

Service Manual

SD Video Camera

Model No. **SDR-S15P****SDR-S15PC****SDR-S15PU****SDR-S15PR****SDR-S15EB****SDR-S15EC****SDR-S15EE****SDR-S15EF****SDR-S15EG****SDR-S15EP****SDR-S15GC****SDR-S15GD****SDR-S15GJ****SDR-S15GK****SDR-S15GN****SDR-S15GT**

Vol. 1

Colour

(S).....Silver Type (except PR/EF/GD/GT)

(K).....Black Type

(T).....Brown Type (except PC/GD/GK)

(P).....Pink Type (only EB)

Panasonic®

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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 Precaution

1.1. General Guidelines

1. IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by

⚠ in the Schematic Diagrams, Circuit Board Layout, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

2. An Isolation Transformer should always be used during the servicing of AC Adaptor whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect AC Adaptor from being damaged by accidental shorting that may occur during servicing.
3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.2. Leakage Current Cold Check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1\text{ M}\Omega$ and $5.2\text{ M}\Omega$. 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 $1.5\text{ k}\Omega$, 10 W resistor, in parallel with a $0.15\text{ }\mu\text{F}$ 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 $1\text{ k}\Omega/\text{V}$ 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 $1/2\text{ mA}$. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

Hot-Check Circuit

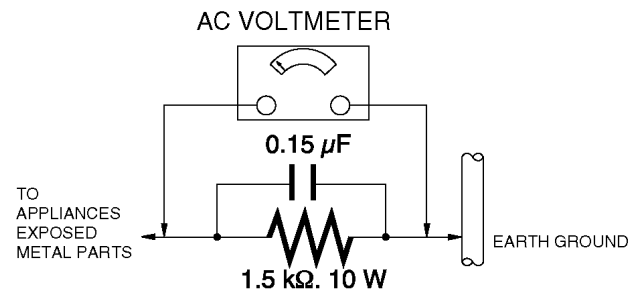


Figure. 1

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 integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an antistatic solder removal device. Some solder removal devices not classified as "antistatic (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION :

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

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

ENGLISH



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

FRANÇAIS



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

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

2.3.1. Information for Your Safety

IMPORTANT

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

WARNING

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

CAUTION

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

FOR YOUR SAFETY

DO NOT REMOVE THE OUTER COVER

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

2.3.2. Caution for AC Mains Lead

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three-pin mains plug for your safety and convenience.

A 5-ampere fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amperes and it is approved by ASTA or BSI to BS1362

Check for the ASTA mark or the BSI mark on the body of the fuse.



If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover, the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local Panasonic Dealer.

If the fitted moulded plug is unsuitable for the socket outlet in your home then the fuse should be removed and the plug cut off and disposed of safely.

There is a danger of severe electrical shock if the cut off plug is inserted into any 13-ampere socket.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt, please consult a qualified electrician.

2.3.2.1. Important

The wires in this mains lead are coloured in accordance with the following code:

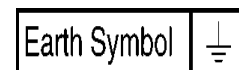
Blue	Neutral
Brown	Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

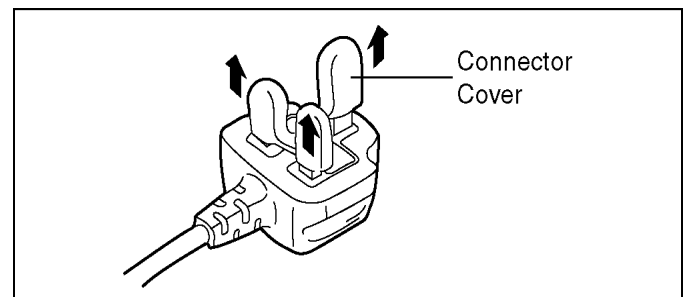
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol.



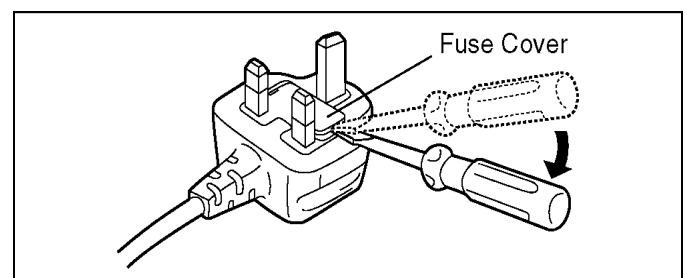
2.3.2.2. Before Use

Remove the Connector Cover as follows.

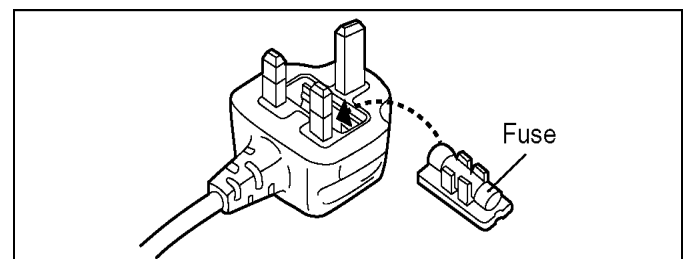


2.3.2.3. How to Replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



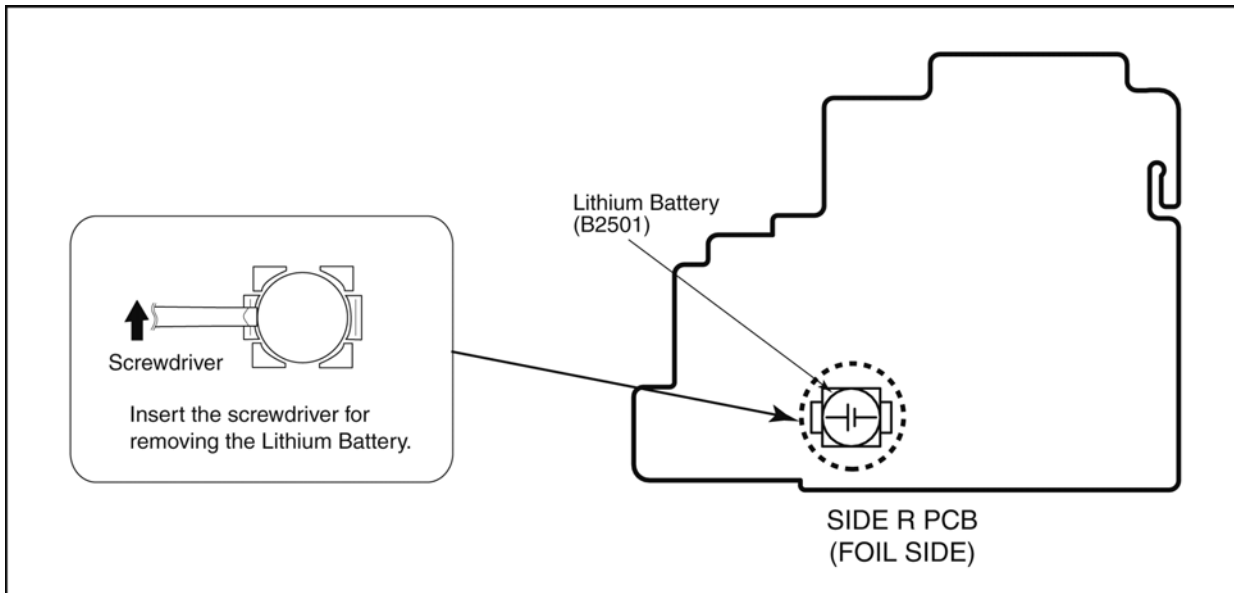
2. Replace the fuse and attach the Fuse cover.



2.4. How to Replace the Lithium Battery

2.4.1. Replacement Procedure

1. Remove the SIDE R PCB. (Refer to Disassembly Procedures.)
2. Remove the Lithium battery (Ref. No. "B2501" at foil side of SIDE R PCB) and then replace it into new one.



NOTE:

This Lithium battery is a critical component.

(Type No.: ML-614S/ZTK **Manufactured by Energy Company, Panasonic Corporation.**)

It must never be subjected to excessive heat or discharge.

It must therefore only be fitted in requirement designed specifically for its use.

Replacement batteries must be of same type and manufacture.

They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.

Do not attempt to re-charge the old battery or re-use it for any other purpose.

It should be disposed of in waste products destined for burial rather than incineration.

(For English)

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.

Dispose of used batteries according to the manufacturer's instructions.

(For German)

ACHTUNG

Explosionsgefahr bei falschem Anbringen der Batterie. Ersetzen Sie nur mit einem äquivalentem vom Hersteller empfohlenem Typ.

Behandeln Sie gebrauchte Batterien nach den Anweisungen des Herstellers.

(For French)

MISE EN GARDE

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

NOTE:

Above caution is applicable for a battery pack which is for SDR-S15 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. General Description About Lead Free Solder (PbF)

The lead free solder has been used in the mounting process of all electrical components on the printed circuit boards used for this equipment in considering the globally environmental conservation.

The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin (Sn), silver (Ag) and Copper (Cu), and the melting point of the lead free solder is higher approx.30°C (86°F) more than that of the normal solder.

Distinction of PCB Lead Free Solder being used

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

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

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

Recommended Lead Free Solder (Service Parts Route.)

- The following 3 types of lead free solder are available through the service parts route.
RFKZ03D01K----- (0.3mm 100g Reel)
RFKZ06D01K----- (0.6mm 100g Reel)
RFKZ10D01K----- (1.0mm 100g Reel)

Note

* Ingredient: tin (Sn) 96.5%, silver (Ag) 3.0%, Copper (Cu) 0.5%, Cobalt (Co) / Germanium (Ge) 0.1 to 0.3%

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

1. The service manual does not contain the following information, because of the impossibility of servicing at component level without concerned equipment/facilities.
 - a. Schematic diagram, Block Diagram and PCB layout of MAIN PCB.
 - b. Parts list for individual parts for MAIN PCB.

When a part replacement is required for repairing MAIN PCB, replace as an assembled parts. (Main PCB)

2. The following category is /are recycle module part. Please send it/them to Central Repair Center.

- MAIN PCB (VEP03H63A : SDR-S15P/PC)
- MAIN PCB (VEP03H63B : SDR-S15EC/EF/EG)
- MAIN PCB (VEP03H63C : SDR-S15GC)
- MAIN PCB (VEP03H63D : SDR-S15EE)
- MAIN PCB (VEP03H63E : SDR-S15GK)
- MAIN PCB (VEP03H63F : SDR-S15EP)
- MAIN PCB (VEP03H63G : SDR-S15PU)
- MAIN PCB (VEP03H63H : SDR-S15EB)
- MAIN PCB (VEP03H63J : SDR-S15GN)
- MAIN PCB (VEP03H63K : SDR-S15GJ)
- MAIN PCB (VEP03H63L : SDR-S15PR)
- MAIN PCB (VEP03H63M : SDR-S15GT)
- MAIN PCB (VEP03H63N : SDR-S15GD)

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

There are nine kinds of SDR-S15.

- a) SDR-S15P
- b) SDR-S15PC
- c) SDR-S15EB/EC/EF/EG/EP
- d) SDR-S15EE
- e) SDR-S15GN
- f) SDR-S15GK
- g) SDR-S15GT
- h) SDR-S15GD
- i) SDR-S15PU/PR/GC/GJ

What is the difference is that the "INITIAL SETTING" data which is stored in Flash ROM mounted on Main PCB.

3.4.1. Defining methods:

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

a) SDR-S15P The nameplate for this model show the following Safety registration mark. 	 Safety registration mark
b) SDR-S15PC The nameplate for this model show the following Safety registration mark. 	
c) SDR-S15EB/EC/EF/EG/EP The nameplate for these models show the following Safety registration mark. 	
d) SDR-S15EE The nameplate for this model show the following Safety registration mark. 	
e) SDR-S15GN The nameplate for this model show the following Safety registration mark. 	
f) SDR-S15GK The nameplate for this model show the following Safety registration mark. 	
g) SDR-S15GT The nameplate for this model show the following Safety registration mark. 	
h) SDR-S15GD The nameplate for this model show the following Safety registration mark. 	
i) SDR-S15PU/PR/GC/GJ The nameplate for these models do not show any above Safety registration mark.	

NOTE:

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

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

4 Specifications

For NTSC areas

SD Video Camera : Information for your safety

Power source: DC 5.0 V (When using AC adaptor), DC 3.6 V (When using battery)	
Power consumption: Recording: 2.9 W, Charging: 4.5 W	
Signal system	EIA Standard: 525 lines, 60 fields NTSC color signal
Image sensor	1/6" CCD image sensor Total: 680 K Effective pixels: Moving picture: 340 K (4:3), 300 K (16:9) Still picture: 350 K (4:3)
Lens	Auto Iris, F1.8 to F2.4 Focal length: 2.3 mm to 23.0 mm Macro (Full range AF)
Zoom	10x optical zoom, 25/700x digital zoom
Monitor	2.7" wide LCD monitor (approx. 123 K pixels)
Microphone	Stereo (with a zoom function)
Speaker	1 round speaker
White balance adjustment	Auto tracking white balance system
Standard illumination	1,400 lx
Minimum required illumination	Approx. 6 lx (Low Light Mode, 1/30) [Approx. 2 lx with the MagicPix function]
Video output level	1.0 Vp-p, 75 Ω
Audio output level	316 mV, 600 Ω
USB	Card reader/writer function (No copyright protection support) Hi-Speed USB (USB 2.0), USB terminal Type miniAB, PictBridge-compliant
Dimensions (excluding the projecting parts)	43 mm (W) x 59 mm (H) x 102 mm (D) [1.70" (W) x 2.33" (H) x 4.02" (D)]
Mass (Weight)	Approx. 165 g (0.36 lbs.) without an SD card and supplied battery
Mass (Weight) in operation	Approx. 187 g (0.41 lbs.) with an SD card and supplied battery
Operating temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating humidity	10 % to 80 %
Battery operation time	Refer to "Charging time and recordable time".

Motion pictures

Recording media	SD Memory Card: 256 MB/512 MB/1 GB/2 GB (FAT12 and FAT16 format corresponding) SDHC Memory Card: 4 GB/6 GB/8 GB/12 GB/16 GB/32 GB (FAT32 format corresponding)
Picture size	704 x 480
Recordable time	Refer to "Recording mode and recording times".
Compression	MPEG2 (SD-Video standard compliant)
Recording mode and transfer rate	XP: 10 Mbps (VBR), SP: 5 Mbps (VBR), LP: 2.5 Mbps (VBR)
Audio compression	MPEG1 Audio Layer2 compliant (2 ch), Dolby Digital compliant (2 ch)
Maximum number of recordable scenes	99 scenes x 99 folders •Scenes recorded on different dates are stored in different folders even if each folder has less than 99 scenes.

Still pictures

Recording media	SD Memory Card: 8 MB/16 MB/32 MB/64 MB/128 MB/256 MB/ 512 MB/1 GB/2 GB (FAT12 and FAT16 format corresponding) SDHC Memory Card: 4 GB/6 GB/8 GB/12 GB/16 GB/32 GB (FAT32 format corresponding)
Number of recordable pictures	Refer to "Number of recordable pictures".
Compression	JPEG (Design rule for Camera File system, based on Exif 2.2 standard), DPOF corresponding
Picture size	640 x 480 (4:3)

AC adaptor : Information for your safety

Power source:	AC 110 V to 240 V, 50/60 Hz
Power consumption:	12 W
DC output:	DC 5.0 V, 1.6 A

Dimensions	76 mm (W) x 22 mm (H) x 46 mm (D) [2.99" (W) x 0.87" (H) x 1.81" (D)]
Mass (Weight)	Approx. 100 g (0.22 lbs.)

Specifications may change without prior notice.

For PAL areas

SD Video Camera : Information for your safety

Power source: DC 5.0 V (When using AC adaptor), DC 3.6 V (When using battery)	
Power consumption: Recording: 2.9 W, Charging: 4.5 W	
Signal system	EIA Standard: 625 lines, 50 fields PAL colour signal
Image sensor	1/6" CCD image sensor Total: 800 K Effective pixels: Moving picture: 400 K (4:3), 350 K (16:9) Still picture: 410 K (4:3)
Lens	Auto Iris, F1.8 to F2.4 Focal length: 2.3 mm to 23.0 mm Macro (Full range AF)
Zoom	10x optical zoom, 25/700x digital zoom
Monitor	2.7" wide LCD monitor (approx. 123 K pixels)
Microphone	Stereo (with a zoom function)
Speaker	1 round speaker
White balance adjustment	Auto tracking white balance system
Standard illumination	1,400 lx
Minimum required illumination	Approx. 6 lx (Low light mode, 1/25) [Approx. 2 lx with the Colour night view function]
Video output level	1.0 Vp-p, 75 Ω
Audio output level	316 mV, 600 Ω
USB	Card reader function (No copyright protection support) Hi-Speed USB (USB 2.0), USB terminal Type miniAB, PictBridge-compliant
Dimensions (excluding the projecting parts)	43 mm (W) x 59 mm (H) x 102 mm (D)
Mass (Weight)	Approx. 165 g without an SD card and supplied battery
Mass (Weight) in operation	Approx. 187 g with an SD card and supplied battery
Operating temperature	0 °C to 40 °C
Operating humidity	10 % to 80 %
Battery operation time	Refer to "Charging time and recordable time".

Motion pictures

Recording media	SD Memory Card: 256 MB/512 MB/1 GB/2 GB (FAT12 and FAT16 format corresponding) SDHC Memory Card: 4 GB/6 GB/8 GB/12 GB/16 GB/32 GB (FAT32 format corresponding)
Picture size	704 x 576
Recordable time	Refer to "Recording mode and recording times".
Compression	MPEG2 (SD-Video standard compliant)
Recording mode and transfer rate	XP: 10 Mbps (VBR), SP: 5 Mbps (VBR), LP: 2.5 Mbps (VBR)
Audio compression	MPEG1 Audio Layer2 compliant (2 ch)
Maximum number of recordable scenes	99 scenes x 99 folders •Scenes recorded on different dates are stored in different folders even if each folder has less than 99 scenes.

Still pictures

Recording media	SD Memory Card: 8 MB/16 MB/32 MB/64 MB/128 MB/256 MB/ 512 MB/1 GB/2 GB (FAT12 and FAT16 format corresponding) SDHC Memory Card: 4 GB/6 GB/8 GB/12 GB/16 GB/32 GB (FAT32 format corresponding)
Number of recordable pictures	Refer to "Number of recordable pictures".
Compression	JPEG (Design rule for Camera File system, based on Exif 2.2 standard), DPOF corresponding
Picture size	640 x 480 (4:3)

AC adaptor : Information for your safety

Power source:	AC 110 V to 240 V, 50/60 Hz
Power consumption:	12 W
DC output:	DC 5.0 V, 1.6 A

Dimensions	76 mm (W) x 22 mm (H) x 46 mm (D)
Mass (Weight)	Approx. 100 g

Specifications may change without prior notice.

Charging time and recordable time

Times are given for a temperature of 25 °C (77 °F) and humidity of 60 %. The charging time shown in the table are approximations. In high or low temperatures, charging requires more time.

- Supplied battery VW-VBJ10 (3.6 V, 940 mAh (minimum))

Charging time	Approx. 2 h 15 min	
Recordable time	Maximum continuously recordable time	Actual recordable time
	Approx. 1 h 15 min	Approx. 40 min

- Actual recordable time includes recording and stopping, power ON/OFF switching, zooming and other operations.
- Recordable time varies according to conditions of use. For example, the recordable time shortens when the [POWER LCD] setting is on while recording.
- The recordable time shortens in some environments (i.e., low temperatures, etc.), therefore it is recommended to charge a spare battery.

Recording mode and recording times

Recording times depend on the recording mode selected.

Recording times for Panasonic SD cards (approximate)

SD card capacity	Recording mode		
	XP (Highest picture quality)	SP (Standard)	LP (Longest recording time)
256 MB	3 min	6 min	12 min
512 MB	6 min	12 min	25 min
1 GB	12 min	25 min	50 min
2 GB	25 min	50 min	1 h 40 min
4 GB	50 min	1 h 40 min	3 h 20 min
6 GB	1 h 15 min	2 h 30 min	5 h
8 GB	1 h 40 min	3 h 20 min	6 h 40 min
12 GB	2 h 30 min	5 h	10 h
16 GB	3 h 20 min	6 h 40 min	13 h 20 min
32 GB	6 h 40 min	13 h 20 min	26 h 40 min

- If a single scene exceeds 4 GB during motion picture recording, recording continues as a separate scene.
- Recording fast-moving objects or repeatedly writing on the same SD card numerous times shortens recording time.
- Mosaic-like interference may be generated on playback screens in the following circumstances:
 - Complicated pictures in background
 - The unit is moved greatly or quickly
 - Recording is of a rapidly moving object (particularly if recording mode is set to [LP])

Number of recordable pictures

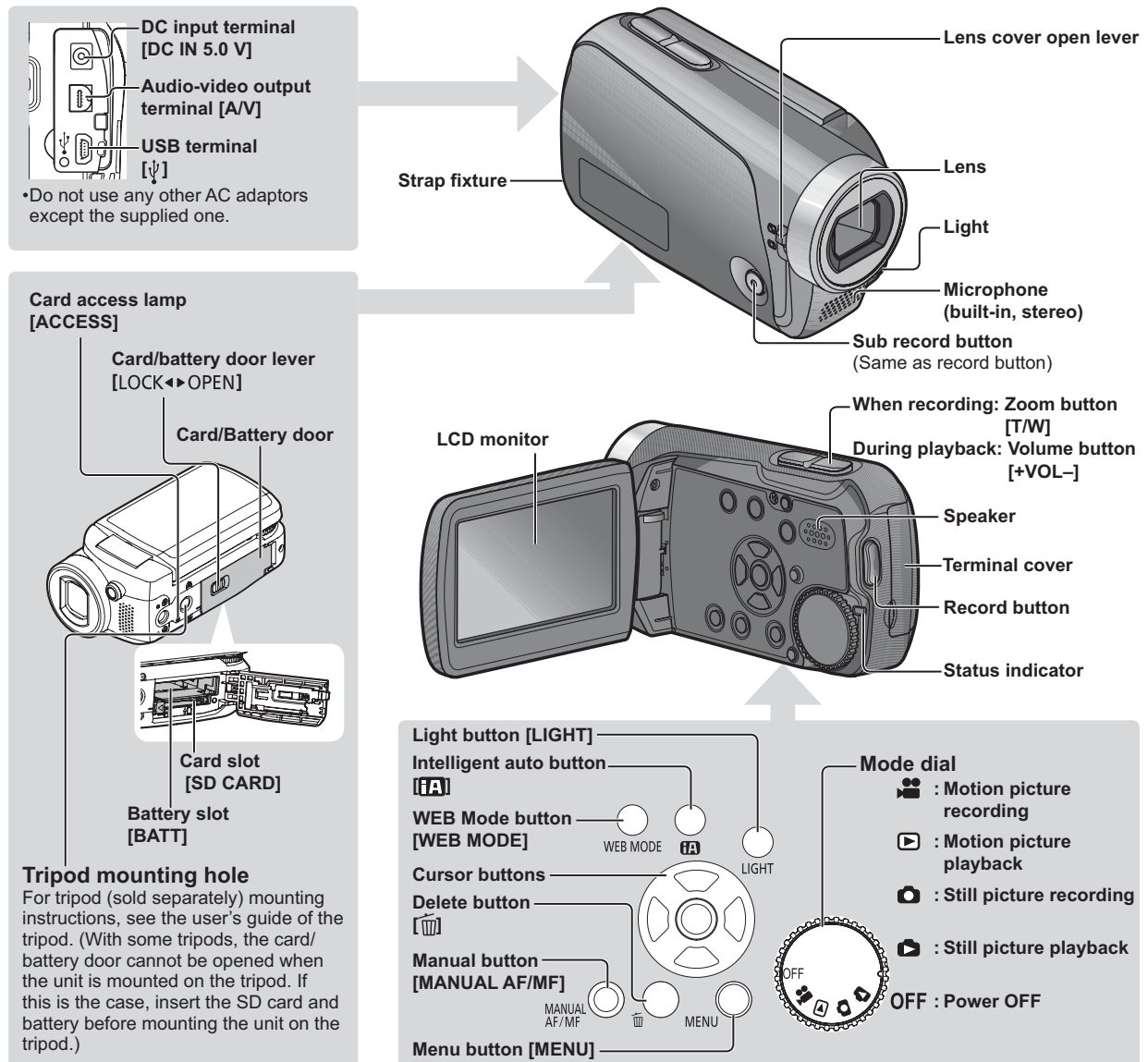
- Picture size is 640×480 (0.3 M).

SD card capacity	The number of pictures for Panasonic SD cards (approximate)
8 MB	37
16 MB	92
32 MB	200
64 MB	430
128 MB	820
256 MB	1710
512 MB	3390
1 GB	6790
2 GB	13820
4 GB	27150
6 GB	41280
8 GB	55260
12 GB	83350
16 GB	99999*
32 GB	99999*

* This unit can record only up to 99,999 still pictures in these SD cards.

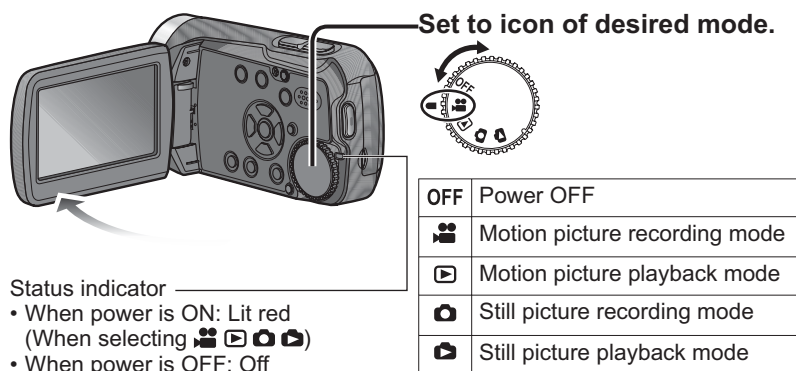
5 Location of Controls and Components

Parts identification and handling



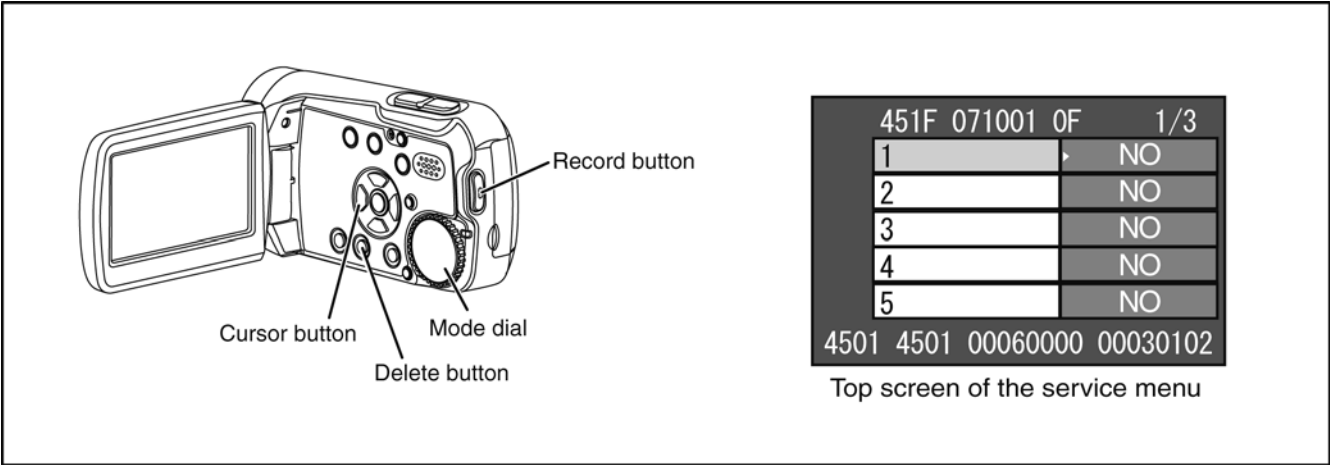
Turning power ON/OFF (Selecting modes)

Rotate the mode dial slowly but surely to the desired position.



6 Service Mode

- 1. **Indication method of the service menu**
Set the mode dial "Motion picture playback" mode.
- 2. While keep pressing the "[LEFT<] of cursor" button, "Record" button and "Delete" button for more than 3 seconds until the top screen of the Service Menu being displayed.



Service mode menu

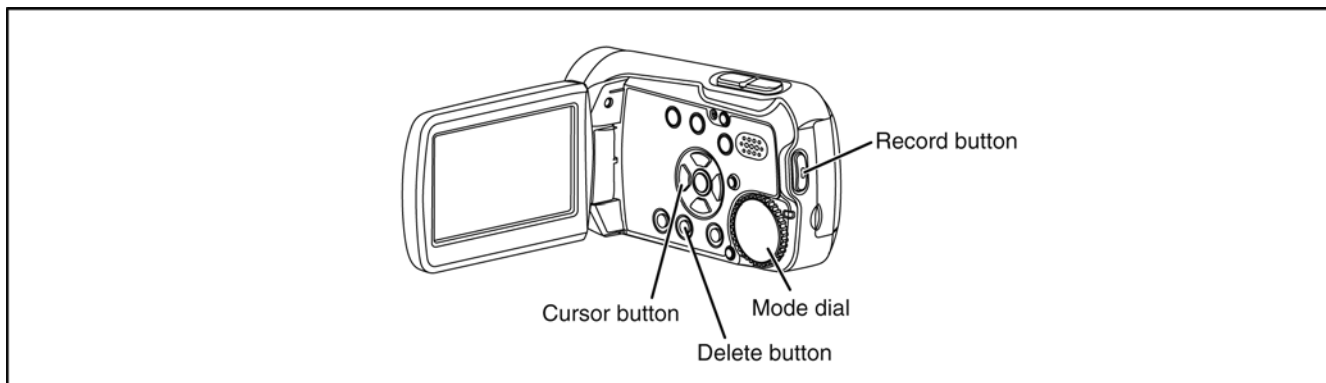
Screen display	Contents	Function
4	Lock search history indication	Display an error cord for three histories saved in EEPROM

NOTE:
Do not using service mode except [4] of Service Menu.

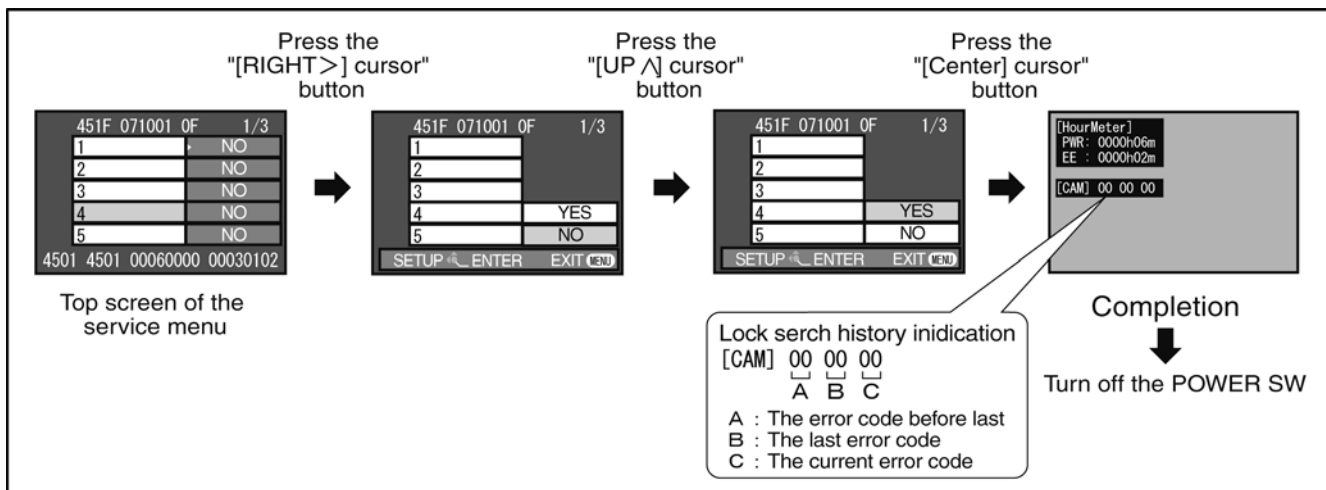
- 3. End method of the top screen of the service menu
Top screen of the service menu is finished by POWER OFF.

6.1. Lock Search History Indication

1. Set the mode dial "Motion picture playback" mode.
2. While keep pressing the "[LEFT<] of cursor" button, "Record" button and "Delete" button for more than 3 seconds until the top screen of the Service Menu being displayed.
3. Select [4] Lock search history indication.



Operation specifications



Indication contents

- Lock search history indication
Display the camera system error cord for three histories saved in EEPROM.
- The error cord contents which are displayed

Error code	Function
51	Focus control is abnormal
52	Zoom control is abnormal
53	OIS lens control is abnormal
33	Communication between camera to ARM is abnormal

Lock search history indication is finished by POWER OFF.

7 Service Fixture & Tools

7.1. When Replacing the Main PCB

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

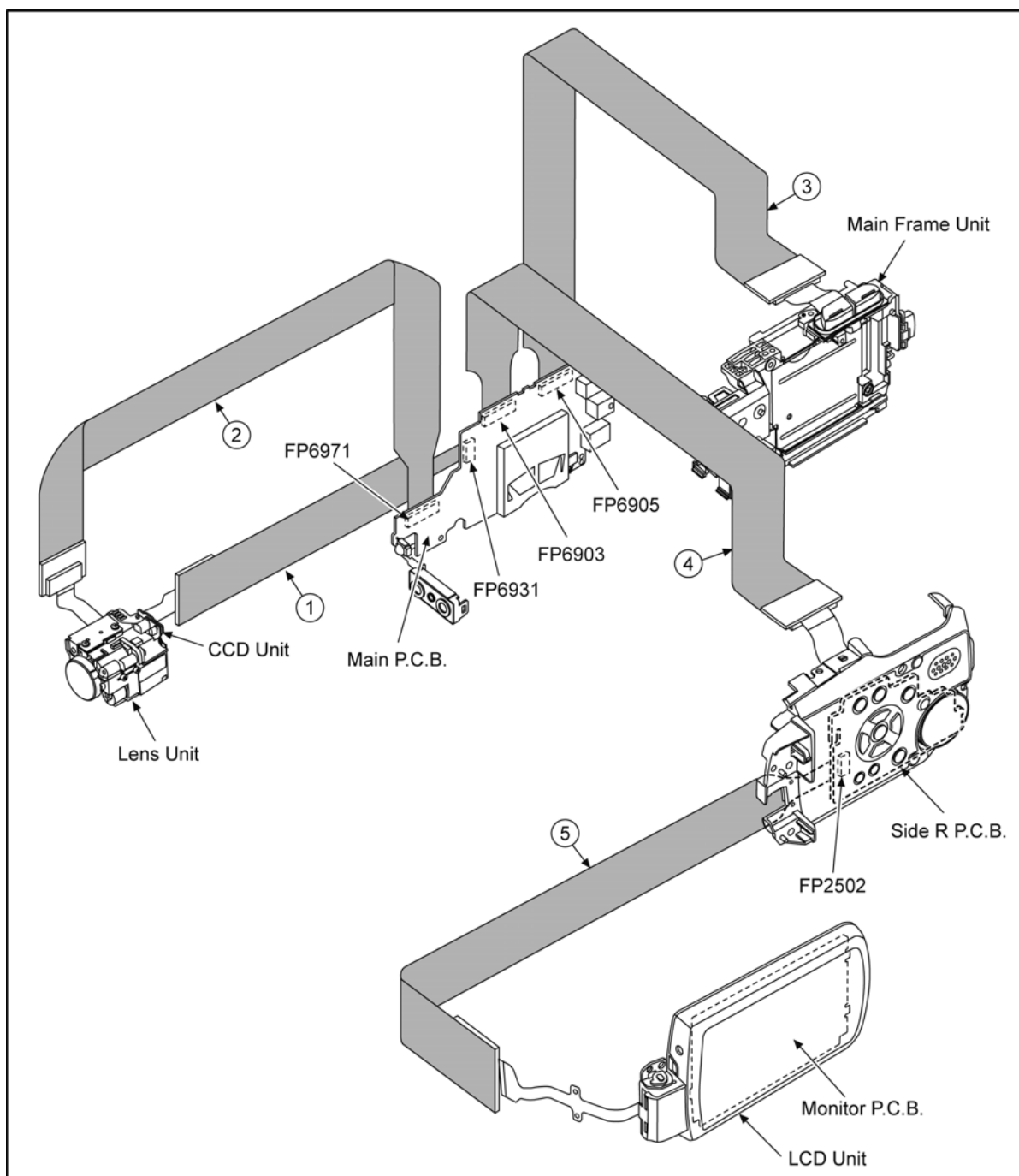
The adjustment instruction is available at "software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN system", together with Maintenance software.

7.2. Service Position

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

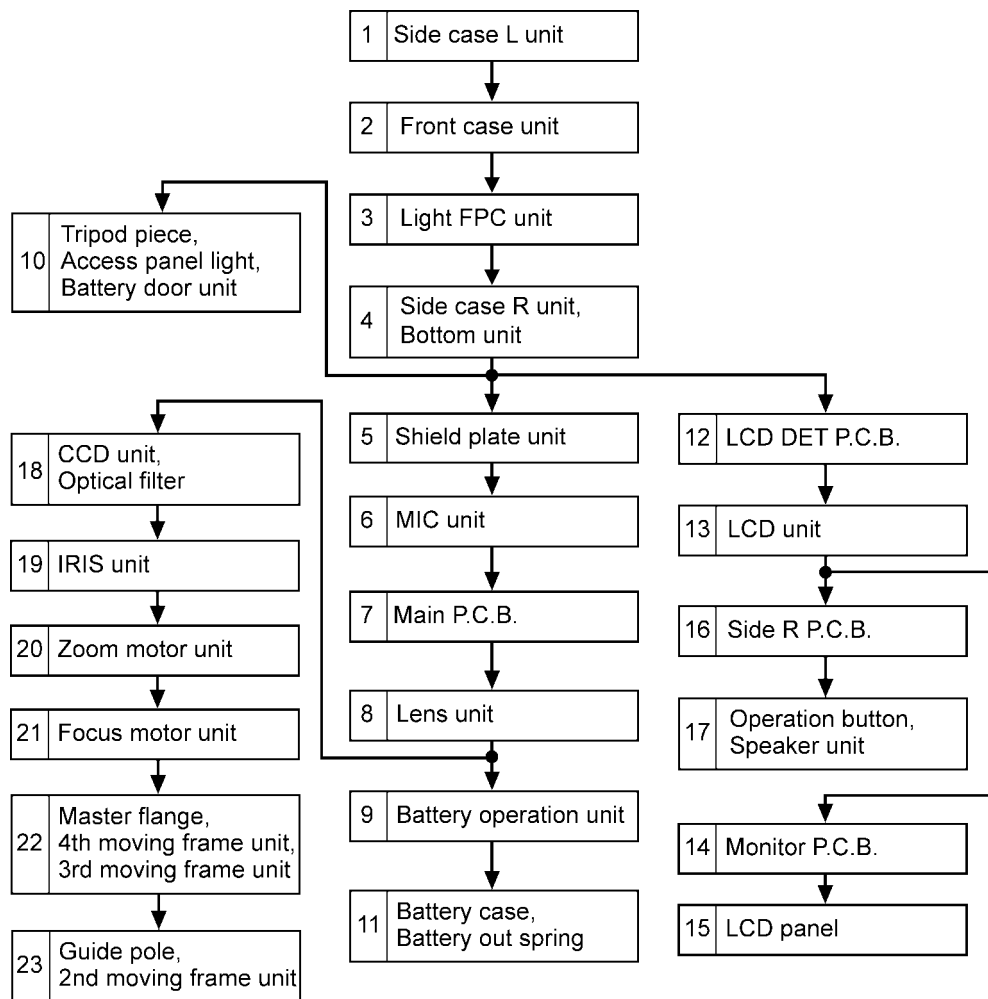
Table S1 Extension Cable List

No.	Parts No.	Connection	Form
1	VFK1173	FP6931 (MAIN) - CCD UNIT	14PIN 0.5 FFC
2	VFK1461	FP6971 (MAIN) - LENS UNIT	20PIN 0.5 FFC
3	VFK1284	FP6905 (MAIN) - BATTERY FPC	24PIN 0.5 FFC
4	RFKZ0487	FP6903 (MAIN) - SIDE R FPC	35PIN 0.3 FFC
5	VFK1284	FP2502 (SIDE R) - MONITOR FPC	24PIN 0.5 FFC

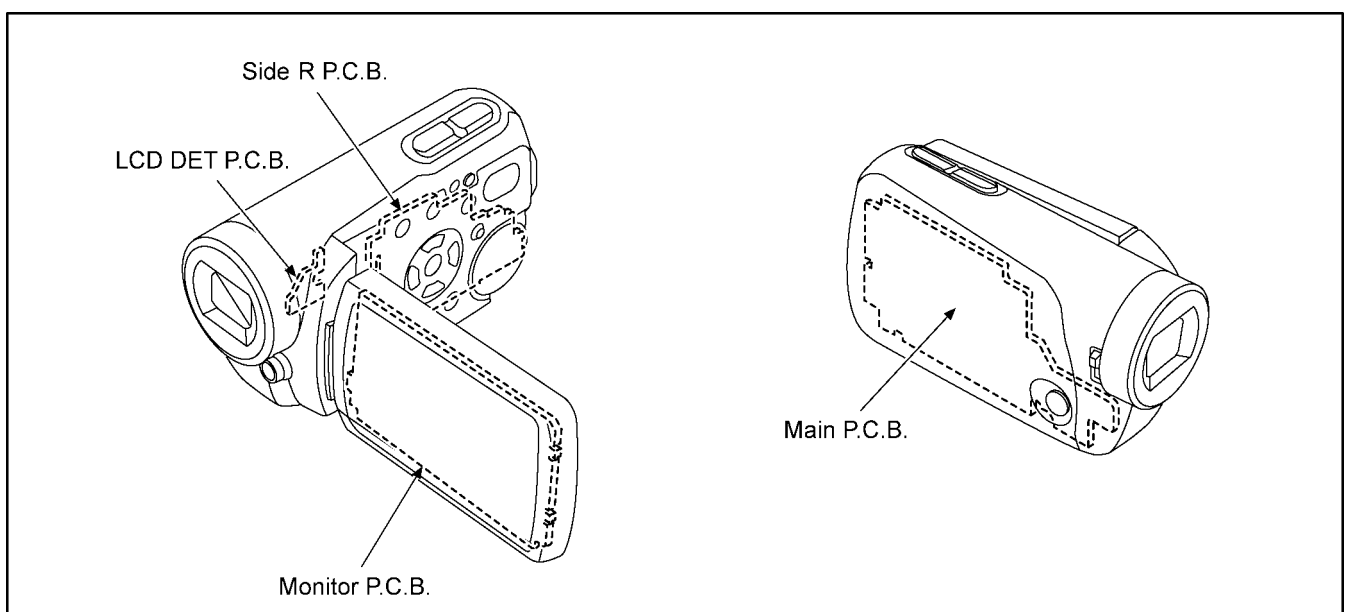


8 Disassembly and Assembly Instructions

8.1. Disassembly Flow Chart



8.2. PCB Location



8.3. Disassembly Procedure

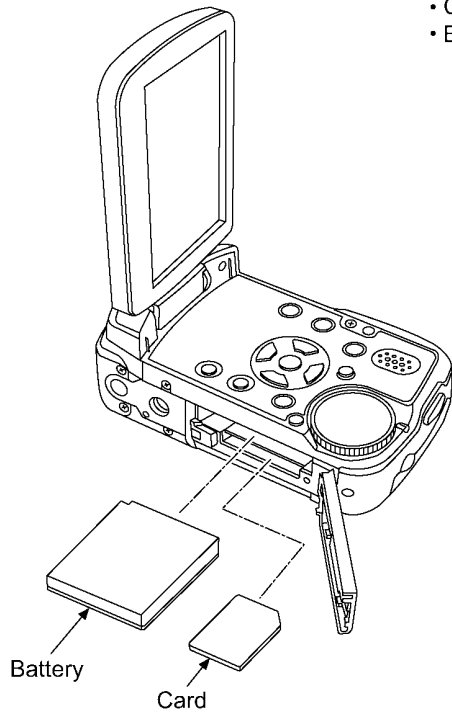
No.	Item	Fig	Removal
1	Side case L unit	Fig.D1	4 Screws (A)
			Rear case
		Fig.D2	1 Screw (B)
			4 Locking tabs
			Top case
		Fig.D3	2 Screws (C)
			2 Locking tabs
			Side case L unit
2	Front case unit	Fig.D4	2 Screws (D)
		Fig.D5	1 Locking tab
			Front case unit
3	Light FPC unit	Fig.D6	FP6901(Flex)
			1 Screw (E)
			Light FPC unit
4	Side case R unit, Bottom unit	Fig.D7	1 Screw (F)
			FP6903(Flex)
			3 Screws (G)
			Side case R unit
			Bottom unit
5	Shield plate unit	Fig.D8	4 Screws (H)
			Shield plate unit
6	MIC unit	Fig.D9	FP6910(Flex)
			3 Locking tabs
			MIC unit
7	Main P.C.B.	Fig.D10	FP6905(Flex)
			FP6931(Flex)
			FP6971(Flex)
			1 Locking tab
			2 Ribs
			Main P.C.B.
8	Lens unit	Fig.D11	1 Screw (I)
			1 Locking tab
			Lens unit
9	Battery operation unit	Fig.D12	1 Screw (J)
			2 Locking tabs
			S/S button
			1 Screw (K)
			1 Hook
			Zoom operation rubber
			Battery operation unit
10	Tripod piece, Access panel light, Battery door unit	Fig.D13	Battery door shaft
			Battery door spring
			Tripod piece
			Access panel light
			Battery door unit
11	Battery case, Battery out spring	Fig.D14	2 Locking tabs
			Battery case
			Battery out spring
12	LCD DET P.C.B.	Fig.D15	1 Screw (L)
			LCD DET P.C.B.
13	LCD unit	Fig.D16	2 Screws (M)
			Hinge reinforcement plate
			FP2502(Flex)
			2 Ribs
			LCD unit
14	Monitor P.C.B.	Fig.D17	2 Screws (N)
			9 Locking tabs
			FP8101(Flex)
			FP8102(Flex)
			LCD hinge unit
			LCD earth plate
			Monitor P.C.B.

No.	Item	Fig	Removal
15	LCD panel	Fig.D18	1 Locking tab
			Reflection sheet
			Lighting plate
			Diffusion sheet
			Prism sheet (B)
			Prism sheet (A)
			Light guide holder
			LCD shield case
			LCD case (B)
			LCD panel
16	Side R P.C.B.	Fig.D19	3 Screws (O)
			P2502(Connector)
			Side R P.C.B.
17	Operation button, Speaker unit	Fig.D20	4 Locking tabs
			Shield plate R
			Operation button
			Speaker unit
18	CCD unit, Optical filter	Fig.D21	2 Screws (P)
			CCD cushion rubber
			CCD unit
			Optical filter
19	IRIS unit	Fig.D22	Solder (8 points)
			3 Screws (Q)
			1 Rib
		Fig.D23	IRIS unit
20	Zoom motor unit	Fig.D24	2 Screws (R)
			Zoom motor unit
21	Focus motor unit	Fig.D25	2 Screws (S)
			Focus motor unit
22	Master flange, 4th moving frame unit, 3rd moving frame unit	Fig.D26	3 Screws (T)
			Master flange
			4th moving frame unit
			3rd moving frame unit
23	Guide pole, 2nd moving frame unit	Fig.D27	2 Guide poles
			2nd moving frame unit

NOTE:

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

- Card
- Battery

**8.3.1. Removal of the Side case L unit**

- Screw (A)× 4

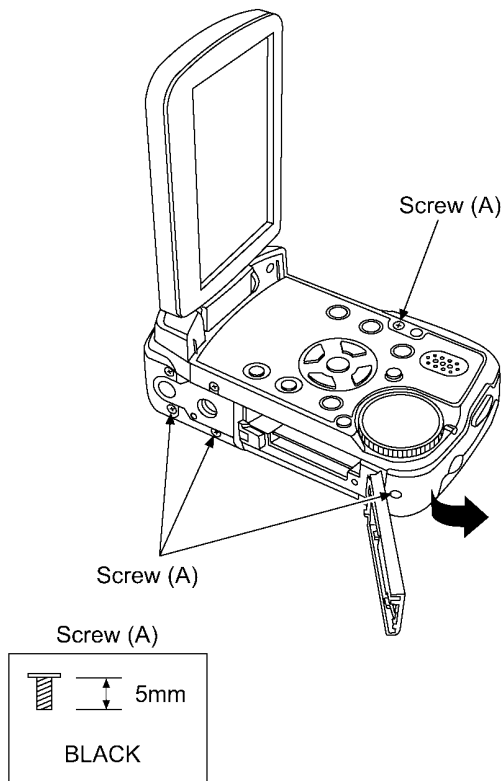


Fig.D1

- Rear case
- Screw (B)× 1
- Locking tab× 4
- Top case

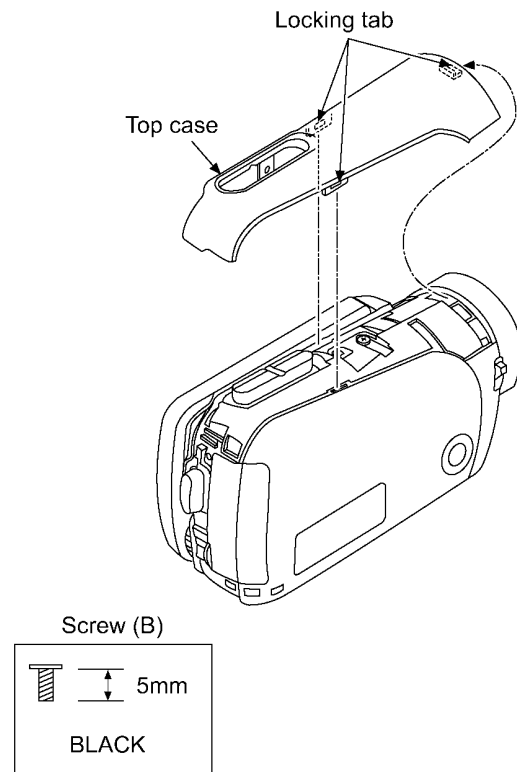
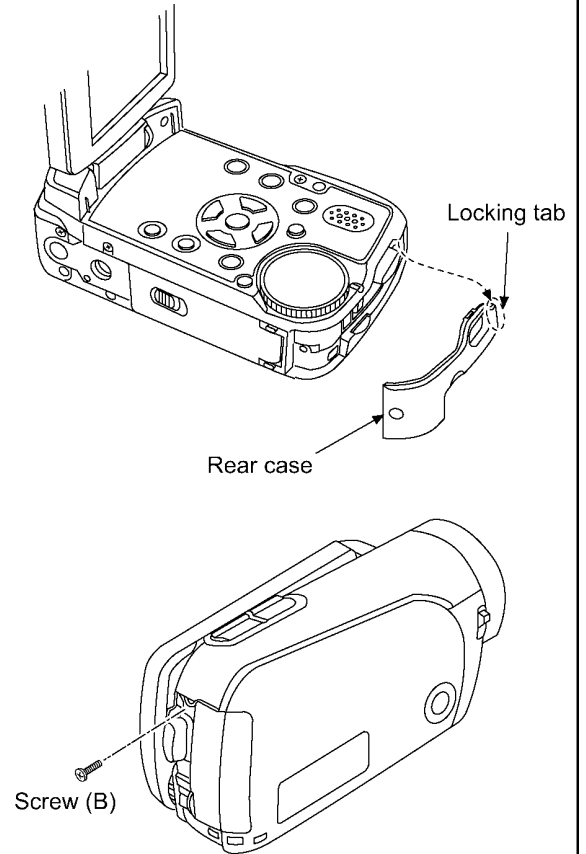


Fig.D2

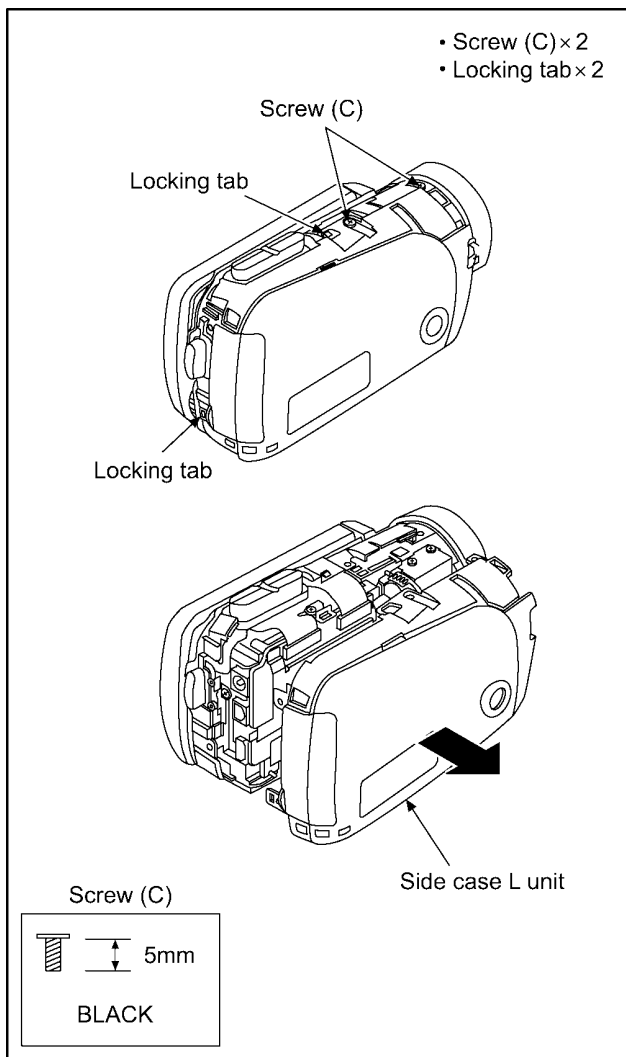


Fig.D3

8.3.2. Removal of the Front case unit

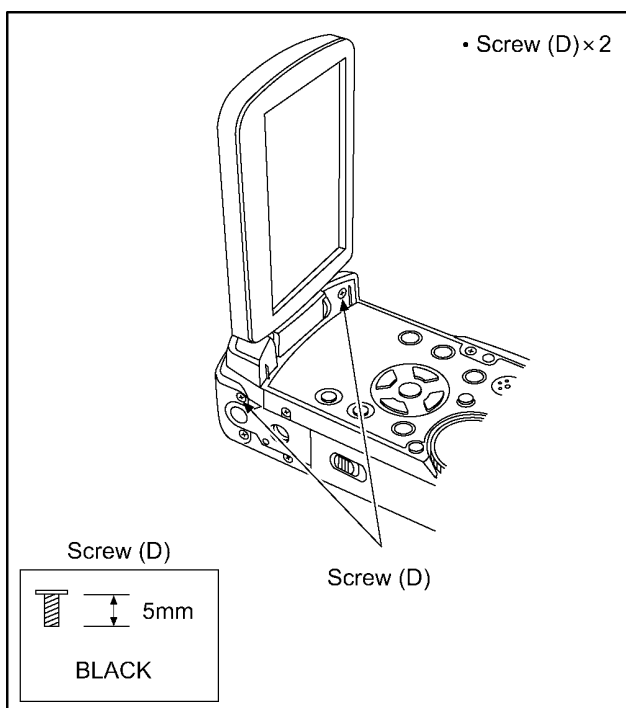


Fig.D4

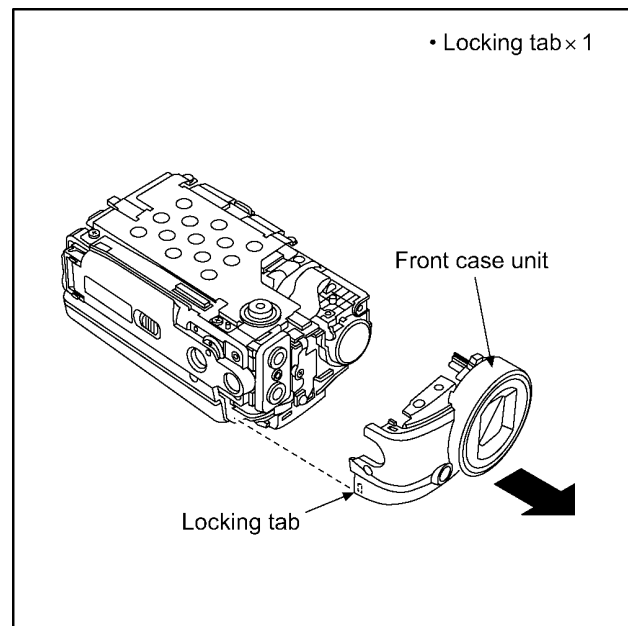


Fig.D5

8.3.3. Removal of the Light FPC unit

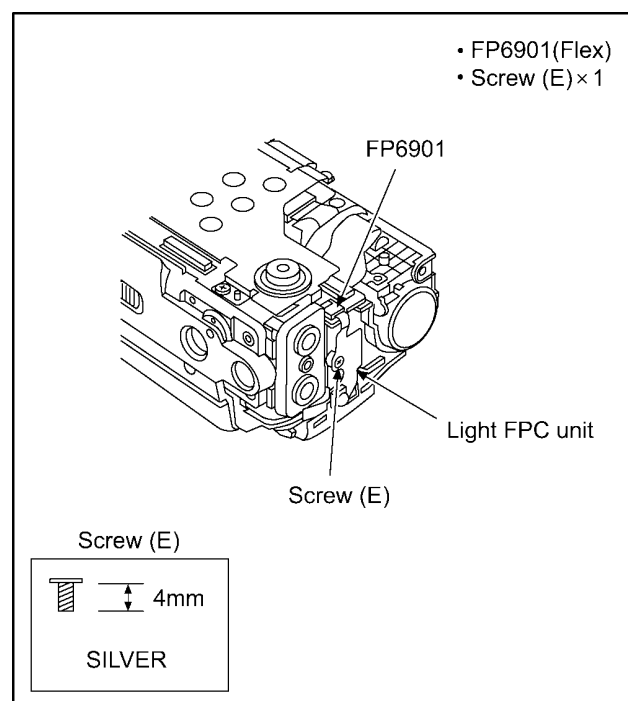


Fig.D6

8.3.4. Removal of the Side case R unit and Bottom unit

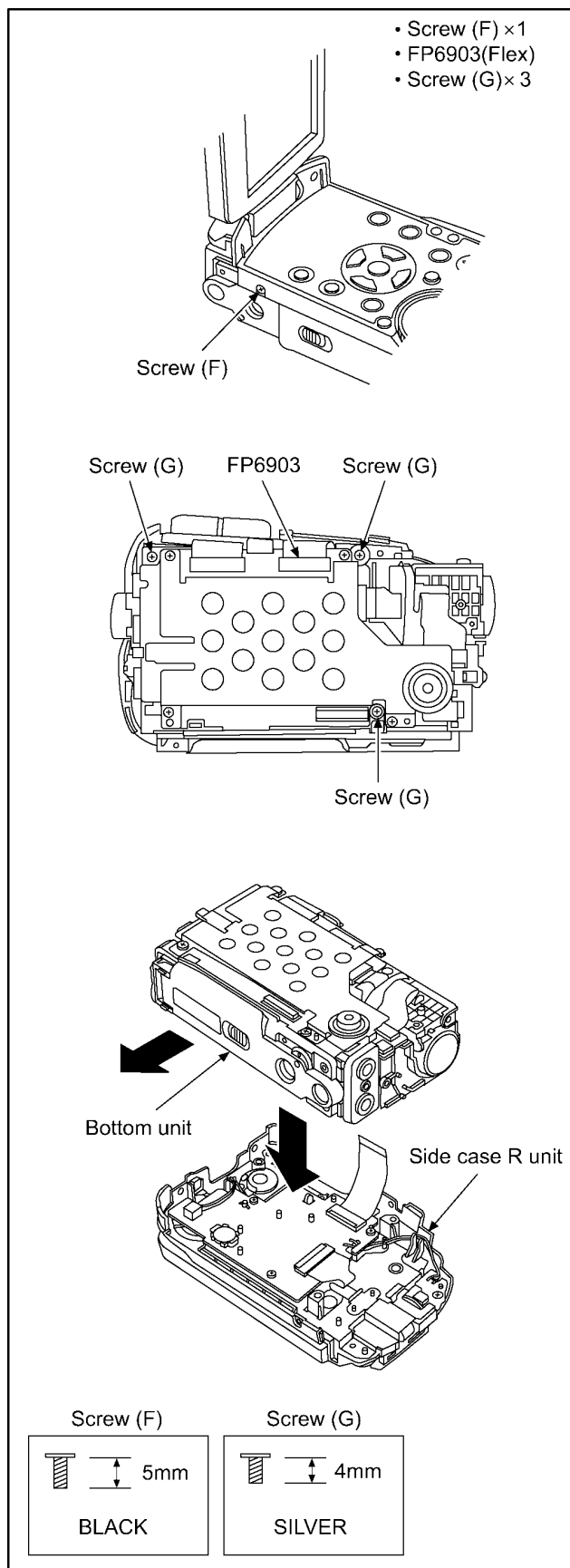


Fig.D7

8.3.5. Removal of the Shield plate unit

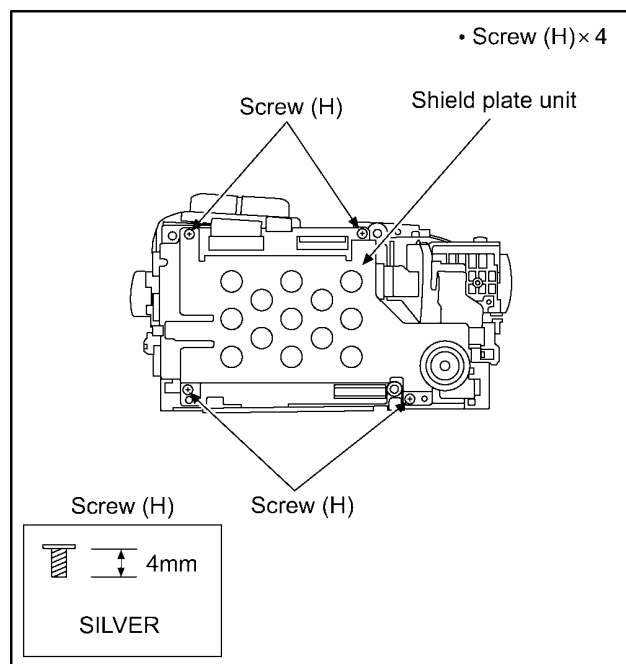


Fig.D8

8.3.6. Removal of the MIC unit

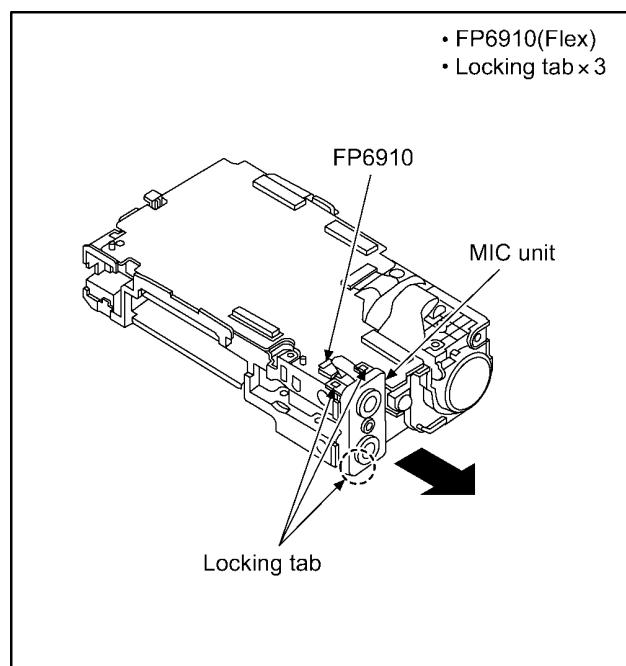


Fig.D9

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

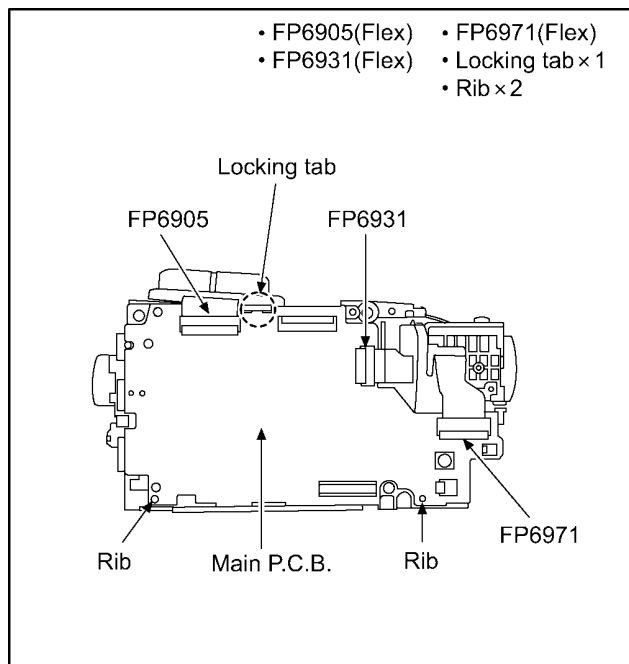


Fig.D10

8.3.8. Removal of the Lens unit

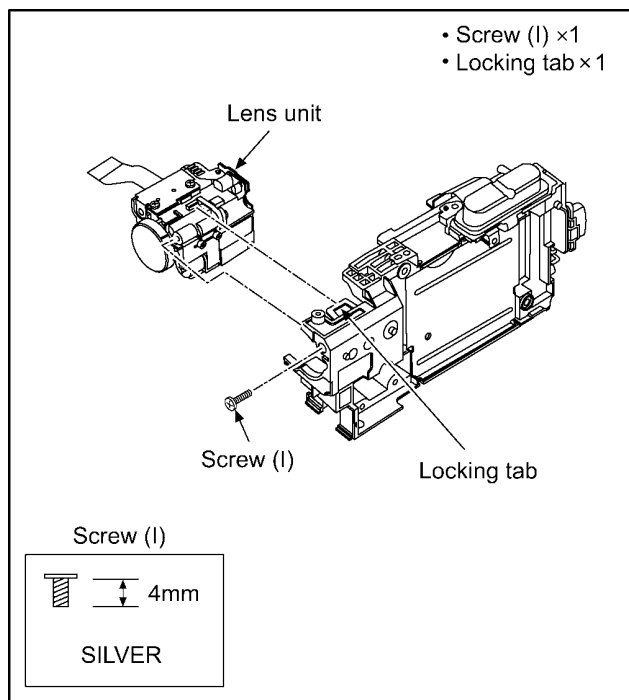


Fig.D11

8.3.9. Removal of the Battery operation unit

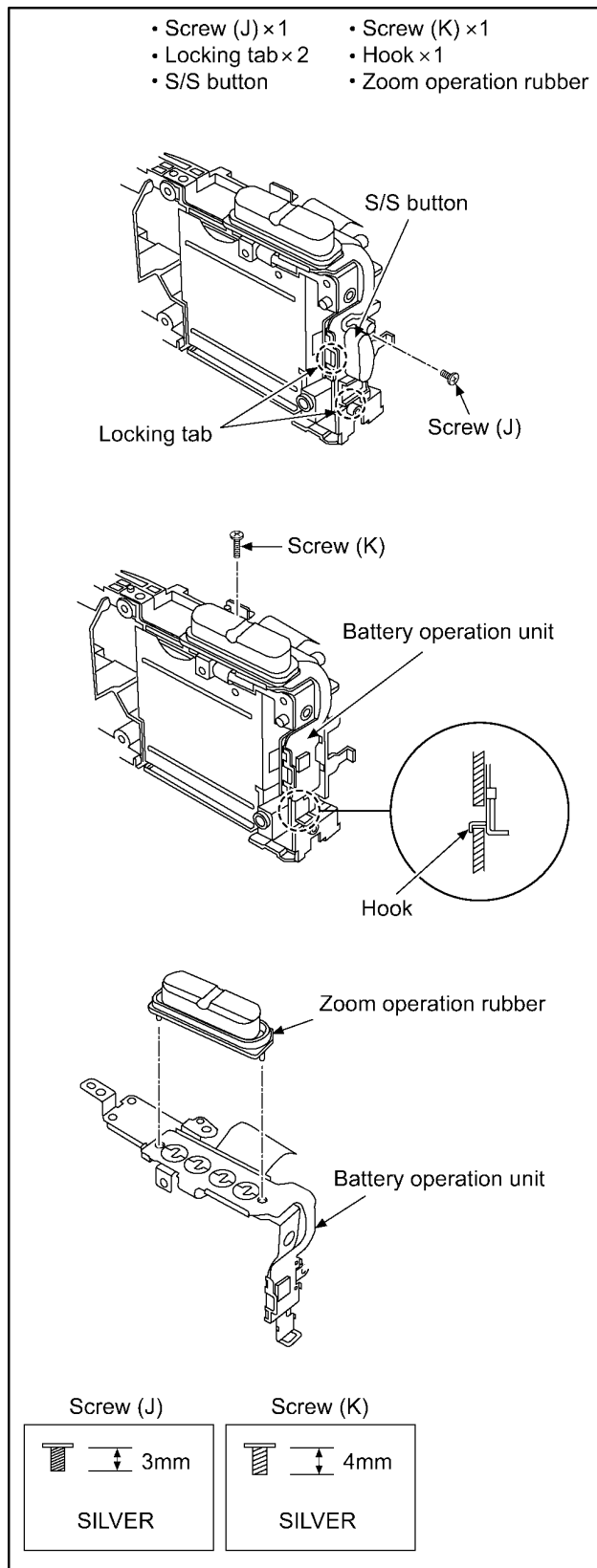


Fig.D12

8.3.10. Removal of the Tripod piece, Access panel light and Battery door unit

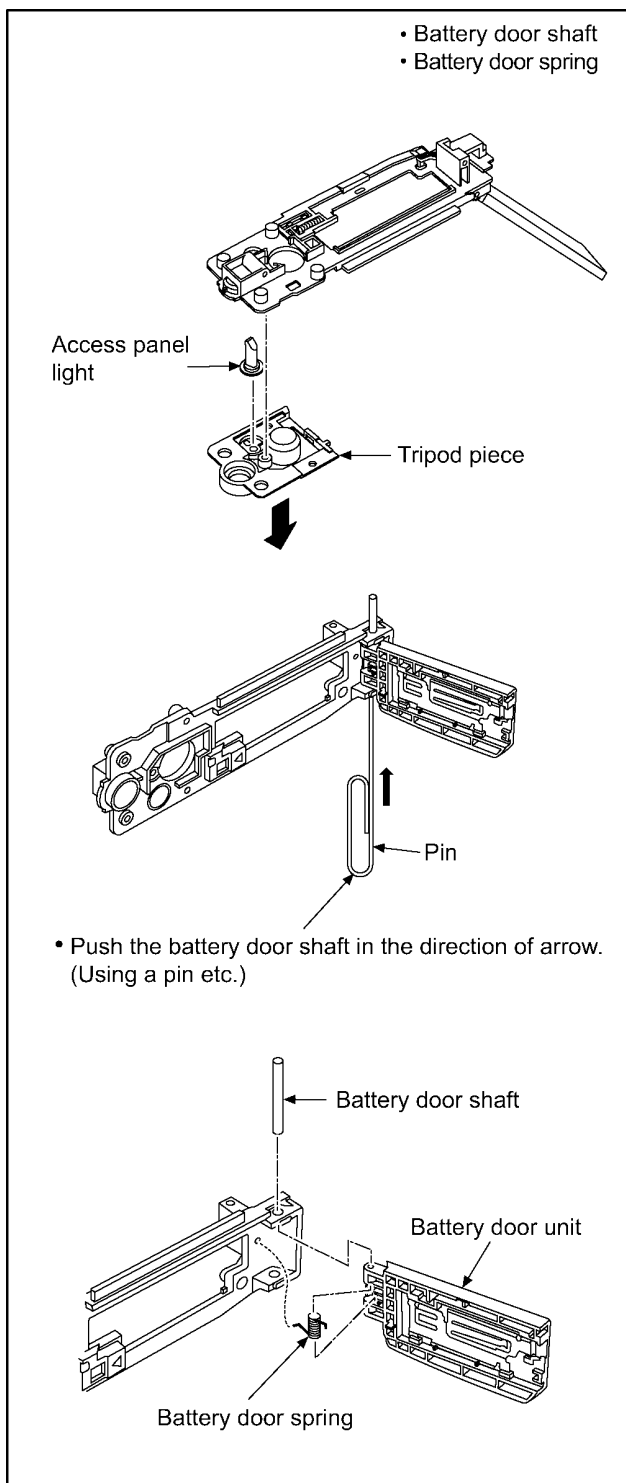


Fig.D13

8.3.11. Removal of the Battery case and Battery out spring

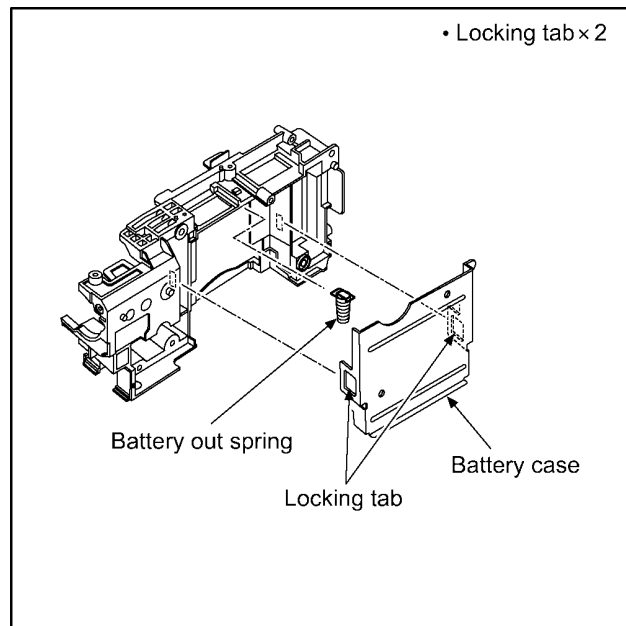


Fig.D14

8.3.12. Removal of the LCD DET P.C.B.

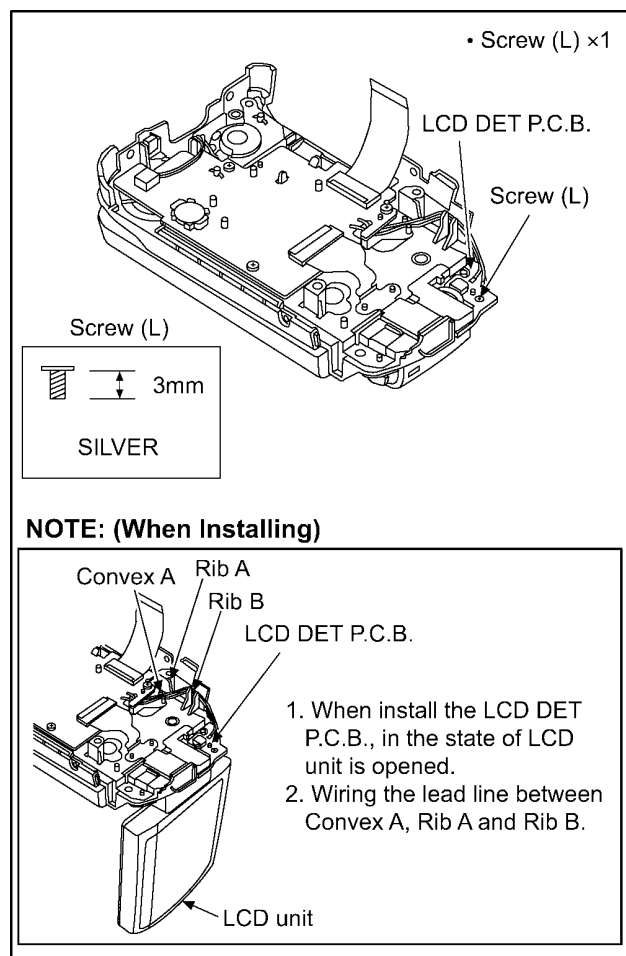


Fig.D15

8.3.13. Removal of the LCD unit

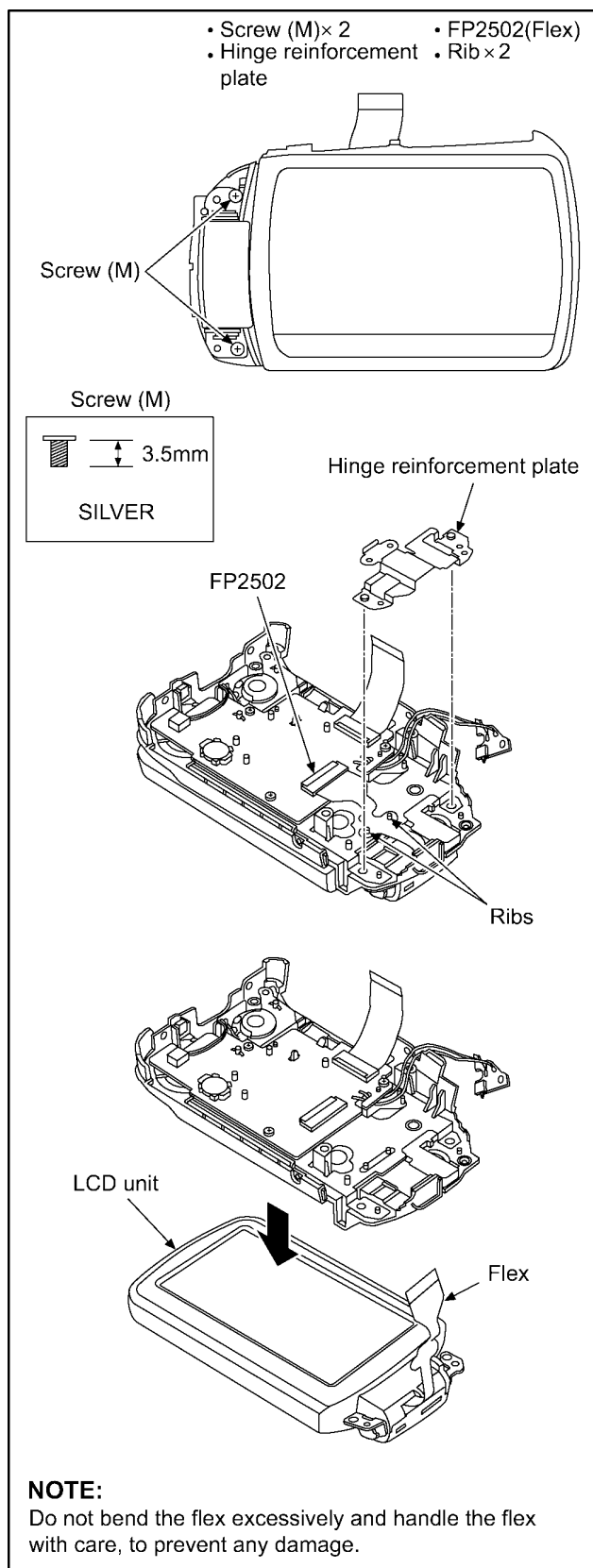


Fig.D16

8.3.14. Removal of the Monitor P.C.B.

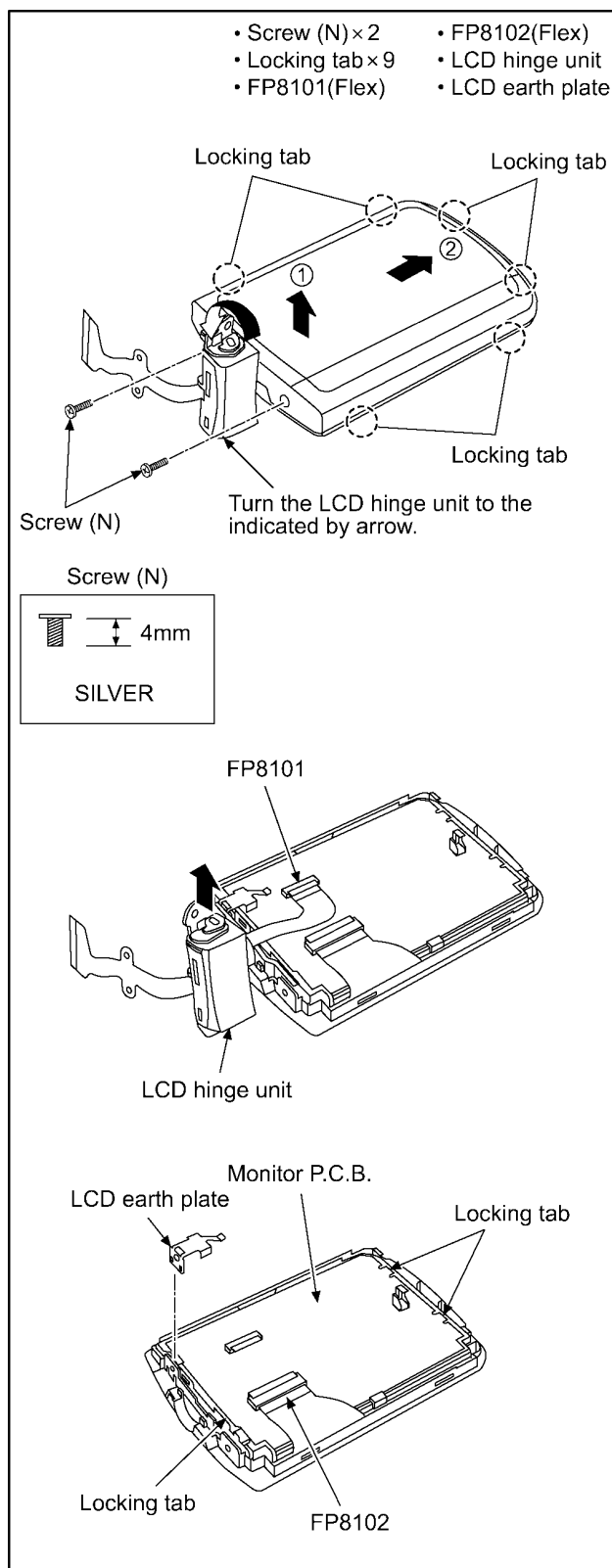


Fig.D17

8.3.15. Removal of the LCD panel

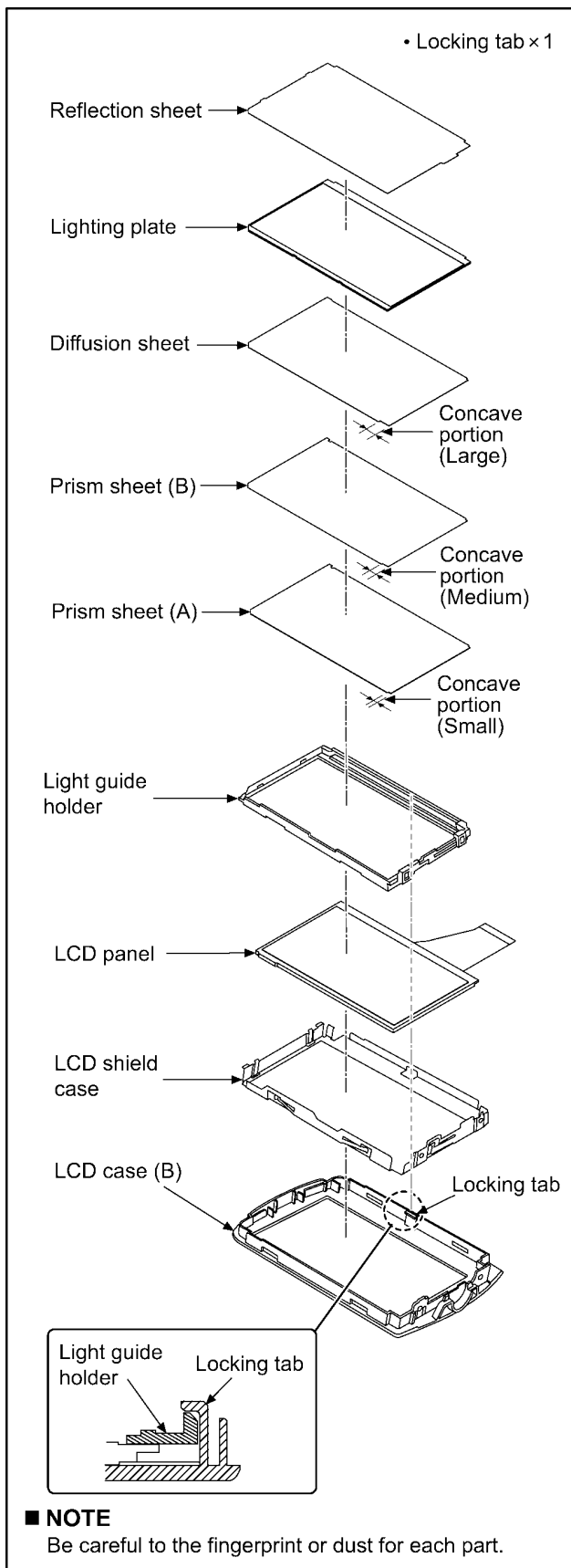


Fig.D18

8.3.16. Removal of the Side R P.C.B.

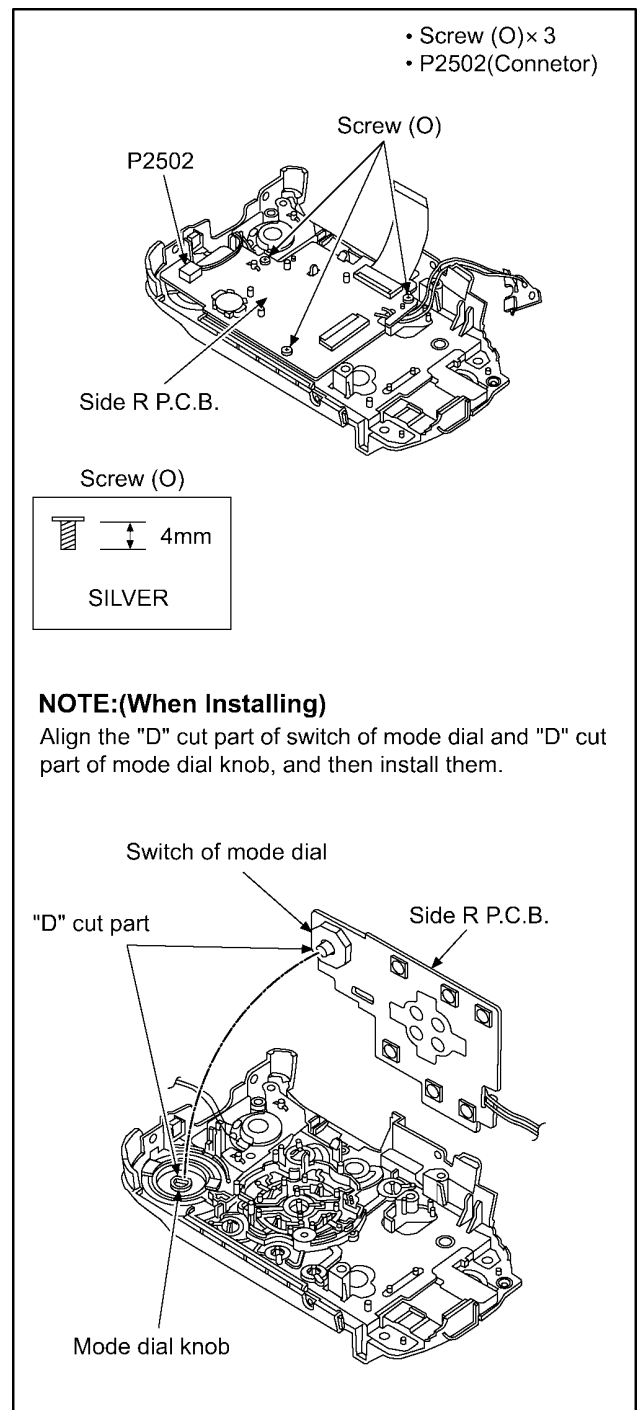


Fig.D19

8.3.17. Removal of the Operation button and Speaker unit

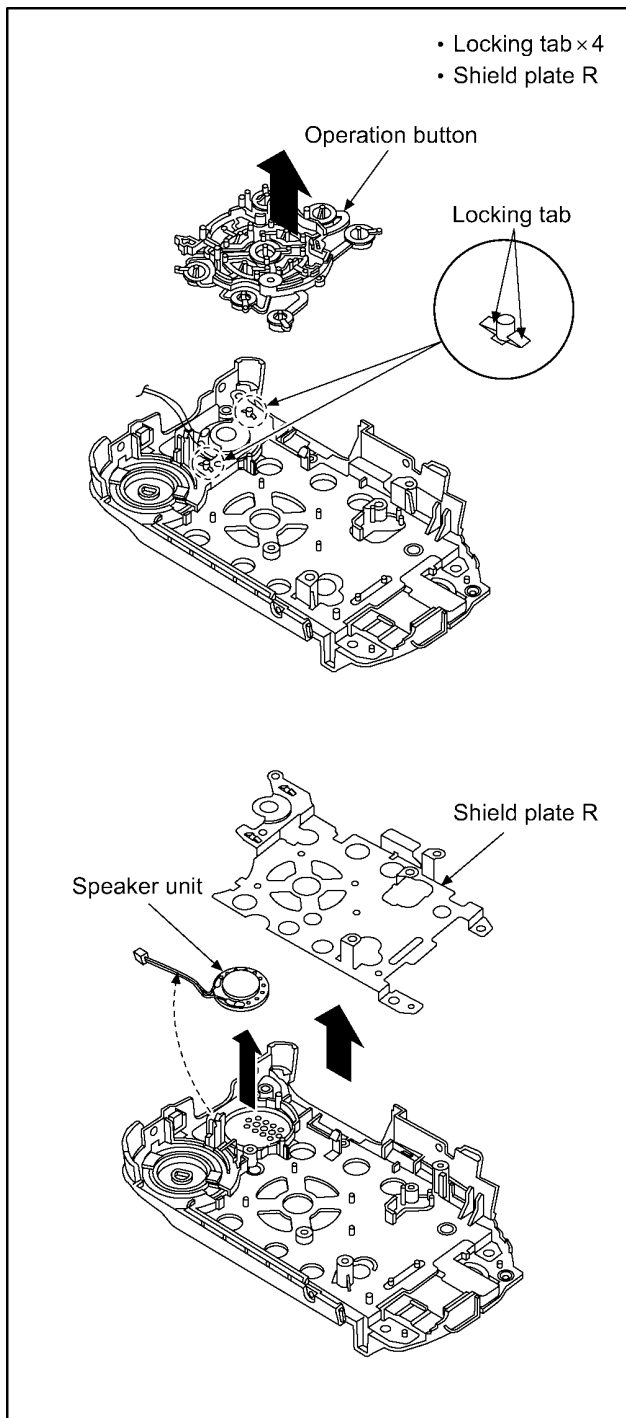


Fig.D20

8.3.18. Removal of the CCD unit and Optical filter

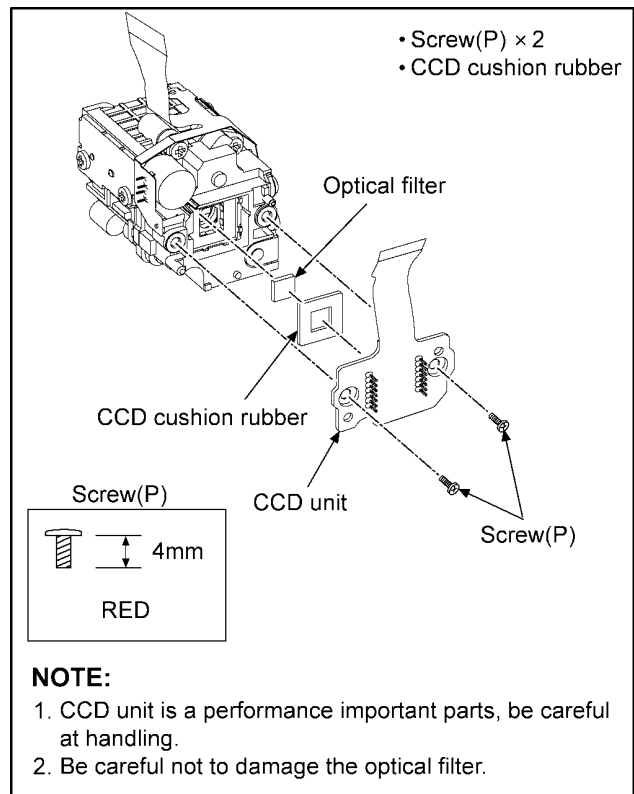


Fig.D21

8.3.19. Removal of the IRIS unit

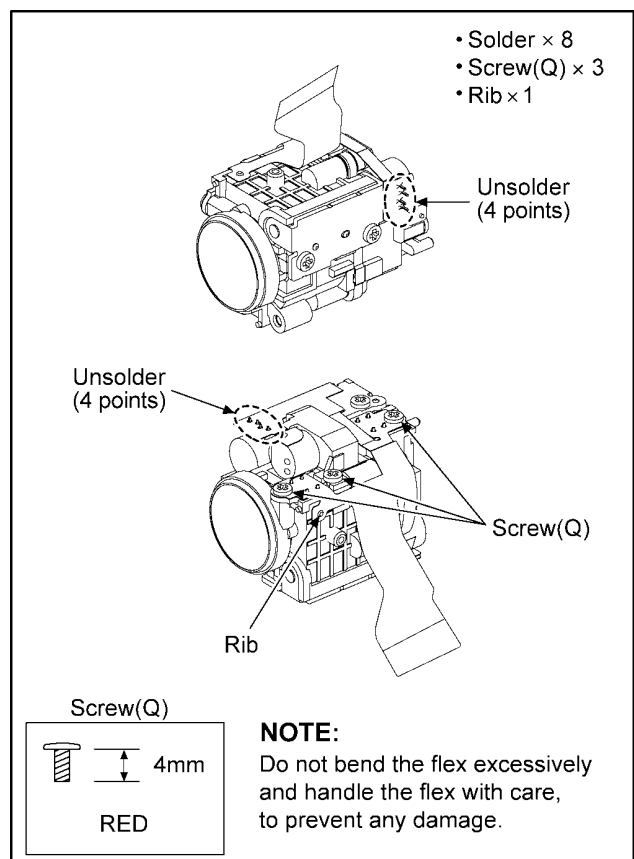


Fig.D22

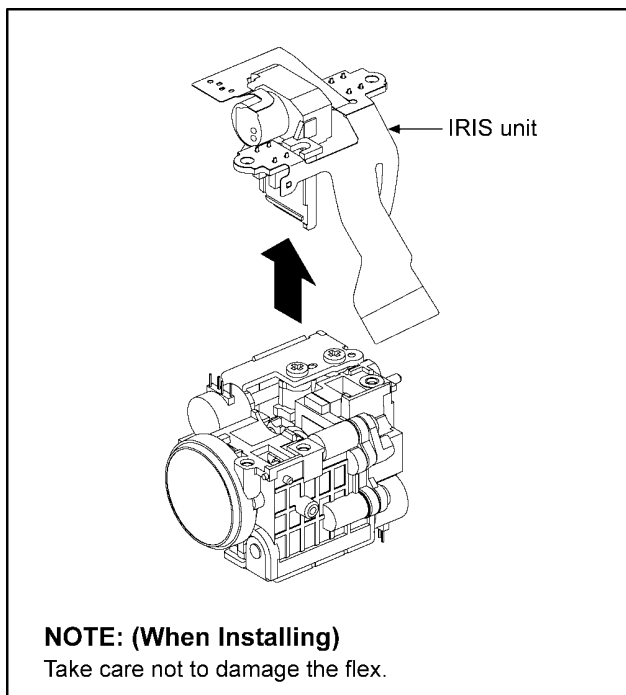


Fig.D23

8.3.20. Removal of the Zoom motor unit

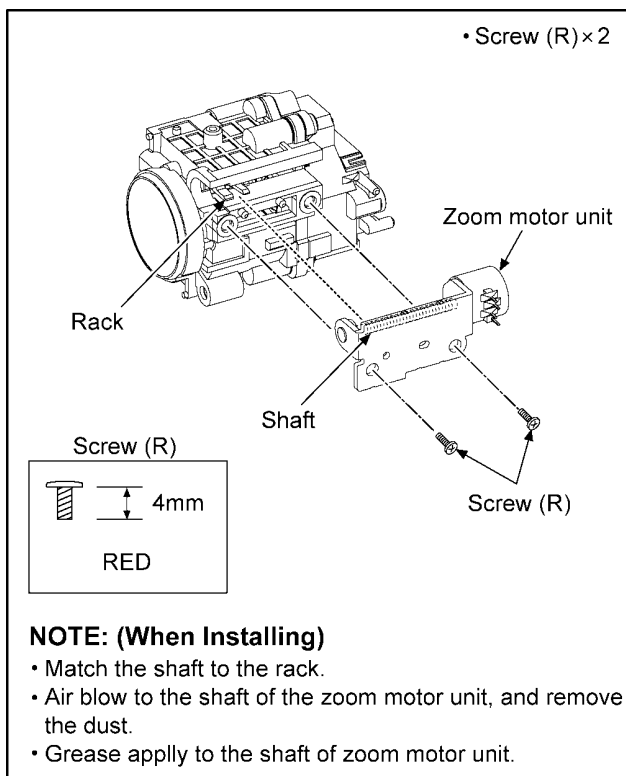


Fig.D24

8.3.21. Removal of the Focus motor unit

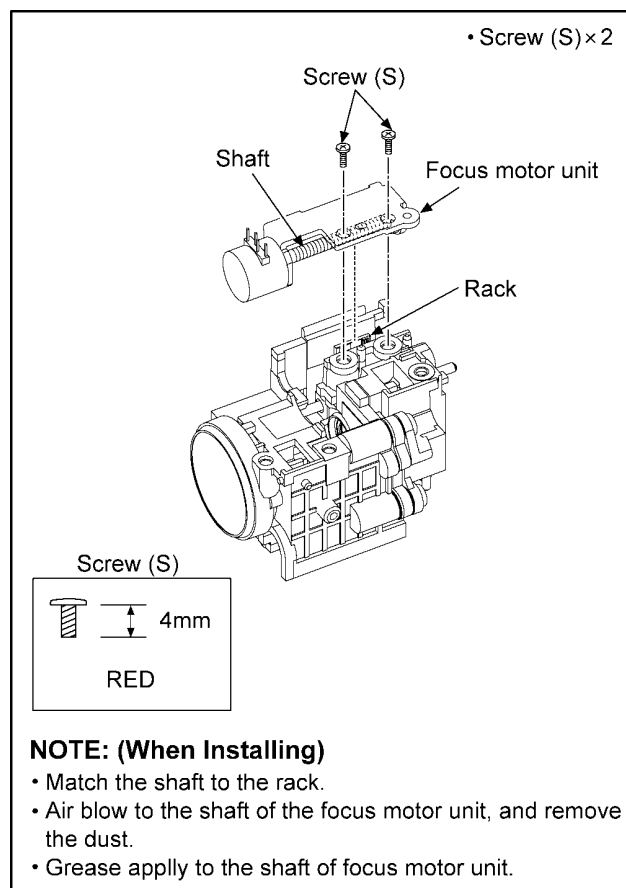


Fig.D25

9 Measurements and Adjustments

9.1. Electric Adjustment

- Adjustment method is different from a conventional SD video camera.
- An exclusive jig and PC (including software for adjustment "Tatsujin") are necessary for electric adjustment.
- A USB driver for service is necessary to communication with PC.
- Connection method of the main unit and an exclusive adjustment jig as follows

9.1.1. Adjustment Procedure

- Connect the main unit to PC with USB.

The adjustment instruction is available at "Software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN System".

Figure of connection

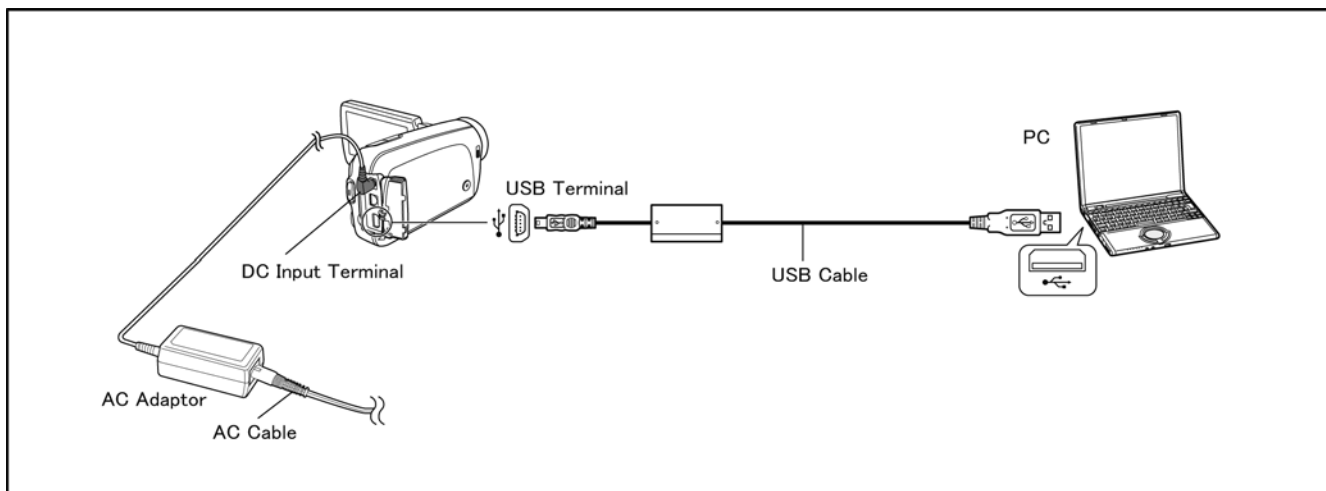
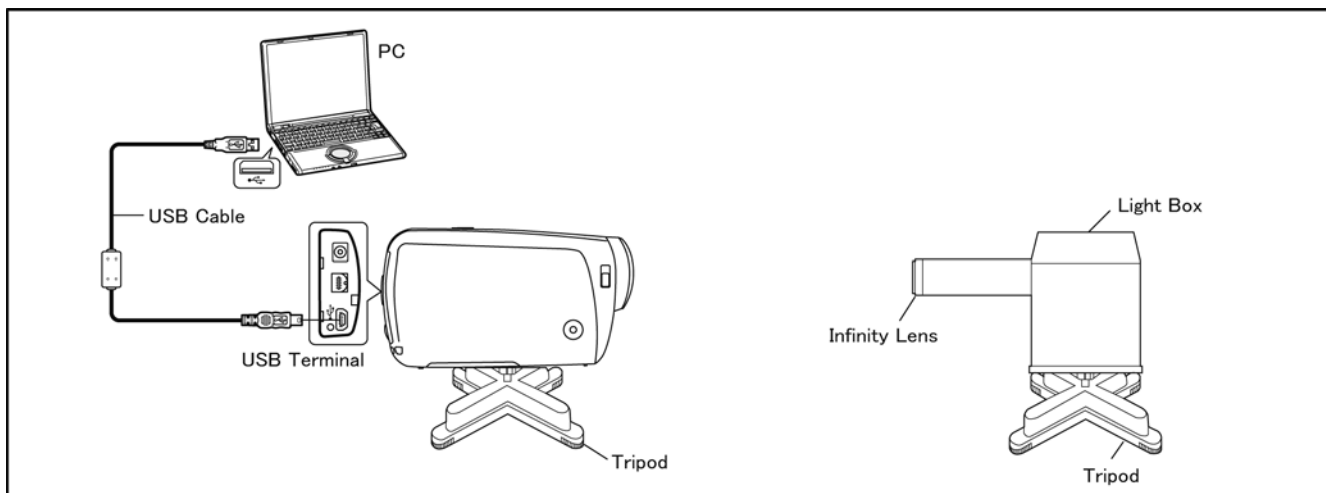


Figure of image when adjustment



Part Number of jig

- Only a necessary jig mentions it in setup of electric adjustment.

No.	Part Name	Part Number	Remarks
1	PC	-----	
2	AC Adaptor	-----	
3	AC Cable	-----	
4	USB Cable	-----	
5	Adjustment Software (Tatsujin)	-----	

Adjustment Items

- Adjustment item as follows.

The adjustment instruction is available at "Software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN System".

Adjustment item		Replacement part	Main P.C.B.	IC6004(EEPROM)	Lens P.C.B.	Prism Unit	IRIS	4th lens frame move unit
Camera Part	●Hall amplifire/PWM bias (Automatic)		○	○	○	○	○	
	●Hall amplifire adjustment		○	○	○	○	○	
	●Zoom tracking adjustment (Automatic)		○	○	○	○	○	○
	●Address wound revision		○	○		○		
	●White balance adjustment		○	○		○		
Video Part	●Brightness level adjustment		○	○		○		

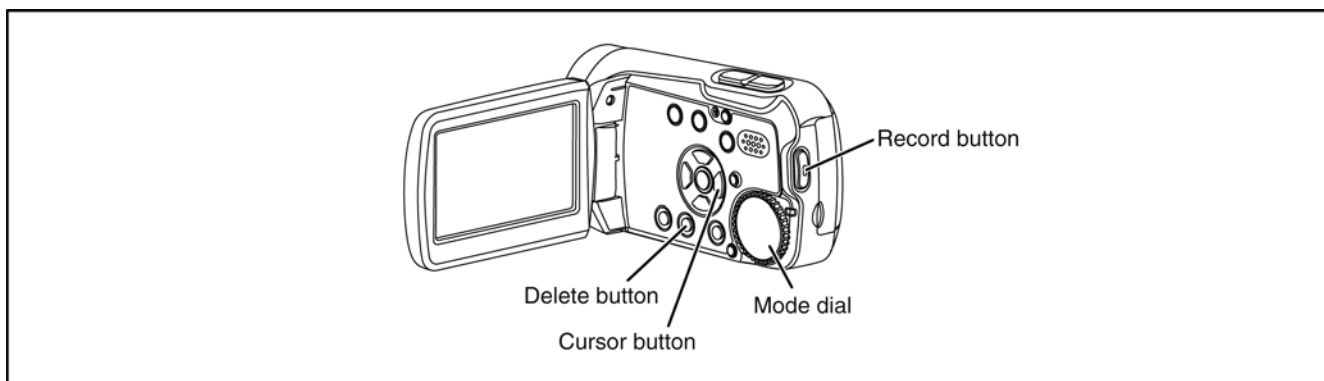
9.2. Repair Record

Using the applicable items in (Repair & Maintenance) that is newly provided in the adjustment software, record the treatment and the date of execution.

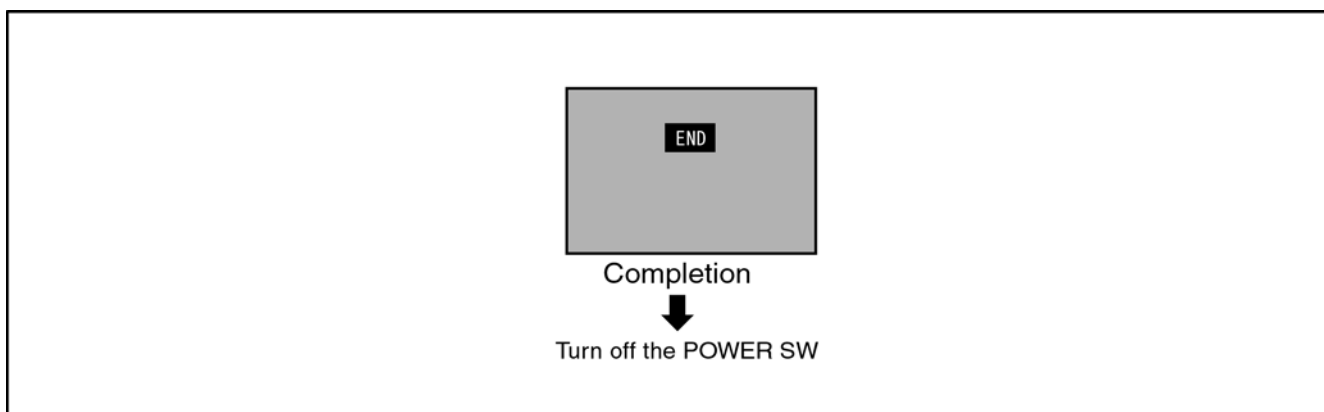
10 Factory Setting

10.1. HOW TO TURN ON THE FACTORY SETTINGS?

1. Set the mode dial to the Motion picture recording position.
2. Press three buttons ("Cursor button [Right>]", "Delete button" and "Record button" simultaneously for 3 seconds or more.



3. Beep tone is generated and then the shutter sound is generated.
4. When "END" appears on the display, the Factory Setting is completed.
5. Set the mode dial to the OFF position to close the Factory Setting.



10.2. WHAT IS THE FACTORY SETTINGS?

The factory settings clean up and/or refresh the following settings.

1. The OSD MENU setting data.
2. Deletion only for all scene files in a card and format of the MPEG2 file system area.
3. Reset the folder number and file number of still pictures.
(Setting the folder number is 100, and file number is 0.)
4. Clear the mechanism lock information.
5. Clear the service mode information contents.

The setting position of factory settings:

Name	Setting position
Mode dial	OFF

Service Manual

Diagrams and Replacement Parts List

SD Video Camera

Model No.

SDR-S15EB	SDR-S15GJ
SDR-S15EC	SDR-S15GK
SDR-S15EE	SDR-S15GN
SDR-S15EF	SDR-S15GT
SDR-S15EG	SDR-S15P
SDR-S15EP	SDR-S15PC
SDR-S15GC	SDR-S15PR
SDR-S15GD	SDR-S15PU

Vol. 1
Colour
(S).....Silver Type (except PR/EF/GD/GT)
(K).....Black Type
(T).....Brown Type (except PC/GD/GK)
(P).....Pink Type (only EB)

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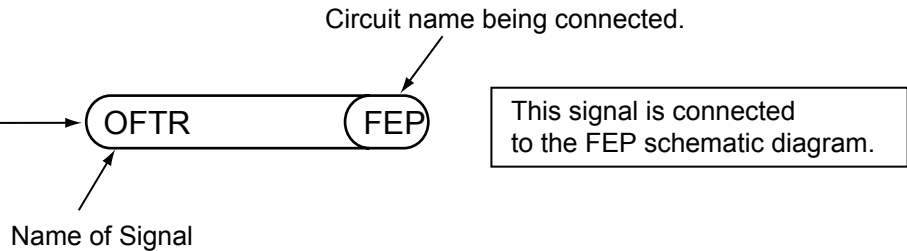
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S1. About Indication of The Schematic Diagram

S1.1. Important Safety Notice

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

- 1.Although reference number of the parts is indicated on the P.C.B. drawing and/or schematic diagrams, it is NOT mounted on the P.C.B. when it is displayed with "\$" mark.
- 2.It is only the "Test Round" and no terminal (Pin) is available on the P.C.B. when the TP (Test Point) indicated as "●" mark.
- 3.The voltage being indicated on the schematic diagram is measured in "Standard-Playback" mode when there is no specify mode is mentioned.
- 4.Although the voltage and waveform available on here is measured with standard frame, it may be differ from actual measurement due to modification of circuit and so on.
- 5.The voltage being indicated here may be include observational-error (deviation) due to internal-resistance and/or reactance of equipment. Therefore, handle the value indicated on here as reference.
- 6.Use the parts number indicated on the Replacement Parts List .
- 7.Indication on Schematic diagrams:



S2. Voltage Chart

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

S2.1. Side R P.C.B.

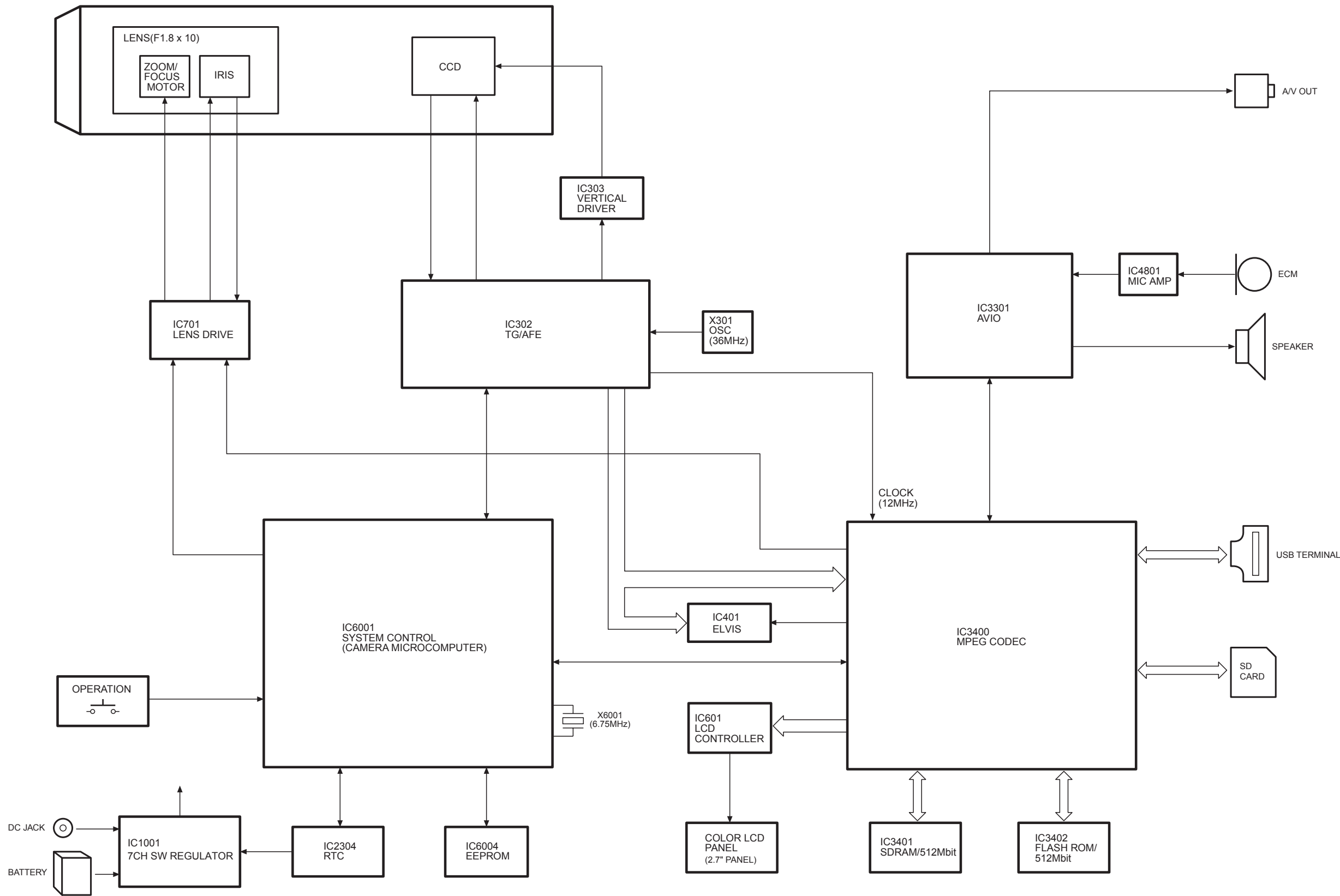
S2.2. Monitor P.C.B.

REF No.	PIN No.	POWER ON
IC601	1	1.6
IC601	2	0
IC601	3	0
IC601	4	3.7
IC601	5	3.5
IC601	6	3.7
IC601	7	3.7
IC601	8	3.7
IC601	9	3.5
IC601	10	0
IC601	11	0.9
IC601	12	0
IC601	13	0
IC601	14	0.6
IC601	15	0.6
IC601	16	0.6
IC601	17	0
IC601	18	1.5
IC601	19	0.7
IC601	20	0.7
IC601	21	0.7
IC601	22	0.7
IC601	23	0
IC601	24	6.2
IC601	25	3.3
IC601	26	3.3
IC601	27	3.3
IC601	28	0
IC601	29	5.9
IC601	30	5.7
IC601	31	0.9
IC601	32	0.3
IC601	33	6.2
IC601	34	5.5
IC601	35	2.9
IC601	36	3.3
IC601	37	0
IC601	38	3.7
IC601	39	0
IC601	40	3.7
IC601	41	0
IC601	42	0
IC601	43	0
IC601	44	0
IC601	45	3.7
IC601	46	3.7
IC601	47	1.8
IC601	48	1.7
IC601	49	0
IC601	50	0
IC601	51	3.7
IC601	52	0
IC601	53	3.7
IC601	54	0.2
IC601	55	0.2
IC601	56	3.7
IC601	57	1.7
IC601	58	1.7
IC601	59	0
IC601	60	0
IC601	61	3.4
IC601	62	2.9
IC601	63	0
IC601	64	1.9

REF No.	PIN No.	POWER ON
Q8101	E	0.5
Q8101	C	2
Q8101	B	1.5
Q8102	E	0.5
Q8102	C	2
Q8102	B	1.5
Q8104	E	0.5
Q8104	C	2
Q8104	B	1.5
Q8105	E	0.5
Q8105	C	2
Q8105	B	1.5
Q8107	E	1.6
Q8107	C	0
Q8107	B	0.9
Q8108	E	0.5
Q8108	C	2
Q8108	B	1.5
Q8112	E	1.5
Q8112	C	0
Q8112	B	0.7
Q8113	E	0
Q8113	C	-6.7
Q8113	B	0

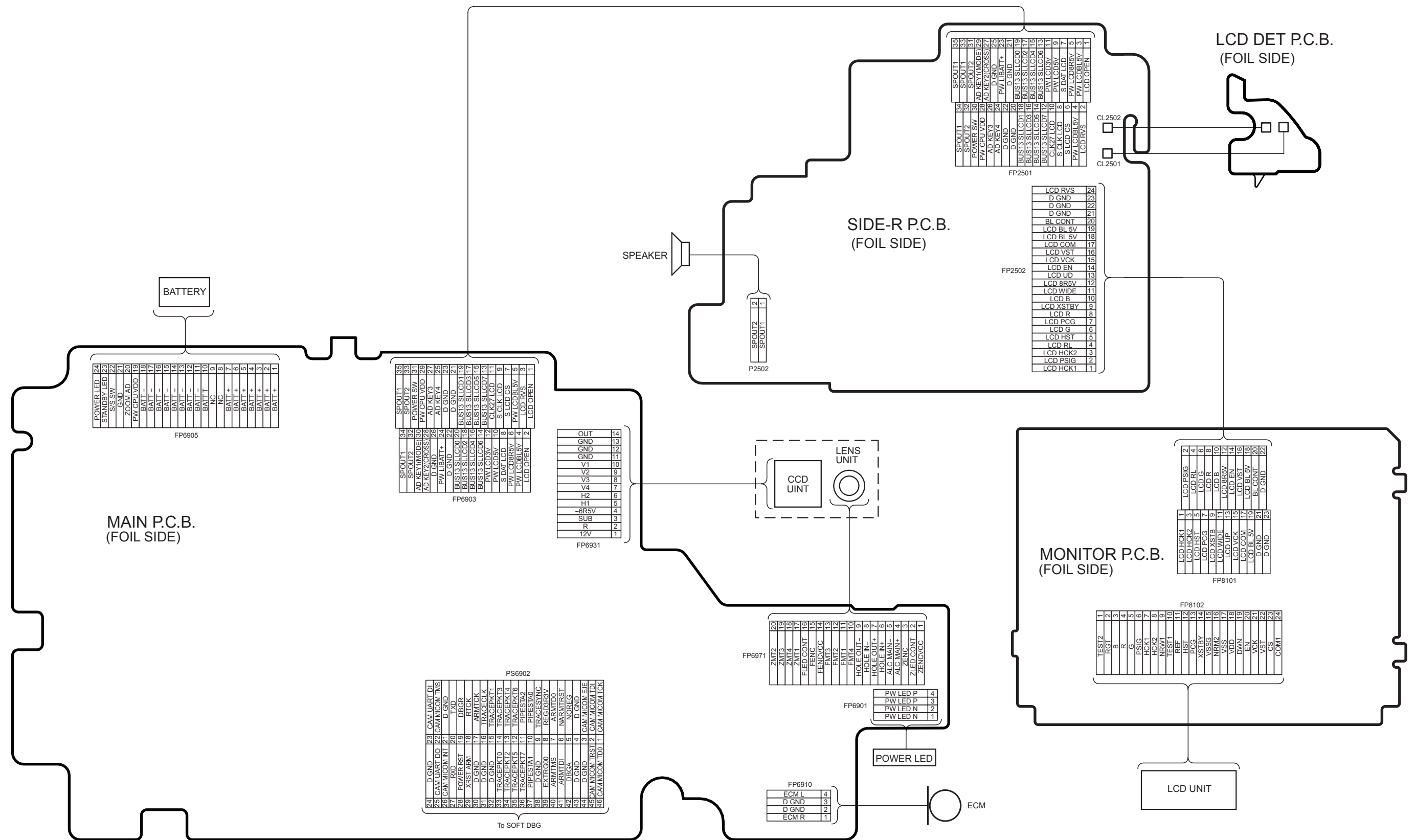
S3. Block Diagram

S3.1. Overall Block Diagram

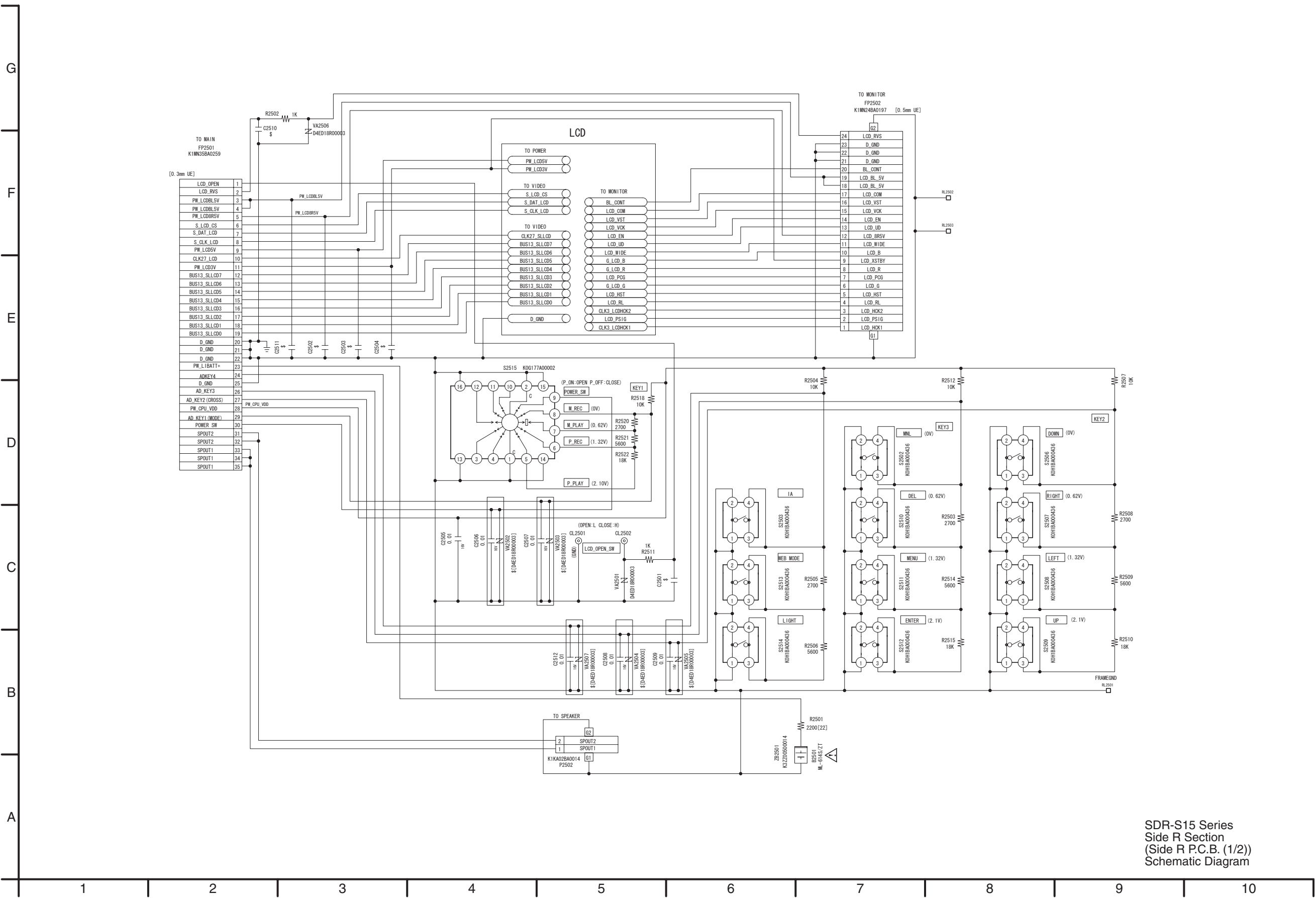


SDR-S15 OVERALL BLOCK DIAGRAM

S4.1. Interconnection Diagram

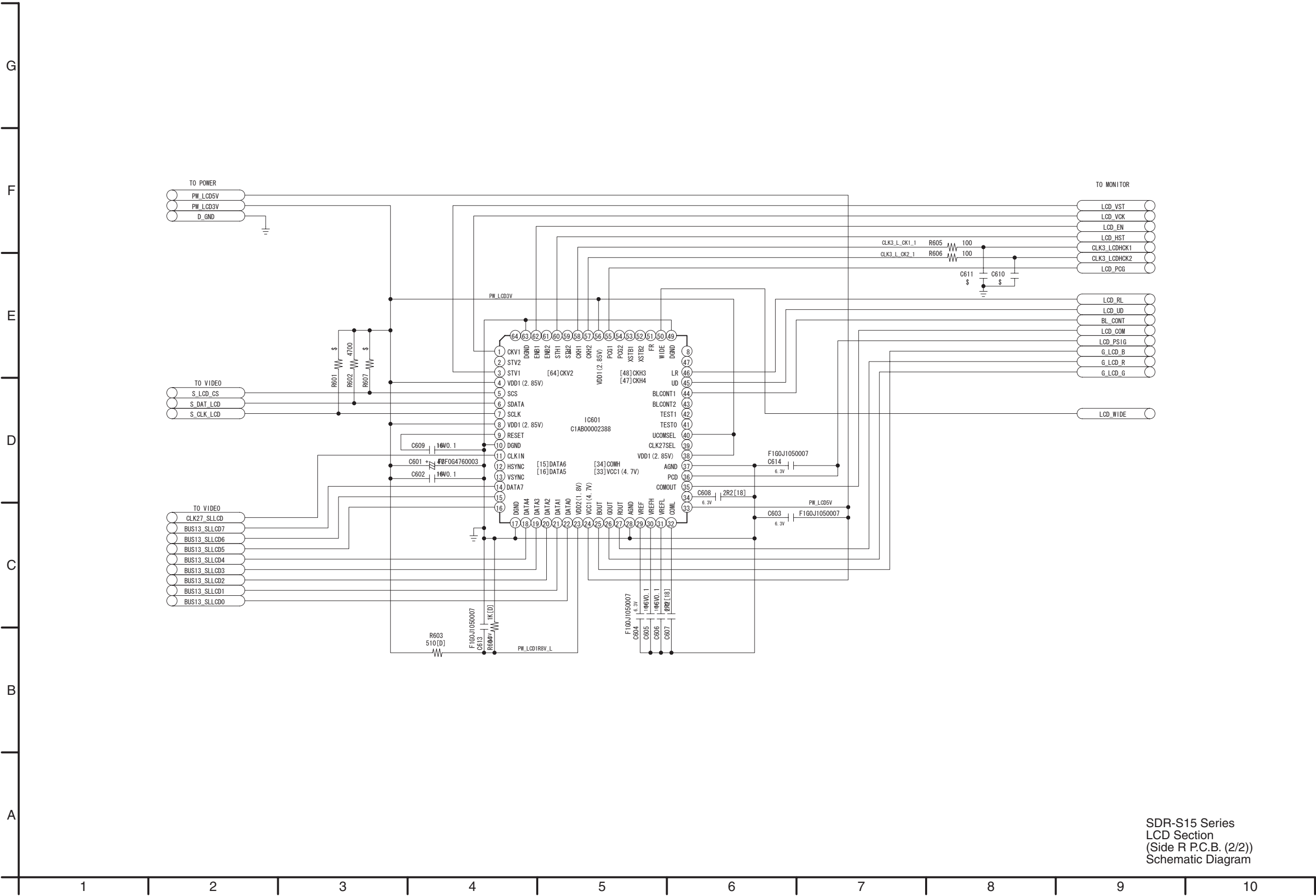


S4.2. Side R Schematic Diagram

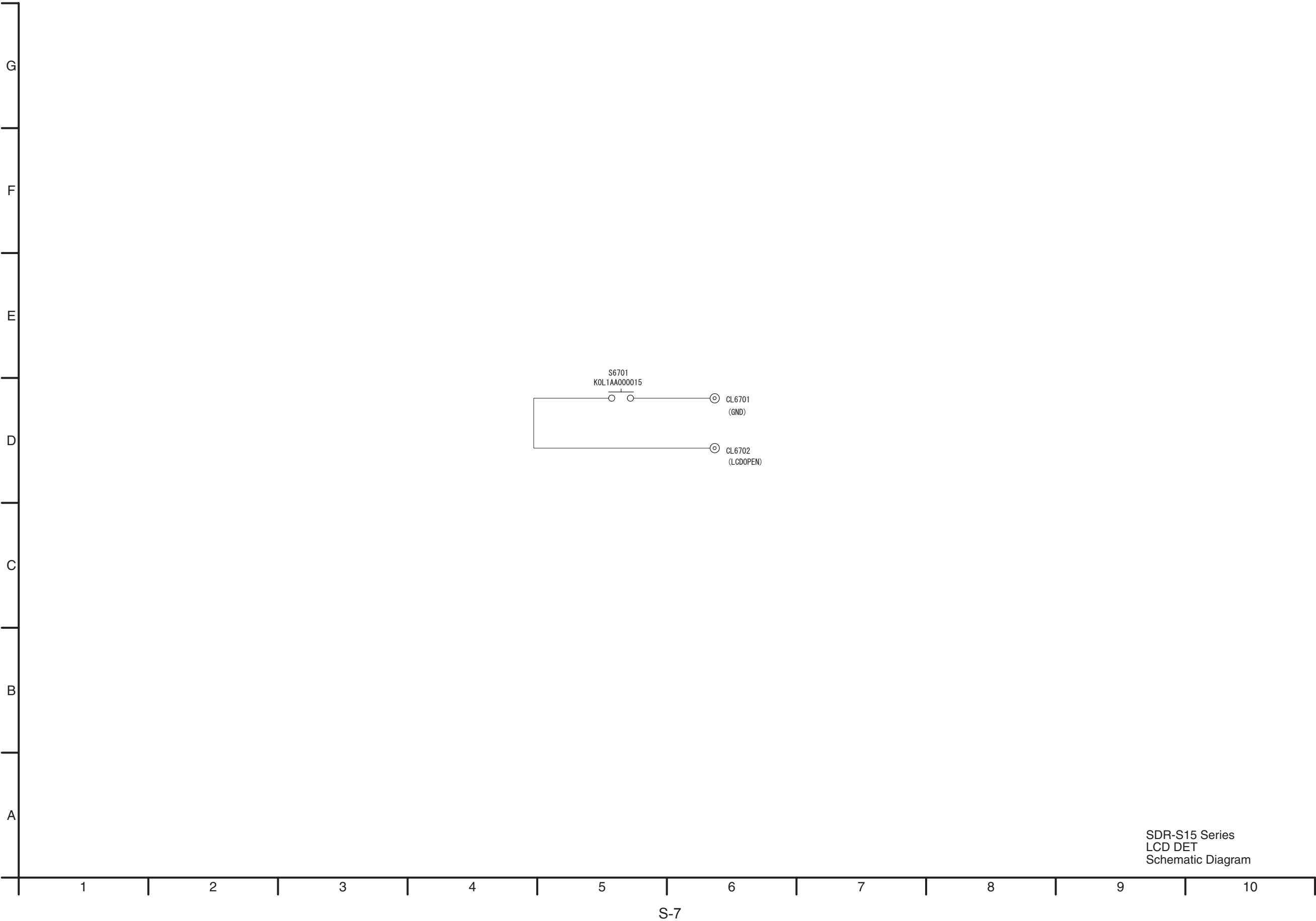


SDR-S15 Series
Side R Section
(Side R P.C.B. (1/2))
Schematic Diagram

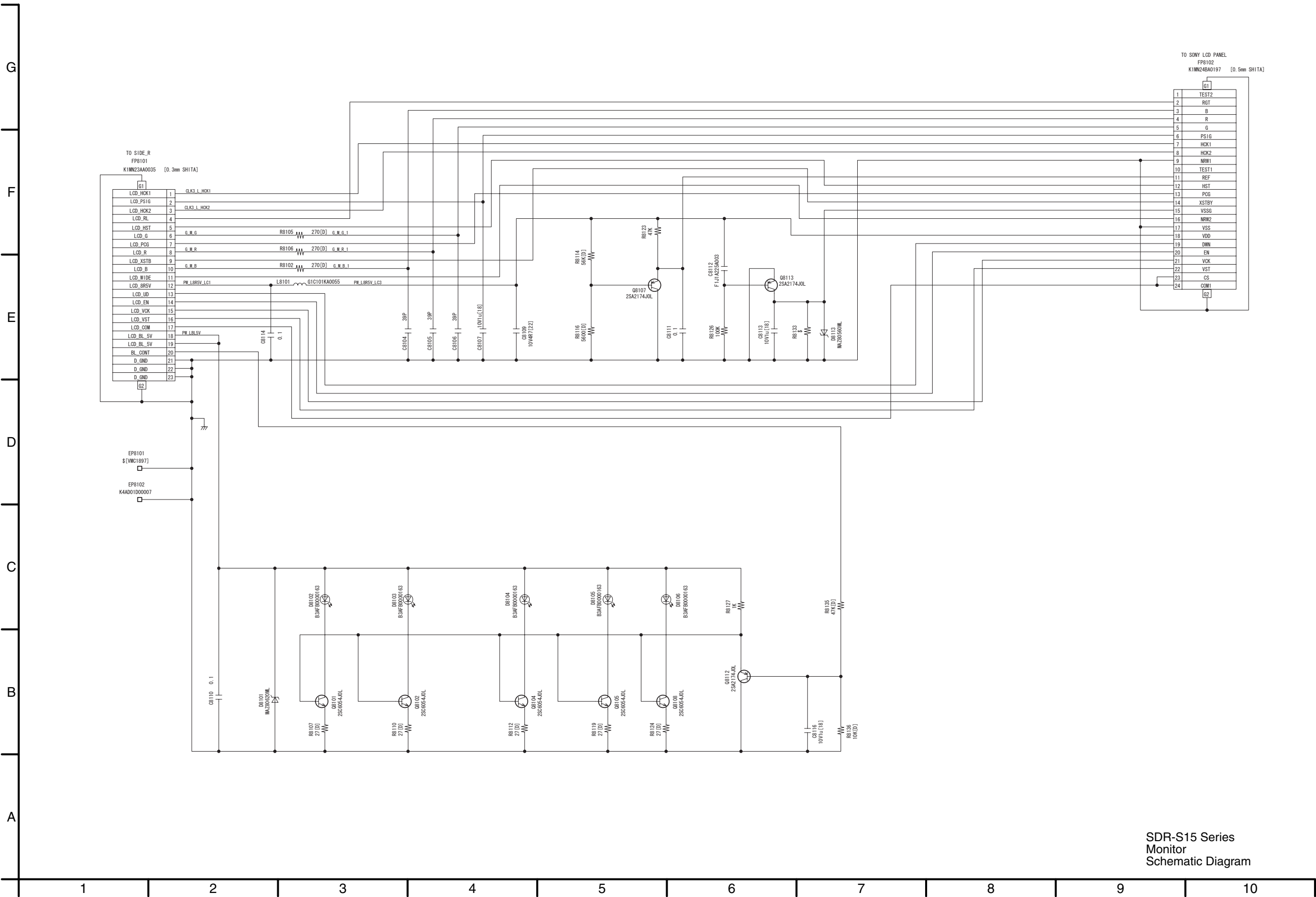
S4.3. LCD Schematic Diagram



S4.4. LCD DET Schematic Diagram

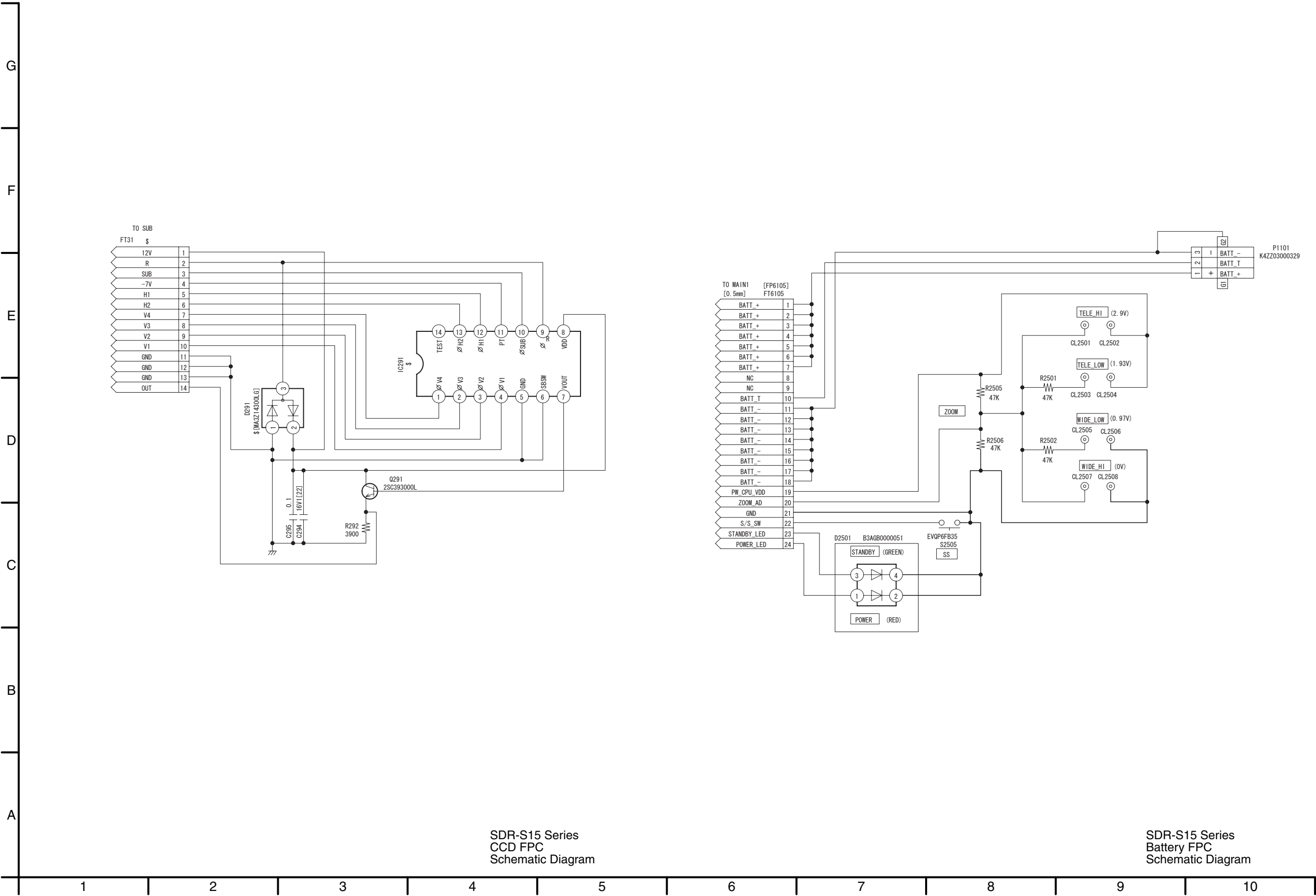


S4.5. Monitor Schematic Diagram



SDR-S15 Series
Monitor
Schematic Diagram

S4.6. CCD FPC Schematic Diagram / S4.7. Battery FPC Schematic Diagram



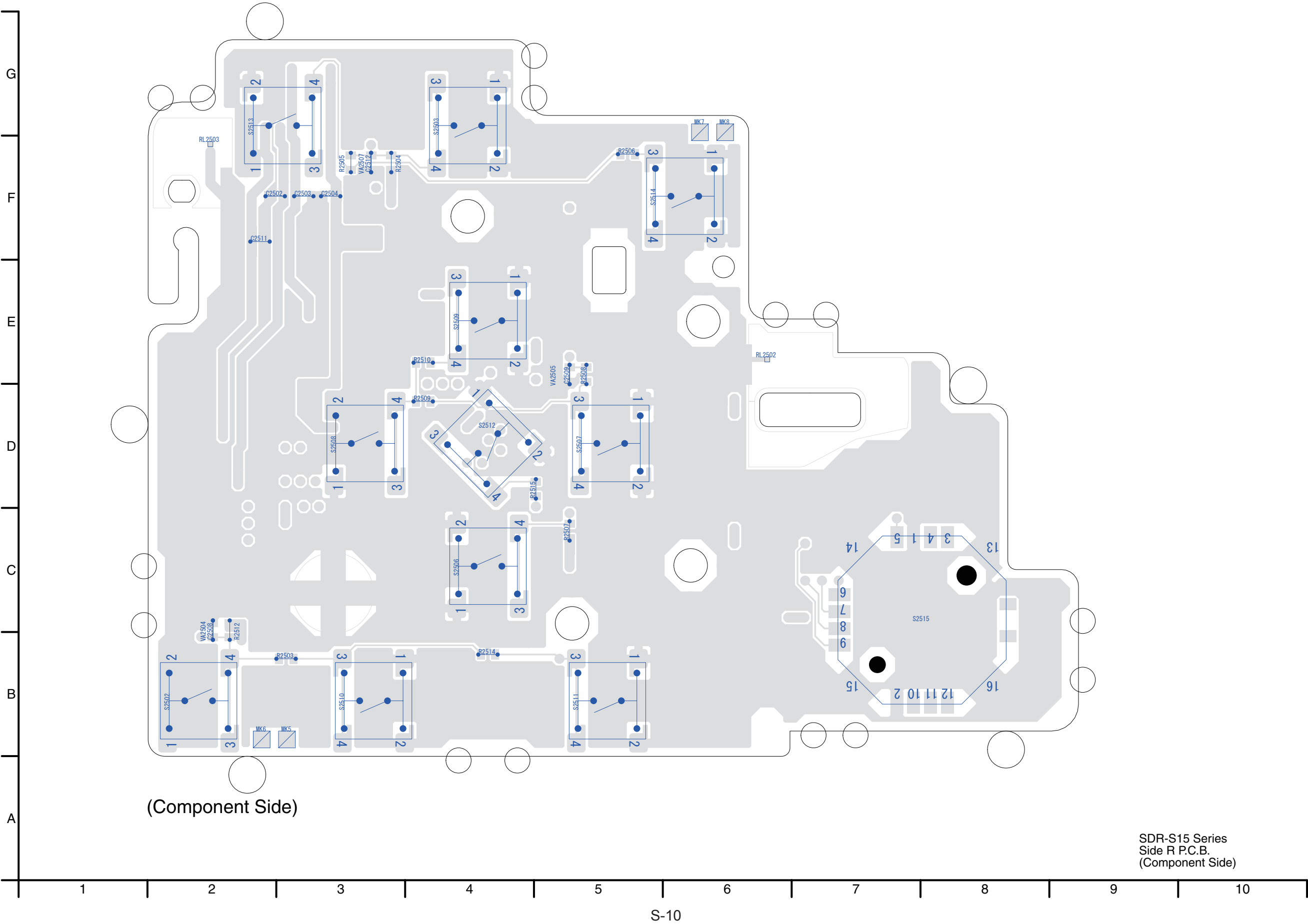
SDR-S15 Series
CCD FPC
Schematic Diagram

SDR-S15 Series
Battery FPC
Schematic Diagram

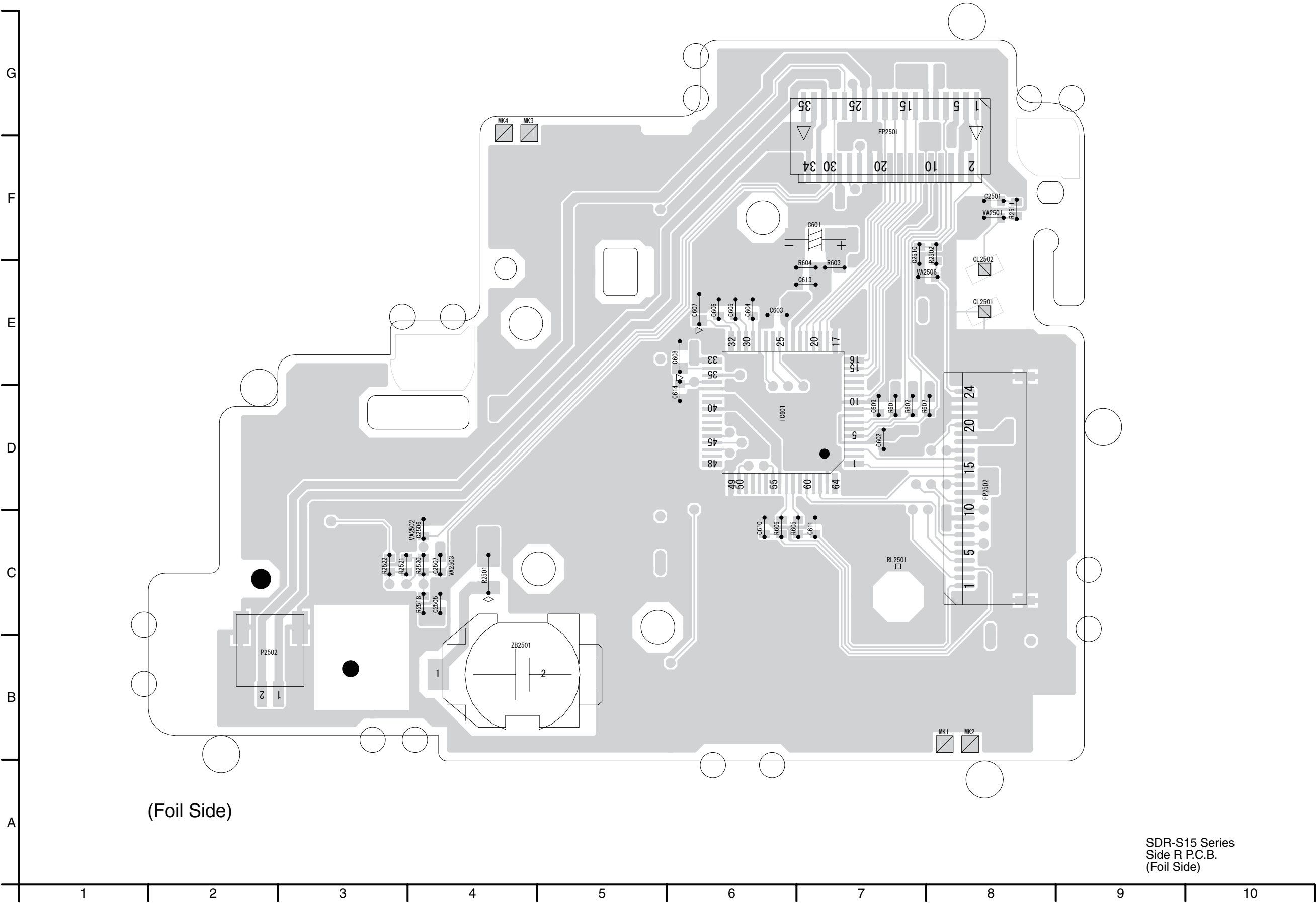
S5. Print Circuit Board

S5.1. Side R P.C.B.

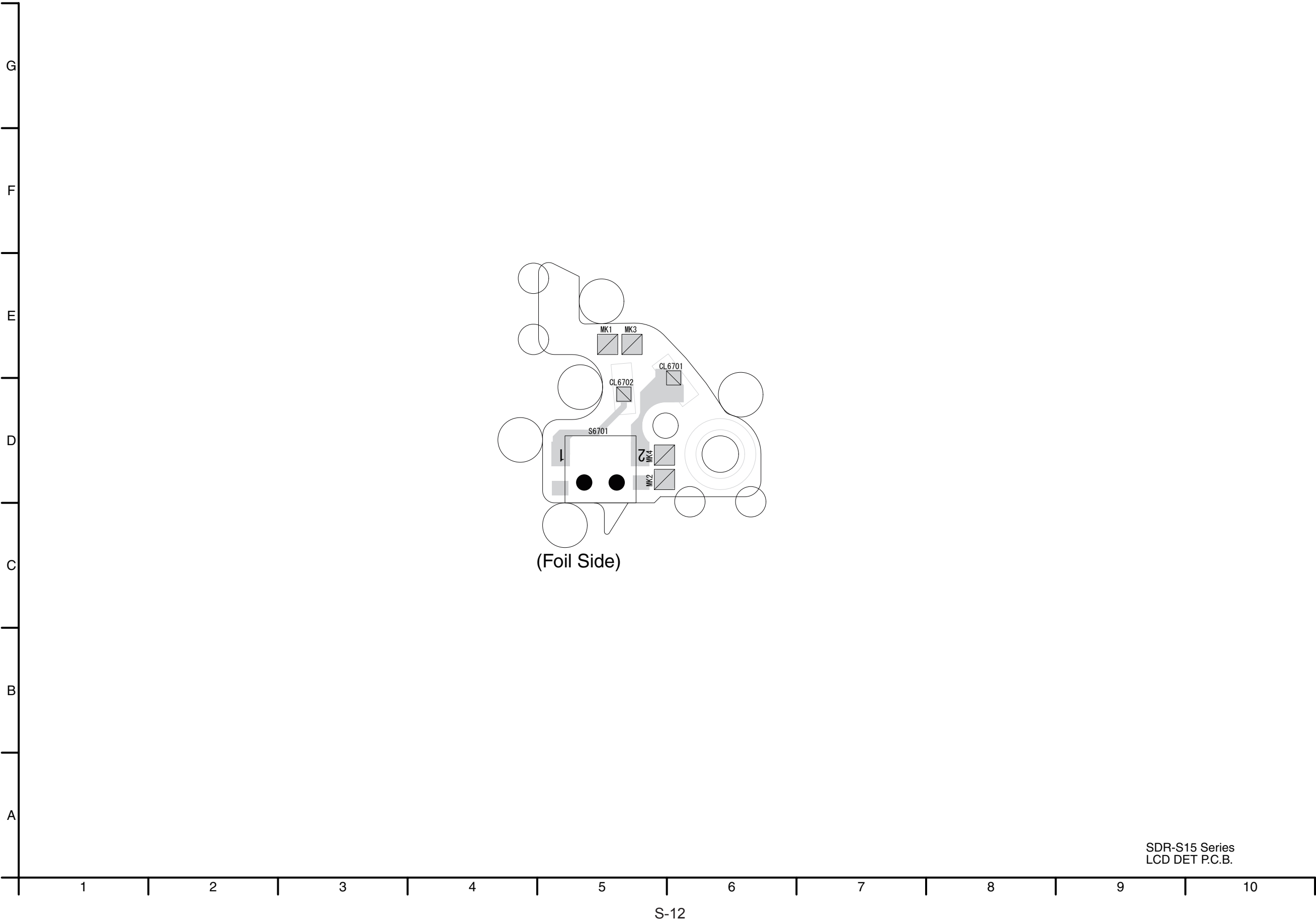
S5.1.1. Side R P.C.B. (Component Side)



S5.1.2. Side R P.C.B. (Foil Side)

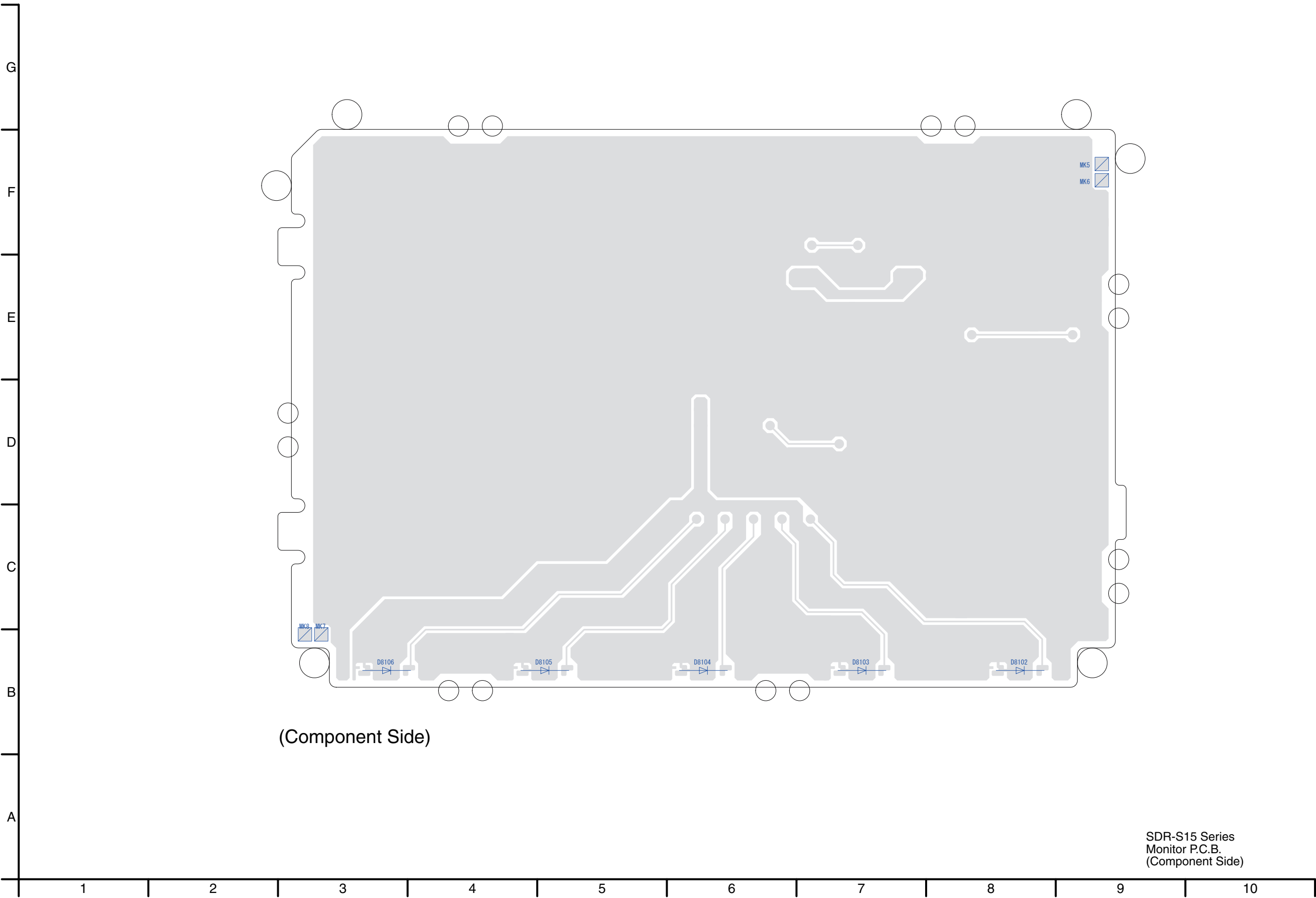


S5.2. LCD DET P.C.B.

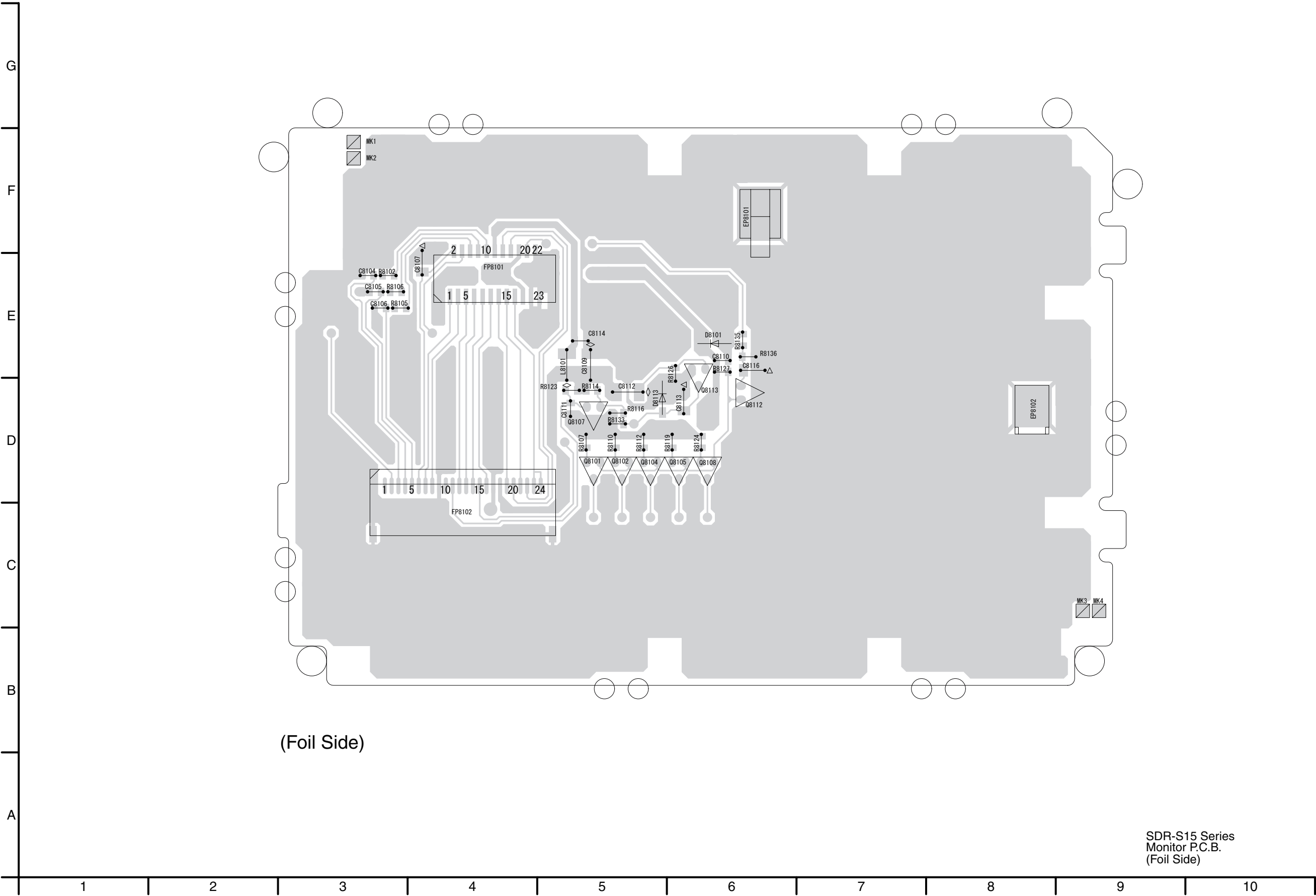


S5.3. Monitor P.C.B.

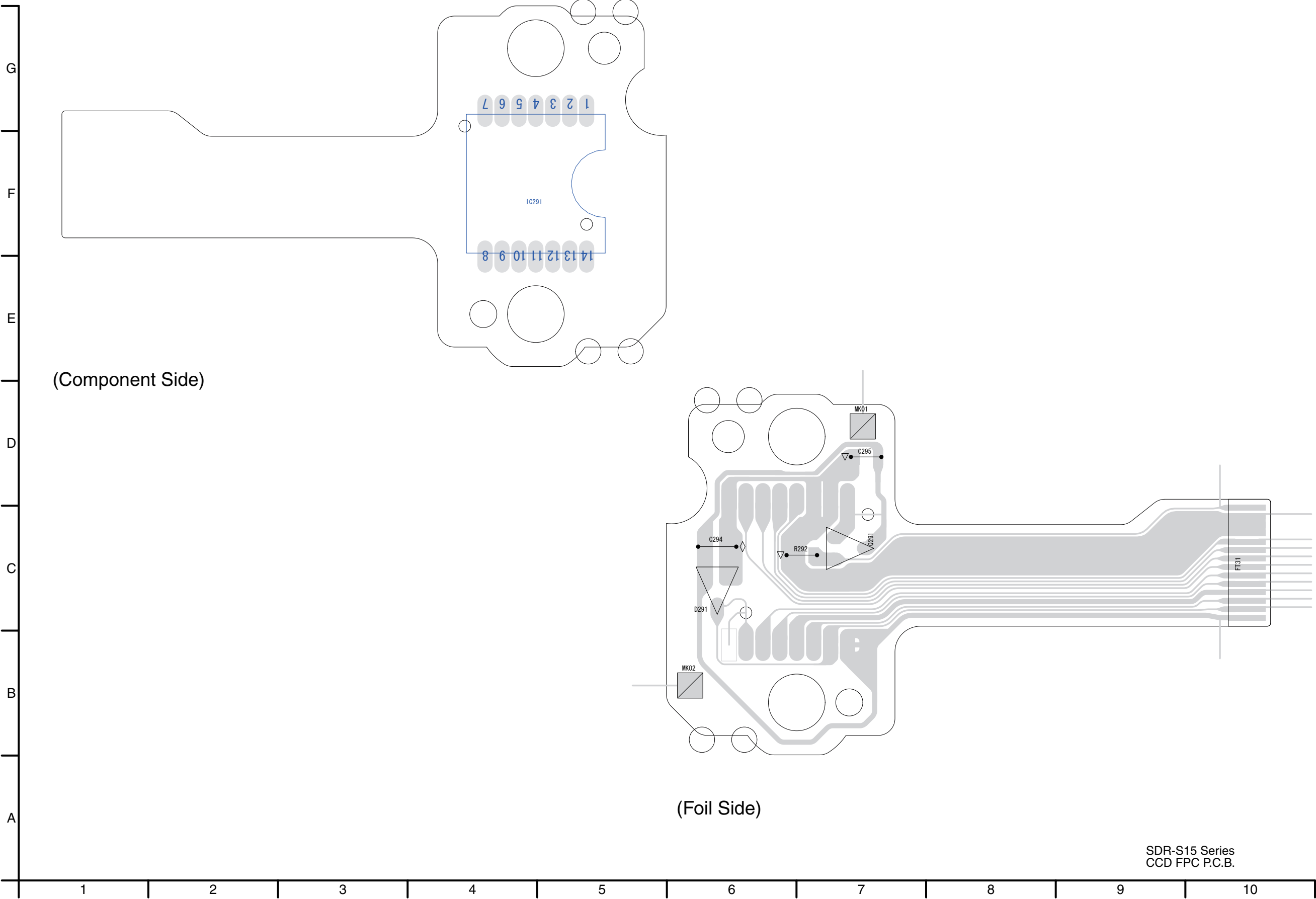
S5.3.1. Monitor P.C.B. (Component Side)



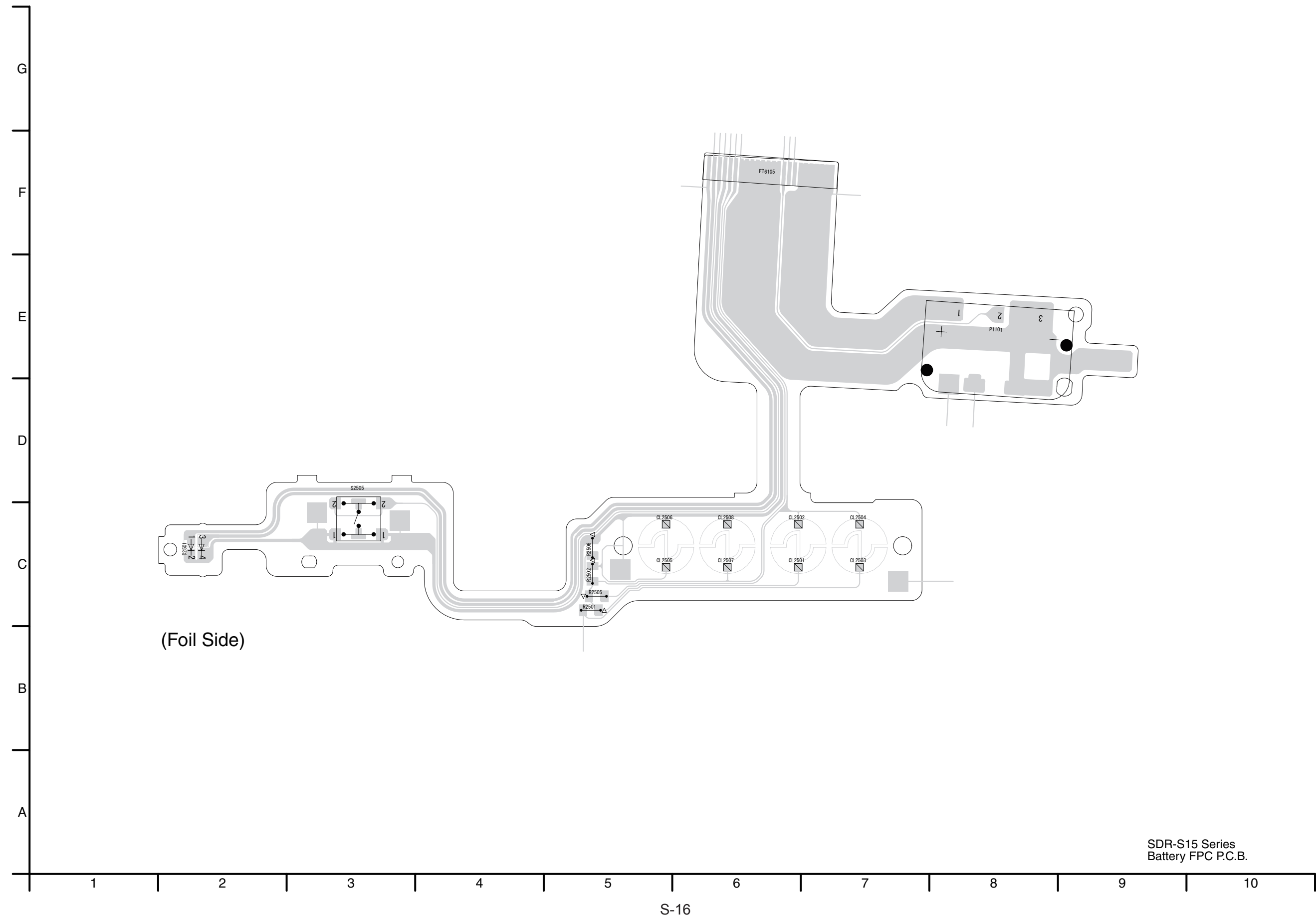
S5.3.2. Monitor P.C.B. (Foil Side)



S5.4. CCD FPC P.C.B.



S5.5. Battery FPC P.C.B.



S6. Replacement Parts List

Note: ☐ 1.* Be sure to make your orders of replacement parts according to this list.

2. IMPORTANT SAFETY NOTICE

- ☐ Components identified with the mark $\triangle$ have the special characteristics for safety.
- ☐ When replacing any of these components, use only the same type.

3. Unless otherwise specified,

- ☐ All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICRO-FARADS (uf), P=uuF.

4. The marking (RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.

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

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
##	VEP03H63H	MAIN P.C.B.	1	(RTL) E.S.D. EB
##	VEP03H63B	MAIN P.C.B.	1	(RTL) E.S.D. EC,EF,EG
##	VEP03H63D	MAIN P.C.B.	1	(RTL) E.S.D. EE
##	VEP03H63F	MAIN P.C.B.	1	(RTL) E.S.D. EP
##	VEP03H63C	MAIN P.C.B.	1	(RTL) E.S.D. GC
##	VEP03H63N	MAIN P.C.B.	1	(RTL) E.S.D. GD
##	VEP03H63K	MAIN P.C.B.	1	(RTL) E.S.D. GJ
##	VEP03H63E	MAIN P.C.B.	1	(RTL) E.S.D. GK
##	VEP03H63J	MAIN P.C.B.	1	(RTL) E.S.D. GN
##	VEP03H63M	MAIN P.C.B.	1	(RTL) E.S.D. GT
##	VEP03H63A	MAIN P.C.B.	1	(RTL) E.S.D. P,PC
##	VEP03H63L	MAIN P.C.B.	1	(RTL) E.S.D. PR
##	VEP03H63G	MAIN P.C.B.	1	(RTL) E.S.D. PU
##	VEP01A17A	LIGHT FPC UNIT	1	(RTL) E.S.D.
##	VEP01A08A	BATTERY FPC	1	
##	VEP06G44A	SIDE R P.C.B.	1	(RTL) E.S.D.
##	VEP09155A	LCD DET P.C.B.	1	
##	VEP29205B	MONITOR P.C.B.	1	(RTL) E.S.D.
##	VEP01A17A	LIGHT FPC UNIT		(RTL) E.S.D.
D4801	B3AFB0000171	DIODE	1	E.S.D.
##	VEP01A08A	BATTERY FPC		
D2501	B3AGB0000051	DIODE	1	E.S.D.
P1101	K4ZZ03000329	CONNECTOR 3P	1	
R2501	D0GB473JA057	M.RESISTOR CH 1/10W 47K	1	
R2502	D0GB473JA057	M.RESISTOR CH 1/10W 47K	1	
R2505	D0GB473JA057	M.RESISTOR CH 1/10W 47K	1	
R2506	D0GB473JA057	M.RESISTOR CH 1/10W 47K	1	
S2505	EVQP6FB35	SWITCH	1	
##	VEP06G44A	SIDE R P.C.B.		(RTL) E.S.D.
A B2501	ML-614S/ZTK	SMALL SECONDARY BATTERIES	1	E.S.D. [ENERGY]
C601	F3F0G4760003	E.CAPACITOR CH 4V 47U	1	
C602	F1G1C104A080	C.CAPACITOR CH 16V 0.1U	1	
C603	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C604	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C605	F1G1C104A080	C.CAPACITOR CH 16V 0.1U	1	
C606	F1G1C104A080	C.CAPACITOR CH 16V 0.1U	1	
C607	F1H0J225A002	C.CAPACITOR CH 6.3V 2.2U	1	
C608	F1H0J225A002	C.CAPACITOR CH 6.3V 2.2U	1	
C609	F1G1C104A080	C.CAPACITOR CH 16V 0.1U	1	
C613	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C614	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C2505	ECJ0EB1C103K	C.CAPACITOR CH 16V 0.01U	1	
C2506	ECJ0EB1C103K	C.CAPACITOR CH 16V 0.01U	1	
C2507	ECJ0EB1C103K	C.CAPACITOR CH 16V 0.01U	1	
C2508	ECJ0EB1C103K	C.CAPACITOR CH 16V 0.01U	1	
C2509	ECJ0EB1C103K	C.CAPACITOR CH 16V 0.01U	1	
C2512	ECJ0EB1C103K	C.CAPACITOR CH 16V 0.01U	1	
FP2501	K1MN35BA0259	CONNECTOR 35P	1	
FP2502	K1MN24BA0197	CONNECTOR 24P	1	
IC601	C1AB00002388	IC	1	E.S.D.
P2502	K1KA02BA0014	CONNECTOR 2P	1	
R602	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R603	ERJ2RHD511	M.RESISTOR CH 1/16W 510	1	
R604	ERJ2RHD102X	M.RESISTOR CH 1/16W 1K	1	
R605	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	
R606	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R2501 02	ERJ6GEJ222V	M.RESISTOR CH 1/10W 2.2K	1	
R2502 02	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	
R2503	ERJ2RHD272	M.RESISTOR CH 1/16W 2.7K	1	
R2504	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R2505 02	ERJ2RHD272	M.RESISTOR CH 1/16W 2.7K	1	
R2506 02	ERJ2GEJ562	M.RESISTOR CH 1/16W 5.6K	1	
R2507	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R2508	ERJ2RHD272	M.RESISTOR CH 1/16W 2.7K	1	
R2509	ERJ2GEJ562	M.RESISTOR CH 1/16W 5.6K	1	
R2510	ERJ2GEJ183	M.RESISTOR CH 1/16W 18K	1	
R2511	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	
R2512	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R2514	ERJ2GEJ562	M.RESISTOR CH 1/16W 5.6K	1	
R2515	ERJ2GEJ183	M.RESISTOR CH 1/16W 18K	1	
R2518	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R2520	ERJ2RHD272	M.RESISTOR CH 1/16W 2.7K	1	
R2521	ERJ2GEJ562	M.RESISTOR CH 1/16W 5.6K	1	
R2522	ERJ2GEJ183	M.RESISTOR CH 1/16W 18K	1	
S2502	K0H1BA000436	SWITCH	1	
S2503	K0H1BA000436	SWITCH	1	
S2506	K0H1BA000436	SWITCH	1	
S2507	K0H1BA000436	SWITCH	1	
S2508	K0H1BA000436	SWITCH	1	
S2509	K0H1BA000436	SWITCH	1	
S2510	K0H1BA000436	SWITCH	1	
S2511	K0H1BA000436	SWITCH	1	
S2512	K0H1BA000436	SWITCH	1	
S2513	K0H1BA000436	SWITCH	1	
S2514	K0H1BA000436	SWITCH	1	
S2515	K0G177A00002	SWITCH	1	
VA2501	D4ED18R00003	VARISTORS	1	
VA2506	D4ED18R00003	VARISTORS	1	
ZB2501	K3ZZ00500014	BATTERY HOLDER	1	
##	VEP09155A	LCD DET P.C.B.		
S6701	K0L1AA000015	SWITCH	1	
##	VEP29205B	MONITOR P.C.B.		(RTL) E.S.D.
C8104	ECJ0EC1H390J	C.CAPACITOR CH 50V 39P	1	
C8105	ECJ0EC1H390J	C.CAPACITOR CH 50V 39P	1	
C8106	ECJ0EC1H390J	C.CAPACITOR CH 50V 39P	1	
C8107	ECJ1VB1A105K	C.CAPACITOR CH 10V 1U	1	
C8109	F1J1A475A023	C.CAPACITOR CH 10V 4.7U	1	
C8110	F1G1A104A012	C.CAPACITOR CH 10V 0.1U	1	
C8111	F1G1A104A012	C.CAPACITOR CH 10V 0.1U	1	
C8112	F1J1A2250007	C.CAPACITOR CH 10V 2.2U	1	
C8113	ECJ1VB1A105K	C.CAPACITOR CH 10V 1U	1	
C8114	F1G1A104A012	C.CAPACITOR CH 10V 0.1U	1	
C8116	ECJ1VB1A105K	C.CAPACITOR CH 10V 1U	1	
D8101	MAZ8062GML	DIODE	1	E.S.D.
D8102	B3AFB0000175	DIODE	1	E.S.D.
D8103	B3AFB0000175	DIODE	1	E.S.D.
D8104	B3AFB0000175	DIODE	1	E.S.D.
D8105	B3AFB0000175	DIODE	1	E.S.D.
D8106	B3AFB0000175	DIODE	1	E.S.D.
D8113	MAZ8056GML	DIODE	1	E.S.D.
EP8102	K4AD01D00007	EARTH TERMINAL	1	
FP8101	K1MN23AA0035	CONNECTOR 23P	1	
FP8102	K1MN24BA0197	CONNECTOR 24P	1	
L8101	G1C101KA0055	CHIP INDUCTOR 100UH	1	
Q8101	2SC6054J0L	TRANSISTOR	1	E.S.D.
Q8102	2SC6054J0L	TRANSISTOR	1	E.S.D.
Q8104	2SC6054J0L	TRANSISTOR	1	E.S.D.

[illegible]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	VKM7863	REAR CASE	1	(-K)
1	VKM7968	REAR CASE	1	(-P)
1	VKM7918	REAR CASE	1	(-S)
1	VKM7917	REAR CASE	1	(-T)
2	VKM7725	TOP CASE	1	(-K)
2	VKM7967	TOP CASE	1	(-P)
2	VKM7916	TOP CASE	1	(-S)
2	VKM7915	TOP CASE	1	(-T)
3	VKM7724	SIDE CASE (L)	1	(-K)
3	VKM7966	SIDE CASE (L)	1	(-P)
3	VKM7914	SIDE CASE (L)	1	(-S)
3	VKM7913	SIDE CASE (L)	1	(-T)
4	VYQ4304	JACK COVER UNIT	1	(-K)
4	VYQ4816	JACK COVER UNIT	1	(-P)
4	VYQ4587	JACK COVER UNIT	1	(-S)
4	VYQ4586	JACK COVER UNIT	1	(-T)
5	VXU1669	SUB REC BUTTON UNIT	1	
6	VSC6047	SHIELD PLATE	1	
7	VEK0M01	MIC UNIT	1	
8	VEP03H63H	MAIN P.C.B.	1	(RTL) E.S.D. EB
8	VEP03H63B	MAIN P.C.B.	1	(RTL) E.S.D. EC,EF,EG
8	VEP03H63D	MAIN P.C.B.	1	(RTL) E.S.D. EE
8	VEP03H63F	MAIN P.C.B.	1	(RTL) E.S.D. EP
8	VEP03H63C	MAIN P.C.B.	1	(RTL) E.S.D. GC
8	VEP03H63N	MAIN P.C.B.	1	(RTL) E.S.D. GD
8	VEP03H63K	MAIN P.C.B.	1	(RTL) E.S.D. GJ
8	VEP03H63E	MAIN P.C.B.	1	(RTL) E.S.D. GK
8	VEP03H63J	MAIN P.C.B.	1	(RTL) E.S.D. GN
8	VEP03H63M	MAIN P.C.B.	1	(RTL) E.S.D. GT
8	VEP03H63A	MAIN P.C.B.	1	(RTL) E.S.D. P,PC
8	VEP03H63L	MAIN P.C.B.	1	(RTL) E.S.D. PR
8	VEP03H63G	MAIN P.C.B.	1	(RTL) E.S.D. PU
9	VMB4094	BATTERY OUT SPRING	1	
10	VMD5849-1	MAIN FRAME	1	
11	VMS7810	BATTERY DOOR SHAFT	1	
12	VMB4197	BATTERY DOOR SPRRING	1	
13	VGL1238	ACCESS PANEL LIGHT	1	
14	VGU0C49	BATTERY LOCK KNOB	1	
15	VMB3852	SD LOCK SPRING	1	
16	VGU0C48	DOOR SW LEVER	1	
17	VMP8897	BATTERY DOOR PLATE	1	
18	VGQ9278	BATTERY DOOR KNOB	1	
19	VKM7459	BOTTOM CASE	1	(-K,-T)
19	VKM7906	BOTTOM CASE	1	(-P,-S)
20	VKF4330	BATTERY DOOR	1	(-K,-T)
20	VKF4526	BATTERY DOOR	1	(-P,-S)
21	VXU1677	ZOOM OPERATION RUBBER	1	
22	VGU0C52	S/S BUTTON	1	
23	VEP01A08A	BATTERY FPC	1	
24	VMP9079	ZOOM PLATE	1	
25	VMP9234	HINGE REINFORCEMENT PLATE	1	
26	VEP06G44A	SIDE R P.C.B.	1	(RTL) E.S.D.
27	VGU0D71	OPERATION BUTTON	1	(-K,-T)
27	VGU0E42	OPERATION BUTTON	1	(-P,-S)
28	LOA01A00029	SPEAKER UNIT	1	
29	VGL1277	SR PANEL LIGHT	1	
30	VSC6118	SHIELD PLATE R	1	
31	VYK3B09	SIDE CASE R (2) UNIT	1	EBK,ECK,EEK,EFK,EGK,EPK, GCK,GJK,GNK
31	VYK3D52	SIDE CASE R (2) UNIT	1	EBP
31	VYK3B11	SIDE CASE R (2) UNIT	1	EBS,ECS,EES,EFS,EGS,EPS, GCS,GJS,GNS
31	VYK3B10	SIDE CASE R (2) UNIT	1	EBT,ECT,EET,EFT,EGT,EPT, GCT,GJT,GNT
31	VYK3B06	SIDE CASE R (2) UNIT	1	GDK
31	VYK3B12	SIDE CASE R (2) UNIT	1	GKK
31	VYK3B13	SIDE CASE R (2) UNIT	1	GKS
31	VYK3B03	SIDE CASE R (2) UNIT	1	GTK
31	VYK3B04	SIDE CASE R (2) UNIT	1	GTT
31	VYK3A97	SIDE CASE R (2) UNIT	1	PK,PRK,PUK
31	VYK3A99	SIDE CASE R (2) UNIT	1	PS,PUS
31	VYK3A98	SIDE CASE R (2) UNIT	1	PT,PRT,PUT
31	VYK3B00	SIDE CASE R (2) UNIT	1	PCK
31	VYK3B02	SIDE CASE R (2) UNIT	1	PCS
32	VYK2M78	MODE DIAL UNIT	1	(-K)
32	VYK3D53	MODE DIAL UNIT	1	(-P)
32	VYK3D46	MODE DIAL UNIT	1	(-S)

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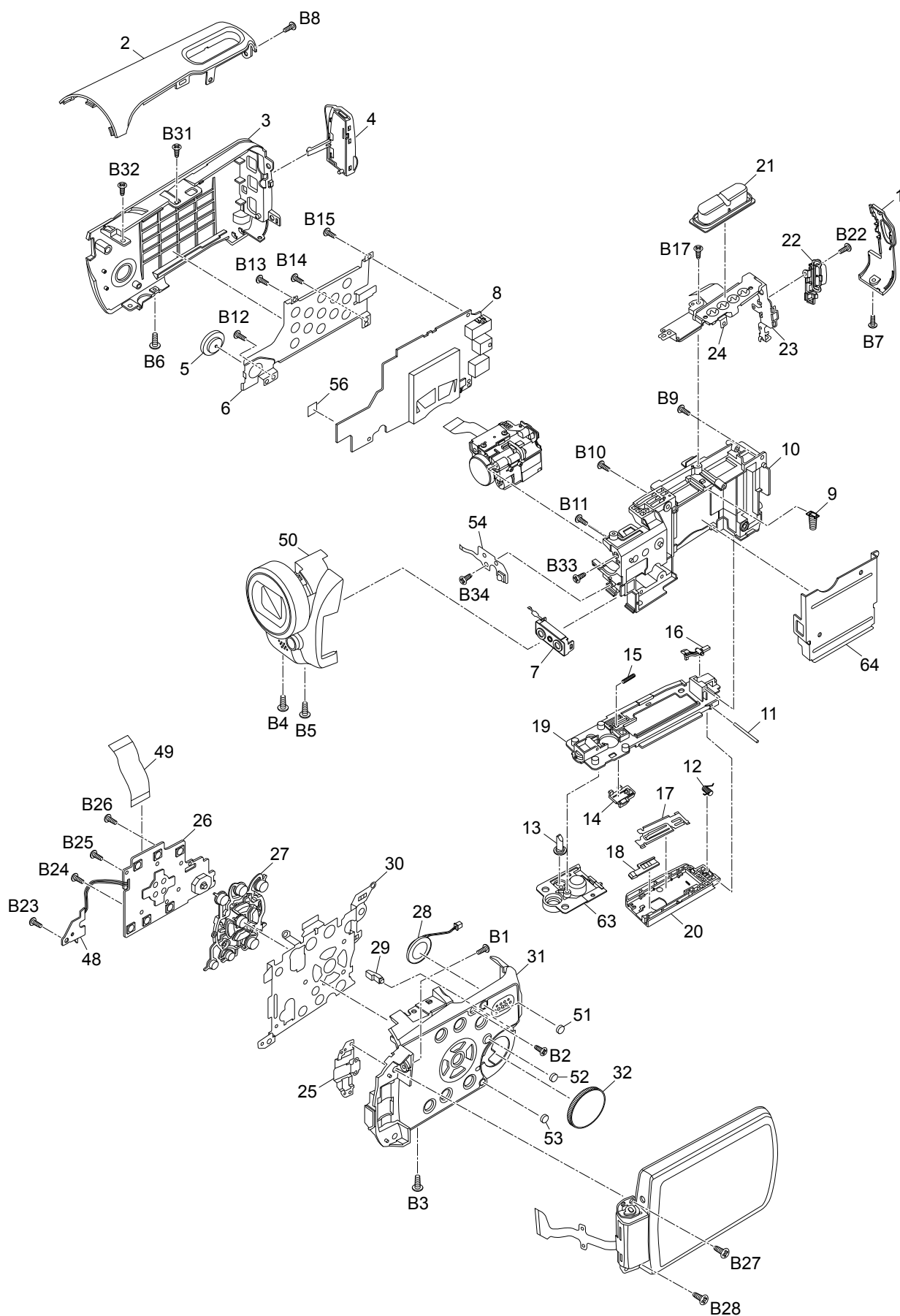
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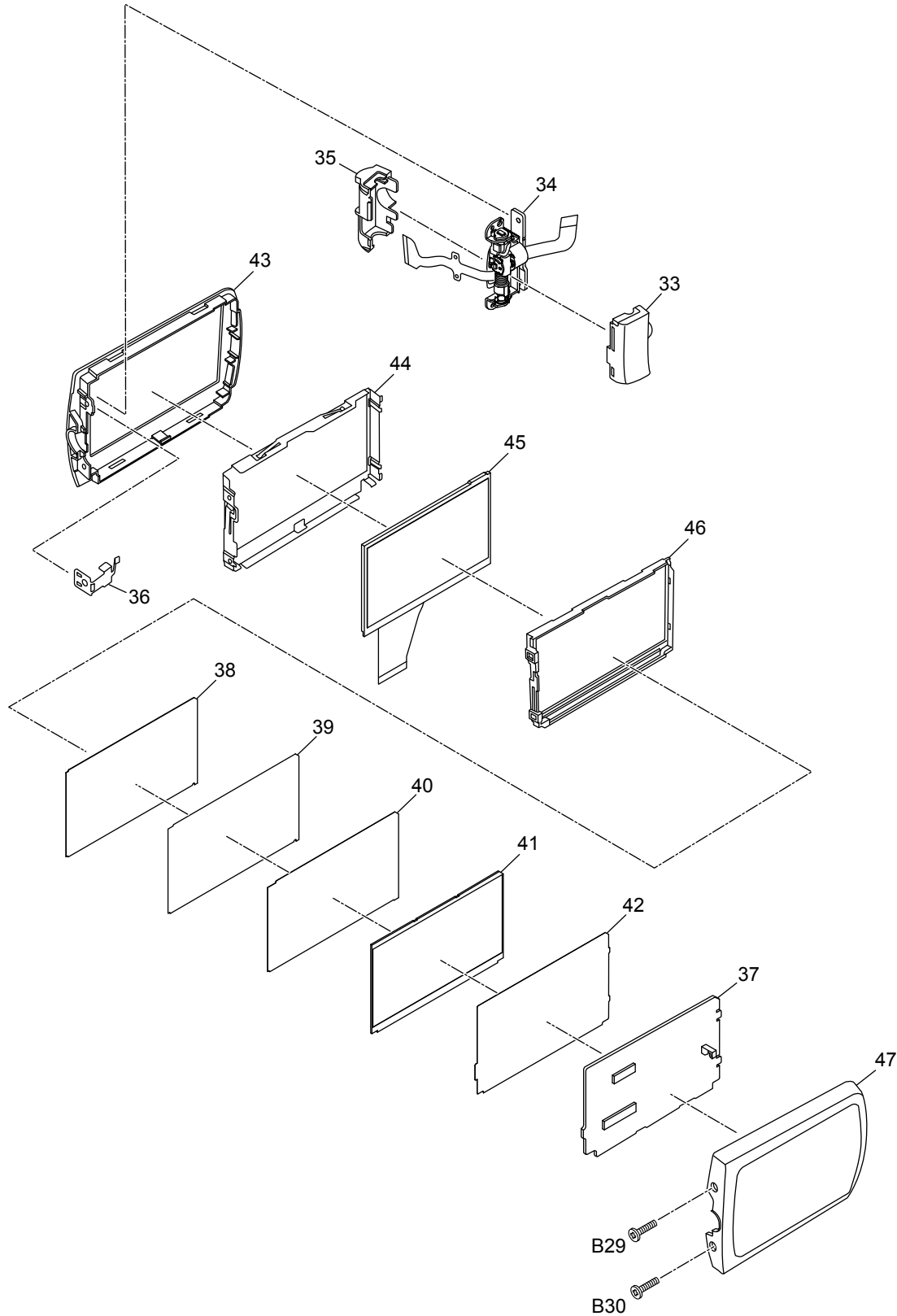
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
301	---	SMALL SECONDARY BATTERY P	1						
302	K2KZ9CB00002	AV CABLE	1						
303	K2CA2CA00025	AC CABLE	1	P,PC,PU					
303	K2CA2CA00020	AC CABLE	1	GK					
313	K2CA2CA00027	AC CABLE	1	GT					
304	VFC4308	HAND STRAP	1						
305	K1HA05AD0006	USB CABLE	1	EB,EC,EE,EF,EG,EP,GC, GD,GJ,GK,GN,GT,PR,PU					
305	K1HA05AD0005	USB CABLE	1	P,PC					
306	VSK0695-M	AC ADAPTOR	1	EB,EC,EE,EF,EG,EP,GC, GJ,GK,GN,PU					
306	VSK0704-M	AC ADAPTOR	1	GD					
306	VSK0703	AC ADAPTOR	1	GT					
306	VSK0694-M	AC ADAPTOR	1	P,PC					
306	VSK0702-M	AC ADAPTOR	1	PR					
307	LSFT0771-S	CD-ROM	1						
308	VPF1253	BAG, POLYETHYLENE	1						
309	LSQT1438-A	INSTRUCTION BOOK	1	EB					
309	LSQT1434-A	INSTRUCTION BOOK	1	EC					
309	LSQT1435-A	INSTRUCTION BOOK	1	EC					
309	LSQT1443-A	INSTRUCTION BOOK	1	EE					
309	LSQT1433-A	INSTRUCTION BOOK	1	EF					
309	LSQT1430-A	INSTRUCTION BOOK	1	EG					
309	LSQT1431-A	INSTRUCTION BOOK	1	EG					
309	LSQT1432-A	INSTRUCTION BOOK	1	EG					
309	LSQT1436-A	INSTRUCTION BOOK	1	EP					
309	LSQT1437-A	INSTRUCTION BOOK	1	EP					
309	LSQT1439-A	INSTRUCTION BOOK	1	GC,GJ					
309	LSQT1440-A	INSTRUCTION BOOK	1	GC					
309	LSQT1441-A	INSTRUCTION BOOK	1	GC					
309	LSQT1447-A	INSTRUCTION BOOK	1	GD					
309	LSQT1445-A	INSTRUCTION BOOK	1	GK					
309	LSQT1444-A	INSTRUCTION BOOK	1	GN					
309	LSQT1446-A	INSTRUCTION BOOK	1	GT					
309	LSQT1426-A	INSTRUCTION BOOK	1	P,PC					
309	LSQT1427-A	INSTRUCTION BOOK	1	PC					
309	LSQT1429-A	INSTRUCTION BOOK	1	PR,PU					
309	LSQT1428-A	INSTRUCTION BOOK	1	PU					
310	VPG1Y94	PACKING CASE	1	EB,EC,EE,EF,EG,EP,GC, GD,GJ,GK,GN,GT					
310	VPG1Y93	PACKING CASE	1	P,PC,PR,PU					
311	VPN6675	PAD	1						
312	VPF1320	CAMERA BAG	1						
312	VPN6719	SHEET	1	GK					
313	VQL1Y83	COLOR LABEL	1	EBP					
313	VQL1S99	COLOR LABEL	1	EBS,ECS,EES,EGS,EPS,GCS, GJS,GKS,GNS					
313	VQL1Y82	COLOR LABEL	1	EBT,ECT,EET,EFT,EGT,EPT, GCT,GDT,GJT,GNT,GT					
313	VQL1S98	COLOR LABEL	1	PS,PCS,PUS					
313	VQL1Y81	COLOR LABEL	1	PT,PRT,PUT					
314	VQL1Y83	COLOR LABEL	1	EBP					
314	VQL1S99	COLOR LABEL	1	EBS,ECS,EES,EGS,EPS,GCS, GJS,GKS,GNS					
314	VQL1Y82	COLOR LABEL	1	EBT,ECT,EET,EFT,EGT,EPT, GCT,GDT,GJT,GNT,GT					
314	VQL1S98	COLOR LABEL	1	PS,PCS,PUS					
314	VQL1Y81	COLOR LABEL	1	PT,PRT,PUT					
315	LSFT0783	CD-ROM (INSTRUCTION BOOK)	1	EC,EG,EP					
315	LSFT0784	CD-ROM (O/I)	1	GC,GJ					
316	K2CT3CA00004	AC CABLE	1	EB,GC					
317	K2CQ2CA00006	AC CABLE	1	EC,EE,EF,EG,EP,GC					
317	K2CR2CA00003	AC CABLE	1	GD					
317	K2CP2YY00001	AC CABLE	1	GJ					
321	K2CJ2DA00008	AC CABLE	1	GN					
323	K2CJ2DA00006	AC CABLE	1	PR					
									</

S7. Exploded View

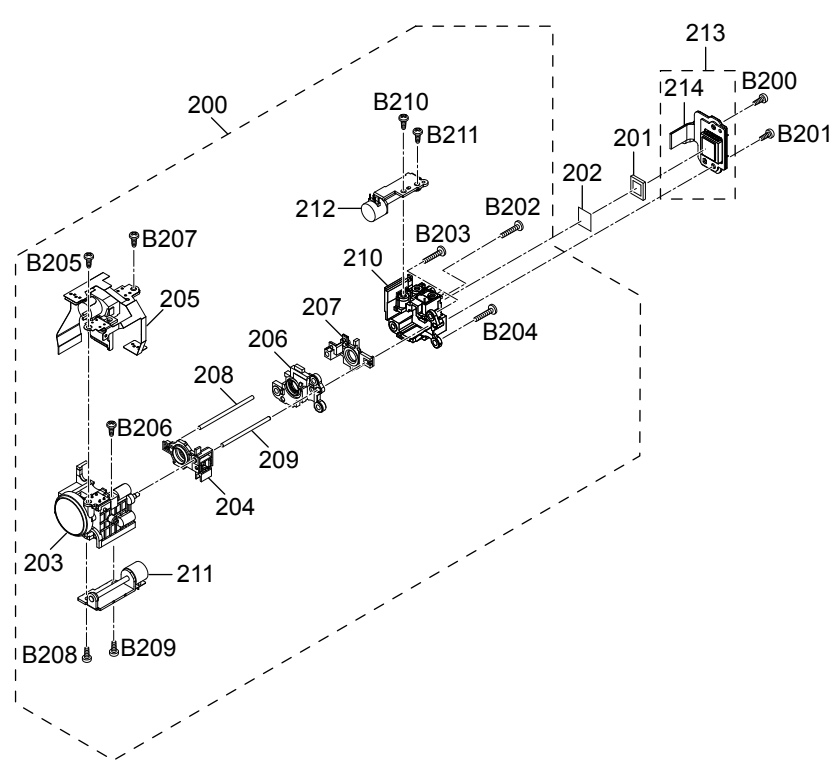
S7.1. Frame and Casing Section



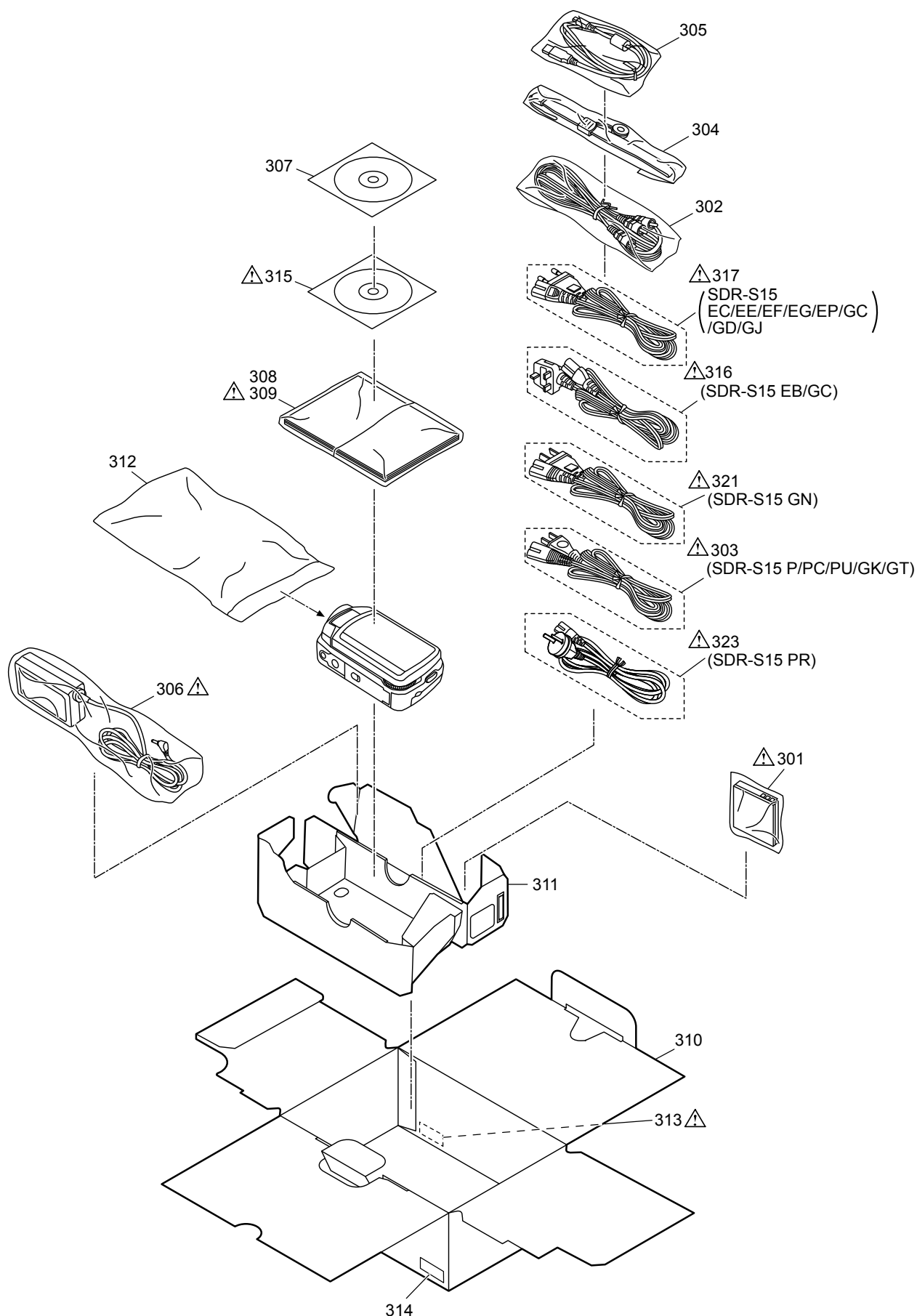
S7.2. LCD Section



S7.3. Lens Section



S7.4. Packing Parts and Accessories Section



This PACKING CASE is for the cabinet colour black.

Please put the colour label matched to the cabinet colour at the position of REF No.313 and REF No.314 when you use this PACKING CASE for other cabinet colours.