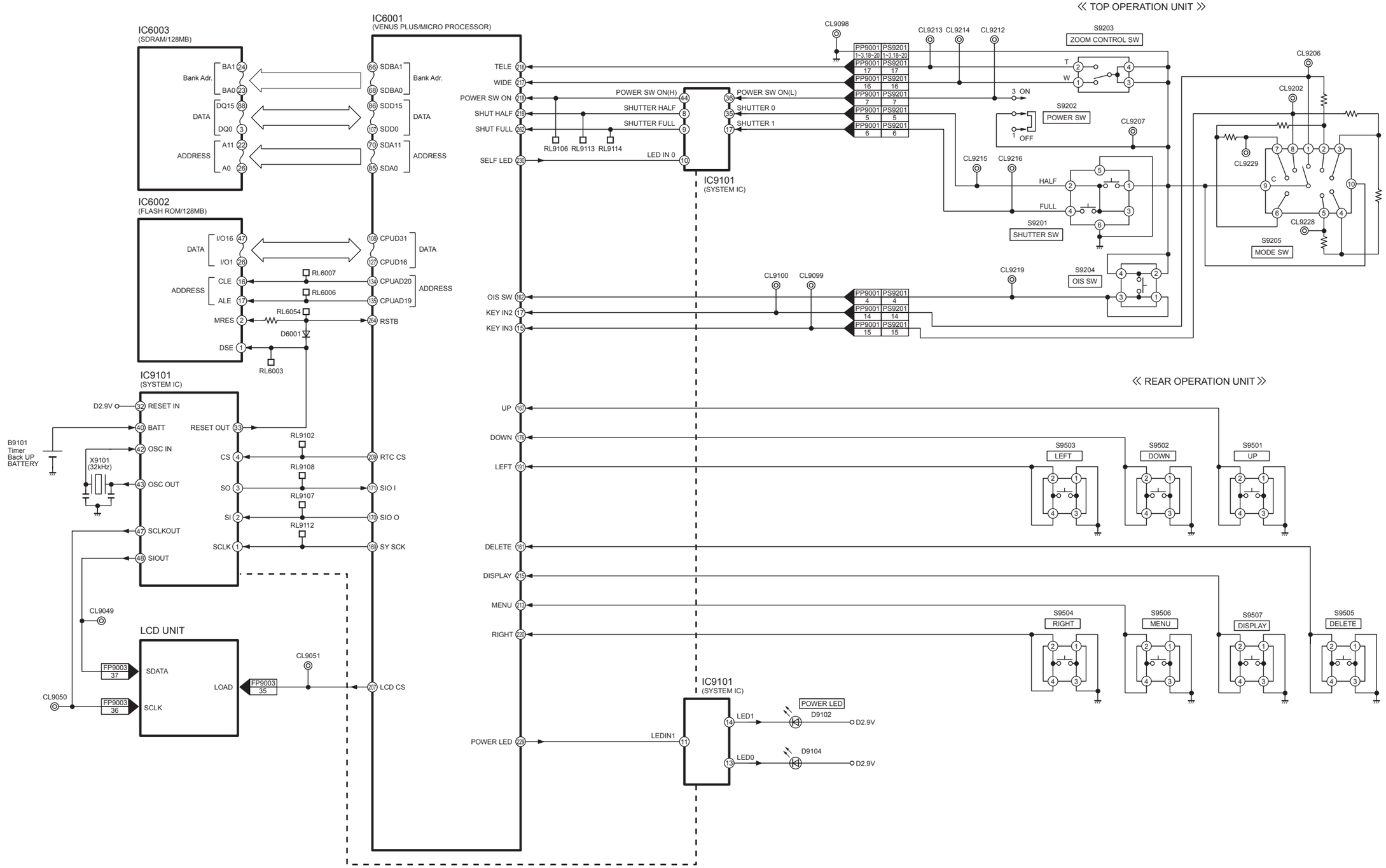
S2. Block Diagram

S2.1. Overall Block Diagram



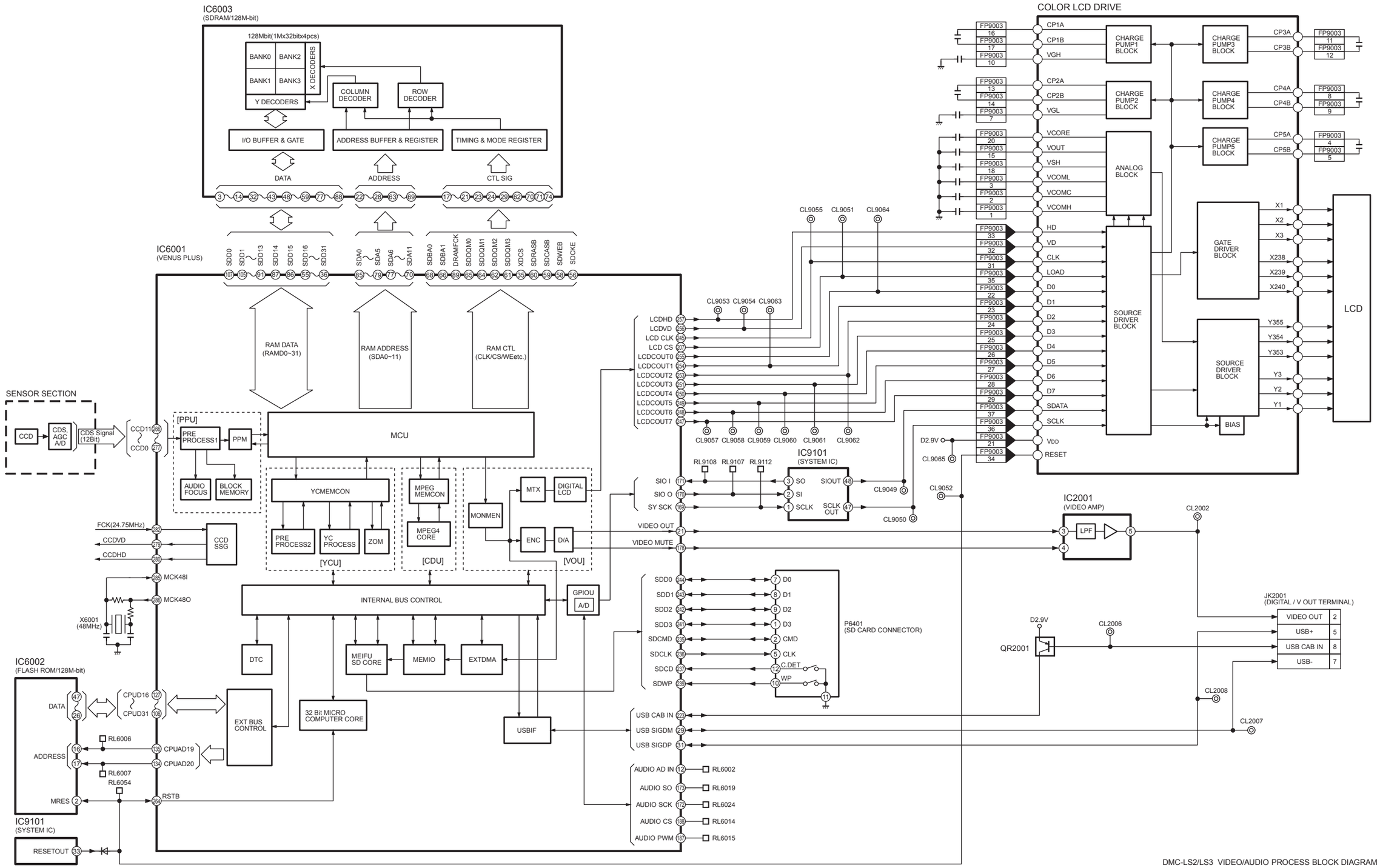
DMC-LS2/LS3 OVERALL BLOCK DIAGRAM

S2.2. System Control Block Diagram



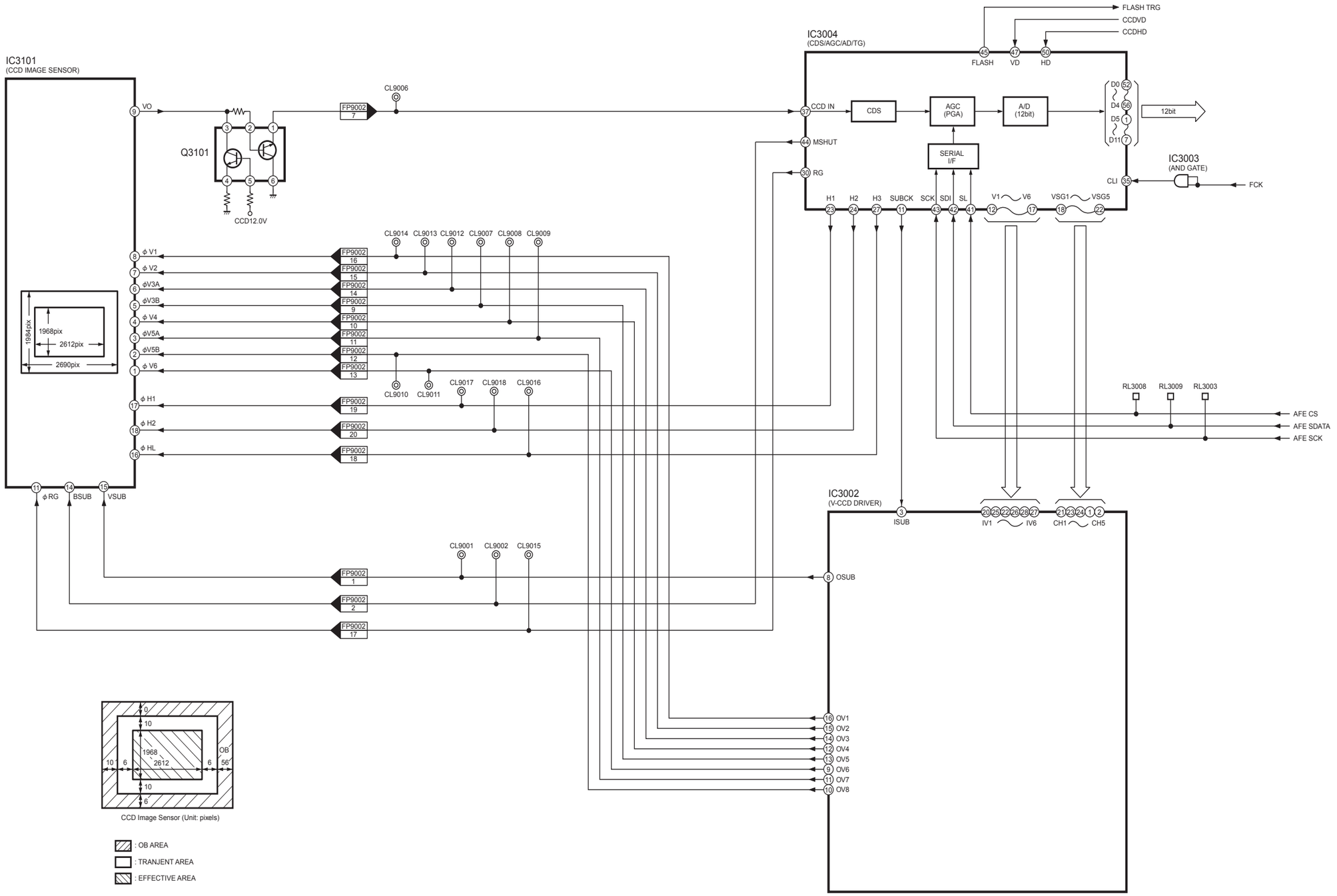
DMC-LS2/LS3 SYSTEM CONTROL BLOCK DIAGRAM

S2.3. Video/Audio Process Block Diagram



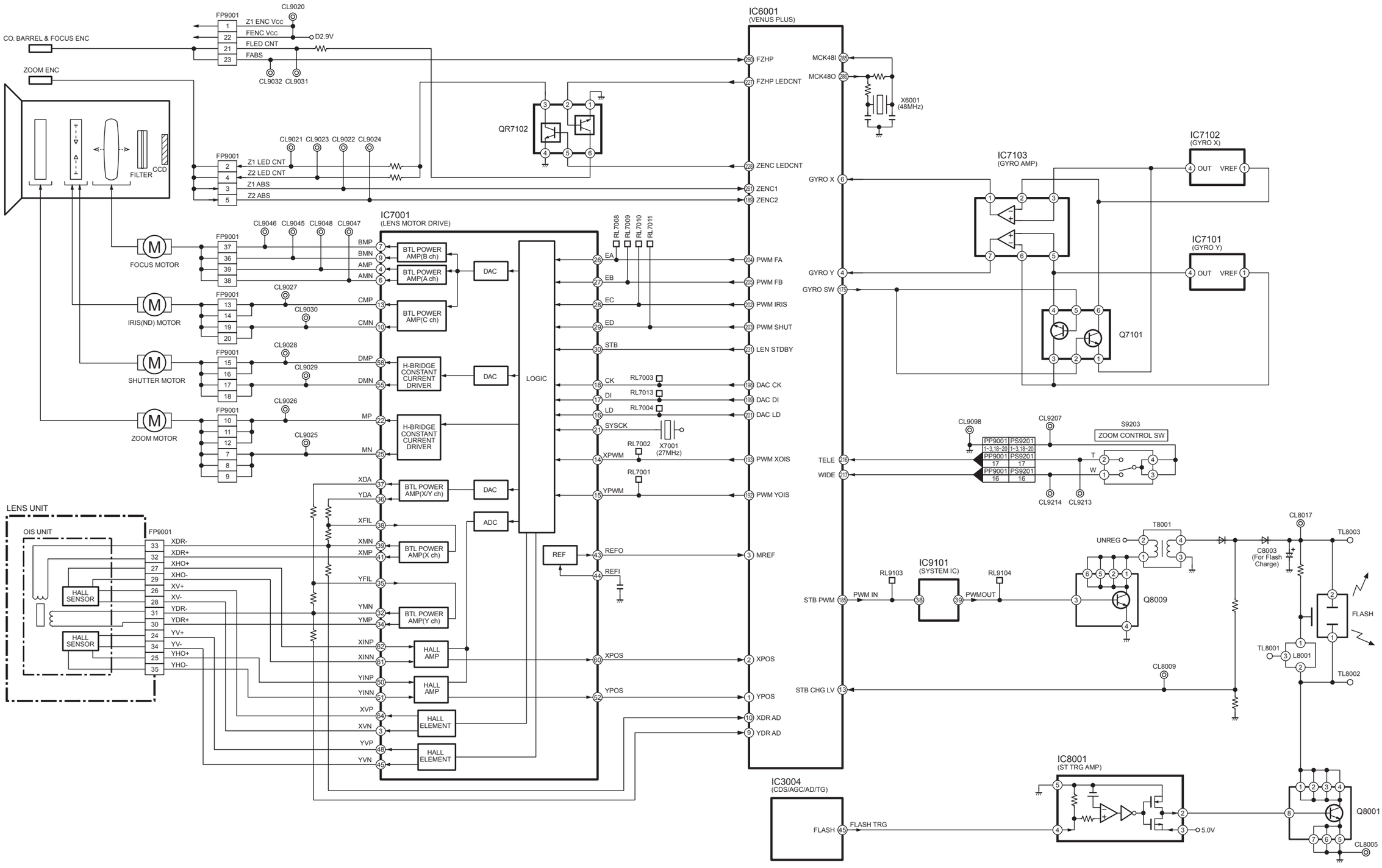
DMC-LS2/LS3 VIDEO/AUDIO PROCESS BLOCK DIAGRAM

S2.4. Sensor Block Diagram



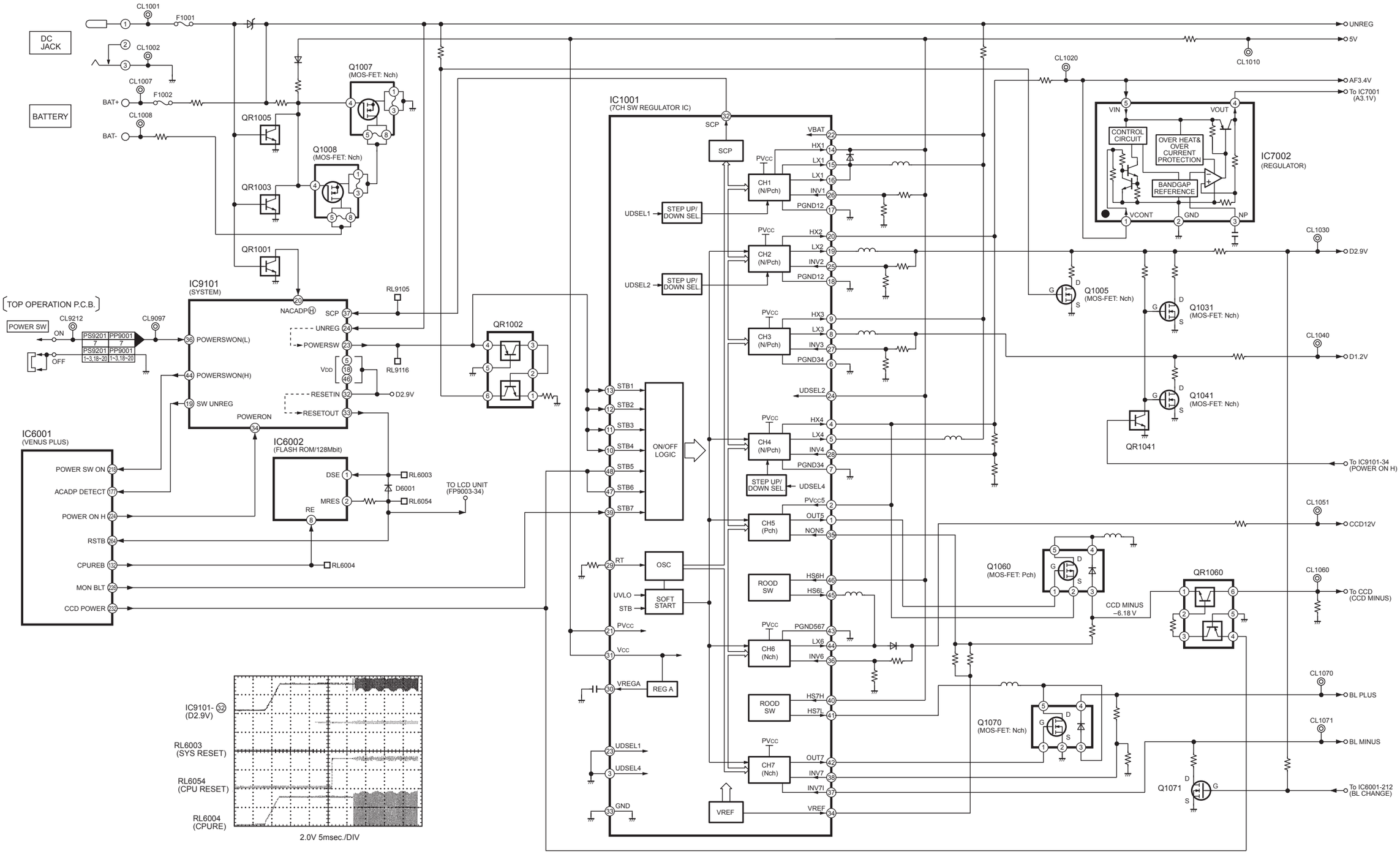
DMC-LS2/LS3 SENSOR BLOCK DIAGRAM

S2.5. Lens Drive Block Diagram



DMC-LS2/LS3 LENS DRIVE BLOCK DIAGRAM

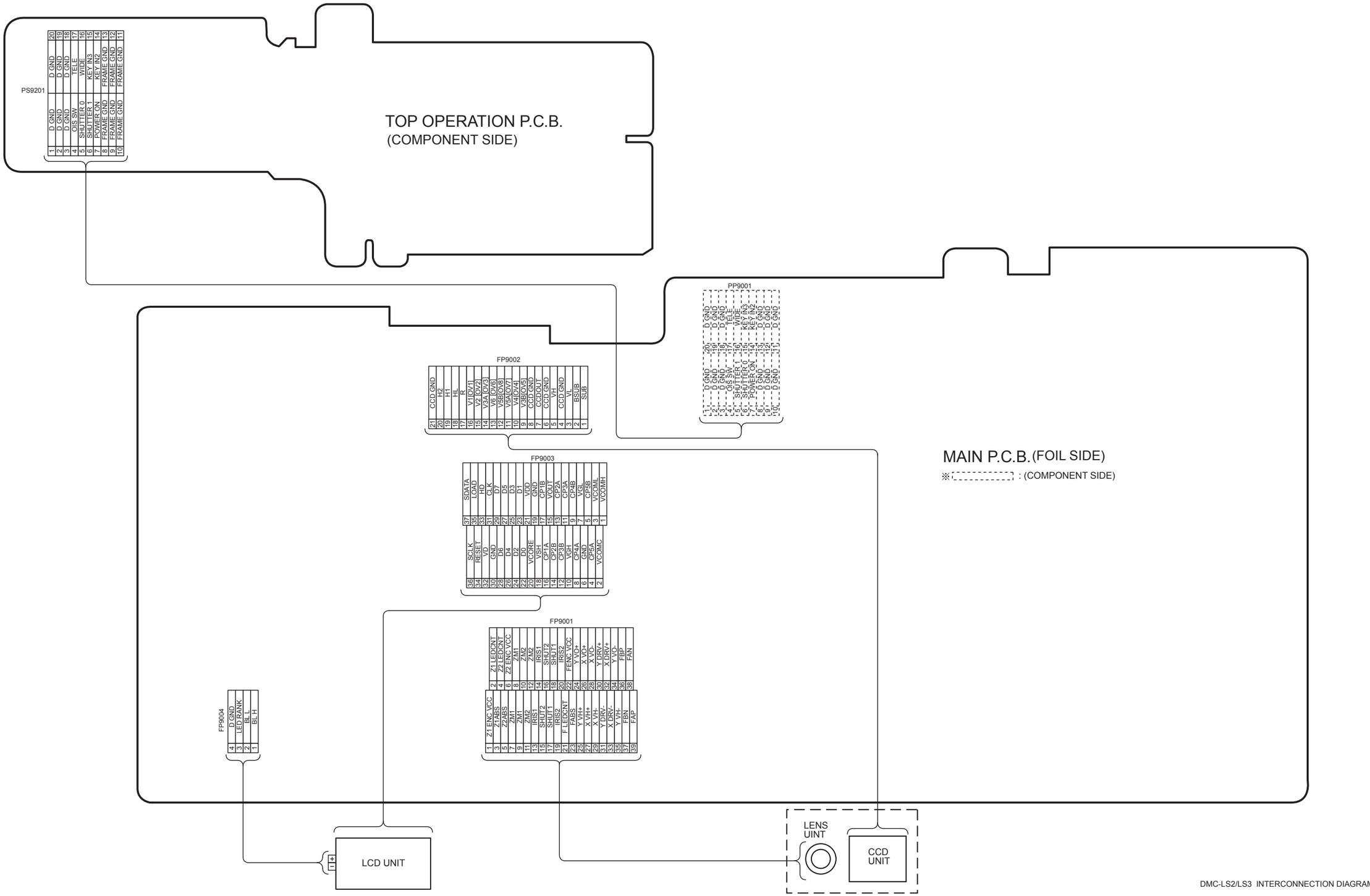
S2.6. Power Block Diagram



DMC-LS2/LS3 POWER BLOCK DIAGRAM

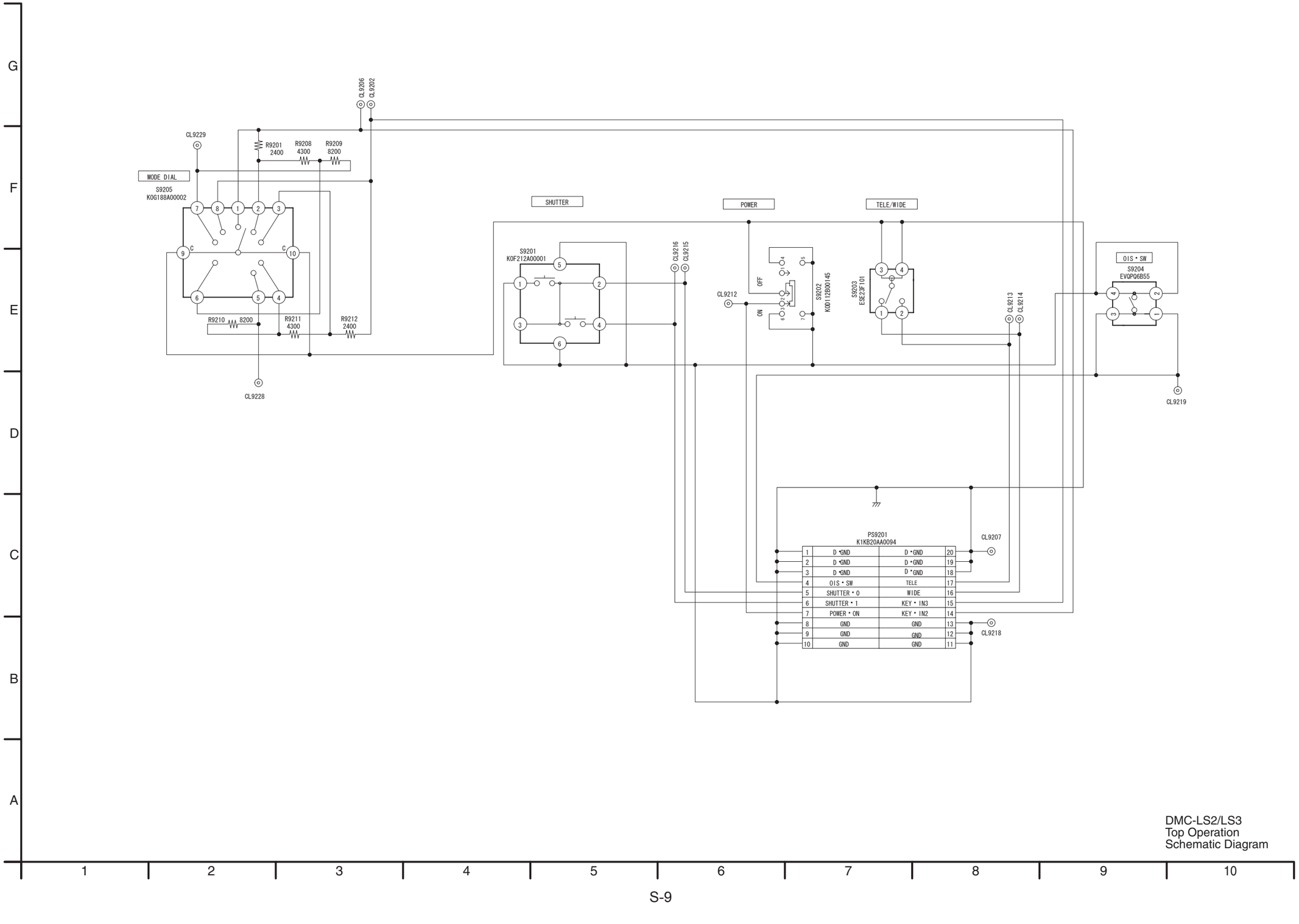
S3. Schematic Diagram

S3.1. Interconnection Diagram



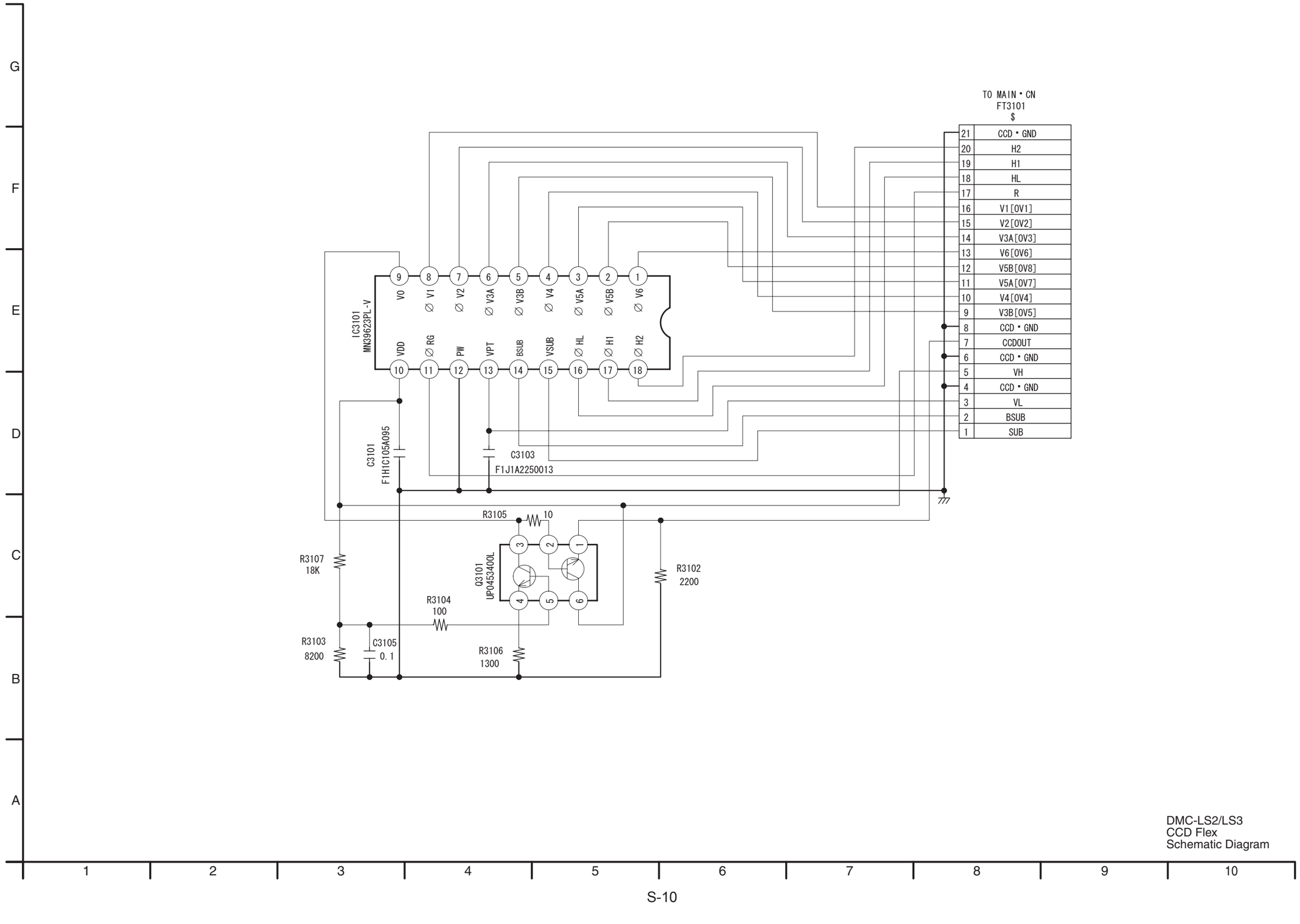
DMC-LS2/LS3 INTERCONNECTION DIAGRAM

S3.2. Top Operation Schematic Diagram



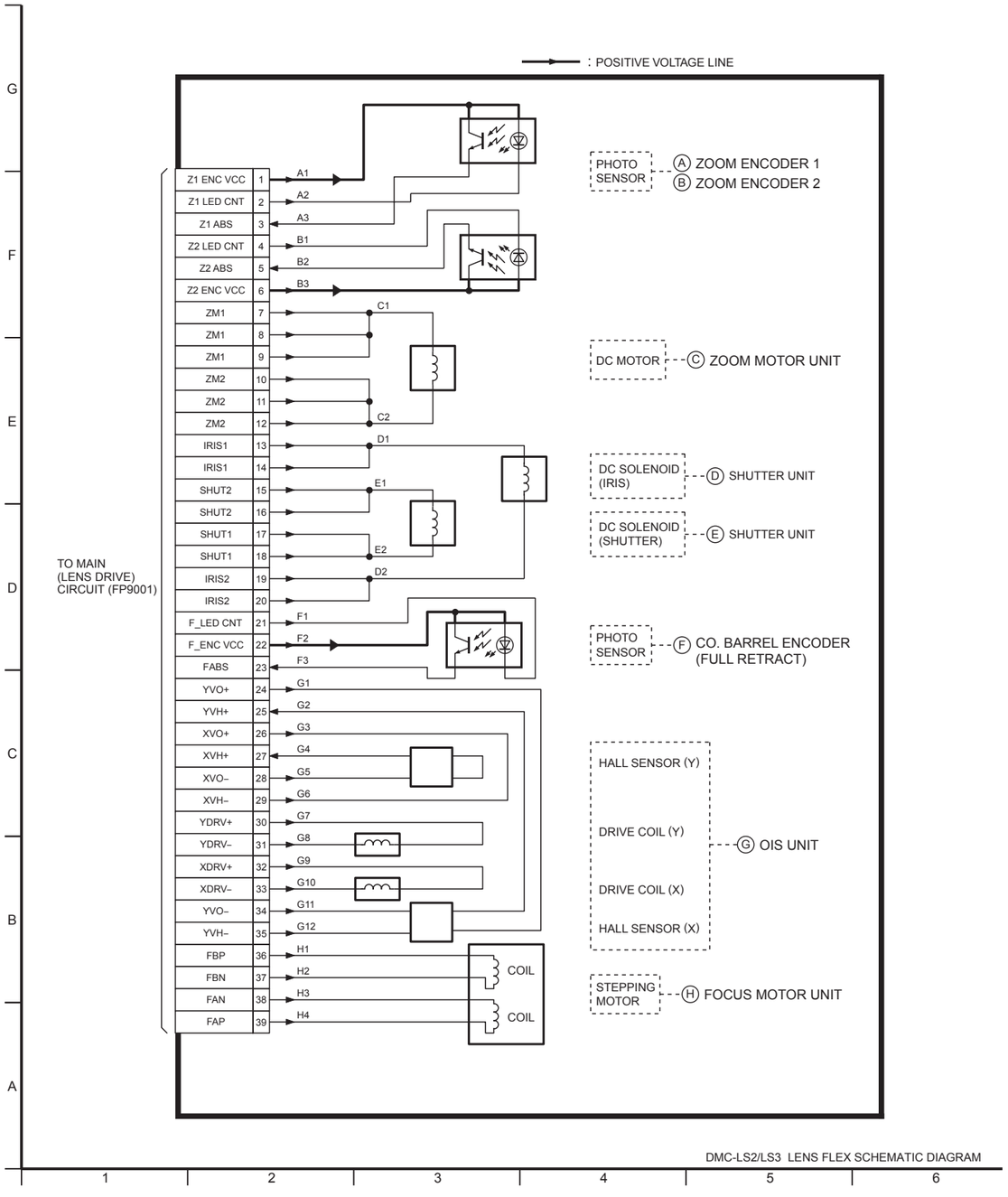
DMC-LS2/LS3
Top Operation
Schematic Diagram

S3.3. CCD Flex Schematic Diagram



DMC-LS2/LS3
CCD Flex
Schematic Diagram

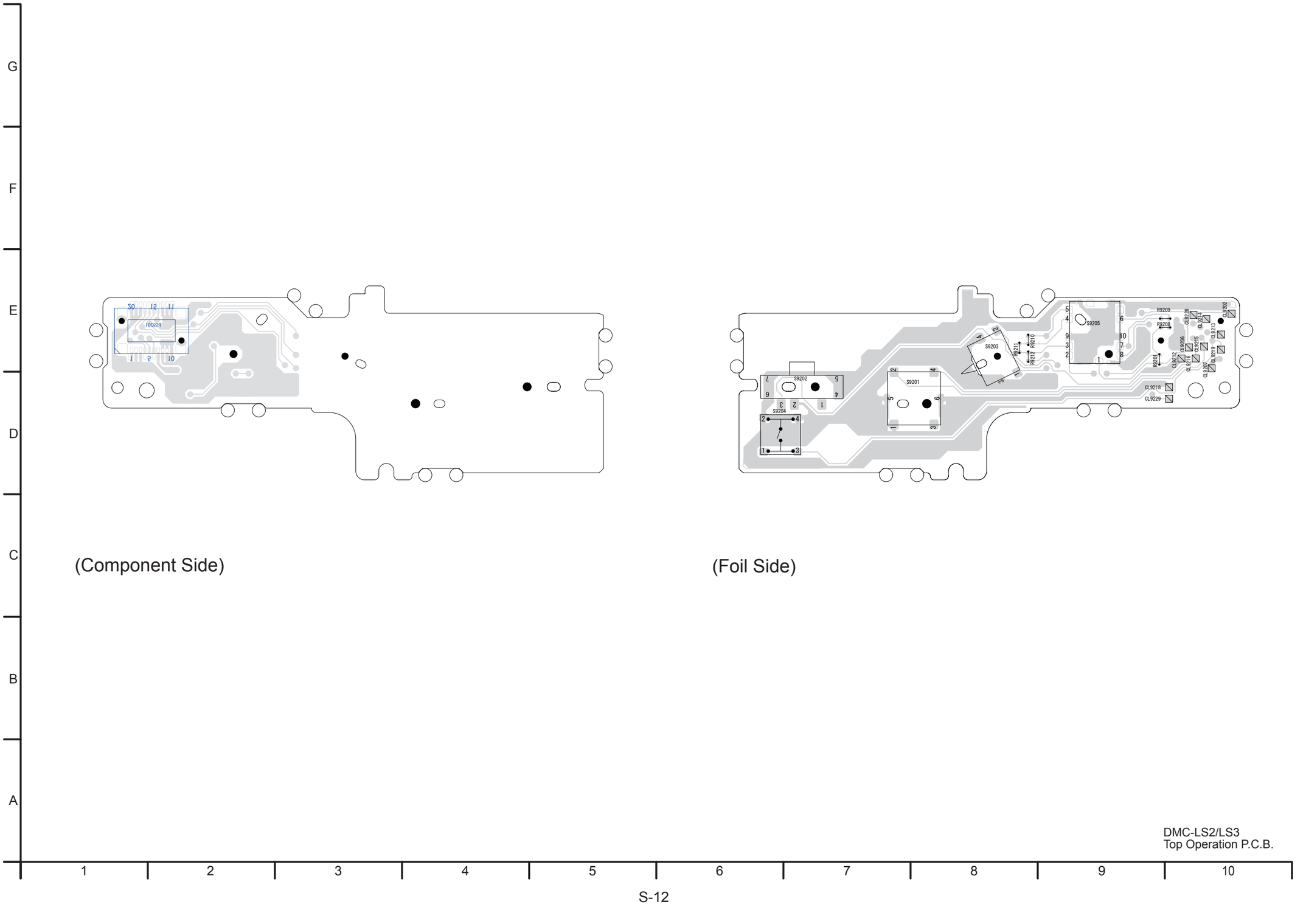
S3.4. Lens Flex Schematic Diagram



DMC-LS2/LS3 LENS FLEX SCHEMATIC DIAGRAM

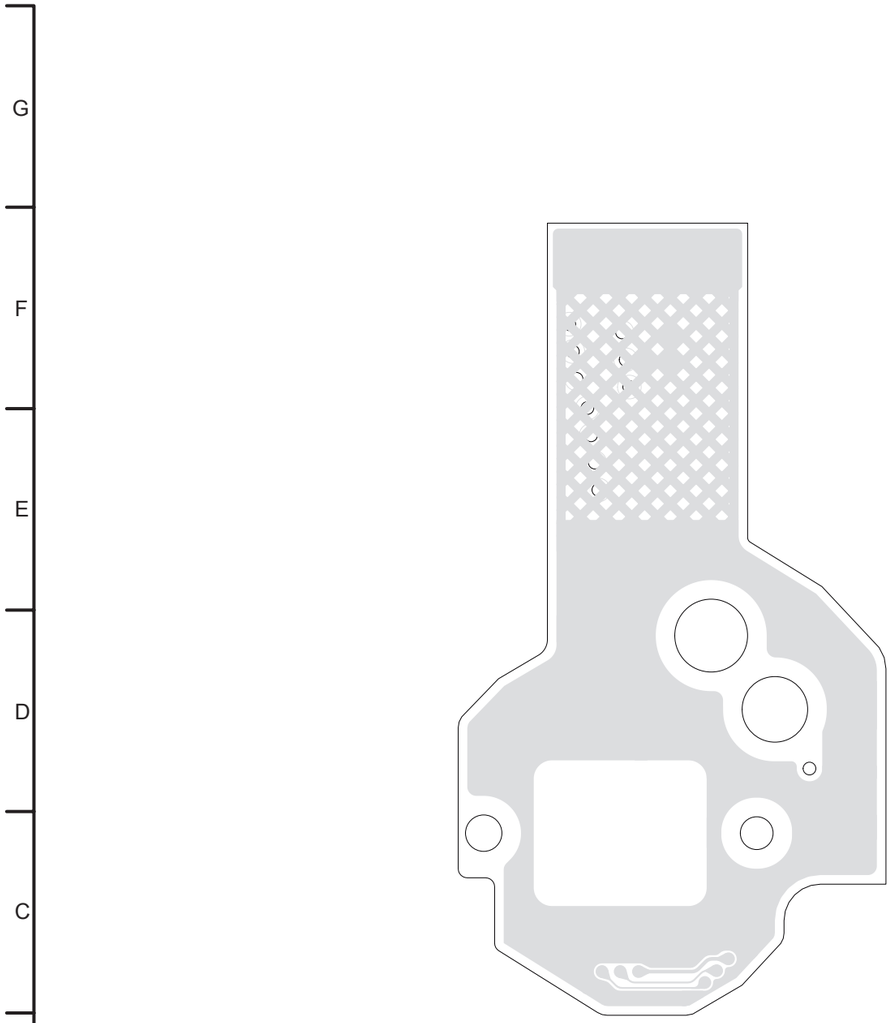
S4. Print Circuit Board

S4.1. Top Operation P.C.B.

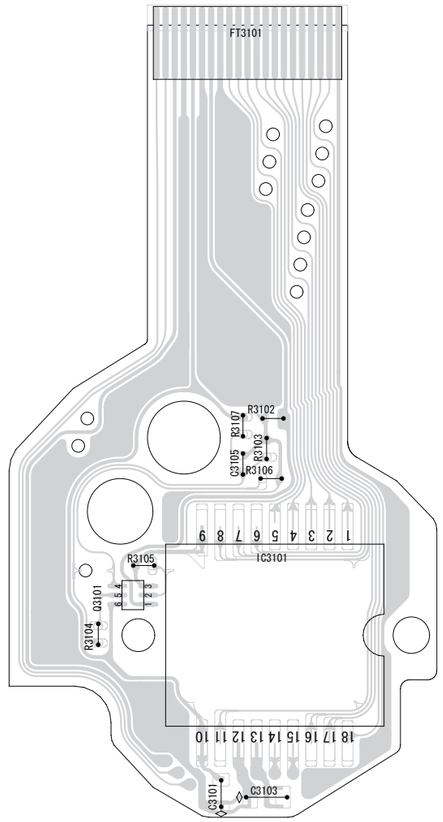


DMC-LS2/LS3
Top Operation P.C.B.

S4.2. CCD Flex P.C.B.



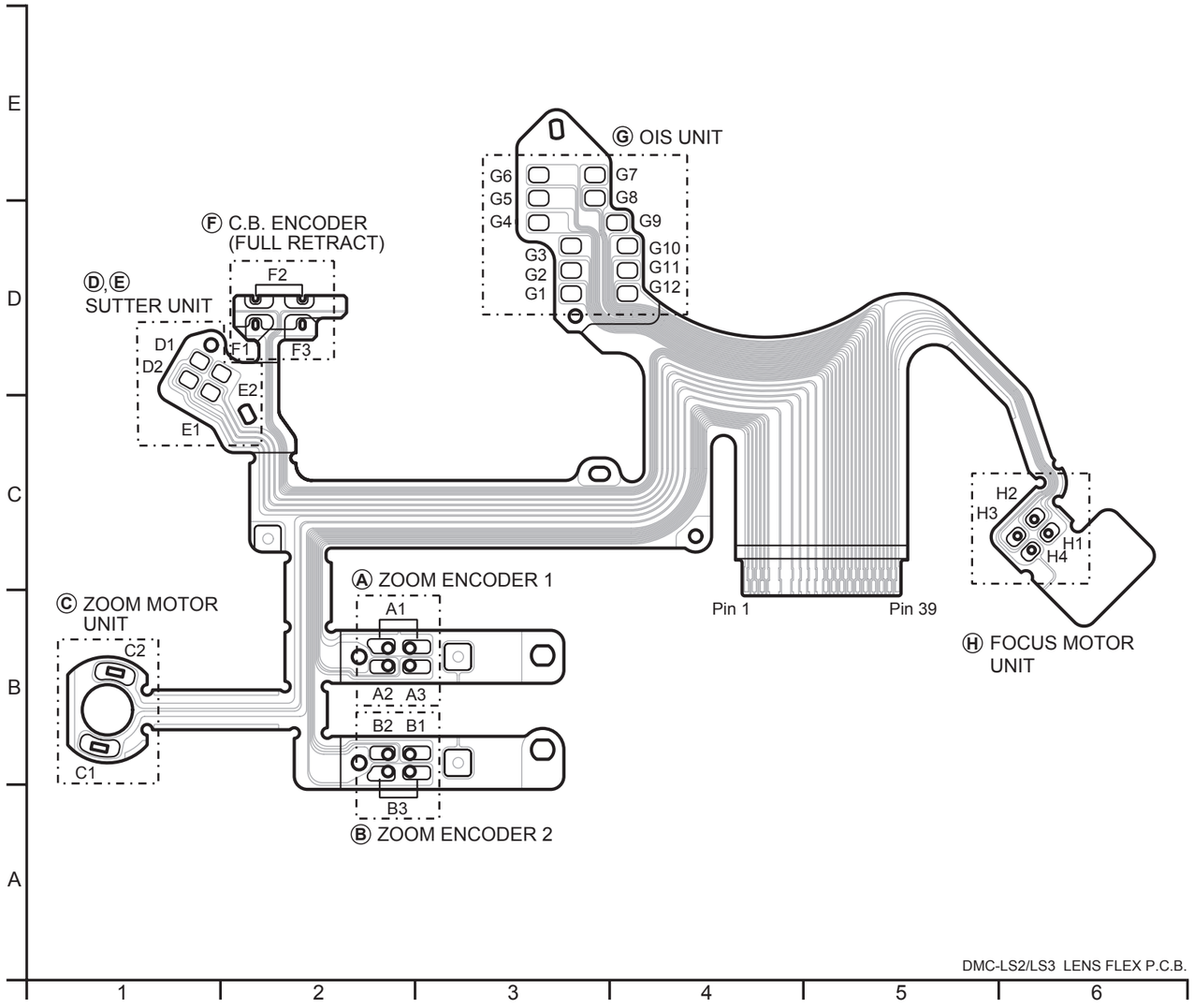
(Component Side)



(Foil Side)

DMC-LS2/LS3
CCD Flex P.C.B.

S4.3. Lens Flex P.C.B.



S5. 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.

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 [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
##	VEP59021A	TOP-OPE P.C.B. UNIT		(RTL)
PS9201	K1KB20AA0094	CONNECTOR 20P	1	LS2
R9201	ERJ2GEJ242X	M.RESISTOR CH 1/16W 2.4K	1	
R9208	ERJ2GEJ432X	M.RESISTOR CH 1/16W 4.3K	1	
R9209	ERJ2GEJ822X	M.RESISTOR CH 1/16W 8.2K	1	
R9210	ERJ2GEJ822X	M.RESISTOR CH 1/16W 8.2K	1	
R9211	ERJ2GEJ432X	M.RESISTOR CH 1/16W 4.3K	1	
R9212	ERJ2GEJ242X	M.RESISTOR CH 1/16W 2.4K	1	
S9201	K0F212A00001	SWITCH	1	
S9202	K0D112B00145	SWITCH	1	
S9203	ESE23F101	SWITCH	1	
S9204	EVQPQ6B55	SWITCH	1	
S9205	K0G188A00002	SWITCH	1	
##	VEK0J68	CCD UNIT		(RTL)
C3101	ECJ1VB1C105K	C.CAPACITOR CH 16V 1U	1	[PAVC-CSG]
C3103	F1J1A2250013	CAPACITOR	1	[PAVC-CSG]
C3105	ECJ0EB1A104K	C.CAPACITOR CH 10V 0.1U	1	[PAVC-CSG]
Q3101	UP0453400L	TRANSISTOR	1	[PAVC-CSG] E.S.D
R3102	ERJ2GEJ222	M.RESISTOR CH 1/16W 2.2K	1	[PAVC-CSG]
R3103	ERJ2GEJ822	M.RESISTOR CH 1/16W 8.2K	1	[PAVC-CSG]
R3104	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	[PAVC-CSG]
R3105	ERJ2GEJ100	M.RESISTOR CH 1/16W 10	1	[PAVC-CSG]
R3106	ERJ2GEJ132	M.RESISTOR CH 1/16W 1.3K	1	[PAVC-CSG]
R3107	ERJ2GEJ183	M.RESISTOR CH 1/16W 18K	1	[PAVC-CSG]

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

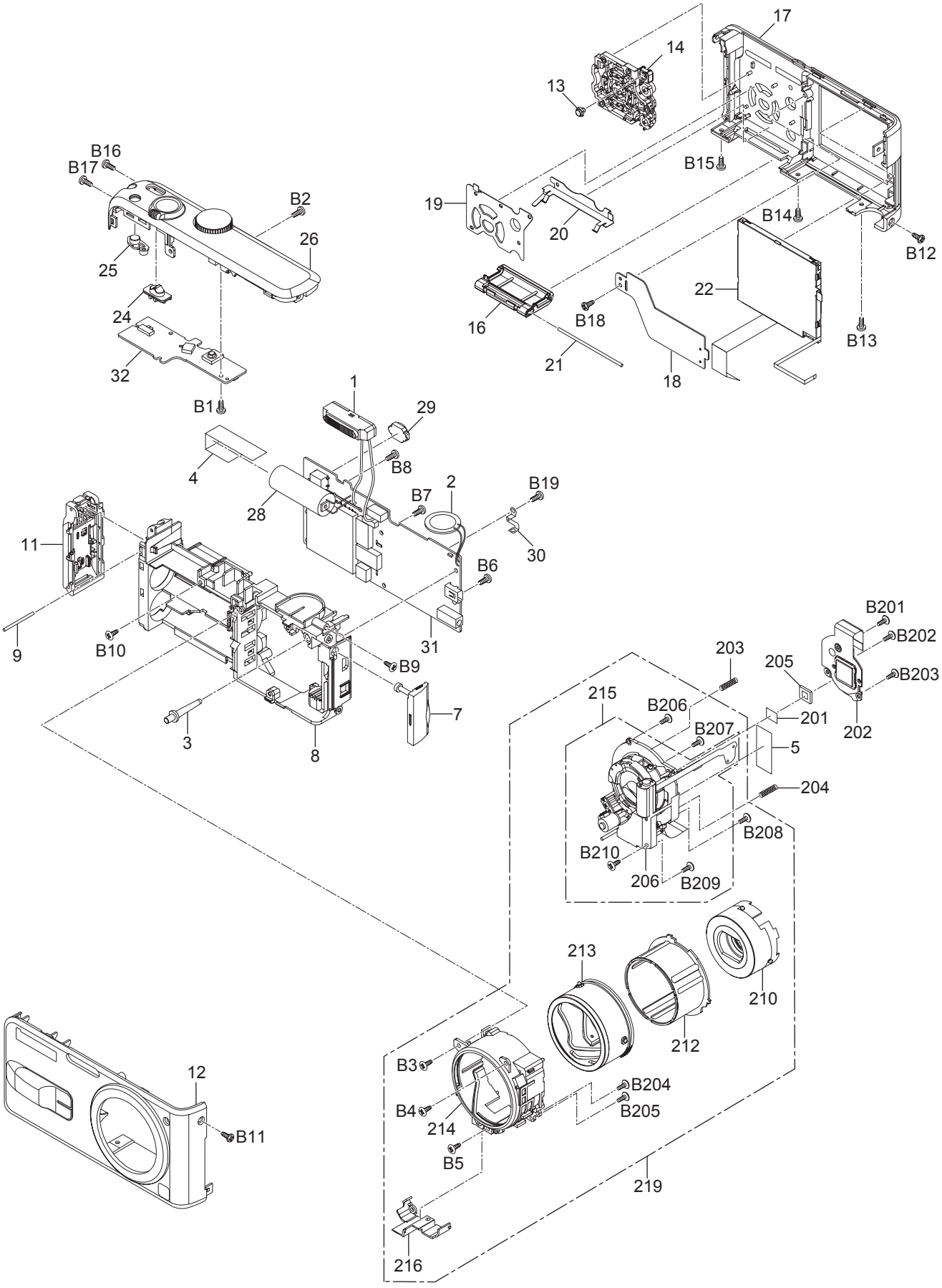
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
##		CASING AND LENS SECTION		
1	EFN-AMV46ZD	FLASH	1	
2	L0DCDD000008	BUZZER	1	
3	VGL1177	LED PANEL(F)	1	
4	VGQ8876	CONDENSOR SHEET	1	LS2(ALL)
5	VGQ8891	LENS SHEET	1	
7	VKF4068	JACK COVER	1	
8	VXK1852	FRAME(1)	1	
9	VMS7699	BATT.DOOR SHAFT	1	
11	VYF3078	BATT.DOOR UNIT	1	LS2(ALL)
11	VYF3084	BATT.DOOR UNIT	1	LS3(ALL)
12	VYK1T95	FRONT CASE UNIT	1	LS2(ALL)
12	VYK1V38	FRONT CASE UNIT	1	LS3(ALL)
13	VGL1176	LED PANEL(R)	1	
14	VGU9918	REAR KNOB	1	
16	VKF4067	SD COVER	1	LS2(ALL)
16	VKF4096	SD COVER	1	LS3(ALL)
17	VKM6878SVS	REAR CASE	1	LS2(ALL)
17	VKM6923SVC	REAR CASE	1	LS3(ALL)
18	VMA0U50	LCD HOLDER	1	
19	VMA0U51	EARTH PLATE	1	
20	VMA0U52	SD COVER SPRING	1	
21	VMS7697	SD SHAFT	1	
22	VYQ3678	LCD UNIT	1	
24	VGU9941	POWER KNOB	1	LS2(ALL)
24	VGU9941	POWER KNOB	1	LS3(ALL)
25	VGU9943	OIS KNOB	1	LS2(ALL)
25	VGU9943	OIS KNOB	1	LS3(ALL)
26	VYK1U35	TOP BLOCK	1	LS2(ALL)
26	VYK1V80	TOP BLOCK	1	LS3(ALL)
28	F2A2F8000003	FLASH CONDENSER	1	
29	ML-614S/F9FE	BUTTON BATTERY	1	
30	VMA0U86	HOLD PLATE	1	
31	VEP56027A	MAIN PCB UNIT	1	[RTL]E.S.D
32	VEP59021A	TOP-OPE PCB UNIT	1	[RTL]
201	VDL1603	OPTICAL FILTER	1	[PAVC-CSG]
202	VEK0J68	CCD UNIT	1	[PAVC-CSG] E.S.D
203	VMB3683	CCD SPRING	1	[PAVC-CSG]
204	VMB3683	CCD SPRING	1	[PAVC-CSG]
205	VMX3437	CCD CUSHION RUBBER	1	[PAVC-CSG]
206	L6DA8BEC0001	ZOOM MOTOR UNIT	1	[PAVC-CSG]
207	B3NAA0000091	PHOTO SENSOR	1	[PAVC-CSG]
208	B3NAA0000091	PHOTO SENSOR	1	[PAVC-CSG]
210	VXP2580	1ST LENS FRAME UNIT	1	[PAVC-CSG]
212	VDW1092	DIRECT FRAME	1	[PAVC-CSG]
213	VDW1275	DRIVE FRAME	1	[PAVC-CSG]
214	VXQ1413	FIX FRAME UNIT	1	[PAVC-CSG]
215	VXQ1448	LENS S UNIT	1	[PAVC-CSG]
216	VMA0T19	COVER	1	[PAVC-CSG]
219	VXW0789	LENS UNIT	1	[PAVC-CSG]
1000	VXW0789	CAMERA LENS UNIT	1	[PAVC-CSG]
1001	VXW0779	CAMERA LENS UNIT	1	[PAVC-CSG]
B1	VHD1759-1	SCREW	1	
B2	XQN17+BJ45FN	SCREW	1	
B3	XQN17+BJ45FN	SCREW	1	
B4	XQN17+BJ45FN	SCREW	1	
B5	XQN17+BJ45FN	SCREW	1	
B6	XQN17+BJ45FN	SCREW	1	
B7	XQN17+BJ45FN	SCREW	1	
B8	XQN17+BJ45FN	SCREW	1	
B9	XQN17+BJ45FN	SCREW	1	
B10	XQN17+BJ45FN	SCREW	1	
B11	XQN17+BJ45FN	SCREW	1	
B12	XQN17+BJ45FN	SCREW	1	
B13	XQN17+BJ45FN	SCREW	1	
B14	XQN17+BJ45FN	SCREW	1	
B15	XQN17+BJ45FN	SCREW	1	
B16	XQN17+BJ65FN	SCREW	1	
B17	XQN17+BJ65FN	SCREW	1	
B18	VHD1759-1	SCREW	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
B19	XQN17+BJ45FN	SCREW	1	
B201	VHD1726	SCREW	1	[PAVC-CSG]
B202	VHD1726	SCREW	1	[PAVC-CSG]
B203	VHD1726	SCREW	1	[PAVC-CSG]
B204	XQN14+CJ4FJ	SCREW	1	[PAVC-CSG]
B205	XQN14+CJ4FJ	SCREW	1	[PAVC-CSG]
B206	XQN14+CJ4FJ	SCREW	1	[PAVC-CSG]
B207	XQN14+CJ4FJ	SCREW	1	[PAVC-CSG]
B208	XQN14+CJ4FJ	SCREW	1	[PAVC-CSG]
B209	XQN14+CJ25FJ	SCREW	1	[PAVC-CSG]
B210	XQN14+CJ25FJ	SCREW	1	[PAVC-CSG]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
##		PACKING SECTION		
101	K1HA08CD0007	USB CABLE	1	
102	K1HA08CD0009	VIDEO CABLE	1	
103	VFC4090	STRAP	1	
104	VFF0311	CD-ROM	1	LS2PP(SEE NOTES)
104	VFF0312	CD-ROM	1	(EXCEPT LS2PP)(SEE NOTES)
106	VQT0X00	O/I SOFTWARE	1	LS2PP
106	VQT0X09	O/I SOFTWARE	1	LS2PL
106	VQT0X01	O/I SOFTWARE	1	LS2EG,LS3EG
106	VQT0X02	O/I SOFTWARE	1	LS2EGM,LS3EGM
106	VQT0X03	O/I SOFTWARE	1	LS2EF,LS3EF
106	VQT0X04	O/I SOFTWARE	1	LS2EB
106	VQT0X05	O/I SOFTWARE	1	LS2GC/SG
106	VQT0X10	O/I SOFTWARE	1	LS2GT
106	VQT0X06	O/I SOFTWARE	1	LS2GK
106	VQT0X07	O/I SOFTWARE	1	LS2GN
106	VQT0X08	O/I SOFTWARE	1	LS2EE
⚠ 107	VQT0V10	INSTRUCTION BOOK	1	LS2PP
		(ENGLISH/SPANISH)		
⚠ 107	VQT0V11	INSTRUCTION BOOK	1	LS2PP
		(CANADIAN FRENCH)		
⚠ 107	VQT0V12	INSTRUCTION BOOK	1	LS2PL
		(ENGLISH)		
⚠ 107	VQT0V13	INSTRUCTION BOOK	1	LS2PL
		(SPANISH)		
⚠ 107	VQT0V14	INSTRUCTION BOOK	1	LS2PL
		(PORTUGUESE)		
⚠ 107	VQT0V15	INSTRUCTION BOOK	1	LS2EG,LS3EG
		(GERMAN)		
⚠ 107	VQT0V16	INSTRUCTION BOOK	1	LS2EG/EF,LS3EG/EF
		(FRENCH)		
⚠ 107	VQT0V17	INSTRUCTION BOOK	1	LS2EG,LS3EG
		(ITALIAN)		
⚠ 107	VQT0V18	INSTRUCTION BOOK	1	LS2EG,LS3EG
		(DUTCH)		
⚠ 107	VQT0V19	INSTRUCTION BOOK	1	LS2EGM,LS3EGM
		(SPANISH)		
⚠ 107	VQT0V20	INSTRUCTION BOOK	1	LS2EGM,LS3EGM
		(PORTUGUESE)		
⚠ 107	VQT0V21	INSTRUCTION BOOK	1	LS2EGM,LS3EGM
		(SWEDISH)		
⚠ 107	VQT0V22	INSTRUCTION BOOK	1	LS2EGM,LS3EGM
		(DANISH)		
⚠ 107	VQT0V23	INSTRUCTION BOOK	1	LS2EB
		(ENGLISH)		
⚠ 107	VQT0V24	INSTRUCTION BOOK	1	LS2GC/SG
		(ENGLISH)		
⚠ 107	VQT0V25	INSTRUCTION BOOK	1	LS2GC/SG
		(CHINESE(TRADITIONAL))		
⚠ 107	VQT0V27	INSTRUCTION BOOK	1	LS2GC/SG
		(ARABIC)		
⚠ 107	VQT0V28	INSTRUCTION BOOK	1	LS2GT
		(CHINESE(TRADITIONAL))		
⚠ 107	VQT0V29	INSTRUCTION BOOK	1	LS2GK
		(CHINESE(SIMPLIFIED))		
⚠ 107	VQT0V30	INSTRUCTION BOOK	1	LS2GN
		(ENGLISH)		
⚠ 107	VQT0V26	INSTRUCTION BOOK	1	LS2EE
		(RUSSIAN)		
108	VQT0W41	O/I PC CONN.	1	LS2PP
		(ENGLISH/SPANISH/		
		CANADIAN FRENCH)		
108	VQT0W42	O/I PC CONN.	1	LS2PL
		(ENGLISH/SPANISH/		
		PORTUGUESE)		
108	VQT0W43	O/I PC CONN.	1	LS2EG,LS3EG
		(GERMAN/FRENCH/ITALIAN/		
		DUTCH)		
108	VQT0W44	O/I PC CONN.	1	LS2EGM,LS3EGM
		(SPANISH/PORTUGUESE/		
		SWEDISH/DUTCH)		
108	VQT0W45	O/I PC CONN.	1	LS2EF,LS3EF
		(FRENCH)		
108	VQT0W46	O/I PC CONN.	1	LS2EB
108	VQT0W47	O/I PC CONN.	1	LS2GC/SG
		(ENGLISH		
		CHINESE(TRADITIONAL)/		
		RUSSIAN/ARABIC)		
108	VQT0W48	O/I PC CONN.	1	LS2GT
		(CHINESE(TRADITIONAL))		
108	VQT0W49	O/I PC CONN.	1	LS2GK
		(CHINESE(SIMPLIFIED))		
108	VQT0W50	O/I PC CONN.	1	LS2GN
		(ENGLISH)		
108	VQT0W14	O/I PC CONN.	1	LS2EE
		(RUSSIAN/UKRAINIAN)		
108	VQT0W22	O/I PC CONN.	1	LS2EE
		(UKRAINIAN)		
109	VPK3088	PACKING CASE	1	LS2PP
109	VPK3089	PACKING CASE	1	LS2EB/EE/EF/EG/EGM/GC/
				GN/GT/PL/SG
109	VPK3091	PACKING CASE	1	LS2GK
109	VPK3123	PACKING CASE		LS3(ALL)
110	VPN6389	PAD	1	
111	VPF1100	POLY BAG	1	LS2EB/EE/EF/GK/GN/GT/PP
				LS3EF
111	VPF1132	POLY BAG	1	LS2EG/EGM/GC/PL/SG
				LS3EG/EGM
112	VPF1098-1	PROTECTION BAG	1	

S6. Exploded View

S6.1. Frame and Casing Section



S6.2. Packing Parts and Accessories Section