Panasonic

ORDER NO. DSC1801001CE

B26

Service Manual

Digital Camera/Body/Lens Kit

Model No. DC-G9P
DC-G9PP
DC-G9EB
DC-G9EC
DC-G9EE
DC-G9EF
DC-G9EG
DC-G9GA
DC-G9GC
DC-G9GD
DC-G9GH
DC-G9GK
DC-G9GN
DC-G9MEB
DC-G9MEG
DC-G9LP
DC-G9LEB
DC-G9LEC
DC-G9LEF
DC-G9LEG
DC-G9LGA
DC-G9LGC
DC-G9LGN

Colour
Black Type
DC-G9M series: Interchangeable Lens (H-FS12060) is bundled.
DC-G9L series: Interchangeable Lens (H-ES12060) is bundled.

LUMIX

⚠ 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.

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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.

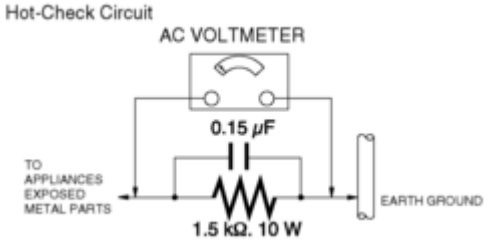


Figure. 1

2 Warning

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

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

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

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

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an antistatic solder removal device. Some solder removal devices not classified as "antistatic (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).

7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   CAUTION :
   Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

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

ENGLISH

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

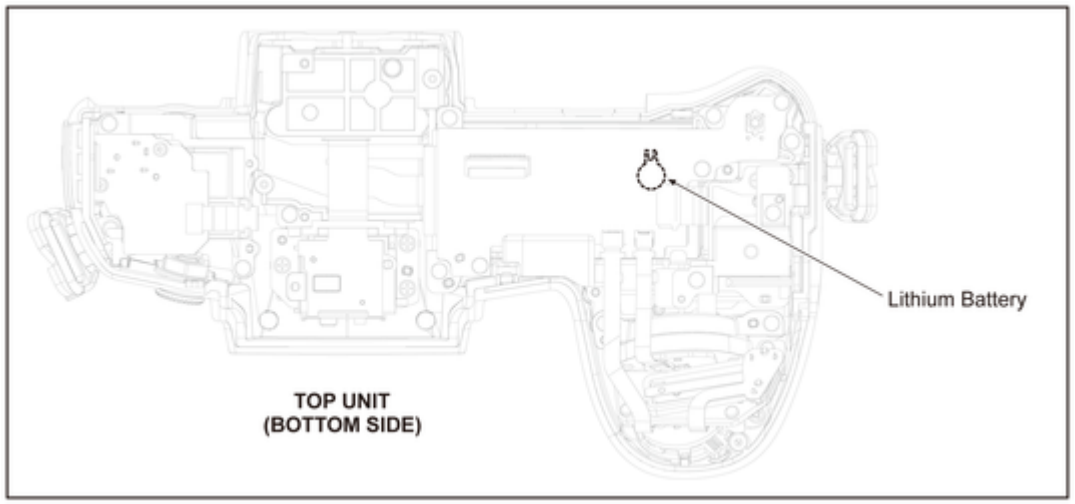
FRANÇAIS

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

2.3 How to Replace the Lithium Battery

2.3.1 Replacement Procedure

- The TOP UNIT includes Lithium battery.



NOTE:
This Lithium battery is a critical component.
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in requirement designed specifically for its use.
Replacement batteries must be of same type and manufacture.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the old battery or re-use it for any other purpose.
It should be disposed of in waste products destined for burial rather than incineration.

(For English)

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

(For German)

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

(For French)

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

NOTE:
Above caution is applicable for a battery pack which is for DC-G9/G9M/G9L series, as well.

3 Service Navigation

3.1 Introduction

This service manual contains technical information, which allow service personnel's to understand and service this model.
Please place orders using the parts list and not the drawing reference numbers.
If the circuit is changed or modified, the information will be followed by service manual to be controlled with original service manual.

3.2 About service of bundled lenses

Please refer to the following service manuals about Disassembly and Assembly or Maintenance of bundled lenses.

- H-FS12060E/GK/PP: Order No.DSC1604008CE
- H-ES12060PP/E/GK: Order No.DSC1702007CE

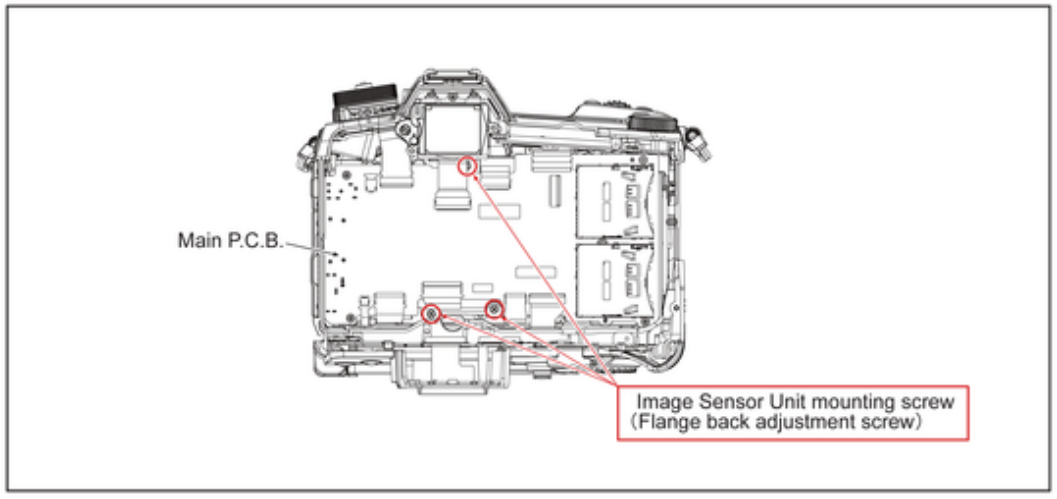
3.3 Important Notice

*When servicing, it is recommended dealing with Clean box. (Refer to "8.2. Clean Box" section of this service manual for details.)

3.3.1 Camera Body Unit

3.3.1.1 About Flange back adjustment

* "Flange back" is the distance from the lens mount level to the Image Sensor level.
When turning the image sensor unit mounting screw even a little or removing, the "simplicity flange back adjustment" is need.
Perform the "simplicity flange back adjustment" according to contents described in "10 Measurements and Adjustments" section of this service manual.



3.3.1.2 About Shutter Unit (Ref. 5)

Before exchanging the "shutter unit", confirm that the symptom and/or phenomenon is not due to the setting of functions.

Important:
After replacing the shutter unit, the shutter unit data has to be stored to the unit.
The shutter unit supplied as service parts has affix the label of own configure data.
By inputting second line to third line of these data into the adjustment software and writing these data to Flash-ROM (IP2001), the shutter adjustment becomes needless.
In addition, the adjustment software can read data encoded to QR Code by using WEB camera with a close-up function.
Refer to the adjustment instruction in the adjustment software for details.

3.3.1.3 About Main P.C.B. (Ref.1) & Flash-ROM (IP2001)

Before exchanging the “Main P.C.B.”, that confirm that the symptom and/or phenomenon is not due to the setting of functions.

Important:
When replacing the Main P.C.B. that cannot be repaired by exchanging the IC, carry out any of followings.
In the case of exchanging the Flash-ROM (IP2001) is same way too.

1. When the camera power can be ON, and camera body and adjustment software can be communicated:
   Before replacing the “Main P.C.B. and/or Flash-ROM”, proceed the EEPROM data backup from the unit.
   After replacing the Main P.C.B. and/or Flash-ROM, overwrite the EEPROM data with backup data from the unit first,
   then proceed the adjustment /inspection. (Almost adjustment/inspection items can be omitted.)
   Refer to the adjustment instruction in the adjustment software for details.
2. When the camera power cannot be ON, or camera body and adjustment software cannot be communicated:
   Almost full adjustment/inspection must be performed after replacing the “Main P.C.B. and/or Flash-ROM”.
   Refer to the adjustment instruction in the adjustment software for details.

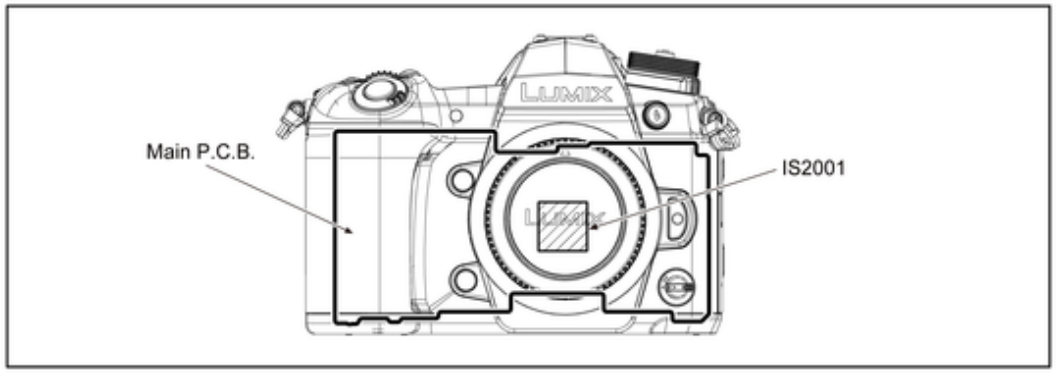
Notes after replacement:
Make sure the camera body firmware is latest version.

3.3.1.4 About Venus Engine (IS2001) [Located on the Main P.C.B.]:

- The Venus Engine (IS2001) consists of two IC chips, which are fixed together with solder.
  (The so called, “Package On Package” type IC.)

NOTE:

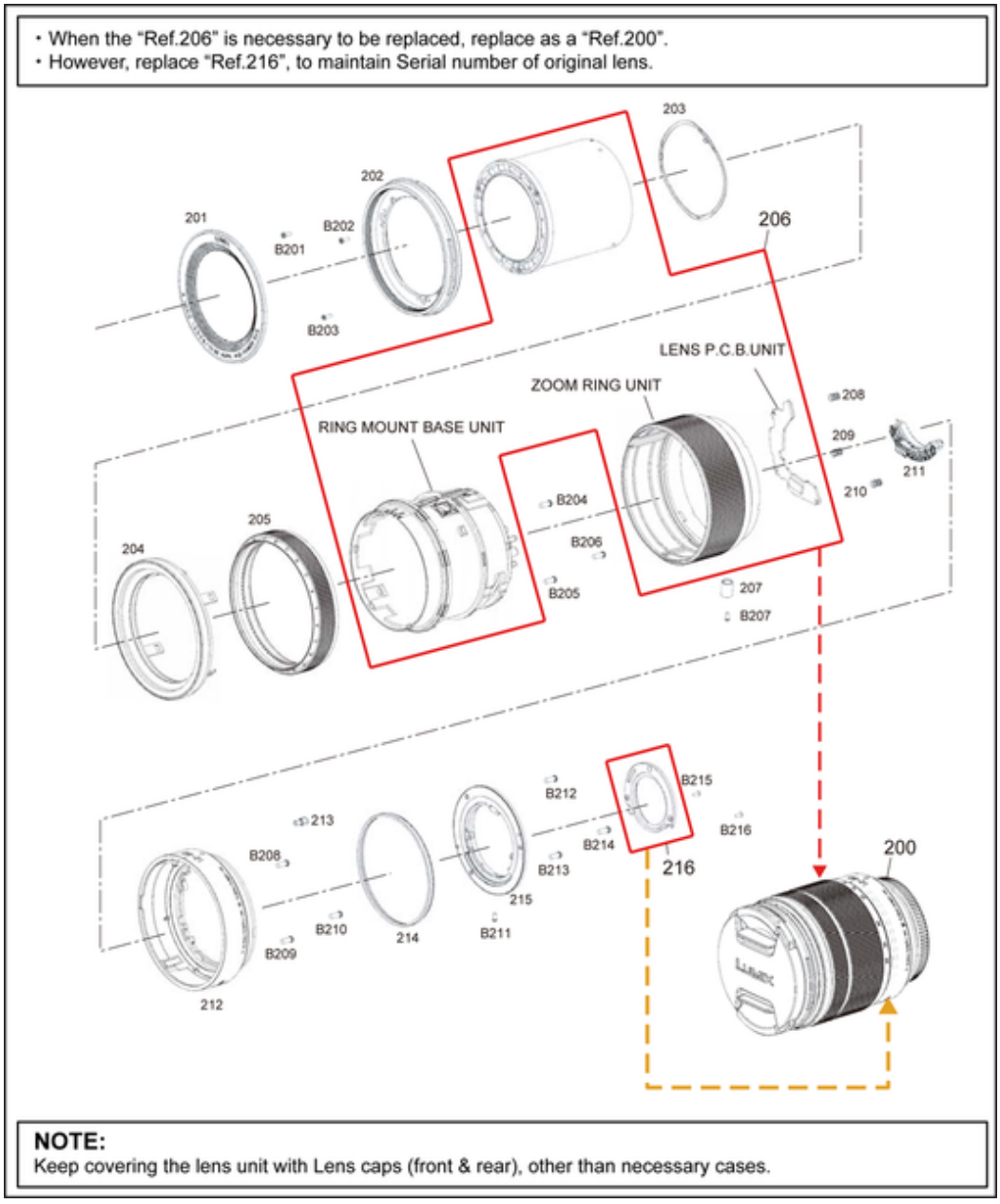
- During servicing, do not press down hard on the surface of IS2001.



3.3.2 Lens Unit (Interchangeable Lens: H-FS12060)

3.3.2.1 About Lens Main Unit (Ref. 206)

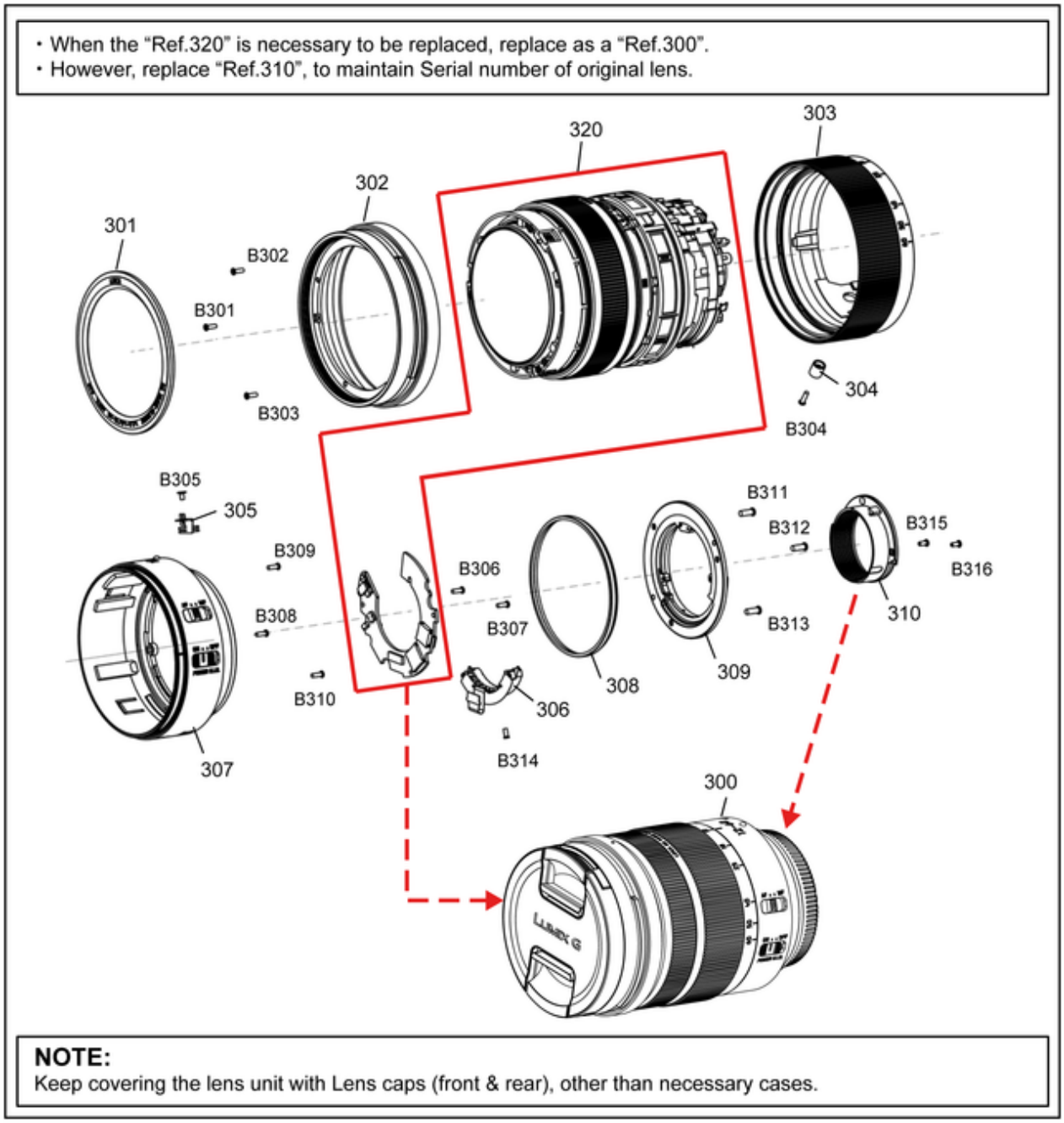
1. Lens Main Unit (Ref. 206) is not supplied due to difficulty of the transportation issue (Fragile, Dust-free packing), and requires critical lens adjustments.
   Therefore, if there are any needs of the “Lens Main Unit” (Ref. 206), carefully confirm its performance in advance.
2. Once “Lens Main Unit” (Ref. 206) is confirmed as defective, place order “Lens Unit” (Ref. 200) and replace Shading Frame (Ref. 216), to maintain Serial number of owner’s original lens.



3.3.3 Lens Unit (Interchangeable Lens: H-ES12060)

3.3.3.1 About Lens Main Unit (Ref. 320)

1. Lens Main Unit (Ref. 320) is not supplied due to difficulty of the transportation issue (Fragile, Dust-free packing), and requires critical lens adjustments.
   Therefore, if there are any needs of the "Lens Main Unit" (Ref. 320), carefully confirm its performance in advance.
2. Once "Lens Main Unit" (Ref. 320) is confirmed as defective, place order "Lens Unit" (Ref. 300) and replace Shading Frame (Ref. 310), to maintain Serial number of owner's original lens.



3.3.4 About Flexible Cable and Connector

Do not touch carelessly so that the foreign body should not adhere to the terminal part of flexible cable and connector. Wipe off with a clean cloth and the cotton bud, etc. when the terminal part is dirty.

3.4 Service Notes

3.4.1 About Wi-Fi/Bluetooth Function

The page number in this chapter does not show the page number of this service manual.

What you can do with the Wi-Fi®/Bluetooth® function

• The camera cannot be used to connect to a public wireless LAN connection.

Controlling with a Smartphone/Tablet (P95)
• Recording with a smartphone (P96)
• Playing back or saving images stored on the camera, or uploading them on social media sites (P98)

Explore more enjoyment possibilities with Bluetooth®
You can connect to a smartphone that supports Bluetooth low energy any time.
Connect to a smartphone to use a full range of features.
• Connecting easily by pairing (P91)
• Turning on/off the camera by remote control (P96)
• Operating the shutter button of the camera (P97)
• Sending recorded images automatically
• Auto Cloud Backup
• Recording location information to the camera's images
• Synchronising the camera's clock
• Saving the camera's setup information to a smartphone

Displaying pictures on a TV
Printing Wirelessly
Sending images to AV device
Sending images to PC
Using Web services

These operating instructions refer to both smartphones and tablets as smartphones from this point on unless noted otherwise.
• For details, refer to the "Operating Instructions for advanced features (PDF format)".

3.4.2 Important Notice of Servicing

This camera unit has the personal information of wireless LAN connection the customer has registered.
For the protection of private information, please erase the personal information after the completion of repair by "Initial Settings".
In addition, please print out the following documents, and pass to the customer with the camera unit.

Printing Material [Leaflet for Customer]

3.5 General Description About Lead Free Solder (PbF)

The lead free solder has been used in the mounting process of all electrical components on the printed circuit boards used for this equipment in considering the globally environmental conservation.
The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin (Sn), silver (Ag) and copper (Cu), and the melting point of the lead free solder is higher approx.30°C (86°F) more than that of the normal solder.

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

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

Service caution for repair work using Lead Free Solder (PbF)

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

Recommended Lead Free Solder (Service Parts Route.)

- The following 3 types of lead free solder are available through the service parts route.

SVKZ000001----------(0.3mm 100g Reel)
SVKZ000002----------(0.6mm 100g Reel)
SVKZ000003----------(1.0mm 100g Reel)

Note
* Ingredient: Tin (Sn) 96.5%, Silver (Ag) 3.0%, Copper (Cu) 0.5%. (Flux cored)

3.6 How to Define the Model Suffix (NTSC or PAL Model)

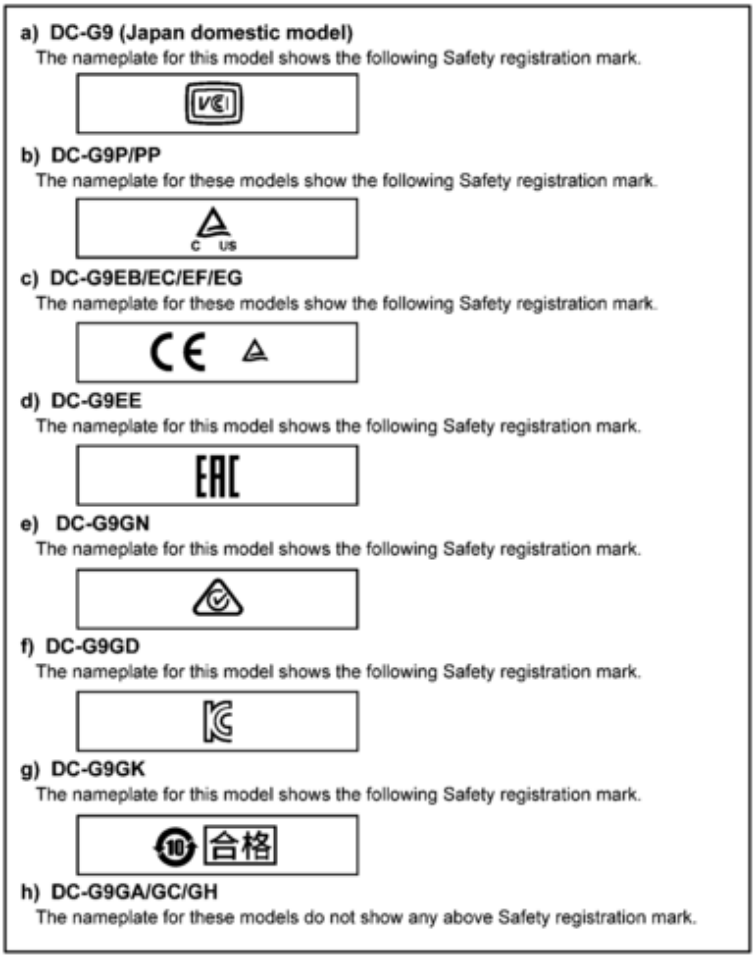
There are eight kinds of DC-G9 (Camera body unit), regardless of the colours.

- a) DC-G9 (Japan domestic model)
- b) DC-G9P/PP
- c) DC-G9EB/EC/EF/EG
- d) DC-G9EE
- e) DC-G9GN
- f) DC-G9GD
- g) DC-G9GK
- h) DC-G9GA/GC/GH

What is the difference is that the “Initial Settings” data which is stored in Flash-ROM mounted on Main P.C.B..

3.6.1 Defining Methods:

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



NOTE:
After replacing the Main P.C.B., be sure to achieve adjustment.
Refer to the adjustment instruction in the adjustment software for details.

3.6.2 Initial Settings:

After replacing the Main P.C.B. and/or Flash-ROM, make sure to perform the initial settings after achieving the adjustment by ordering the following procedure in accordance with model suffix of the unit.

1. Important Notice:
Before proceeding Initial settings, make sure to read the following CAUTION.

CAUTION:(Initial Settings)

---After Replacing the Main P.C.B. and/or Flash-ROM ---

[Except "EB/EC/EF and EG" models]

*. The model suffix can be chosen JUST ONE TIME.
(Effective model suffix : "P/PP/EE/GA/GC/GD/GH/GK/GN and JAPAN domestic model")

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

2. Procedures:

- Precautions: Read the above "CAUTION" carefully.
- Preparation:
  Attach the fully charged Battery, and insert the memory card to slot1.
  Set the mode dial to [P] (Program AE Mode).

- **Step 1. The temporary cancellation of "Initial Settings":**
  Set the drive mode dial to [Single], while pressing [Playback] button and [AF/AE LOCK] button simultaneously, turn the power on.
- **Step 2. The cancellation of "Initial Settings":**
  Press the [Playback] button in order to enter the [Playback] mode.
  Press [AF/AE LOCK] button and "[UP] of Cursor buttons" simultaneously, then turn the power off.
  The LCD displays the " ! " mark before the unit powers down.

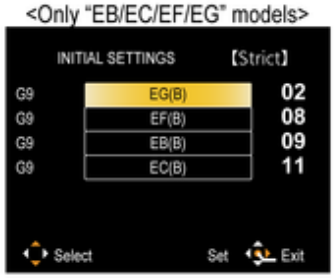
- **Step 3. Turn the Power On:**
  Set the mode dial to [P] (Program AE Mode) and drive mode dial to [Single], then turn the power on.
- **Step 4. Display the Initial Settings:**
  While pressing [MENU/SET] button and "[RIGHT] of Cursor buttons" simultaneously, turn the power off.
  The "Initial Settings" menu is displayed.
  There are two kinds of "Initial Settings" menu form as follows:
  [CASE 1. After replacing the Main P.C.B. and/or Flash-ROM]
  [Except "EB/EC/EF and EG" models : 1PB1DVLB1116Z is used as a Main P.C.B..]
  When Main P.C.B. has just been replaced, 10 model suffixes are displayed as follows. (two pages in total)

[Only "EB/EC/EF and EG" models : 1PB1DVLB1116Y is used as a Main P.C.B..]
When Main P.C.B. has just been replaced, 4 model suffixes are displayed as follows. (one page in total)

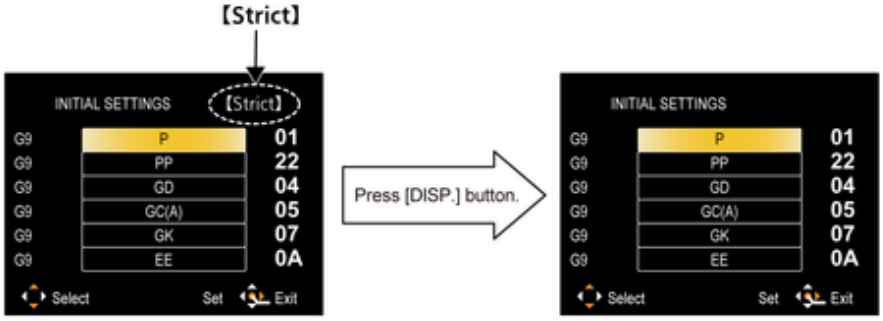
[CASE 2. Other than “After replacing the Main P.C.B. and/or Flash-ROM”]

<Other than “EB/EC/EF/EG” models>

<Only “EB/EC/EF/EG” models>

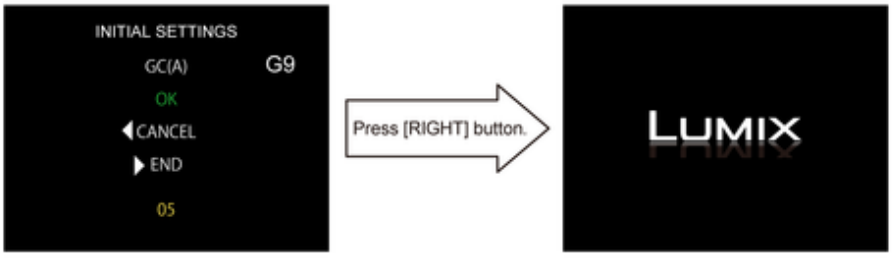


- **Step 5. Cancel “Strict” mode:**
  Press the [DISP.] button to cancel “Strict” mode. (Confirm the “Strict” is disappeared.)

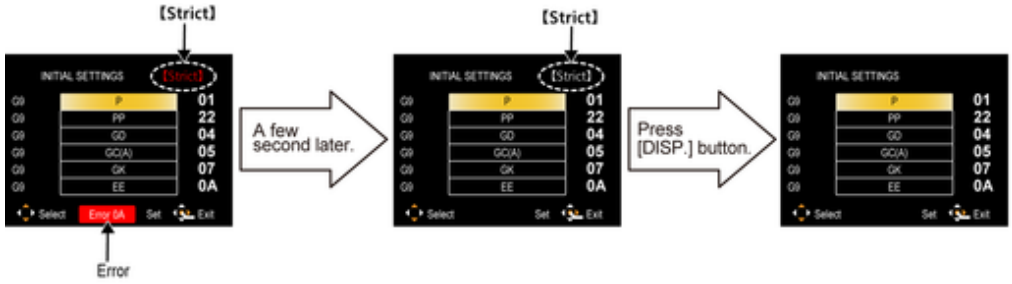


- **Step 6. Choose the Model Suffix in “Initial Settings”: (Refer to “CAUTION”)**

  [Caution: After replacing the Main P.C.B. and/or Flash-ROM]
  The model suffix can been chosen, **JUST ONE TIME** .
  Once one of the model suffix have been chosen, the model suffix lists will not be displayed, thus, it can not be changed.
  Therefore, select the area carefully.
  Select the area with pressing “[UP] / [DOWN] of Cursor buttons”.
- **Step 7. Set the Model Suffix in “Initial Settings”:**
  Press the “[RIGHT] of Cursor buttons”.
  The only set area is displayed, and then press the “[RIGHT] of Cursor buttons” after confirmation.
  (The unit is powered off automatically.)



NOTE:
When the error message such as the following is displayed, cancel “Strict” mode.
Press [DISP.] button to clear the “Strict” display at the upper right corner of screen.



- **Step 8. Confirmation:**
  Confirm the display of “PLEASE SET THE CLOCK” in concerned language when the unit is turned on again.
  When the unit is connected to PC with USB cable, it is detected as removable media.
  (When the “GK” model suffix is selected, the display shows “PLEASE SET THE CLOCK” in Chinese.)

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

- **Default setting (After “Initial Settings”)**

	MODEL	VIDEO OUTPUT	LANGUAGE	DATE	REMARKS
a)	DC-G9P	NTSC	English	Month/Date/Year	
b)	DC-G9PP	NTSC	English	Month/Date/Year	
c)	DC-G9EB	PAL	English	Date/Month/Year	
d)	DC-G9EC	PAL	English	Date/Month/Year	
e)	DC-G9EE	PAL	Russian	Date/Month/Year	
f)	DC-G9EF	PAL	English	Date/Month/Year	
g)	DC-G9EG	PAL	English	Date/Month/Year	
h)	DC-G9GA	PAL	English	Date/Month/Year	
i)	DC-G9GC	PAL	English	Date/Month/Year	
j)	DC-G9GD	NTSC	Korean	Year/Month/Date	
k)	DC-G9GH	PAL	English	Date/Month/Year	
l)	DC-G9GK	PAL	Chinese (simplified)	Year/Month/Date	
m)	DC-G9GN	PAL	English	Date/Month/Year	
n)	DC-G9JPC (Japan domestic model)	NTSC/PAL	Japanese/Chinese (simplified)	Year/Month/Date	

4 Specifications

4.1 Camera Body

The following specification is for DC-G9LEB/G9MEB/G9EB.
Some specifications may differ depending on model suffix.

Specifications are subject to change without notice.

Digital Camera Body (DC-G9):

Information for your safety

Power Source:	DC 8.4 V (8.4 V⎓)
Power Consumption:	4.0 W (When recording with Monitor) (When the Interchangeable lens (H-ES12060) is used) 3.8 W (When recording with Monitor) (When the Interchangeable lens (H-FS12060) is used) 3.0 W (When playing back with Monitor) (When the Interchangeable lens (H-ES12060) is used) 2.8 W (When playing back with Monitor) (When the Interchangeable lens (H-FS12060) is used)

Camera effective pixels	20,330,000 pixels	
Image sensor	4/3″ Live MOS sensor, total pixel number 21,770,000 pixels, Primary colour filter	
Digital Zoom	2×/4×	
Extra Tele Conversion	When taking still pictures: Max. 2× (When a picture size of [S] is selected.) When recording motion pictures: 2.7× (FHD)/1.4× (4K)	
Focus mode	AFS/AFF/AFC/MF	
Auto focus mode	Face/Eye Detection/Tracking/225-area-focusing/Custom Multi/1-area-focusing/Pinpoint (Focus area selection is possible by touching or with the joystick)	
Shutter type	Focal-plane shutter	
Burst recording		
Burst speed	Mechanical shutter/ Electronic Front Curtain	12 pictures/second (High speed, AFS/MF), 9 pictures/second (High speed, AFF/AFC), 7 pictures/second (Middle speed), 2 pictures/second (Low speed)
	Electronic shutter	60 pictures/second (Super high speed, AFS/MF), 20 pictures/second (Super high speed, AFF/AFC), 12 pictures/second (High speed, AFS/MF), 9 pictures/second (High speed, AFF/AFC), 7 pictures/second (Middle speed), 2 pictures/second (Low speed)

Number of recordable pictures	Super high speed	When there are RAW files: 50 pictures When there are no RAW files: 50 pictures
	High speed, Middle speed, Low speed	When there are RAW files: 60 or higher pictures When there are no RAW files: 600 or higher pictures ＊ When recording is performed under the test conditions specified by Panasonic
ISO sensitivity (Standard Output Sensitivity)	Still picture: AUTO/ISO/100*/200/400/800/1600/3200/6400/12800/25600 Creative Video Mode: AUTO/100*/200/400/800/1600/3200/6400/12800 (1/3 EV step change possible) ＊ Only available when [Extended ISO] is set.	
Minimum Illumination	Approx. 3 lx (when i-Low light is used, the shutter speed is 1/25th of a second) (When the Interchangeable lens (H-ES12060) is used) Approx. 5 lx (when i-Low light is used, the shutter speed is 1/25th of a second) (When the Interchangeable lens (H-FS12060) is used)	
Shutter speed	Still picture: B (Bulb) (Max. approx. 30 minutes), 60 seconds to 1/8000th of a second (Mechanical shutter), B (Bulb) (Max. approx. 30 minutes), 60 seconds to 1/2000th of a second (Electronic Front Curtain), 1 second to 1/32000th of a second (Electronic shutter) Motion picture: 1/25th of a second to 1/16000th of a second	
Metering range	EV 0 to EV 18	
White Balance	AWB/AWBc/Daylight/Cloudy/Shade/Incandescent lights/Flash/White set1, 2, 3, 4/White Balance K set1, 2, 3, 4	
Exposure (AE)	Programme AE/Aperture-priority AE/Shutter-priority AE/Manual exposure	
Exposure Compensation	1/3 EV Step, −5 EV to +5 EV	
Light metering system, Light metering mode	1728-zone multi-pattern sensing system, Multiple/Centre weighted/Spot	
Monitor	3″ TFT LCD (3:2) (Approx. 1,040,000 dots) (field of view ratio about 100%) Touch screen	

Viewfinder	OLED Live Viewfinder (4:3) (Approx. 3,680,000 dots) (field of view ratio about 100%) (Magnification approx. 1.66×, 0.83× (35 mm film camera equivalent), with 50 mm lens at infinity; −1.0 m^{-1}) (with diopter adjustment −4 to +3 diopter)
Flash Mode	AUTO, AUTO/Red-Eye Reduction, Forced ON, Forced ON/ Red-Eye Reduction, Slow Sync., Slow Sync./Red-Eye Reduction, Forced OFF
Flash synchronisation speed	Equal to or smaller than 1/250th of a second
Microphone	Stereo
Speaker	Monaural
Recording media	SD Memory Card/SDHC Memory Card*/SDXC Memory Card* (* Card slot 1/Card slot 2: UHS-I/UHS-II UHS Speed Class 3) Double slot recording function is available.
Picture size	
Still picture	When the aspect ratio setting is [4:3] 4992×3744 pixels (6K photo), 3328×2496 pixels (4K photo), 5184×3888 pixels ([L]), 3712×2784 pixels ([M]), 2624×1968 pixels ([S]), 10368×7776 pixels ([XL])*, 7296×5472 pixels ([LL])* When the aspect ratio setting is [3:2] 5184×3456 pixels (6K photo), 3504×2336 pixels (4K photo), 5184×3456 pixels ([L]), 3712×2480 pixels ([M]), 2624×1752 pixels ([S]), 10368×6912 pixels ([XL])*, 7296×4864 pixels ([LL])* When the aspect ratio setting is [16:9] 3840×2160 pixels (4K photo), 5184×2920 pixels ([L]), 3840×2160 pixels ([M]), 1920×1080 pixels ([S]), 10368×5832 pixels ([XL])*, 7296×4104 pixels ([LL])* When the aspect ratio setting is [1:1] 2880×2880 pixels (4K photo), 3888×3888 pixels ([L]), 2784×2784 pixels ([M]), 1968×1968 pixels ([S]), 7776×7776 pixels ([XL])*, 5472×5472 pixels ([LL])* * When recording in [High Resolution Mode]
Recording quality	
Motion pictures	[Rec Format]: [AVCHD]/[MP4] Refer to P65 of this document for details. Refer to P68 of this document for details about High Speed Video.
Quality	RAW/RAW+ Fine/RAW+ Standard/Fine/Standard

Recording file format		
Still Picture	RAW/JPEG (based on “Design rule for Camera File system”, based on “Exif 2.31” standard)	
6K/4K photo (burst file)	6K photo: MP4 (H.265/HEVC, AAC (2 ch)) 4K photo: MP4 (H.264/MPEG-4 AVC, AAC (2 ch))	
Motion pictures	AVCHD Progressive/AVCHD/MP4	
Audio compression	AVCHD	Dolby Audio™ (2 ch)
	MP4	AAC (2 ch), LPCM* (2 ch, 48 kHz/16 bit) * When selecting [4K/150M/60p]/[4K/150M/50p]
Interface		
[REMOTE]	∅ 2.5 mm jack	
[MIC]	∅ 3.5 mm jack	
Headphone	∅ 3.5 mm jack	
HDMI	HDMI Type A	
USB	Super Speed USB 3.0 GEN1/USB 3.0 Micro-B * Data from the PC can not be written to the camera using the USB connection cable.	
Flash synchro	Available	
Dimensions	Approx. 136.9 mm (W)×97.3 mm (H)×91.6 mm (D) (5.39″ (W)×3.83″ (H)×3.61″ (D)) (excluding the projecting parts)	
Mass	Approx. 658 g/1.45 lb (with one card and the battery) Approx. 586 g/1.30 lb (camera body) Approx. 978 g/2.16 lb (with the Interchangeable lens (H-ES12060), one card and the battery) Approx. 868 g/1.91 lb (with the Interchangeable lens (H-FS12060), one card and the battery)	
Operating temperature	−10 °C* to 40 °C (14 °F* to 104 °F) * The performance of the battery (number of recordable pictures/operating time) may decrease temporarily when using in a temperature between −10 °C and 0 °C (14 °F and 32 °F) (cold places such as ski resorts or places at high altitude).	

Operating humidity	10%RH to 80%RH
Dust-proof and splash-proof	Yes

Wireless transmitter

Wireless LAN	
Compliance standard	IEEE 802.11a/b/g/n/ac (standard wireless LAN protocol)
Frequency range used (central frequency)	2412 MHz to 2472 MHz (1 to 13 ch) 5180 MHz to 5320 MHz (36/40/44/48/52/56/60/64 ch) 5500 MHz to 5700 MHz (100/104/108/112/116/120/124/128/132/136/140 ch)
Encryption method	Wi-Fi compliant WPA™/WPA2™
Access method	Infrastructure mode
Bluetooth function	
Compliance standard	Bluetooth v4.2 (Bluetooth low energy (BLE))
Frequency range used (central frequency)	2402 MHz to 2480 MHz

Battery Charger (Panasonic DMW-BTC13):
Information for your safety

Input:	5.0 V ⎓ 1.8 A
Output:	8.4 V ⎓ 0.85 A
Operating temperature:	0 °C to 40 °C (32 °F to 104 °F)

AC adaptor (Panasonic VSK0815L):
Information for your safety

Input:	110 V – 240 V ~ 50/60 Hz 0.25 A
Output:	5.0 V ⎓ 1.8 A
Operating temperature:	0 °C to 40 °C (32 °F to 104 °F)

Battery Pack (lithium-ion) (Panasonic DMW-BLF19E):
Information for your safety

Voltage/capacity:	7.2 V/1860 mAh

The symbols on this product (including the accessories) represent the following:

~	AC
⎓	DC
⧈	Class II equipment (The construction of the product is double-insulated.)

4.2 Lens

Interchangeable Lens	**H-ES12060 "LEICA DG VARIO-ELMARIT 12–60 mm/F2.8–4.0 ASPH./ POWER O.I.S."**	**H-FS12060 "LUMIX G VARIO 12–60 mm/ F3.5–5.6 ASPH./POWER O.I.S."**
Focal length	f=12 mm to 60 mm (35 mm film camera equivalent: 24 mm to 120 mm)	f=12 mm to 60 mm (35 mm film camera equivalent: 24 mm to 120 mm)
Aperture type	9 diaphragm blades/circular aperture diaphragm	7 diaphragm blades/circular aperture diaphragm
Maximum aperture	F2.8 (Wide) to F4.0 (Tele)	F3.5 (Wide) to F5.6 (Tele)
Minimum aperture value	F22	F22
Lens construction	14 elements in 12 groups (4 aspherical lenses, 2 ED lenses)	11 elements in 9 groups (3 aspherical lenses, 1 ED lens)
Nano surface coating	Yes	None
In focus distance	Wide: 0.2 m (0.66 feet) to ∞ / Tele: 0.24 m (0.79 feet) to ∞ (from the focus distance reference line)	Wide: 0.2 m (0.66 feet) to ∞ / Tele: 0.25 m (0.82 feet) to ∞ (from the focus distance reference line)
Maximum image magnification	0.3× (35 mm film camera equivalent: 0.6×)	0.27× (35 mm film camera equivalent: 0.54×)
Optical Image Stabiliser	Available	Available
O.I.S. switch	Available (Switching ON/OFF)	None (Setting of the [Stabilizer] is done in [Rec] menu.)
[AF/MF] switch	Available (Switching AF/MF)	None
Mount	"Micro Four Thirds Mount"	"Micro Four Thirds Mount"
Angle of view	84° (Wide) to 20° (Tele)	84° (Wide) to 20° (Tele)
Filter diameter	62 mm	58 mm
Max. diameter	Ø68.4 mm (2.7 inch)	Ø66 mm (2.6 inch)
Overall length	Approx. 86 mm (3.4 inch) (from the tip of the lens to the base side of the lens mount)	Approx. 71 mm (2.8 inch) (from the tip of the lens to the base side of the lens mount)
Mass	Approx. 320 g/0.70 lb	Approx. 210 g/0.46 lb
Operating temperature	−10 °C to 40 °C (14 °F to 104 °F)	0 °C to 40 °C (32 °F to 104 °F)
Dust-proof and splash-proof	Yes	Yes

• LEICA is a registered trademark of Leica Microsystems IR GmbH. ELMARIT is a registered trademark of Leica Camera AG. The LEICA DG lenses are manufactured using measurement instruments and quality assurance systems that have been certified by Leica Camera AG based on the company's quality standards.

4 Specifications

4.1 Camera Body

The following specification is for DC-G9LEB/G9MEB/G9EB.
Some specifications may differ depending on model suffix.

Specifications are subject to change without notice.

Digital Camera Body (DC-G9):

Information for your safety

Power Source:	DC 8.4 V (8.4 V⎓)
Power Consumption:	4.0 W (When recording with Monitor) (When the Interchangeable lens (H-ES12060) is used) 3.8 W (When recording with Monitor) (When the Interchangeable lens (H-FS12060) is used) 3.0 W (When playing back with Monitor) (When the Interchangeable lens (H-ES12060) is used) 2.8 W (When playing back with Monitor) (When the Interchangeable lens (H-FS12060) is used)

Camera effective pixels	20,330,000 pixels	
Image sensor	4/3″ Live MOS sensor, total pixel number 21,770,000 pixels, Primary colour filter	
Digital Zoom	2×/4×	
Extra Tele Conversion	When taking still pictures: Max. 2× (When a picture size of [S] is selected.) When recording motion pictures: 2.7× (FHD)/1.4× (4K)	
Focus mode	AFS/AFF/AFC/MF	
Auto focus mode	Face/Eye Detection/Tracking/225-area-focusing/Custom Multi/1-area-focusing/Pinpoint (Focus area selection is possible by touching or with the joystick)	
Shutter type	Focal-plane shutter	
Burst recording		
Burst speed	Mechanical shutter/ Electronic Front Curtain	12 pictures/second (High speed, AFS/MF), 9 pictures/second (High speed, AFF/AFC), 7 pictures/second (Middle speed), 2 pictures/second (Low speed)
	Electronic shutter	60 pictures/second (Super high speed, AFS/MF), 20 pictures/second (Super high speed, AFF/AFC), 12 pictures/second (High speed, AFS/MF), 9 pictures/second (High speed, AFF/AFC), 7 pictures/second (Middle speed), 2 pictures/second (Low speed)

Number of recordable pictures	Super high speed	When there are RAW files: 50 pictures When there are no RAW files: 50 pictures
	High speed, Middle speed, Low speed	When there are RAW files: 60 or higher pictures When there are no RAW files: 600 or higher pictures ＊ When recording is performed under the test conditions specified by Panasonic
ISO sensitivity (Standard Output Sensitivity)	Still picture: AUTO/ISO100*/200/400/800/1600/3200/6400/12800/25600 Creative Video Mode: AUTO/100*/200/400/800/1600/3200/6400/12800 (1/3 EV step change possible) ＊ Only available when [Extended ISO] is set.	
Minimum Illumination	Approx. 3 lx (when i-Low light is used, the shutter speed is 1/25th of a second) (When the Interchangeable lens (H-ES12060) is used) Approx. 5 lx (when i-Low light is used, the shutter speed is 1/25th of a second) (When the Interchangeable lens (H-FS12060) is used)	
Shutter speed	Still picture: B (Bulb) (Max. approx. 30 minutes), 60 seconds to 1/8000th of a second (Mechanical shutter), B (Bulb) (Max. approx. 30 minutes), 60 seconds to 1/2000th of a second (Electronic Front Curtain), 1 second to 1/32000th of a second (Electronic shutter) Motion picture: 1/25th of a second to 1/16000th of a second	
Metering range	EV 0 to EV 18	
White Balance	AWB/AWBc/Daylight/Cloudy/Shade/Incandescent lights/Flash/White set1, 2, 3, 4/White Balance K set1, 2, 3, 4	
Exposure (AE)	Programme AE/Aperture-priority AE/Shutter-priority AE/Manual exposure	
Exposure Compensation	1/3 EV Step, −5 EV to +5 EV	
Light metering system, Light metering mode	1728-zone multi-pattern sensing system, Multiple/Centre weighted/Spot	
Monitor	3″ TFT LCD (3:2) (Approx. 1,040,000 dots) (field of view ratio about 100%) Touch screen	

Viewfinder	OLED Live Viewfinder (4:3) (Approx. 3,680,000 dots) (field of view ratio about 100%) (Magnification approx. 1.66×, 0.83× (35 mm film camera equivalent), with 50 mm lens at infinity; −1.0 m^{-1}) (with diopter adjustment −4 to +3 diopter)
Flash Mode	AUTO, AUTO/Red-Eye Reduction, Forced ON, Forced ON/ Red-Eye Reduction, Slow Sync., Slow Sync./Red-Eye Reduction, Forced OFF
Flash synchronisation speed	Equal to or smaller than 1/250th of a second
Microphone	Stereo
Speaker	Monaural
Recording media	SD Memory Card/SDHC Memory Card*/SDXC Memory Card* (* Card slot 1/Card slot 2: UHS-I/UHS-II UHS Speed Class 3) Double slot recording function is available.
Picture size	
Still picture	When the aspect ratio setting is [4:3] 4992×3744 pixels (6K photo), 3328×2496 pixels (4K photo), 5184×3888 pixels ([L]), 3712×2784 pixels ([M]), 2624×1968 pixels ([S]), 10368×7776 pixels ([XL])*, 7296×5472 pixels ([LL])* When the aspect ratio setting is [3:2] 5184×3456 pixels (6K photo), 3504×2336 pixels (4K photo), 5184×3456 pixels ([L]), 3712×2480 pixels ([M]), 2624×1752 pixels ([S]), 10368×6912 pixels ([XL])*, 7296×4864 pixels ([LL])* When the aspect ratio setting is [16:9] 3840×2160 pixels (4K photo), 5184×2920 pixels ([L]), 3840×2160 pixels ([M]), 1920×1080 pixels ([S]), 10368×5832 pixels ([XL])*, 7296×4104 pixels ([LL])* When the aspect ratio setting is [1:1] 2880×2880 pixels (4K photo), 3888×3888 pixels ([L]), 2784×2784 pixels ([M]), 1968×1968 pixels ([S]), 7776×7776 pixels ([XL])*, 5472×5472 pixels ([LL])* * When recording in [High Resolution Mode]
Recording quality	
Motion pictures	[Rec Format]: [AVCHD]/[MP4] Refer to P65 of this document for details. Refer to P68 of this document for details about High Speed Video.
Quality	RAW/RAW+ Fine/RAW+ Standard/Fine/Standard

Recording file format		
Still Picture	RAW/JPEG (based on “Design rule for Camera File system”, based on “Exif 2.31” standard)	
6K/4K photo (burst file)	6K photo: MP4 (H.265/HEVC, AAC (2 ch)) 4K photo: MP4 (H.264/MPEG-4 AVC, AAC (2 ch))	
Motion pictures	AVCHD Progressive/AVCHD/MP4	
Audio compression	AVCHD	Dolby Audio™ (2 ch)
	MP4	AAC (2 ch), LPCM* (2 ch, 48 kHz/16 bit) * When selecting [4K/150M/60p]/[4K/150M/50p]
Interface		
[REMOTE]	∅ 2.5 mm jack	
[MIC]	∅ 3.5 mm jack	
Headphone	∅ 3.5 mm jack	
HDMI	HDMI Type A	
USB	Super Speed USB 3.0 GEN1/USB 3.0 Micro-B * Data from the PC can not be written to the camera using the USB connection cable.	
Flash synchro	Available	
Dimensions	Approx. 136.9 mm (W)×97.3 mm (H)×91.6 mm (D) (5.39″ (W)×3.83″ (H)×3.61″ (D)) (excluding the projecting parts)	
Mass	Approx. 658 g/1.45 lb (with one card and the battery) Approx. 586 g/1.30 lb (camera body) Approx. 978 g/2.16 lb (with the Interchangeable lens (H-ES12060), one card and the battery) Approx. 868 g/1.91 lb (with the Interchangeable lens (H-FS12060), one card and the battery)	
Operating temperature	−10 °C* to 40 °C (14 °F* to 104 °F) * The performance of the battery (number of recordable pictures/operating time) may decrease temporarily when using in a temperature between −10 °C and 0 °C (14 °F and 32 °F) (cold places such as ski resorts or places at high altitude).	

Operating humidity	10%RH to 80%RH
Dust-proof and splash-proof	Yes

Wireless transmitter

Wireless LAN	
Compliance standard	IEEE 802.11a/b/g/n/ac (standard wireless LAN protocol)
Frequency range used (central frequency)	2412 MHz to 2472 MHz (1 to 13 ch) 5180 MHz to 5320 MHz (36/40/44/48/52/56/60/64 ch) 5500 MHz to 5700 MHz (100/104/108/112/116/120/124/128/132/136/140 ch)
Encryption method	Wi-Fi compliant WPA™/WPA2™
Access method	Infrastructure mode
Bluetooth function	
Compliance standard	Bluetooth v4.2 (Bluetooth low energy (BLE))
Frequency range used (central frequency)	2402 MHz to 2480 MHz

Battery Charger (Panasonic DMW-BTC13):
Information for your safety

Input:	5.0 V ⎓ 1.8 A
Output:	8.4 V ⎓ 0.85 A
Operating temperature:	0 °C to 40 °C (32 °F to 104 °F)

AC adaptor (Panasonic VSK0815L):
Information for your safety

Input:	110 V – 240 V ~ 50/60 Hz 0.25 A
Output:	5.0 V ⎓ 1.8 A
Operating temperature:	0 °C to 40 °C (32 °F to 104 °F)

Battery Pack (lithium-ion) (Panasonic DMW-BLF19E):
Information for your safety

Voltage/capacity:	7.2 V/1860 mAh

The symbols on this product (including the accessories) represent the following:

~	AC
⎓	DC
⧈	Class II equipment (The construction of the product is double-insulated.)

4.2 Lens

Interchangeable Lens	**H-ES12060 "LEICA DG VARIO-ELMARIT 12–60 mm/F2.8–4.0 ASPH./ POWER O.I.S."**	**H-FS12060 "LUMIX G VARIO 12–60 mm/ F3.5–5.6 ASPH./POWER O.I.S."**
Focal length	f=12 mm to 60 mm (35 mm film camera equivalent: 24 mm to 120 mm)	f=12 mm to 60 mm (35 mm film camera equivalent: 24 mm to 120 mm)
Aperture type	9 diaphragm blades/circular aperture diaphragm	7 diaphragm blades/circular aperture diaphragm
Maximum aperture	F2.8 (Wide) to F4.0 (Tele)	F3.5 (Wide) to F5.6 (Tele)
Minimum aperture value	F22	F22
Lens construction	14 elements in 12 groups (4 aspherical lenses, 2 ED lenses)	11 elements in 9 groups (3 aspherical lenses, 1 ED lens)
Nano surface coating	Yes	None
In focus distance	Wide: 0.2 m (0.66 feet) to ∞ / Tele: 0.24 m (0.79 feet) to ∞ (from the focus distance reference line)	Wide: 0.2 m (0.66 feet) to ∞ / Tele: 0.25 m (0.82 feet) to ∞ (from the focus distance reference line)
Maximum image magnification	0.3× (35 mm film camera equivalent: 0.6×)	0.27× (35 mm film camera equivalent: 0.54×)
Optical Image Stabiliser	Available	Available
O.I.S. switch	Available (Switching ON/OFF)	None (Setting of the [Stabilizer] is done in [Rec] menu.)
[AF/MF] switch	Available (Switching AF/MF)	None
Mount	"Micro Four Thirds Mount"	"Micro Four Thirds Mount"
Angle of view	84° (Wide) to 20° (Tele)	84° (Wide) to 20° (Tele)
Filter diameter	62 mm	58 mm
Max. diameter	Ø68.4 mm (2.7 inch)	Ø66 mm (2.6 inch)
Overall length	Approx. 86 mm (3.4 inch) (from the tip of the lens to the base side of the lens mount)	Approx. 71 mm (2.8 inch) (from the tip of the lens to the base side of the lens mount)
Mass	Approx. 320 g/0.70 lb	Approx. 210 g/0.46 lb
Operating temperature	−10 °C to 40 °C (14 °F to 104 °F)	0 °C to 40 °C (32 °F to 104 °F)
Dust-proof and splash-proof	Yes	Yes

• LEICA is a registered trademark of Leica Microsystems IR GmbH. ELMARIT is a registered trademark of Leica Camera AG. The LEICA DG lenses are manufactured using measurement instruments and quality assurance systems that have been certified by Leica Camera AG based on the company's quality standards.

5 Location of Controls and Components

The following description is for DC-G9LEB/G9MEB/G9EB.
Some descriptions may differ depending on model suffix.
The page number in this chapter does not show the page number of this service manual.

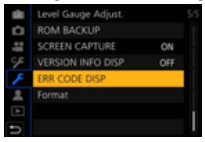
5.1 Camera Body

5.2 Lens

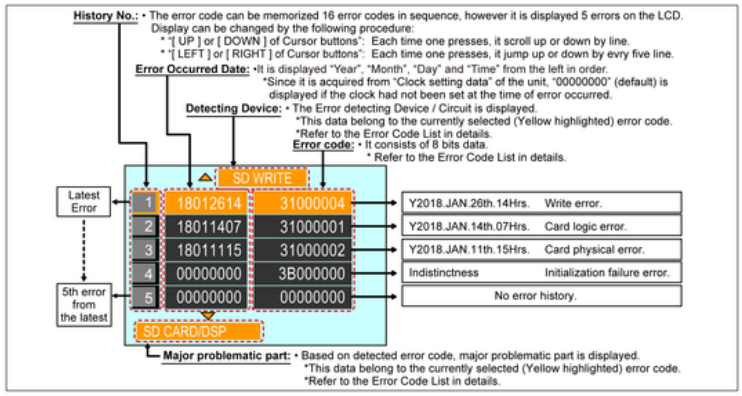
6 Service Mode

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.
   The error code is memorized to Flash-ROM when the unit has just before powered off.
2. **How to Display**
   There are two types of display methods. (refer to the step 2 below)
   - Preparation
     Attach the fully charged Battery, and insert the memory card to slot1.
     Set the mode dial to [P] (Program AE Mode).
   - **Step 1. The temporary cancellation of "Initial Settings":**
     Set the drive mode dial to [Single], while pressing [Playback] button and [AF/AE LOCK] button simultaneously, turn the power on.
   - **Step 2. Execute the error code display mode:**
     [Display method by pressing the buttons simultaneously]
     Press [Playback] button, [MENU/SET] button and "[LEFT] of Cursor buttons" simultaneously with the step 1 condition.
     *The display is changed as shown below when the above buttons are pressed simultaneously.
     Normal display → Error code display → Camera information display → Normal display → .....
     [Display method from the menu display]
     Select [ERR CODE DISP] from the setup menu and then press [MENU/SET] button with the step 1 condition.



*The display is changed as shown below when [MENU/SET] button is pressed.
Menu display → Error code display → Camera information display → Menu display → .....



Example of Error Code Display

   - **Error Code List**
     The error code consists of 8 bit data and it shows the following information.

Attribute	Main item	Sub item	Error code		Contents	Error Indication	
			High 4 bits	Low 4 bits		Detecting device	Problematic Part/Circuit
HARD	Flash	Flash	28*0	0000	Flash charge timeout error (system error indicated)	STRB CHG	STRB PCB/ FPC
				0001	EEPROM of External Flash is damaged.	EST EEP	E.STRB
				0002	ZOOM function of External Flash is damaged.	EST	
				0003	Other function of External Flash is damaged.		
	BIS	In Body Image Stabilization	28*0	0010	BIS HP encorder (X) Low detect error	BIS HPL X	BIS
				0020	BIS HP encorder (X) High detect error	BIS HPH X	
				0030	BIS HP encorder (Y) Low detect error	BIS HPL Y	
				0040	BIS HP encorder (Y) High detect error	BIS HPH Y	
				0050	BIS GYRO (X) error	BIS GYRO X	
				0060	BIS GYRO (Y) error	BIS GYRO Y	
				0070	BIS GYRO communication error	BIS GY DIF	
				0080	BIS GYRO (R) error	BIS GYRO R	
				0090	BIS APU timeout error	BIS APU	
				0100	BIS Position sensor (X1) error	BIS POS X1	
				0200	BIS Position sensor (X2) error	BIS POS X2	
				0300	BIS Position sensor (Y) error	BIS POS Y	
				0400	BIS Drive Voltage (X1) error	BIS DRIVE X1	
				0500	BIS Drive Voltage (X2) error	BIS DRIVE X2	
				0600	BIS Drive Voltage (Y) error	BIS DRIVE Y	
				0700	BIS DIFF Signal (X1) error	BIS DIFF X1	
				0800	BIS DIFF Signal (X2) error	BIS DIFF X2	
				0900	BIS DIFF Signal (Y) error	BIS DIFF Y	
	Flash-ROM	Data Area	2B*0	0001	EEPROM data error (During read out)	FROM RE	FROM
				0002	EEPROM data error (During write in)	FROM WR	
		Program Area		0005	Firmware update error	FIRMUP FAIL	
				0006	Firmware update error (USB Micon)	USBFWUP FAIL	USB
				000C	LENS-FPGA firmware update error	FIRMUP FAIL	FPGA
				000D	IMAGE-FPGA firmware update error	FIRMUP FAIL	FPGA
				000E	TC-FPGA firmware update error	FIRMUP FAIL	FPGA
SOFT	CPU	Reset	30*0	0000	NMI reset	NMI RST	MAIN PCB
	Recording Media	Memory card	31*0	0002	Memory card physical error	SD CARD	SD CARD/DSP
				0004	Memory card writing error	SD WRITE	
	CPU, ASIC Hardware	Halt	38*0	0001	Zoom processing not completed.	ZOOM	ZOOMm/LENSu
	Lens	Communication	3C11 | 3CFA	****	Lens communication error	LENS COMM	SOFT
	Camera	System	3B*0	0000	Flash ROM writing during camera initialization	FROM	SOFT
			3D*0	0000	Assert occurrence	ASSERT	
			3E*0	0001	Exposure charging operation failure	MSHUT	MSHUT
				0002	Failure of the returning operation to the home position		
				0003	Failure of the mecha shutter sensor		
				0004	Exposure charging operation failure 1		
				0005	Exposure charging operation failure 2		
				0006	Exposure charging recovery operation failure		
				0011	Single curtain mechanical shutter PR1 operation failure		
				0012	Single curtain mechanical shutter PR2 operation failure		
				0013	Single curtain mechanical shutter reset operation failure		
				0014	Abnormal current of shutter drive motor		
				0101	Electronic shutter front curtain operation failure		
				0102	Electronic shutter front curtain operation failure		
				0112	Electronic shutter rear curtain operation failure		
				1102	Mechanical shutter front curtain set PI1 detection failure		
				1103	Mechanical shutter front curtain set PI1 detection failure		
				1104	Mechanical shutter front curtain set PI2 detection failure		
				1105	Mechanical shutter front curtain set PI2 detection failure		
				1106	Mechanical shutter front curtain set PI3 detection failure		
				1107	Mechanical shutter front curtain set PI3 detection failure		
				1108	Mechanical shutter front curtain set PI4 detection failure		
				1109	Mechanical shutter front curtain set PI4 detection failure		

Attribute	Main item	Sub item	Error code		Contents	Error Indication	
			High 4 bits	Low 4 bits		Detecting device	Problematic Part/Circuit
SOFT	Camera	System	3E*0	1202	Mechanical shutter exposure control PI1 detection failure	MSHUT	MSHUT
				1203	Mechanical shutter exposure control PI1 detection failure		
				1204	Mechanical shutter exposure control PI2 detection failure		
				1205	Mechanical shutter exposure control PI2 detection failure		
				1206	Mechanical shutter exposure control PI3 detection failure		
				1207	Mechanical shutter exposure control PI3 detection failure		
				1208	Mechanical shutter exposure control PI4 detection failure		
				1209	Mechanical shutter exposure control PI4 detection failure		
				1302	Mechanical shutter release control 1 PI1 detection failure		
				1303	Mechanical shutter release control 1 PI1 detection failure		
				1304	Mechanical shutter release control 1 PI2 detection failure		
				1305	Mechanical shutter release control 1 PI2 detection failure		
				1306	Mechanical shutter release control 1 PI3 detection failure		
				1307	Mechanical shutter release control 1 PI3 detection failure		
				1308	Mechanical shutter release control 1 PI4 detection failure		
				1309	Mechanical shutter release control 1 PI4 detection failure		
				1402	Mechanical shutter release control 2 PI1 detection failure		
				1403	Mechanical shutter release control 2 PI1 detection failure		
				1404	Mechanical shutter release control 2 PI2 detection failure		
				1405	Mechanical shutter release control 2 PI2 detection failure		
				1406	Mechanical shutter release control 2 PI3 detection failure		
				1407	Mechanical shutter release control 2 PI3 detection failure		
				1408	Mechanical shutter release control 2 PI4 detection failure		
				1409	Mechanical shutter release control 2 PI4 detection failure		
				140A	Mechanical shutter release control 2 home position failure		
	Recording	Motion Image Recording	3F*0	0001	File time out error in recording motion image	MOVR T.O.	SOFT
				0002	File data cue send error in recording motion image	MOVR FILE	
Wi-Fi			321*	****	Wi-Fi / Bluetooth error : (Failure to initialize Wi-Fi / Bluetooth module)	WiFi	WiFi
			3A11	0000			

Important Notice about “Error Code List”

About “*” indication:

The third digit from the left is different as follows.

- In case of 0 (example: 2B **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: 2B **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.

○ **Step 3. How to Exit from Error Code Display Mode:**

Simply, turn the power off. (Since Error Code display mode is executed under the condition of temporary cancellation of “Initial Settings”, it wake up with normal condition when turn off the power.)

NOTE:

The error code can not be initialized.

7 Troubleshooting Guide

7.1 Checking Method of Body and Interchangeable Lens

1. **Initial (Default) Status Of The Lens Unit**
   The Lens unit which is supplied as a standard accessory for this camera unit (H-FS12060, H-ES12060) shows the following status when the Lens is detached from the Camera unit.
   NOTE: Although the lens unit is attached it shows the same condition when the Camera turns off.
   H-FS12060 (Included in DC-G9M):
   1. ZOOM RING
      When the Zoom ring is rotated, Zoom condition is changing accordingly. (The 1st lens frame moves.)
      [Focal length : 12mm to 60mm [35mm film camera equivalent: 24mm to 120mm]]
   2. FOCUS RING
      The Focus condition does not changed although Focus ring is rotated. (Free rotation.)

   H-ES12060 (Included in DC-G9L):
   1. ZOOM RING
      When the Zoom ring is rotated, Zoom condition is changing accordingly. (The 1st lens frame moves.)
      [Focal length : 12mm to 60mm [35mm film camera equivalent: 24mm to 120mm]]
   2. FOCUS RING
      The Focus condition does not changed although Focus ring is rotated. (Free rotation.)
2. **Initial Inspection Tips (Before Determine The Unit Being Faulty/Defective):**
   Since this unit is equipped with various functions/settings, some phenomenon/effect might be caused by miss usage of function and/or settings.
   It might be made a miss-judgement caused by miss usage of function & settings although the unit is working properly without fault.
   Therefore, check/confirm the followings before concluding/determine the unit being faulty/defective.
   NOTE: Refer to the Operating Instructions about content of various settings.
   If it is hard to determine whether the resolution is out of specification or not, proceed the “RESOLUTION INSPECTION”,
   before replacing the Lens Main Unit. (The unit might be mishandling, dropping or others.)
3. **Reference information**

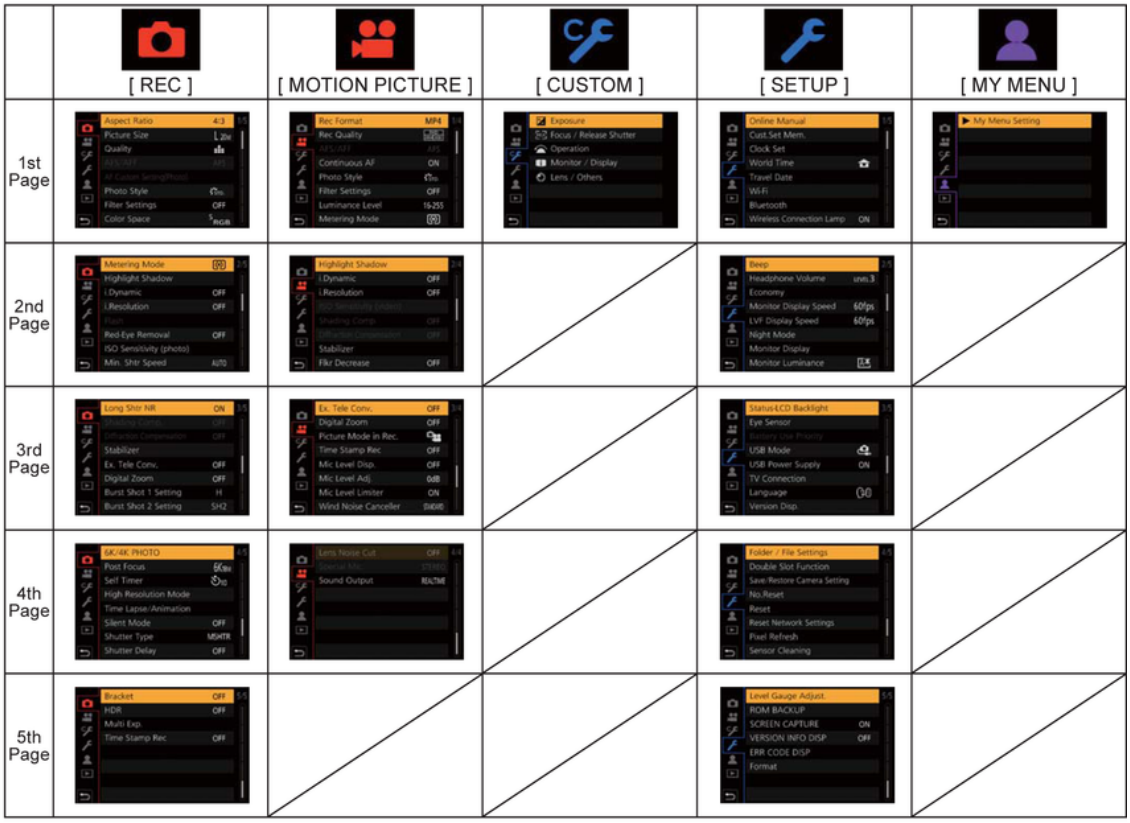
MENU LIST(Quick Reference)

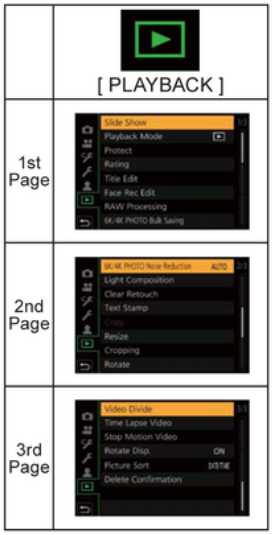
■ Mode Dial

※ iA	Intelligent Auto Mode / Intelligent Auto Plus Mode	M	Creative Video Mode
P	Programme AE Mode	C1	Custom Mode
A	Aperture-Priority AE Mode	C2	Custom Mode
S	Shutter-Priority AE Mode	C3	Custom Mode
M	Manual Exposure Mode		Creative Control Mode

Pressing the [MENU/SET button] displays the basic menu. All basic menu is not displayed in the red letters mode.
Some menus are displayed in service mode only.
In **iA**, displayed menus are different in accordance with selected modes.

■ Basic Menu



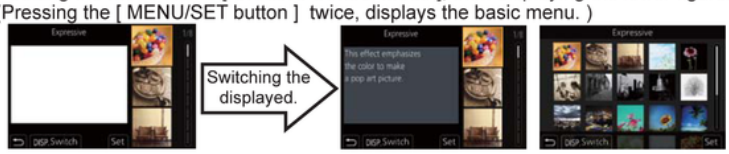


The menu item which can not be chosen is displayed in gray. When the menu page has no items that can be chosen, the page skips display.

REMARKS:

[Creative Control Mode]

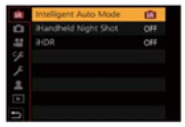
* Setting the mode dial to [Creative Control Mode], then displaying the lower figure.
(Pressing the [MENU/SET button] twice, displays the basic menu.)



■ Other than Basic Menu

[Intelligent Auto Mode]

[Intelligent Auto Mode] and [Intelligent Auto Plus Mode] can be selected from [iA] menu.
In [Intelligent Auto] mode [REC] and [MOTION PICTURE] menu are limited and displayed following items only.
(In [Intelligent Auto Plus] mode, [Basic Menu] is displayed.)

	[iA]	[REC]	[MOTION PICTURE]	[CUSTOM][SETUP][MY MEMU][PLAYBACK]
1st Page				Same as [MENU LIST (Quick Reference)].
2nd Page				

[M Creative Video Mode]

[REC] is not displayed.
[MOTION PICTURE], [CUSTOM], [SETUP], [MY MEMU] and [PLAYBACK] are the same as above-mentioned Menu LIST (Quick Reference.))

7.2 Wi-Fi Circuit (Wi-Fi BT P.C.B.)

7.2.1 How to Remove Wi-Fi Password Protection

To prevent incorrect operation or use of the Wi-Fi function by a third party and to protect saved personal information, this unit protects the Wi-Fi function with a password.
It is unable to service with password locked condition. When accepting for repair, the unit has been set the Wi-Fi password by customer, run the [Reset Network Settings] for removing Wi-Fi password, then check the operation.

[Reset Procedure of Network Settings]

1) Press the [MENU/SET] button, and select the [SETUP] mode by Cursor buttons.
Select [Reset Network Settings] by Cursor buttons, then press the [MENU/SET] button.
2) Select [YES] and press the [MENU/SET] button.
(The [Reset Network Settings] performs not only resetting Wi-Fi Password but also resetting other all Wi-Fi Settings (Excluding [LUNIX CLUB]) and registered device information in [Bluetooth].)

7.2.2 Checking of trouble caused by Wi-Fi Circuit or not

The Wi-Fi Circuit works properly if the wireless access point (broadband router) name (SSID) in use is displayed on a screen of [Manual Connection].

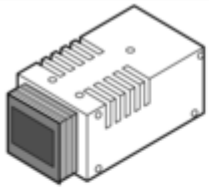
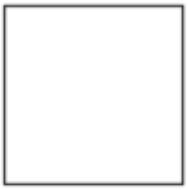
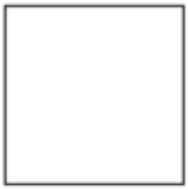
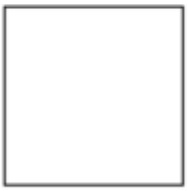
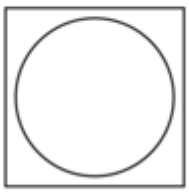
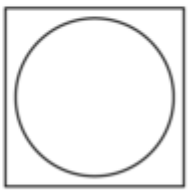
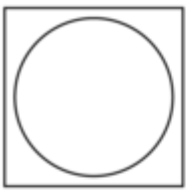
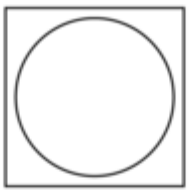
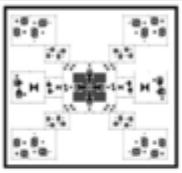
(Primary Confirmation)
Confirm that the wireless access point (broadband router) works properly.

(Procedure)
1) Select [Wi-Fi] in [Setup] menu.
2) Select [Wi-Fi Function] in [Wi-Fi] menu.
3) Select [New Connection] in [Wi-Fi] menu.
4) Select optional function in [Select a function] menu, then select [Via Network] in [Select connection method] menu.
5) Select [From List] in [Select connection method] menu.
6) The Wi-Fi Circuit works properly if the wireless access point (broadband router) name (SSID) in use is displayed.

8 Service Fixture & Tools

8.1 Service Fixture and Tools

The following service fixture and tools are used for checking and servicing this unit.

Light Box (with DC Cable) **RFKZ0523**	ND Filter (ND 0.9) **VFK1164ND09**	ND Filter (ND 0.3) **RFKZ0513**
 * VFK1164TDVLB can be used.		
ND Filter (ND 0.6) **VFK1164ND06**	CC Filter (CC-C7.5) **RFKZ0511**	CC Filter (CC-Y10) **RFKZ0512**
		
LB Filter (LBB2) **RFKZ0520**	LB Filter (LBB8) **RFKZ0521**	Gray Card **RFKZ0506**
		
Resolution Chart **RFKZ0510**	Optical Axis Adjustment Chart **RFKZ0570**	Shutter Adjustment Collimator **RFKZ0630**
 * Supplied as divided chart parts. (Assemble it before use.)		
Diffuser **RFKZ0591**	Silicon Chips **RFKZ0478**	Camera Stand **RFKZ0333J**
	 * For exchange the packing.	

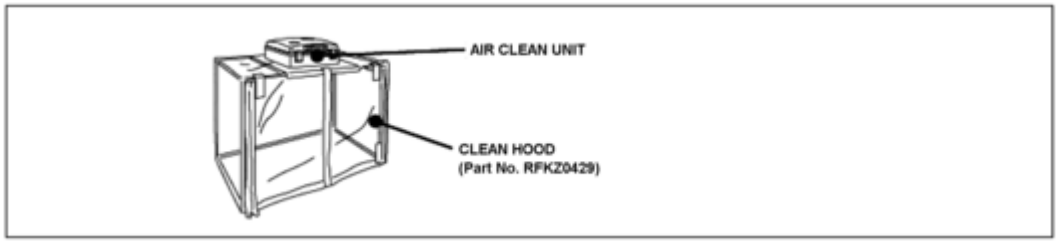
Driver VFK1390	Torque Driver RFKZ0456	Lens Cleaning Kit (BK) VFK1900BK
	 * Spec. : 2-30N·cm (Equiv.0.2-3kgf/cm)	 * Only supplied 10 set/box.
Camera body : DMC-G80/G81/G85 or DMC-GX80/GX85 or DC-GH5	Lens : H-X015 and H-FS014045 (conventional)	Lens : H-HS030 (conventional)
Correspond by the marketed commodity. (It does not supply as service fixture and tools.)	 Correspond by the marketed commodity. (It does not supply as service fixture and tools.)	 Correspond by the marketed commodity. (It does not supply as service fixture and tools.)

8.2 Clean Box

- The repair quality is considered, and it is recommended working in the environment of specified clean level less than class 10,000 (Federal Standard 209D).

[NOTE]

- Work in the environment of specified clean level less than class 10,000 (Federal Standard 209D) when inside cleaning of a lens.
  Please refer to the following service manuals.
- H-FS12060E/GK/PP: Order No.DSC1604008CE
- H-ES12060PP/E/GK: Order No.DSC1702007CE



8.3 When Replacing the Main P.C.B.

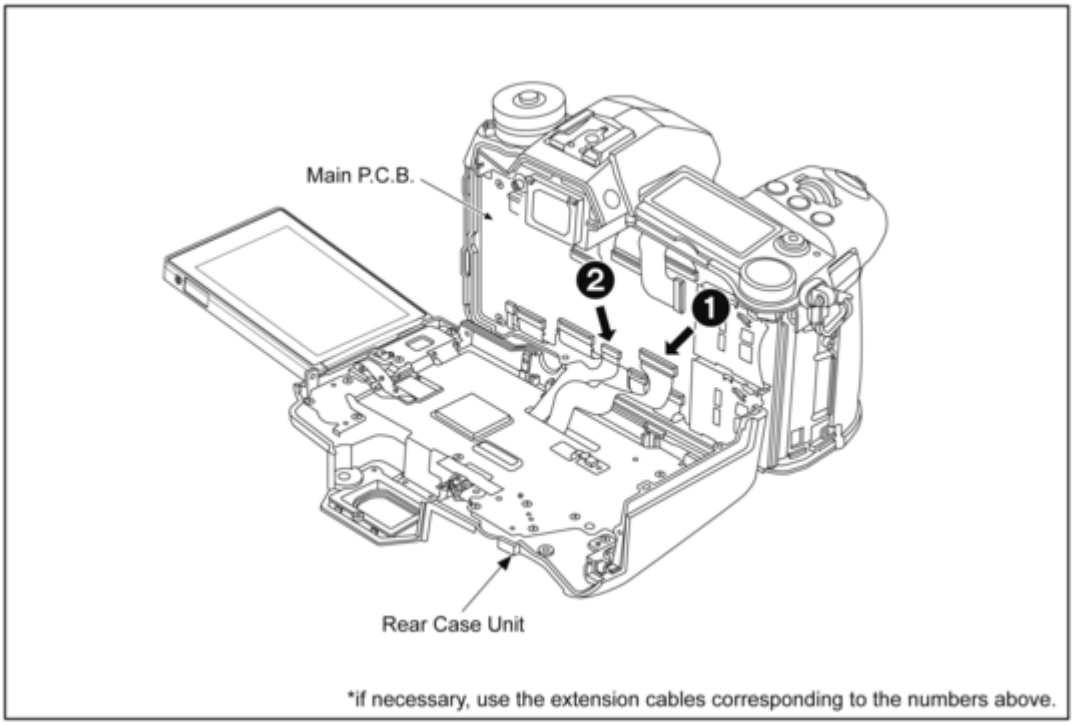
After replacing the Main P.C.B., be sure to achieve adjustment.
Refer to the adjustment instruction in the adjustment software for details.

8.4 Service Position (When checking the each P.C.B.)

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	From
1	RFKZ0477	FP4001(MAIN P.C.B.)←→LCD UNIT	45pin / 0.3 FFC
2	RFKZ0626	FP6009(MAIN P.C.B.)←→REAR PLATE UNIT(REAR OPERATION FPC)	21pin / 0.3 FFC

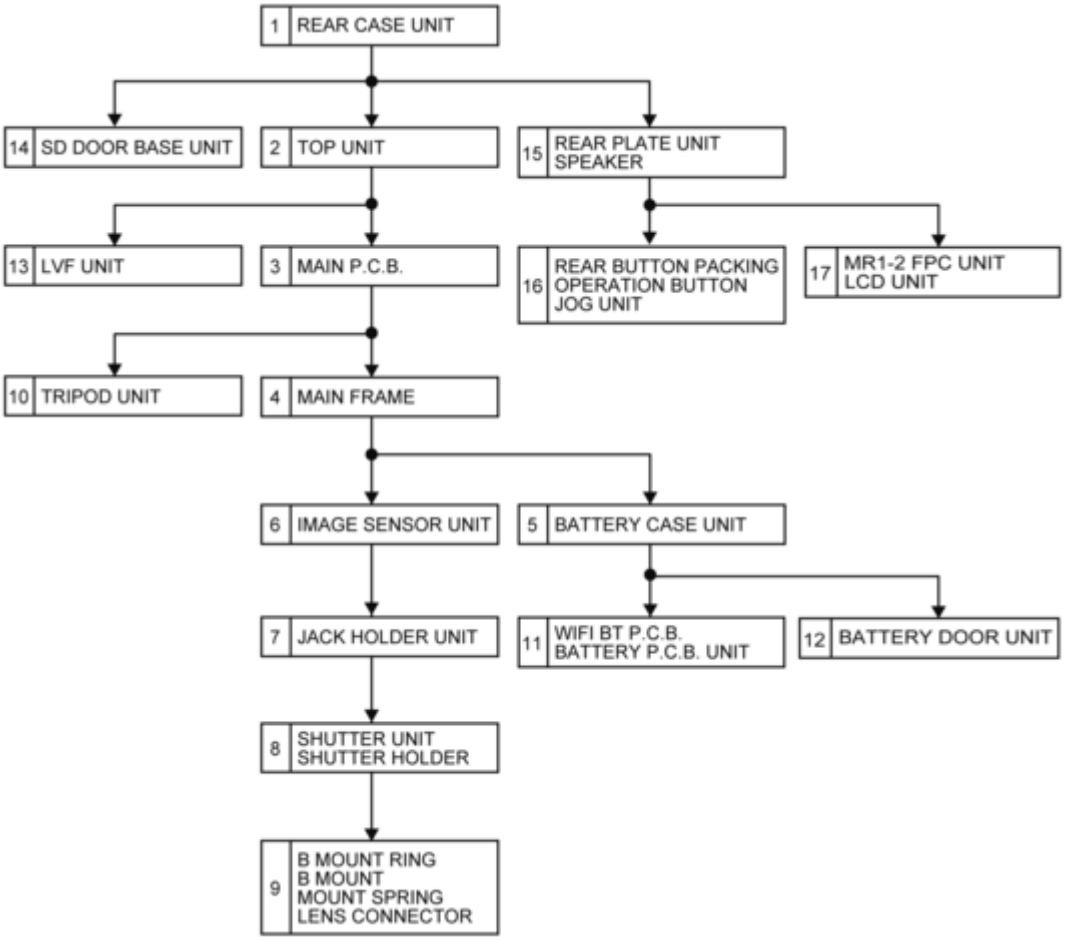

Main P.C.B.
2
1
Rear Case Unit
*if necessary, use the extension cables corresponding to the numbers above.

9 Disassembly and Assembly Instructions

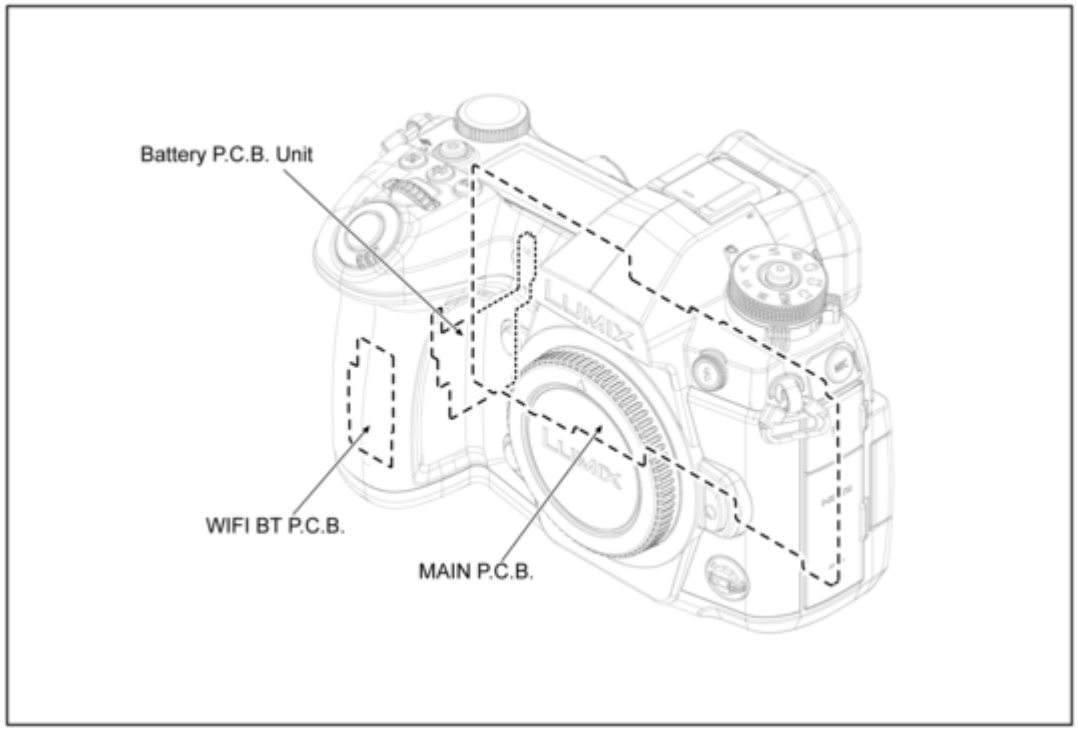
9.1 Camera Body Part

9.1.1 Disassembly Flow Chart

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



9.1.2 P.C.B. Location



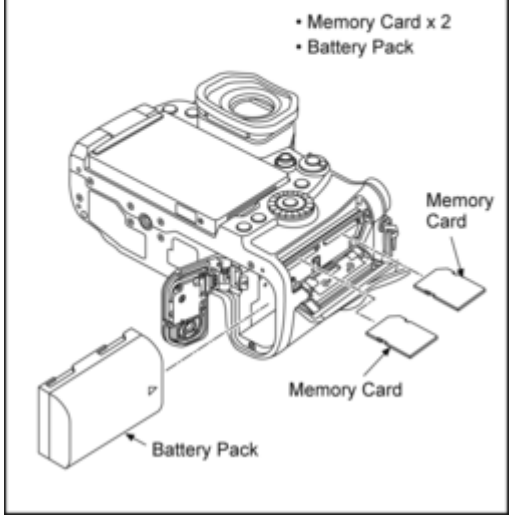
9.1.3 Disassembly Procedure

No.	Item	Fig.	Removal
1	Rear Case Unit	(Fig.D1)	Screw (A) x 3
			Screw (A') x 1
		(Fig.D2)	Front Grip L Unit
			Screw (B) x 1
			Screw (C) x 1
		(Fig.D3)	Rear Grip Unit
			Screw (D) x 1
		(Fig.D4)	Screw (E) x 2
			Eye Cup
			Screw (F) x 2
			Screw (G) x 1
			LVF DPT Knob
		(Fig.D5)	FP4001 (Flex)
			FP6009 (Flex)
			Rear Case Unit
2	Top Unit	(Fig.D8)	FP4002 (Flex)
			FP6001 (Flex)
			FP6002 (Flex)
			FP6004 (Flex)
			P6003 (Connector)
		(Fig.D9)	Front Grip R Unit
			Screw (H) x 2
			Screw (I) x 1
		(Fig.D10)	Screw (J) x 1
			Top Unit
3	Main P.C.B.	(Fig.D12)	FP3501 (Flex)
			FP3502 (Flex)
			FP3561 (Flex)
			FP3563 (Flex)
			FP6005 (Flex)
			FP6006 (Flex)
			FP6008 (Flex)
			Screw (K) x 3

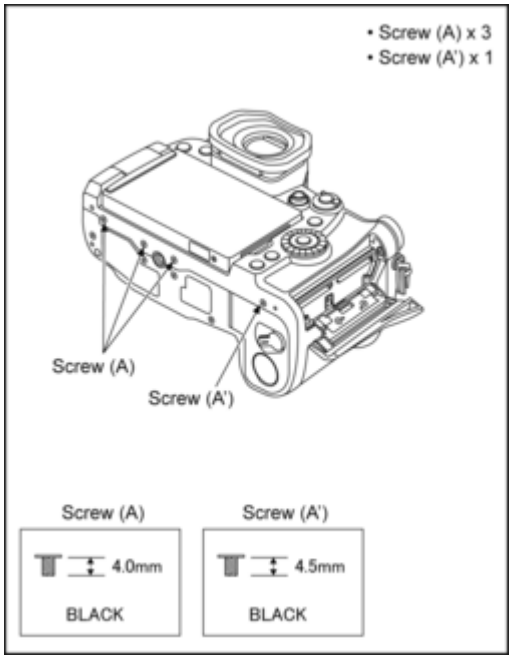
			Screw (L) x 1
			Convex x 2
			Main P.C.B.
		(Fig.D13)	Pasting position standard
			Heat Radi Pad Main 2
4	Main Frame	(Fig.D14)	Screw (M) x 4
			Screw (N) x 1
			Convex x 3
			Main Frame
			Pasting position srandard
			Heat Radi Pad Main 1
5	Battery Case Unit	(Fig.D15)	Screw (O) x 2
			Screw (P) x 1
			FP1982 (Flex)
			Convex x 2
			Battery Case Unit
6	Image Sensor Unit	(Fig.D16)	Screw (Q) x 3
			Image Sensor Unit
			Adjust Spring x 3
7	Jack Holder Unit	(Fig.D18)	Screw (R) x 1
			Screw (S) x 1
			Jack Holder Unit
8	Shutter Unit Shutter Holder	(Fig.D19)	Screw (T) x 3
			Screw (U) x 2
			Shutter Unit
			Shutter Holder
9	B Mount Ring B Mount Mount Spring Lens Connector	(Fig.D20)	Screw (V) x 1
			Screw (W) x 1
			Screw (X) x 2
			Screw (Y) x 2
			B Mount Ring
			B Mount
			Mount Spring
			Lens Connector
10	Tripod Unit	(Fig.D21)	Screw (Z) x 3
			Tripod Unit
11	WIFI BT P.C.B. Battery P.C.B. Unit	(Fig.D22)	LVF Cover Sheet
			FP1981 (Flex)
			Battery FPC
			FP8501 (Flex)
			WIFI FPC
			Screw (a) x 1
			WIFI BT P.C.B.
			Locking Tab x 2
			Contact Cover
			Pasting position srandard
		(Fig.D23)	Screw (b) x 1
			Screw (c) x 1
			Locking Tab x 1
			Battery P.C.B. Unit
12	Battery Door Unit	(Fig.D24)	Battery Case WP Poron
		(Fig.D25)	Battery Door Shaft
			Battery Door Spring
			Battery Door Unit
13	LVF Unit	(Fig.D26)	Screw (d) x 2
			LVF Unit
14	SD Door Base Unit	(Fig.D27)	Screw (e) x 2
			Convex x 2
			Screw (f) x 1

			SD Door Base Unit
15	Rear Plate Unit Speaker	(Fig.D28)	Sheet
			Solder (2 points)
			Screw (g) x 2
			Hinge Arm Cover Up
			Hinge Arm Cover Low
		(Fig.D29)	Screw (h) x 8
			Screw (i) x 1
			FP7441 (Flex)
			Convex x 2
			Thermal Sheet
			Rear Plate Unit
			Joy Stick Knob
			Joy Stick Rubber
			Speaker
			Pasting position standard
		(Fig.D30)	"Installing and Pasting Position Standard"
16	Rear Button Packing Operation Button JOG Unit	(Fig.D31)	Rear Button Packing
			AE Button
			Menu Button
			DISP Button
			LCD Lock Holder
			LCD Lock Knob
			LCD Lock Spring
			JOG Unit
17	MR1-2 FPC Unit LCD Unit	(Fig.D32)	Sheet
			Solder (6 points)
			Convex x 9
			MR1-2 FPC Unit
			Hinge Cushion 4
			Hinge Fix Cover
			Play Button Packing
			Play Button
			LVF Button
		(Fig.D33)	Screw (j) x 2
			LCD Unit

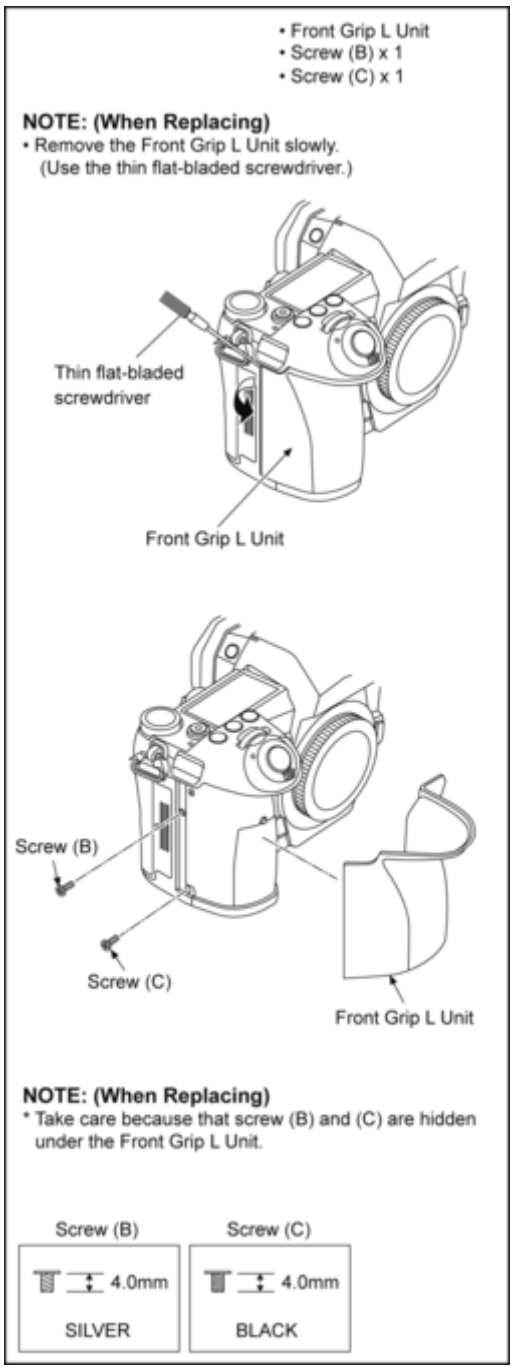
NOTE:
- When servicing and reassembling, remove the memory card and battery pack from the unit.
- Install the body cap to prevent garbage and dust except when it is necessary.
- Do not reuse the screws tightened to metal materials. Use new screws.



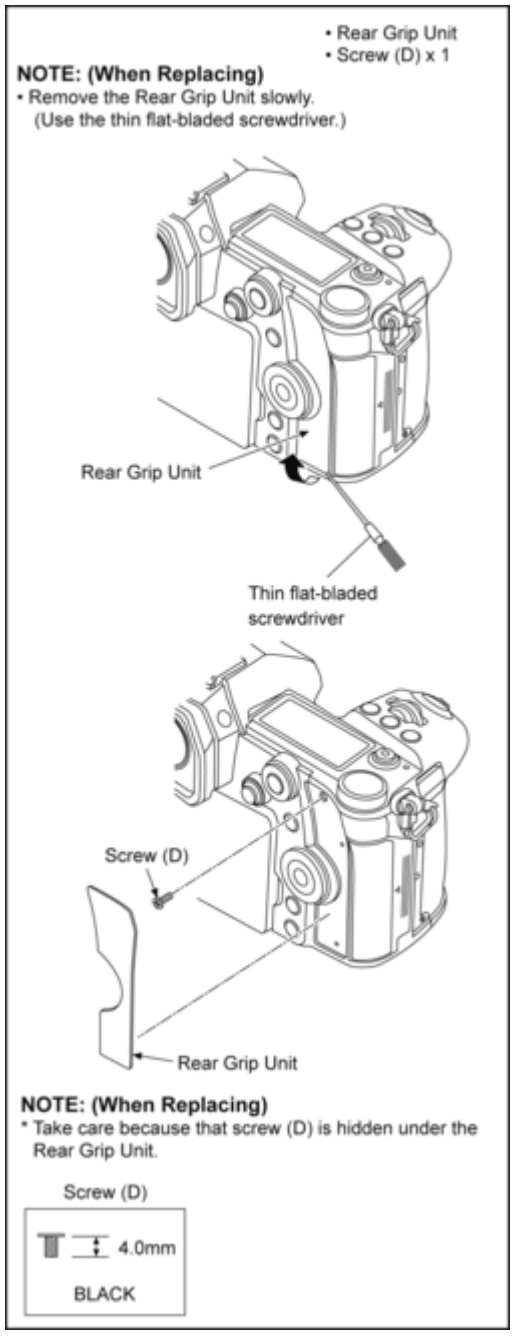
9.1.3.1 Removal of the Rear Case Unit


• Screw (A) x 3
• Screw (A') x 1
Screw (A)
Screw (A')
Screw (A)
Screw (A')
4.0mm
BLACK
4.5mm
BLACK

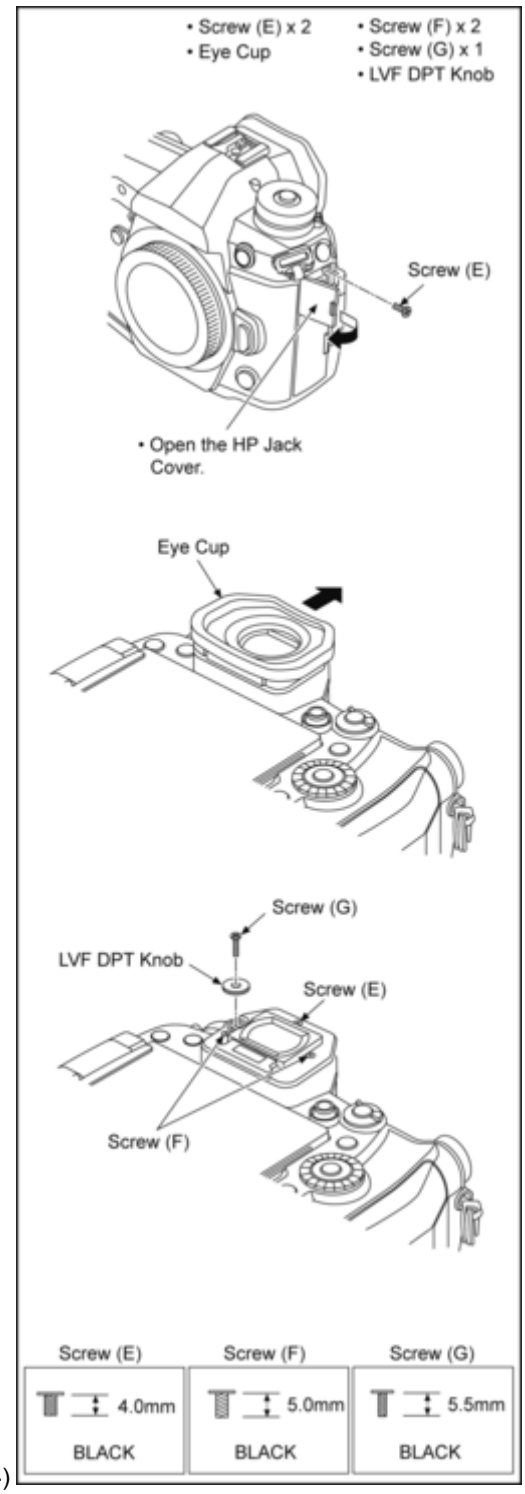
(Fig.D1)


• Front Grip L Unit
• Screw (B) x 1
• Screw (C) x 1
NOTE: (When Replacing)
• Remove the Front Grip L Unit slowly.
(Use the thin flat-bladed screwdriver.)
Thin flat-bladed screwdriver
Front Grip L Unit
Screw (B)
Screw (C)
Front Grip L Unit
NOTE: (When Replacing)
* Take care because that screw (B) and (C) are hidden under the Front Grip L Unit.
Screw (B)
Screw (C)
4.0mm
SILVER
4.0mm
BLACK

(Fig.D2)

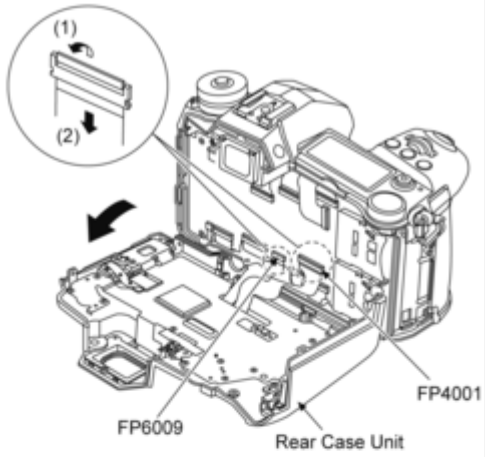

• Rear Grip Unit
• Screw (D) x 1
NOTE: (When Replacing)
• Remove the Rear Grip Unit slowly.
(Use the thin flat-bladed screwdriver.)
Rear Grip Unit
Thin flat-bladed screwdriver
Screw (D)
Rear Grip Unit
NOTE: (When Replacing)
* Take care because that screw (D) is hidden under the Rear Grip Unit.
Screw (D)
4.0mm
BLACK

(Fig.D3)


• Screw (E) x 2
• Eye Cup
• Screw (F) x 2
• Screw (G) x 1
• LVF DPT Knob
Screw (E)
• Open the HP Jack Cover.
Eye Cup
Screw (G)
LVF DPT Knob
Screw (E)
Screw (F)
Screw (E)
4.0mm
BLACK
Screw (F)
5.0mm
BLACK
Screw (G)
5.5mm
BLACK

(Fig.D4)

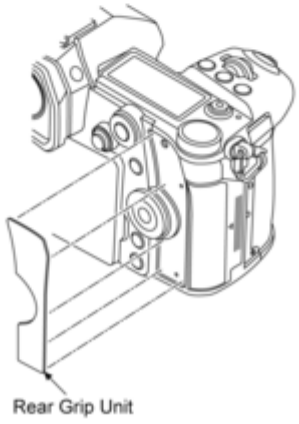
• FP4001 (Flex)
• FP6009 (Flex)



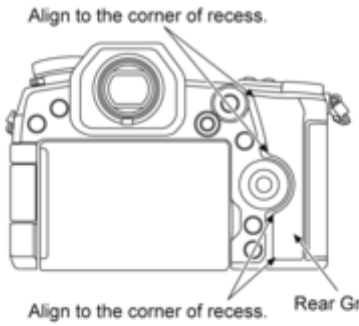
NOTE: (When Replacing)
- When removing the flex, pull up the locking tab in direction of the arrow (1), and then remove the flex in direction of the arrow (2).
- Do not bend the flex excessively and take care not to damage the flex.

NOTE: (When Installing)
- Take care that fibers and dust do not adhere to the surface of sealing and packing.

NOTE: (When Assembling the Rear Grip Unit)
- Replace a new Rear Grip Unit when adhesive force is reduced.

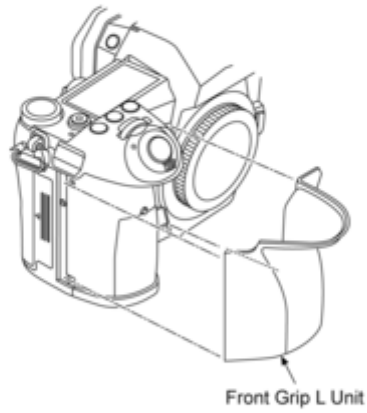


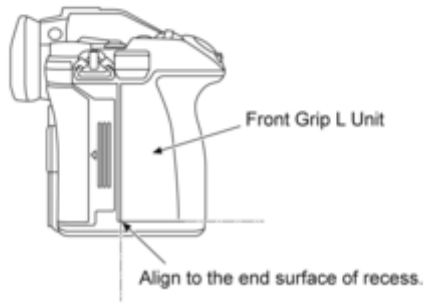
(Fig.D5)



NOTE: (When Installing)
- Install the Rear Grip Unit properly without deviation.

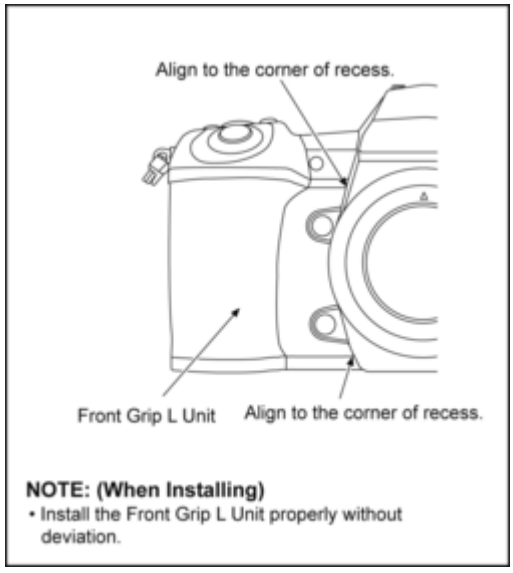
NOTE: (When Assembling the Front Grip L Unit)
- Replace a new Front Grip L Unit when adhesive force is reduced.





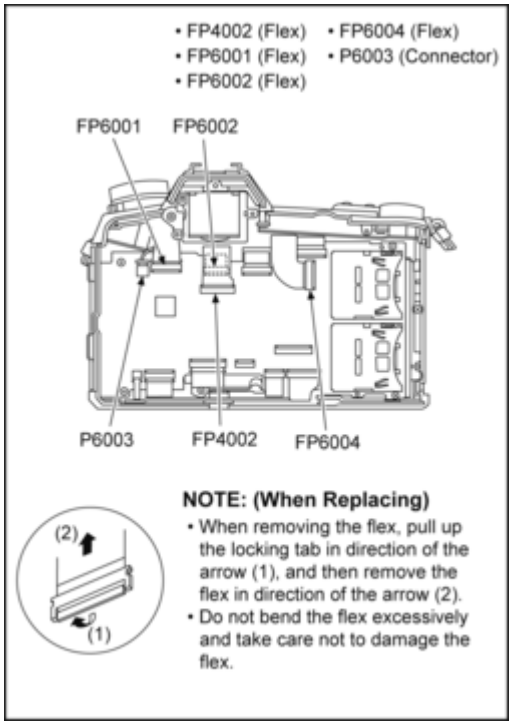
NOTE: (When Installing)
- Install the Front Grip L Unit properly without deviation.

(Fig.D6)

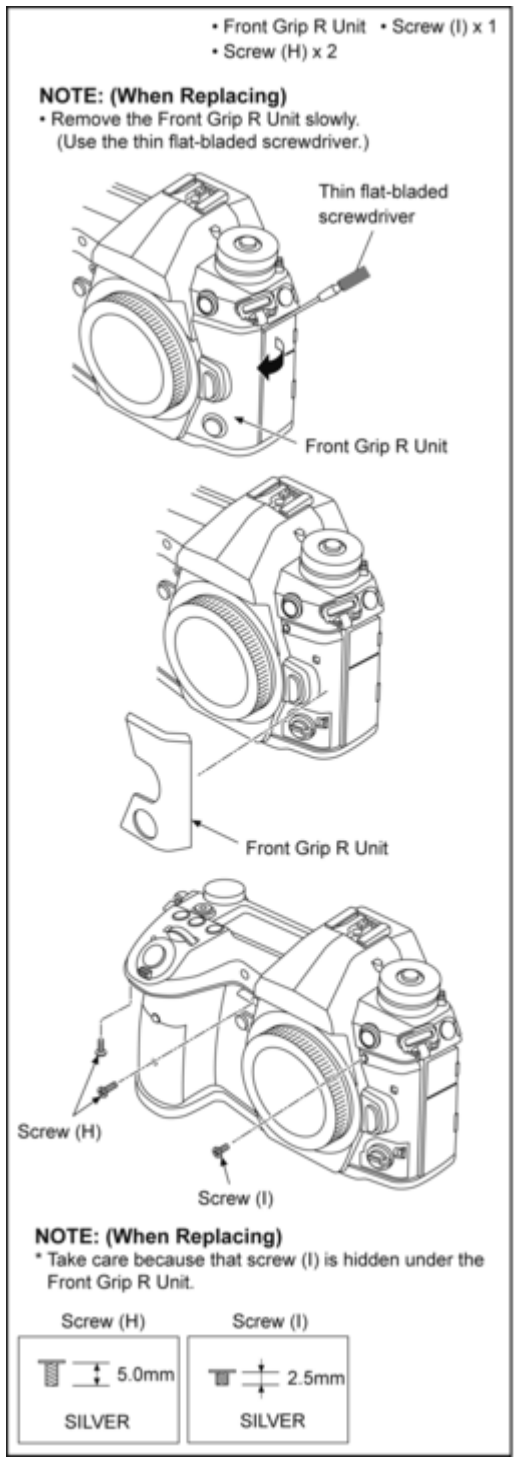


(Fig.D7)

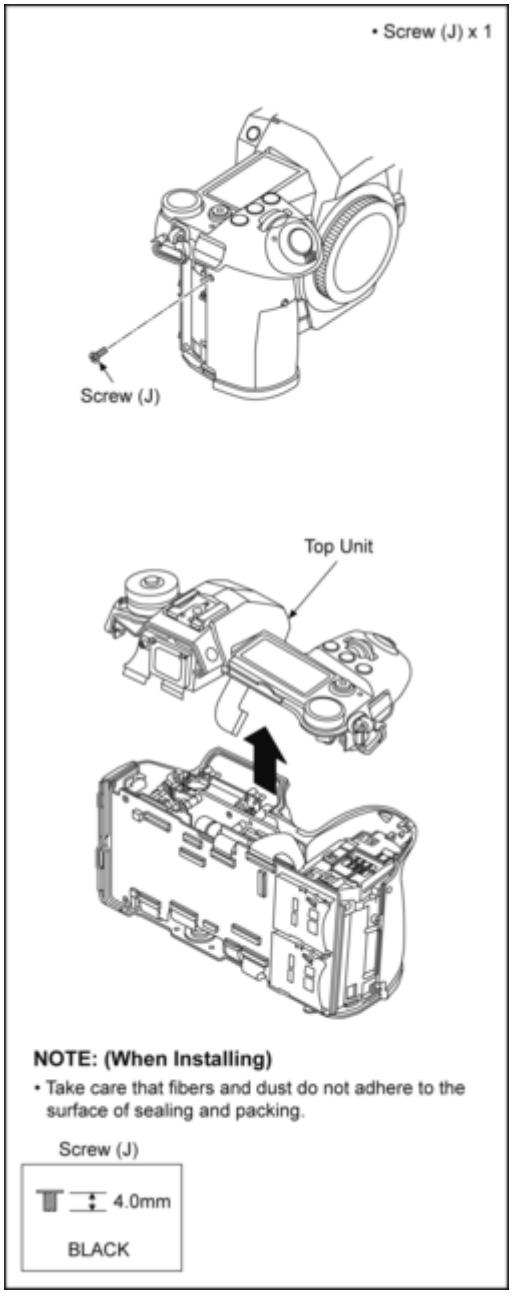
9.1.3.2 Removal of the Top Unit


• FP4002 (Flex)
• FP6004 (Flex)
• FP6001 (Flex)
• P6003 (Connector)
• FP6002 (Flex)
FP6001
FP6002
P6003
FP4002
FP6004
(2)
(1)
NOTE: (When Replacing)
• When removing the flex, pull up the locking tab in direction of the arrow (1), and then remove the flex in direction of the arrow (2).
• Do not bend the flex excessively and take care not to damage the flex.

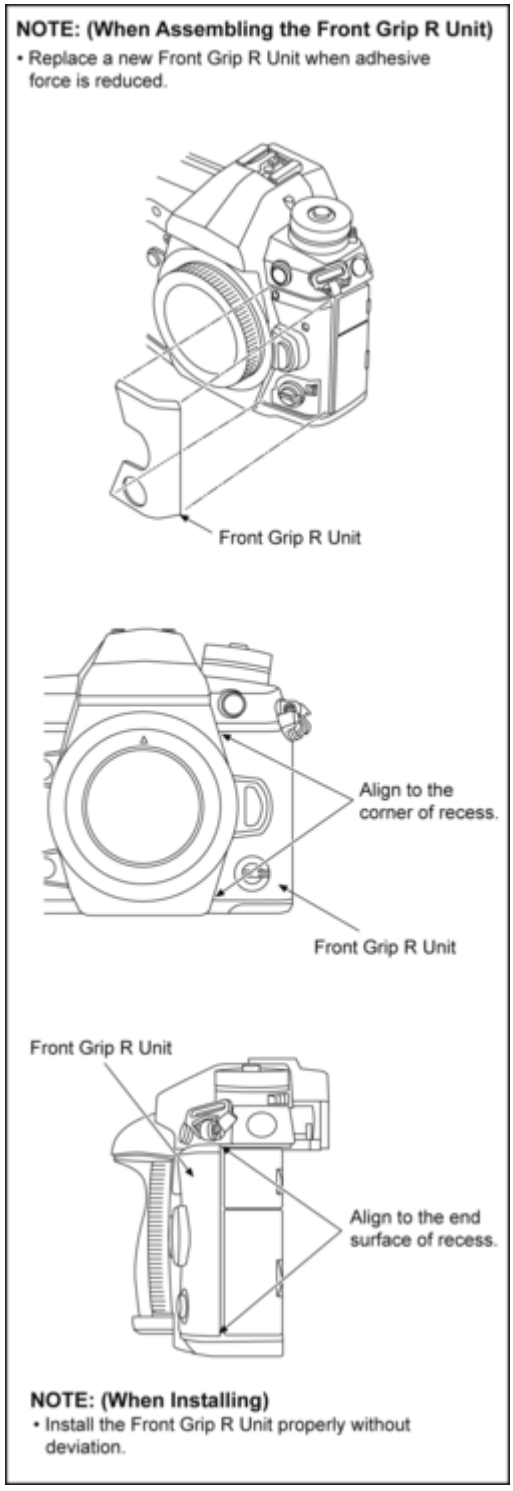
(Fig.D8)


• Front Grip R Unit
• Screw (I) x 1
• Screw (H) x 2
NOTE: (When Replacing)
• Remove the Front Grip R Unit slowly.
(Use the thin flat-bladed screwdriver.)
Thin flat-bladed screwdriver
Front Grip R Unit
Front Grip R Unit
Screw (H)
Screw (I)
NOTE: (When Replacing)
* Take care because that screw (I) is hidden under the Front Grip R Unit.
Screw (H)
Screw (I)
5.0mm
2.5mm
SILVER
SILVER

(Fig.D9)

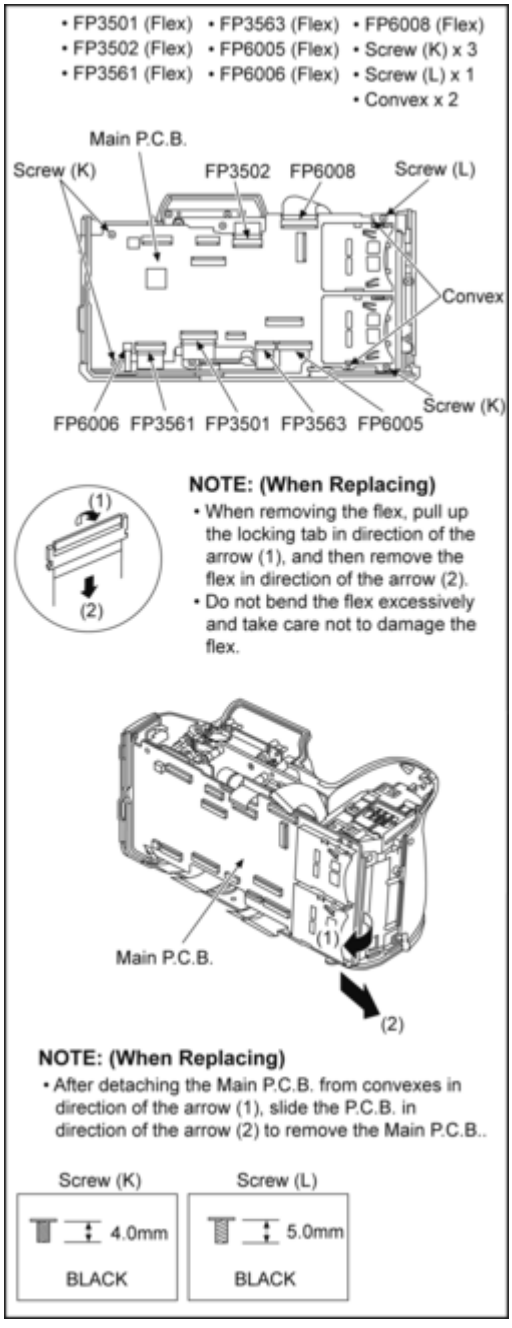


(Fig.D10)

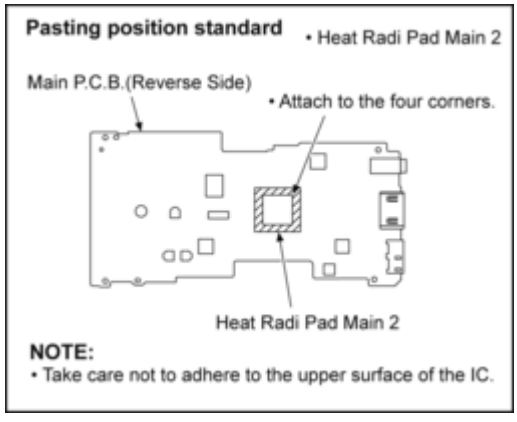


(Fig.D11)

9.1.3.3 Removal of the Main P.C.B.

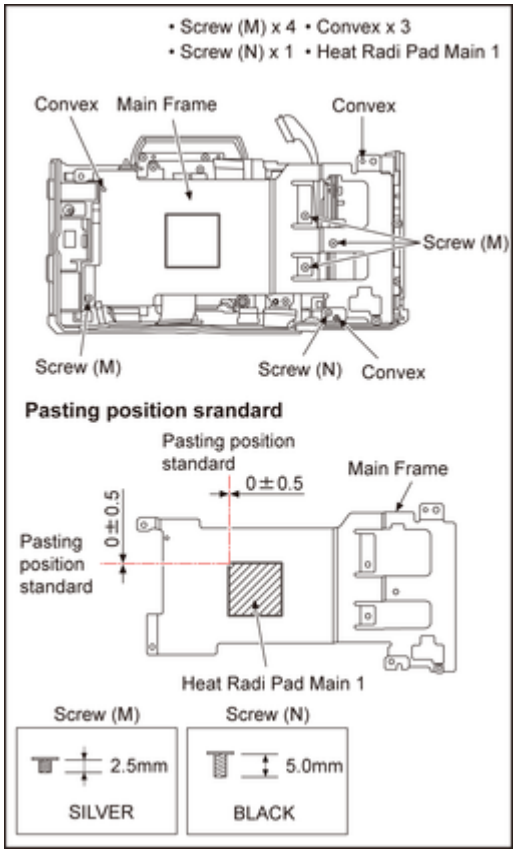


(Fig.D12)



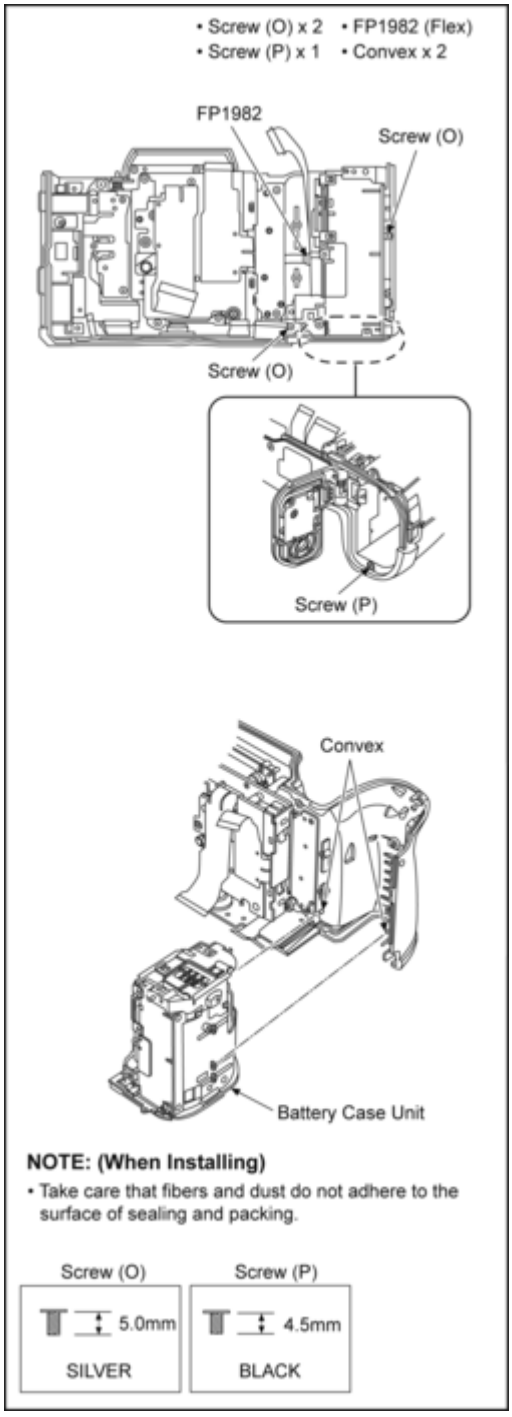
(Fig.D13)

9.1.3.4 Removal of the Main Frame



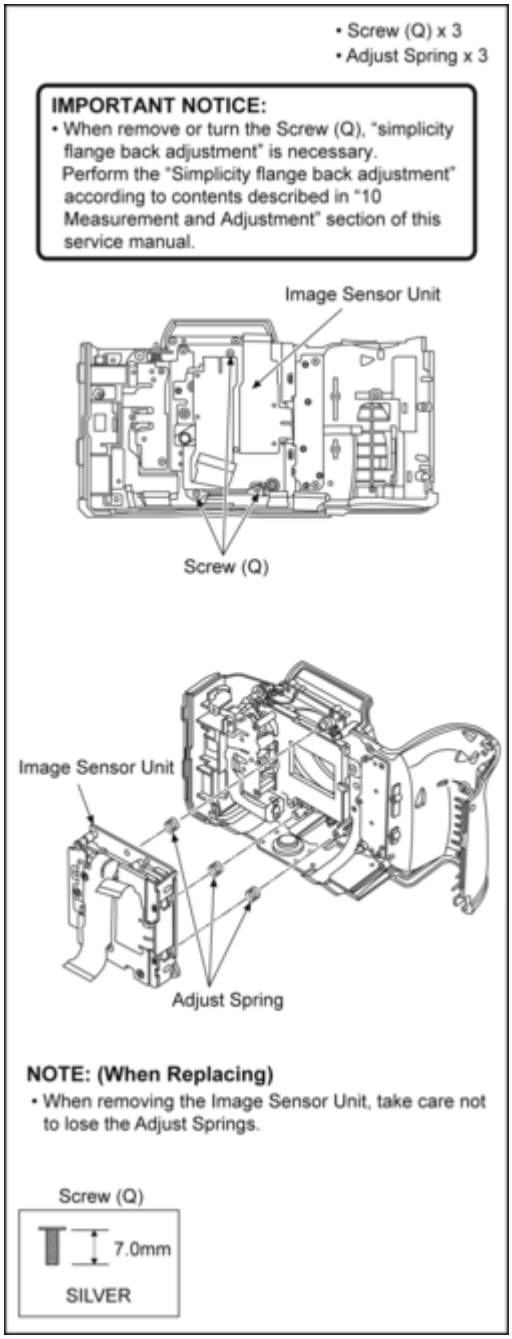
(Fig.D14)

9.1.3.5 Removal of the Battery Case Unit

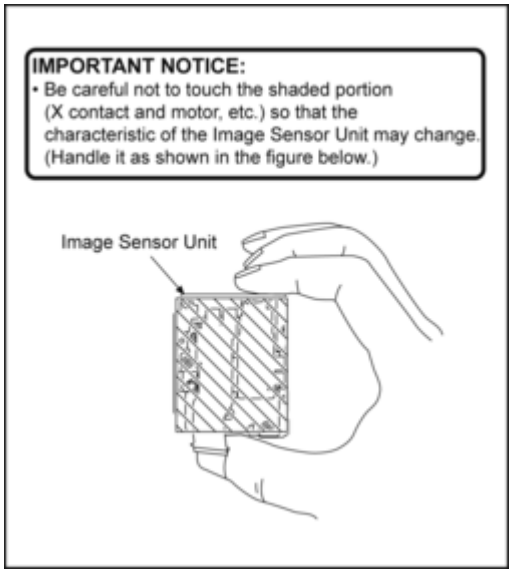


(Fig.D15)

9.1.3.6 Removal of the Image Sensor Unit

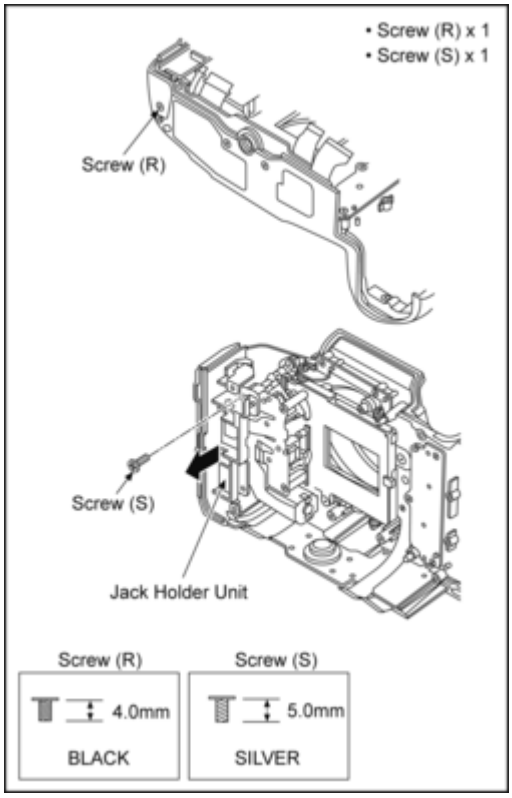


(Fig.D16)



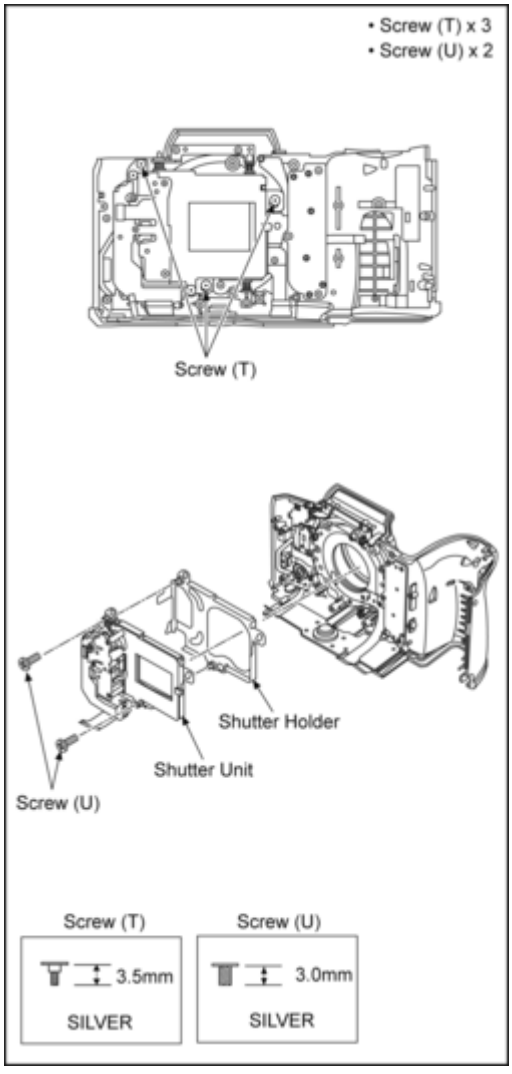
(Fig.D17)

9.1.3.7 Removal of the Jack Holder Unit



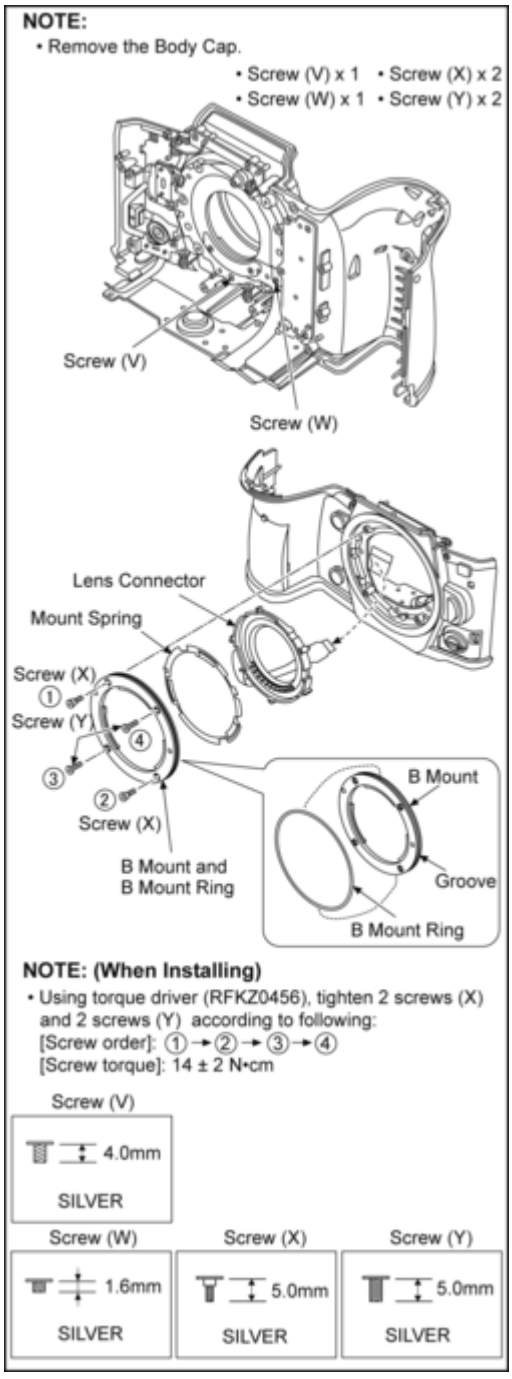
(Fig.D18)

9.1.3.8 Removal of the Shutter Unit and Shutter Holder



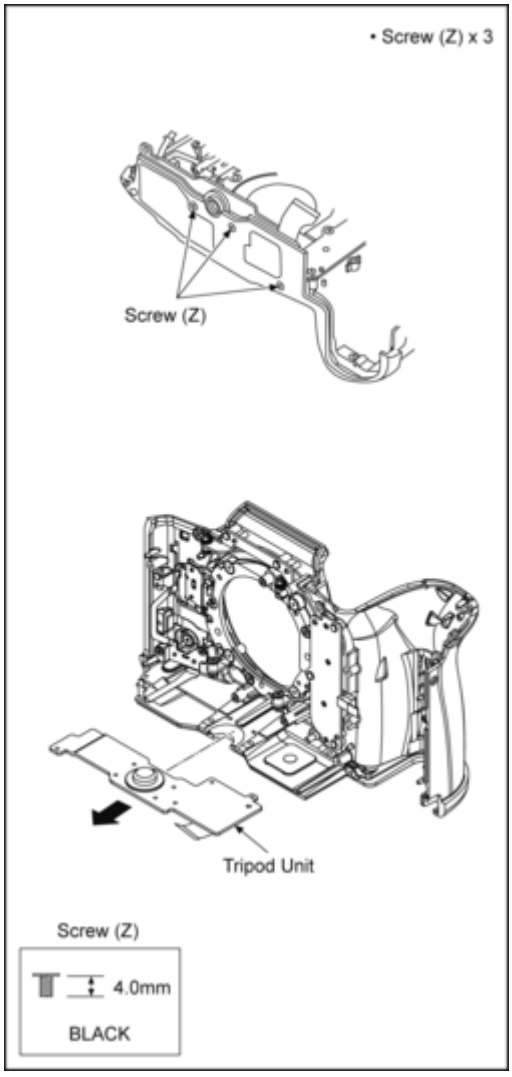
(Fig.D19)

9.1.3.9 Removal of the B Mount Ring and B Mount and Mount Spring and Lens Connector



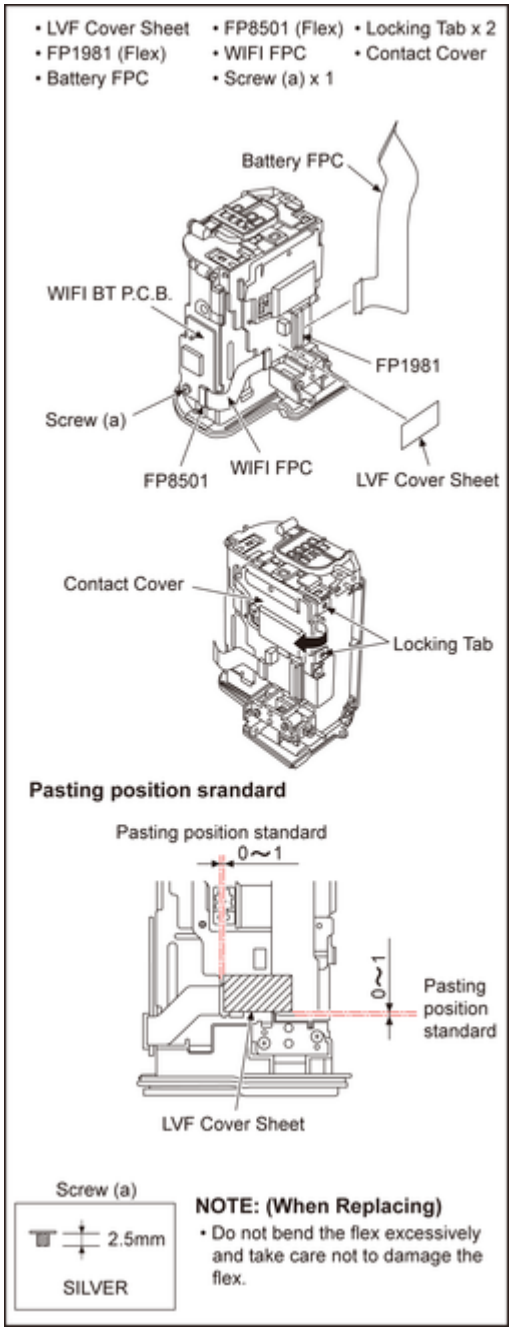
(Fig.D20)

9.1.3.10 Removal of the Tripod Unit

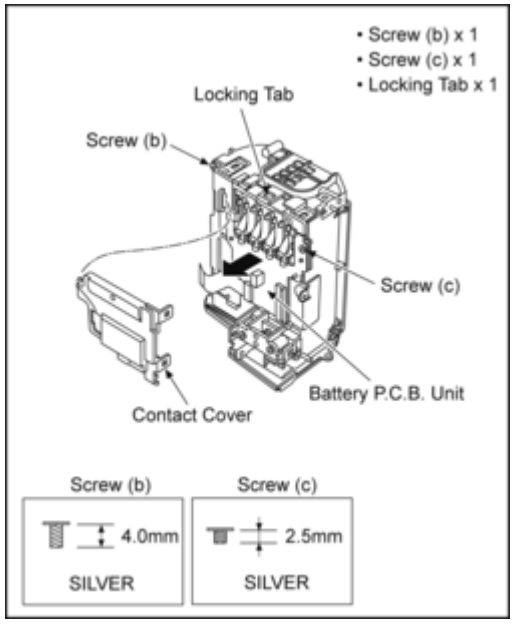


(Fig.D21)

9.1.3.11 Removal of the WIFI BT P.C.B. and Battery P.C.B. Unit

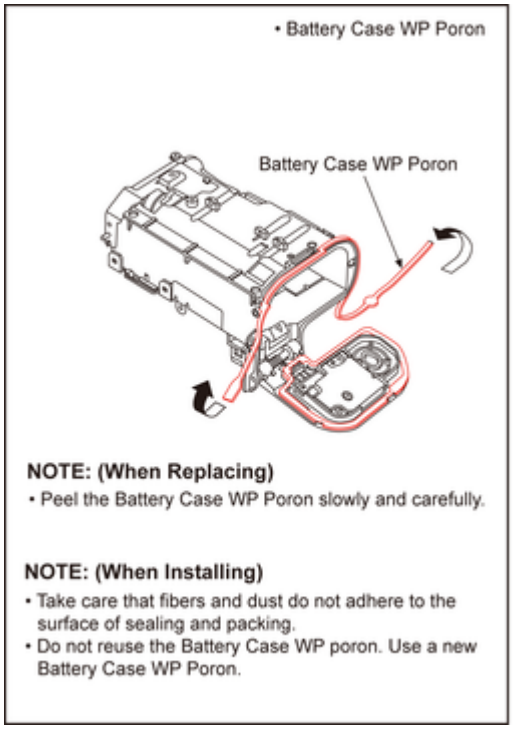


(Fig.D22)

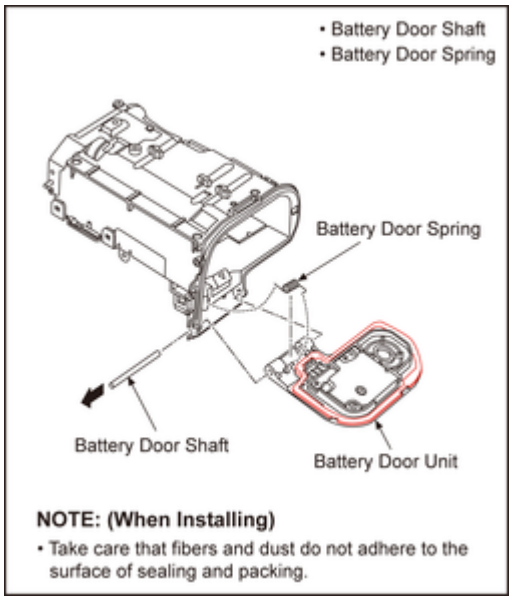


(Fig.D23)

9.1.3.12 Removal of the Battery Door Unit

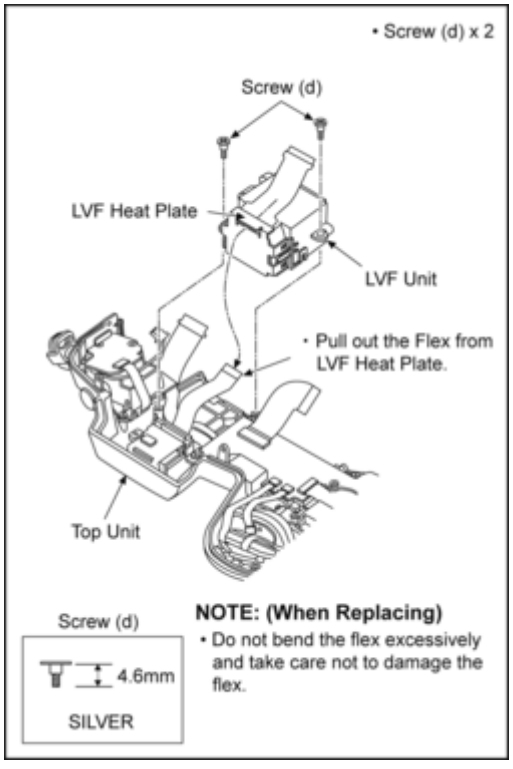


(Fig.D24)



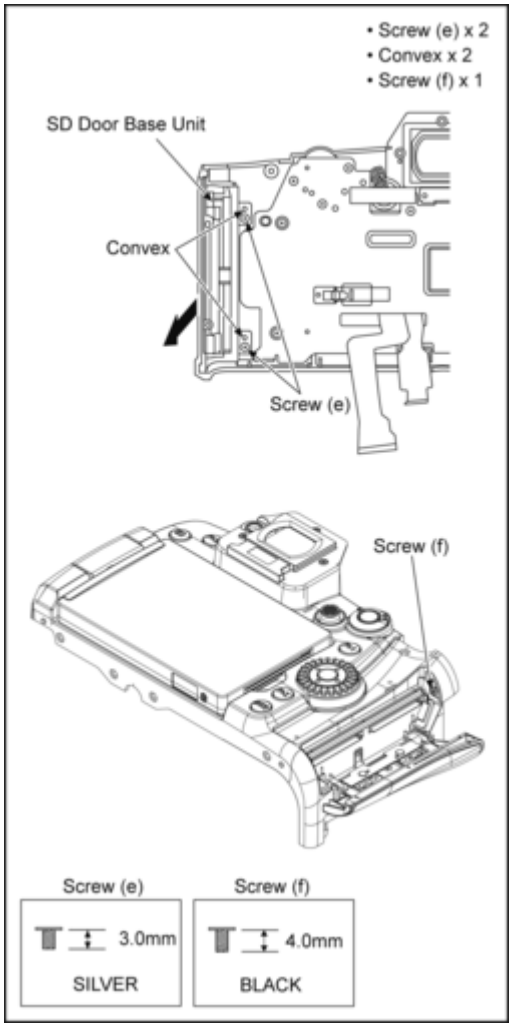
(Fig.D25)

9.1.3.13 Removal of the LVF Unit



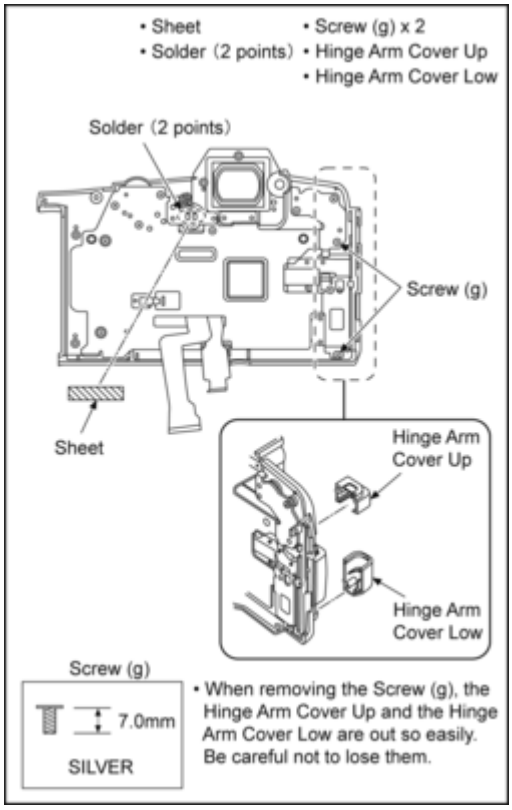
(Fig.D26)

9.1.3.14 Removal of the SD Door Base Unit

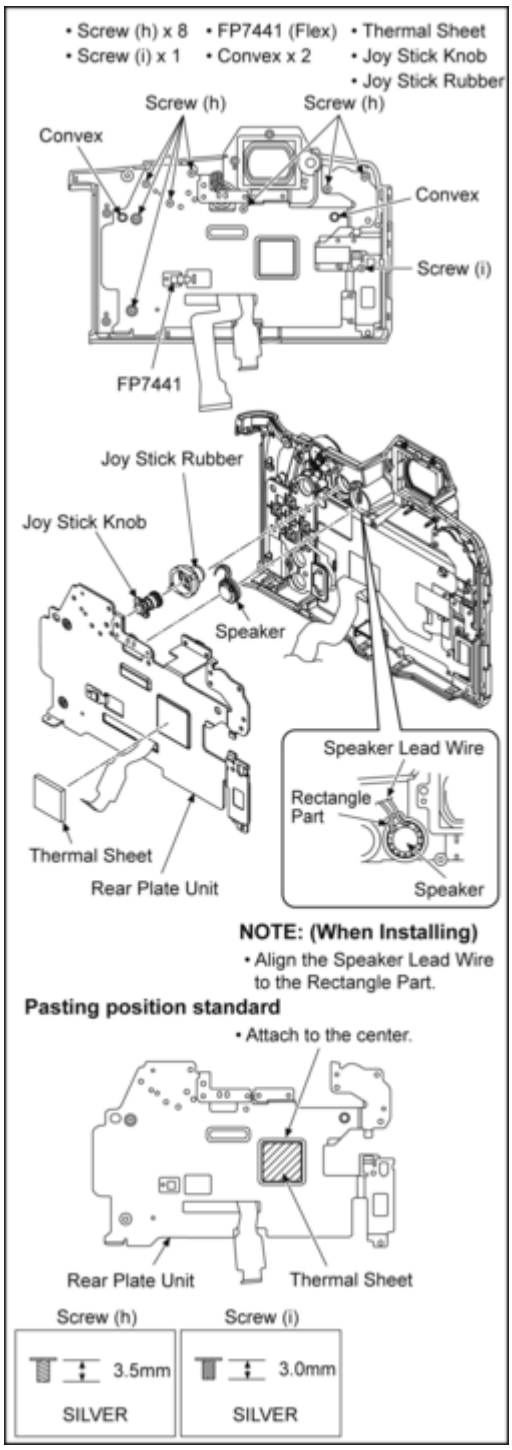


(Fig.D27)

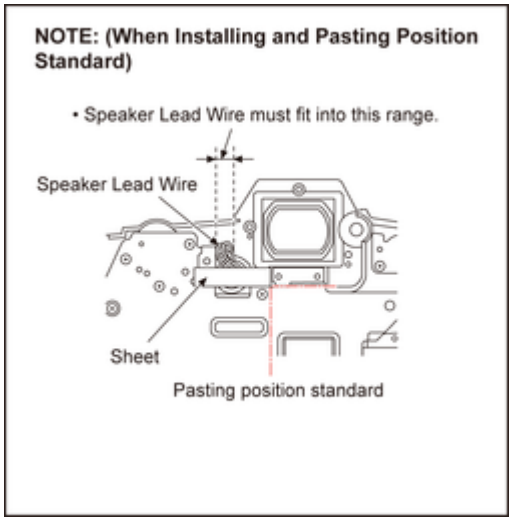
9.1.3.15 Removal of the Rear Plate Unit and Speaker



(Fig.D28)

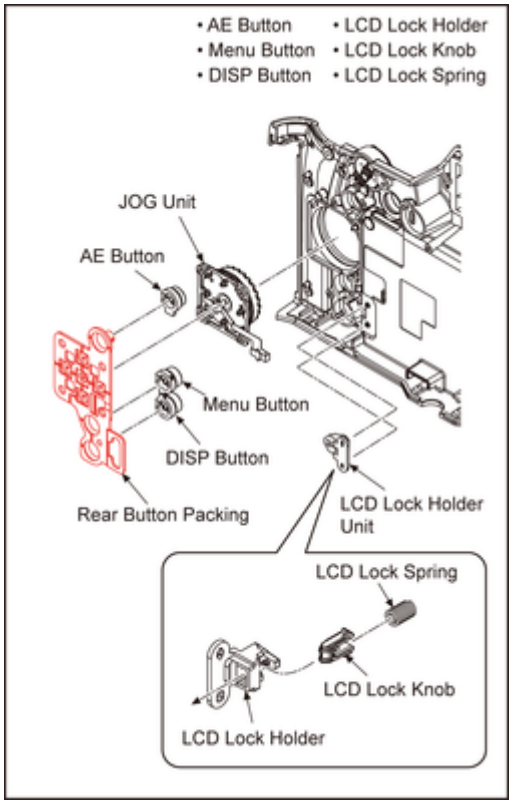


(Fig.D29)



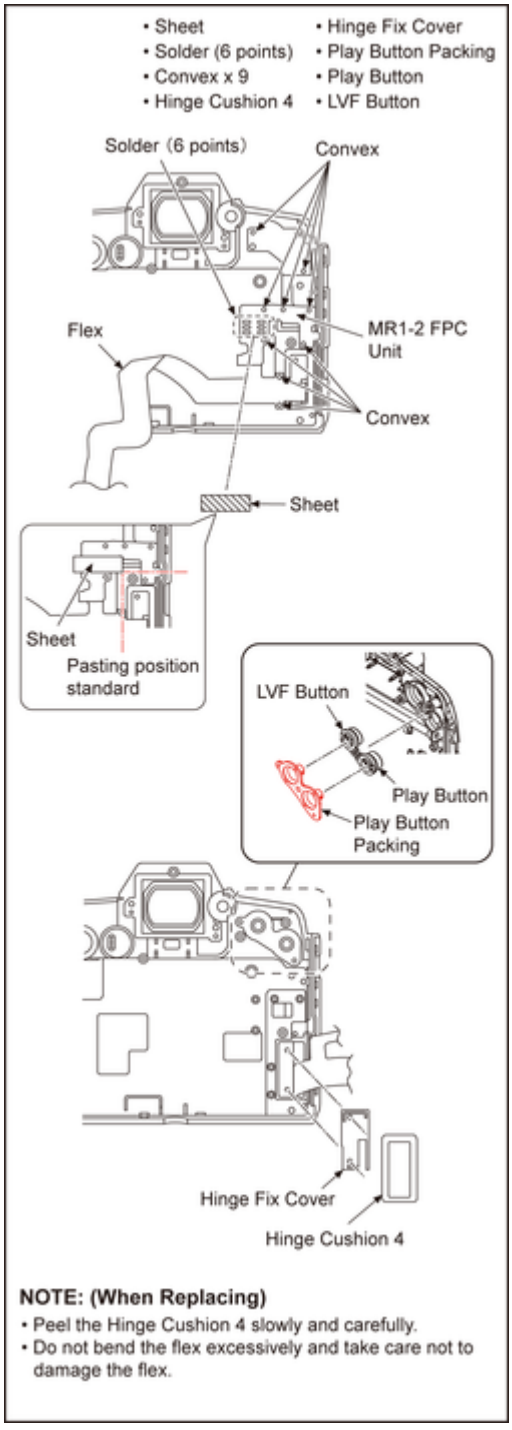
(Fig.D30)

9.1.3.16 Removal of the Rear Button Packing and Operation Button and JOG Unit

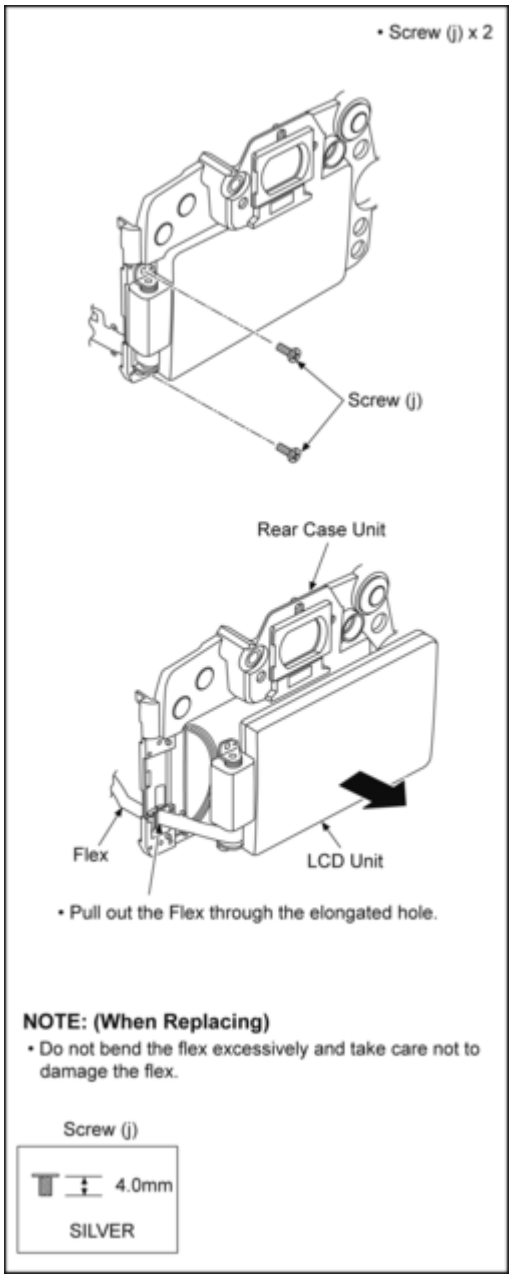


(Fig.D31)

9.1.3.17 Removal of the MR1-2 FPC Unit and LCD Unit



(Fig.D32)



(Fig.D33)

NOTE: (When Installing)
Make sure to confirm the following points when installing:

- The screw is tightened enough.
- Installing conditions are fine. (No distortion, no abnormal-space.)
- No dust and/or dirt on image sensor surface. (live mos)
- LCD image is fine. (No dust and/or dirt on it, and no gradient images.)

9.2 Disassembly and Assembly Procedure for the Lens

Please refer to the following service manuals about Disassembly and Assembly of bundled lenses.

- H-FS12060E/GK/PP: Order No.DSC1604008CE

- H-ES12060PP/E/GK: Order No.DSC1702007CE

10 Measurements and Adjustments

10.1 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.

NOTE:
After adjustments have been terminated, make sure to achieve “Initial Settings”.
After updates it to the latest firmware, the adjustment is executed.

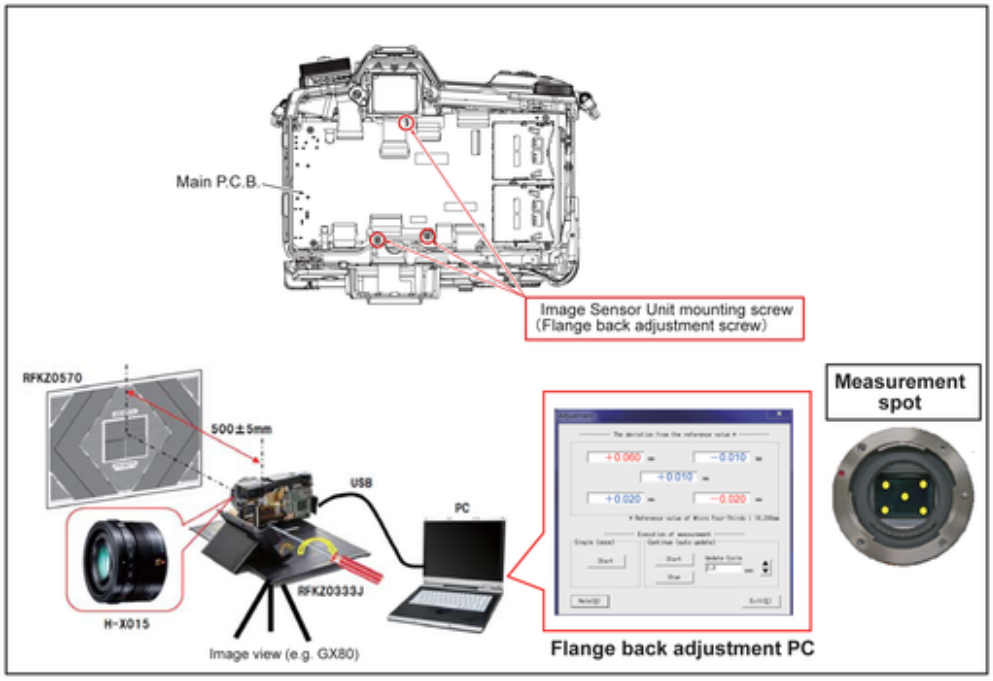
FLAG	Adjustment Item	Replacing Parts								
		Main P.C.B/ Flash-ROM (IP2001) (*4)	Main P.C.B/ (When written the Backup data)	VENUS ENGINE (IS2001)	Image sensor unit (*1)	Shutter unit (*3)	G Sensor (IC6301)	Eye sensor (Rear Case Unit)	BIS gyro (Top Unit)	Lens connector/ Mount base
AF SS1 SS3 BIS	Sensor Area / BIS frame adjustment	○	---	---	○	○	---	---	○	○
---	Simplicity flange back adjustment (*2)	---	---	---	○	○	---	---	○	○
PZM	VENUS-ZOOM inspection	○	○	○	---	---	---	---	---	---
ISO/ SEN	ISO sensitivity adjustment	○	---	---	○	---	---	---	---	---
SAT	Offset gain adjustment	○	---	---	○	---	---	---	---	---
WBL	WB (Low color temperature) adjustment (*5)	○	---	---	○	---	---	---	---	---
WBM	WB (standard color temperature) adjustment (*5)	○	---	---	○	---	---	---	---	---
SHT	Shutter adjustment	○	---	---	---	○	---	---	---	---
WKI	IMAGE SENSOR white scratch compensation	○	---	---	○	---	---	---	---	---
BKI	IMAGE SENSOR black scratch compensation	○	---	---	○	---	---	---	---	---
EYE	Eye Sensor sensitivity	○	---	---	---	---	---	○	---	---
AA1 AA2 AA3	G sensor adjustment	○	○	---	---	---	○	---	---	---
GYR	Gyro sensitive / DC offset adjustment	○	○	---	---	---	---	---	○	---
SH2	Electronic first shutter adjustment	○	---	---	---	○	---	---	---	---

***1 NOTE: (About Image Sensor Unit)**
When remove or turn the flange back adjustment screw, “Simplicity flange back adjustment” *2 is necessary.

***2 NOTE: (About Simplicity flange back adjustment)**
When remove or turn the flange back adjustment screw, “Simplicity flange back adjustment” is necessary.
When remove the flange back adjustment screw, please don’t reuse it. Use new one.

[Abstract of “Simplicity flange back adjustment”]
Set the camera in front of the chart and set center of the chart picture on LCD.
When execute software, camera works AF on 5 spots automatically.
Calculate flange back value at 5 spots and display on PC screen.
Adjust flange back value within the specification by the 3 screws.

The details are refer to adjustment manual in adjustment software.



The image sensor of this camera cannot be fixed when power is OFF.
That is why, image sensor adjustment have to do power ON after assembly (state of above).
Stand-alone mount part cannot adjust.

***3 NOTE: (When exchange the Shutter Unit)**
After replacing the shutter unit, the shutter unit data has to be stored to the Flash-ROM (IP2001) on the Main P.C.B..
The shutter unit supplied as service parts has affix the label of own configure data.
By inputting second line to third line of these data into the adjustment software and writing these data to Flash-ROM (IP2001),
the shutter adjustment becomes needless.
In addition, the adjustment software can read data encoded to QR Code by using WEB camera with a close-up function.
After that, proceed the main body adjustment.
The details are refer to adjustment manual in adjustment software.

***4 NOTE: (When exchange the Main P.C.B. and/or Flash-ROM (IP2001))**
After exchanging the “Main P.C.B. and/or Flash-ROM”, first, execute “Initial Settings” to determine the model suffix, and then, cancel the “Initial Settings” and proceed the adjustments.
When the adjustment data is rewrite without “Initial Settings” execution, may not be able to choose desire model suffix.
During the “Initial Settings” (When the model suffix select screen is displayed), do not power off or do not remove the battery.
* Power down during “Initial Settings” may cause not be able to choose desire model suffix.
When cannot be repaired in the IC exchange, and in the case of performing the “Main P.C.B.” exchange, carry out any of following.

1. When it can turn on power, and the adjustment software can communicate with the camera body:
   Before replacing, proceed the Flash-ROM (IP2001) data backup from the unit.
   After replacing, overwrite the Flash-ROM (IP2001) data with backup data from the unit.
   After that, proceed the main body adjustment. (Almost adjustment/inspection items can be omitted.)
   Refer to the adjustment instruction in the adjustment software for details.
2. When it cannot turn on power, or the adjustment software cannot communicate with the camera body:
   Almost readjustment fully are necessary.
   The details are refer to adjustment manual in adjustment software.

***5 NOTE: (When White Balance (WBL/WBM) adjustment)**
After change to WB adjustment mode for service with software, the adjustment is executed.
After adjusting the AWB adjustment, to cancel the WB adjustment mode for service.
The details are refer to adjustment manual in adjustment software.

About the 3D interchangeable lens (H-FT012) correspondence
This unit has no special structure (circuit or part) for the 3D interchangeable lens correspondence, only by software is processed the 3D interchangeable lens correspondence.

Therefore, if taken with other lenses as usual, the 3D interchangeable lens is no problem for operation.

11 Maintenance

11.1 Notice in External Cleaning

11.1.1 About the Body

NOTE:
Before cleaning the camera, remove the battery and/or disconnect power plug from the outlet.
Also, remove the memory card and lens unit.

11.1.1.1 Dust/Dirt on the Outer Casing Part (S)

1. Blow off the dust first, then sweep out the dust from narrower spaces with soft cleaning brush.
2. Wipe up fingerprint and/or dirt on the Outer casing part with the dry fuzz-free cloth.

11.1.1.2 Dust/Dirt on the Image Sensor

1. Blow off the dust on the surface of the Image sensor with the Blower.
    - Keep the Mount Facing down condition towards to floor when cleaning.
    - Do not put the Blower further inside than the lens mount.
    - Be careful not to blow too strongly.
2. Wipe off the dirt on the image sensor surface with Lens Cleaning Kit (BK)(VFK1900BK).

11.1.1.3 About the LVF Unit

[Procedures]

1. Refer to the “Disassembly & Assembly Instructions” and disassemble the LVF Unit.
2. Blow off the dust of LVF Lens Unit with a blower.
3. Wipe off the dirt on the surface of glasses with Lens Cleaning Kit (VFK1900BK), if necessary.

11.1.2 About the Lens

Please refer to the following service manuals about Maintenance of bundled lenses.

- H-FS12060E/GK/PP: Order No.DSC1604008CE
- H-ES12060PP/E/GK: Order No.DSC1702007CE

Model No. : DC-G9/G9M/G9L Schematic Diagram Note

IMPORTANT SAFETY NOTICE:

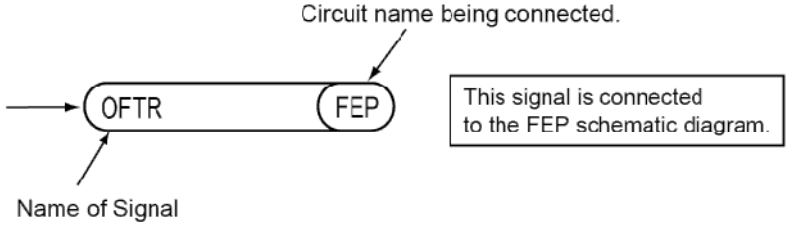
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS USE ONLY THE SAME TYPE.

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

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

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

4.Indication on Schematic diagrams:



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

Model No. : DC-G9/G9M/G9L Parts List Note

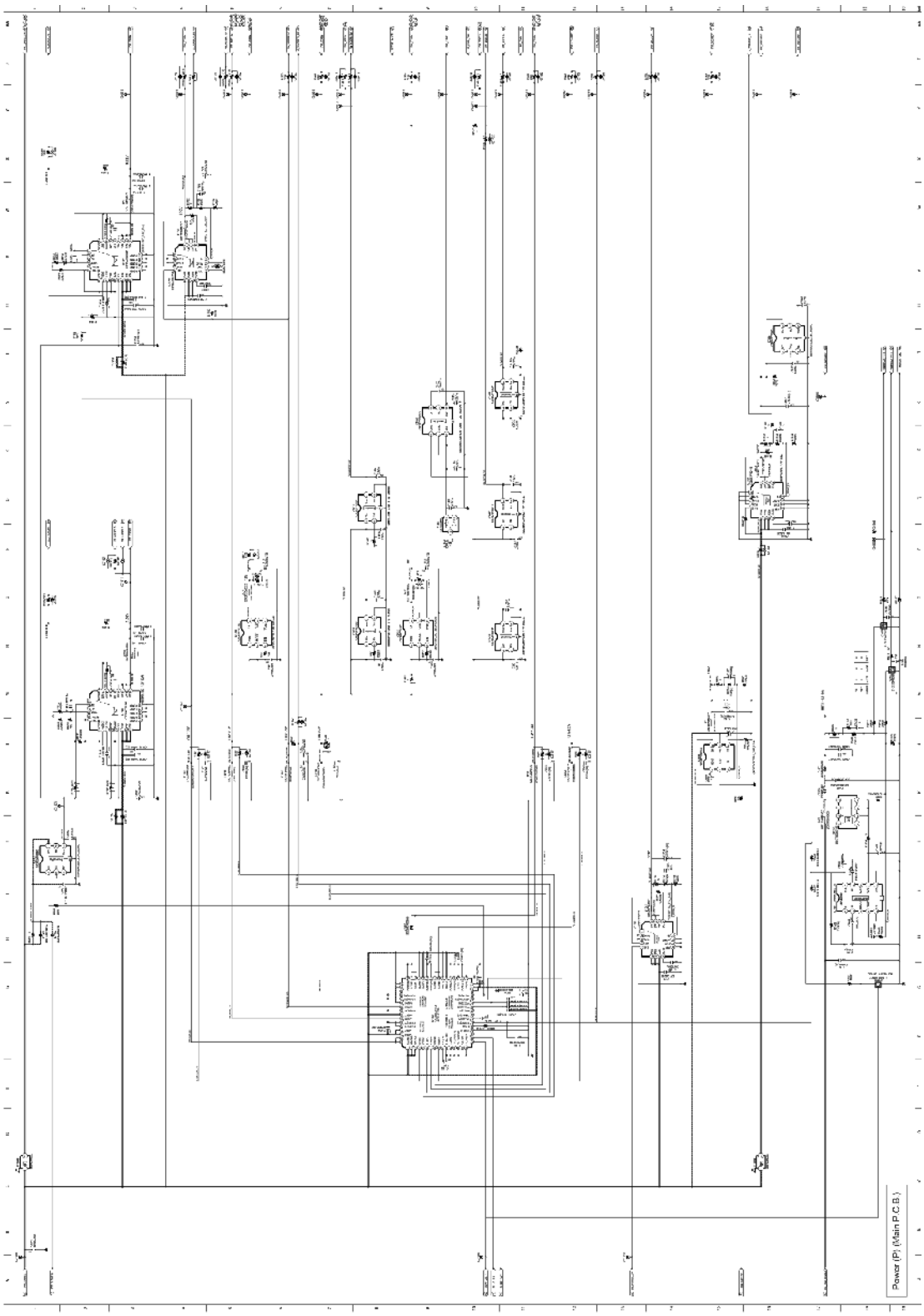
Note:
1. * Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
   Components identified with the mark ⚠ have the special characteristics for safety.
   When replacing any of these components, use only the same type.
3. Unless otherwise specified,
   All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

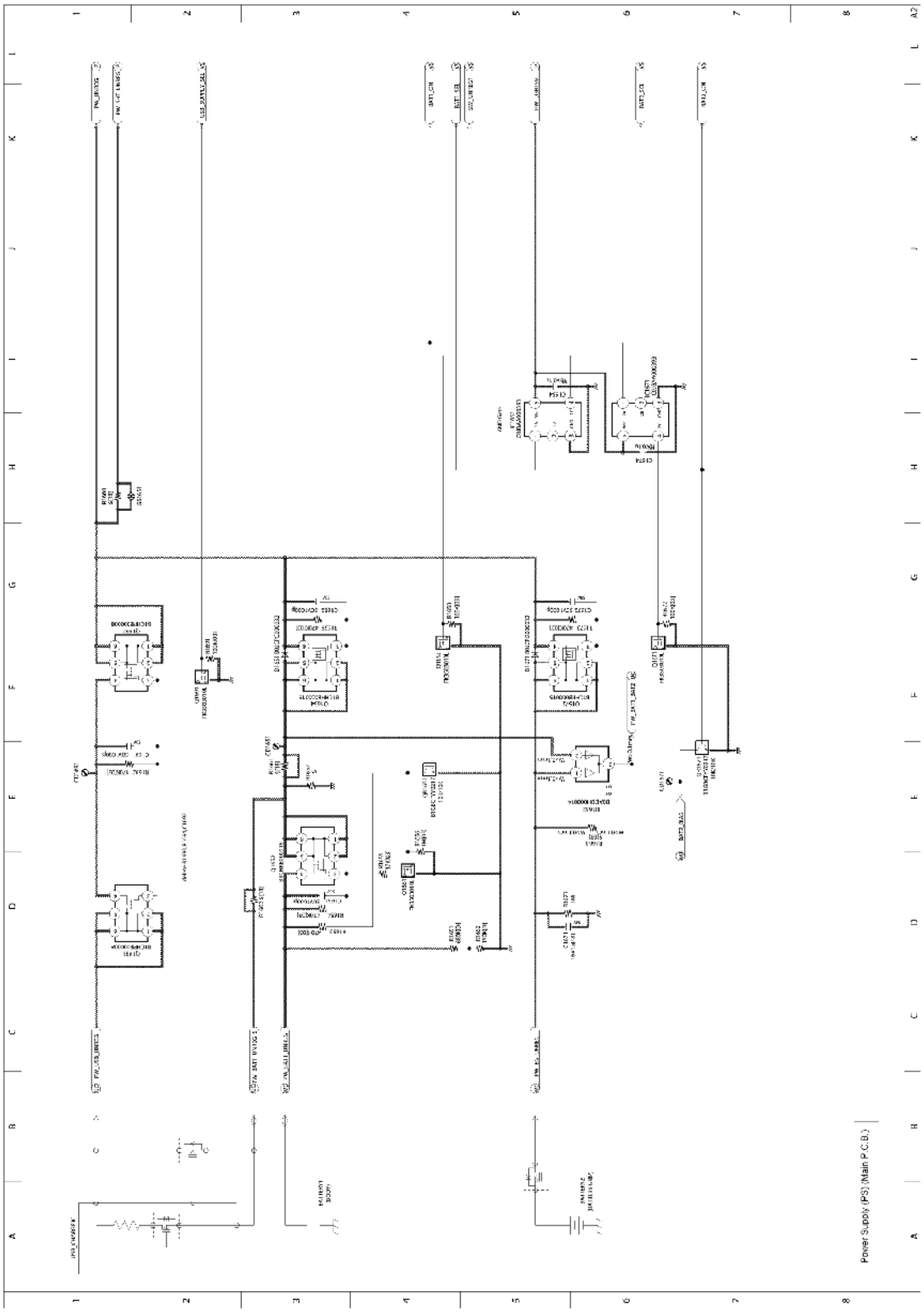
Definition of Parts supplier:

1. **Parts marked with [INBD] in the remarks column are supplied from AP-INBD. Others are supplied from PAVCX.**

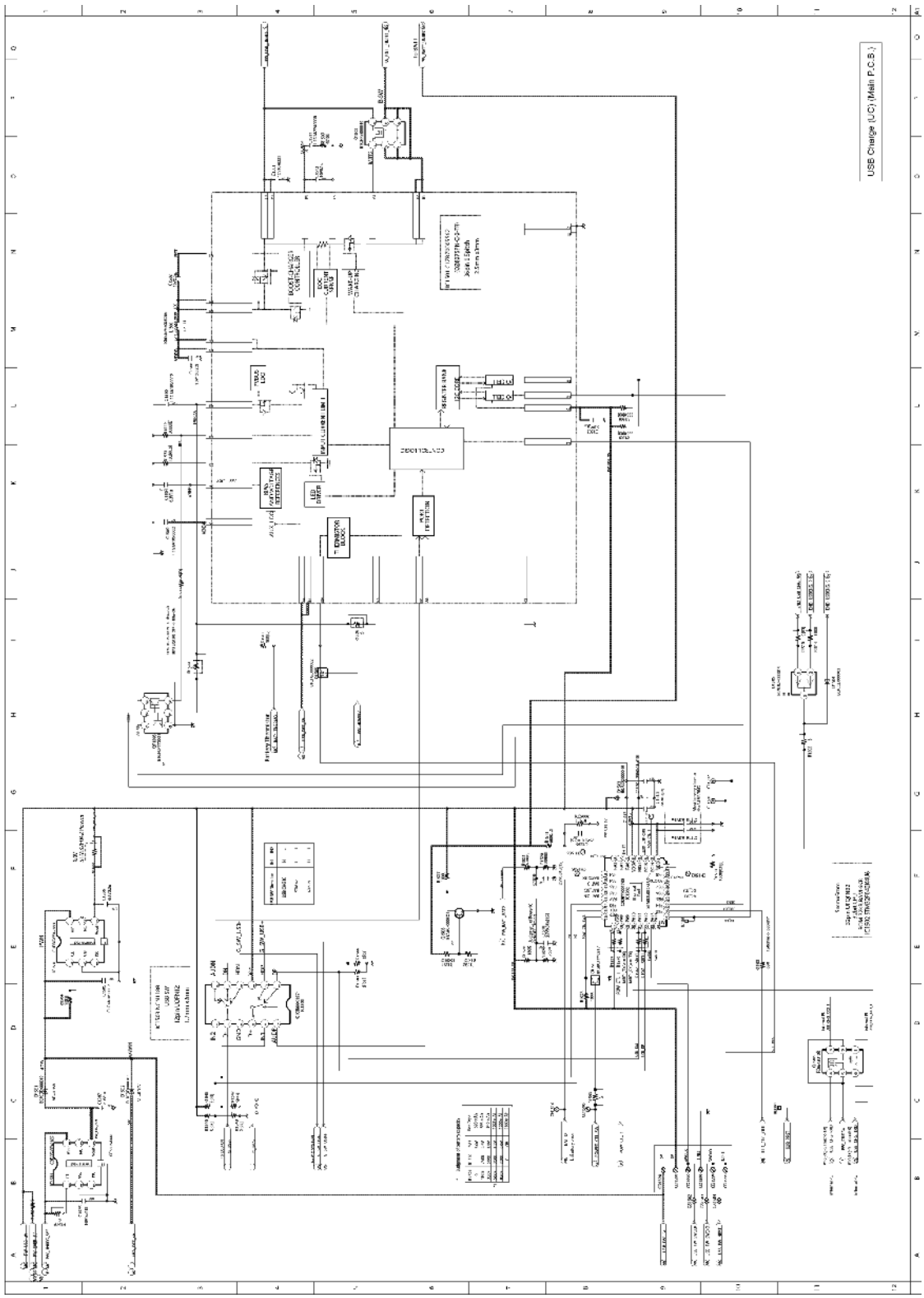
Model No. : DC-G9/G9M/G9L Power (P) (Main P.C.B.)



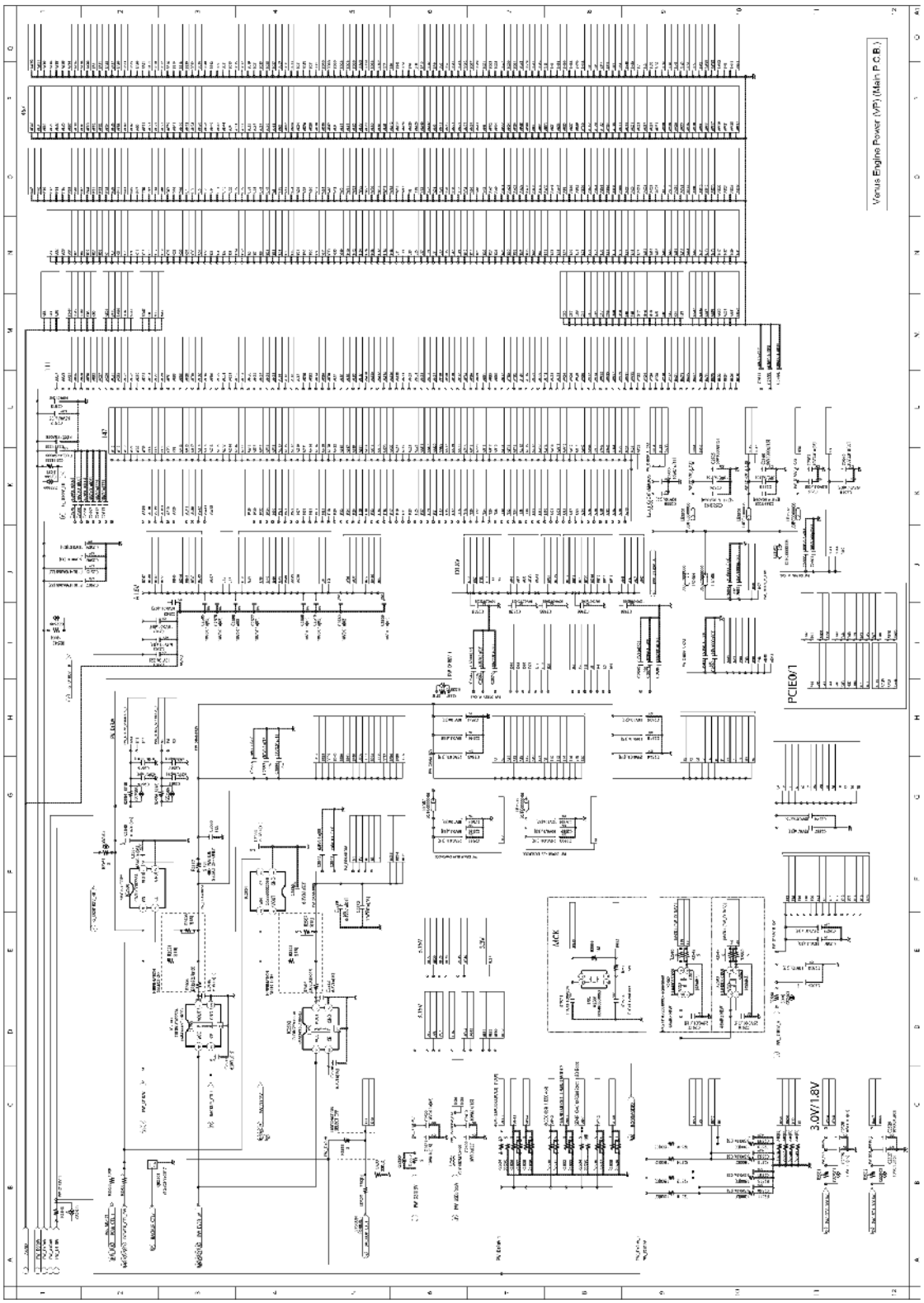
Model No. : DC-G9/G9M/G9L Power Supply (PS) (Main P.C.B.)



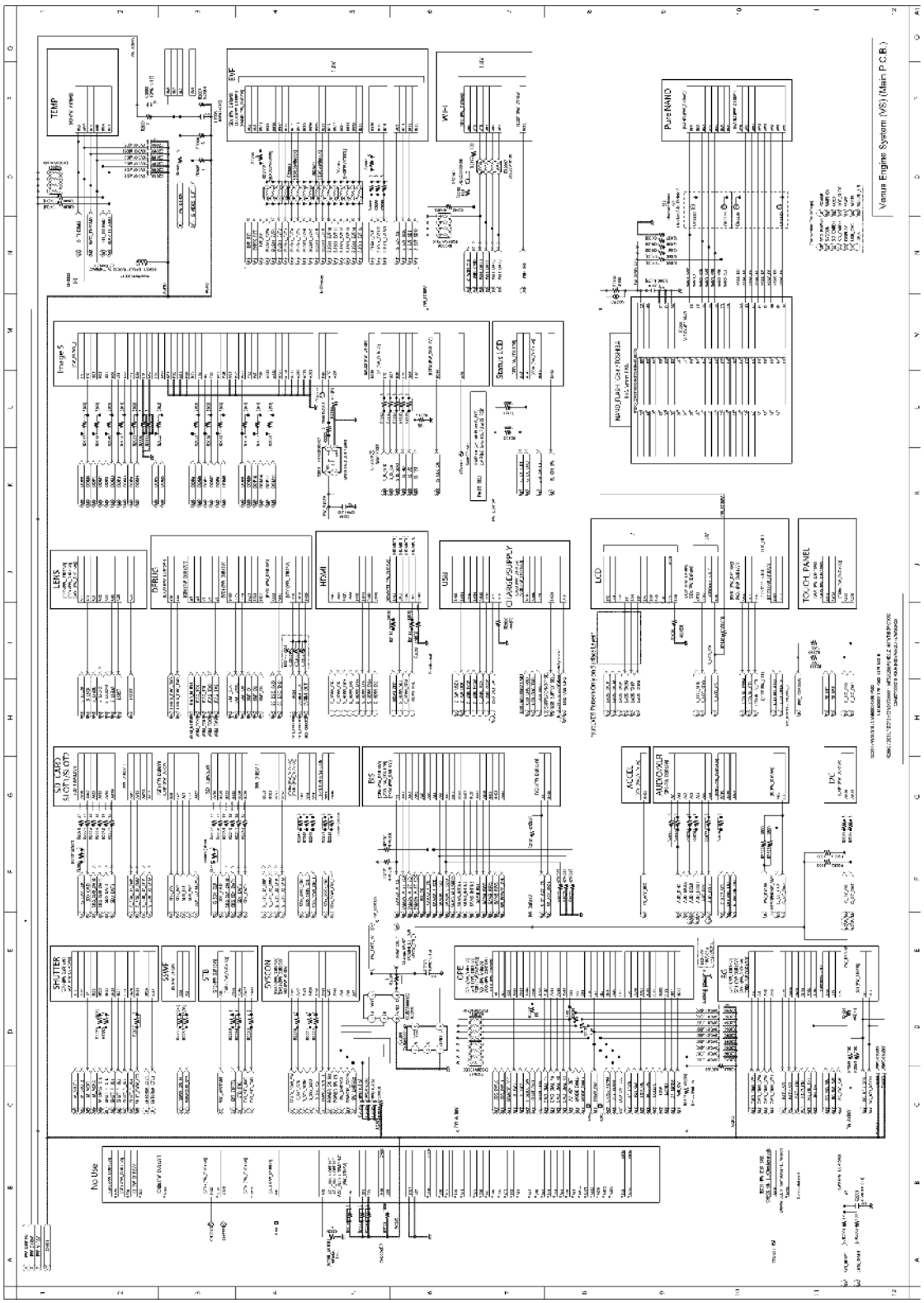
Model No. : DC-G9/G9M/G9L USB Charge (UC) (Main P.C.B.)



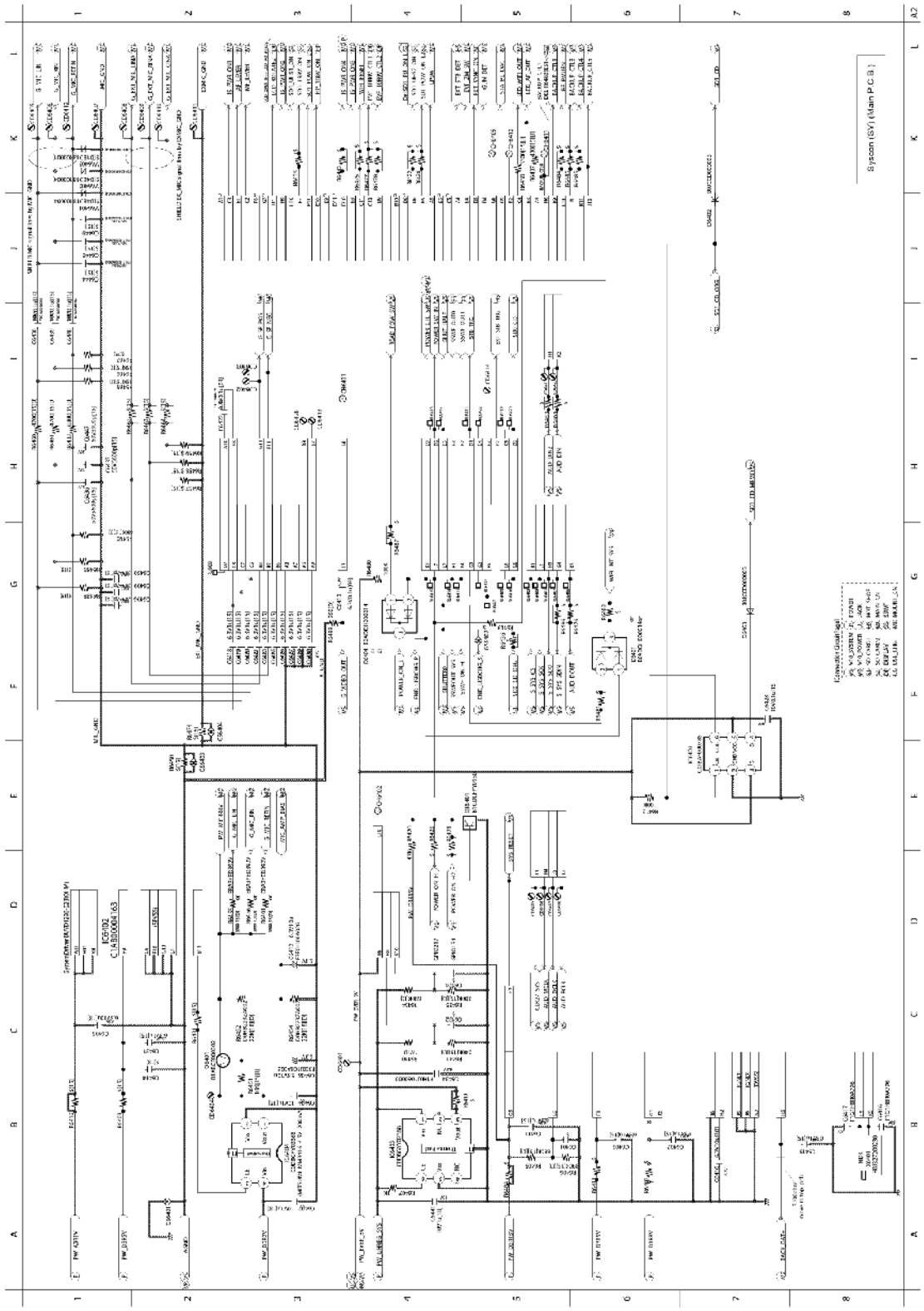
Model No. : DC-G9/G9M/G9L VENUS ENGINE Power (VP) (Main P.C.B.)



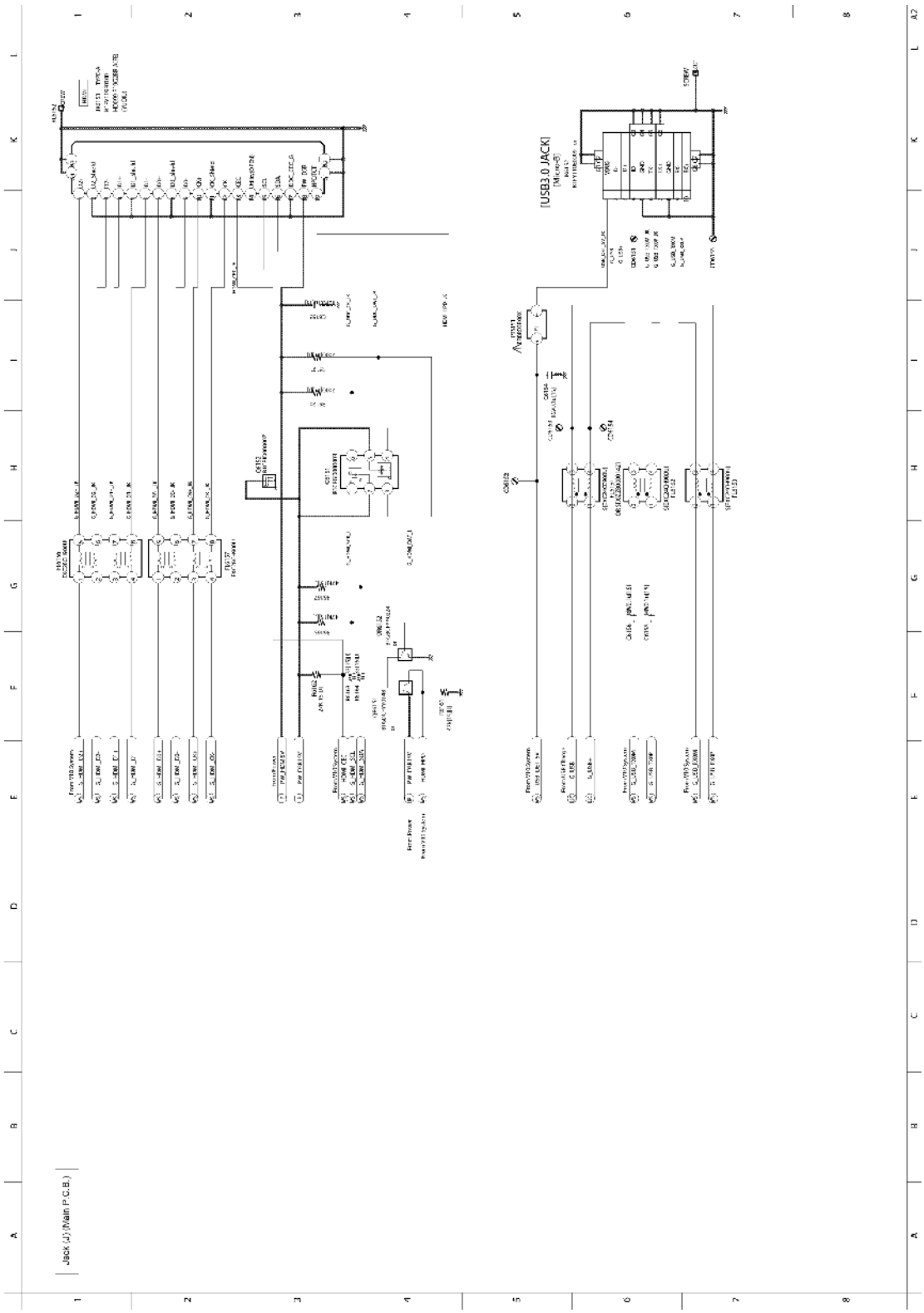
Model No. : DC-G9/G9M/G9L VENUS ENGINE System (VS) (Main P.C.B.)



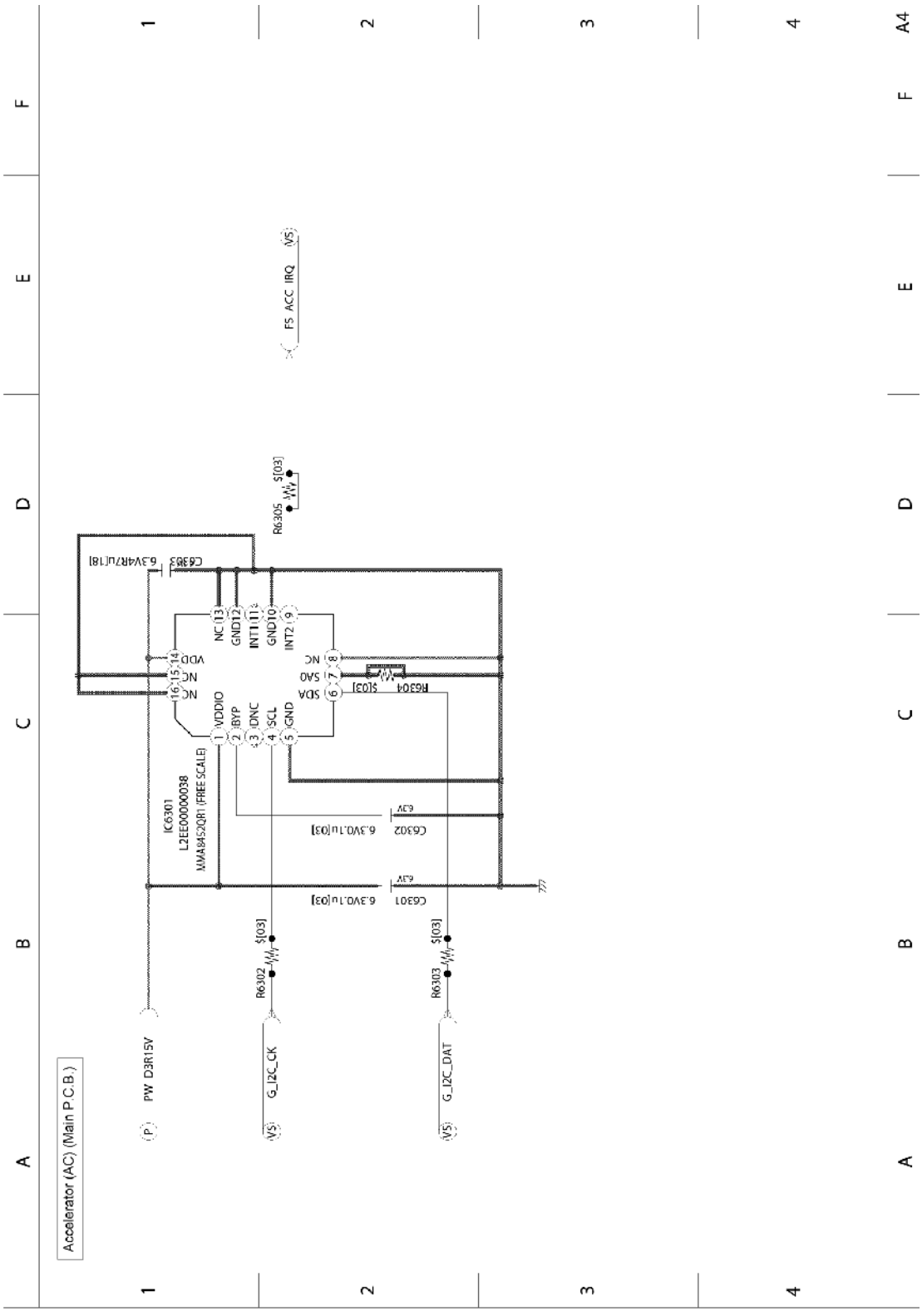
Model No. : DC-G9/G9M/G9L Syscon (SY) (Main P.C.B.)



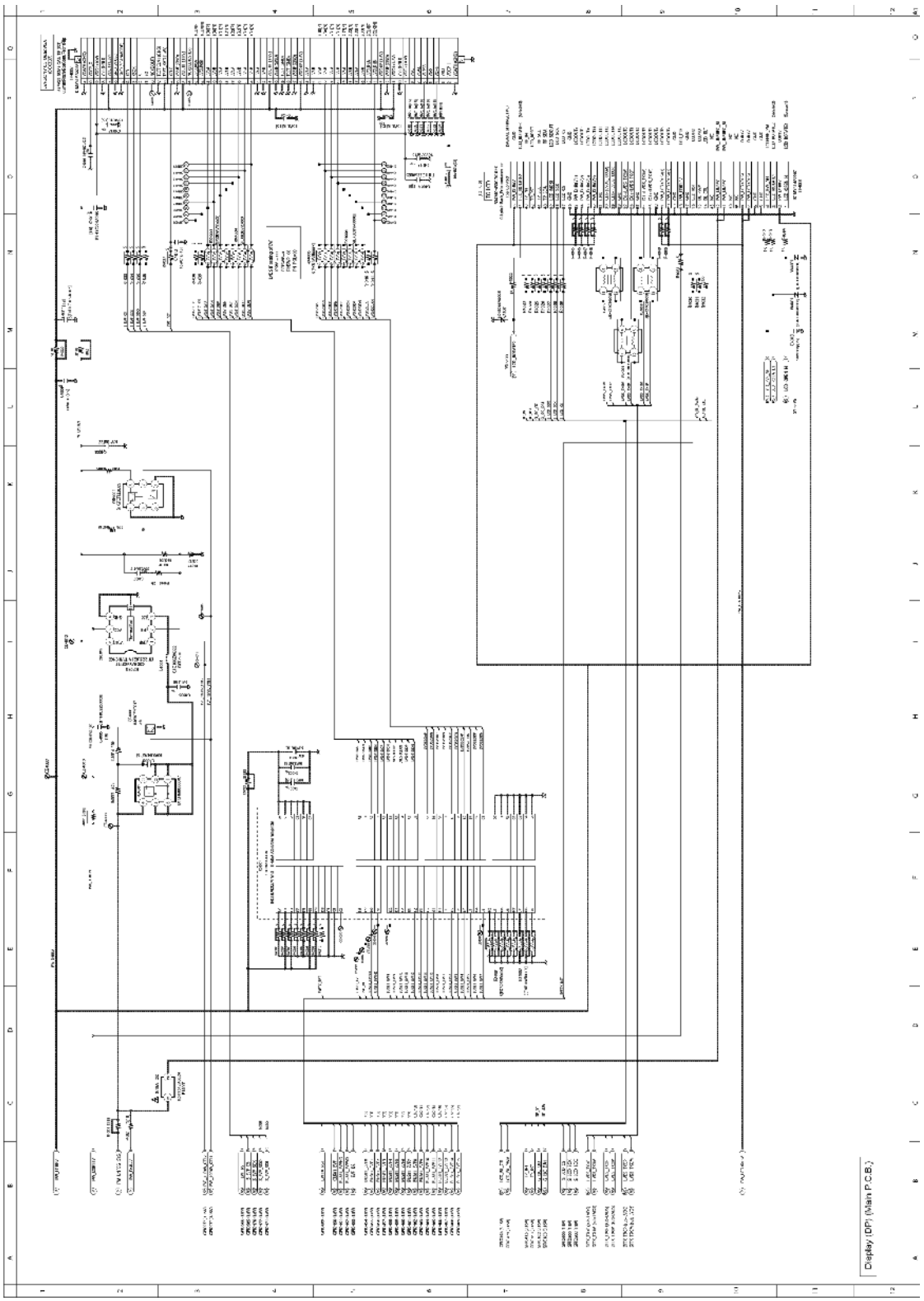
Model No. : DC-G9/G9M/G9L Jack (J) (Main P.C.B.)



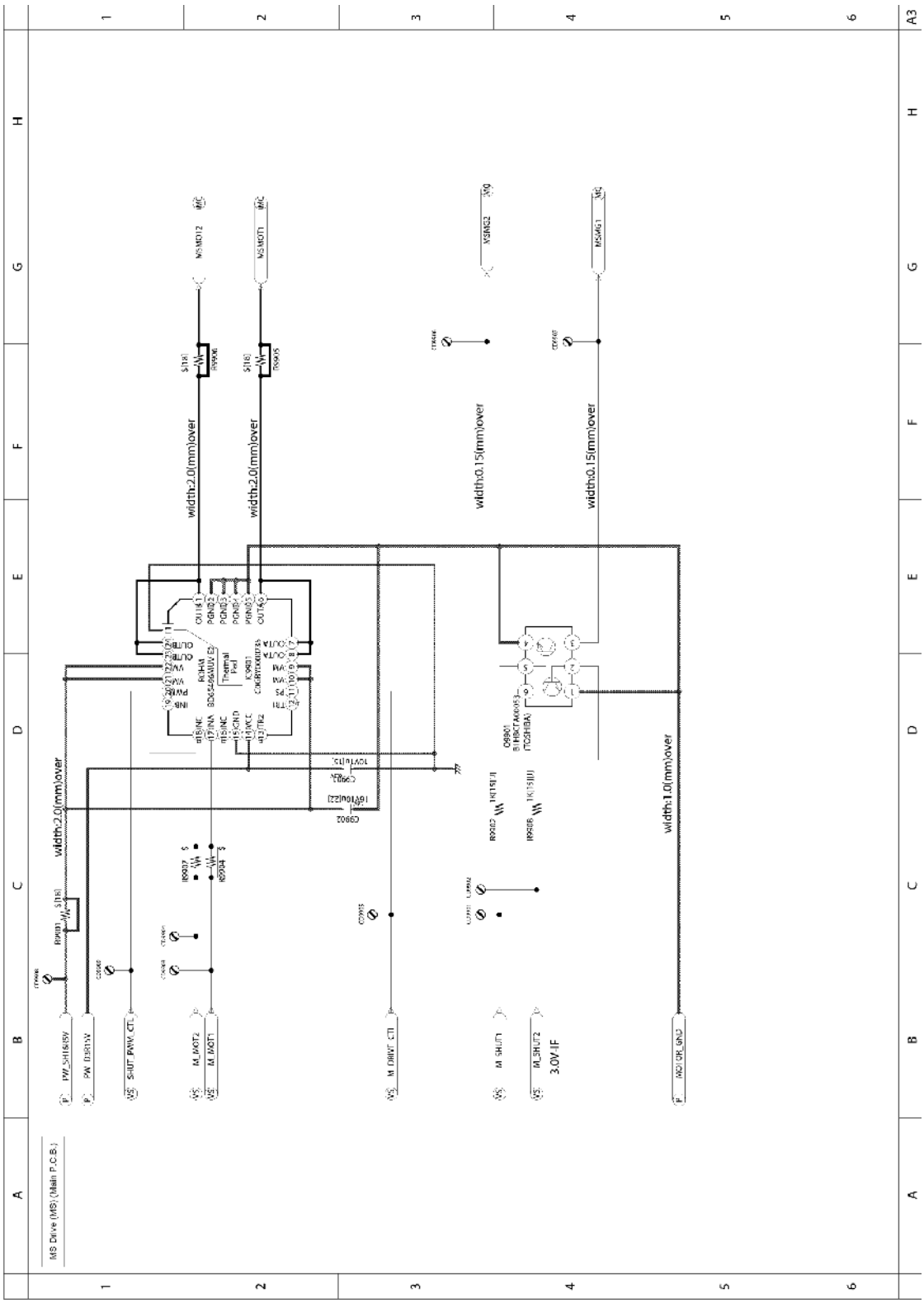
Model No. : DC-G9/G9M/G9L Accelerator (AC) (Main P.C.B.)



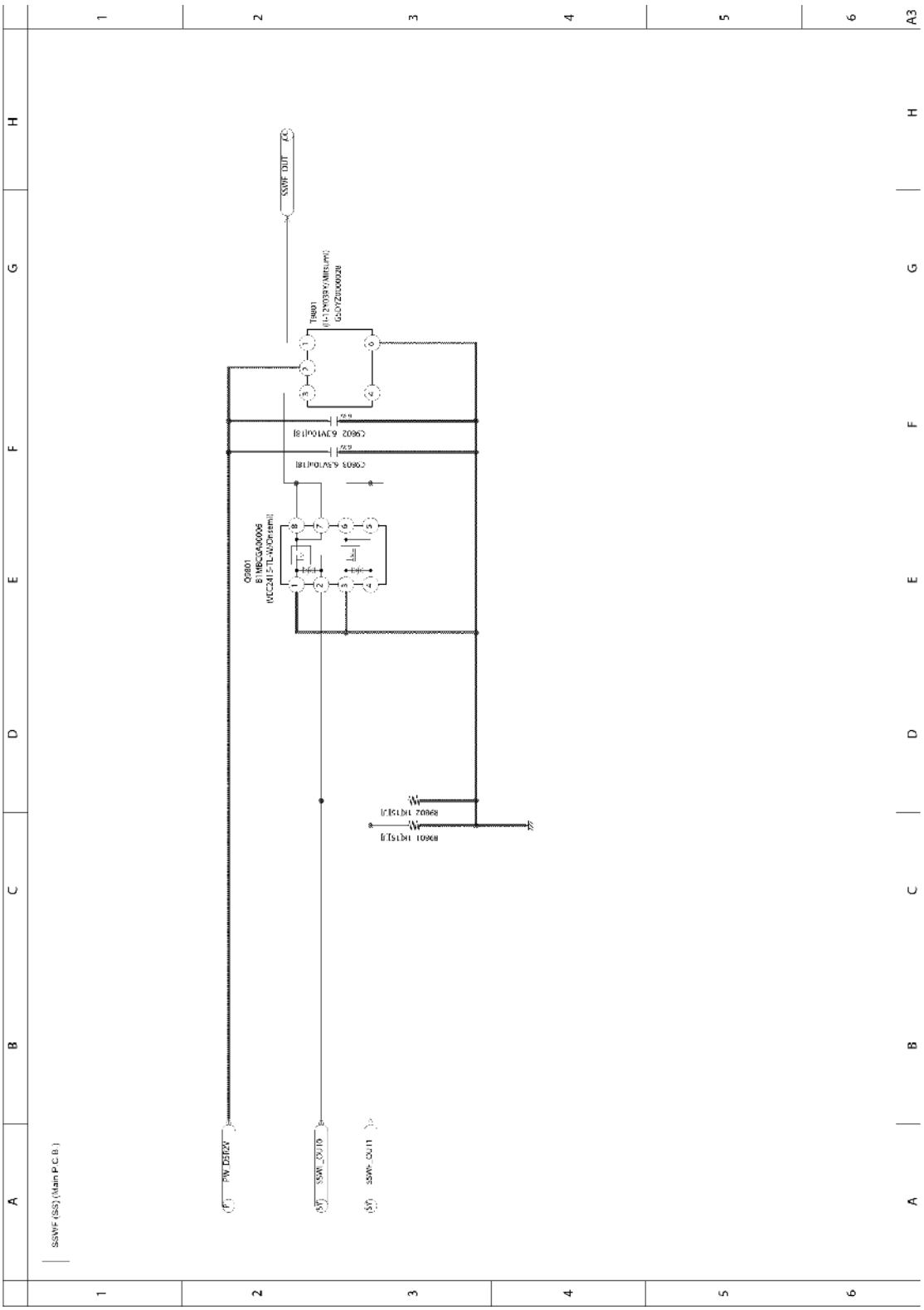
Model No. : DC-G9/G9M/G9L Display (DP) (Main P.C.B.)



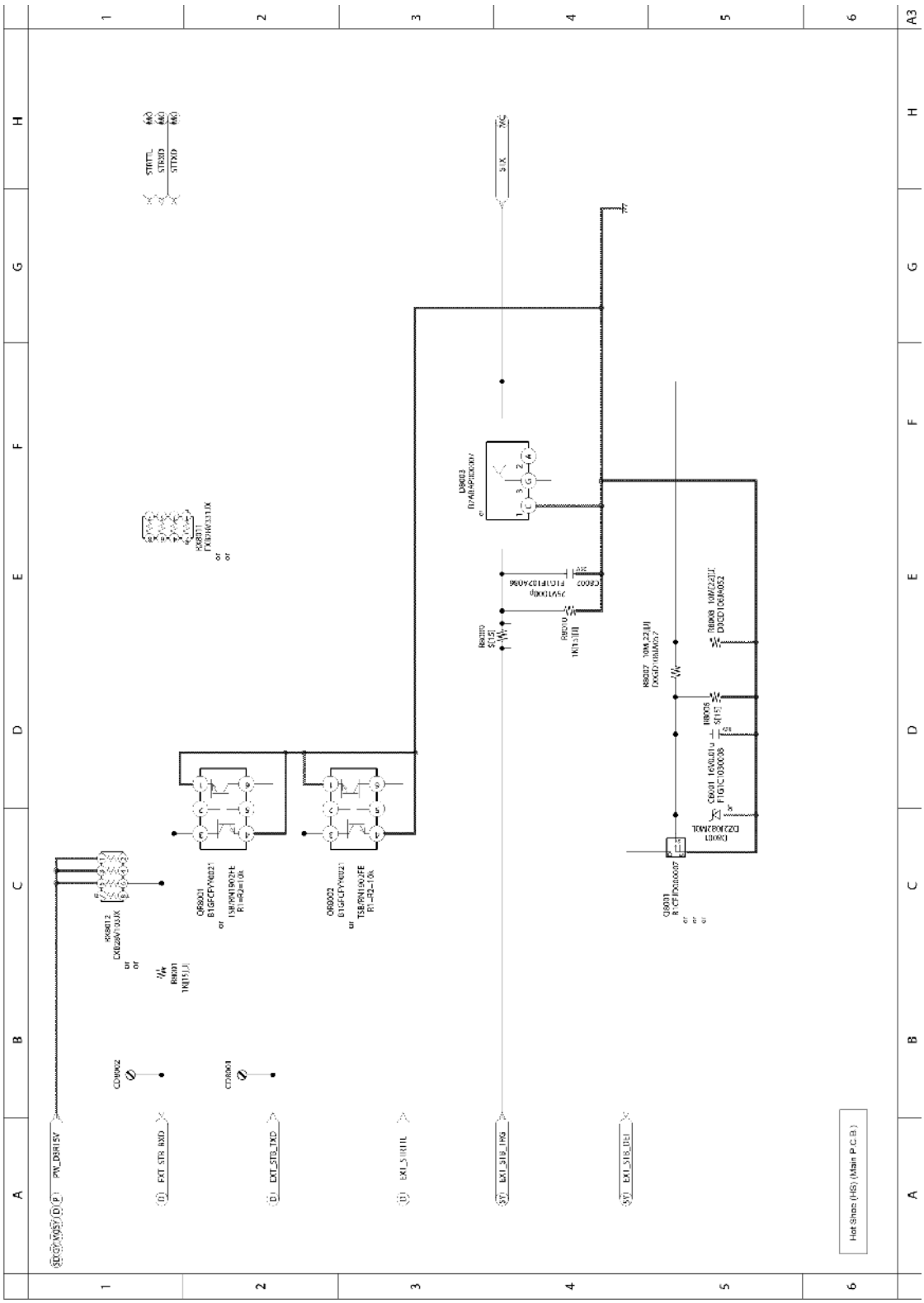
Model No. : DC-G9/G9M/G9L MS Drive (MS) (Main P.C.B.)



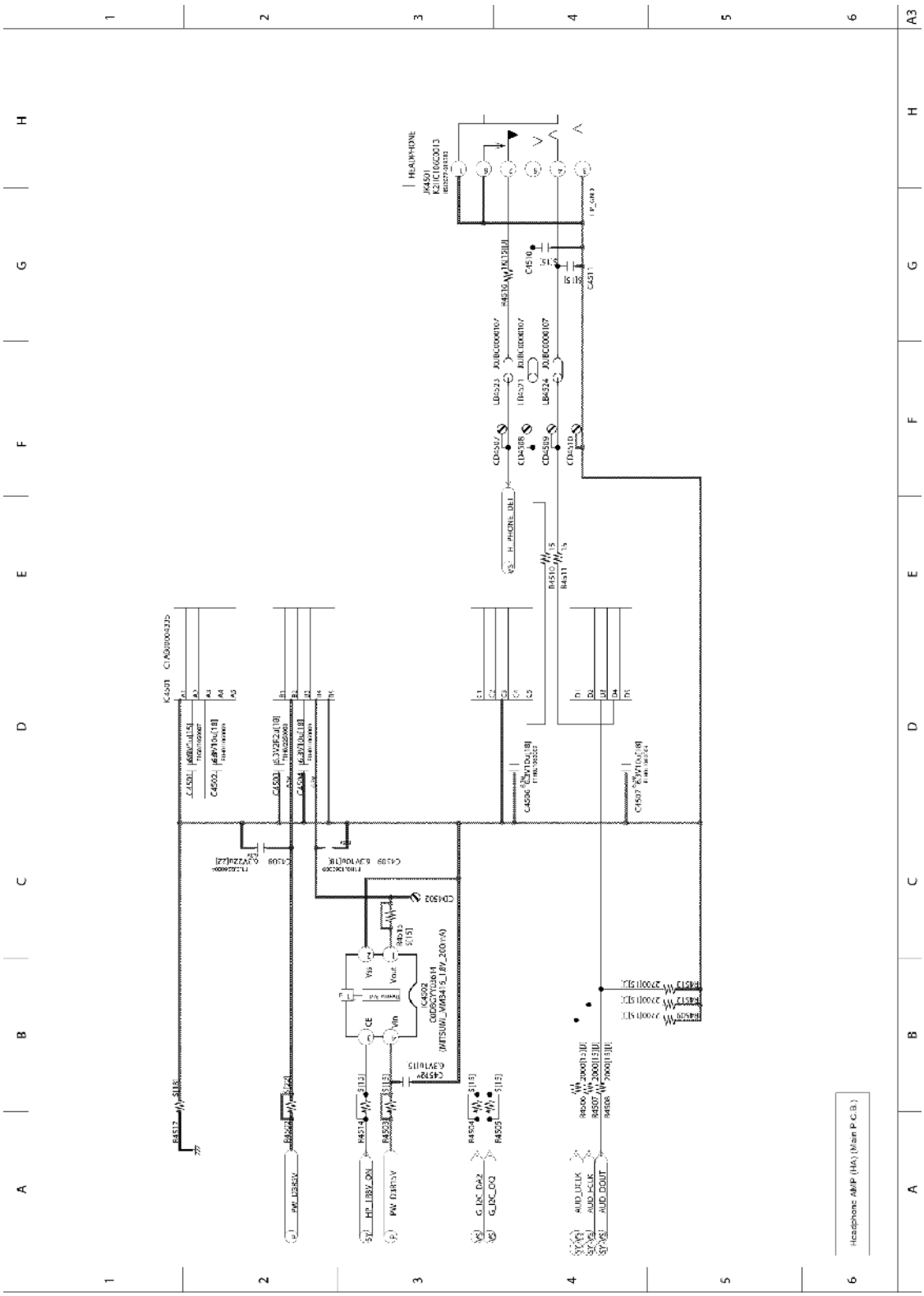
Model No. : DC-G9/G9M/G9L SSWF (SS) (Main P.C.B.)



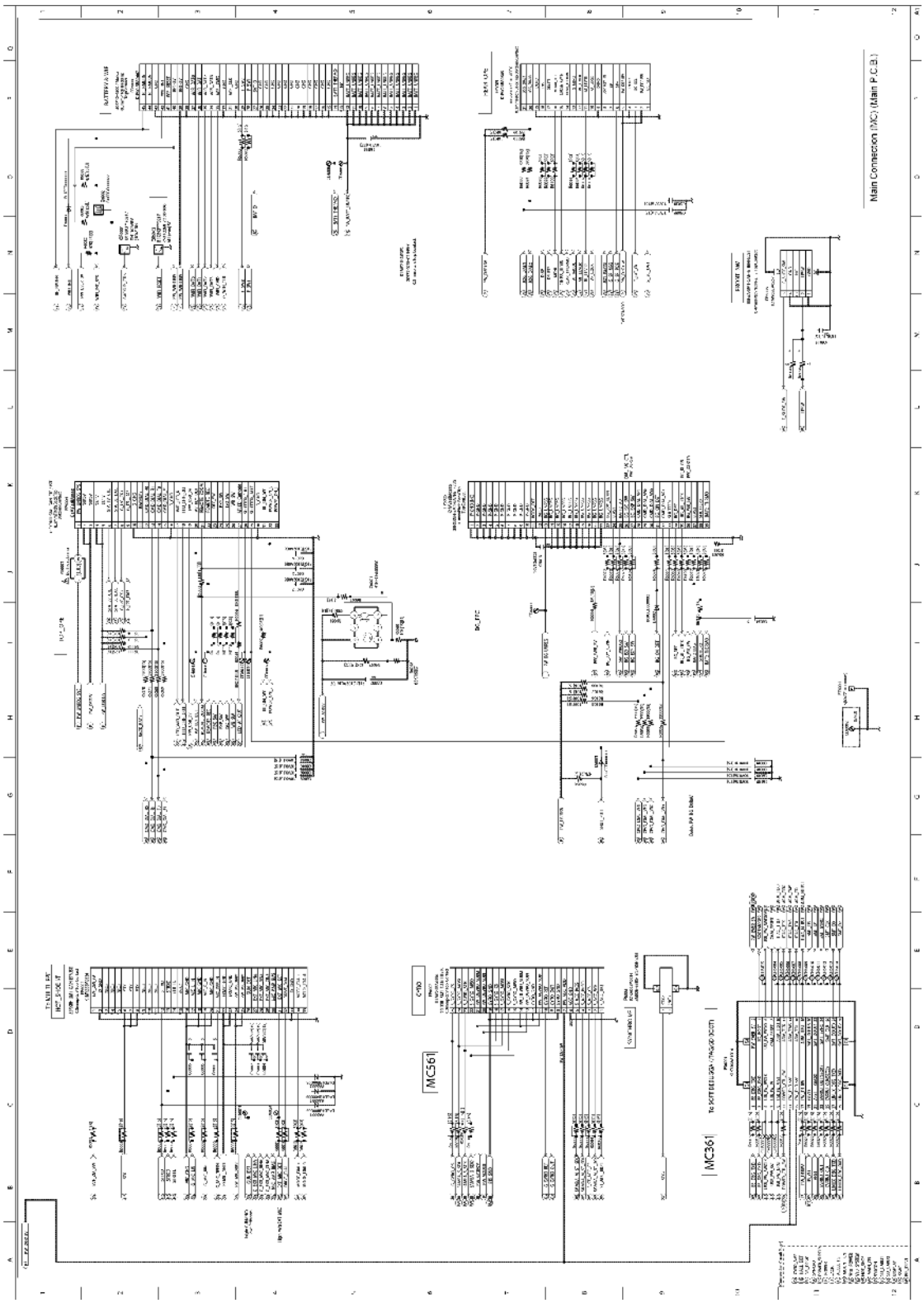
Model No. : DC-G9/G9M/G9L Hot Shoe (HS) (Main P.C.B.)



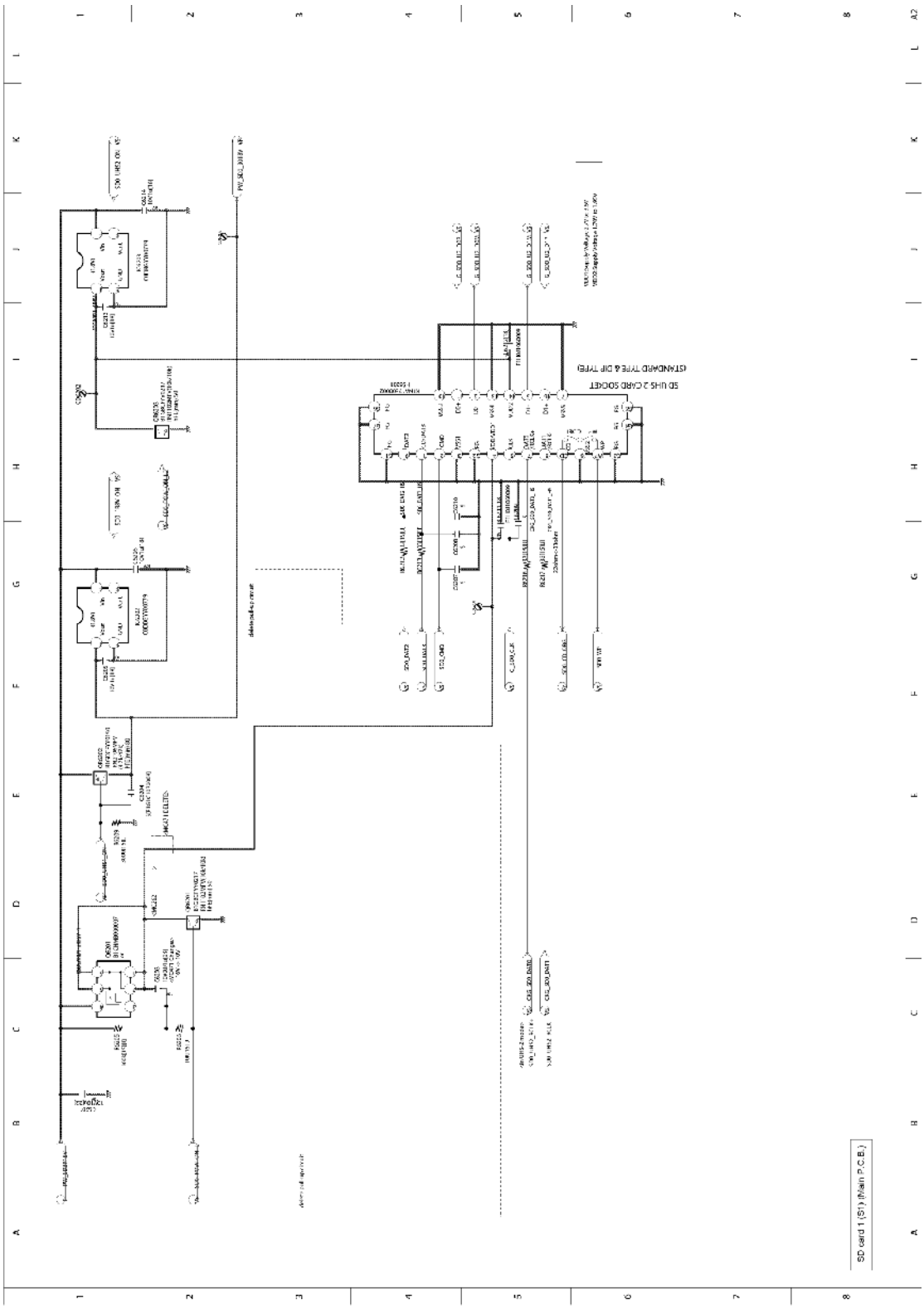
Model No. : DC-G9/G9M/G9L Headphone Amp (HA) (Main P.C.B.)



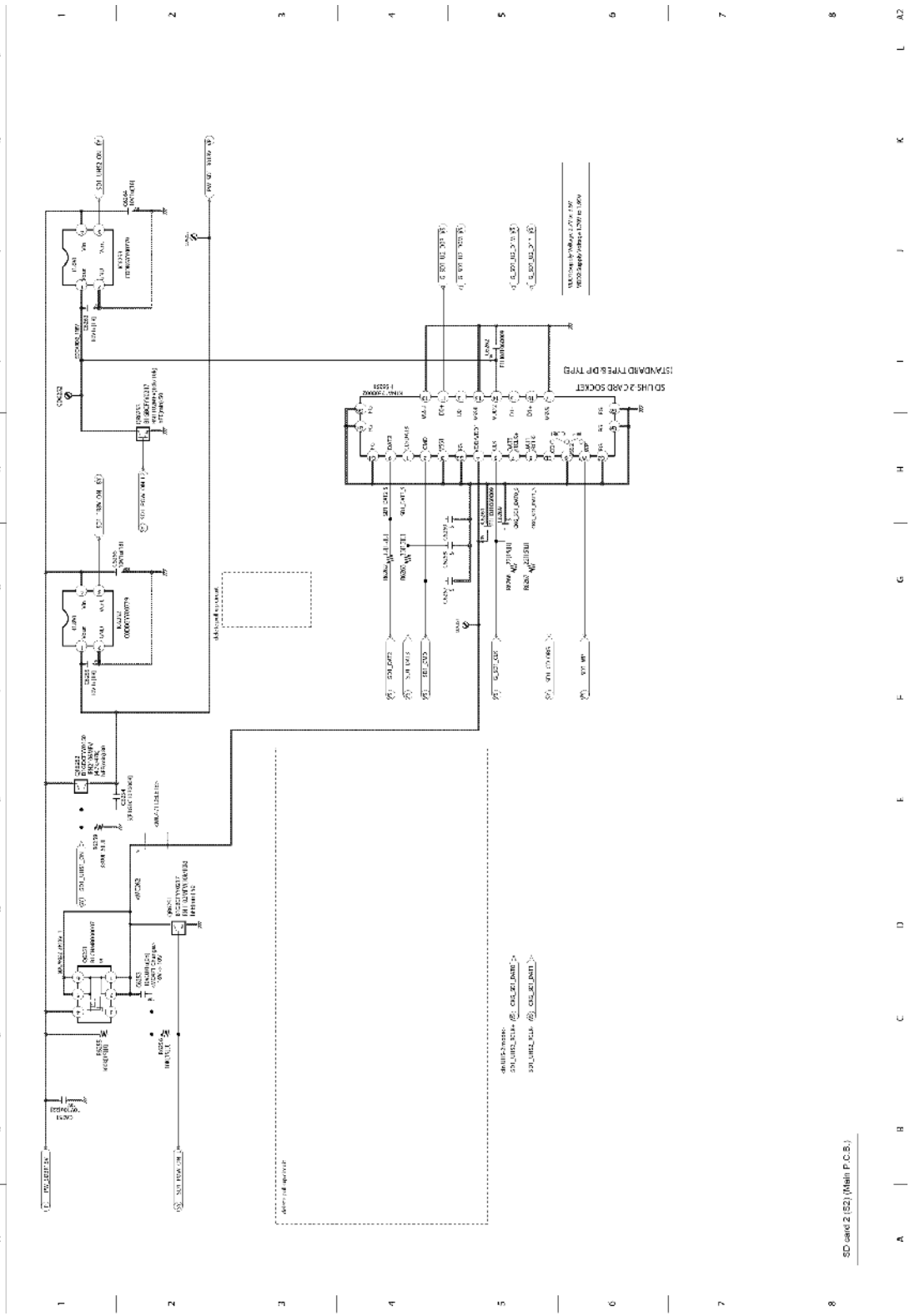
Model No. : DC-G9/G9M/G9L Main Connection (MC) (Main P.C.B.)



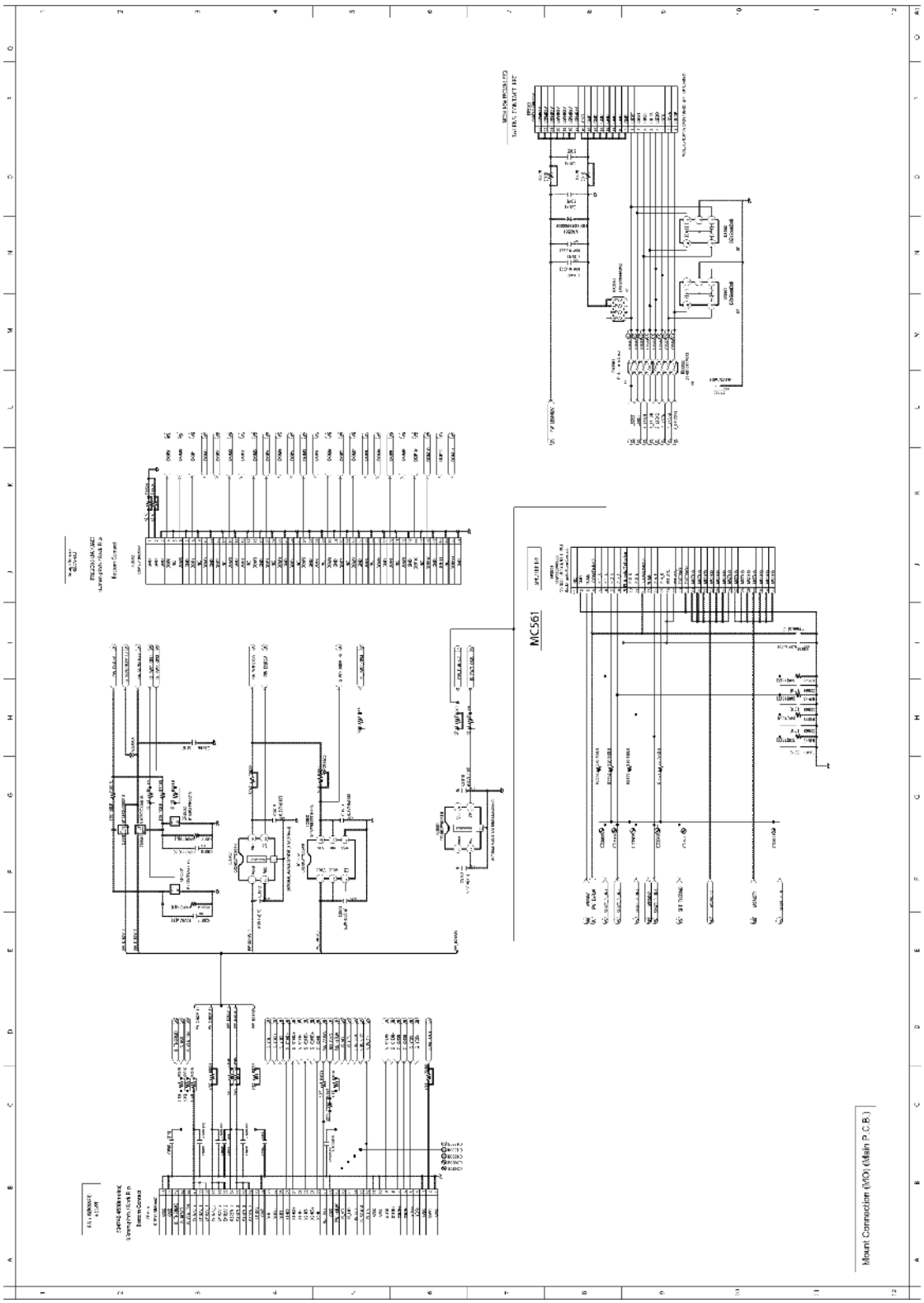
Model No. : DC-G9/G9M/G9L SD Card1 (S1) (Main P.C.B.)



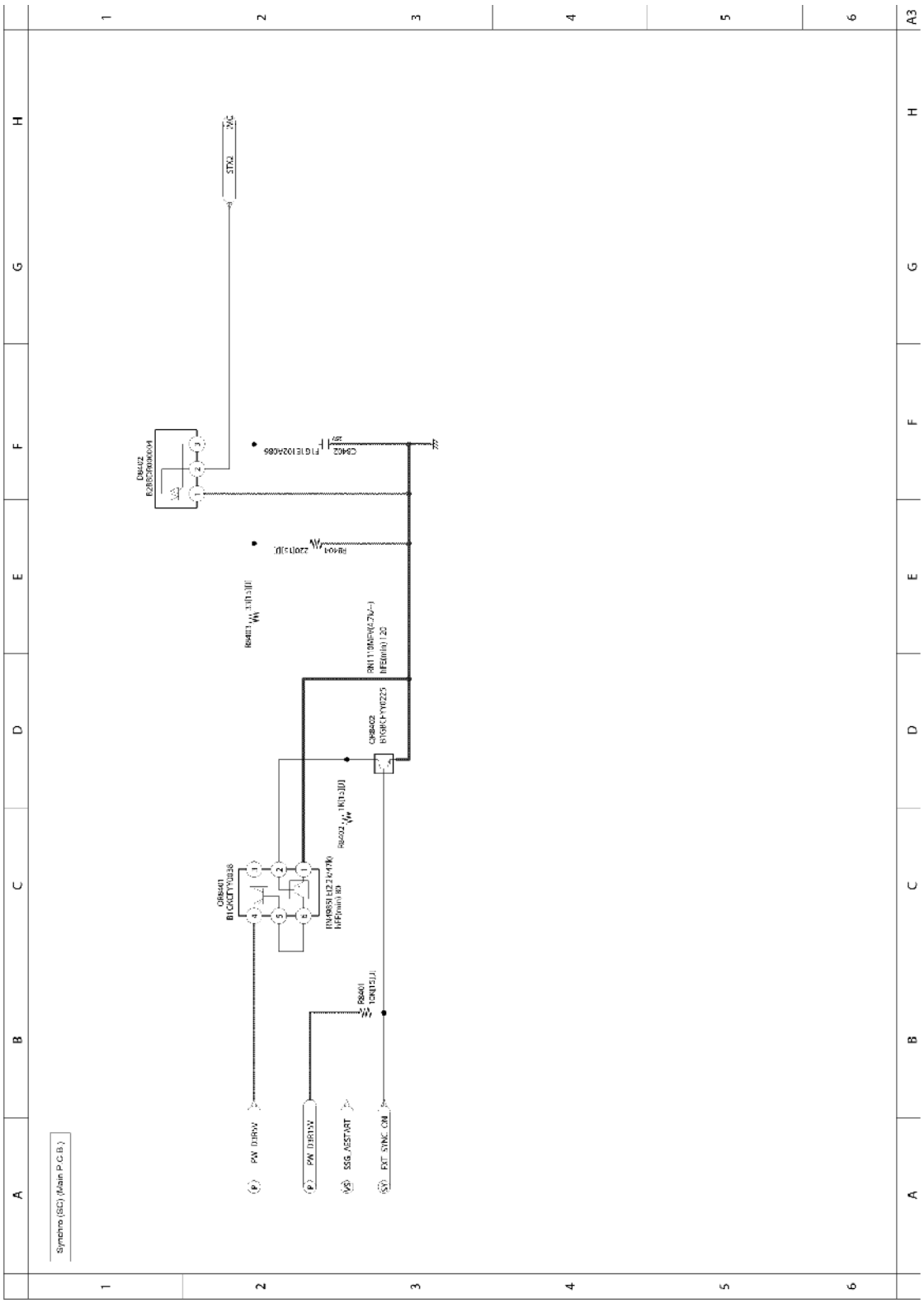
Model No. : DC-G9/G9M/G9L SD Card2 (S2) (Main P.C.B.)



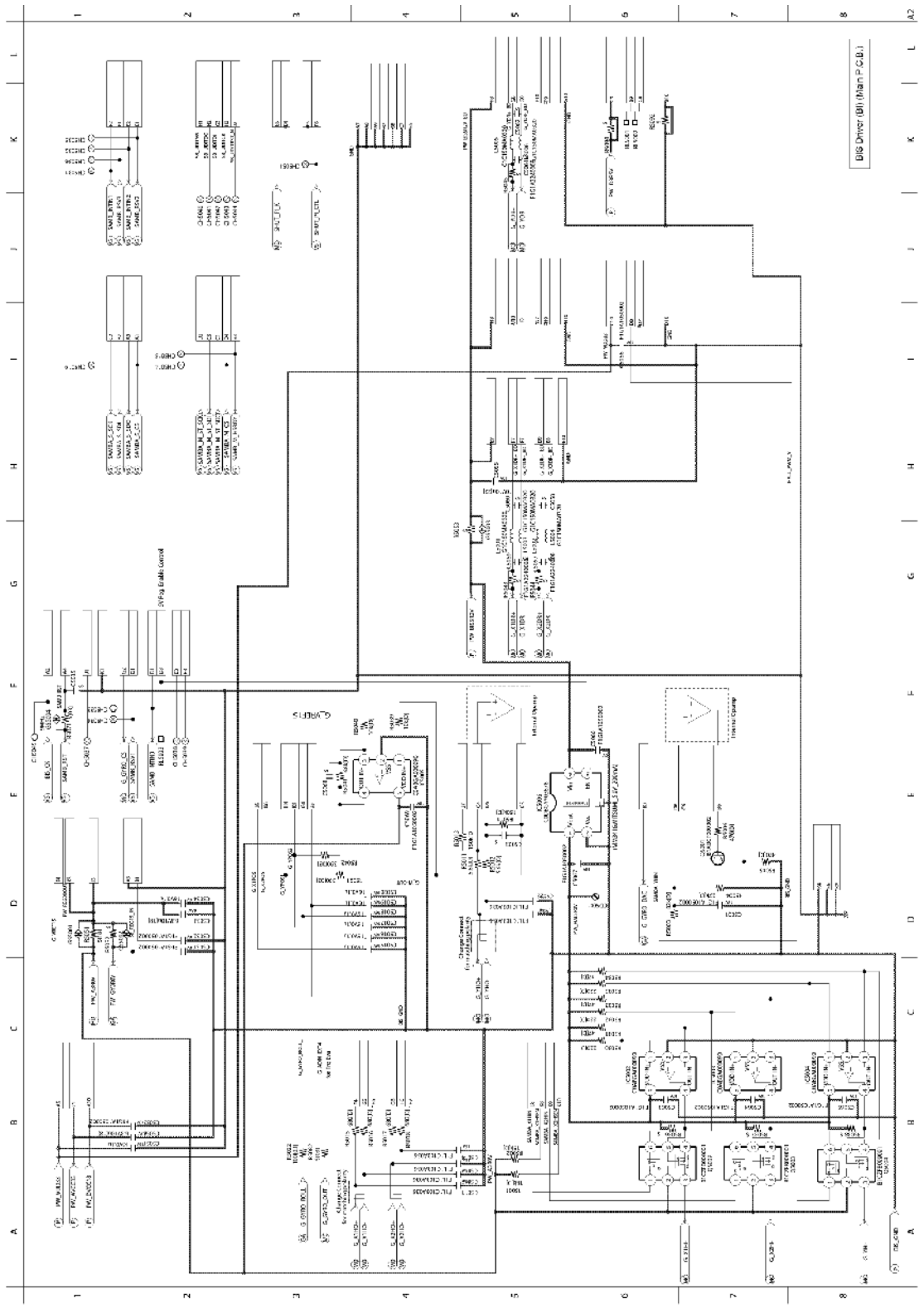
Model No. : DC-G9/G9M/G9L Mount Connection (MO) (Main P.C.B.)



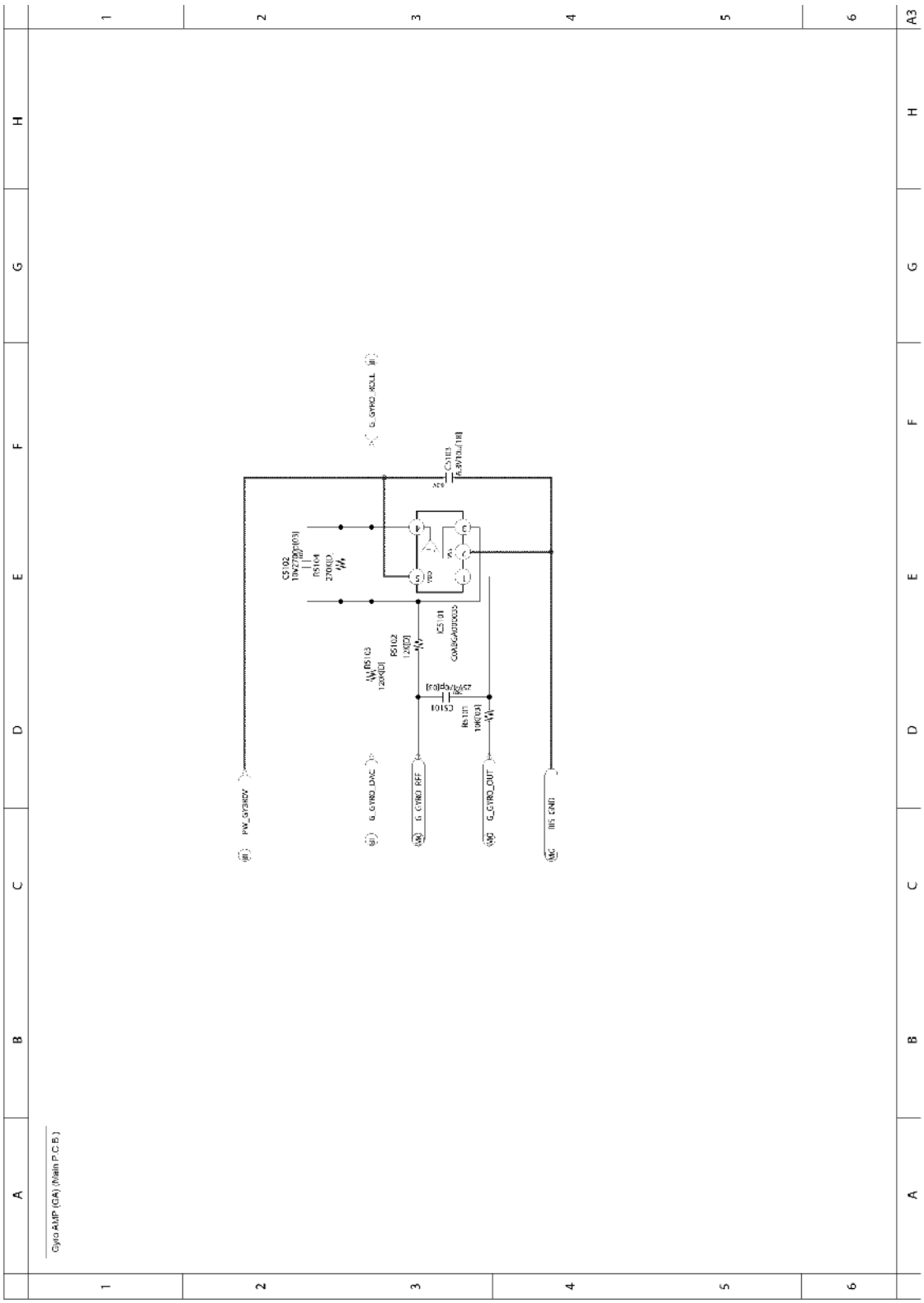
Model No. : DC-G9/G9M/G9L Synchro (SC) (Main P.C.B.)



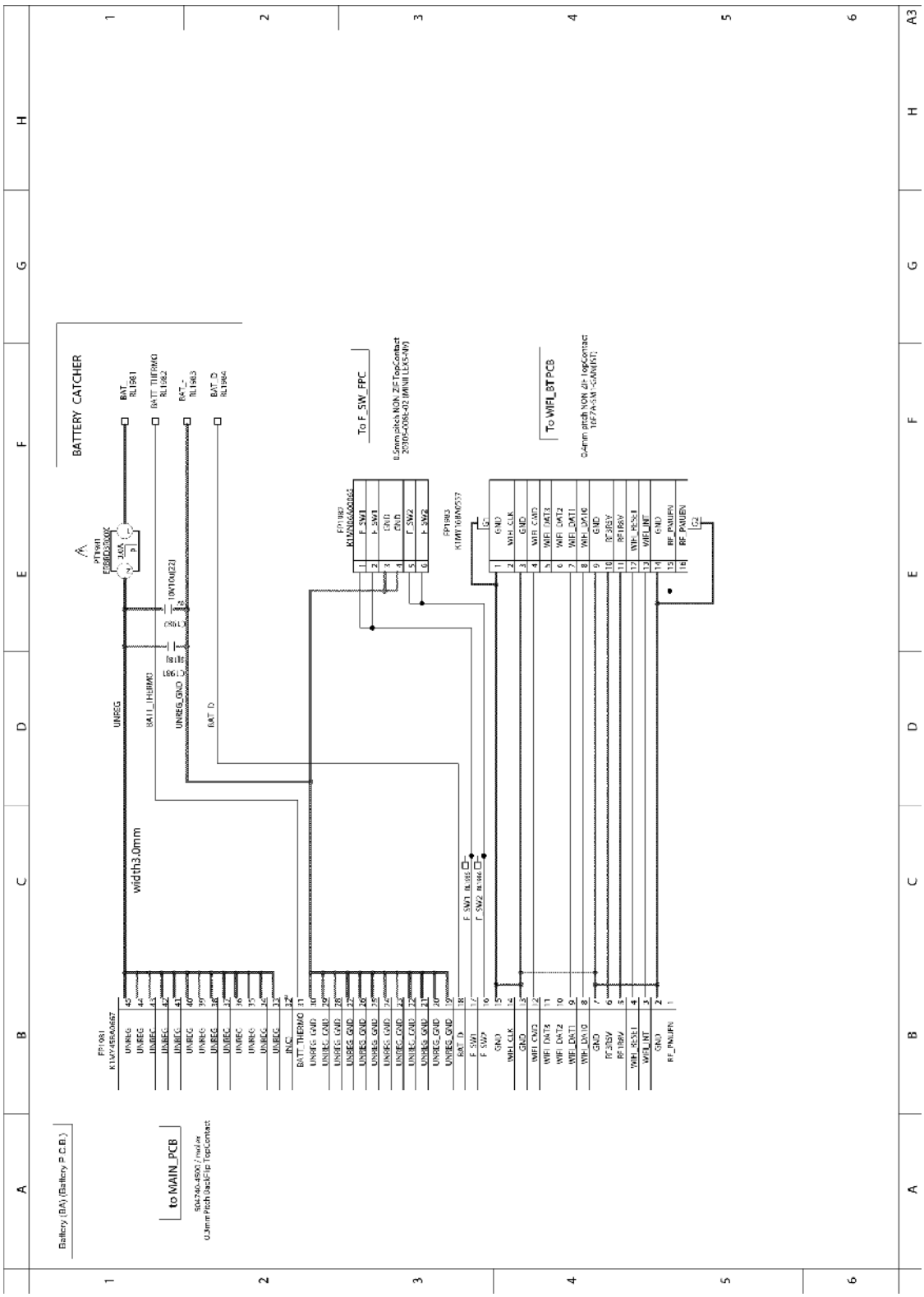
Model No. : DC-G9/G9M/G9L BIS Driver (BI) (Main P.C.B.)



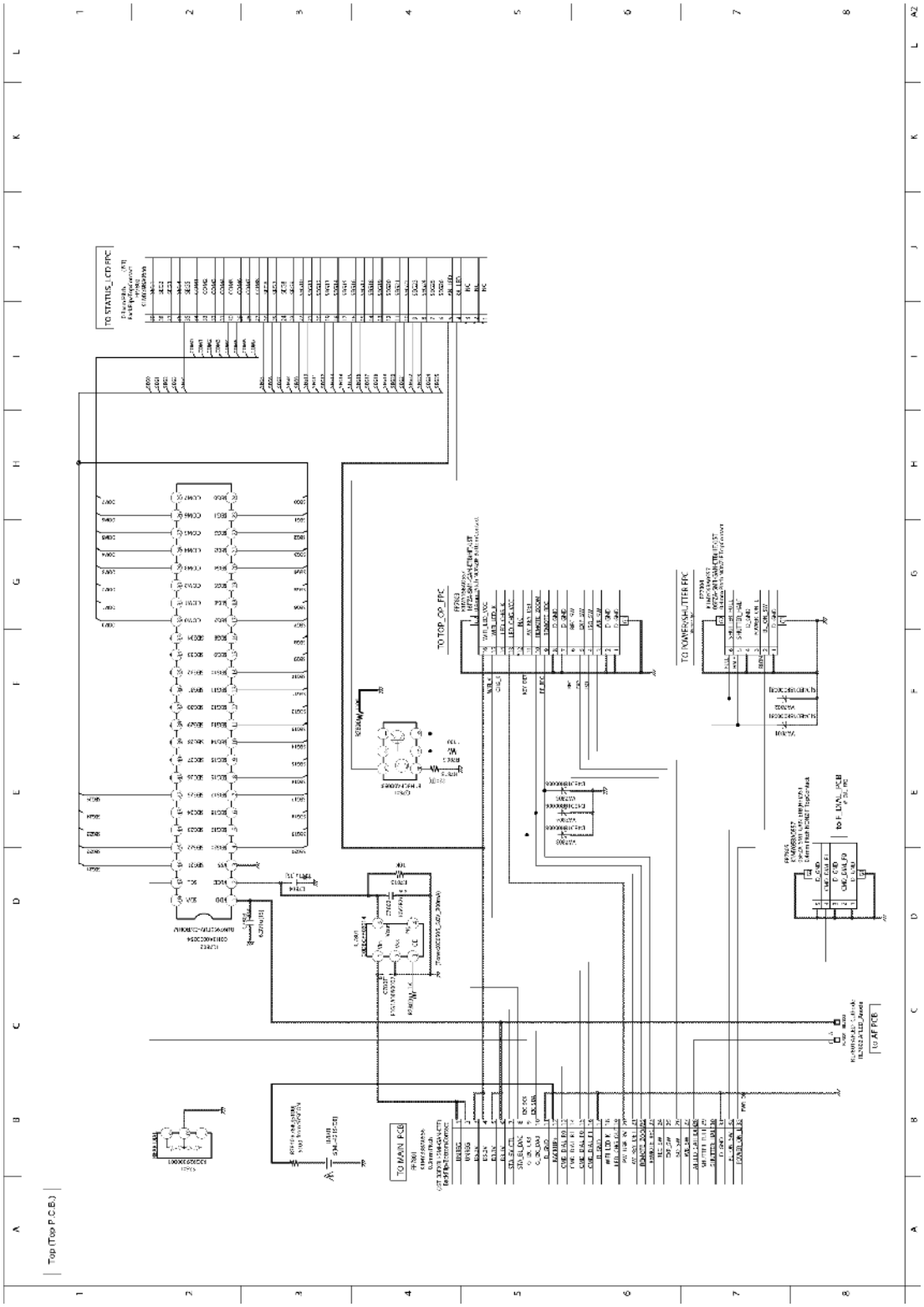
Model No. : DC-G9/G9M/G9L Gyro Amp (GA) (Main P.C.B.)



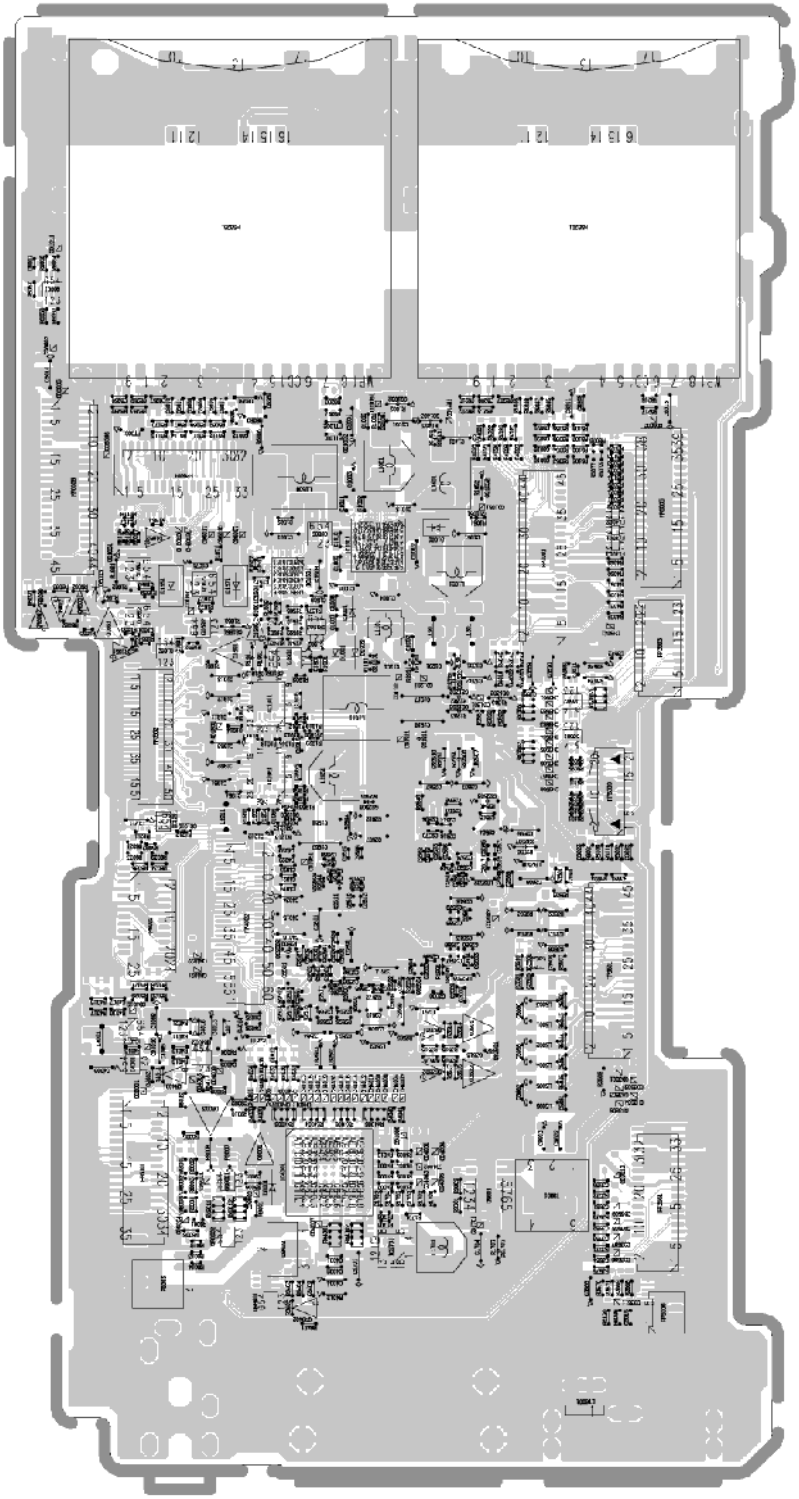
Model No. : DC-G9/G9M/G9L Battery (BA) (Battery P.C.B.)



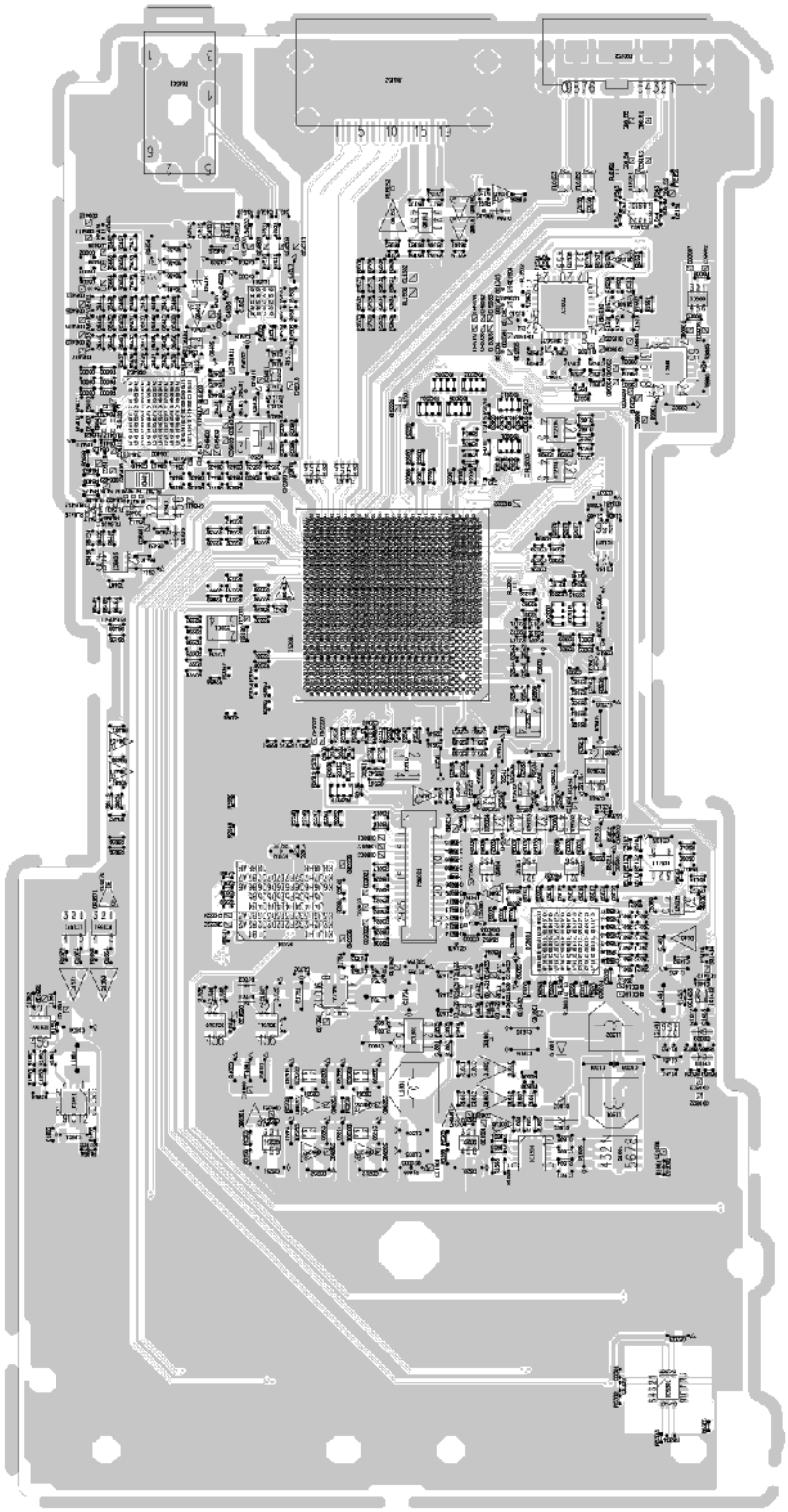
Model No. : DC-G9/G9M/G9L Top (Top P.C.B.)



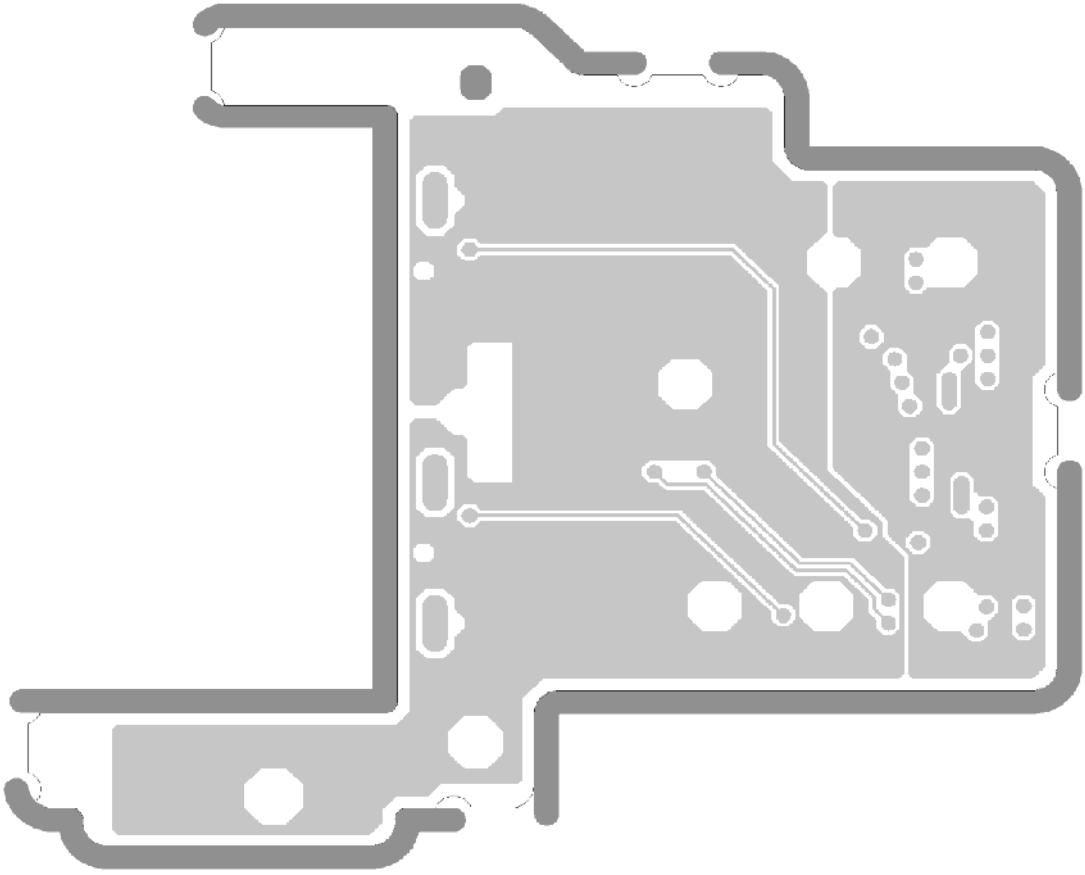
Model No. : DC-G9/G9M/G9L Main P.C.B. (Component Side)



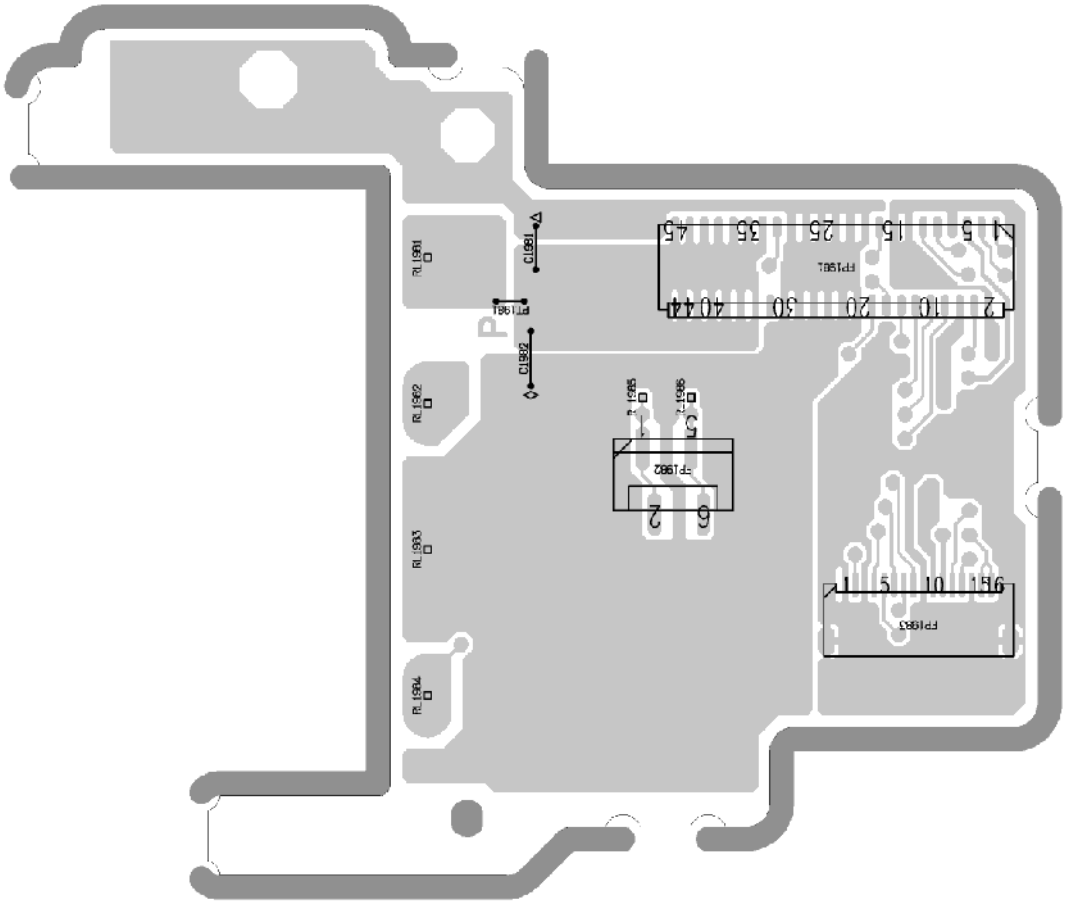
Model No. : DC-G9/G9M/G9L Main P.C.B. (Foil Side)



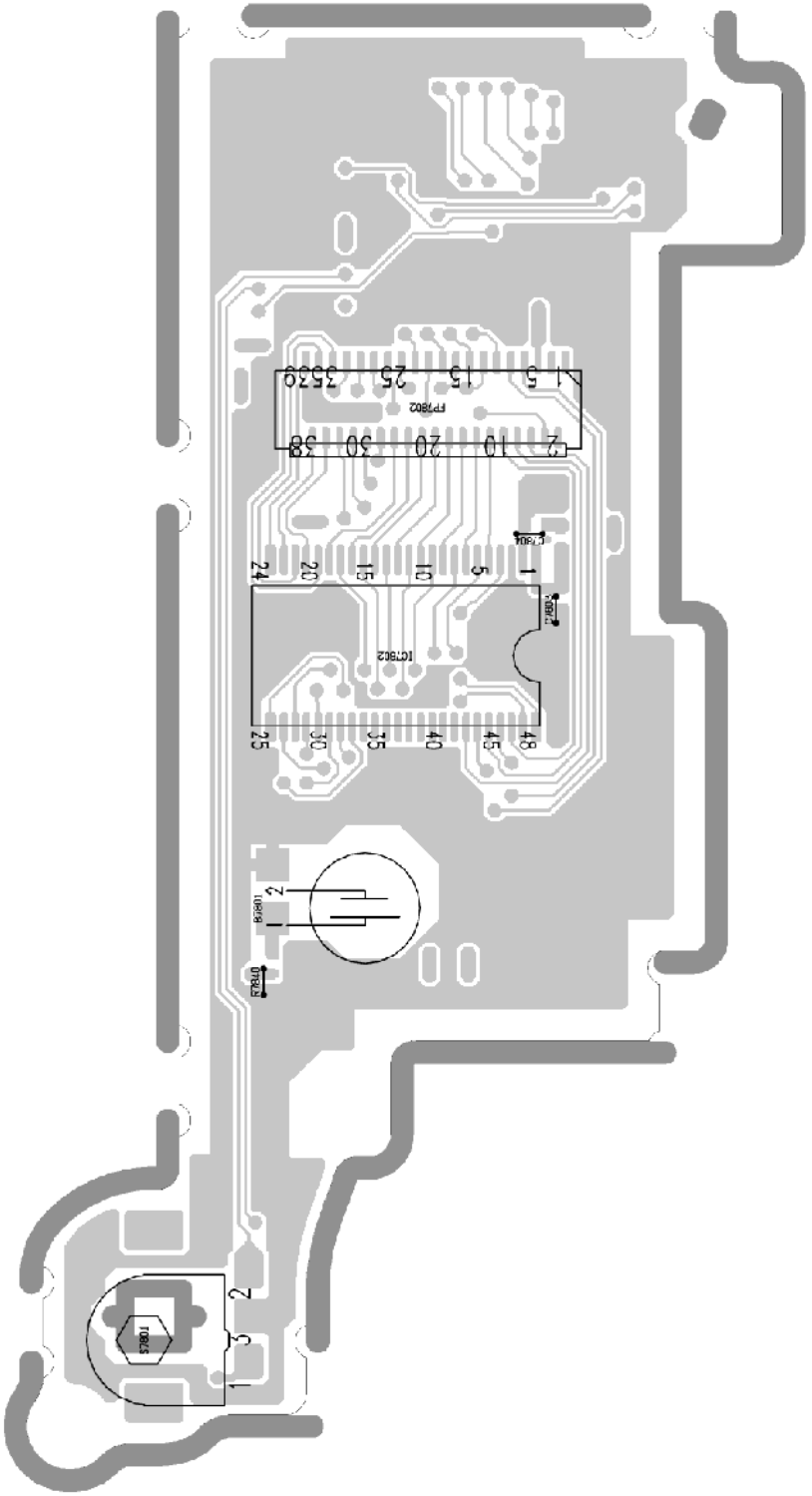
Model No. : DC-G9/G9M/G9L Battery P.C.B. (Component Side)



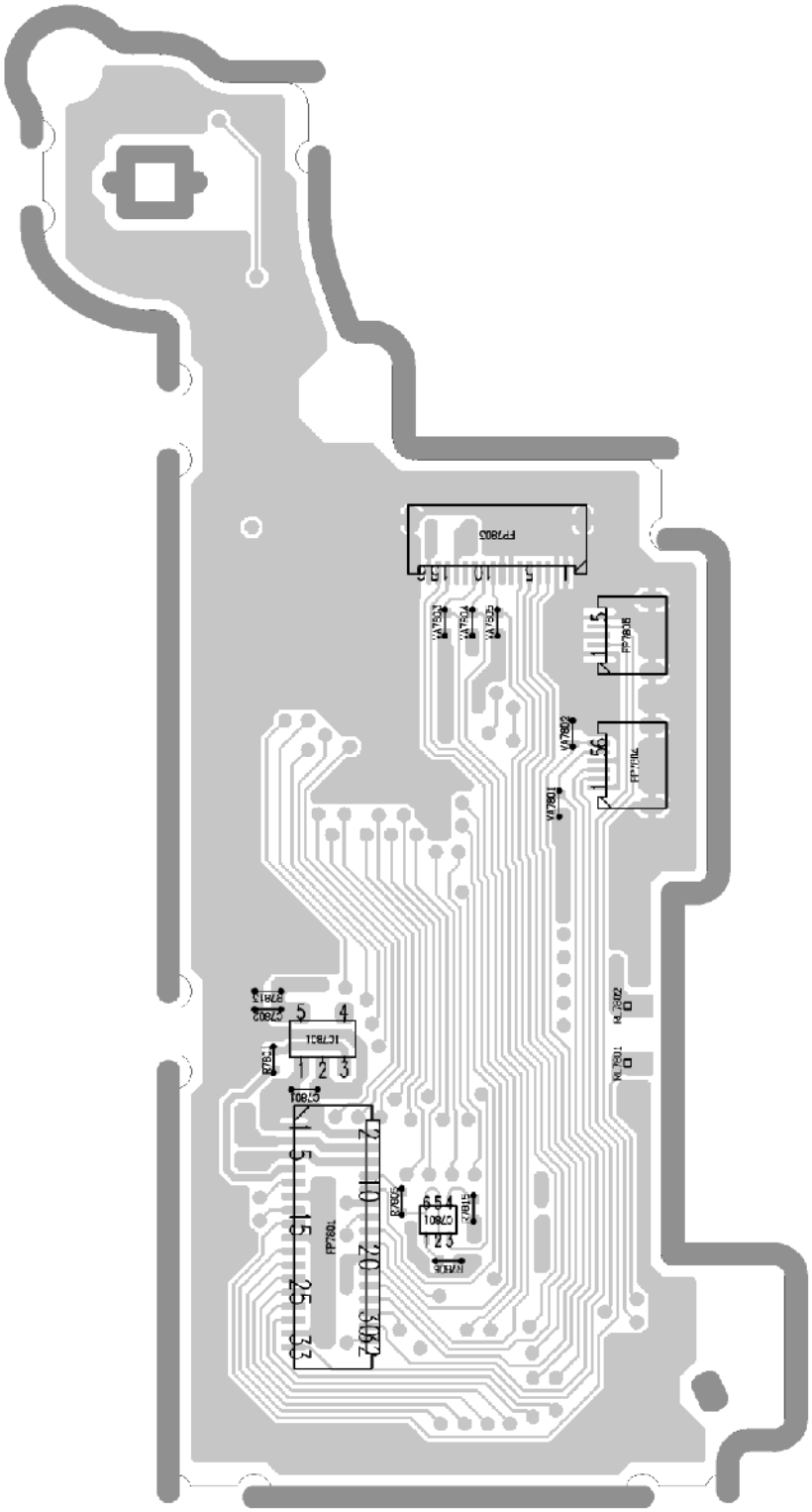
Model No. : DC-G9/G9M/G9L Battery P.C.B. (Foil Side)



Model No. : DC-G9/G9M/G9L Top P.C.B. (Component Side)



Model No. : DC-G9/G9M/G9L Top P.C.B. (Foil Side)



Model No. : DC-G9/G9M/G9L Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
		D1001	DB2J20800L	DIODE	1	E.S.D.
		D1002	B0JCMD000066	DIODE	1	E.S.D.
		D1461	DB3S308F0L	DIODE	1	E.S.D.
		D1501	B0JCDD000019	DIODE	1	E.S.D.
		D1502	B0JCDD000019	DIODE	1	E.S.D.
		D1503	B0JCDD000019	DIODE	1	E.S.D.
		D1504	B0JCCD000003	DIODE	1	E.S.D.
		D1505	B0ADEJ000054	DIODE	1	E.S.D.
		D1601	B0JCRD000017	DIODE	1	E.S.D.
		D1602	B0JCGD000016	DIODE	1	E.S.D.
		D1603	B0JCGD000016	DIODE	1	E.S.D.
		D1651	B0JCPG000032	DIODE	1	E.S.D.
		D1652	B0ADDH000014	DIODE	1	E.S.D.
		D1652	B0ADEJ000054	DIODE	1	E.S.D.
		D1671	B0JCPG000032	DIODE	1	E.S.D.
		D1901	B0JCGD000016	DIODE	1	E.S.D.
		D1902	B0JCGD000016	DIODE	1	E.S.D.
		D3561	DZ5S068D0R	DIODE	1	E.S.D.
		D3562	DZ5S068D0R	DIODE	1	E.S.D.
		D6001	B0JCCD000003	DIODE	1	E.S.D.
		D6002	B0JCCD000003	DIODE	1	E.S.D.
		D6003	B0JCCD000003	DIODE	1	E.S.D.
		D6401	B0ADEJ000054	DIODE	1	E.S.D.
		D6402	B0JCCD000003	DIODE	1	E.S.D.
		D6403	B0JCCD000003	DIODE	1	E.S.D.
		D6404	B0ADEJ000054	DIODE	1	E.S.D.
		D8001	DZ2J082M0L	DIODE	1	E.S.D.
		D8003	B2ABAP000007	DIODE	1	E.S.D.
		D8402	B2BBDR000004	DIODE	1	E.S.D.
		FL6156	EXC28CH900U	FILTER	1	
		FL6157	EXC28CH900U	FILTER	1	
		FP3501	K1MY45BA0667	CONNECTOR 45P	1	
		FP3502	K1MY51BA0647	CONNECTOR 51P	1	
		FP3561	K1MY33BA0556	CONNECTOR 33P	1	
		FP3563	K1MY23BA0667	CONNECTOR 23P	1	
		FP4001	K1MY45BA0667	CONNECTOR 45P	1	
		FP4002	K1MY61AA0288	CONNECTOR 61P	1	
		FP6001	K1MY35BA0556	CONNECTOR 35P	1	
		FP6002	K1MY25BA0556	CONNECTOR 25P	1	
		FP6004	K1MY33BA0556	CONNECTOR 33P	1	
		FP6005	K1MY39BA0556	CONNECTOR 39P	1	
		FP6006	K1MY05BA0557	CONNECTOR 5P	1	
		FP6008	K1MY45BA0667	CONNECTOR 45P	1	
		FP6009	K1MY21BA0585	CONNECTOR 21P	1	
		HS6201	K1NA17E00002	CONNECTOR 17P	1	
		HS6251	K1NA17E00002	CONNECTOR 17P	1	
		IC1001	C1ZBZ0004906	IC	1	E.S.D.
		IC1211	C0DBAYY01533	IC	1	E.S.D.
		IC1411	C0DBGYY03640	IC	1	E.S.D.
		IC1412	C0DBGYY03641	IC	1	E.S.D.
		IC1431	C0DBGYY03644	IC	1	E.S.D.
		IC1432	C0DBGYY03614	IC	1	E.S.D.
		IC1433	C0DBGYY03644	IC	1	E.S.D.
		IC1451	C0DBAYY01533	IC	1	E.S.D.
		IC1461	C0DBGYY06345	IC	1	E.S.D.
		IC1501	C1ZBZ0005562	IC	1	E.S.D.
		IC1502	SUBF000028	IC	1	E.S.D. [INBD]
		IC1503	C1CB00004574	IC	1	E.S.D.
		IC1510	C0DBGYY02368	IC	1	E.S.D.
		IC1511	C0DBGYY06165	IC	1	E.S.D.
		IC1601	C0DBAYY02125	IC	1	E.S.D.
		IC1651	C0JBAA000393	IC	1	E.S.D.

Model No. : DC-G9/G9M/G9L Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
		IC1671	C0JBAA000393	IC	1	E.S.D.
		IC1701	SUBF000016	IC	1	E.S.D. [INBD]
		IC1751	SUBF000017	IC	1	E.S.D. [INBD]
		IC1801	C0DBAYY02374	IC	1	E.S.D.
		IC1851	SUBF000017	IC	1	E.S.D. [INBD]
		IC1861	C0DBGYY06645	IC	1	E.S.D.
		IC1901	C0DBGYY02369	IC	1	E.S.D.
		IC1911	SUBF000025	IC	1	E.S.D. [INBD]
		IC1951	SUBF000025	IC	1	E.S.D. [INBD]
		IC2004	C0JBAS000182	IC	1	E.S.D.
		IC2005	C0JBAS000182	IC	1	E.S.D.
		IC2502	C0DBGYY05590	IC	1	E.S.D.
		IC2503	C0DBGYY05584	IC	1	E.S.D.
		IC2504	C0ZBZ0002095	IC	1	E.S.D.
		IC2506	C0ZBZ0002264	IC	1	E.S.D.
		IC3501	C0DBGYY03614	IC	1	E.S.D.
		IC3502	C0DBGYY03248	IC	1	E.S.D.
		IC3503	C0DBGYY03644	IC	1	E.S.D.
		IC4001	C1CB00004338	IC	1	E.S.D.
		IC4073	C0DBAYY02115	IC	1	E.S.D.
		IC4501	C1AB00004335	IC	1	E.S.D.
		IC4502	C0DBGYY03614	IC	1	E.S.D.
		IC5001	SUBF000023	IC	1	E.S.D. [INBD]
		IC5002	C0ABGA000090	IC	1	E.S.D.
		IC5003	C0ABGA000090	IC	1	E.S.D.
		IC5004	C0ABGA000090	IC	1	E.S.D.
		IC5005	C0ABGA000090	IC	1	E.S.D.
		IC5006	C0DBGYY03678	IC	1	E.S.D.
		IC5101	C0ABGA000035	IC	1	E.S.D.
		IC6202	C0DBGYY00779	IC	1	E.S.D.
		IC6203	C0DBGYY00779	IC	1	E.S.D.
		IC6252	C0DBGYY00779	IC	1	E.S.D.
		IC6253	C0DBGYY00779	IC	1	E.S.D.
		IC6301	L2EE00000038	IC	1	E.S.D.
		IC6401	C0JBAF000785	IC	1	E.S.D.
		IC6402	C1AB00004163	IC	1	E.S.D.
		IC6403	C0DBGYY02368	IC	1	E.S.D.
		IC6404	C0DBGYY03668	IC	1	E.S.D.
		IC9901	SUBF000005	IC	1	E.S.D. [INBD]
		IP2001	1VL1DVLB1116Z	IC	1	E.S.D.
		IS2001	1SL1DVLB1116Z	IC	1	E.S.D.
		JK4501	K2HC106E0013	JACK	1	
		JK6152	K1FY110E0009	CONNECTOR	1	
		JK6153	K1FY119E0100	CONNECTOR	1	
		L1051	G1C4R7MA0577	CHIP INDUCTOR 4.7UH	1	
		L1061	G1C4R7MA0577	CHIP INDUCTOR 4.7UH	1	
		L1101	G1C220MA0496	CHIP INDUCTOR 22UH	1	
		L1201	G1C100ZA0322	CHIP INDUCTOR	1	
		L1211	G1C3R3ZA0322	CHIP INDUCTOR	1	
		L1301	G1C4R7ZA0322	CHIP INDUCTOR 4.7UH	1	
		L1401	G1C100MA0943	CHIP INDUCTOR	1	
		L1451	G1C3R3ZA0322	CHIP INDUCTOR	1	
		L1500	G1C2R2MA0939	CHIP INDUCTOR	1	
		L1601	G1C1R5MA0577	CHIP INDUCTOR 1.5UH	1	
		L1602	G1C1R5MA0577	CHIP INDUCTOR 1.5UH	1	
		L1701	G1C3R3MA0577	CHIP INDUCTOR	1	
		L1751	G1C4R7ZA0322	CHIP INDUCTOR 4.7UH	1	
		L1801	G1C4R7MA0577	CHIP INDUCTOR 4.7UH	1	
		L1851	G1C4R7ZA0322	CHIP INDUCTOR 4.7UH	1	
		L1911	G1C1R0MA0940	CHIP INDUCTOR	1	
		L1951	G1C1R5MA0577	CHIP INDUCTOR 1.5UH	1	
		L2501	G1C4R7MA0495	CHIP INDUCTOR 4.7UH	1	

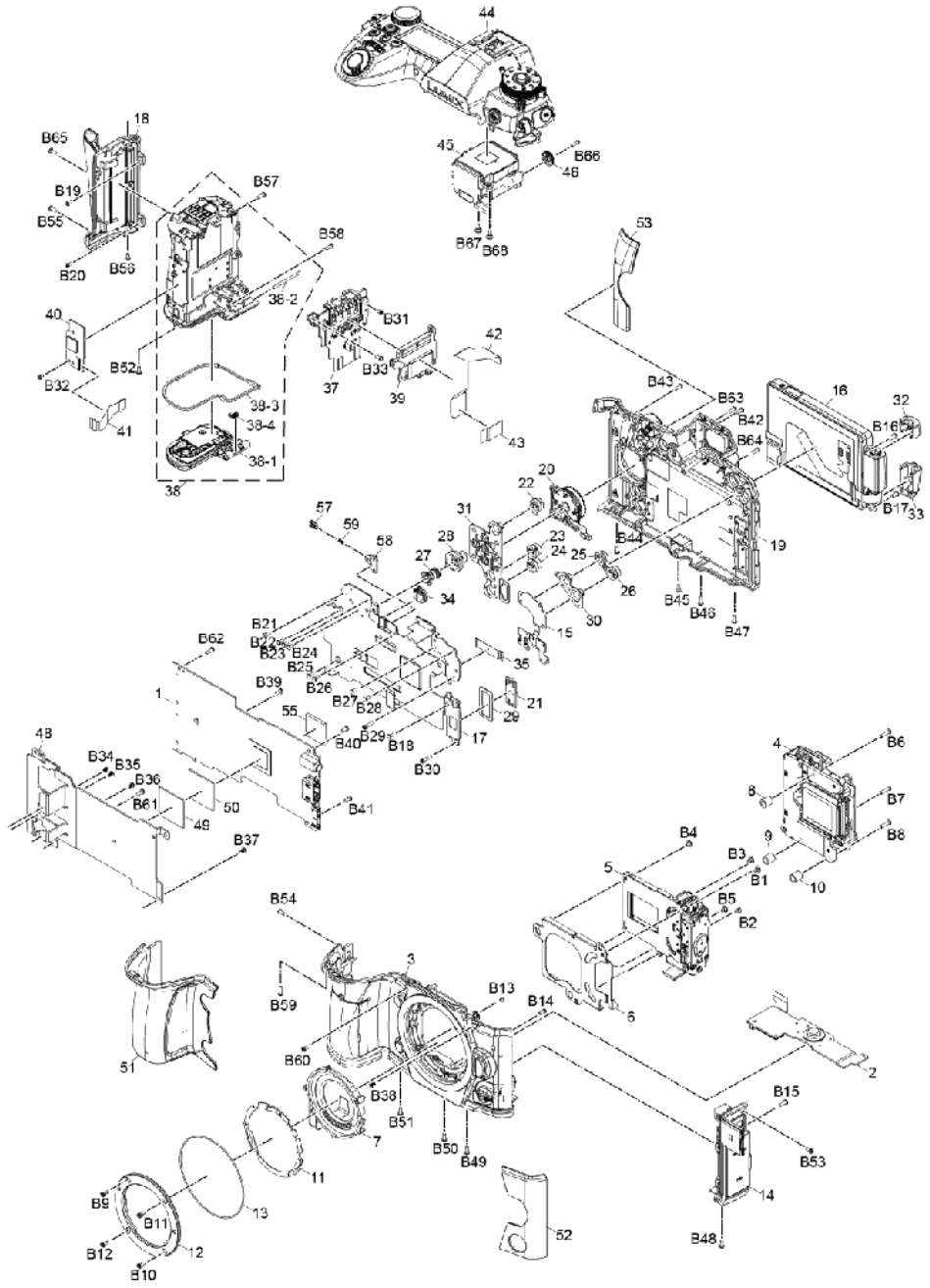
Model No. : DC-G9/G9M/G9L Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
		L2502	G1C4R7MA0495	CHIP INDUCTOR 4.7UH	1	
		L4001	G1C100ZA0322	CHIP INDUCTOR	1	
		L5001	G1C150MA0320	CHIP INDUCTOR	1	
		L5002	G1C150MA0320	CHIP INDUCTOR	1	
		L5003	G1C150MA0320	CHIP INDUCTOR	1	
		L5004	G1C150MA0320	CHIP INDUCTOR	1	
		L5005	G1C150MA0320	CHIP INDUCTOR	1	
		L5006	G1C150MA0320	CHIP INDUCTOR	1	
		LB2001	J0JCC0000408	FILTER	1	
		LB2501	J0JFC0000006	FILTER	1	
		LB2502	J0JFC0000006	FILTER	1	
		LB2503	J0JFC0000006	FILTER	1	
		LB2504	J0JFC0000006	FILTER	1	
		LB2505	J0JFC0000006	FILTER	1	
		LB2506	J0JFC0000006	FILTER	1	
		LB2507	J0JFC0000006	FILTER	1	
		LB2508	J0JFC0000006	FILTER	1	
		LB4521	J0JBC0000107	FILTER	1	
		LB4523	J0JBC0000107	FILTER	1	
		LB4524	J0JBC0000107	FILTER	1	
		P6003	K1KA02BA0014	CONNECTOR 2P	1	
	⚠	PT1001	ERBRD0R50X	FUSE	1	
	⚠	PT1002	ERBRD0R50X	FUSE	1	
	⚠	PT4001	K5H1512A0024	FUSE 50V 0.15A	1	
	⚠	PT6001	K5H1512A0024	FUSE 50V 0.15A	1	
	⚠	PT6151	ERBRD3R00X	FUSE	1	
		Q1502	B1CHRB000016	TRANSISTOR	1	E.S.D.
		Q1505	B1CFGC000022	TRANSISTOR	1	E.S.D.
		Q1506	FC6943010R	TRANSISTOR	1	E.S.D.
		Q1508	B1ABCF000302	TRANSISTOR	1	E.S.D.
		Q1601	B1CFRD000100	TRANSISTOR	1	E.S.D.
		Q1602	B1CFJD000007	TRANSISTOR	1	E.S.D.
		Q1603	B1CFJD000007	TRANSISTOR	1	E.S.D.
		Q1651	FK3503010L	TRANSISTOR	1	E.S.D.
		Q1652	B1CHRB000016	TRANSISTOR	1	E.S.D.
		Q1653	FK3503010L	TRANSISTOR	1	E.S.D.
		Q1654	B1CHRB000016	TRANSISTOR	1	E.S.D.
		Q1671	FK3503010L	TRANSISTOR	1	E.S.D.
		Q1672	B1CHRB000016	TRANSISTOR	1	E.S.D.
		Q1691	FK3503010L	TRANSISTOR	1	E.S.D.
		Q1692	B1CHPB000008	TRANSISTOR	1	E.S.D.
		Q1693	B1CHPB000008	TRANSISTOR	1	E.S.D.
		Q3501	B1CFQC000018	TRANSISTOR	1	E.S.D.
		Q3502	B1CFQC000018	TRANSISTOR	1	E.S.D.
		Q4001	B1CHMB000007	TRANSISTOR	1	E.S.D.
		Q5001	B1ABCF000302	TRANSISTOR	1	E.S.D.
		Q5002	B1CZFB000001	TRANSISTOR	1	E.S.D.
		Q5003	B1CZFB000001	TRANSISTOR	1	E.S.D.
		Q5004	B1CZFB000001	TRANSISTOR	1	E.S.D.
		Q6001	B1HFCFA00050	TRANSISTOR	1	E.S.D.
		Q6002	B1CFGC000022	TRANSISTOR	1	E.S.D.
		Q6151	B1CFGD000003	TRANSISTOR	1	E.S.D.
		Q6152	B1CFJD000007	TRANSISTOR	1	E.S.D.
		Q6201	B1CHMB000007	TRANSISTOR	1	E.S.D.
		Q6251	B1CHMB000007	TRANSISTOR	1	E.S.D.
		Q6401	B1ABCF000302	TRANSISTOR	1	E.S.D.
		Q8001	B1CFJD000007	TRANSISTOR	1	E.S.D.
		Q9801	B1MBCGA00006	TRANSISTOR	1	E.S.D.
		Q9901	B1HBCFA00053	TRANSISTOR	1	E.S.D.
		QR1503	B1GFCFJJ0016	TRANSISTOR-RESISTOR	1	E.S.D.
		QR1505	B1GBCFYY0217	TRANSISTOR-RESISTOR	1	E.S.D.
		QR1601	B1GBCFYY0217	TRANSISTOR-RESISTOR	1	E.S.D.

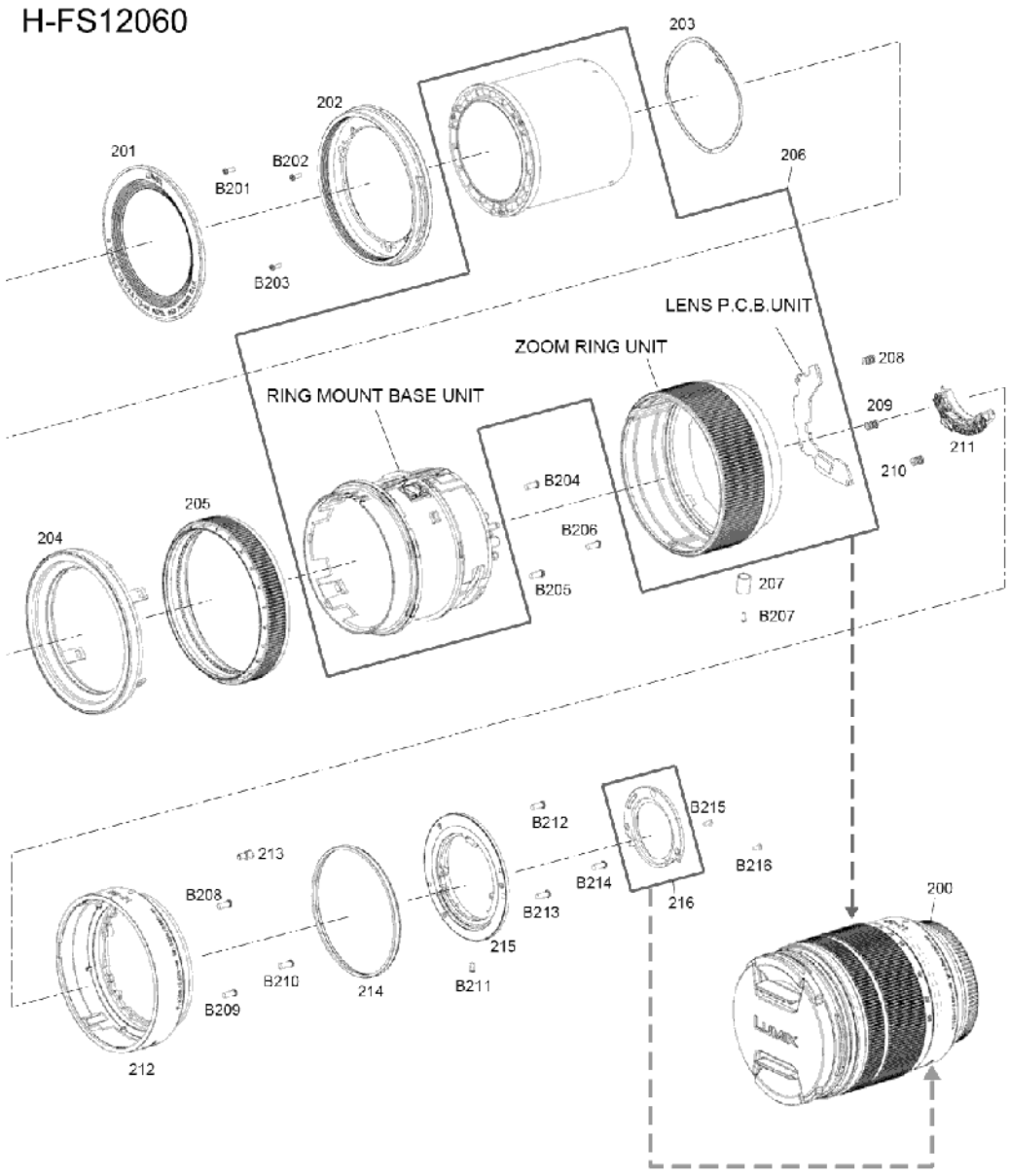
Model No. : DC-G9/G9M/G9L Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
		QR1651	B1GBCFYY0217	TRANSISTOR-RESISTOR	1	E.S.D.
		QR1671	B1GBCFYY0217	TRANSISTOR-RESISTOR	1	E.S.D.
		QR2501	B1GBCFYY0217	TRANSISTOR-RESISTOR	1	E.S.D.
		QR3501	B1GBCFNN0015	TRANSISTOR-RESISTOR	1	E.S.D.
		QR3502	B1GBCFNN0015	TRANSISTOR-RESISTOR	1	E.S.D.
		QR4001	B1GBCFYY0217	TRANSISTOR-RESISTOR	1	E.S.D.
		QR4002	B1GFCFLL0009	TRANSISTOR-RESISTOR	1	E.S.D.
		QR6001	B1GBCFYY0217	TRANSISTOR-RESISTOR	1	E.S.D.
		QR6002	B1GBCFYY0217	TRANSISTOR-RESISTOR	1	E.S.D.
		QR6151	B1GDCFYY0148	TRANSISTOR-RESISTOR	1	E.S.D.
		QR6152	B1GBCFYY0224	TRANSISTOR-RESISTOR	1	E.S.D.
		QR6201	B1GBCFYY0217	TRANSISTOR-RESISTOR	1	E.S.D.
		QR6202	B1GDCFYY0150	TRANSISTOR-RESISTOR	1	E.S.D.
		QR6203	B1GBCFYY0217	TRANSISTOR-RESISTOR	1	E.S.D.
		QR6251	B1GBCFYY0217	TRANSISTOR-RESISTOR	1	E.S.D.
		QR6252	B1GDCFYY0150	TRANSISTOR-RESISTOR	1	E.S.D.
		QR6253	B1GBCFYY0217	TRANSISTOR-RESISTOR	1	E.S.D.
		QR6401	B1GDCFYY0150	TRANSISTOR-RESISTOR	1	E.S.D.
		QR8001	B1GFCFJJ0016	TRANSISTOR-RESISTOR	1	E.S.D.
		QR8002	B1GFCFJJ0016	TRANSISTOR-RESISTOR	1	E.S.D.
		QR8401	B1GKCFYY0038	TRANSISTOR	1	E.S.D.
		QR8402	B1GBCFYY0225	TRANSISTOR-RESISTOR	1	E.S.D.
		RX2001	D1H81034A042	RESISTOR NETWORKS	1	
		RX2006	D1H84734A042	RESISTOR NETWORKS	1	
		RX2007	D1H81014A042	RESISTOR NETWORKS	1	
		RX2012	D1H81034A042	RESISTOR NETWORKS	1	
		RX2013	D1H81034A042	RESISTOR NETWORKS	1	
		RX3561	D1H81014A042	RESISTOR NETWORKS	1	
		RX3562	D1H81014A042	RESISTOR NETWORKS	1	
		RX3563	D1H81044A042	RESISTOR NETWORKS	1	
		RX8011	D1H83314A042	RESISTOR NETWORKS	1	
		RX8012	D1H81034A042	RESISTOR NETWORKS	1	
		T9801	G5DYZ0000028	TRANSFORMER	1	
		TH2001	D4CC11030013	THERMISTORS	1	
		VA6002	D4ED18R00008	VARISTOR	1	
		X2001	H1A7205B0007	CRYSTAL OSCILLATOR	1	
		X2501	H0J480500063	CRYSTAL OSCILLATOR	1	
		X2502	H1A4805B0059	CRYSTAL OSCILLATOR	1	
		X2503	H1A4805B0059	CRYSTAL OSCILLATOR	1	
		X6401	H0J327200230	CRYSTAL OSCILLATOR	1	

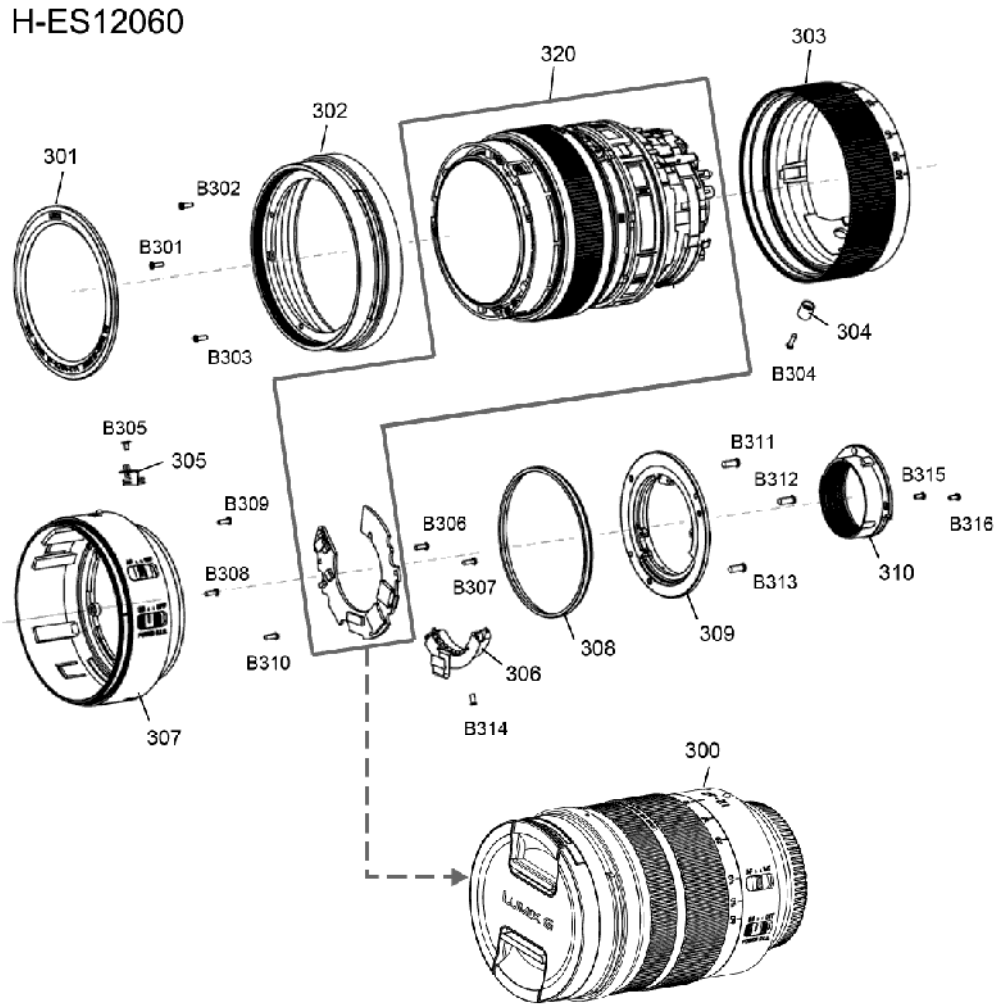
Model No. : DC-G9/G9M/G9L Frame and Casing Section



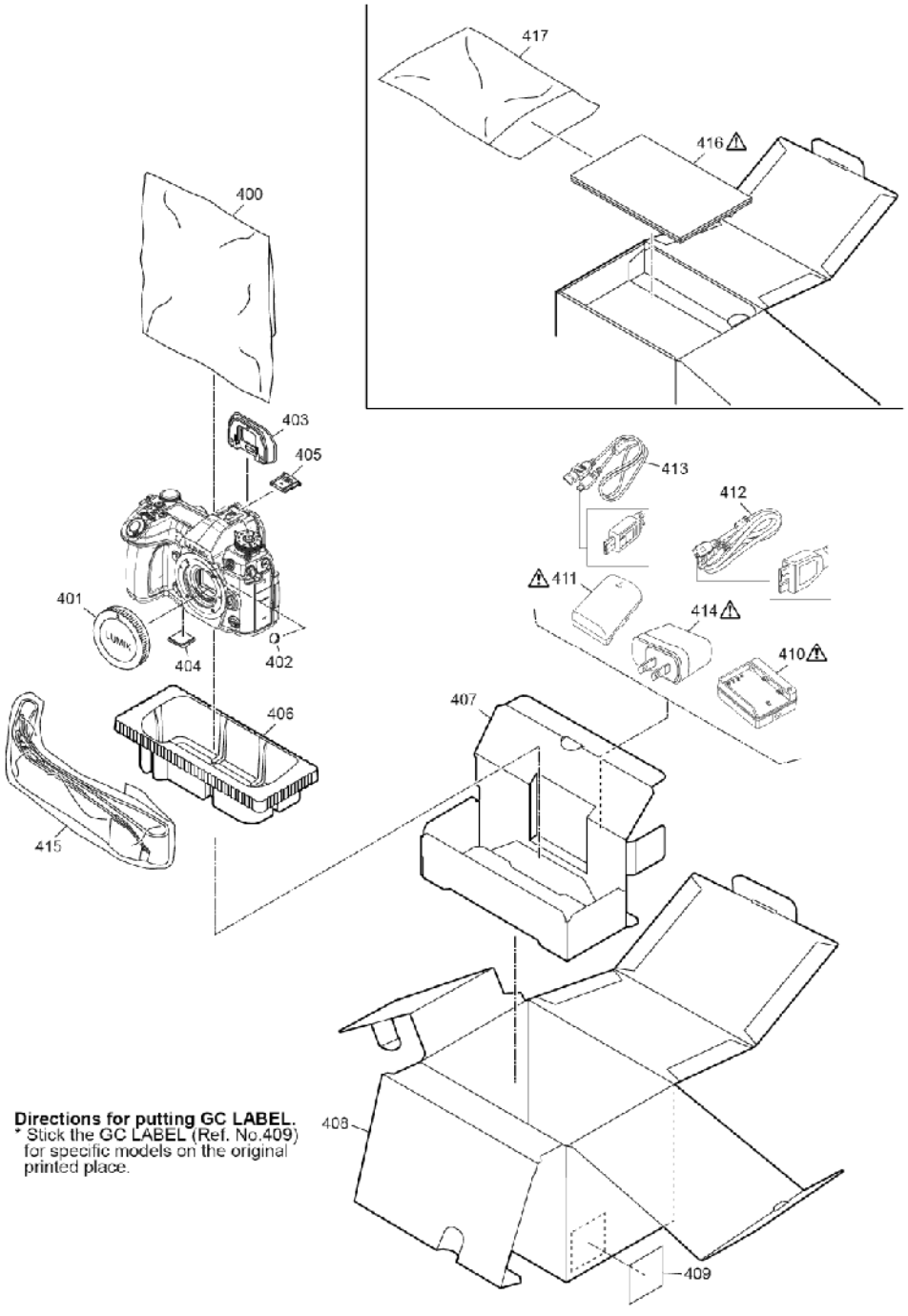
Model No. : DC-G9/G9M/G9L Camera Lens Section (1) (H-FS12060)



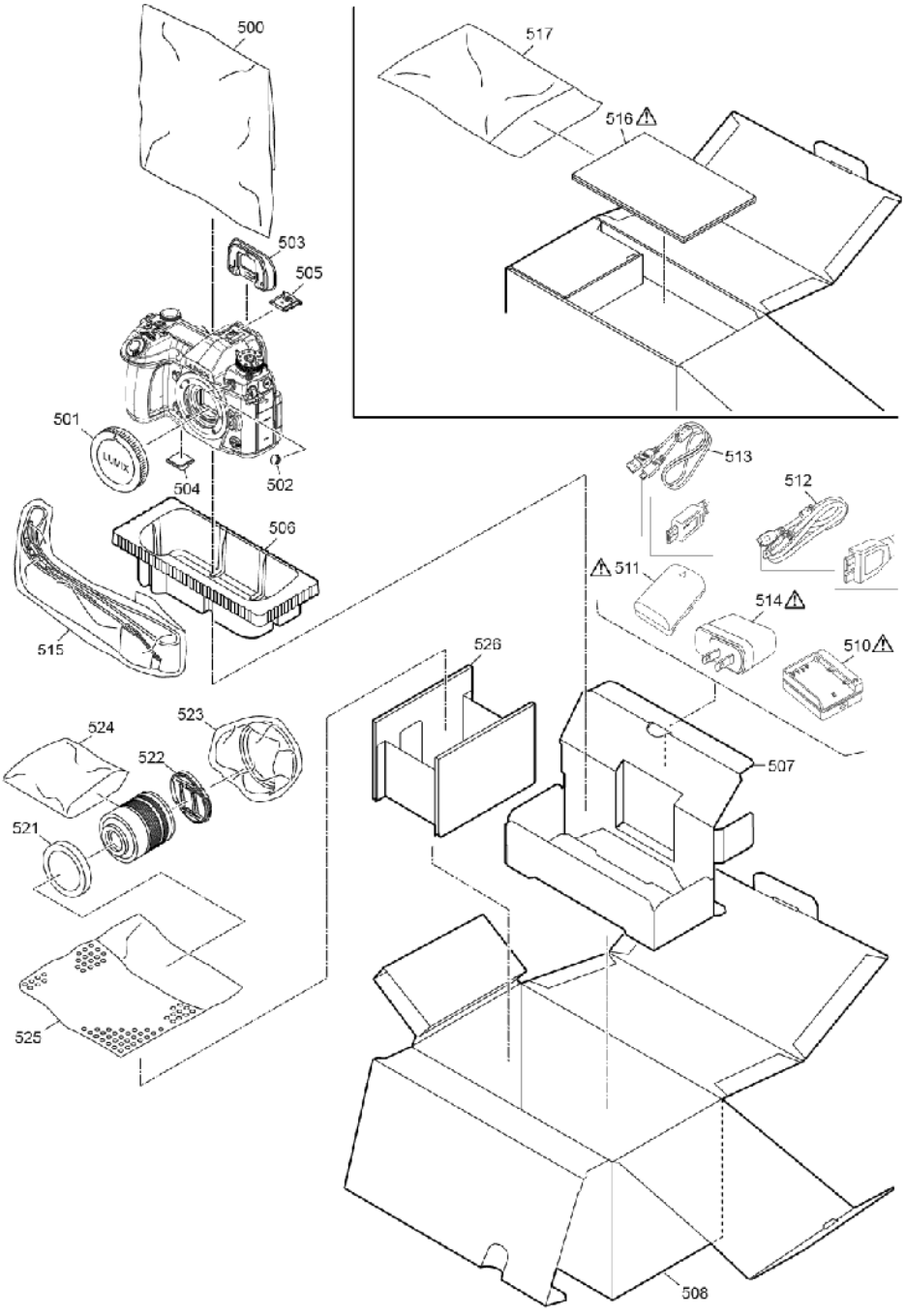
Model No. : DC-G9/G9M/G9L Camera Lens Section (2) (H-ES12060)



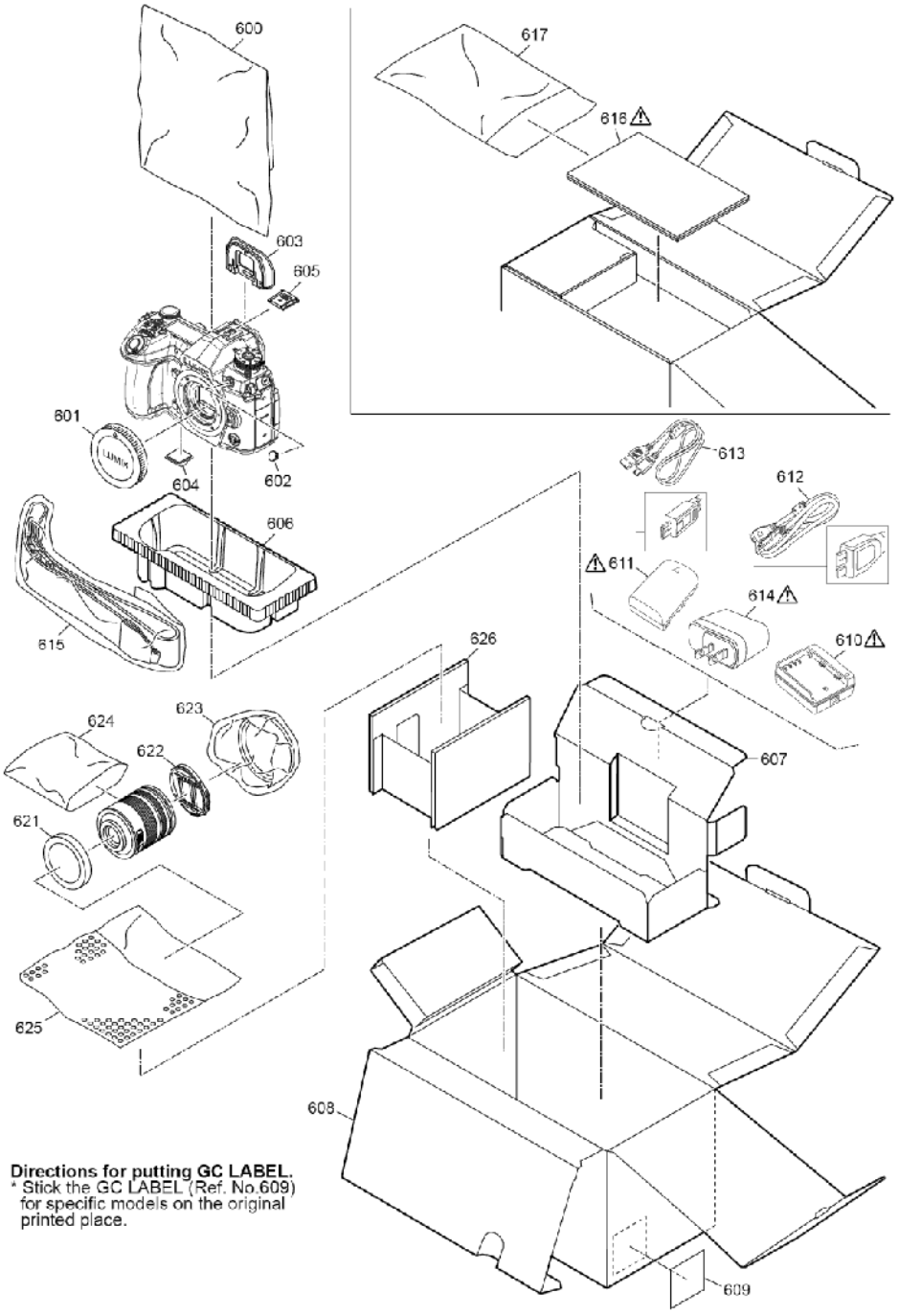
Model No. : DC-G9/G9M/G9L Packing Parts and Accessories Section (1) (G9)



Model No. : DC-G9/G9M/G9L Packing Parts and Accessories Section (2) (G9M)



Model No. : DC-G9/G9M/G9L Packing Parts and Accessories Section (3) (G9L)



Model No. : DC-G9/G9M/G9L Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
		1	1PB1DVLB1116Z	MAIN P.C.B.	1	E.S.D. G9P,G9PP,G9EE,G9GA,G9GC,G9GH,G9GK,G9GN,G9GD,G9LP,G9LGA,G9LGC,G9LGN
		1	1PB1DVLB1116Y	MAIN P.C.B.	1	E.S.D. G9EG,G9EC,G9EF,G9EB,G9MEG,G9MEB,G9LEG,G9LEC,G9LEF,G9LEB
		2	1YE1MC471Z	TRIPOD UNIT	1	
		3	2YM1MC471Z	FRONT CASE UNIT	1	
		4	2DX1MC471Z	IMAGE SENSOR UNIT	1	
		5	3DX2MC561Z-S	SHUTTER UNIT	1	
		6	DVZM1004Z	SHUTTER HOLDER	1	
		7	DVVE1003Z	LENS CONNECTOR	1	
		8	SMB0206	ADJUST SPRING	1	
		9	SMB0206	ADJUST SPRING	1	
		10	SMB0206	ADJUST SPRING	1	
		11	VMC2063	MOUNT SPRING	1	
		12	VMD6702	B MOUNT	1	
		13	VMG2060	B MOUNT RING	1	
		14	1YK3MC471Z	JACK HOLDER UNIT	1	
		15	1PB1DVLD1059Z	MR1-2 FPC UNIT	1	
		16	1YE2MC471Z	LCD UNIT	1	
		17	1YE4MC471Z	REAR PLATE UNIT	1	
		18	1YK2MC471Z	SD DOOR BASE UNIT	1	
		19	1YM5MC471Z	REAR CASE UNIT	1	
		20	1YT3MC471Z	JOG UNIT	1	
		21	VGQ1F77-A	HINGE FIX COVER	1	
		22	DVBC1071Z/K	AE BUTTON	1	
		23	DVBC1072Z/K	MENU BUTTON	1	
		24	DVBC1073Z/K	DISP BUTTON	1	
		25	DVBC1074Z/K	LVF BUTTON	1	
		26	DVBC1075Z/K	PLAY BUTTON	1	
		27	DVBE1014Z/K	JOY STICK KNOB	1	
		28	DVBZ1022Z/K	JOY STICK RUBBER	1	
		29	DVGE1270Z	HINGE CUSHION 4	1	
		30	DVHG1053Z	PLAY BUTTON PACKING	1	
		31	DVHG1054Z	REAR BUTTON PACKING	1	
		32	DVKV1026Z/K	HINGE ARM COVER UP	1	
		33	DVKV1027Z/K	HINGE ARM COVER LOW	1	
		34	L0AA01A00185	SPEAKER	1	
		35	VGQ1F53	SHEET	1	
		37	1LP1MC471Z	BATTERY P.C.B. UNIT	1	
		38	1YM6MC471Z	BATTERY CASE UNIT	1	
		38-1	1YK1MC471Z	BATTERY DOOR UNIT	1	
		38-2	DVDF1058Z	BATTERY DOOR SHAFT	1	
		38-3	DVHX1136Z	BATTERY CASE WP PORON	1	
		38-4	DVUR1071Z	BATTERY DOOR SPRING	1	
		39	2GE1MC471Z	CONTACT COVER	1	
		40	SEP1006AB	WIFI BT P.C.B.	1	
		41	DVLD1056Z	WIFI FPC	1	
		42	DVLD1064Z	BATTERY FPC	1	
		43	SKN0027K	LVF COVER SHEET	1	
		44	2YM2MC471Z	TOP UNIT	1	
		45	1OU2MC471Z	LVF UNIT	1	
		46	EGE1MC471Z	LVF DPT KNOB	1	
		48	DVME1121Z	MAIN FRAME	1	
		49	DVMY1005Z	HEAT RADI PAD MAIN 1	1	
		50	DVMY1006Z	HEAT RADI PAD MAIN 2	1	
		51	DVYE1046Z/K	FRONT GRIP L UNIT	1	
		52	DVYE1047Y/K	FRONT GRIP R UNIT	1	
		53	DVYE1049Z/K	REAR GRIP UNIT	1	
		55	SGQ0212	THERMAL SHEET	1	
		57	DVBE1013Z/K	LCD LOCK KNOB	1	
		58	DVBZ1020Z/K	LCD LOCK HOLDER	1	

Model No. : DC-G9/G9M/G9L Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
		59	VMB4668	LCD LOCK SPRING	1	
		B1	DVHD1020Z	SCREW	1	
		B2	DVHD1020Z	SCREW	1	
		B3	DVHD1021Z	SCREW	1	
		B4	DVHD1021Z	SCREW	1	
		B5	DVHD1021Z	SCREW	1	
		B6	SHD0108	SCREW	1	
		B7	SHD0108	SCREW	1	
		B8	SHD0108	SCREW	1	
		B9	VHD2124	SCREW	1	
		B10	VHD2124	SCREW	1	
		B11	VHD2190	SCREW	1	
		B12	VHD2190	SCREW	1	
		B13	VHD2384	SCREW	1	
		B14	XQN16+BJ4FN	SCREW	1	
		B15	VHD2247-A	SCREW	1	
		B16	VHD1411	SCREW	1	
		B17	VHD1411	SCREW	1	
		B18	VHD1919	SCREW	1	
		B19	VHD1919	SCREW	1	
		B20	VHD1919	SCREW	1	
		B21	VHD2301-A	SCREW	1	
		B22	VHD2301-A	SCREW	1	
		B23	VHD2301-A	SCREW	1	
		B24	VHD2301-A	SCREW	1	
		B25	VHD2301-A	SCREW	1	
		B26	VHD2301-A	SCREW	1	
		B27	VHD2301-A	SCREW	1	
		B28	VHD2301-A	SCREW	1	
		B29	XQN16+BJ7FN	SCREW	1	
		B30	XQN16+BJ7FN	SCREW	1	
		B31	VHD1681	SCREW	1	
		B32	VHD1681	SCREW	1	
		B33	XQN16+BJ4FN	SCREW	1	
		B34	VHD1681	SCREW	1	
		B35	VHD1681	SCREW	1	
		B36	VHD1681	SCREW	1	
		B37	VHD1681	SCREW	1	
		B38	VHD1681	SCREW	1	
		B39	VHD2179	SCREW	1	
		B40	VHD2179	SCREW	1	
		B41	VHD2179	SCREW	1	
		B42	VHD2179	SCREW	1	
		B43	VHD2179	SCREW	1	
		B44	SHD0062	SCREW	1	
		B45	VHD2179	SCREW	1	
		B46	VHD2179	SCREW	1	
		B47	VHD2179	SCREW	1	
		B48	VHD2179	SCREW	1	
		B49	VHD2179	SCREW	1	
		B50	VHD2179	SCREW	1	
		B51	VHD2179	SCREW	1	
		B52	SHD0062	SCREW	1	
		B53	VHD2179	SCREW	1	
		B54	VHD2179	SCREW	1	
		B55	VHD2179	SCREW	1	
		B56	VHD2179	SCREW	1	
		B57	VHD2247-A	SCREW	1	
		B58	VHD2247-A	SCREW	1	
		B59	VHD2247-A	SCREW	1	
		B60	VHD2247-A	SCREW	1	
		B61	VHD2471	SCREW	1	

Model No. : DC-G9/G9M/G9L Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
		B62	VHD2471	SCREW	1	
		B63	VHD2471	SCREW	1	
		B64	VHD2471	SCREW	1	
		B65	XQN16+BJ4FN	SCREW	1	
		B66	DVHD1050Z	SCREW	1	
		B67	VHD2436	SCREW	1	
		B68	VHD2436	SCREW	1	
		200	SXW0282	LENS UNIT	1	G9M
		201	SDW0373K	DECORATION RING	1	G9M
		202	SDW0372K	FILTER RING	1	G9M
		203	VMC2220	WAVE WASHER	1	G9M
		204	SXQ0655	FRONT FRAME UNIT	1	G9M
		205	SXQ0653	FOCUS RING UNIT	1	G9M
		206	-----	LENS MAIN UNIT	1	G9M (NOT SUPPLIED)
		207	VMS8326	ZOOM PIN	1	G9M
		208	VMG1855	FLOATING RUBBER	3	G9M
		209	VMG1855	FLOATING RUBBER	3	G9M
		210	VMG1855	FLOATING RUBBER	3	G9M
		211	SEJ0005	MOUNT CONTAT UNIT	1	G9M
		212	SXQ0648	REAR FRAME UNIT	1	G9M
		213	VMS8278	ADJUST PIN	1	G9M
		214	SMG0095	SEALING RUBBER	1	G9M
		215	SXQ0649	L MOUNT UNIT	1	G9M
		216	-----	SHADING FRAME	1	G9M (NOT SUPPLIED)
		B201	VHD2296	SCREW	1	G9M
		B202	VHD2296	SCREW	1	G9M
		B203	VHD2296	SCREW	1	G9M
		B204	XQN16+BJ4FNK	SCREW	1	G9M
		B205	XQN16+BJ4FNK	SCREW	1	G9M
		B206	XQN16+BJ4FNK	SCREW	1	G9M
		B207	VHD2296	SCREW	1	G9M
		B208	VHD2296	SCREW	1	G9M
		B209	VHD2296	SCREW	1	G9M
		B210	VHD2296	SCREW	1	G9M
		B211	VHD2298	SCREW	1	G9M
		B212	VHD2299	SCREW	1	G9M
		B213	VHD2299	SCREW	1	G9M
		B214	VHD2299	SCREW	1	G9M
		B215	VHD2246	SCREW	1	G9M
		B216	VHD2246	SCREW	1	G9M
		300	LOU3Z260Z	LENS UNIT	1	G9L
		301	1HR1Z260CZ	DECORING UNIT	1	G9L
		302	DVGX1028Z	FILTER RING	1	G9L
		303	ADE3Z260Z	ZOOM RING UNIT	1	G9L
		304	DVMH1028Z	ZOOM DRIVE PIN	1	G9L
		305	DVUS1002Z	REAR FRAME EARTH SPRING	1	G9L
		306	6SE2Z260Z	L MOUNT CONTACT UNIT	1	G9L
		307	RDE4Z260Z	REAR FRAME UNIT	1	G9L
		308	SMG0095	SEALING RUBBER	1	G9L
		309	SXQ0649	L MOUNT UNIT	1	G9L
		310	-----	SHADING FRAME	1	G9L (NOT SUPPLIED)
		320	-----	LENS MAIN UNIT	1	G9L (NOT SUPPLIED)
		B301	VHD2296	SCREW	1	G9L
		B302	VHD2296	SCREW	1	G9L
		B303	VHD2296	SCREW	1	G9L
		B304	SHD0021	SCREW	1	G9L
		B305	VHD2011	SCREW	1	G9L
		B306	VHD2073	SCREW	1	G9L
		B307	VHD2073	SCREW	1	G9L
		B308	VHD2296	SCREW	1	G9L
		B309	VHD2296	SCREW	1	G9L
		B310	VHD2296	SCREW	1	G9L

Model No. : DC-G9/G9M/G9L Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
		B311	VHD2299	SCREW	1	G9L
		B312	VHD2299	SCREW	1	G9L
		B313	VHD2299	SCREW	1	G9L
		B314	VHD2298	SCREW	1	G9L
		B315	VHD2246	SCREW	1	G9L
		B316	VHD2246	SCREW	1	G9L
		400	VPF1565	CAMERA BAG	1	G9
		401	VKF4971	BODY CAP	1	G9
		402	VKF5108-A	FLASH SYNCHRO SOCKET CAP	1	G9
		403	DVYE1062Y/K	EYE CUP	1	G9
		404	SKF0145K	BATTERY GRIP CONTACT COVER	1	G9
		405	SKF0106K	HOT SHOE COVER	1	G9
		406	DVPN1085Z	CUSHION	1	G9
		407	DVPN1086Z	PAD B	1	G9
		408	DVPK1101001Z	PACKING CASE	1	G9P,G9PP,G9EG,G9EC,G9EF,G9EB,G9EE,G9GA,G9GC,G9GH,G9GN,G9GD
		408	DVPK1103001Z	PACKING CASE	1	G9GK
		409	SQL0064	GC LABEL	1	G9GA,G9GD
	⚠	410	DVLC1002Z	BATTERY CHARGER	1	G9P,G9PP,G9EG,G9EC,G9EF,G9EB,G9EE,G9GH,G9GN
	⚠	410	DVLC1002Y	BATTERY CHARGER	1	G9GA,G9GC,G9GK,G9GD
	⚠	411	---	BATTERY PACK	1	G9
		412	K2KYYYY00245	USB CABLE	1	G9
		413	K1HY04YY0106	USB CABLE (FOR CHARGER)	1	G9
	⚠	414	VSK0815FB	AC ADAPTOR	1	G9P,G9PP
	⚠	414	VSK0815K	AC ADAPTOR	1	G9EG,G9EC,G9EF,G9EE,G9GA,G9GC
	⚠	414	VSK0815L	AC ADAPTOR	1	G9EB,G9GH
	⚠	414	VSK0815N	AC ADAPTOR	1	G9GA,G9GC
	⚠	414	VSK0815H	AC ADAPTOR	1	G9GK
	⚠	414	VSK0815MA	AC ADAPTOR	1	G9GN
	⚠	414	VSK0815R	AC ADAPTOR	1	G9GD
		415	DVPW1005Z	SHOULDER STRAP	1	G9
	⚠	416	DVQX1310Z	BASIC O/I (ENGLISH)	1	G9P
	⚠	416	DVQX1311Z	BASIC O/I (SPANISH)	1	G9P
	⚠	416	DVQX1312Z	BASIC O/I (ENGLISH)	1	G9PP
	⚠	416	DVQX1313Z	BASIC O/I (SPANISH)	1	G9PP
	⚠	416	DVQX1314Z	BASIC O/I (FRENCH)	1	G9PP
	⚠	416	DVQX1315Z	BASIC O/I (GERMAN)	1	G9EG
	⚠	416	DVQX1316Z	BASIC O/I (FRENCH)	1	G9EG,G9EF
	⚠	416	DVQX1317Z	BASIC O/I (ITALIAN)	1	G9EG
	⚠	416	DVQX1318Z	BASIC O/I (DUTCH)	1	G9EG,G9EF
	⚠	416	DVQX1319Z	BASIC O/I (SPANISH)	1	G9EC
	⚠	416	DVQX1320Z	BASIC O/I (PORTUGUESE)	1	G9EC
	⚠	416	DVQX1321Z	BASIC O/I (SWEDISH)	1	G9EC
	⚠	416	DVQX1322Z	BASIC O/I (DANISH)	1	G9EC
	⚠	416	DVQX1323Z	BASIC O/I (FINNISH)	1	G9EC
	⚠	416	DVQX1324Z	BASIC O/I (ENGLISH)	1	G9EB
	⚠	416	DVQX1325Z	BASIC O/I (RUSSIAN)	1	G9EE
	⚠	416	DVQX1326Z	BASIC O/I (UKRAINIAN)	1	G9EE
	⚠	416	DVQX1327Z	BASIC O/I (ENGLISH)	1	G9GA
	⚠	416	DVQX1328Z	BASIC O/I (CHINESE(TRADITIONAL))	1	G9GA
	⚠	416	DVQX1329Z	BASIC O/I (ARABIC)	1	G9GA
	⚠	416	DVQX1330Z	BASIC O/I (ENGLISH)	1	G9GC
	⚠	416	DVQX1331Z	BASIC O/I (CHINESE(TRADITIONAL))	1	G9GC
	⚠	416	DVQX1332Z	BASIC O/I (ARABIC)	1	G9GC
	⚠	416	DVQX1333Z	BASIC O/I (ENGLISH)	1	G9GH
	⚠	416	DVQX1334Z	BASIC O/I (CHINESE(TRADITIONAL))	1	G9GH
	⚠	416	DVQX1335Z	BASIC O/I (CHINESE(SIMPLIFIED))	1	G9GK
	⚠	416	DVQX1336Z	BASIC O/I (ENGLISH)	1	G9GN
	⚠	416	DVQX1337Z	BASIC O/I (KOREAN)	1	G9GD
		417	VPF1542	BAG, POLYETHYLENE	1	G9
		500	VPF1565	CAMERA BAG	1	G9M

Model No. : DC-G9/G9M/G9L Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
		501	VKF4971	BODY CAP	1	G9M
		502	VKF5108-A	FLASH SYNCHRO SOCKET CAP	1	G9M
		503	DVYE1062Y/K	EYE CUP	1	G9M
		504	SKF0145K	BATTERY GRIP CONTACT COVER	1	G9M
		505	SKF0106K	HOT SHOE COVER	1	G9M
		506	DVPN1085Z	CUSHION	1	G9M
		507	DVPN1086Z	PAD B	1	G9M
		508	DVPK1104001Z	PACKING CASE	1	G9M
	⚠	510	DVLC1002Z	BATTERY CHARGER	1	G9M
	⚠	511	---	BATTERY PACK	1	G9M
		512	K2KYYYY00245	USB CABLE	1	G9M
		513	K1HY04YY0106	USB CABLE (FOR CHARGER)	1	G9M
	⚠	514	VSK0815K	AC ADAPTOR	1	G9MEG
	⚠	514	VSK0815L	AC ADAPTOR	1	G9MEB
		515	DVPW1005Z	SHOULDER STRAP	1	G9M
	⚠	516	DVQX1315Z	BASIC O/I (GERMAN)	1	G9MEG
	⚠	516	DVQX1316Z	BASIC O/I (FRENCH)	1	G9MEG
	⚠	516	DVQX1317Z	BASIC O/I (ITALIAN)	1	G9MEG
	⚠	516	DVQX1318Z	BASIC O/I (DUTCH)	1	G9MEG
	⚠	516	DVQX1324Z	BASIC O/I (ENGLISH)	1	G9MEB
		517	VPF1542	BAG, POLYETHYLENE	1	G9M
		521	VFC4605-B	LENS REAR CAP	1	G9M
		522	VYF3514	LENS CAP	1	G9M
		523	SYA0066	LENS HOOD	1	G9M
		524	VPF1475	LENS BAG	1	G9M
		525	VPF1483	AIR CAP BAG	1	G9M
		526	VPN7786	PAD E	1	G9M
		600	VPF1565	CAMERA BAG	1	G9L
		601	VKF4971	BODY CAP	1	G9L
		602	VKF5108-A	FLASH SYNCHRO SOCKET CAP	1	G9L
		603	DVYE1062Y/K	EYE CUP	1	G9L
		604	SKF0145K	BATTERY GRIP CONTACT COVER	1	G9L
		605	SKF0106K	HOT SHOE COVER	1	G9L
		606	DVPN1085Z	CUSHION	1	G9L
		607	DVPN1086Z	PAD B	1	G9L
		608	DVPK1105001Z	PACKING CASE	1	G9L
		609	SQL0064	GC LABEL	1	G9LGA
	⚠	610	DVLC1002Z	BATTERY CHARGER	1	G9LP,G9LEG,G9LEC,G9LEF,G9LEB,G9LGN
	⚠	610	DVLC1002Y	BATTERY CHARGER	1	G9LGA,G9LGC
	⚠	611	---	BATTERY PACK	1	G9L
		612	K2KYYYY00245	USB CABLE	1	G9L
		613	K1HY04YY0106	USB CABLE (FOR CHARGER)	1	G9L
	⚠	614	VSK0815FB	AC ADAPTOR	1	G9LP
	⚠	614	VSK0815K	AC ADAPTOR	1	G9LEG,G9LEC,G9LEF,G9LGA,G9LGC
	⚠	614	VSK0815L	AC ADAPTOR	1	G9LEB
	⚠	614	VSK0815N	AC ADAPTOR	1	G9LGA,G9LGC
		615	DVPW1005Z	SHOULDER STRAP	1	G9L
	⚠	616	DVQX1310Z	BASIC O/I (ENGLISH)	1	G9LP
	⚠	616	DVQX1311Z	BASIC O/I (SPANISH)	1	G9LP
	⚠	616	DVQX1315Z	BASIC O/I (GERMAN)	1	G9LEG
	⚠	616	DVQX1316Z	BASIC O/I (FRENCH)	1	G9LEG,G9LEF
	⚠	616	DVQX1317Z	BASIC O/I (ITALIAN)	1	G9LEG
	⚠	616	DVQX1318Z	BASIC O/I (DUTCH)	1	G9LEG,G9LEF
	⚠	616	DVQX1319Z	BASIC O/I (SPANISH)	1	G9LEC
	⚠	616	DVQX1320Z	BASIC O/I (PORTUGUESE)	1	G9LEC
	⚠	616	DVQX1321Z	BASIC O/I (SWEDISH)	1	G9LEC
	⚠	616	DVQX1322Z	BASIC O/I (DANISH)	1	G9LEC
	⚠	616	DVQX1323Z	BASIC O/I (FINNISH)	1	G9LEC
	⚠	616	DVQX1324Z	BASIC O/I (ENGLISH)	1	G9LEB
	⚠	616	DVQX1327Z	BASIC O/I (ENGLISH)	1	G9LGA
	⚠	616	DVQX1328Z	BASIC O/I (CHINESE(TRADITIONAL))	1	G9LGA

Model No. : DC-G9/G9M/G9L Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
	⚠	616	DVQX1329Z	BASIC O/I (ARABIC)	1	G9LGA
	⚠	616	DVQX1330Z	BASIC O/I (ENGLISH)	1	G9LGC
	⚠	616	DVQX1331Z	BASIC O/I (CHINESE(TRADITIONAL))	1	G9LGC
	⚠	616	DVQX1332Z	BASIC O/I (ARABIC)	1	G9LGC
	⚠	616	DVQX1336Z	BASIC O/I (ENGLISH)	1	G9LGN
	⚠	616	VSK0815MA	AC ADAPTOR	1	G9LGN
		617	VPF1542	BAG, POLYETHYLENE	1	G9L
		621	VFC4605-B	LENS REAR CAP	1	G9L
		622	SYF0083	LENS CAP	1	G9L
		623	1ZE4Z260Z	LENS HOOD	1	G9L
		624	VPF1475	LENS BAG	1	G9L
		625	VPF1483	AIR CAP BAG	1	G9L
		626	DVPN1088Z	PAD E	1	G9L