ORDER NO. VM1009041CE
B27

Service Manual

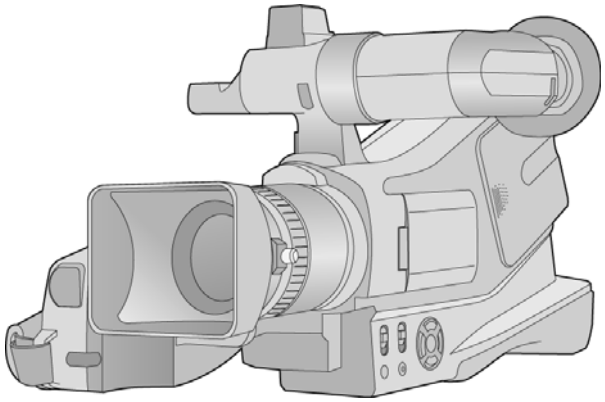
High Definition Video Camera

Model No. HDC-MDH1GC
HDC-MDH1GK

Vol. 1

Colour

(K).....Black Type



⚠ WARNING

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

Panasonic®

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1 Safety Precautions

1.1. General Guidelines

1. **IMPORTANT SAFETY NOTICE**
   There are special components used in this equipment which are important for safety. These parts are marked by

   ⚠ in the Schematic Diagrams, Circuit Board Layout, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.
2. An Isolation Transformer should always be used during the servicing of AC Adaptor whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect AC Adaptor from being damaged by accidental shorting that may occur during servicing.
3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.2. Leakage Current Cold Check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1 MΩ and 5.2 MΩ. When the exposed metal does not have a return path to the chassis, the reading must be infinity.

1.3. Leakage Current Hot Check (See Figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5 kΩ, 10 W resistor, in parallel with a 0.15 μF capacitor, between each exposed metallic part on the set and a good earth ground, as shown in Figure 1.
3. Use an AC voltmeter, with 1 kΩ/V or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 V RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 mA. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

Hot-Check Circuit

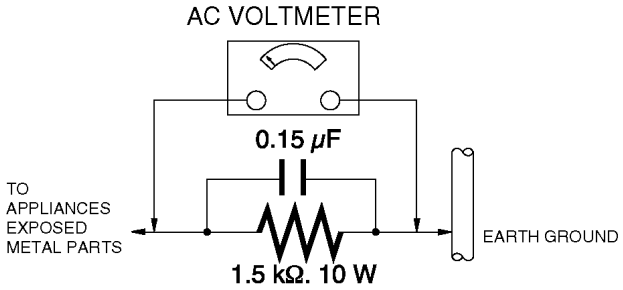


Figure. 1

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. Caution for AC Cord (For GC)

2.2.1. 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.

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

If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt, please consult a qualified electrician.

2.2.2.1. 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:

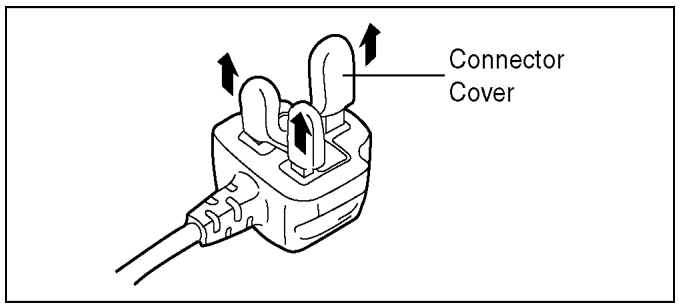
The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

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.

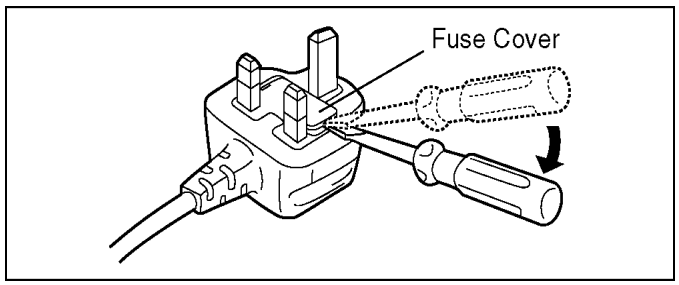
2.2.2.2. Before Use

Remove the Connector Cover as follows.

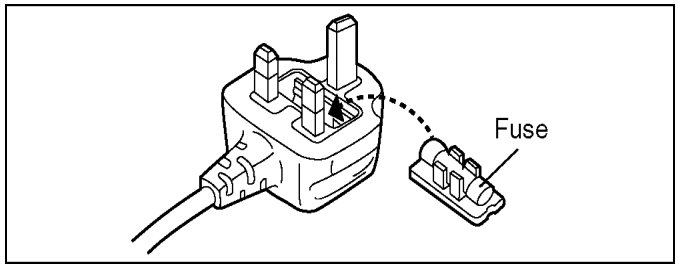


2.2.2.3. How to Replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



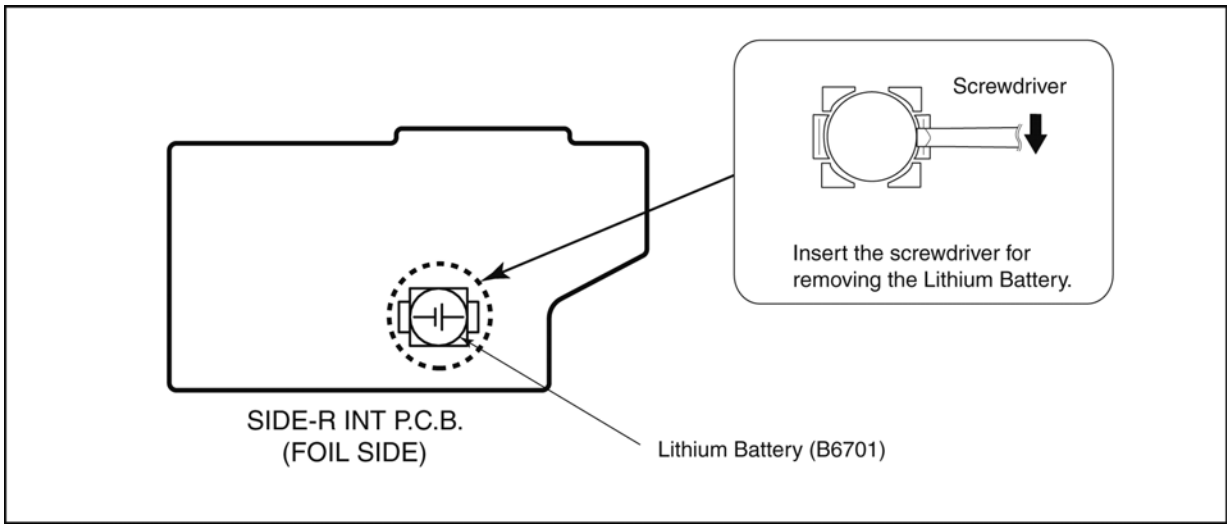
2. Replace the fuse and attach the Fuse cover.



2.3. How to Replace the Lithium Battery

2.3.1. Replacement Procedure

1. Remove the Side-R Int P.C.B.. (Refer to Disassembly Procedures.)
2. Remove the Lithium battery (Ref. No. “B6701” at foil side of Side-R Int P.C.B.) 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 manufacturier.

NOTE:

Above caution is applicable for a battery pack which is for HDC-MDH1 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 P.C.B. Lead Free Solder being used

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

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

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

Recommended Lead Free Solder (Service Parts Route.)

- The following 3 types of lead free solder are available through the service parts route.
  RFKZ03D01KS----------(0.3mm 100g Reel)
  RFKZ06D01KS----------(0.6mm 100g Reel)
  RFKZ10D01KS----------(1.0mm 100g Reel)

Note

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

3.3. Important Notice 1

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 P.C.B. layout of MAIN P.C.B..
   b. Parts list for individual parts for MAIN P.C.B..
   When a part replacement is required for repairing MAIN P.C.B., replace as an assembled parts. (Main P.C.B.)
2. The following category is /are recycle module part. Please send it/them to Central Repair Center.
   - MAIN P.C.B. (VEP03H99A: HDC-MDH1GC/GK)

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

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

3.5. How to Define the Model Suffix

There are two kinds of HDC-MDH1.

- a) HDC-MDH1GK
- b) HDC-MDH1GC

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

3.5.1. Defining methods:

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

a) HDC-MDH1GK

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

b) HDC-MDH1GC

The nameplate for this model do not show any above Safety registration mark.

NOTE:

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

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

3.6. Formatting

[FORMAT CARD]

Please be aware that if a medium is formatted, then all the data recorded on the medium will be erased and cannot be restored. Back up important data on a PC, DVD disc etc.

- When formatting is complete, select [EXIT] and press the button in the centre to exit the message screen.
- Perform a physical formatting of the SD card when the SD card is to be disposed/ transferred.

- Do not turn this unit off or remove the SD card, while formatting. Do not expose the unit to vibrations or shock.

Use this unit to format media.
Do not format an SD card using any other equipment such as a PC. The card may not be used on this unit.

When disposing of or giving away the SD card, note that:

- Formatting and deletion of this unit or computer only changes the file management information and does not completely delete the data in the SD card.
- It is recommended that the SD card is physically destroyed or the SD card is physically formatted using this unit when disposing of or giving away the SD card.
- To physically format the SD card, connect the unit via the AC adaptor, select [SETUP] → [FORMAT CARD] → [YES] from the menu, and then press and hold the recording start/stop button or sub recording start/stop button on the screen below for about 3 seconds. When the SD card data deletion screen appears, select [YES], and then follow the on-screen instructions.

- The customer is responsible for the management of the data in the SD card.

4 Specifications

High Definition Video Camera
Information for your safety

Power source: DC 9.3 V (When using AC adaptor)/DC 7.2 V (When using battery)
Power consumption: Recording; 5.0 W

Signal system:
AVCHD;1080/50i, 576/50i

Recording format:
AVCHD; AVCHD format compliant

Image sensor: 1/4.1 type (1/4.1″) 1MOS image sensor
Total; 3320 K
Effective pixels;
Motion picture; 1920 K to 1360 K (16:9), 1440 K to 1020 K (4:3)
Still picture; 2160 K to 1520 K (4:3), 2080 K to 1460 K (3:2), 1920 K to 1360 K (16:9)

Lens: Auto Iris, 16.8× Optical Zoom, F1.8 to F2.6
Focal length; 2.9 mm to 48.7 mm
Macro (Full range AF)
35 mm equivalent;
Motion picture; 35.8 mm to 716 mm (16:9)/43.9 mm to 878 mm (4:3)
Still picture; 35.8 mm to 716 mm (4:3/3:2/16:9)
Minimum focus distance;
Normal; Approx. 4 cm (Wide)/Approx. 1.2 m (Tele)
Tele macro; Approx. 50 cm (Tele)
Intelligent auto Macro; Approx. 1 cm (Wide)/Approx. 50 cm (Tele)

Zoom: i.Zoom OFF 20×, 23× i.Zoom, 50×/1200× Digital Zoom
Using image sensor effective area

Image Stabilizer Function:
Optical (HYBRID O.I.S., active mode, O.I.S. LOCK function)

Monitor: 6.7 cm (2.7″) wide LCD monitor (Approx. 230 K dots)

Viewfinder: 0.69 cm (0.27″) wide EVF (Approx. 123 K dots)

Microphone: Stereo (with a zoom microphone function)

Speaker: 1 round speaker, dynamic type

White balance adjustment: Auto tracking white balance system

Standard illumination: 1,400 lx

Minimum required illumination:
Approx. 4 lx (1/25 with Low light mode in the Scene mode)
Approx. 1 lx with the colour night view function

AV connector video output level:
1.0 Vp-p, 75 Ω, PAL system

Component connector video output level;
Y; 1.0 Vp-p, 75 Ω/Pb; 0.7 Vp-p, 75 Ω/Pr; 0.7 Vp-p, 75 Ω

HDMI connector video output level: HDMI™ (x.v.Colour™) 1080i/576p

AV connector audio output level (Line): 316 mV, 600 Ω, 2 ch

Headphone output: 77 mV, 32 Ω (Stereo mini jack)

HDMI connector audio output level:
Dolby Digital/Linear PCM

MIC input:
−70 dBV (Mic sensitivity −50 dB equivalent, 0 dB=1 V/Pa, 1 kHz)
(Stereo mini jack)

USB:
Card reader/writer function (No copyright protection support)
Hi-Speed USB (USB 2.0), USB terminal Type Mini B

Dimensions:
216 mm (W)×224 mm (H)×432 mm (D)
(excluding projecting parts)

Mass:
Approx. 1800 g [without battery (supplied) and an SD card (optional)]

Mass in operation:
Approx. 1913 g [with battery (supplied) and an SD card (optional)]

Operating temperature: 0 °C to 40 °C

Operating humidity: 10%RH to 80%RH

Battery operation time: See “Charging and recording time”

■ Motion pictures

Recording media:
SD Memory Card (FAT12 and FAT16 system compliant)
SDHC Memory Card (FAT32 system compliant)
SDXC Memory Card (exFAT system compliant)
Refer to “Card that you can use this unit”.

Compression: MPEG-4 AVC/H.264

Recording mode and transfer rate:
HA; Approx. 17 Mbps (VBR)
HG; Approx. 13 Mbps (VBR)
HX; Approx. 9 Mbps (VBR)
HE; Approx. 5 Mbps (VBR)
SA; Approx. 9 Mbps (VBR)
SX; Approx. 4.5 Mbps (VBR)
Refer to “Recording modes/approximate record time”.

Picture size:
HA/HG/HX/HE; 1920×1080/50i
SA/SX; 720×576/50i

Audio compression:
Dolby Digital/2ch

■ Still pictures

Recording media:
SD Memory Card (FAT12 and FAT16 system compliant)
SDHC Memory Card (FAT32 system compliant)
SDXC Memory Card (exFAT system compliant)
Refer to “Card that you can use this unit”.

Compression:
JPEG (Design rule for Camera File system, based on Exif 2.2 standard)

Picture size:
Picture aspect [4:3]; 1952×1464/640×480
Picture aspect [3:2]; 2064×1376
Picture aspect [16:9]; 1920×1080
Refer to “Approximate number of recordable pictures”.

AC adaptor
Information for your safety

Power source:	AC 110 V to 240 V, 50/60 Hz
Power consumption:	19 W
DC output:	DC 9.3 V, 1.2 A (Unit operation)
	DC 8.4 V, 0.65 A (Battery charging)

Dimensions:
92 mm (W)×33 mm (H)×61 mm (D)

Mass:
Approx. 115 g

Charging and recording time

■ **Charging/Recording time**

● Temperature: 25 °C/humidity: 60%RH

Battery model number [Voltage/Capacity (minimum)]	Charging time	Recording mode	Maximum continuously recordable time	Actual recordable time
Supplied battery/ VW-VBG260 (optional) [7.2 V/2500 mAh]	4 h 40 min	HA/HG/HX/ HE	4 h 50 min	3 h
		SA/SX	5 h 5 min	3 h 10 min
VW-VBG130 (optional) [7.2 V/1250 mAh]	2 h 35 min	HA	2 h 30 min	1 h 30 min
		HG/HX/HE		1 h 35 min
		SA/SX	2 h 40 min	1 h 40 min
VW-VBG6 (optional) [7.2 V/5400 mAh]	9 h 25 min	HA/HG	11 h 55 min	7 h 20 min
		HX/HE	12 h	7 h 25 min
		SA/SX	12 h 35 min	7 h 50 min

● These times are approximations.

● **The indicated charging time is for when the battery has been discharged completely. Charging time and recordable time vary depending on the usage conditions such as high/low temperature.**

● The actual recordable time refers to the recordable time when repeatedly starting/stopping recording, turning the unit on/off, moving the zoom lever etc.

● The batteries heat up after use or charging. This is not a malfunction.

Recording modes/approximate recordable time

● SD cards are only mentioned with their main memory size. The stated times are the approximate recordable times for continuous recording.

Recording mode		HA	HG	HX	HE	SA	SX
Picture size		1920×1080				720×576	
SD card	4 GB	30 min	40 min	1 h	1 h 30 min	1 h	2 h
	8 GB	1 h	1 h 20 min	2 h	3 h 20 min	2 h	4 h
	16 GB	2 h	2 h 40 min	4 h 10 min	6 h 40 min	4 h	8 h
	32 GB	4 h 10 min	5 h 30 min	8 h 20 min	13 h 40 min	8 h	16 h
	48 GB	6 h 20 min	8 h 10 min	12 h 30 min	20 h 20 min	12 h	24 h
	64 GB	8 h 30 min	11 h	16 h 50 min	27 h 30 min	16 h 30 min	33 h

Ⓐ Image quality prioritised

Ⓑ Recording time prioritised

● If recording for long periods, prepare batteries for 3 or 4 times the period you wish to record for.

● The default setting is [HA] mode.

● Maximum continuously recordable time for one scene: 12 hours

● The recording is paused once when the recording time for one scene exceeds 12 hours, and the recording will automatically resume after a few seconds.

● If a recording with a lot movements is recorded, the recording time is reduced.

● The recordable time may be reduced if recording of short scene is repeated.

● Use time in the row of 4 GB in above table as a guideline for the time that can be copied onto one DVD disc (4.7 GB).

Cards that you can use with this unit

Use SD cards conforming to Class 4 or higher of the SD Speed Class Rating* for motion picture recording.

Card type	Capacity	Motion picture recording	Still picture recording
SD Memory Card	8 MB/16 MB	Cannot be used.	Can be used.
	32 MB/64 MB/ 128 MB/256 MB	Cannot be guaranteed in operation.	
	512 MB/1 GB/ 2 GB	Can be used.	
SDHC Memory Card	4 GB/6 GB/8 GB/ 12 GB/16 GB/ 24 GB/32 GB		
SDXC Memory Card	48 GB/64 GB		

* The SD Speed Class Rating is the speed standard for successive writes.

Approximate number of recordable pictures

● SD cards are only mentioned with their main memory size. The stated number is the approximate number of recordable pictures.

Aspect ratio		4:3			
Picture size		2.0M 1952×1464		0.3M 640×480	
Picture quality					
SD card	512 MB	300	500	3600	6100
	1 GB	600	1000	7400	12000
	2 GB	1200	2000	15000	25000
	4 GB	2500	4000	30000	50000
	8 GB	5000	8000	60500	102000
	16 GB	10000	16000	122000	205000
	32 GB	20000	32000	246000	414000
	48 GB	31000	49000	364000	613000
	64 GB	42000	66000	492000	829000

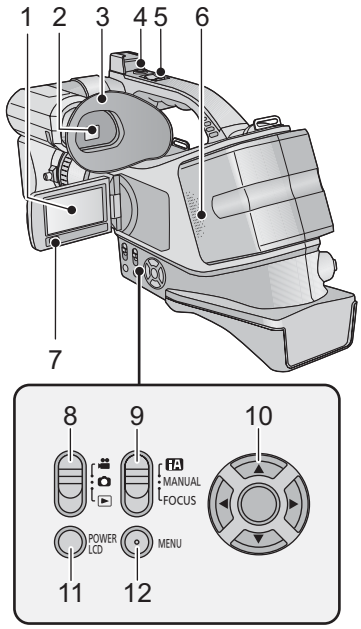
Aspect ratio		3:2		16:9	
Picture size		2.8M 2064×1376		2.1M 1920×1080	
Picture quality					
SD card	512 MB	300	500	440	690
	1 GB	600	1000	900	1400
	2 GB	1200	2000	1800	2800
	4 GB	2500	4000	3600	5600
	8 GB	5000	8000	7300	11000
	16 GB	10000	16000	14000	23000
	32 GB	20000	32000	29000	46000
	48 GB	31000	49000	44000	69000
	64 GB	42000	66000	59000	93000

● **The number of recordable pictures depends on whether and are used together and on the subject being recorded.**

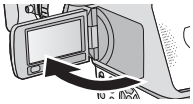
● Maximum number of recordable pictures that can be displayed is 99999.
If the number of recordable pictures exceeds 99999, the number will not change when the picture is taken until the number of recordable pictures gets less than 99999.

● The memory capacity indicated on the label of an SD card is the total of the capacity for copyright protection and management and the capacity which can be used on the unit, a PC etc.

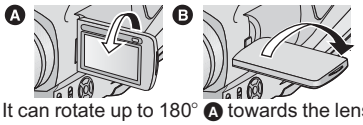
5 Location of Controls and Components



1 LCD monitor (Touch screen)



- It can open up to 90°.



- It can rotate up to 180° Ⓐ towards the lens or 90° Ⓑ towards the opposite direction.

Due to limitations in LCD production technology, there may be some tiny bright or dark spots on the LCD monitor screen. However, this is not a malfunction and does not affect the recorded picture.

2 Viewfinder

Due to limitations in LCD production technology, there may be some tiny bright or dark spots on the viewfinder screen. However, this is not a malfunction and does not affect the recorded picture.

3 Eyecup

4 Sub recording start/stop button

- This button functions in the same manner as the recording start/stop button.

5 Sub zoom lever

- This lever functions in the same manner as the zoom lever.

6 Speaker

7 Sub menu button [MENU]

- This button functions in the same manner as the menu button.

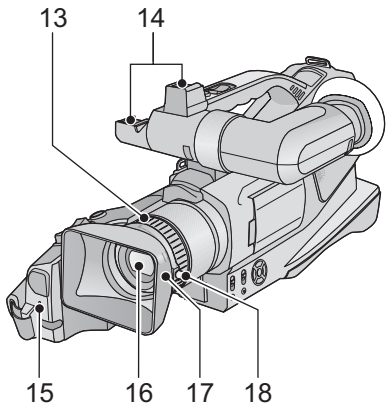
8 Mode switch

9 Intelligent auto/Manual/Manual focus switch [iA/MANUAL/FOCUS]

10 Cursor button

11 Power LCD button [POWER LCD]

12 Menu button [MENU]



13 Focus ring

14 Accessory shoe

15 Recording lamp

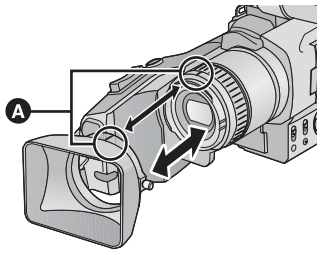
16 Lens

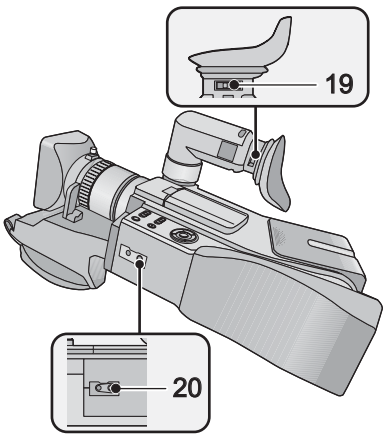
17 Lens hood

- This will reduce the extra light entering the lens in blight sunlight or backlight etc., making it possible to take clearer pictures.

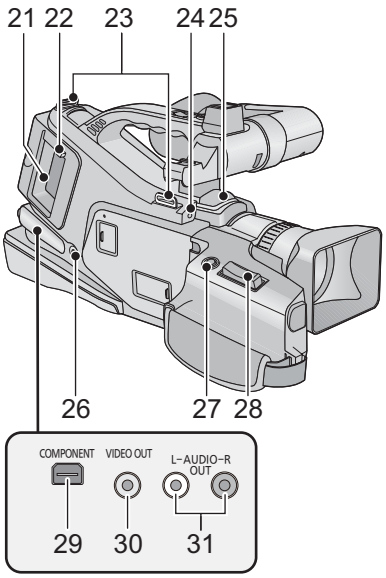
18 Lens hood attachment knob

- When you remove the lens hood, first of all, loosen the lens hood attachment knob.
- When you attach the lens hood back, unite the mark Ⓐ and fasten the lens hood attachment knob.
- If you use the filter kit (optional) or the conversion lens (optional), remove the lens hood.





19 Eyepiece corrector knob
20 Tripod receptacle



21 Battery holder
22 Battery release button [PUSH]
23 Shoulder strap fixture
24 External microphone terminal [EXT MIC]
25 Internal microphones
26 Headphone terminal [PHONES]

- Excessive sound pressure from earphones and headphones can cause hearing loss.
- Listening at full volume for long periods may damage the user's ears.

27 Photoshot button [ ]
28 Zoom lever [W/T] (In motion picture recording mode or still picture recording mode)
Thumbnail display switch [/]/ Volume lever [−VOL+] (In playback mode)

29 Component connector [COMPONENT]

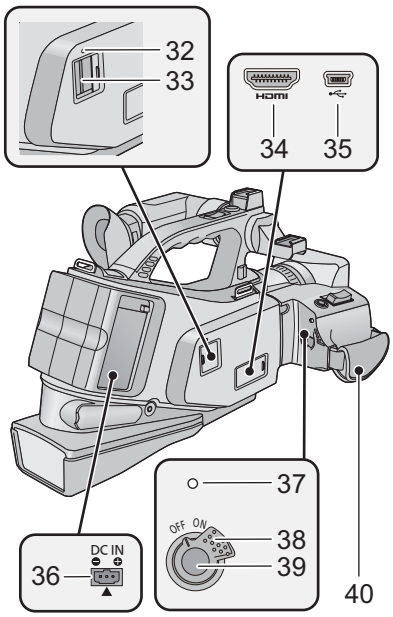
- Use the component cable (only the supplied cable).

30 Video output connector [VIDEO OUT]

- Use the AV cable (only the supplied cable).

31 Audio output connector [AUDIO OUT]

- Use the AV cable (only the supplied cable).

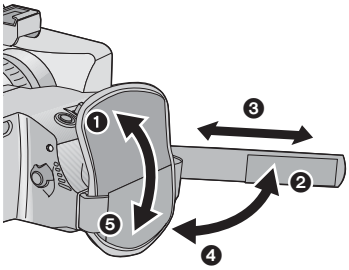


32 Access lamp [ACCESS]
33 Card slot
34 HDMI connector [HDMI]
35 USB terminal [ ]
36 DC input terminal [DC IN]

- Always use the supplied AC adaptor or a genuine Panasonic AC adaptor (optional).

37 Status indicator
38 Power switch
39 Recording start/stop button
40 Grip belt

Adjust the length of the grip belt so that it fits your hand.

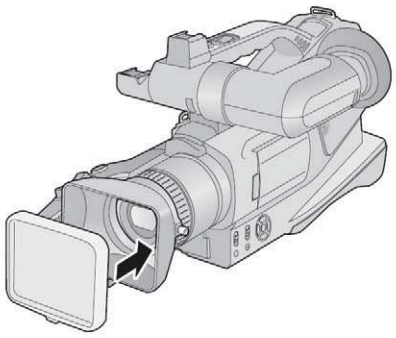


❶, ❷ Flip the belt.
❸ Adjust the length.
❹, ❺ Replace the belt.

About the supplied accessories

■ About the Lens cap

When not using the unit, attach the lens cap to protect the lens.

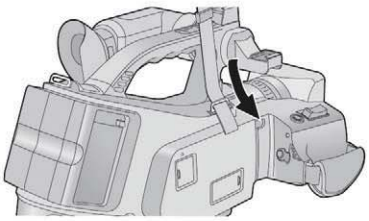


- When recording, always remove the lens cap before turning the unit on.

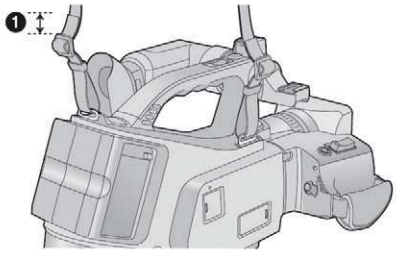
■ About the Shoulder strap

We recommend that you attach the shoulder strap before going out of doors to record so as to avoid dropping this unit.

1 Pull the end of the shoulder strap through the shoulder strap fixture on the unit.



2 Fold the tip of the shoulder strap, run it through the shoulder strap length adjuster, and pull it.

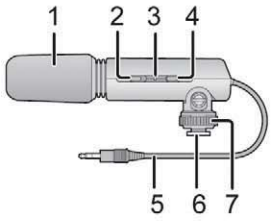


- Pull it out more than 2 cm ❶ from the shoulder strap length adjuster so that it cannot slip off.

■ About the external stereo microphone

External stereo microphone

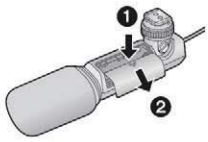
Supplied external stereo microphone can be switched to record sound in either stereo or monaural.



1 Wind Shield (Microphone condenser)
2 Off/On mode selector switch [OFF/MONO/STEREO]
3 Battery check lamp [BATTERY]
4 [WIND CUT OFF/ON] switch
5 Stereo mini-plug cord
6 Shoe
7 Shoe lock

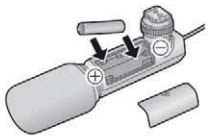
Inserting a battery

1 Remove the battery cover from the microphone.



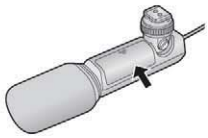
- Press the [▼] mark on the cover in the direction of arrow ❶ and slide the cover in the direction of arrow ❷.

2 Insert the battery with the (−) end first as shown in the figure.



- Be sure to insert the battery with the (−) and (+) ends facing the proper directions.

3 Replace the battery cover.



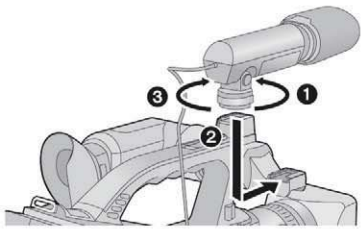
- When the battery is exhausted, purchase a new "AAA", "UM-4", "R03" or "LR03" type battery and insert it in the same way as explained above.
- Do not short-circuit the battery.
- Remove the battery if you will not use the microphone for one month or longer.
- Keep the AAA battery out of reach of children to prevent swallowing.

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.

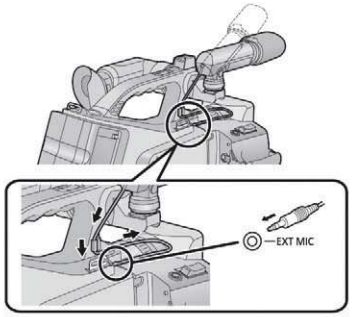
Attaching the external stereo microphone to the unit

1 Attach the microphone to the accessory shoe.



❶ Loosen the shoe lock.
❷ Attach the microphone.
❸ Firmly tighten the shoe lock.

2 Connect the stereo mini-plug cord to the external microphone terminal.

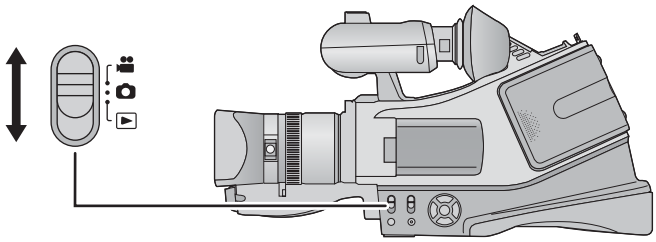


- You can adjust the microphone angle within the range shown in the figure.
- Hold the shoe lock portion when attaching and removing the microphone.
- Be sure to turn the unit off before connecting the microphone.

Selecting a mode

Change the mode to recording or playback.

Operate the mode switch to change the mode to , or .



	Motion picture recording mode
	Still picture recording mode
	Playback mode

How to use the touch screen

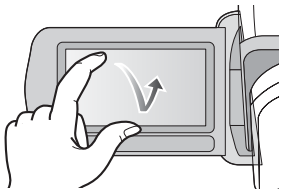
You can operate by directly touching the LCD monitor (touch screen) with your finger.
It is easier to use the stylus pen (supplied) for detailed operation or if it is hard to operate with your fingers.

- The unit supports both operations using the cursor buttons and operations using the touch screen. Select the optimal method according to the situation.
- In this operating instructions, the majority of functions are described on the basis of operations using the cursor buttons.

■ Touch

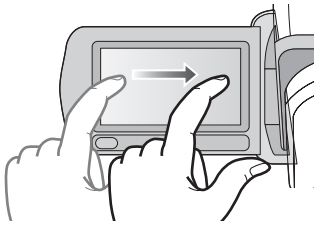
Touch and release the touch screen to select icon or picture.

- Touch the centre of the icon.
- Touching the touch screen will not operate while you are touching another part of the touch screen.



■ Drag

Move your finger while pressing on the touch screen. Can be used during direct playback.

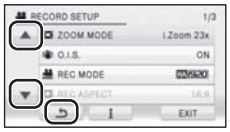


■ About the operation icons

- To operate the following icons using the cursor buttons, select the desired icon using the cursor buttons and then press the button in the centre. (Excluding some functions)

/ / / :
These icons are used to switch the menu and thumbnail display page, for item selection and setting etc.

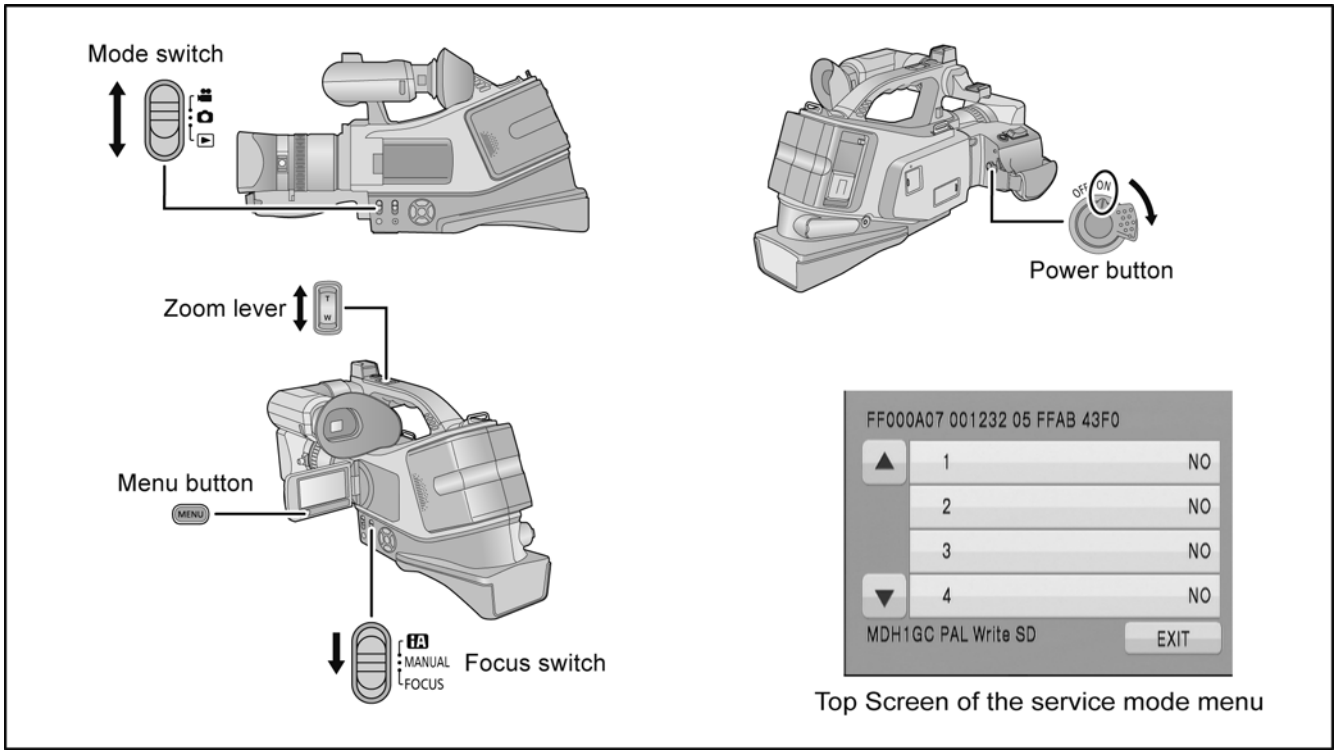
:
This icon is used to return to the previous screen such as when setting menus.



- Do not touch the LCD monitor with hard pointed tips, such as ball point pens.
- Perform the touch screen calibration when the touch is not recognised or wrong location is recognised.

6 Service Mode

1. **Indication method of the service menu**
   Set the mode switch “Motion Picture Recording” mode.
2. Turn the power on, and then while keep pressing the “Zoom lever” to W side, “Focus” switch and “Menu” button for more than 3 seconds until the top screen of the Service Mode Menu being displayed.



Service mode menu

Screen display	Contents	Function
1	Factory settings	Function to throw a product up in a factory shipment state (When recorded data in Built-in memory, “error display” is done)
4	Lock search history indication	Display the camera system error cord for three histories saved in EEPROM
5	Power ON self check result display	Power ON self check (function to diagnose correct function of the device and interface between devices) result display

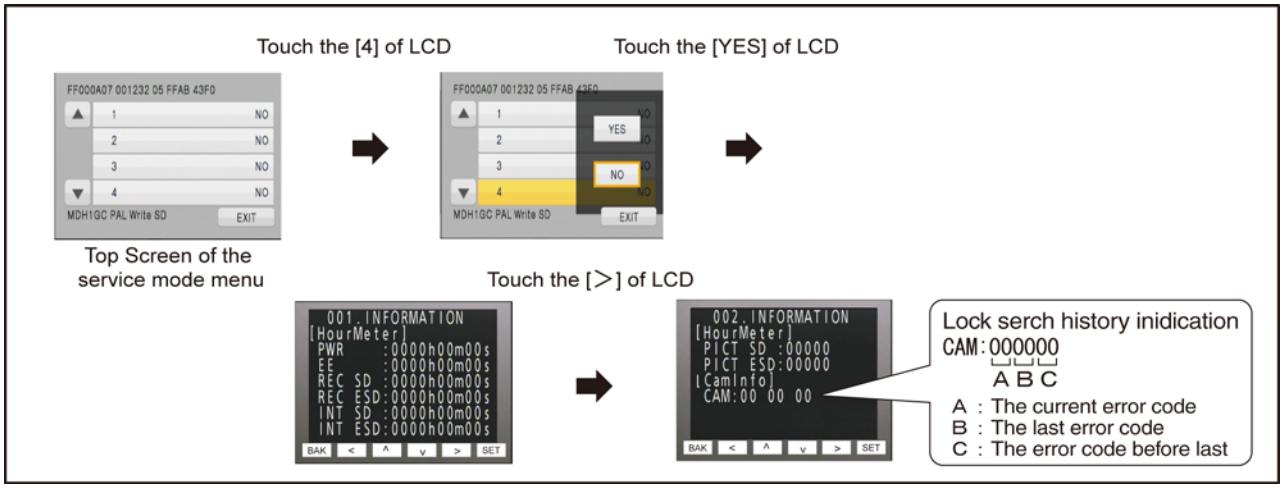
NOTE:
Do not using service mode except above table of Service Menu.

3. End method of the top screen of the service menu
   Push the “Menu” button to end the service mode, and then POWER OFF.

6.1. Lock Search History Indication

Touch the [4] of LCD, select 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

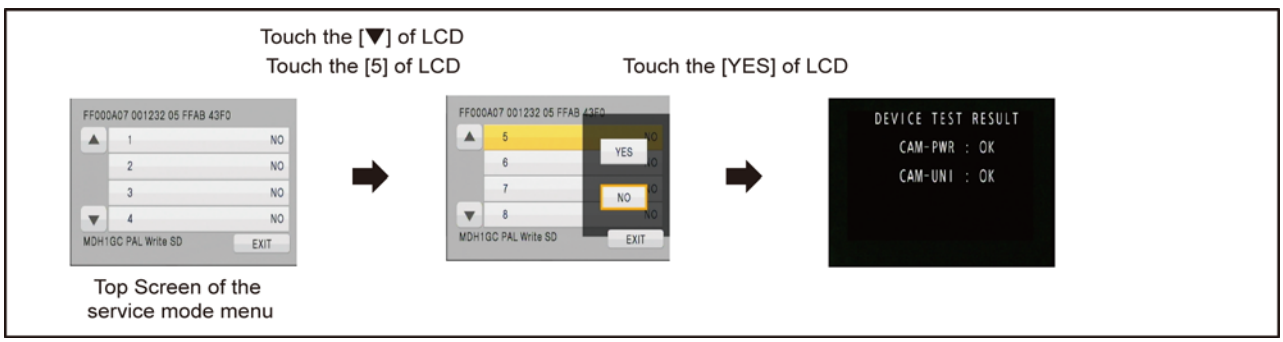
Error code	Function
51	Focus control is abnormal
52	Zoom control is abnormal
53	OIS lens control is abnormal
73	High temperature is abnormal
33	Communication between camera to ARM is abnormal

Push the “Menu” button to end the service mode, and then POWER OFF.

6.2. Power ON Self Check Result Display

Touch the [5] of LCD, select Power ON self check result display.

Operation specifications



Indication contents

- Power ON self check result display
  Function to diagnose correct function of the device and interface between devices result display.

  Display the following commnucation test result.
  - CAM-PWR : Commnucation test between IC2006 to IC301
  - CAM-UNI : Commnucation test between IC3401 to IC301

  Display other than “OK” are abnomalities of each lines.

Cutting of battery connection or AC power supply connection to end the service mode.

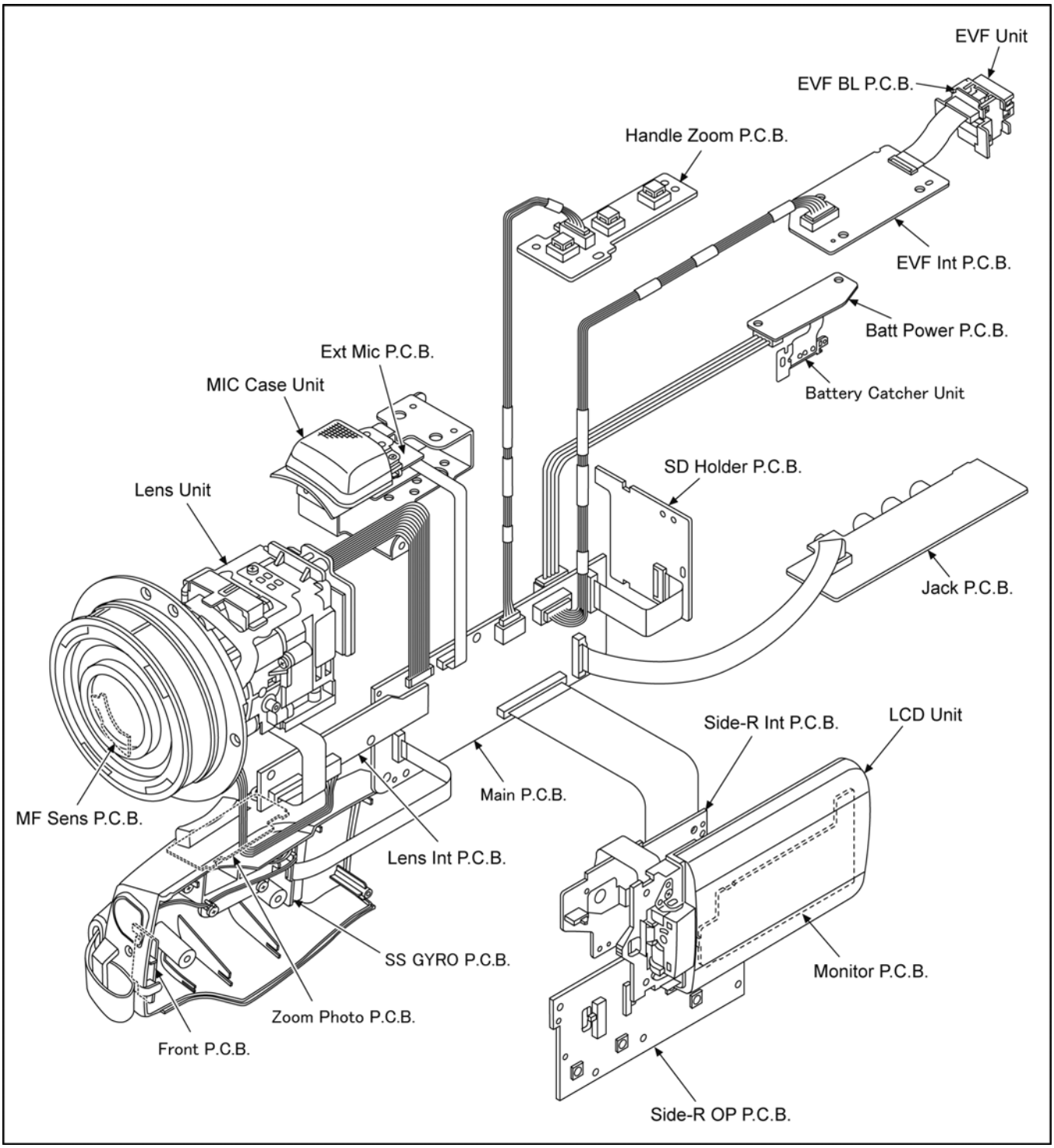
7 Service Fixture & Tools

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

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

7.2. Service Position

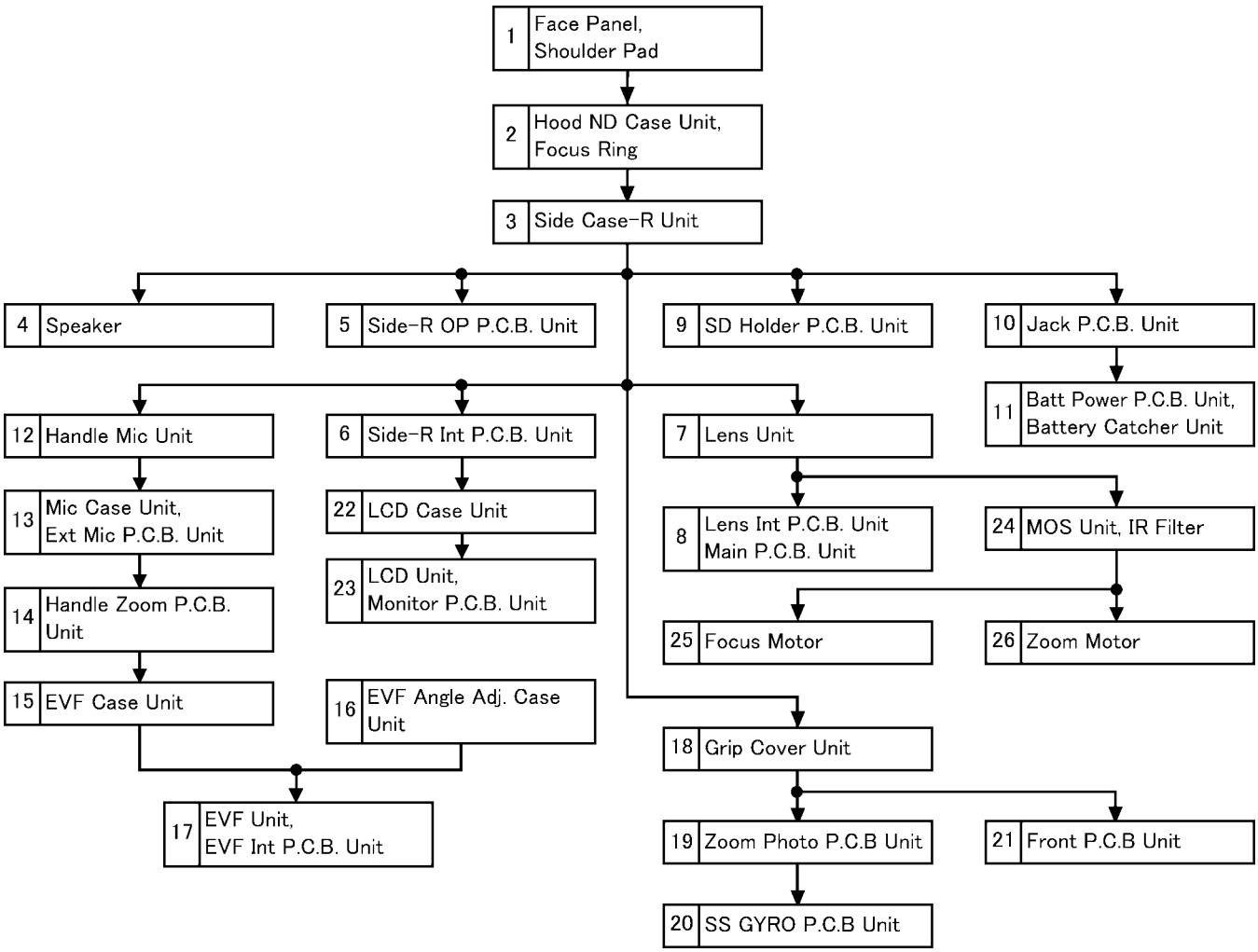
This Service Position is used for checking and replacing parts. (Extension cable is not use.)



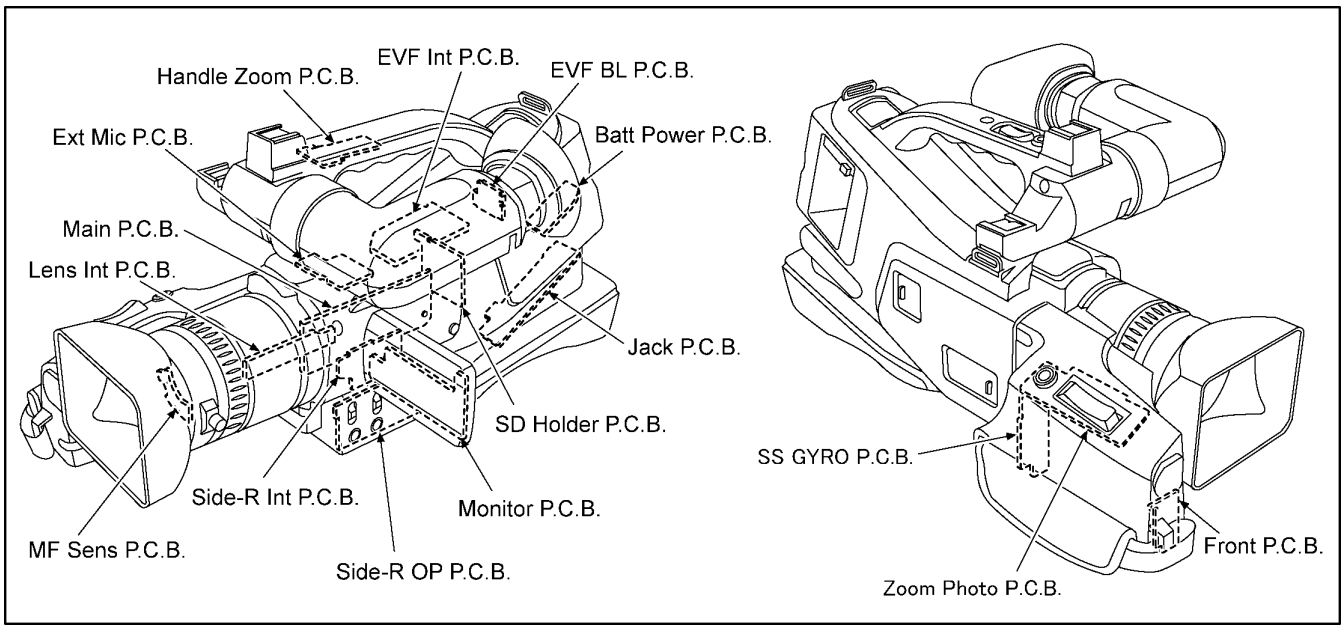
8 Disassembly and Assembly Instructions

8.1. Disassembly Flow Chart

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



8.2. PCB Location



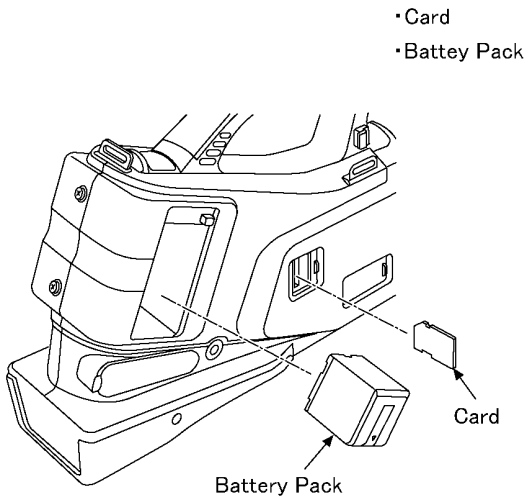
8.3. Disassembly Procedure

No.	Item	Fig	Removal
1	Face Panel Shoulder Pad	Fig. D1	8 Screws (A)
			Face Panel
			Shoulder Pad
2	Hood ND Case Unit Focus Ring	Fig. D2	1 Screw (B)
			Hood ND Case Unit
			Focus Ring
3	Side Case-R Unit	Fig. D3	3 Screws (C)
			4 Screws (D)
			4 Screws (E)
			3 Screws (F)
			FP6006 (Flex)
			Side Case-R Unit
4	Speaker	Fig. D4	2 Screws (G)
			SP Angle
			Tape
			P6701 (Connector)
			Speaker
5	Side-R OP P.C.B. Unit	Fig. D5	5 Screws (H)
			FP6951 (Flex)
		Fig. D6	Sheet
			Camera OP Button
			2 Slide Buttons
			Side-R OP P.C.B. Unit
6	Side-R Int P.C.B. Unit	Fig. D7	5 Screws (I)
			FP6702 (Flex)
			P6701 (Connector)
			FP6703 (Flex)
			Side-R Int P.C.B. Unit
		Fig. D8	NOTE: (When Installing)
7	Lens Unit	Fig. D9	3 Screws (J)
			FP6108 (Flex)
			P6011(Connector)
			P6109(Connector)
		Fig. D10	3 Screws (K)
			Lens Frame-L
			Lens Frame-R
			Lens Unit
8	Lens Int P.C.B. Unit Main P.C.B. Unit	Fig. D11	1 Screw (L)
			Lens Int P.C.B. Unit
		Fig. D12	1 Screw (M)
			3 Screws (N)
			FP6004 (Flex)
			FP6005 (Flex)
			FP6007 (Flex)
			FP6008 (Flex)
			P6001(Connector)
			P6003(Connector)
			P6009(Connector)
			1 Screw (O)
			2 Locking tabs
			Main Earth Plate
			Main P.C.B. Unit
9	SD Holder P.C.B. Unit	Fig. D13	FP6004 (Flex)
			2 Screws (P)
			1 Screw (Q)
			1 Locking tab
			SD Frame
			SD Holder P.C.B. Unit
10	Jack P.C.B. Unit	Fig. D14	FP4501 (Flex)
			1 Screw (R)
			4 Screws (S)
			2 Screws (T)
			AV Jack Plate
			Jack P.C.B. Unit

No.	Item	Fig	Removal
11	Batt Power P.C.B. Unit Battery Catcher Unit	Fig. D15	2 Screws (U)
			P6751 (Connector)
			FP6752 (Flex)
			2 Locking tabs
			Batt Power P.C.B. Unit
			Battery Catcher Unit
12	Handle Mic Unit	Fig. D16	4 Screws (V)
			FP6008 (Flex)
			P6003 (Connector)
			P6009 (Connector)
			Handle Mic Unit
13	Mic Case Unit Ext Mic P.C.B. Unit	Fig. D17	2 Screws (W)
		Fig. D18	4 Screws (X)
			2 Screws (Y)
			FP4801(Flex)
			Handle Hood Angle (Front)
			Mic Case Unit
			Ext Mic P.C.B. Unit
14	Handle Zoom P.C.B. Unit	Fig. D19	1 Screw (Z)
			Shoe Spring
			4 Screws (a)
			Shoe Hold Plate
			2 Screws (b)
		Fig. D20	2 Locking tabs
			Clamper
			2 Screws (c)
			Handle Zoom P.C.B. Unit
15	EVF Case Unit	Fig. D21	2 Screws (d)
			Slide Cover
		Fig. D22	EVF Case Unit
16	EVF Angle Adj. Case Unit	Fig. D23	Eye Cap
			1 Locking tab
			EVF Angle Adj. Case Unit
17	EVF Unit EVF Int P.C.B. Unit	Fig. D24	2 Screws (e)
			Hold Piece
			EVF Ring
			EVF Lock Ring
			4 Screws (f)
			2 Rubbers
		Fig. D25	7 Locking tabs
			EVF Top Case
			3 Screws (g)
			FP822 (Flex)
			EVF Unit
			EVF Int P.C.B. Unit
18	Grip Cover Unit	Fig. D26	4 Screws (h)
			FP6005 (Flex)
			Grip Cover Unit
19	Zoom photo P.C.B. Unit	Fig. D27	3 Screws (i)
			FP6602 (Flex)
			P6691(Connector)
		Fig. D28	1 Screw (j)
			Photo Button
			Zoom SW Hold Frame
			2 Screws (k)
			Zoom SW
			Zoom Lever Cussion-B
			Zoom Photo P.C.B. Unit
20	SS GYRO P.C.B. Unit	Fig. D29	3 Screws (l)
		Fig. D30	P.C.B. Holder Unit
			3 Screws (m)
			SS GYRO P.C.B. Unit

No.	Item	Fig	Removal
21	Front P.C.B. Unit	Fig. D31	2 Screws (n)
			FP6801(Connector)
			Remote Controller Window
		Fig. D32	2 Screws (o)
			P.C.B. Angle
			Front P.C.B. Unit
22	LCD Case Unit	Fig. D33	3 Screws (p)
		Fig. D34	2 Screws (q)
			6 Locking tabs
			LCD Case Top Unit
			FP901 (Flex)
			LCD Case Unit
23	LCD Unit Monitor P.C.B. Unit	Fig. D35	1 Screw (r)
			LCD Frame
			FP903 (Flex)
			FP904 (Flex)
			FP905 (Flex)
			LCD Unit
		Fig. D36	1 Locking tab
			Reflection Sheet
			Light Guide Plate
			Diffusion Sheet
			Prism Sheet B
			Prism Sheet A
			Lighting Plate Holder
			Monitor P.C.B. Unit
24	MOS Unit IR Filter	Fig. D37	2 Screws (s)
			MOS Cushion
			MOS Unit
			IR Filter
25	Focus Motor	Fig. D38	3 Screws (t)
			4 Solders
			2 Convexes
			Focus Motor
26	Zoom Motor	Fig. D39	3 Screws (u)
			4 Solders
			2 Convexes
			Zoom Motor

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



8.3.1. Removal of the Face Panel and Shoulder Pad

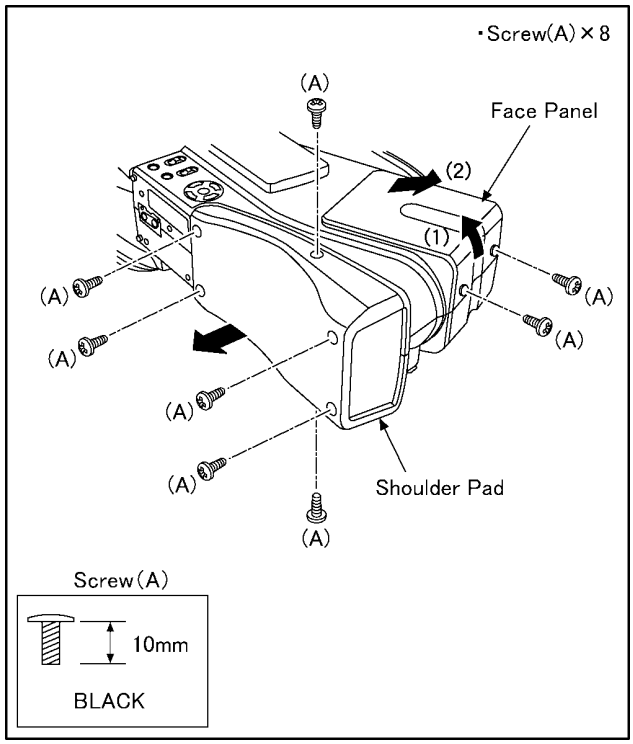


Fig. D1

8.3.2. Removal of the Hood ND Case Unit and Focus Ring

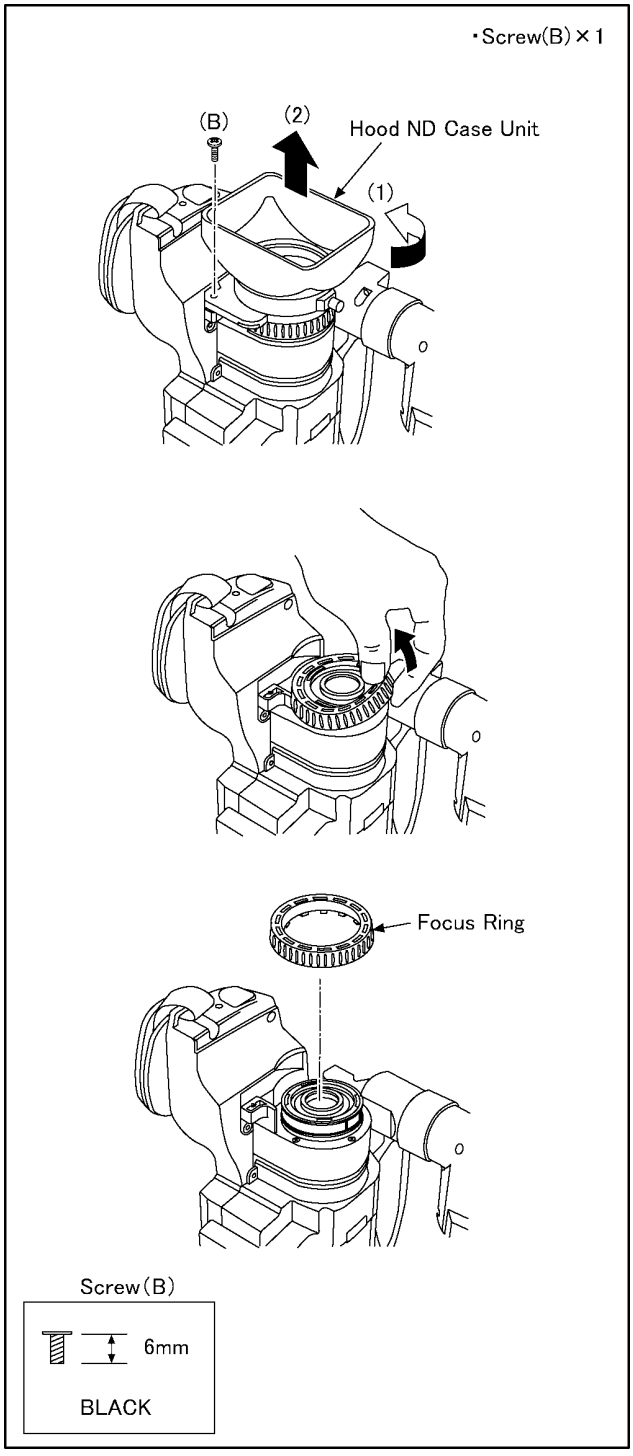


Fig. D2

8.3.3. Removal of the Side Case-R Unit

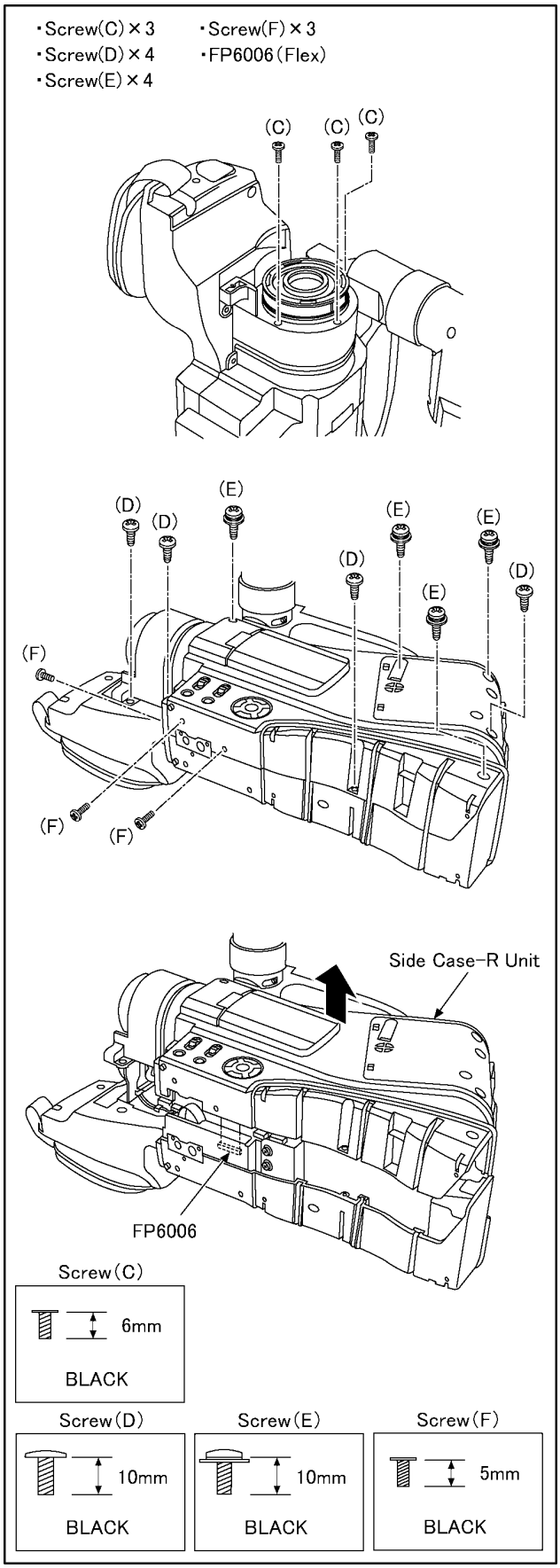


Fig. D3

8.3.4. Removal of the Speaker

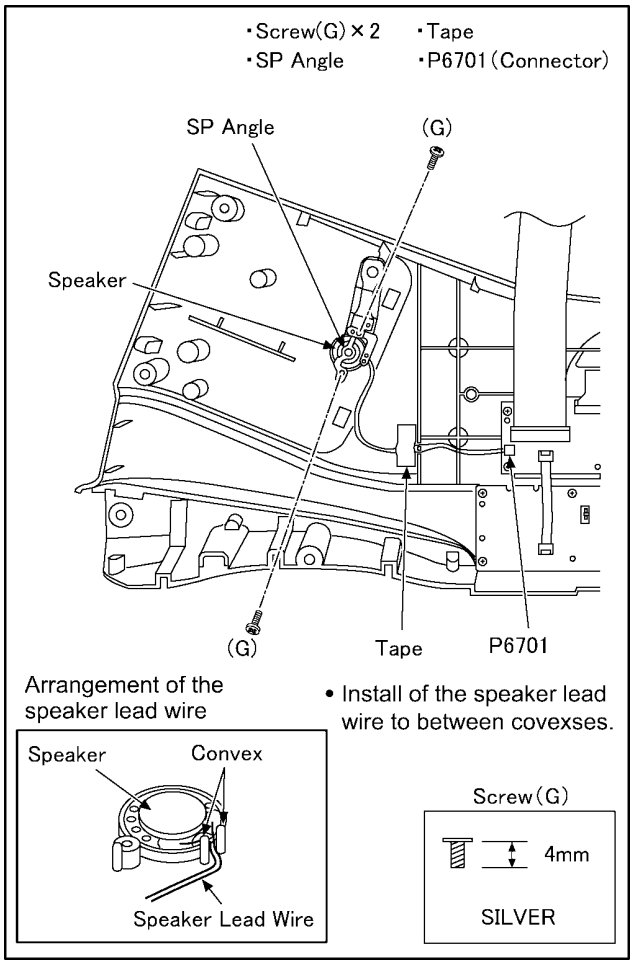


Fig. D4

8.3.5. Removal of the Side-R OP P.C.B. Unit

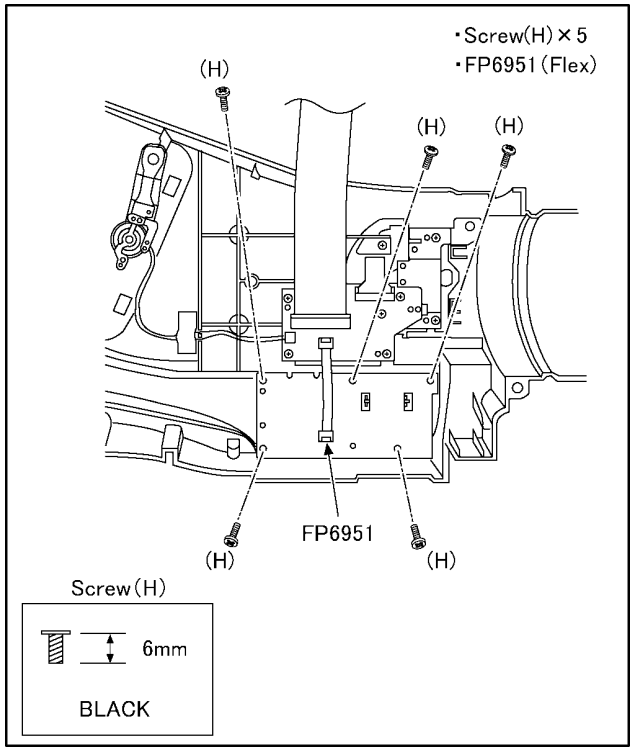


Fig. D5

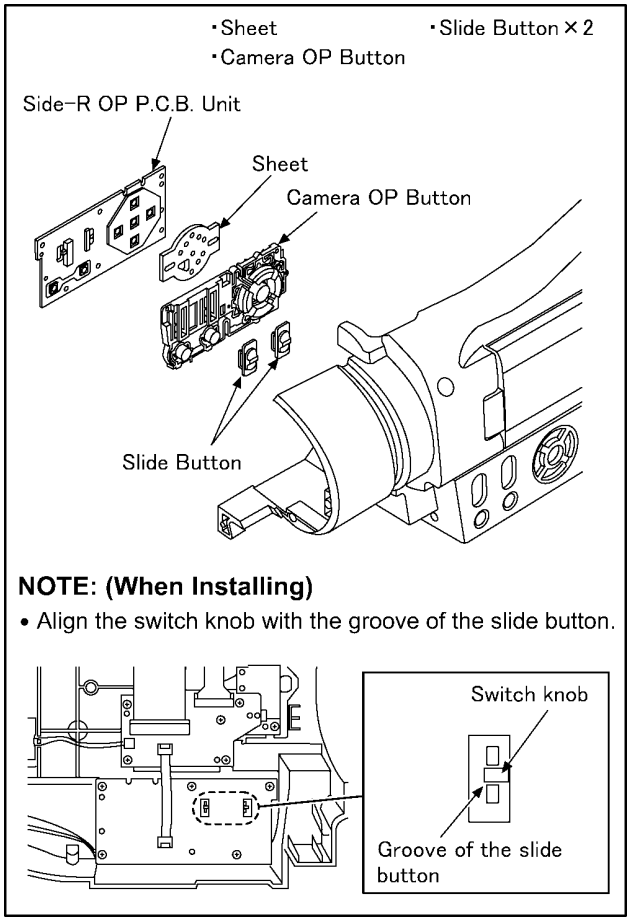


Fig. D6

8.3.6. Removal of the Side-R Int P.C.B. Unit

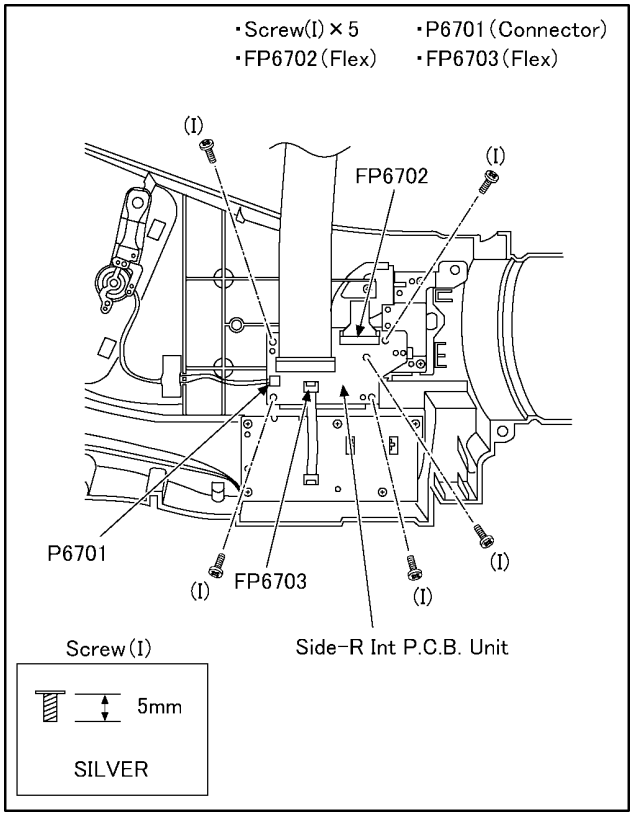


Fig. D7

NOTE: (When Installing)

- Having open the LCD Case Unit, then install the Side-R Int P.C.B. Unit.

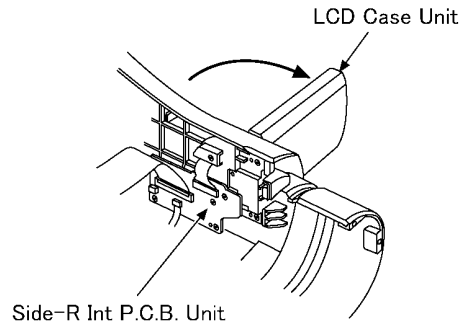


Fig. D8

8.3.7. Removal of the Lens Unit

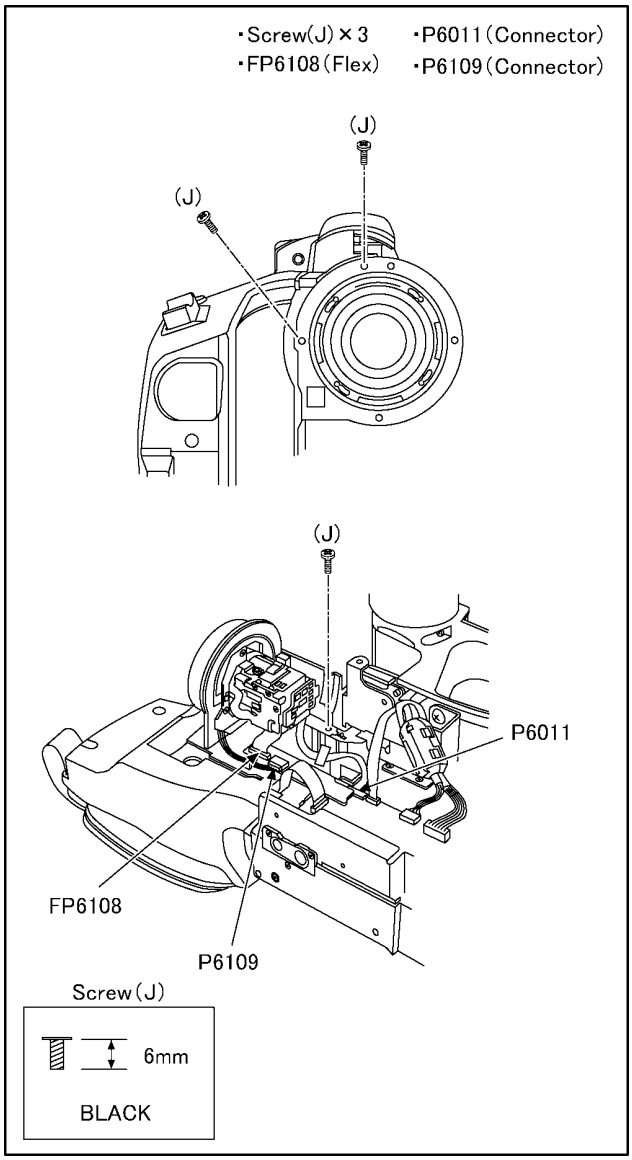


Fig. D9

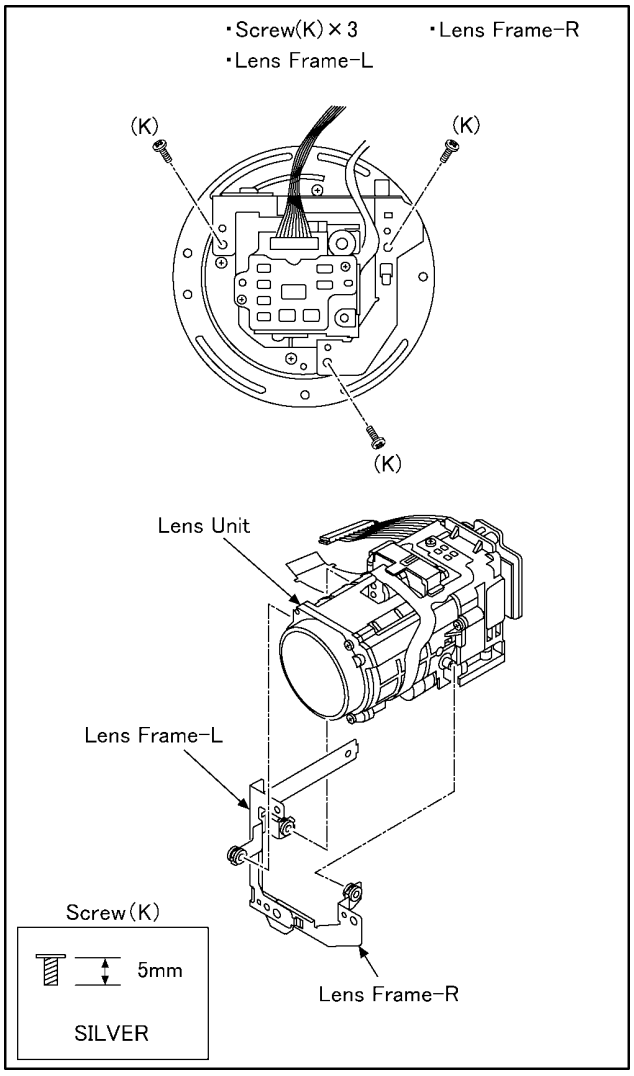


Fig. D10

8.3.8. Removal of the Lens Int P.C.B. Unit and Main P.C.B. Unit

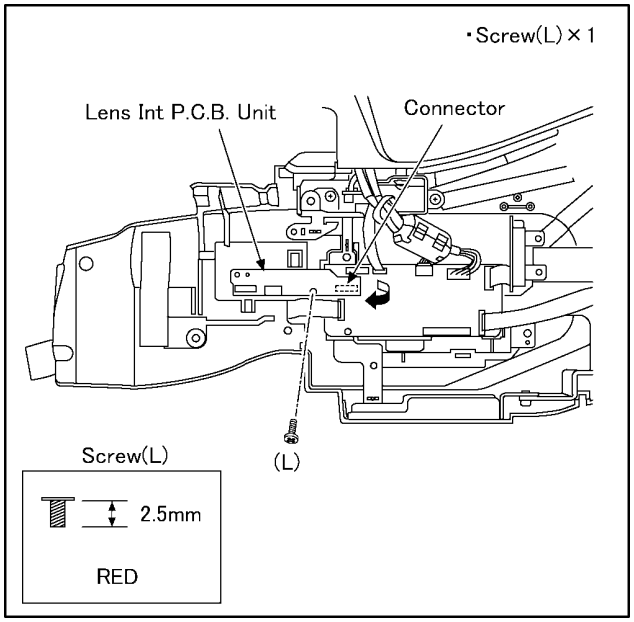


Fig. D11

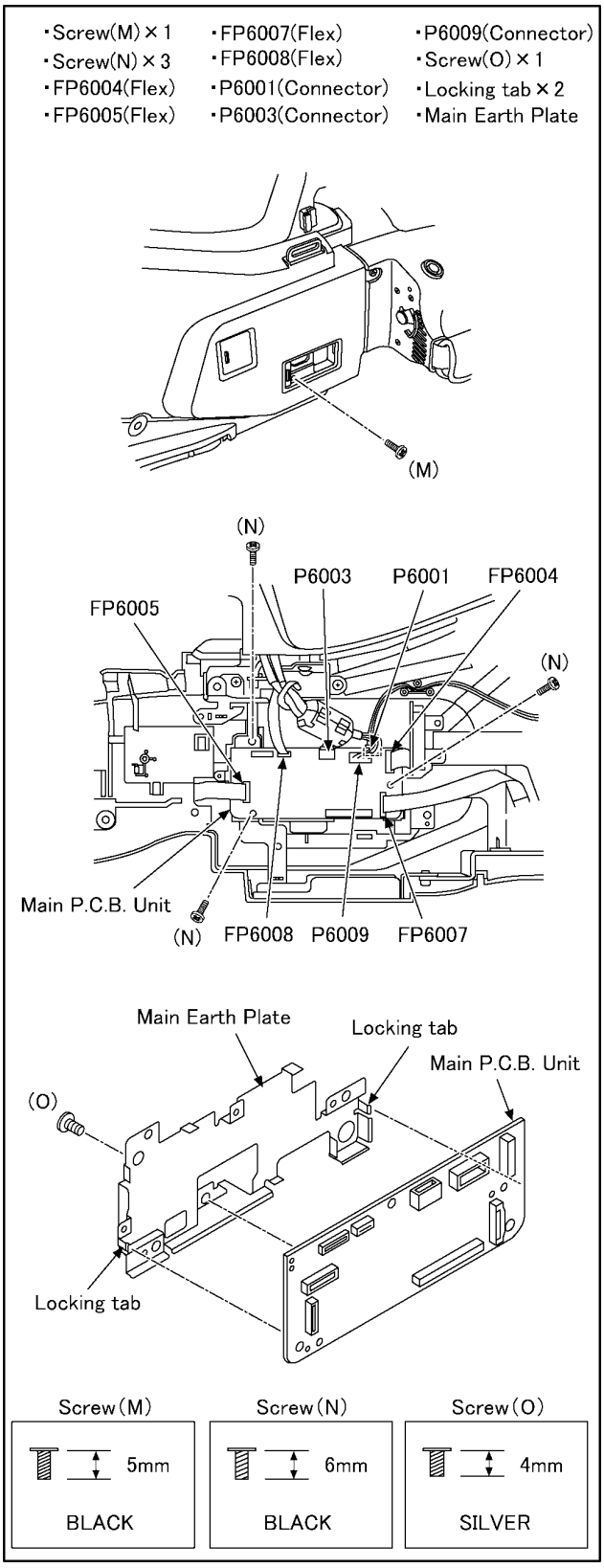


Fig. D12

8.3.9. Removal of the SD Holder P.C.B. Unit

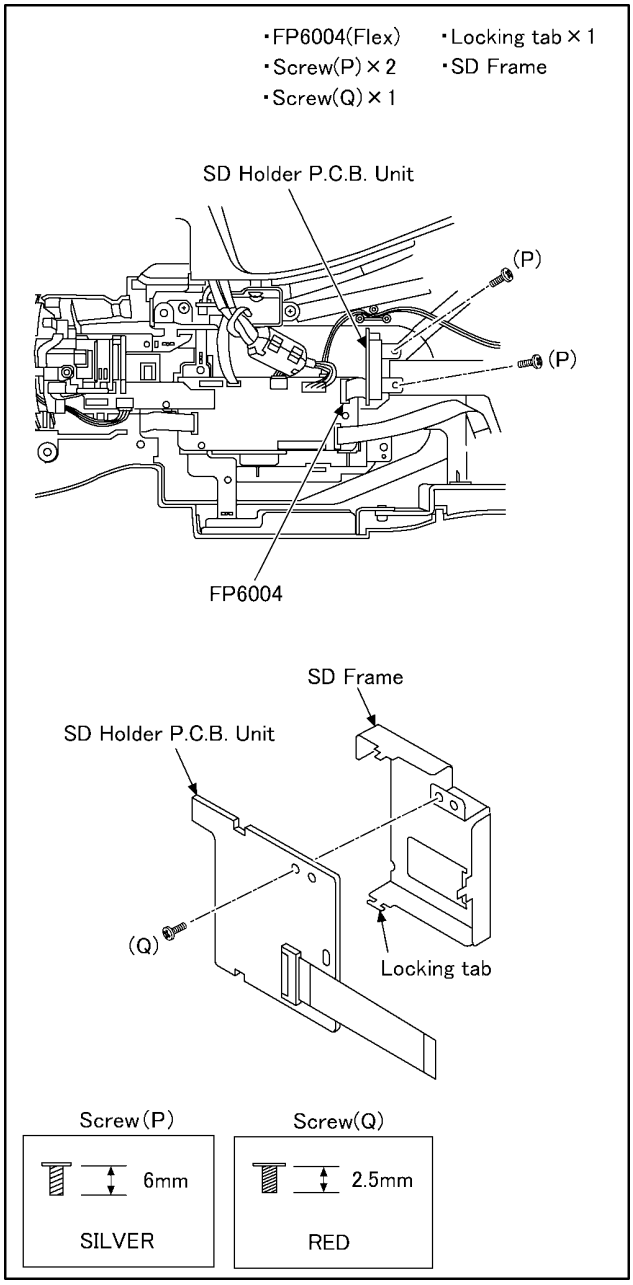


Fig. D13

8.3.10. Removal of the Jack P.C.B. Unit

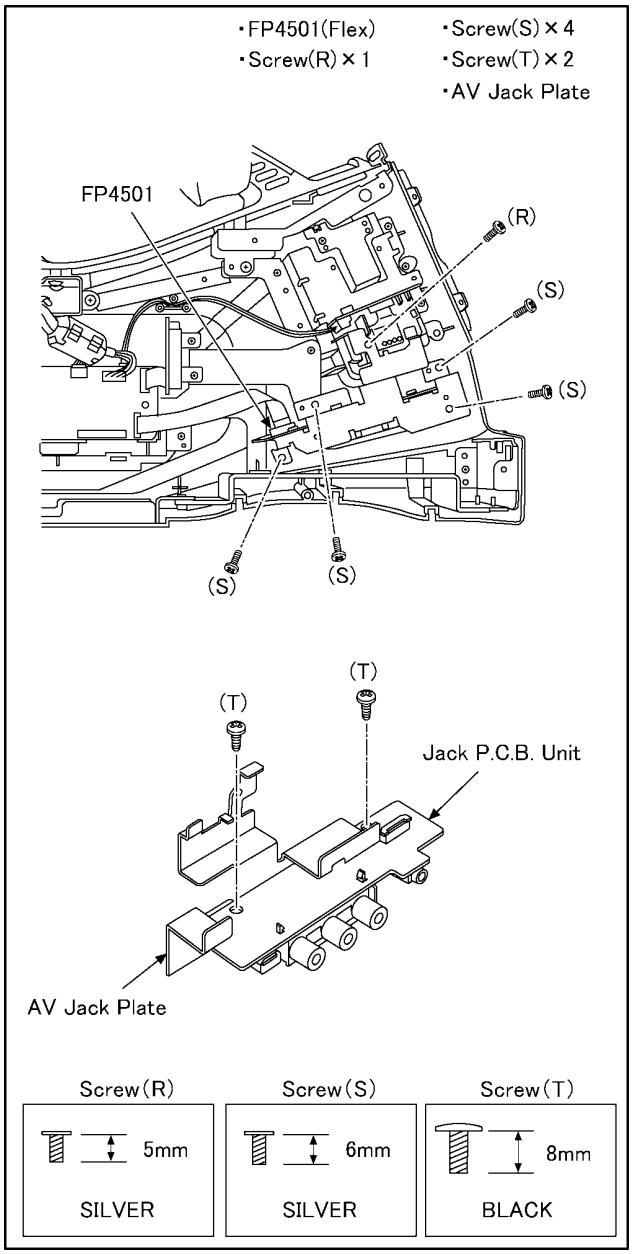


Fig. D14

8.3.11. Removal of the Batt Power P.C.B. Unit and Battery Catcher Unit

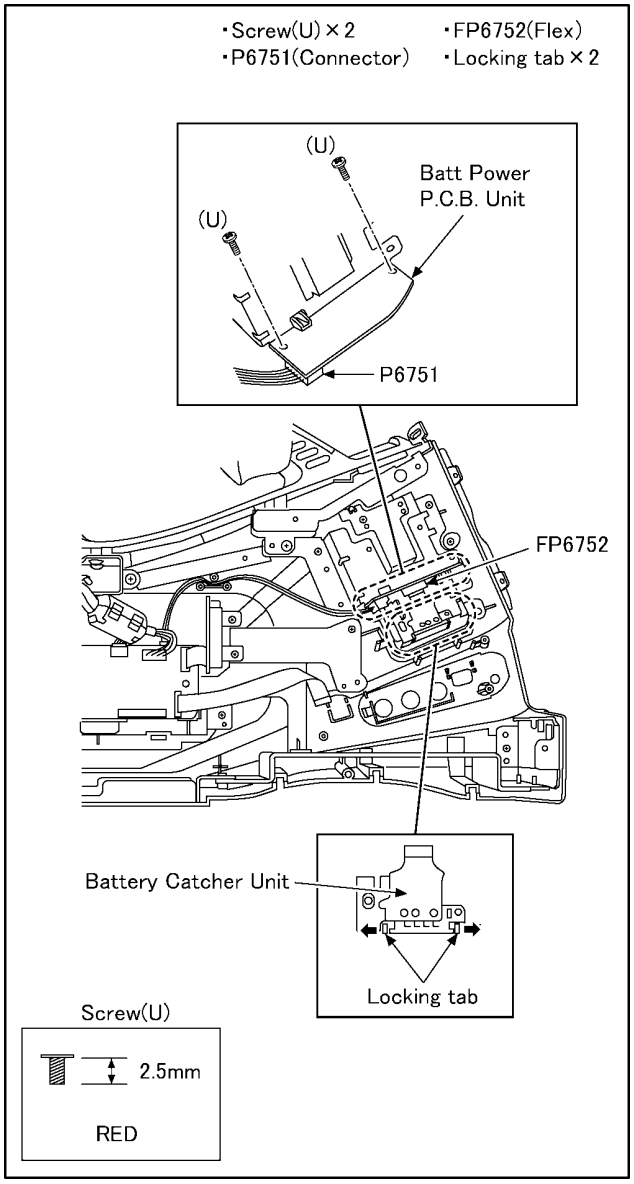


Fig. D15

8.3.12. Removal of the Handle Mic Unit

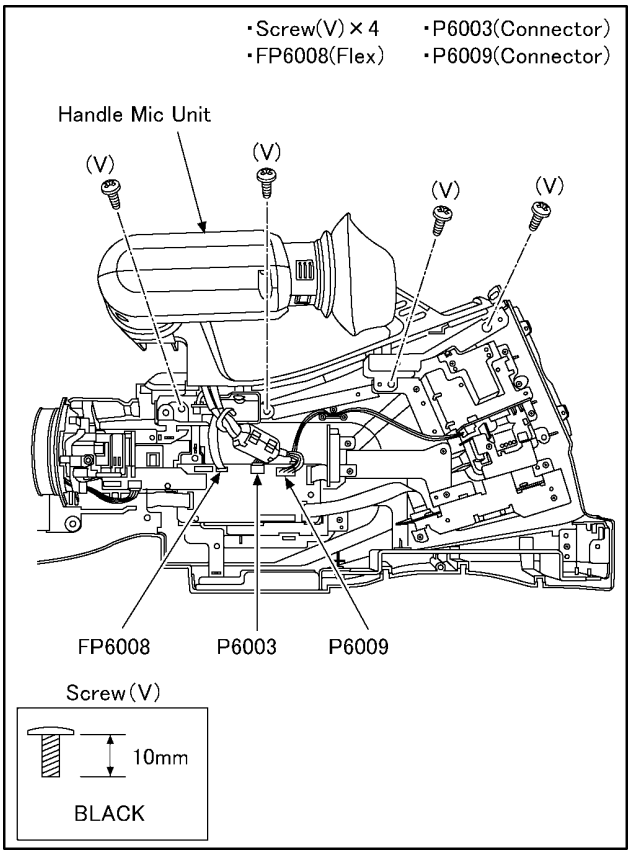


Fig. D16

8.3.13. Removal of the Mic Case Unit and Ext Mic P.C.B. Unit

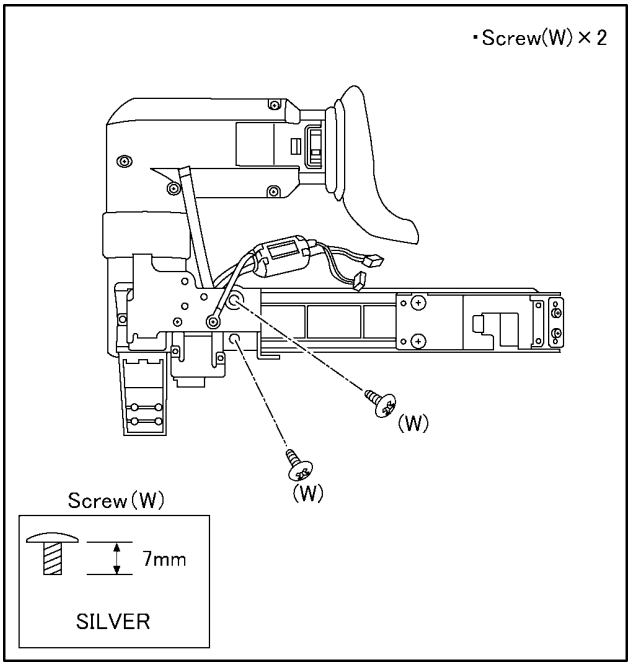


Fig. D17

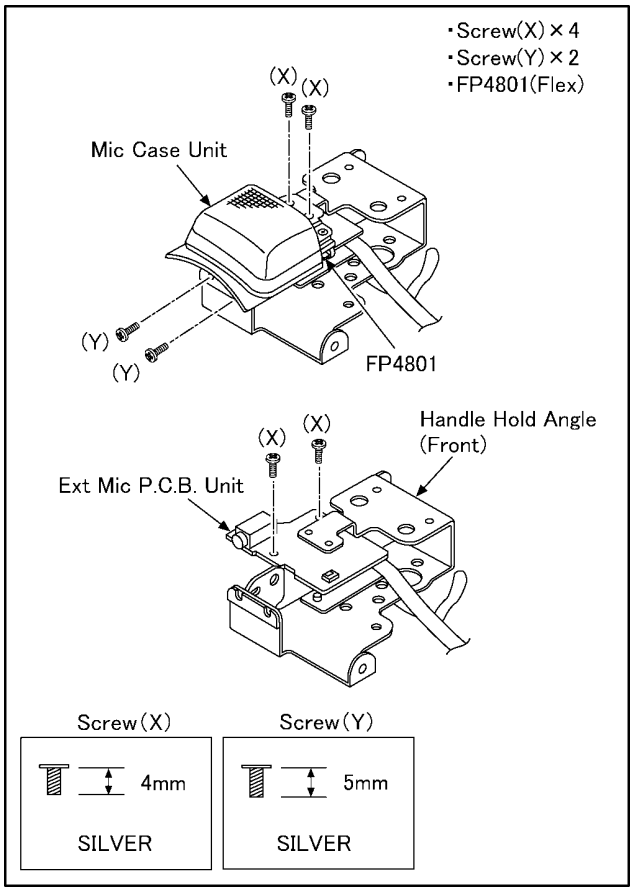


Fig. D18

8.3.14. Removal of the Handle Zoom P.C.B. Unit

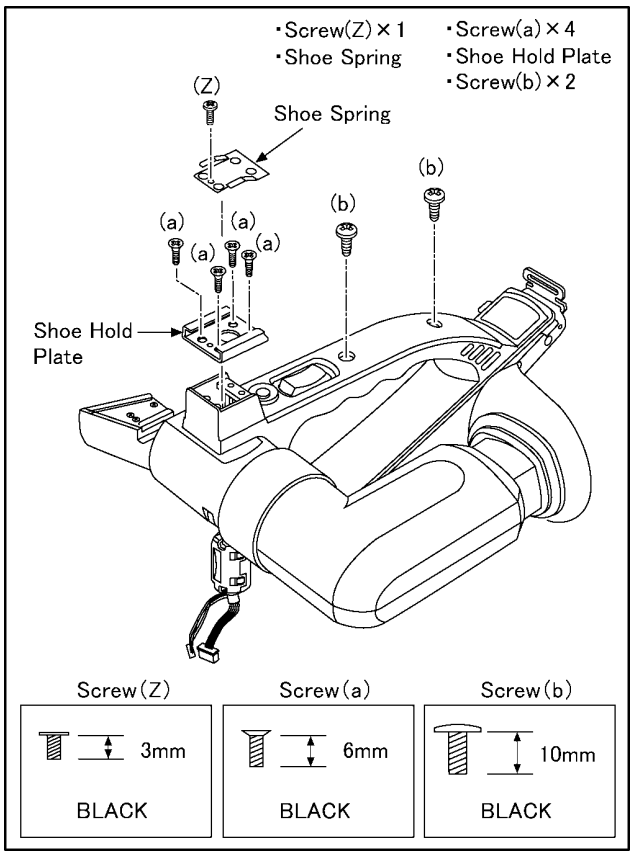


Fig. D19

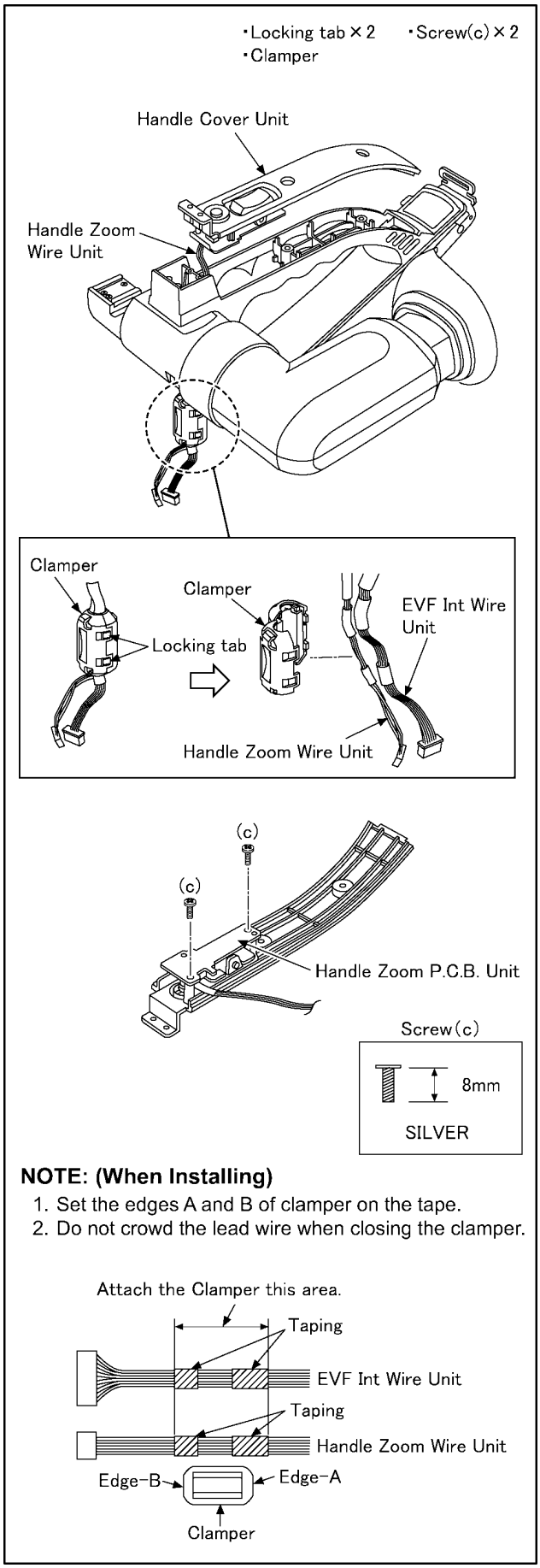
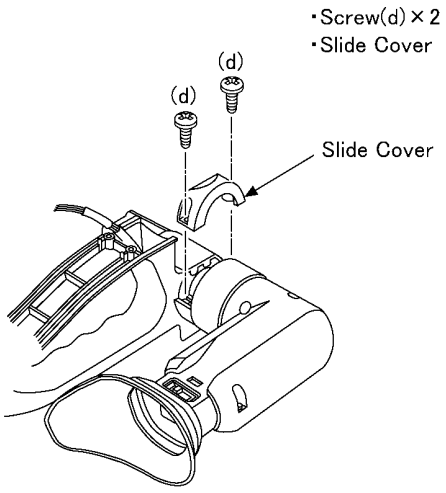
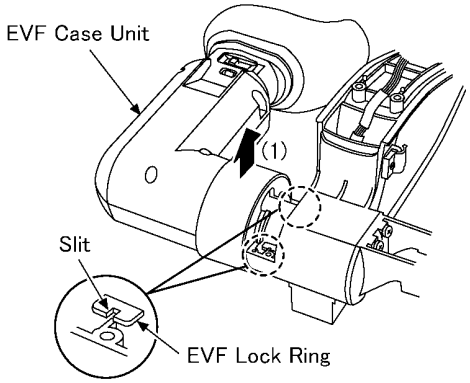


Fig. D20

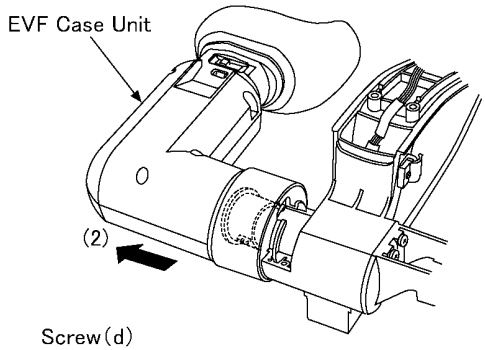
8.3.15. Removal of the EVF Case Unit



1. Lift the EVF Case Unit for the course of the arrow (1) a little and take off the slit of the EVF Lock Ring.



2. Slide the EVF Case Unit for the course of the arrow (2).



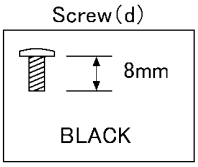
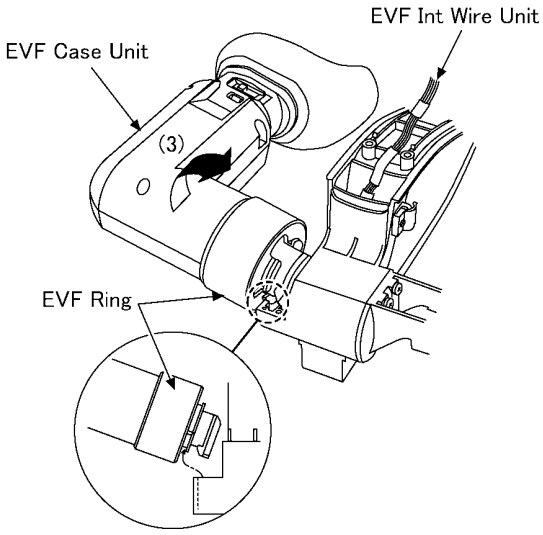


Fig. D21

3. Lift the EVF Case Unit for the course of the arrow (3) and detach the EVF Ring.



NOTE: (When Replacing)

- When pulling out the EVF Int Wire Unit, be careful not to brake or not to damage the wire.

Fig. D22

8.3.16. Removal of the EVF Angle Adj. Case Unit

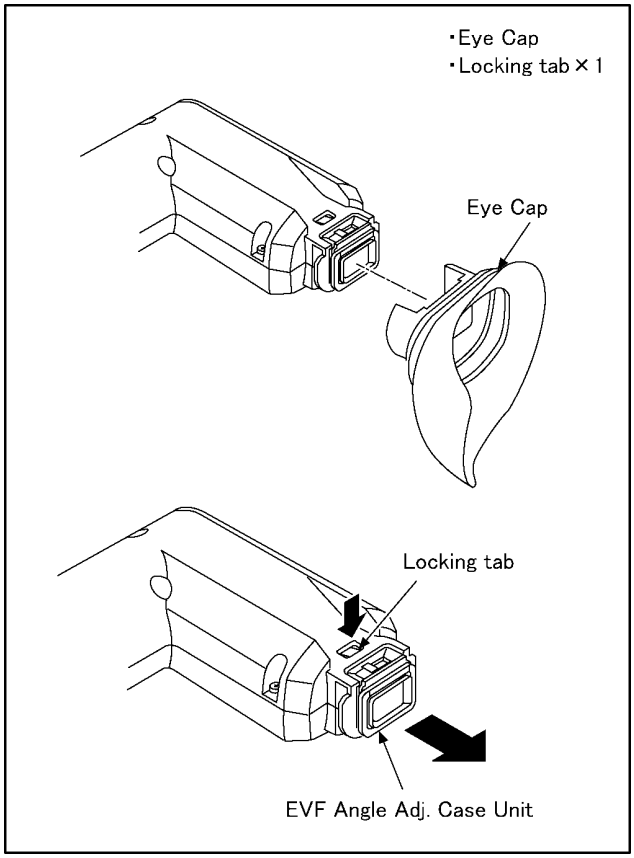


Fig. D23

8.3.17. Removal of the EVF Unit and EVF Int P.C.B. Unit

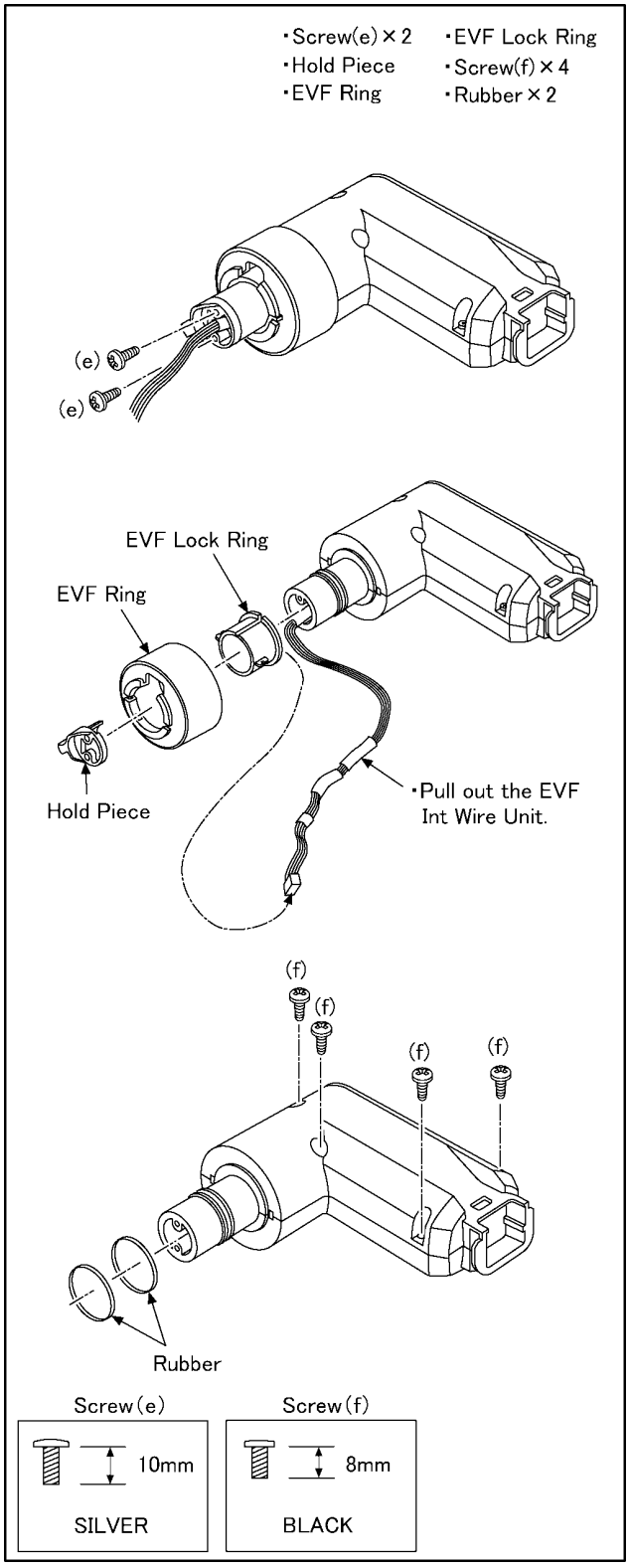


Fig. D24

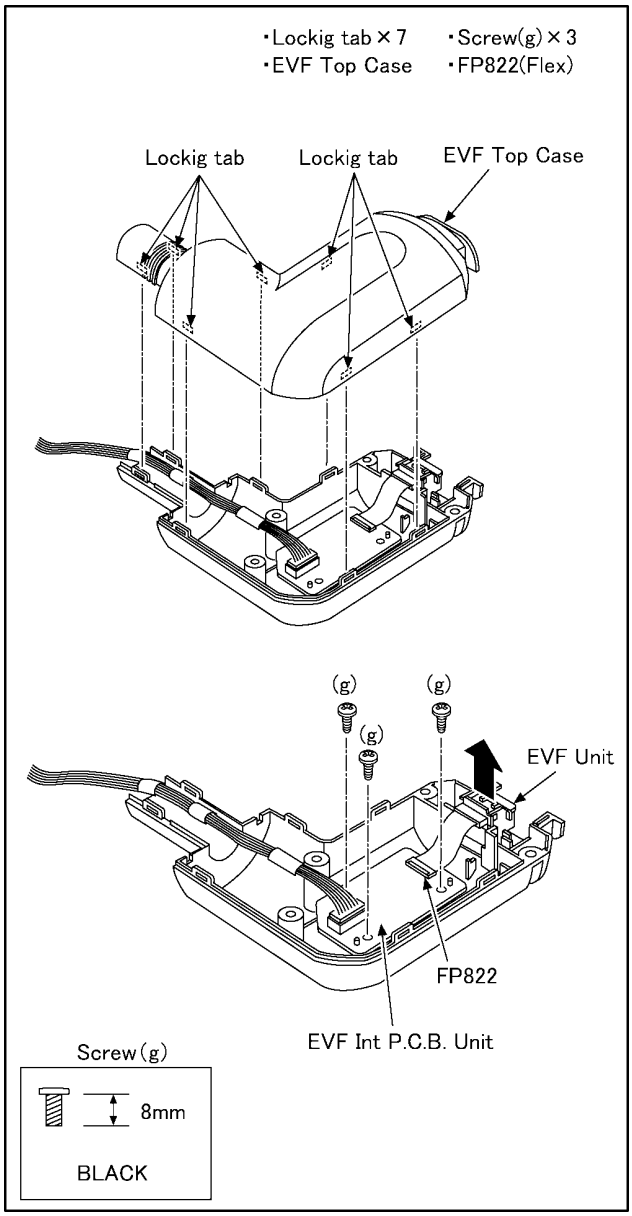


Fig. D25

8.3.18. Removal of the Grip Cover Unit

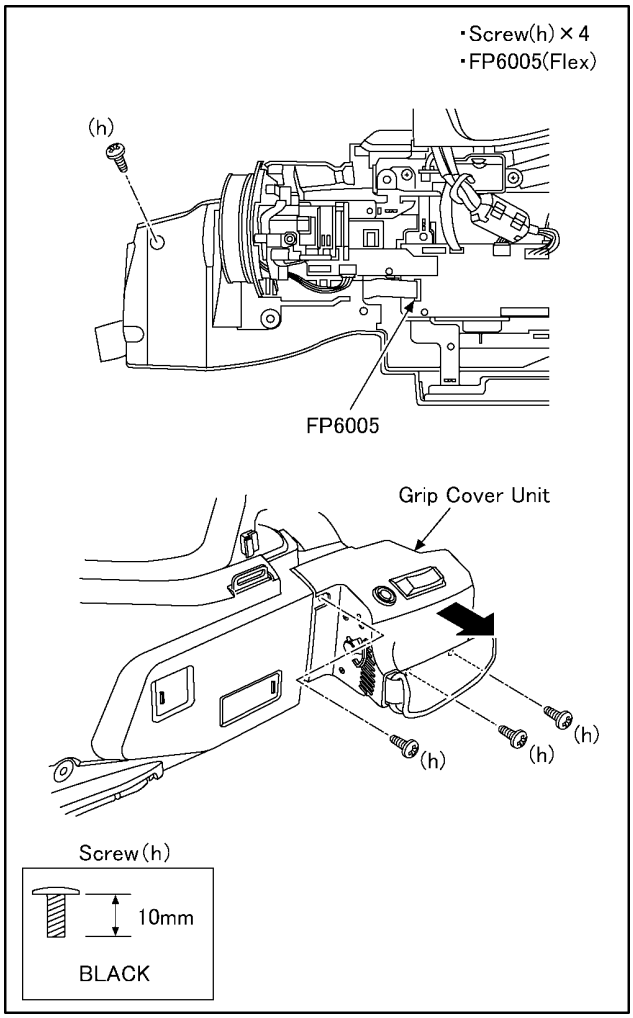


Fig. D26

8.3.19. Removal of the Zoom Photo P.C.B. Unit

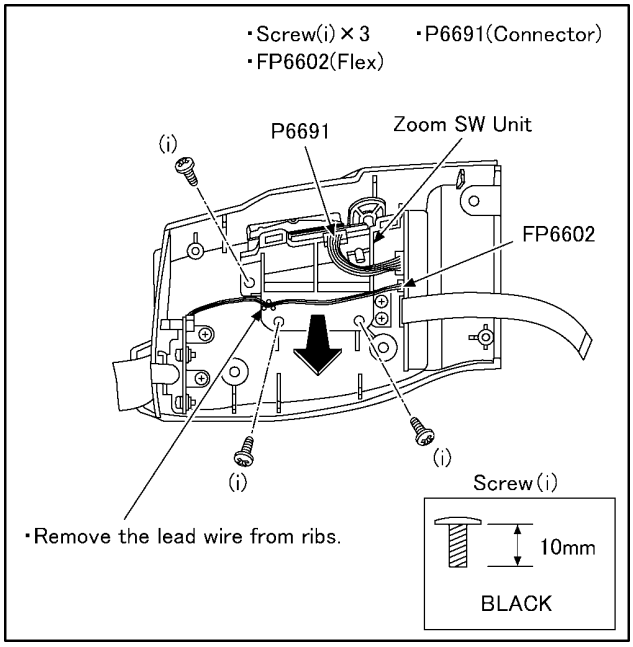


Fig. D27

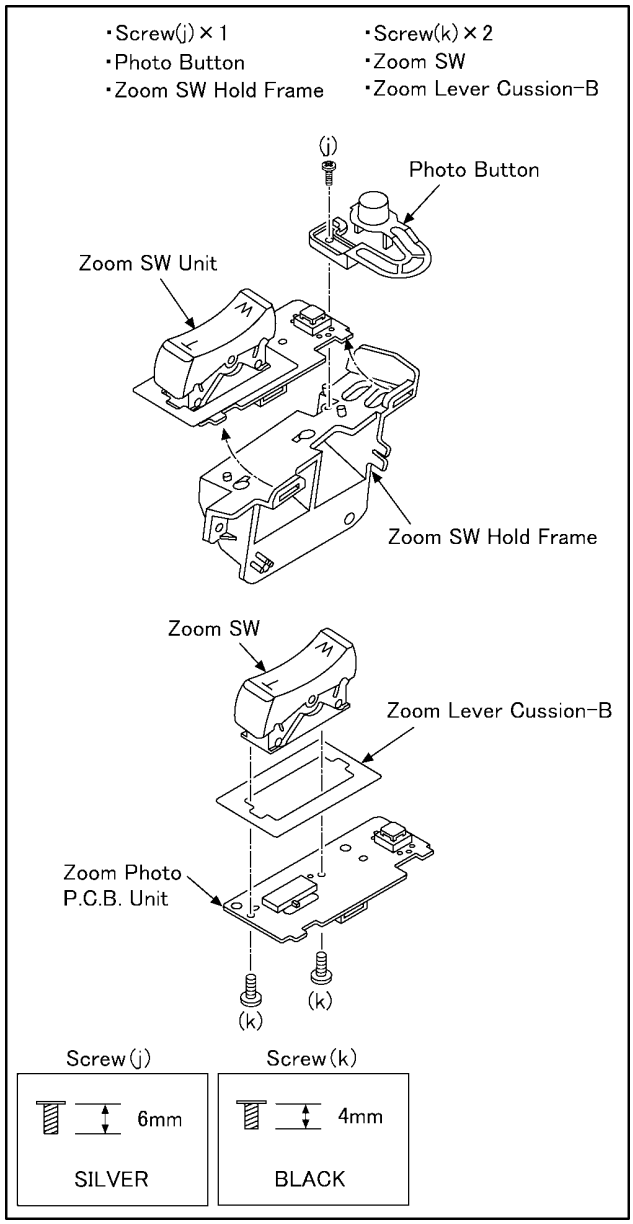


Fig. D28

8.3.20. Removal of the SS GYRO P.C.B. Unit

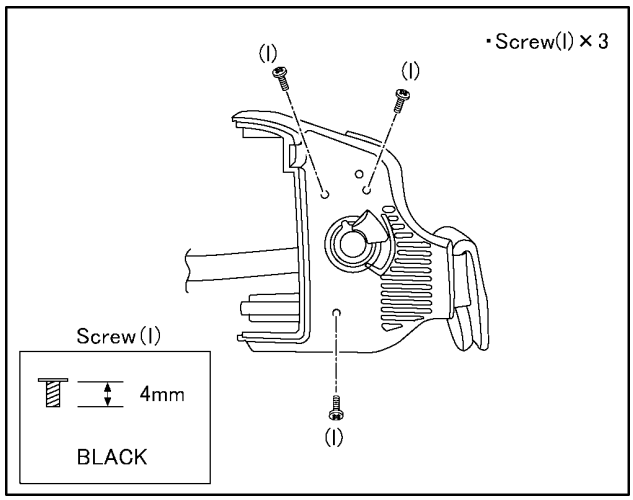


Fig. D29

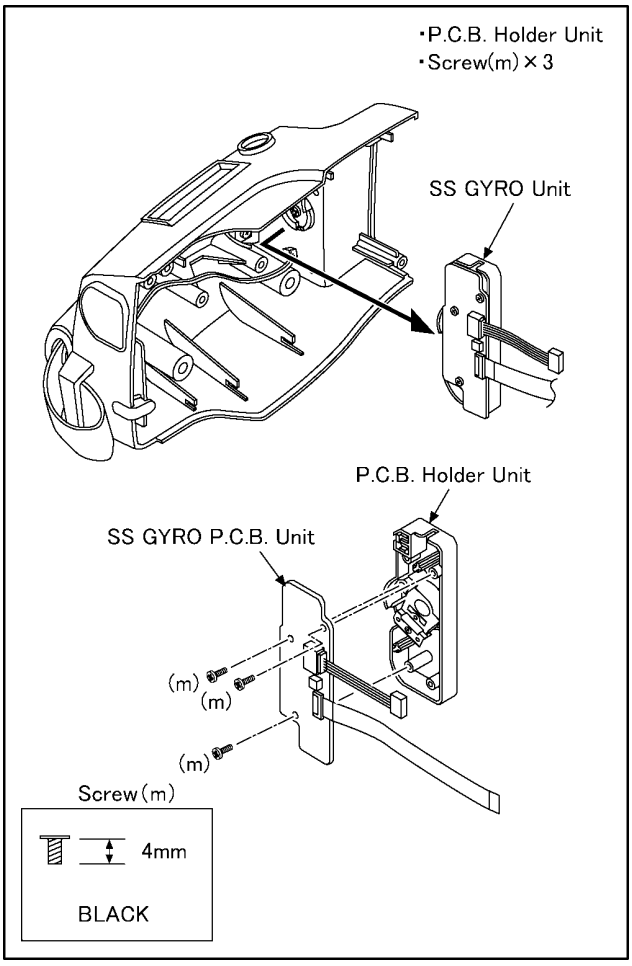


Fig. D30

8.3.21. Removal of the Front P.C.B. Unit

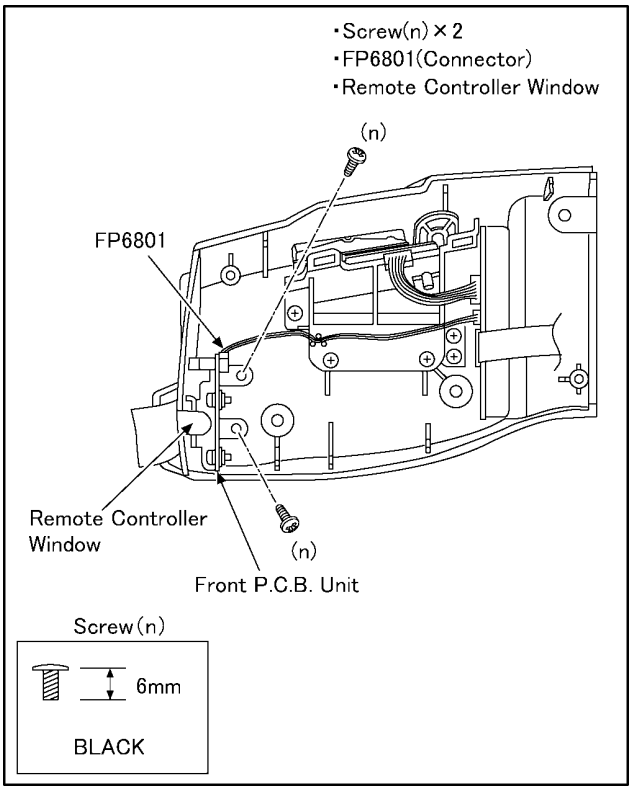


Fig. D31

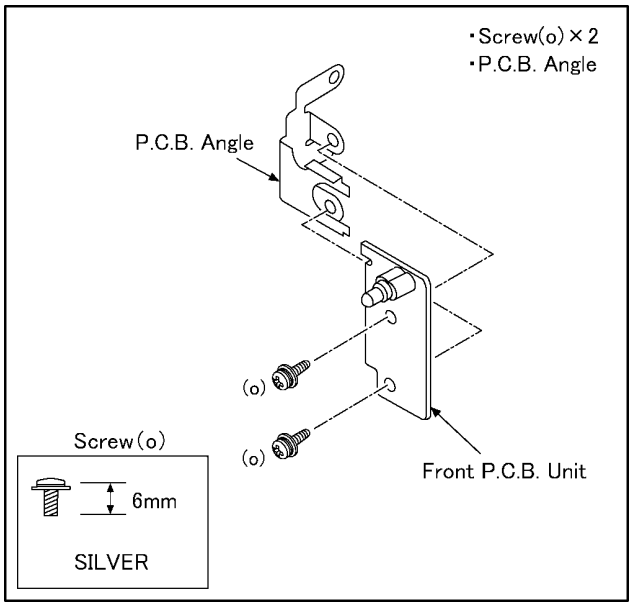


Fig. D32

8.3.22. Removal of the LCD Case Unit

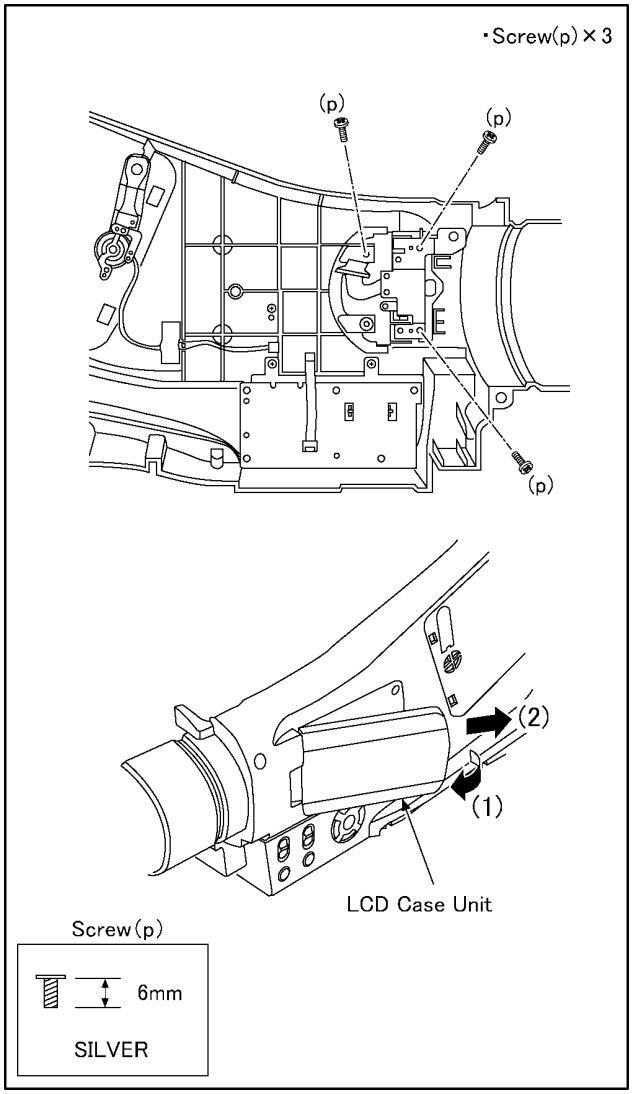


Fig. D33

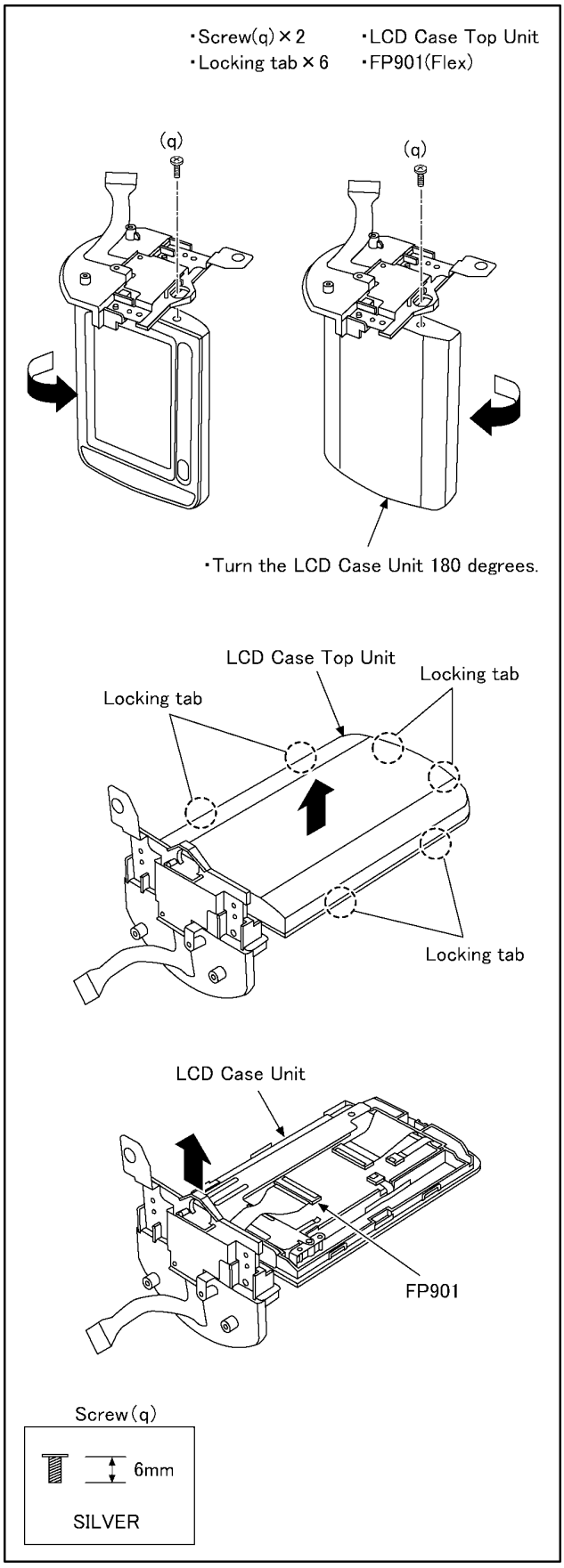


Fig. D34

8.3.23. Removal of the LCD Unit and Monitor P.C.B. Unit

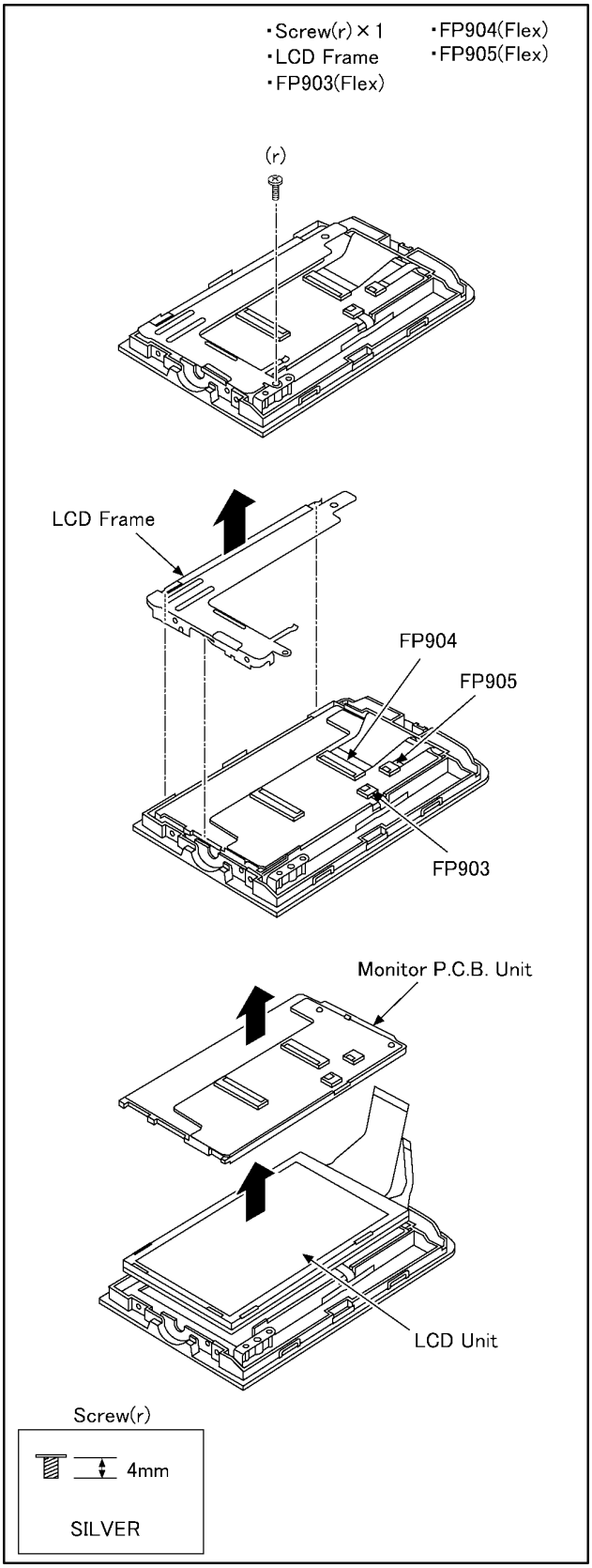


Fig. D35

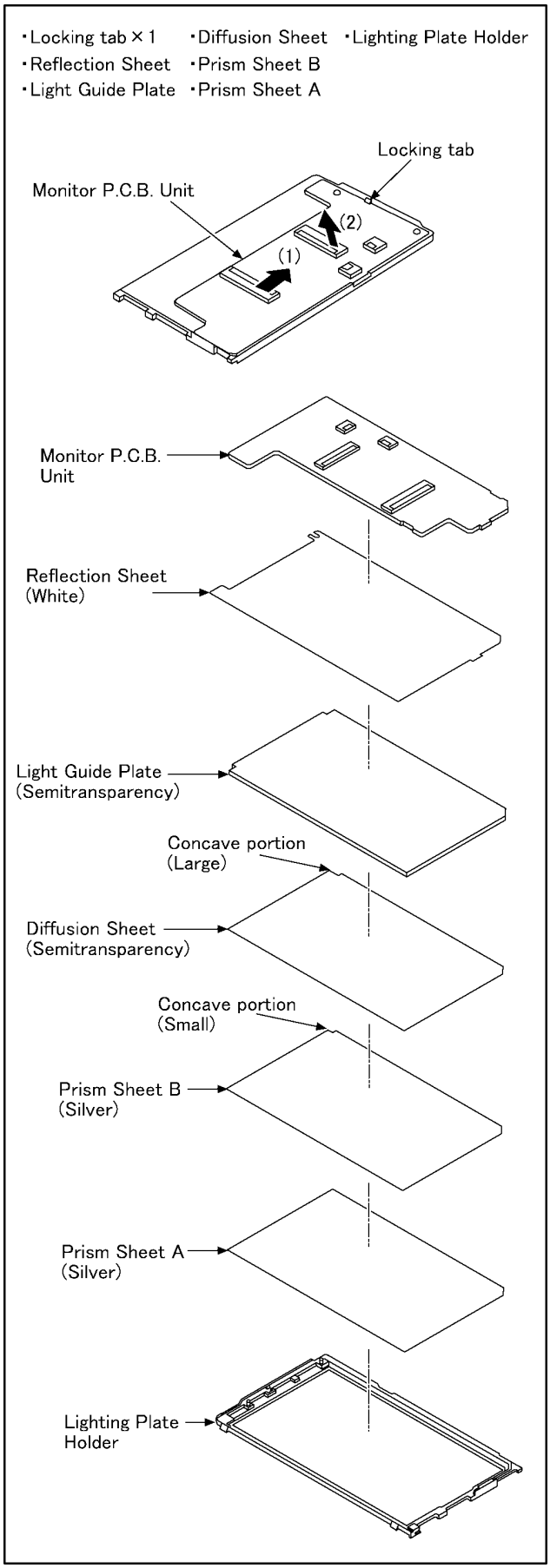


Fig. D36

8.3.24. Removal of the MOS Unit and IR Filter

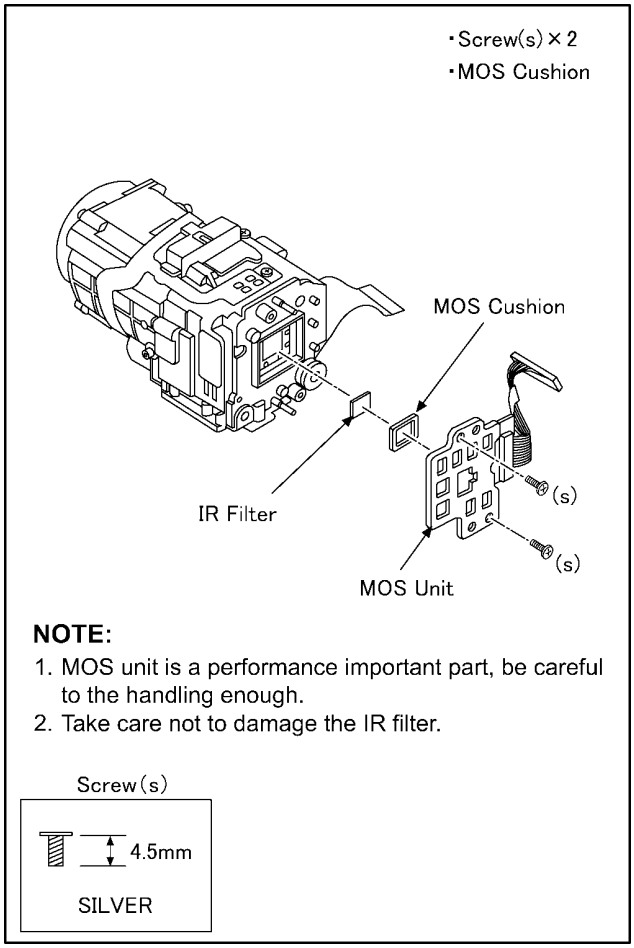


Fig. D37

8.3.25. Removal of the Focus Motor

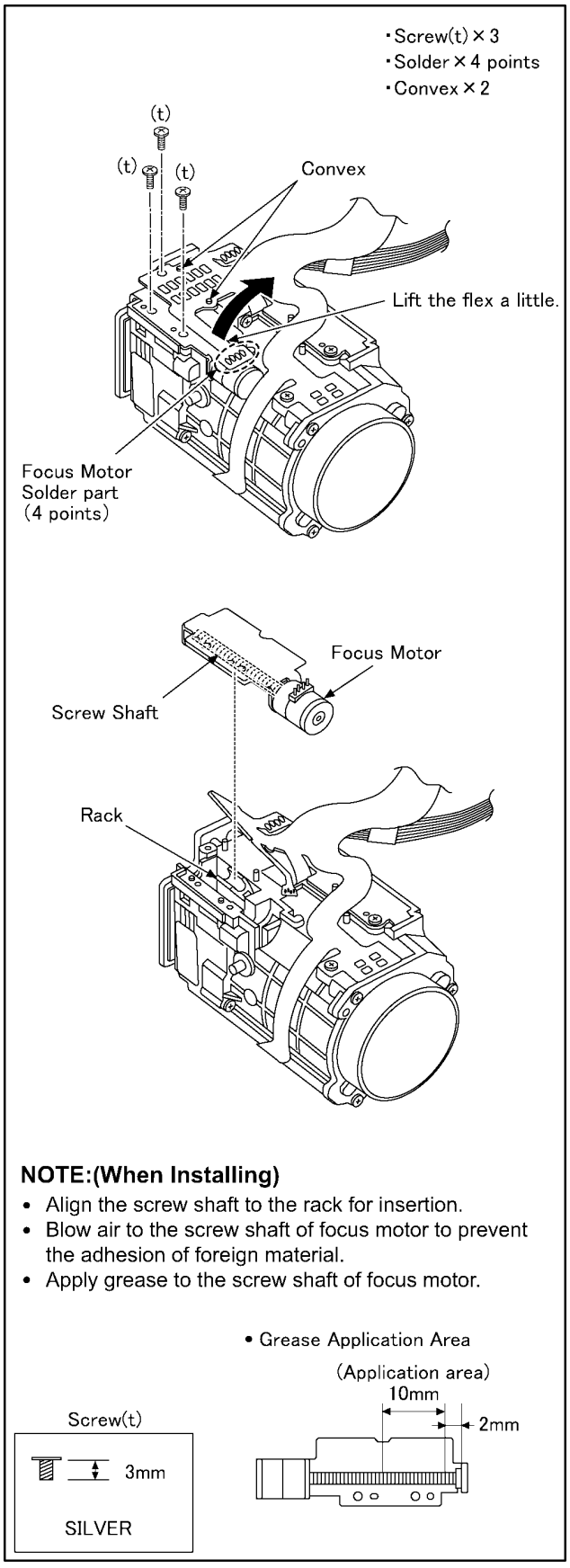


Fig. D38

8.3.26. Removal of the Zoom Motor

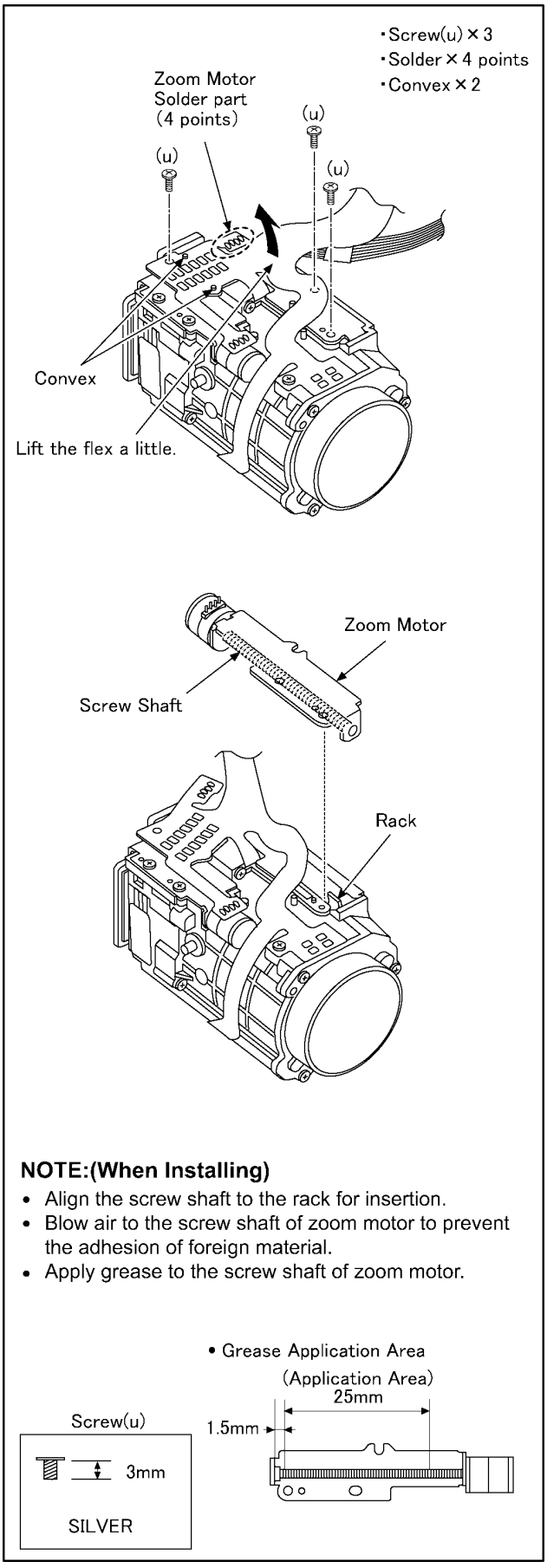


Fig. D39

9 Measurements and Adjustments

9.1. Electric Adjustment

- Adjustment method is different from a conventional High definition 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

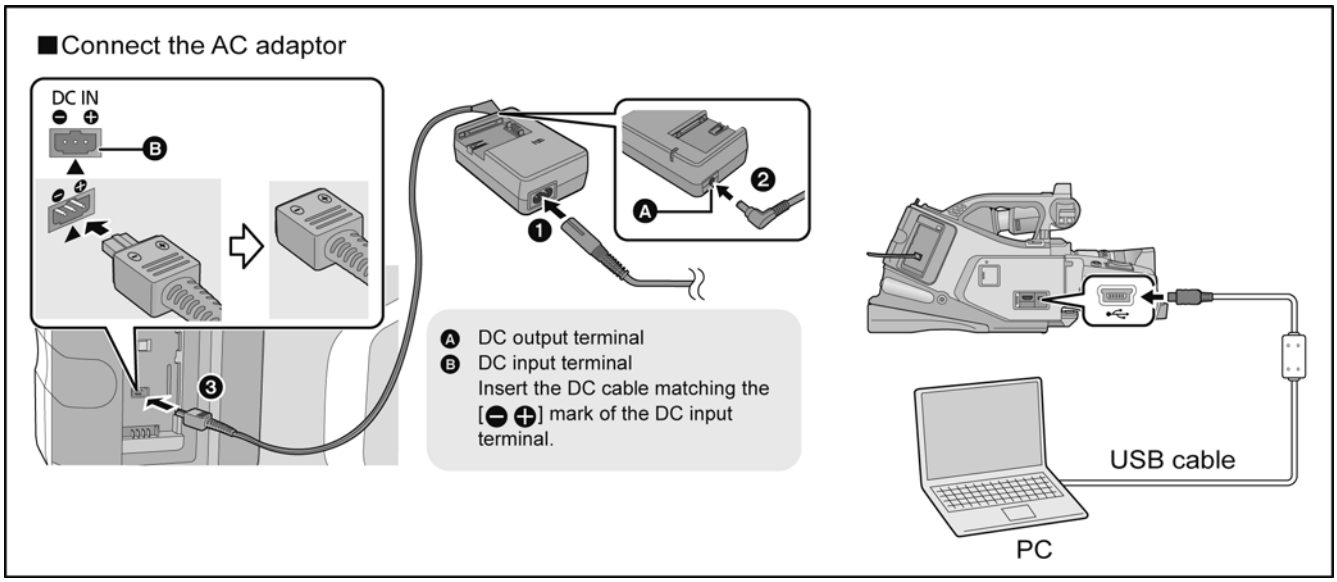
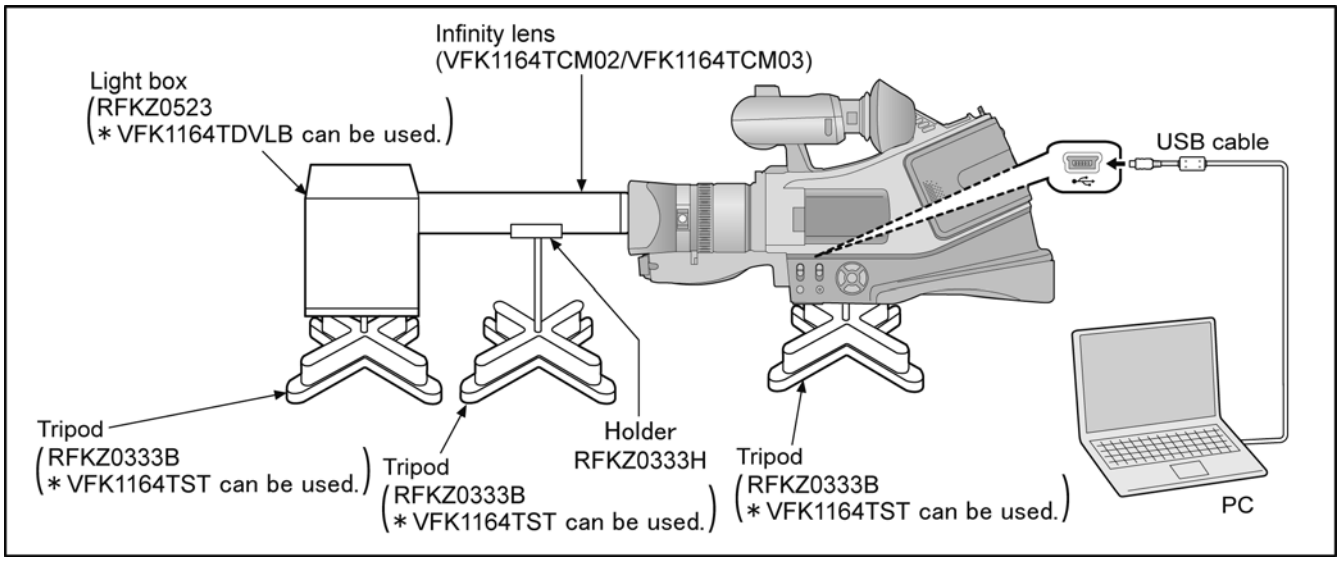


Figure of image when adjustment



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	USB Cable	------	
4	Adjustment Software (Tatsujin)	------	

Adjustment Items

• Adjustment item as follows.

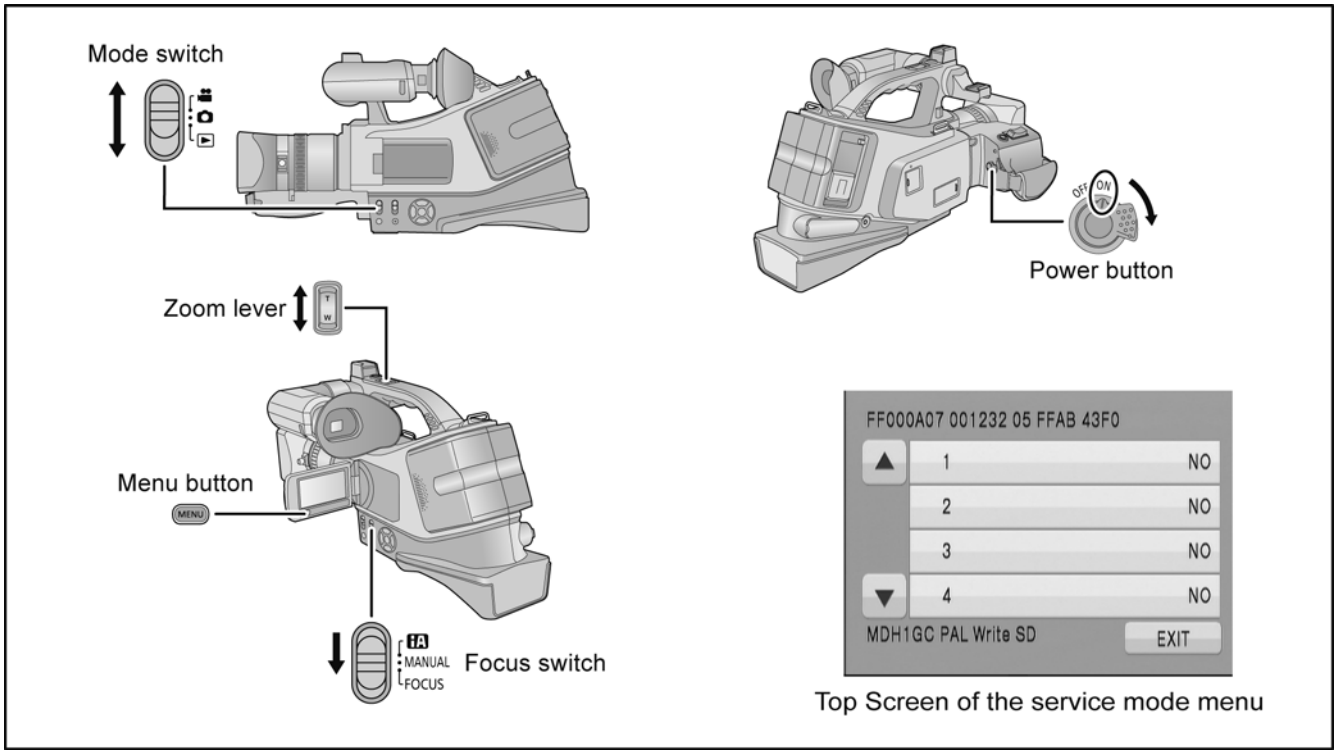
The adjustment instruction is available at "Software download" on the "Support Information from NWBG/VDBG-AVC" web-site in "TSN System".

	Replacement part / Adjustment item	Main P.C.B.	IC2002(EEPROM)	Lens Unit	MOS Unit	IC3701	IC301
Camera Part	● Hall amplifire/PWM bias	○	○	○	○		
	● OIS Hall amplifire adjustment (automatic)	○	○	○	○		
	● OIS Sensor Offset adjustment (automatic)	○	○				
	● Zoom tracking adjustment (automatic)	○	○	○	○		
	● Address wound revision (automatic)	○	○		○		
	● White balance adjustment (automatic)	○	○		○		
	● Gain adjustment between channels (automatic)	○			○		○
Video Part	● Brightness level adjustment	○	○			○	

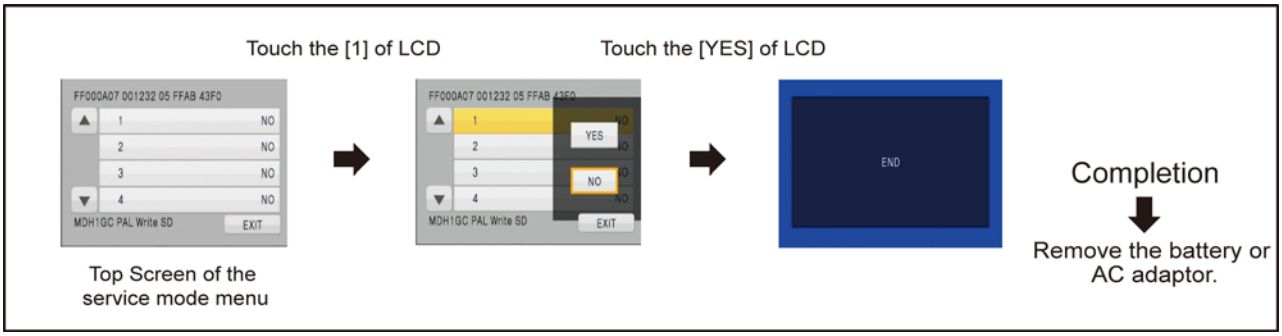
10 Factory Setting

10.1. How To Turn On The Factory Settings?

1. Set the mode switch “Motion Picture Recording” mode.
2. Turn the power on, and then while keep pressing the “Zoom lever” to W side, “Focus” switch and “Menu” button for more than 3 seconds until the top screen of the Service Mode Menu being displayed.



3. Touch the [1] of LCD.
4. Touch the [YES] of LCD.
5. After few seconds “END” is displayed on LCD monitor. Cutting of battery connection or AC power supply connection as a completion of the “FACTORY SETTINGS”.



10.2. What Is The Factory Settings?

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

1. MENU, MODE, ADJUSTMENT VALUE.
2. SD card format.
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.
6. Initialize the VIERA Link Physical Address.

The setting position of factory settings:

Name	Setting position
Mode switch	Motion picture recording mode

VM1009041CE

Service Manual

Diagrams and Replacement Parts List

High Definition Video Camera

Model No.

HDC-MDH1GC

HDC-MDH1GK

Vol. 1
Colour
(K).....Black Type

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:

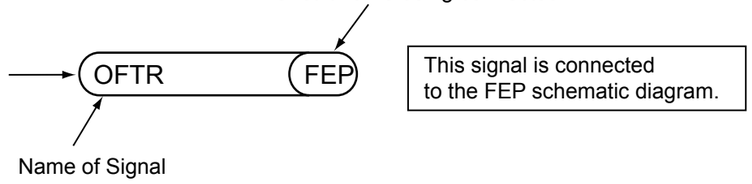


Table of contents

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. SD Holder P.C.B.

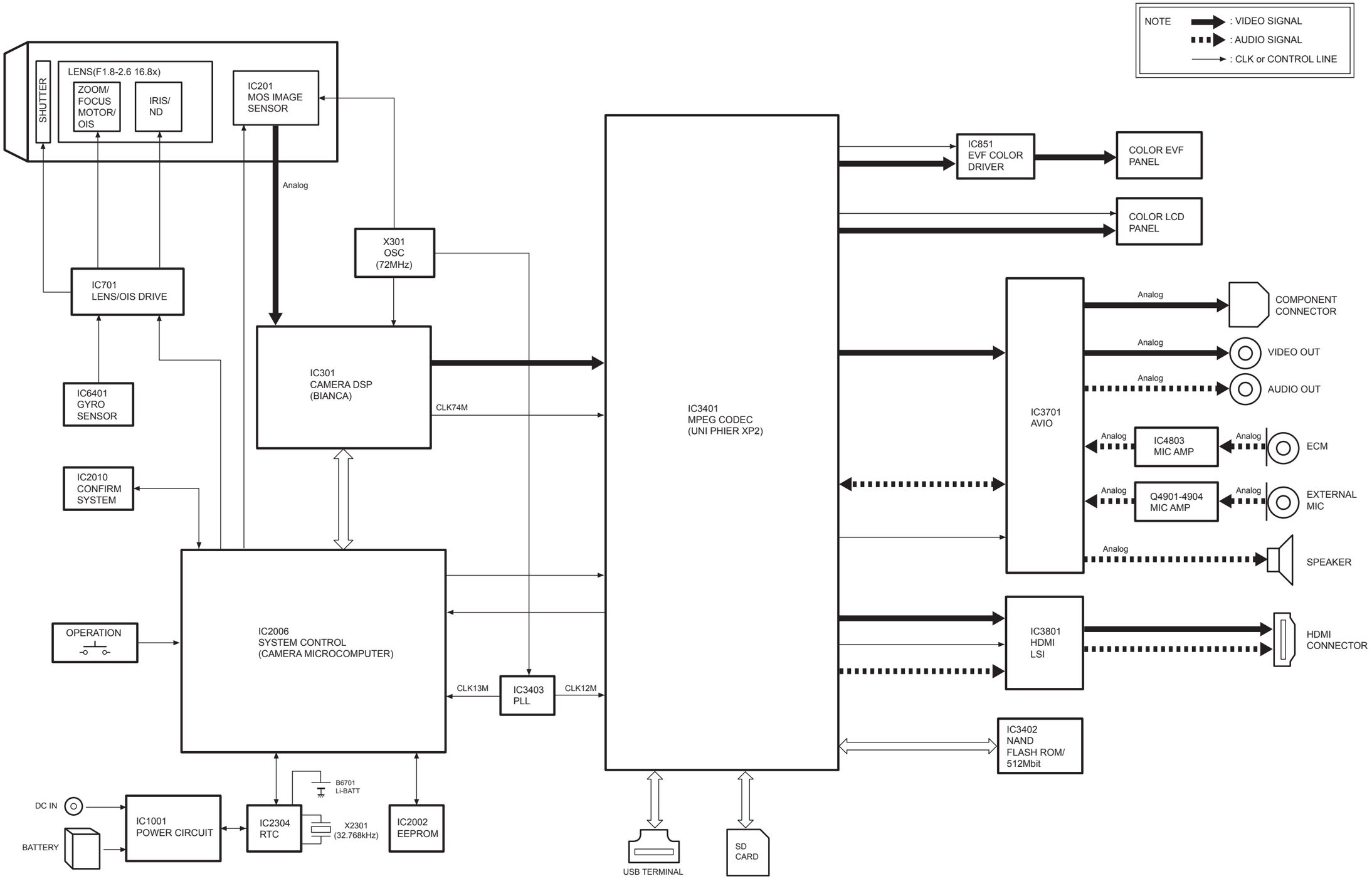
REF No.	PIN No.	POWER ON
Q3901	E	3.2
Q3901	C	3.2
Q3901	B	3.2

S2.2. EXT MIC P.C.B.

REF No.	PIN No.	POWER ON
IC4803	1	2.6
IC4803	2	2.6
IC4803	3	2.6
IC4803	4	0
IC4803	5	2.6
IC4803	6	2.6
IC4803	7	2.6
IC4803	8	5
Q4901	E	0.5
Q4901	C	3.7
Q4901	B	1
Q4902	E	4.4
Q4902	C	2.9
Q4902	B	3.7
Q4903	E	0.5
Q4903	C	3.7
Q4903	B	1
Q4904	E	4.4
Q4904	C	2.9
Q4904	B	3.7
Q4907	E	4.4
Q4907	C	5
Q4907	B	5

S3. Block Diagram

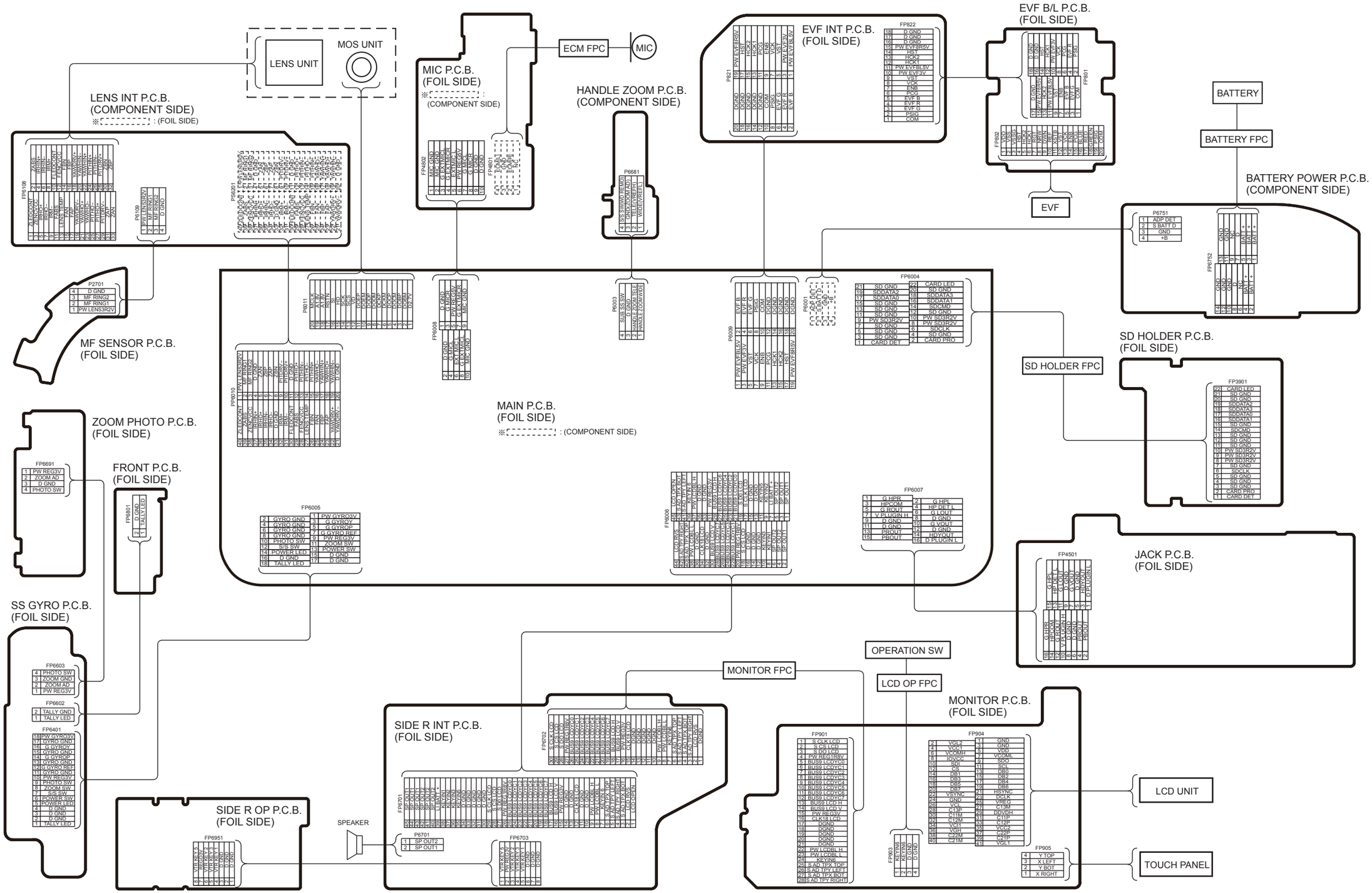
S3.1. Overall Block Diagram



HDC-MDH1 OVERALL BLOCK DIAGRAM

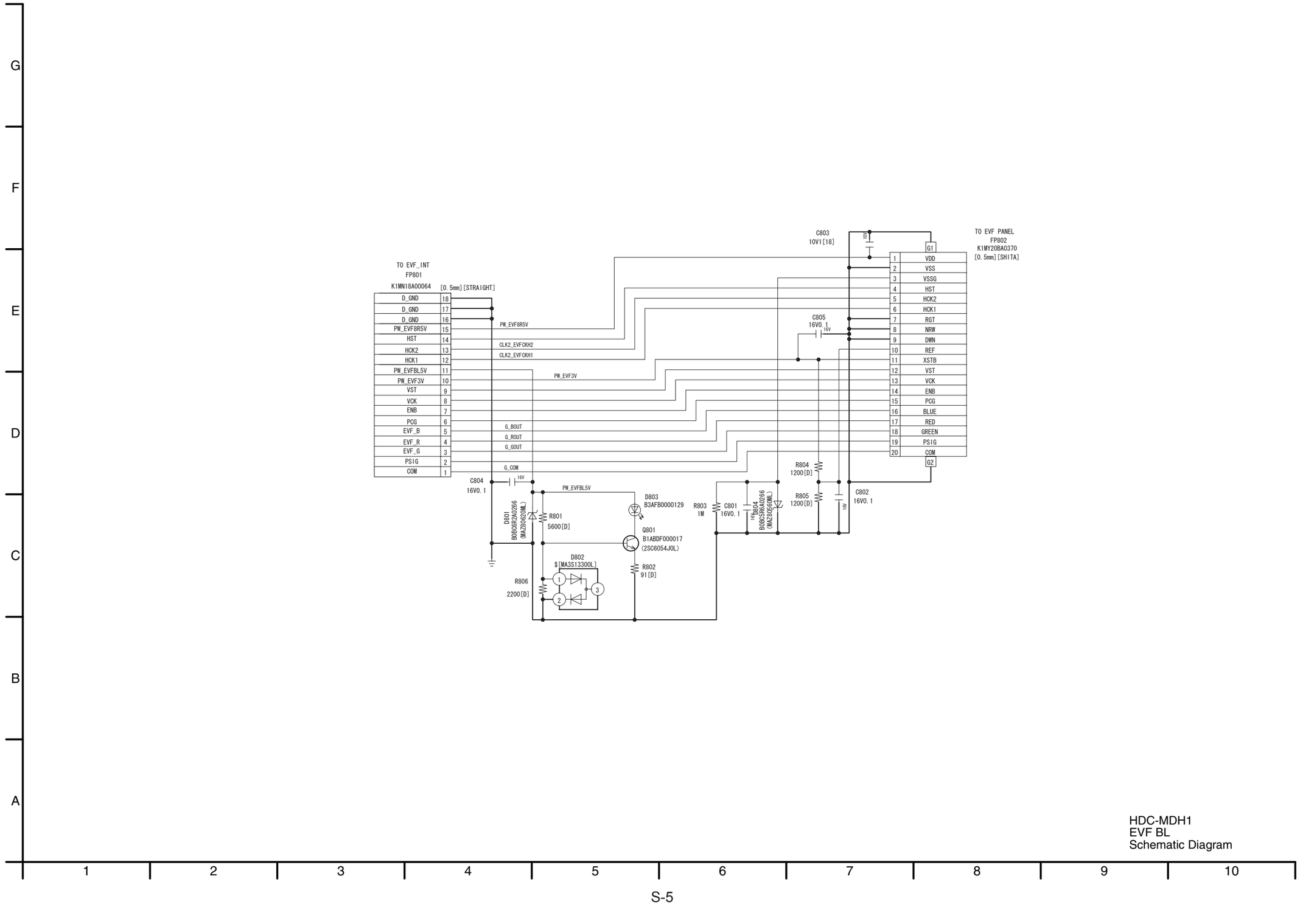
S4. Schematic Diagram

S4.1. Interconnection Diagram



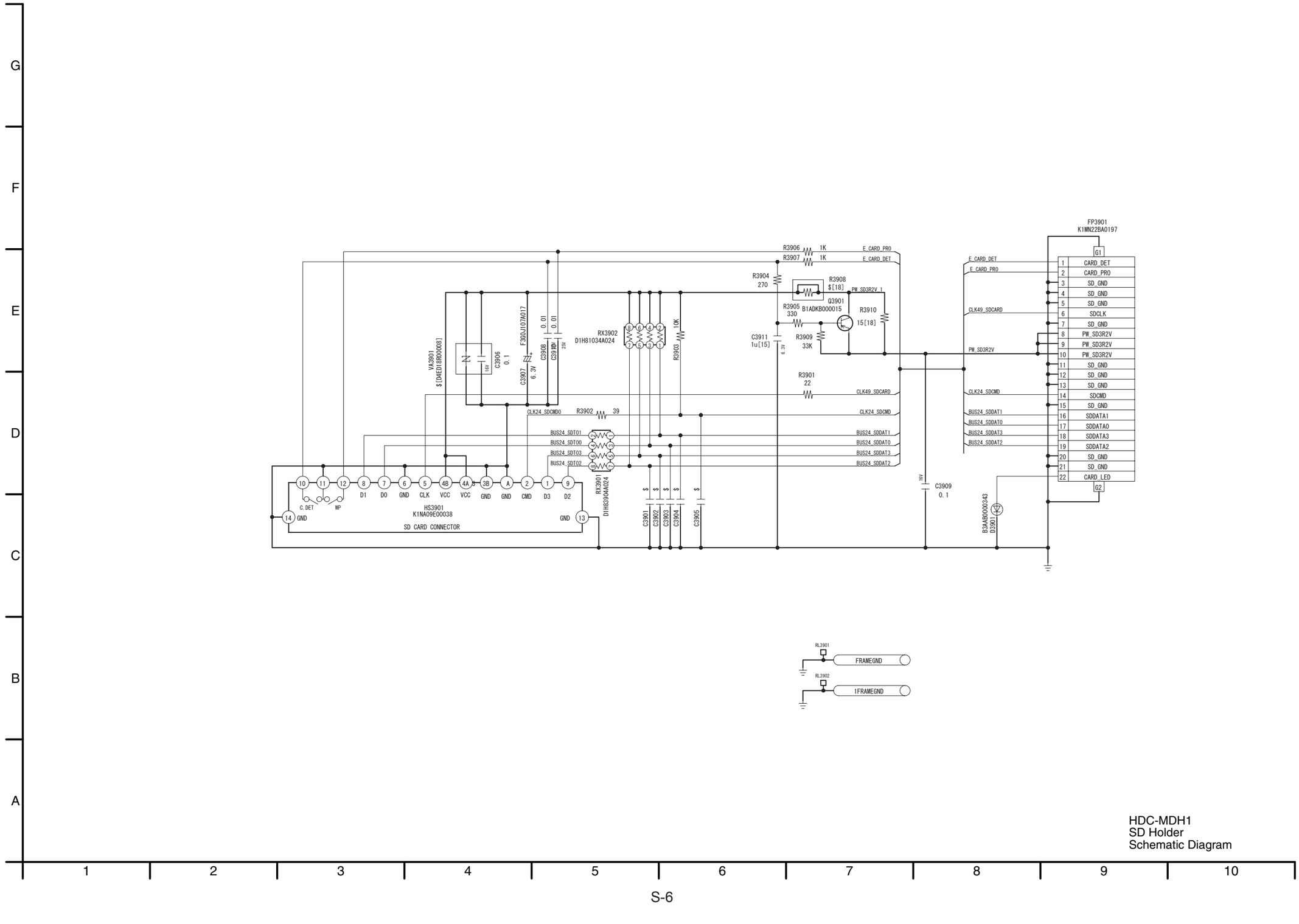
HDC-MDH1 INTERCONNECTION DIAGRAM

S4.2. EVF BL Schematic Diagram



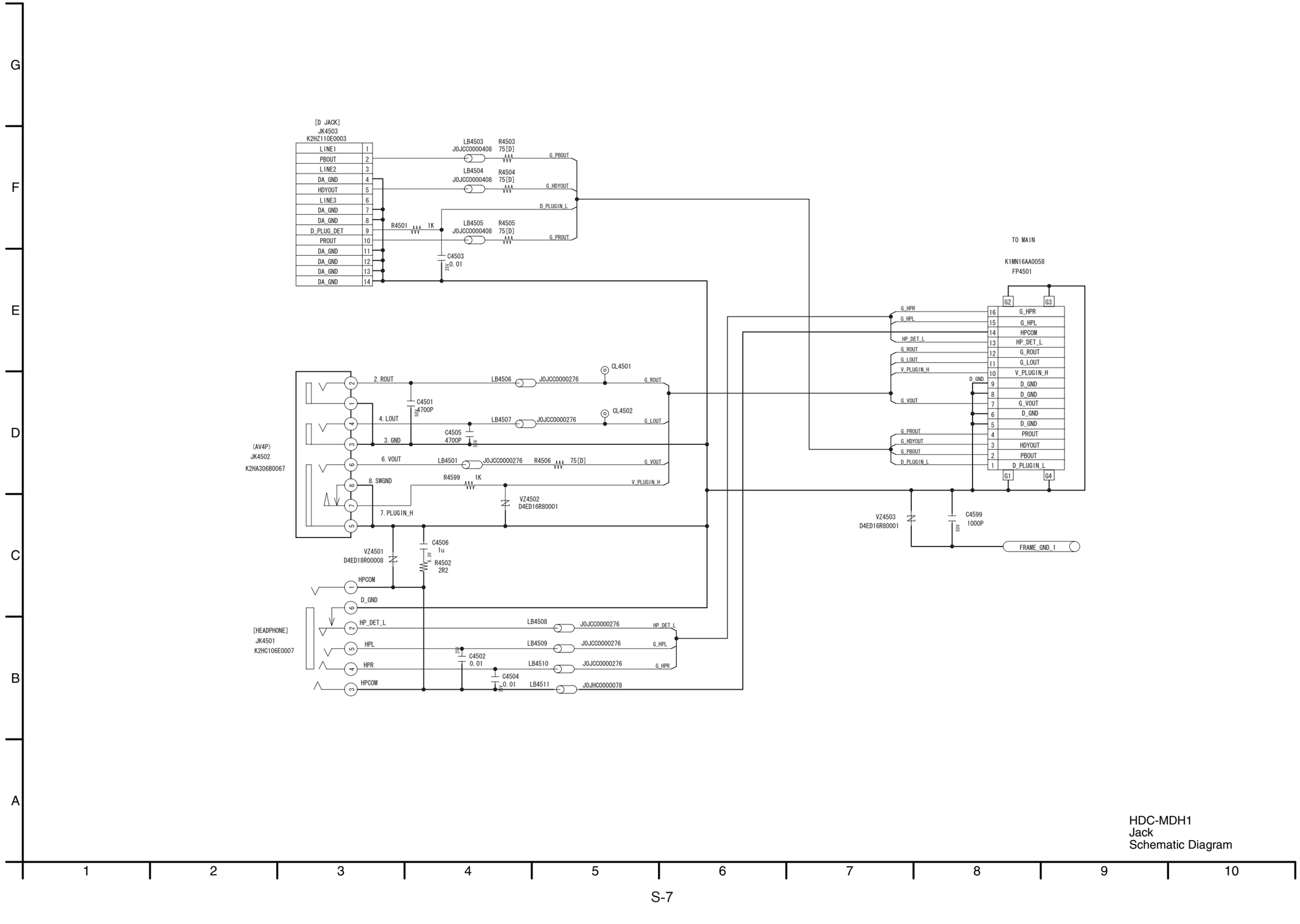
HDC-MDH1
EVF BL
Schematic Diagram

S4.3. SD Holder Schematic Diagram



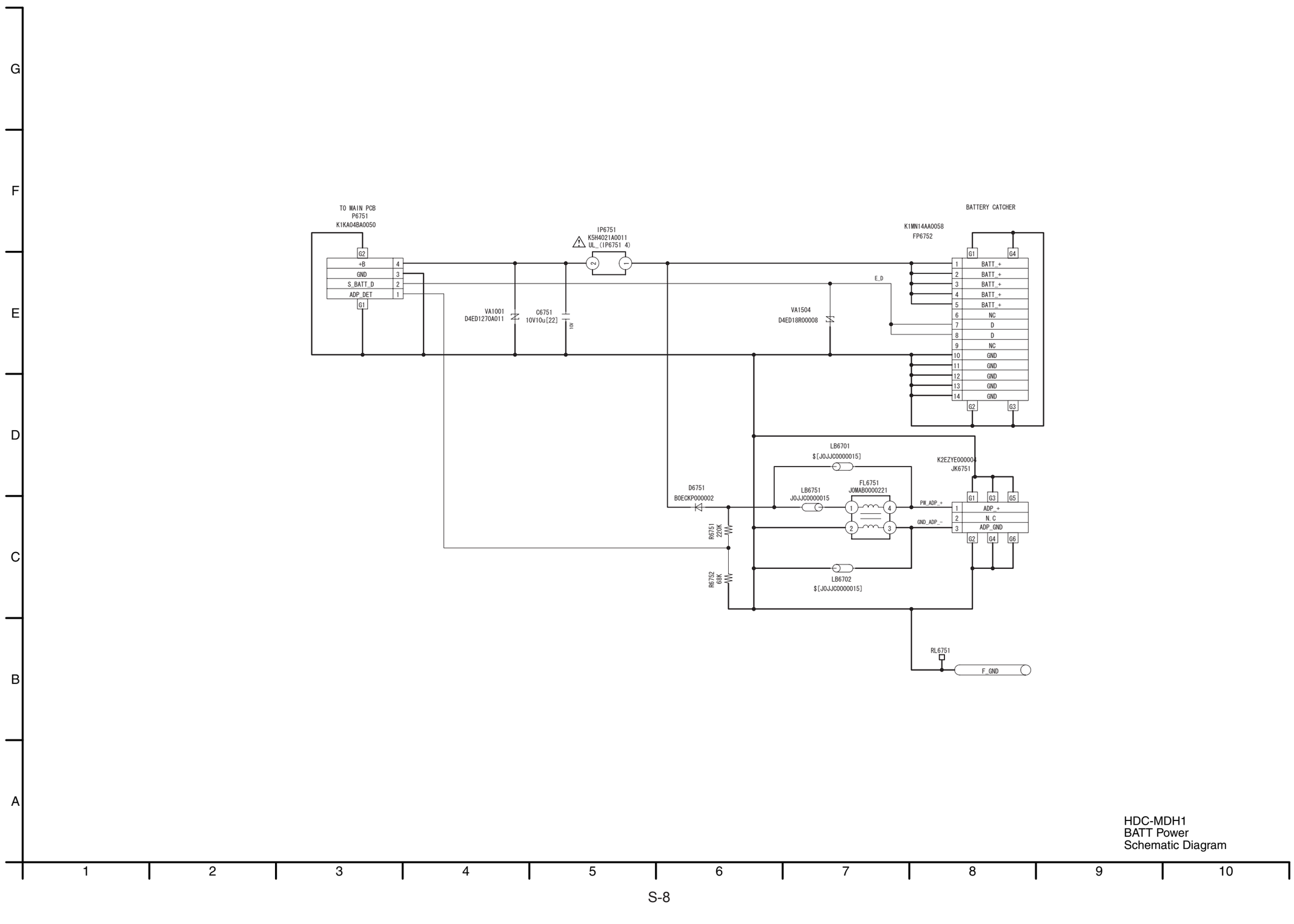
HDC-MDH1
SD Holder
Schematic Diagram

S4.4. Jack Schematic Diagram



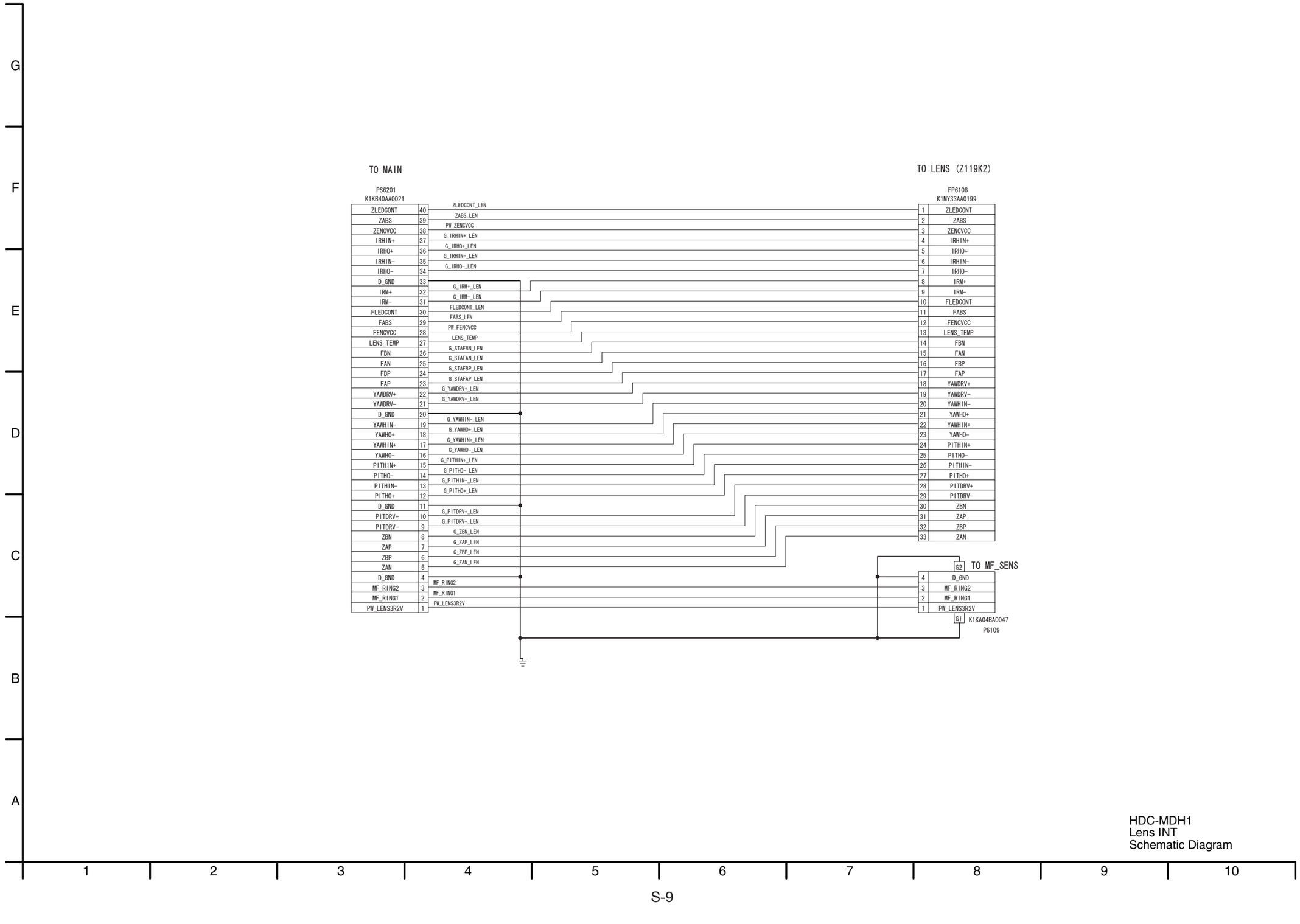
HDC-MDH1
Jack
Schematic Diagram

S4.5. BATT Power Schematic Diagram

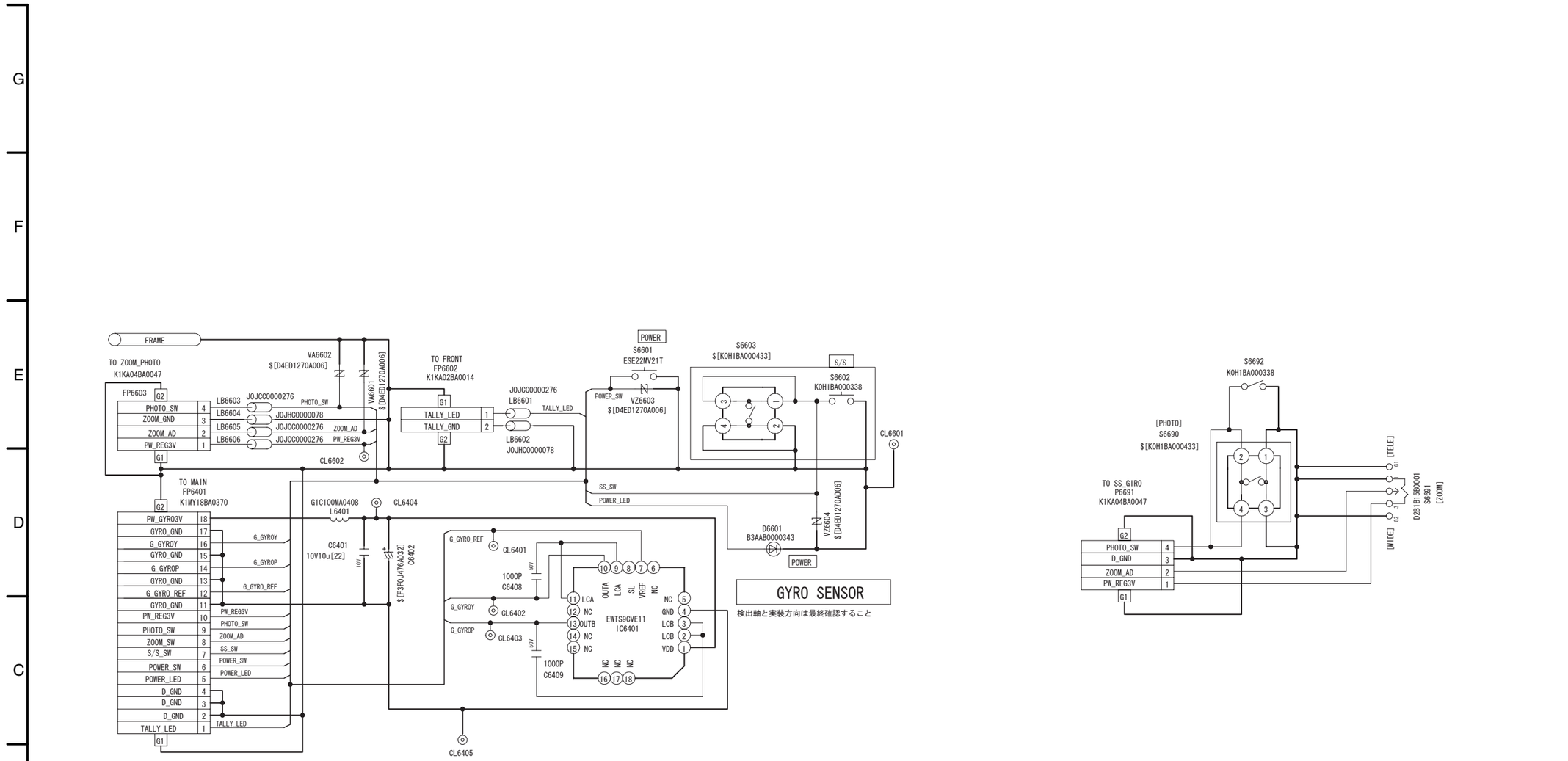


HDC-MDH1
BATT Power
Schematic Diagram

S4.6. Lens INT Schematic Diagram



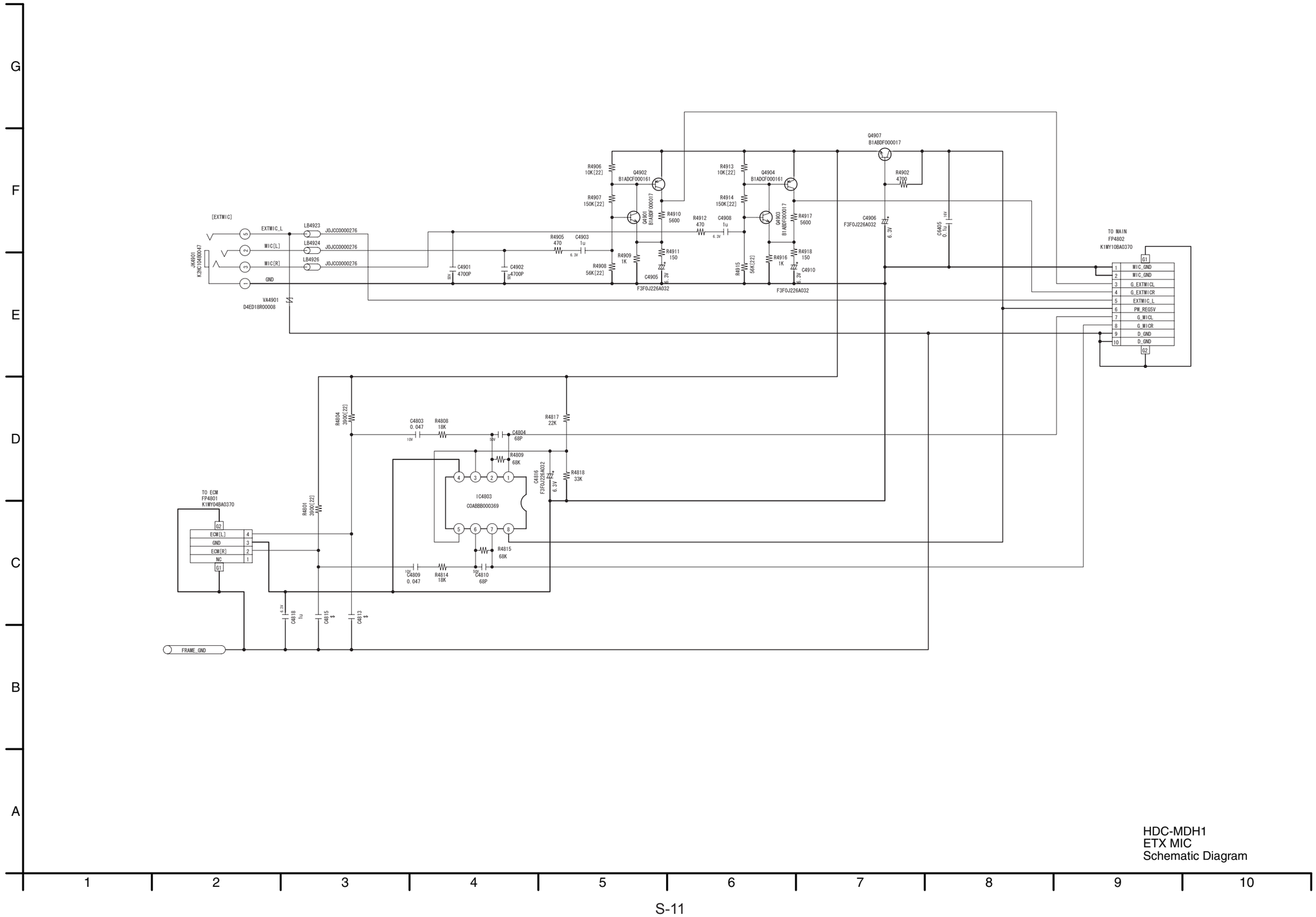
S4.7. SS Gyro Schematic Diagram / S4.8. Zoom Photo Schematic Diagram



HDC-MDH1
SS Gyro
Schematic Diagram

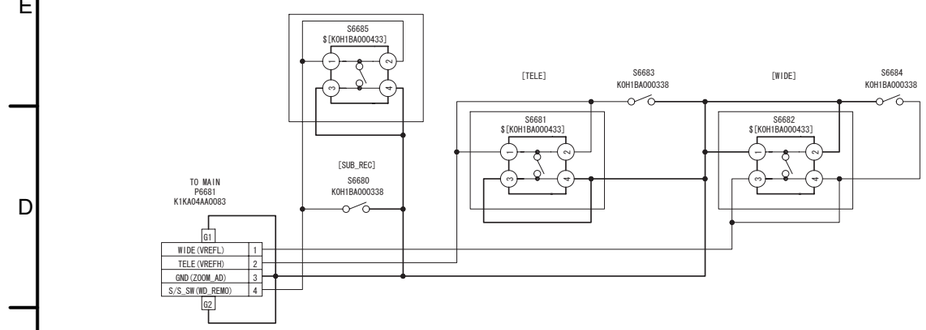
HDC-MDH1
Zoom Photo
Schematic Diagram

S4.9. EXT MIC Schematic Diagram

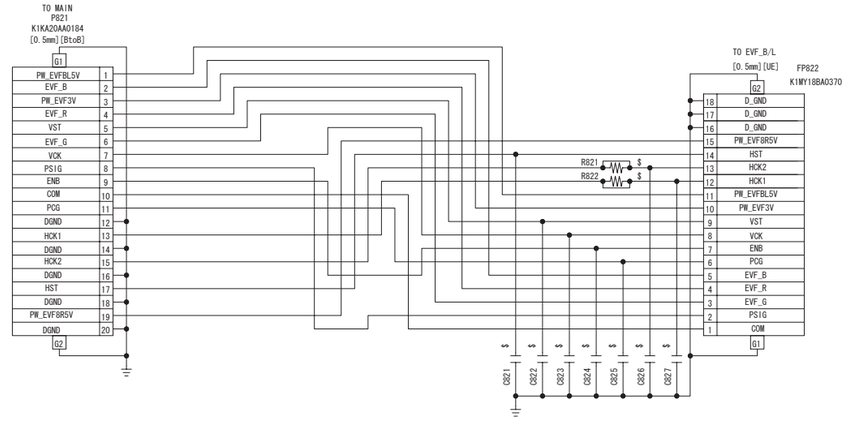


HDC-MDH1
ETX MIC
Schematic Diagram

S4.10. Handle Zoom Schematic Diagram / S4.11. EVF INT Schematic Diagram

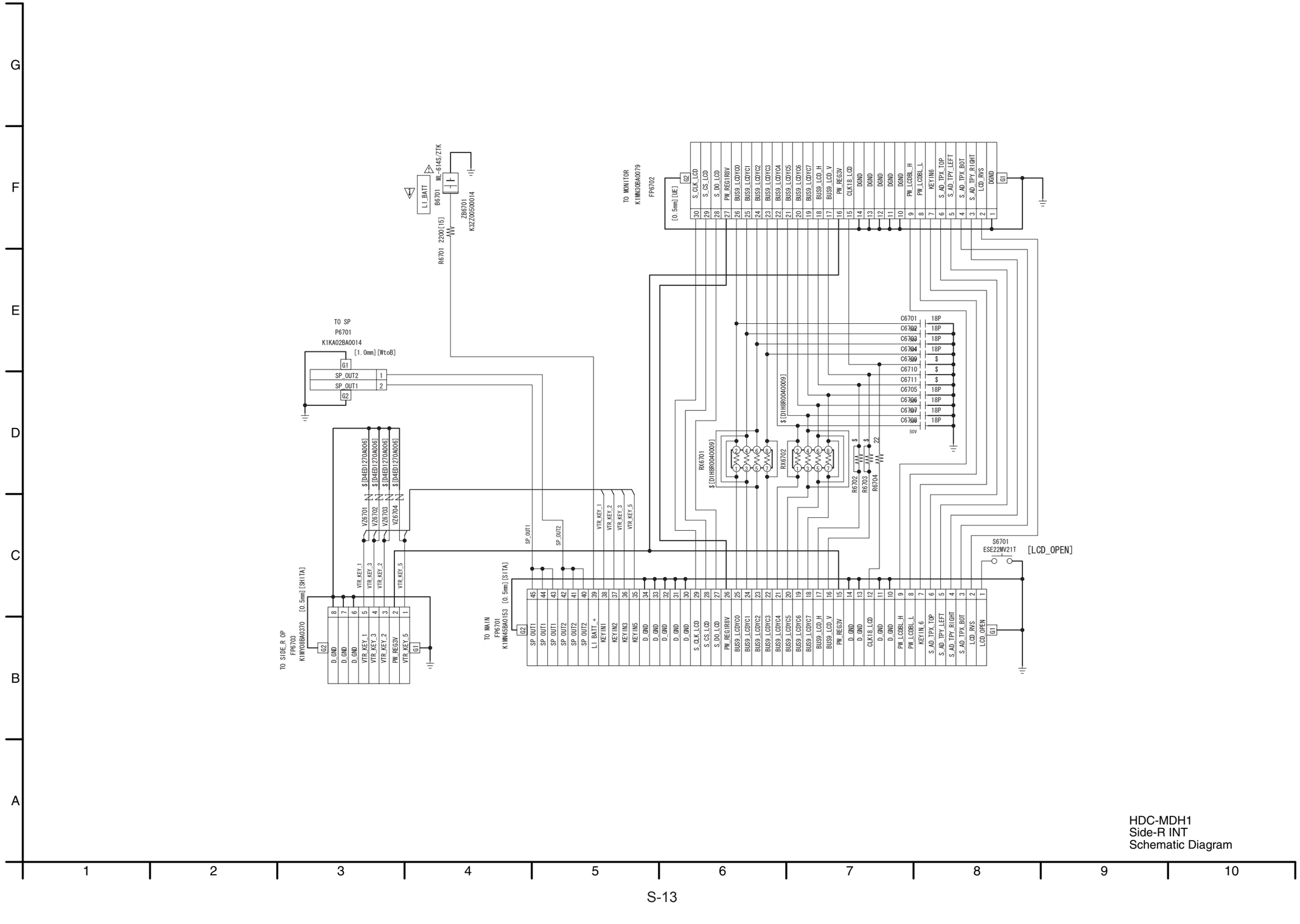


HDC-MDH1
Handle Zoom
Schematic Diagram



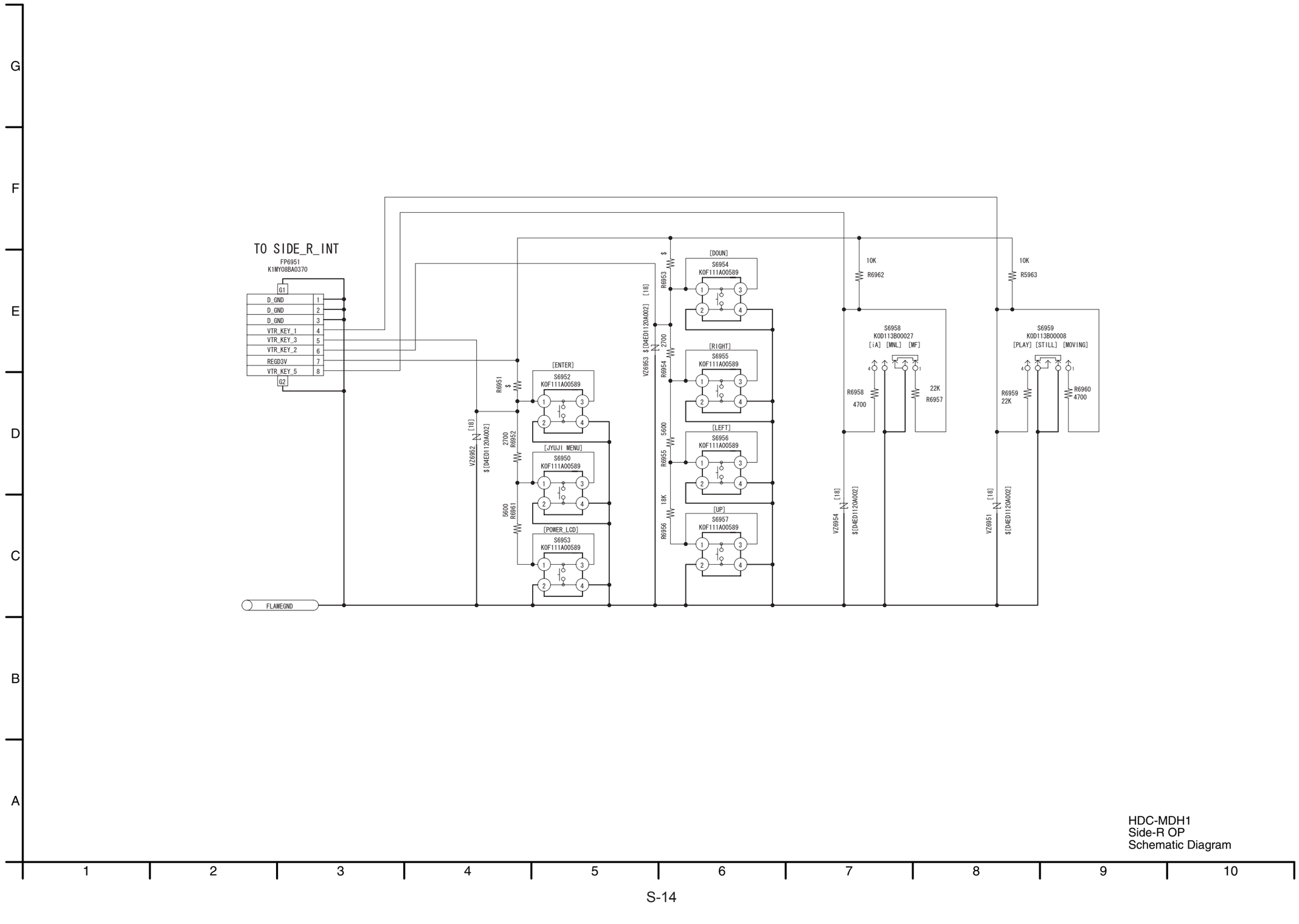
HDC-MDH1
EVF INT
Schematic Diagram

S4.12. Side-R INT Schematic Diagram



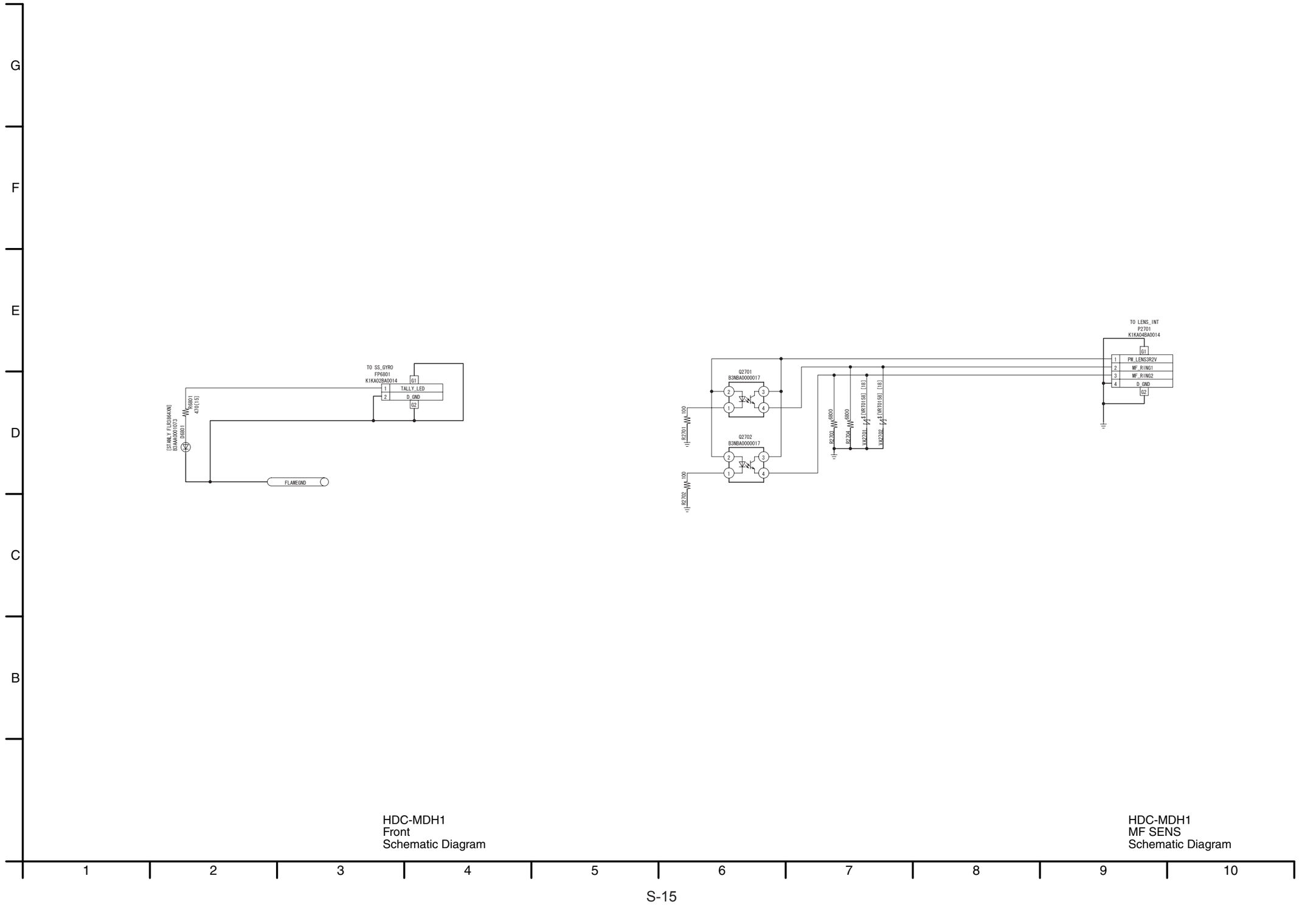
HDC-MDH1
Side-R INT
Schematic Diagram

S4.13. Side-R OP Schematic Diagram



HDC-MDH1
Side-R OP
Schematic Diagram

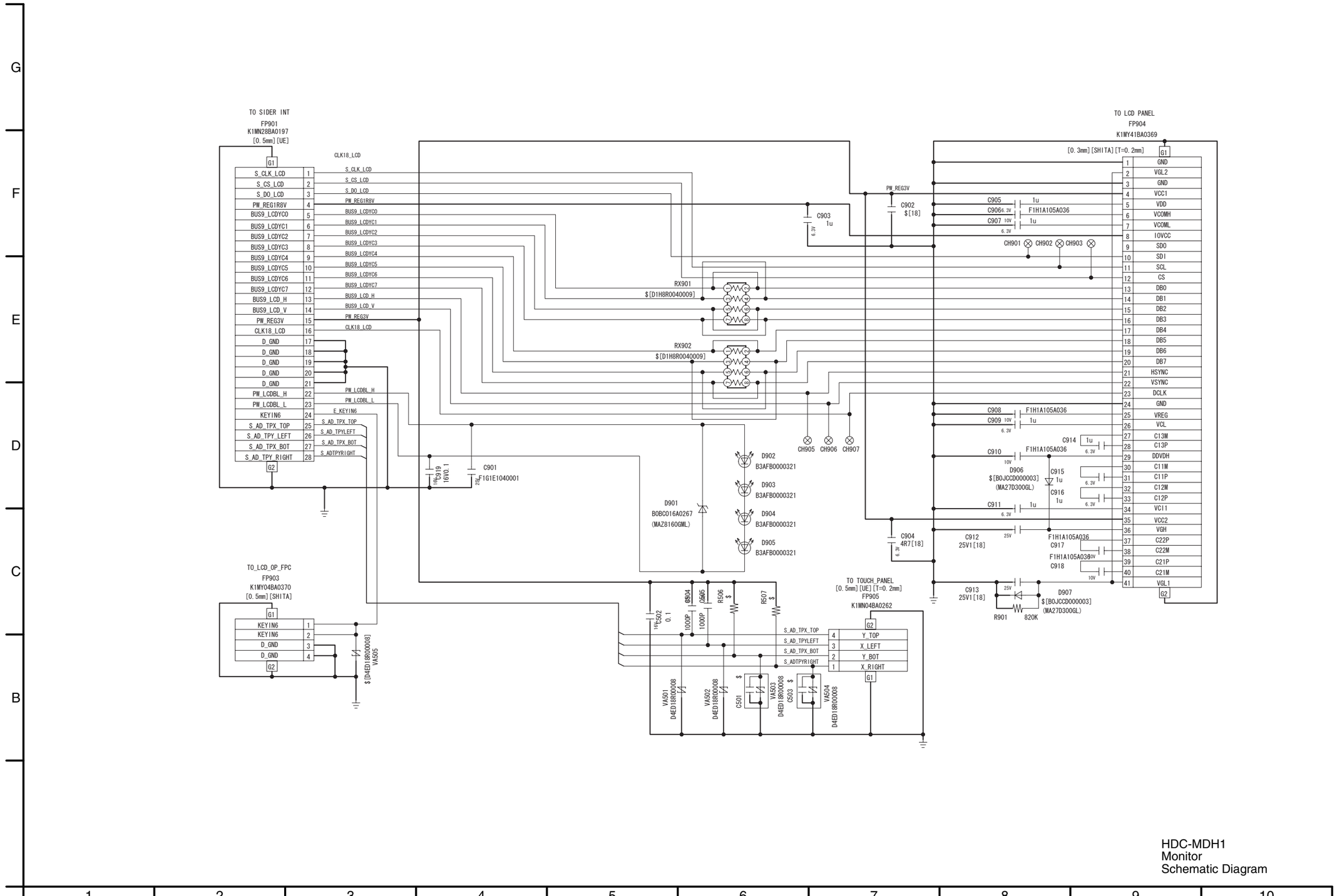
S4.14. Front Schematic Diagram / S4.15. MF SENS Schematic Diagram



HDC-MDH1
Front
Schematic Diagram

HDC-MDH1
MF SENS
Schematic Diagram

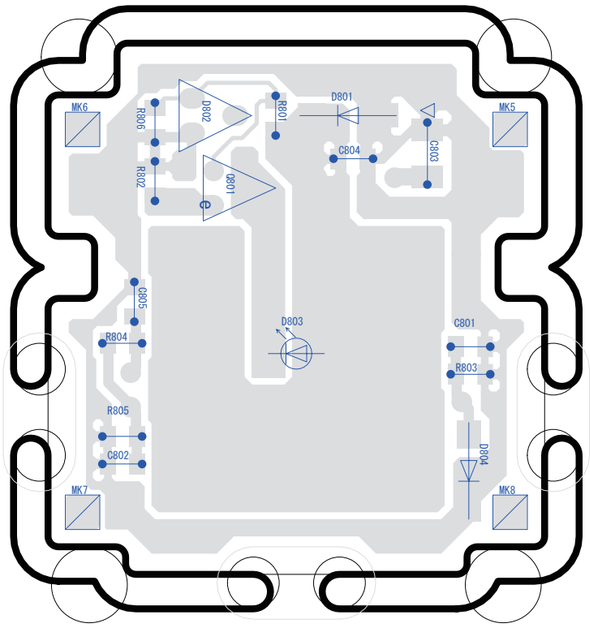
S4.16. Monitor Schematic Diagram



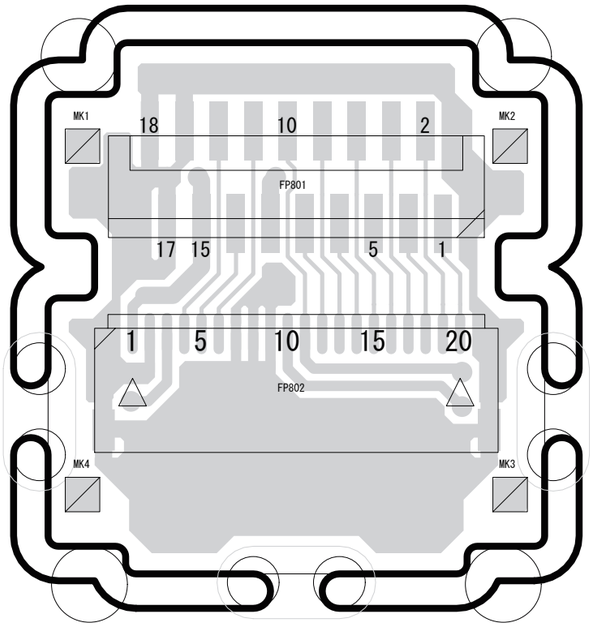
HDC-MDH1
Monitor
Schematic Diagram

S5. Print Circuit Board

S5.1. EVF BL P.C.B.



(Component Side)

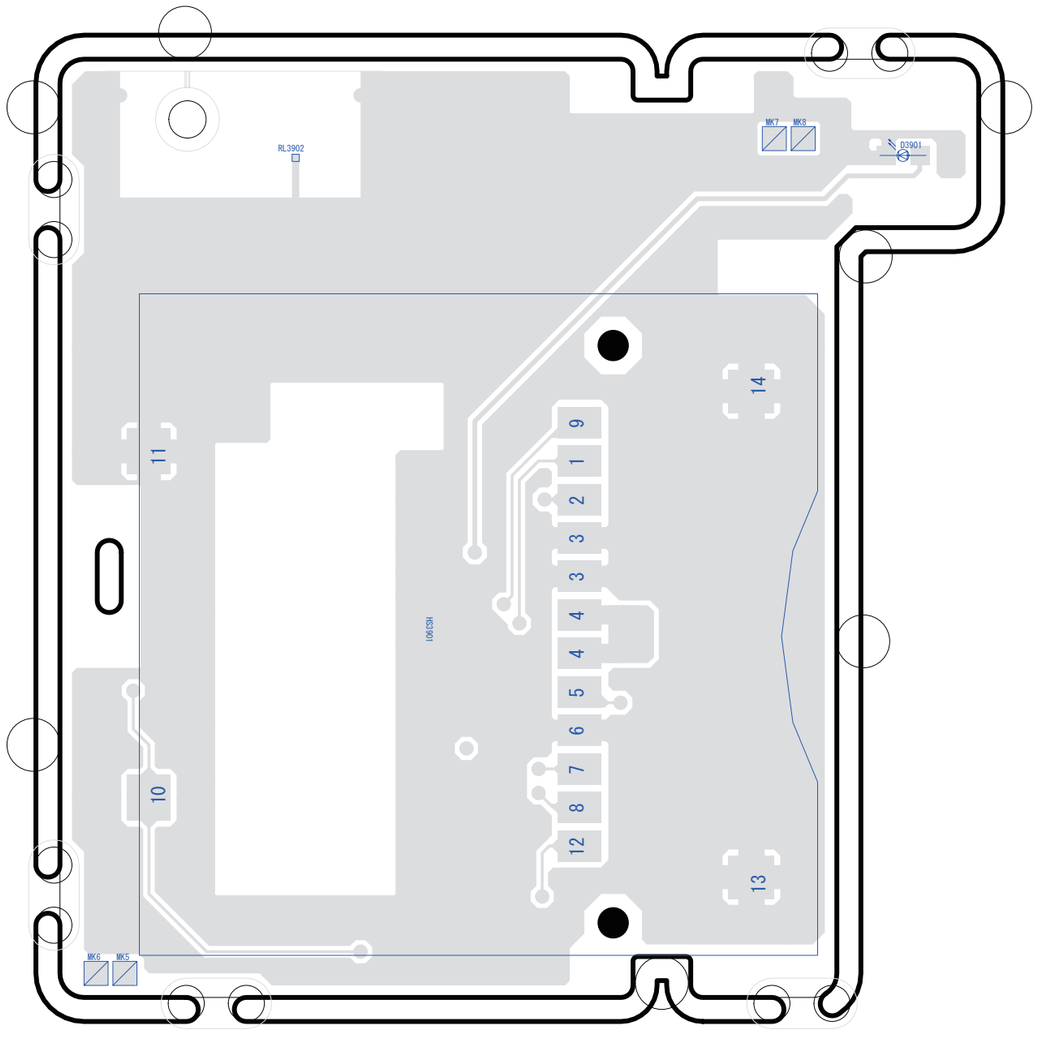


(Foil Side)

HDC-MDH1
EVF BL P.C.B.

S5.2. SD Holder P.C.B.

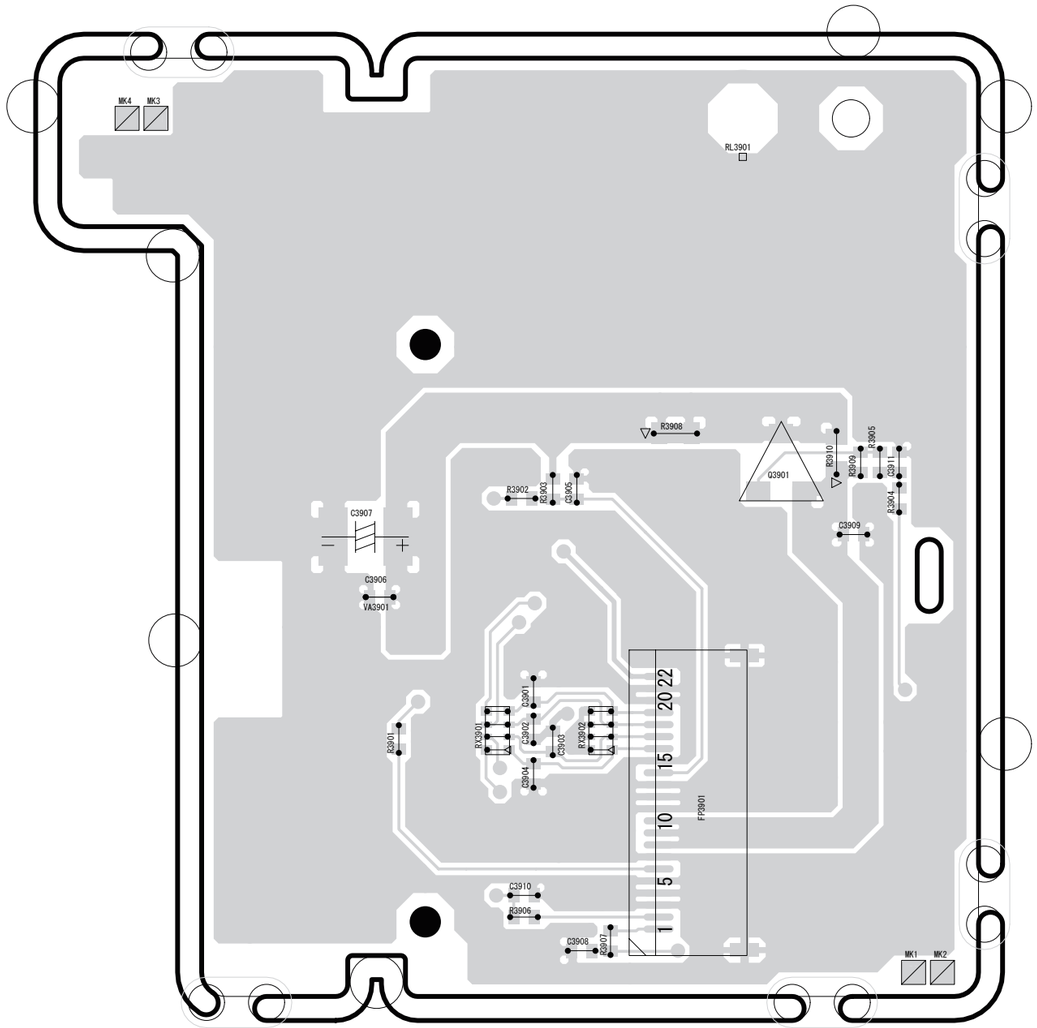
S5.2.1. SD Holder P.C.B. (Component Side)



(Component Side)

HDC-MDH1
SD Holder P.C.B.
(Component Side)

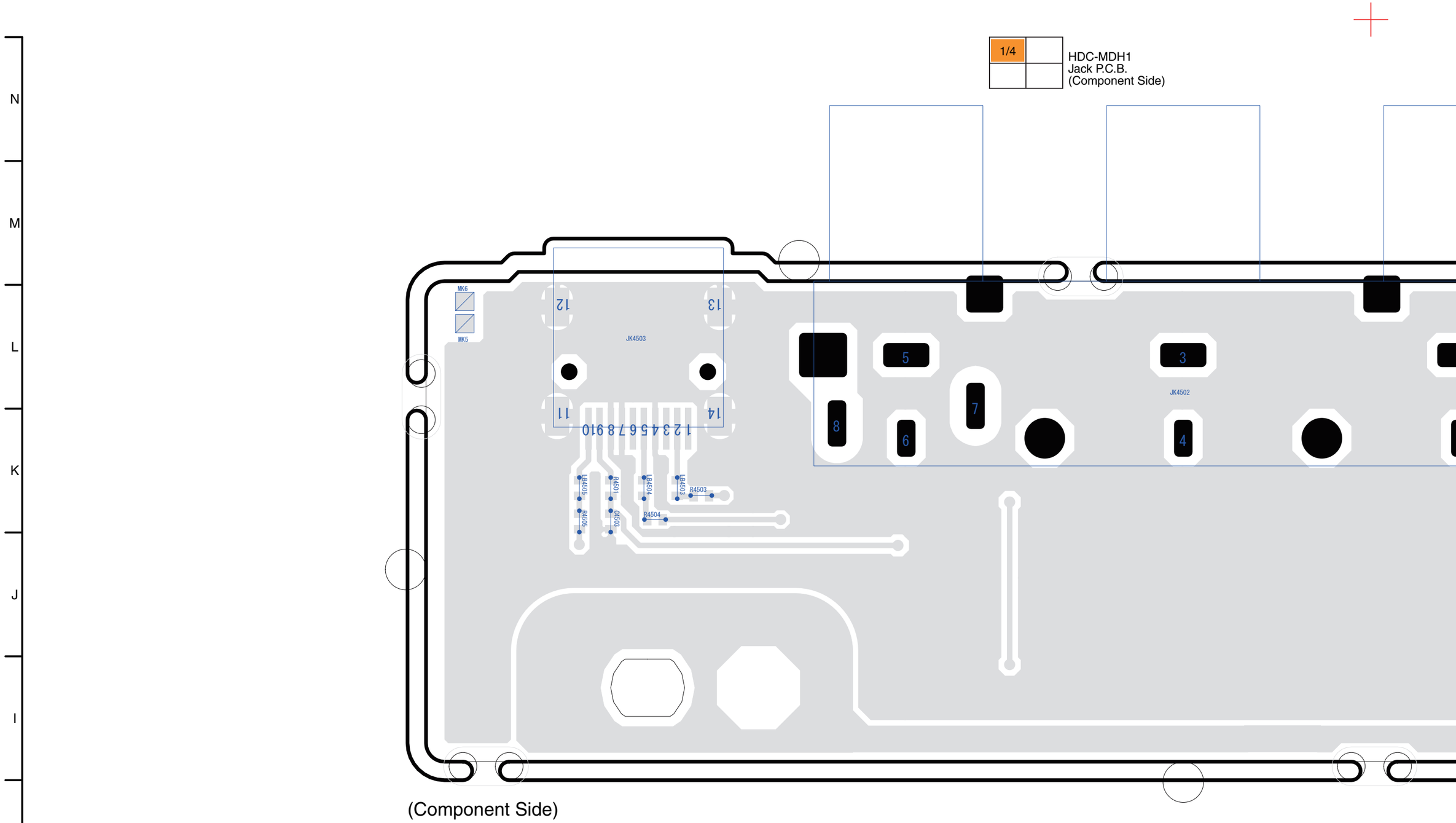
S5.2.2. SD Holder P.C.B. (Foil Side)



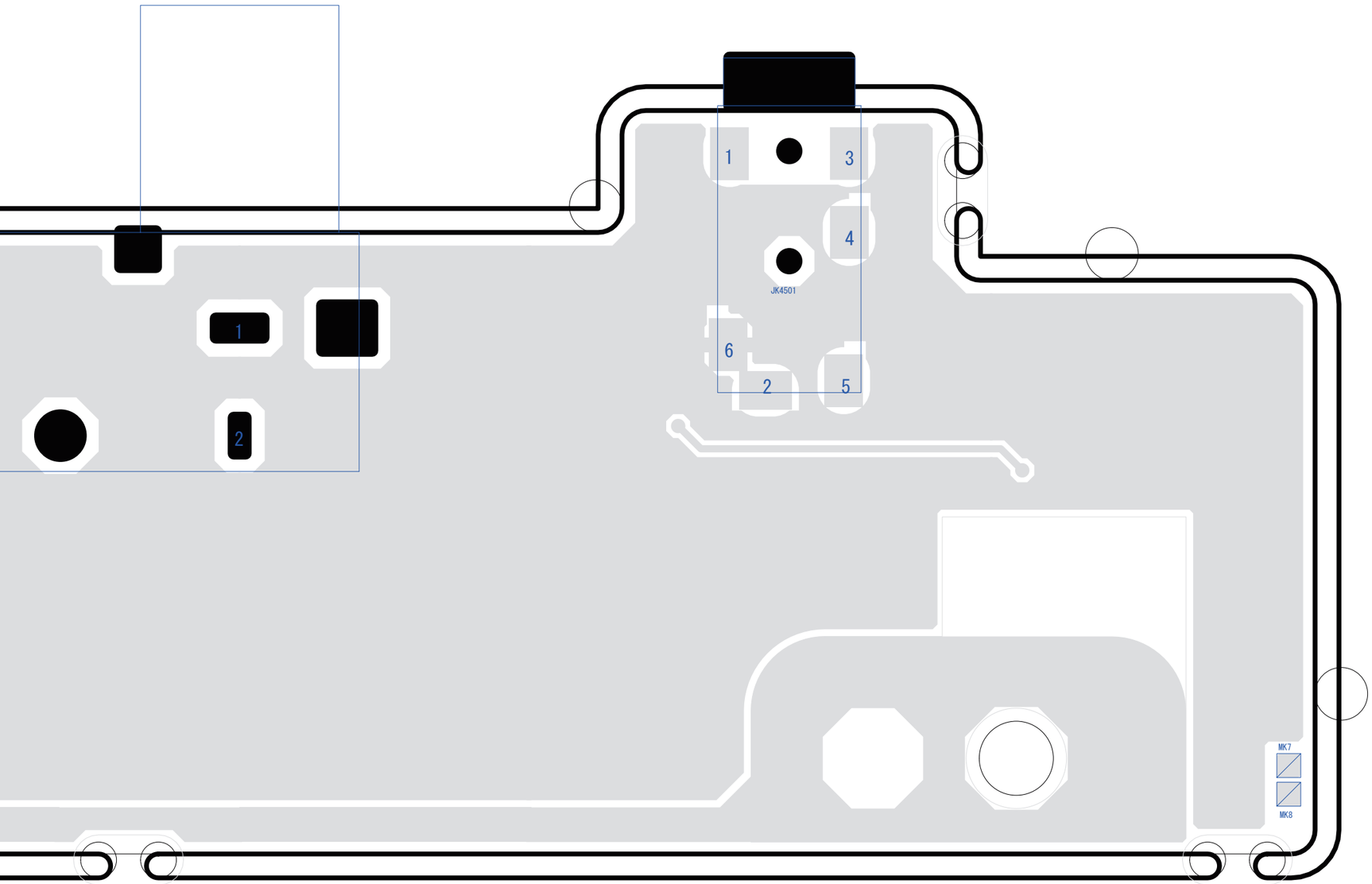
(Foil Side)

HDC-MDH1
SD Holder P.C.B.
(Foil Side)

S5.3. Jack P.C.B.



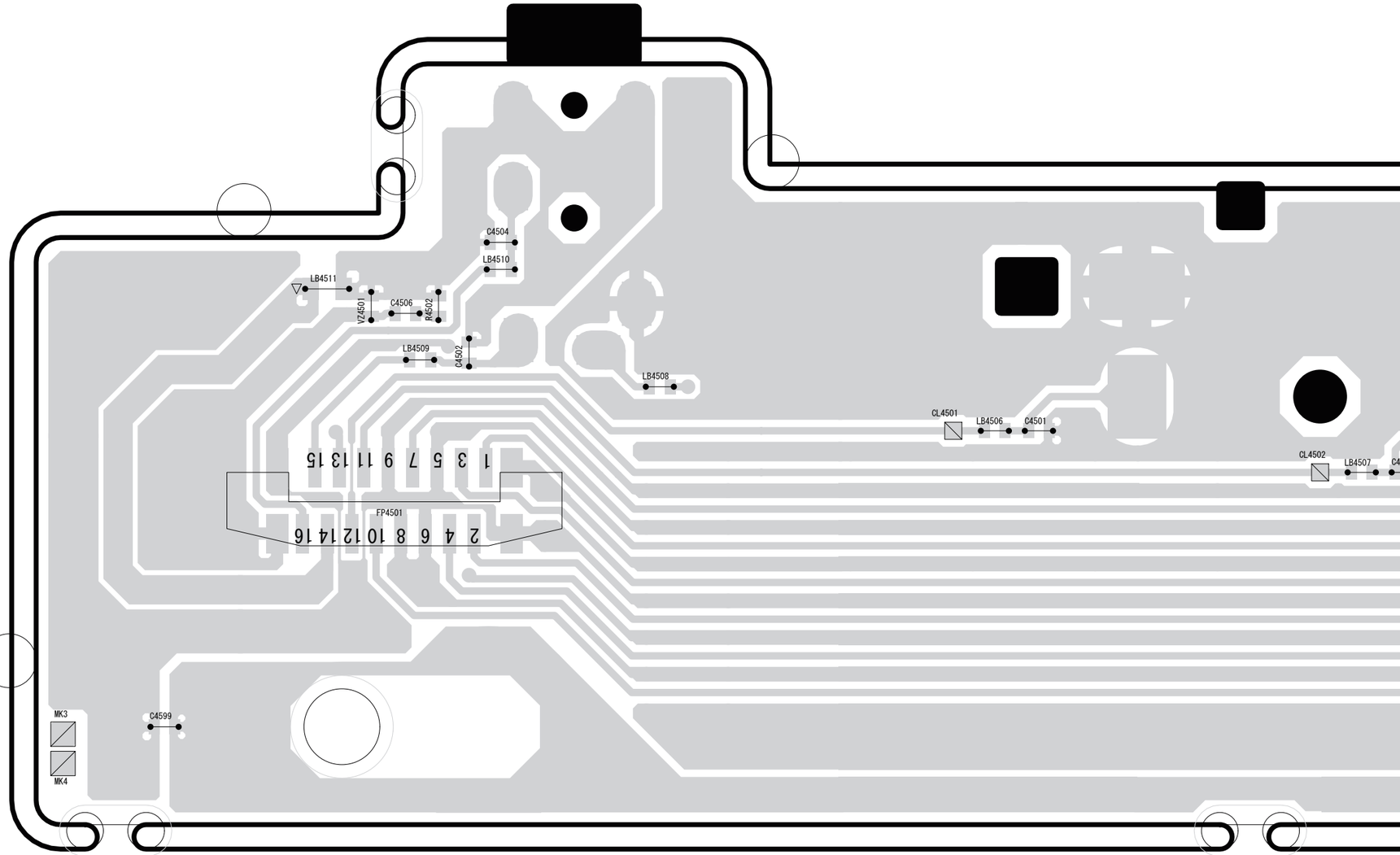
(Component Side)



2/4

HDC-MDH1
Jack P.C.B.
(Component Side)

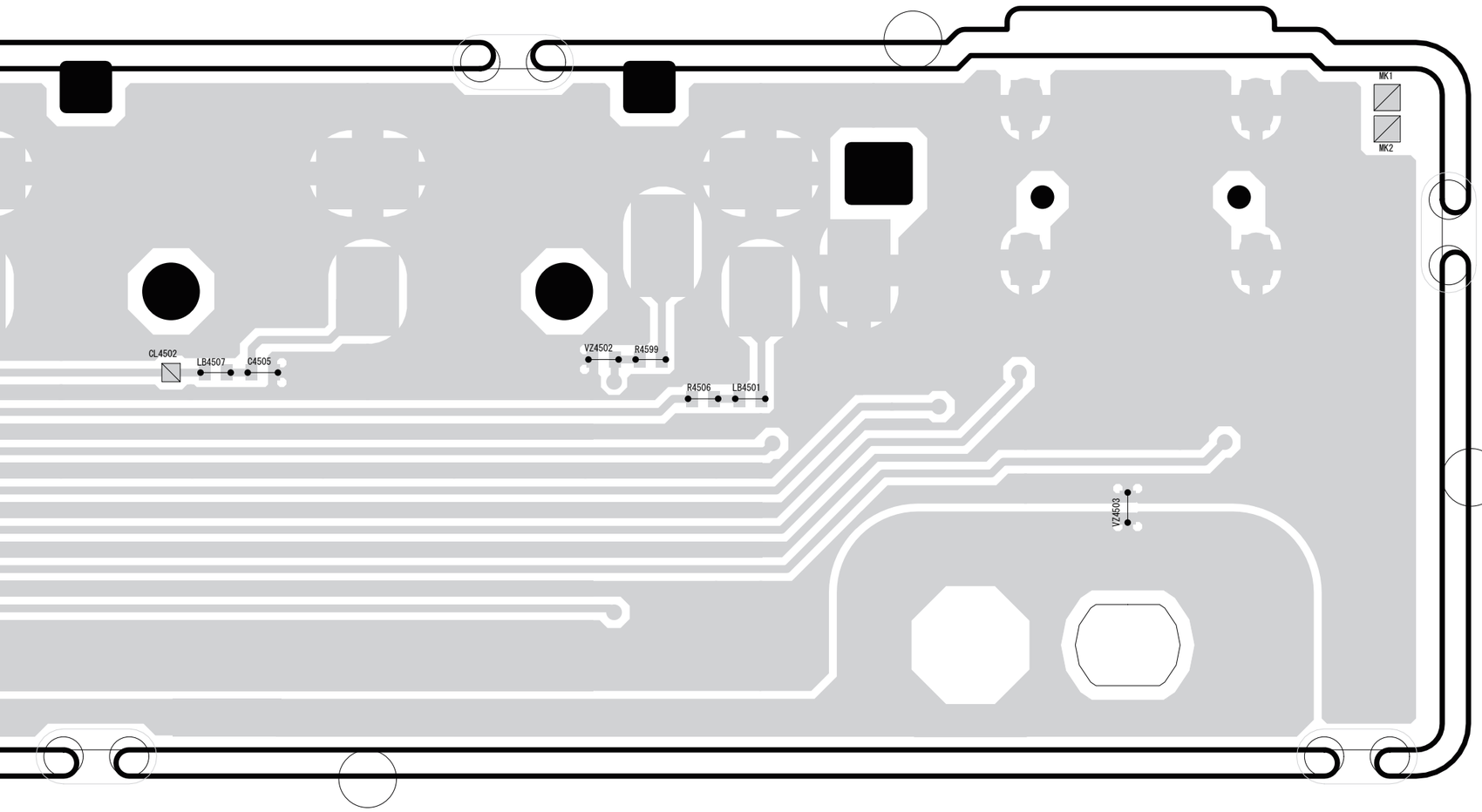
(Component Side)



(Foil Side)

HDC-MDH1
Jack P.C.B.
(Foil Side)

3/4

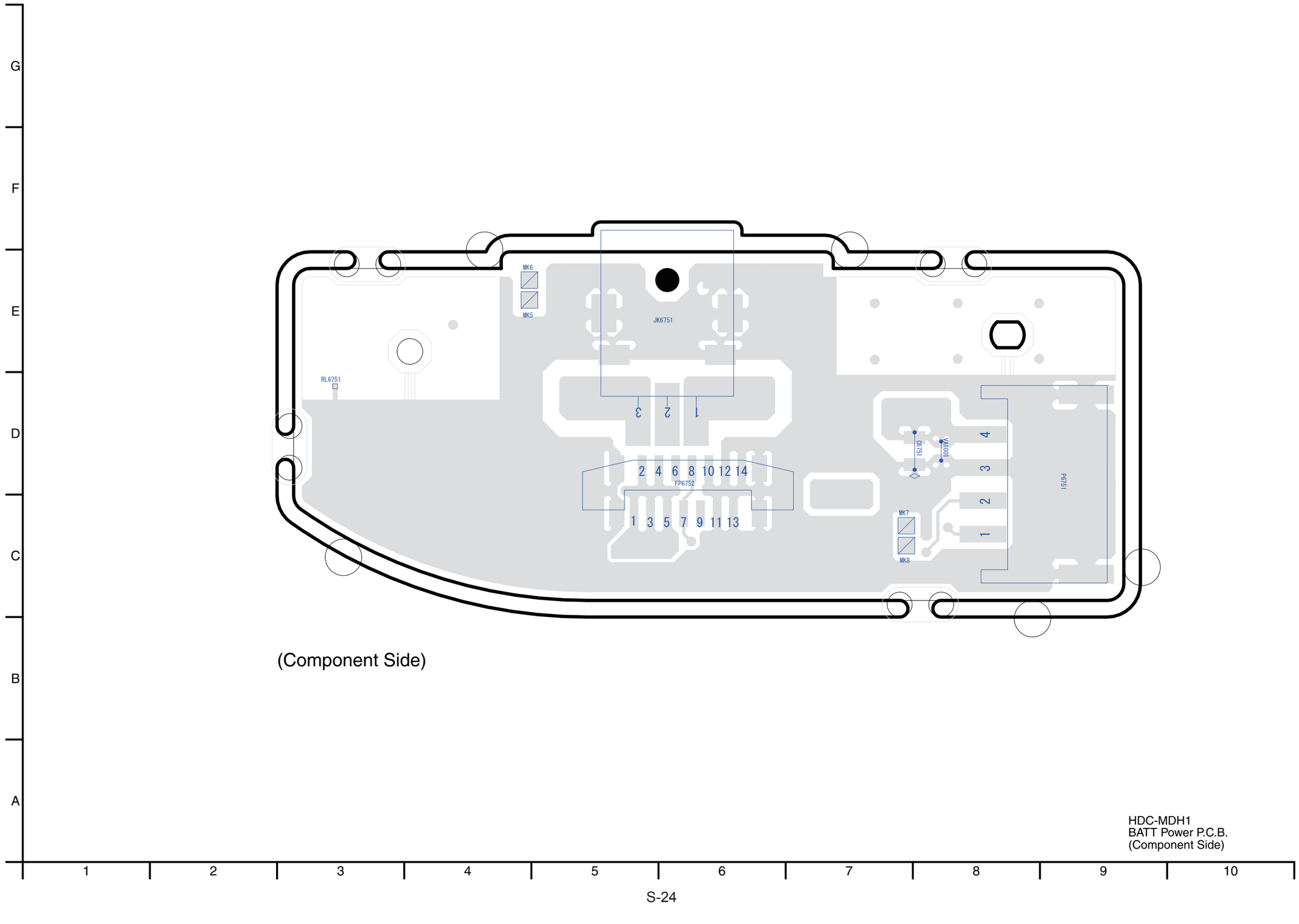


HDC-MDH1
Jack P.C.B.
(Foil Side)
4/4

11 12 13 14 15 16 17 18 19 20 21

S5.4. BATT Power P.C.B.

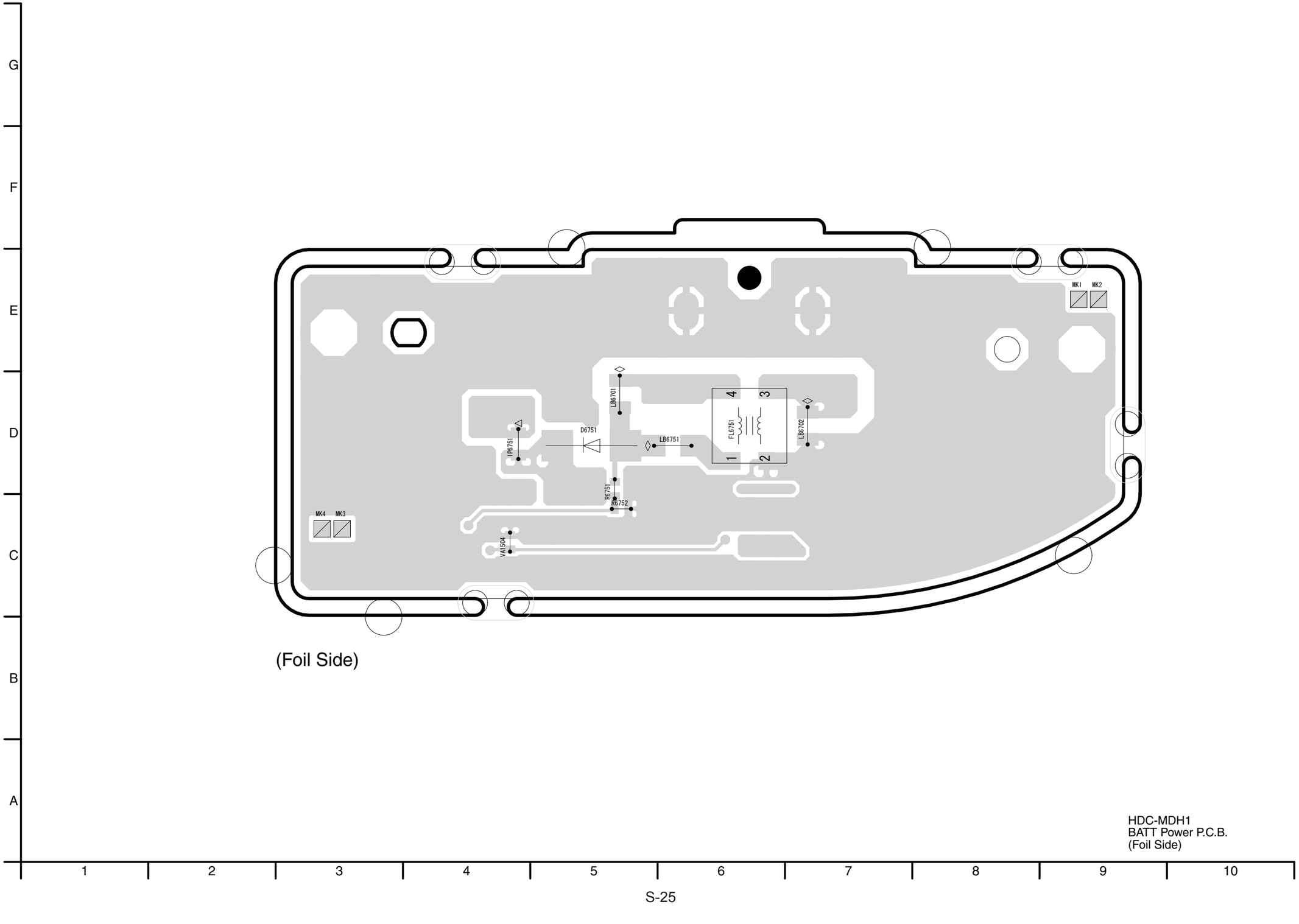
S5.4.1. BATT Power P.C.B. (Component Side)



(Component Side)

HDC-MDH1
BATT Power P.C.B.
(Component Side)

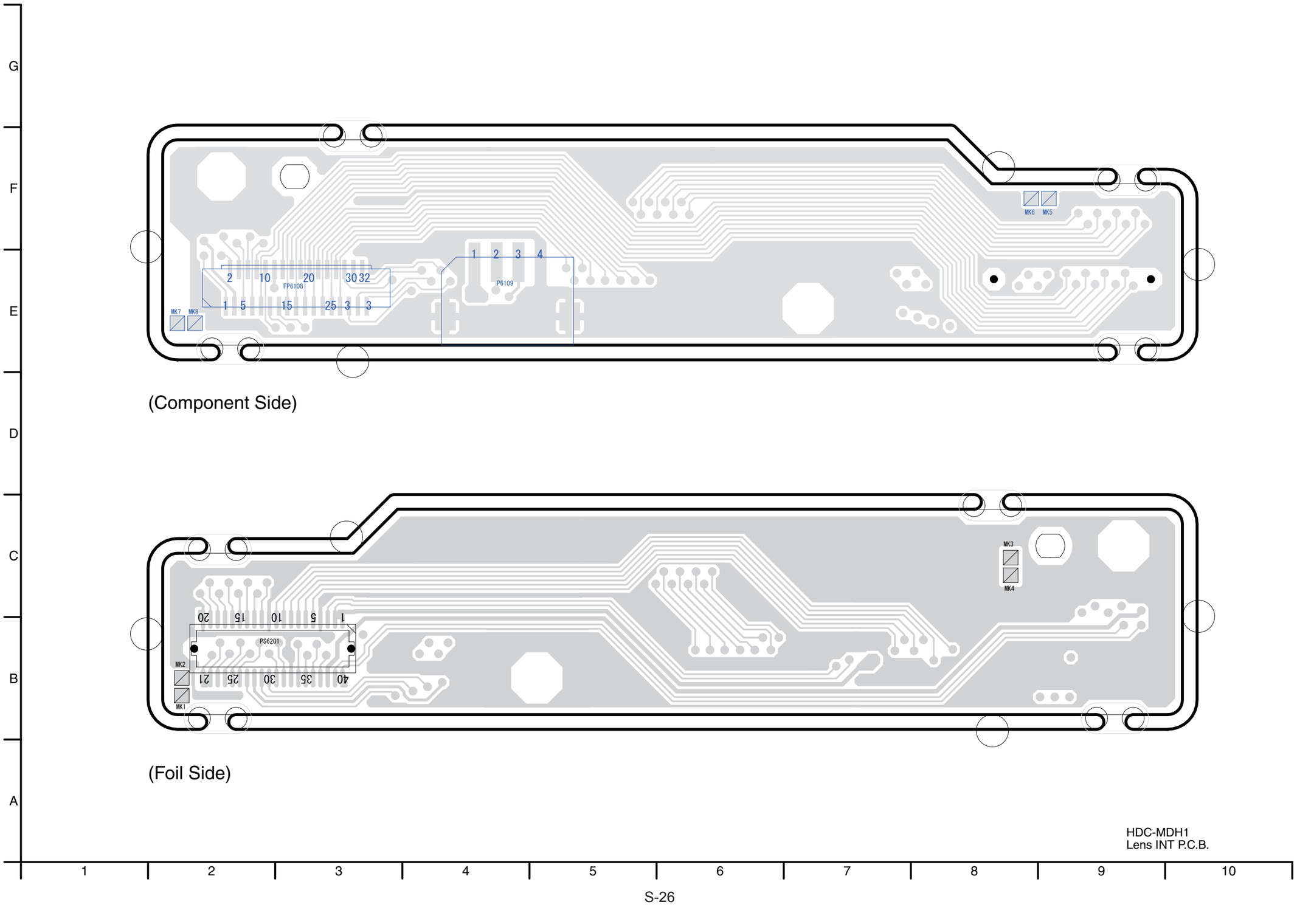
S5.4.2. BATT Power P.C.B. (Foil Side)



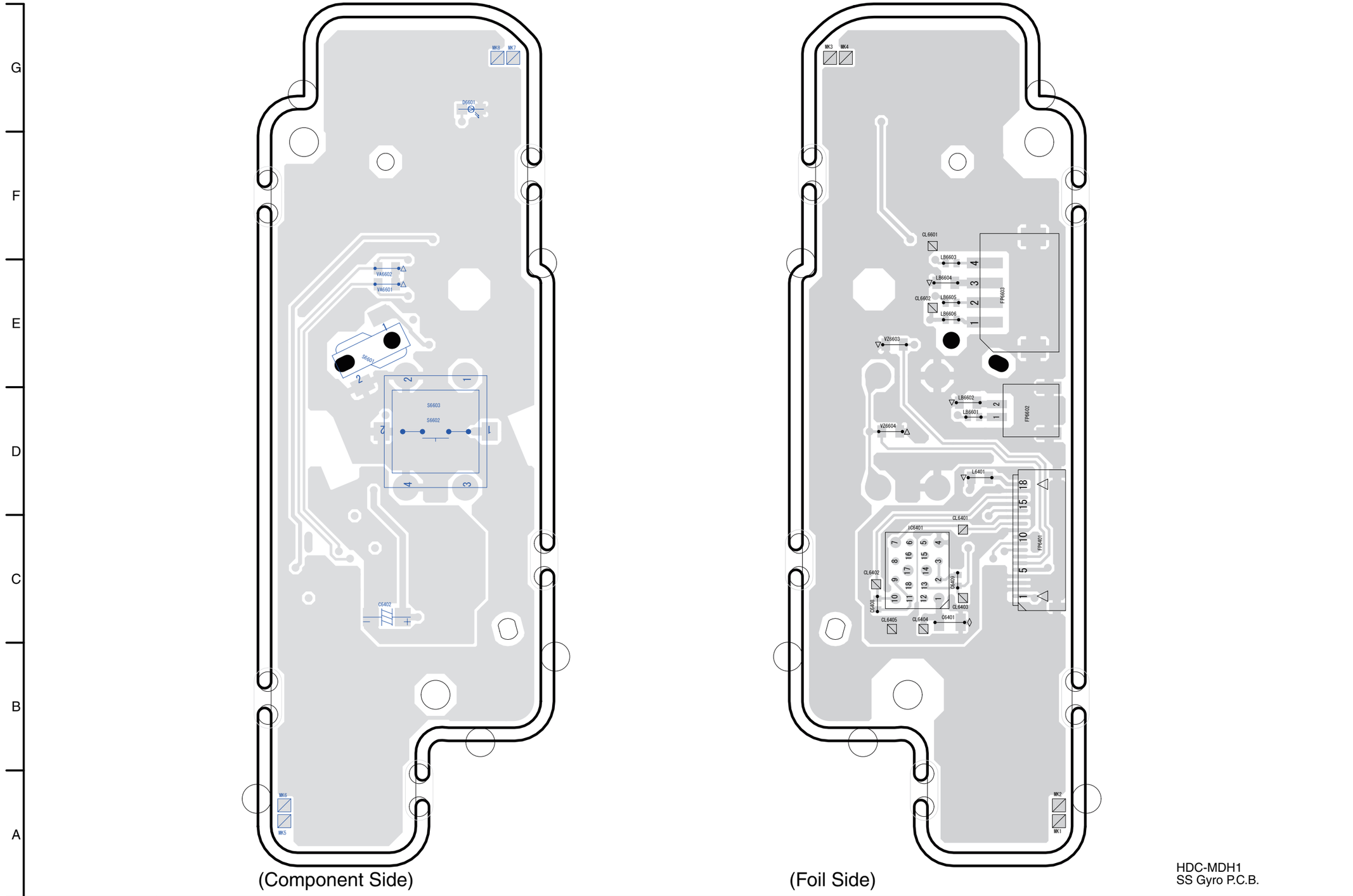
(Foil Side)

HDC-MDH1
BATT Power P.C.B.
(Foil Side)

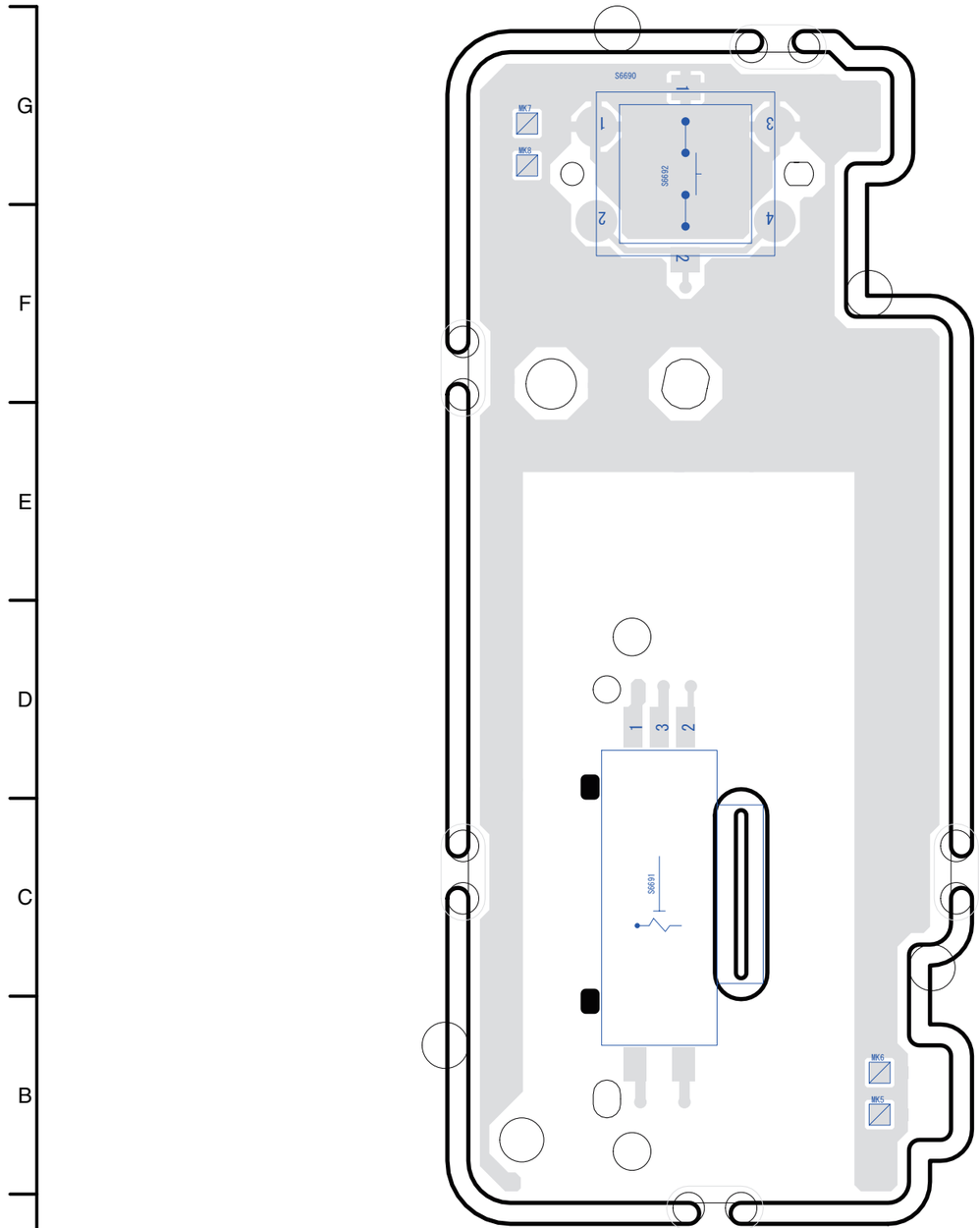
S5.5. Lens INT P.C.B.



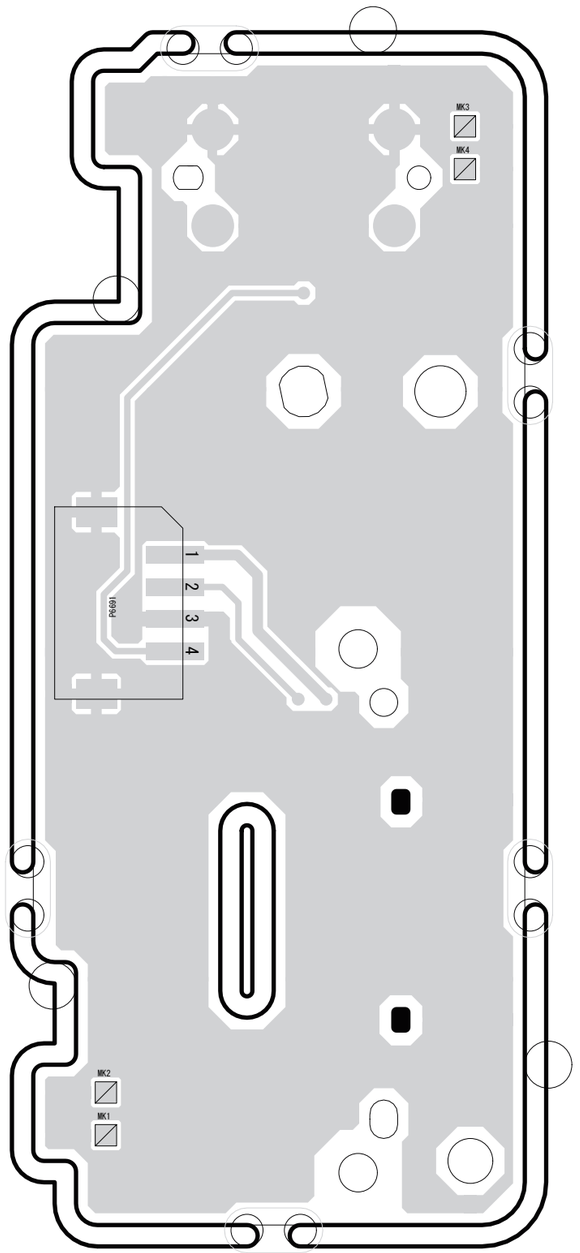
S5.6. SS Gyro P.C.B.



S5.7. Zoom Photo P.C.B.



(Component Side)



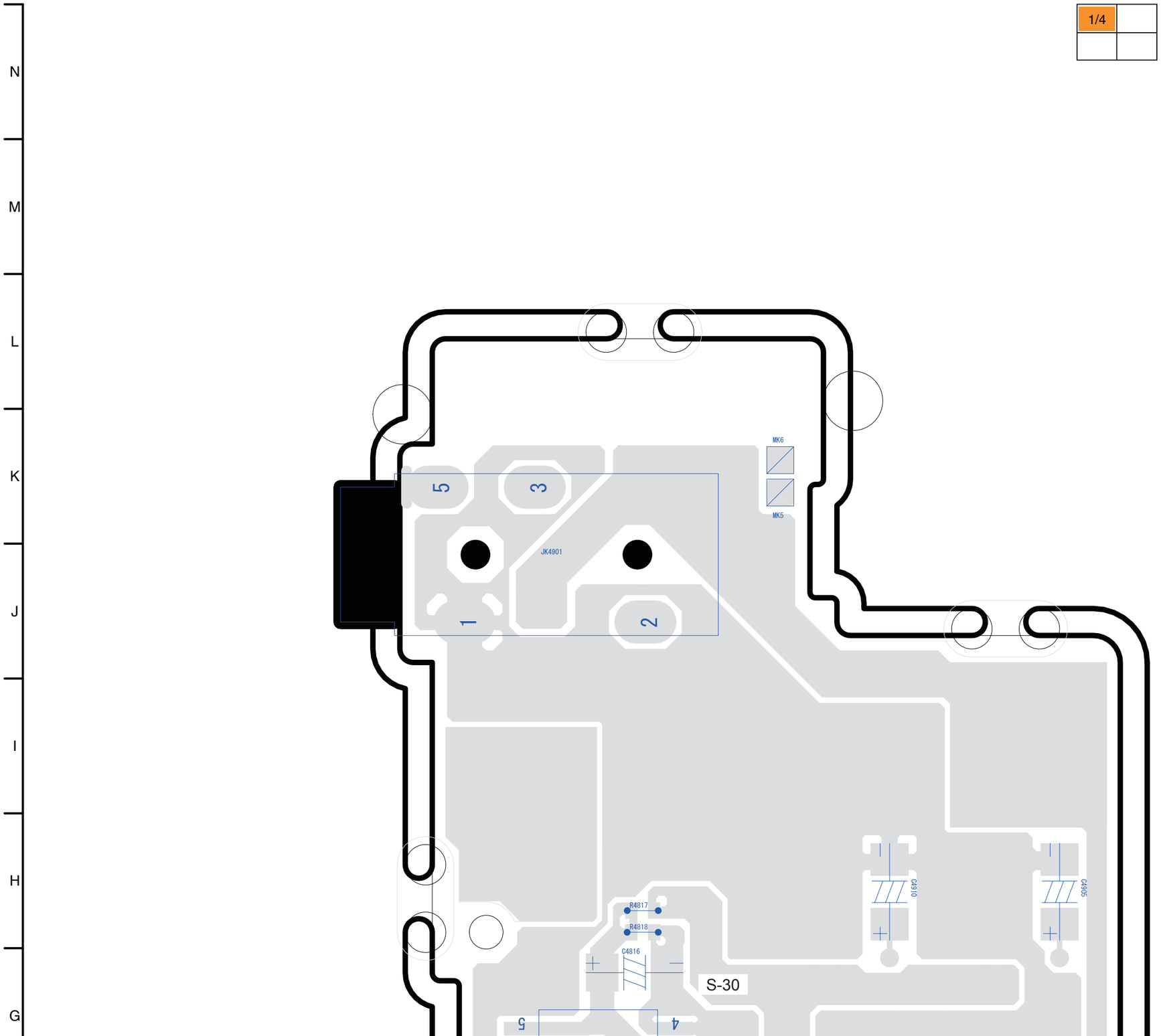
(Foil Side)

HDC-MDH1
Zoom Photo P.C.B.

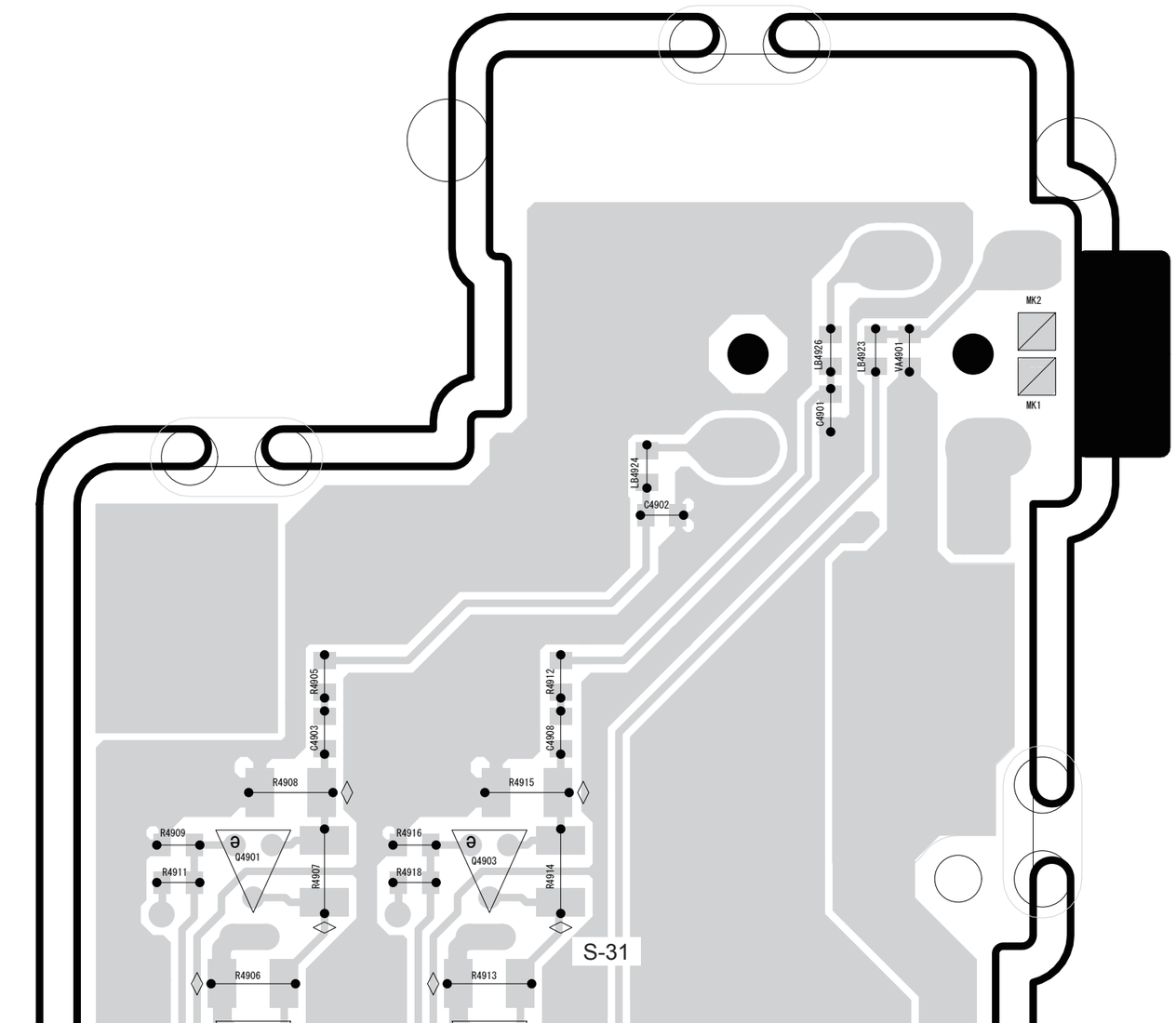
S5.8. EXT MIC P.C.B.

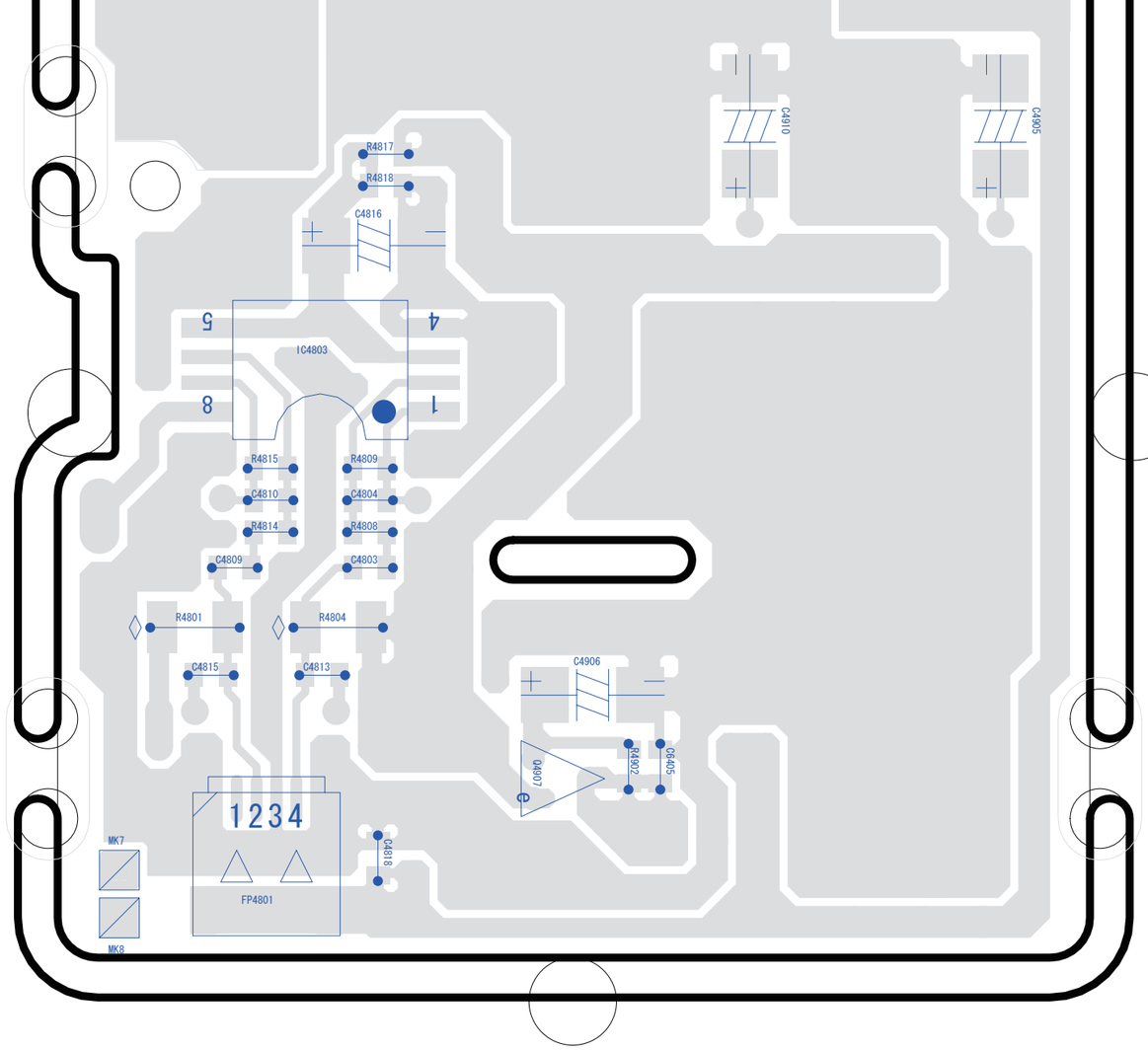
1/4	

HDC-MDH1
EXT MIC P.C.B.
(Component Side)



HDC-MDH1
EXT MIC P.C.B.
(Foil Side)

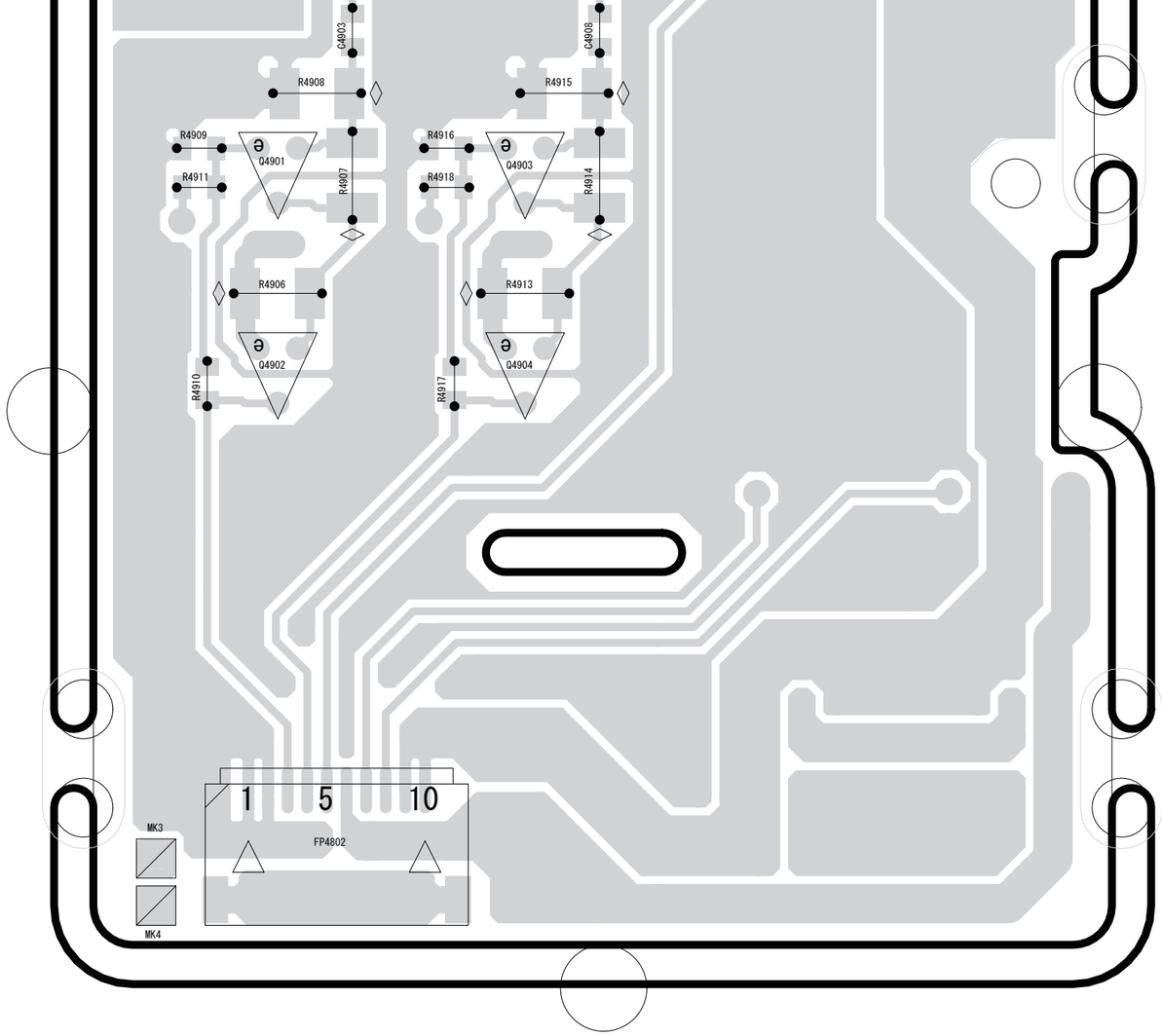




(Component Side)

3/4	

HDC-MDH1
EXT MIC P.C.B.
(Component Side)

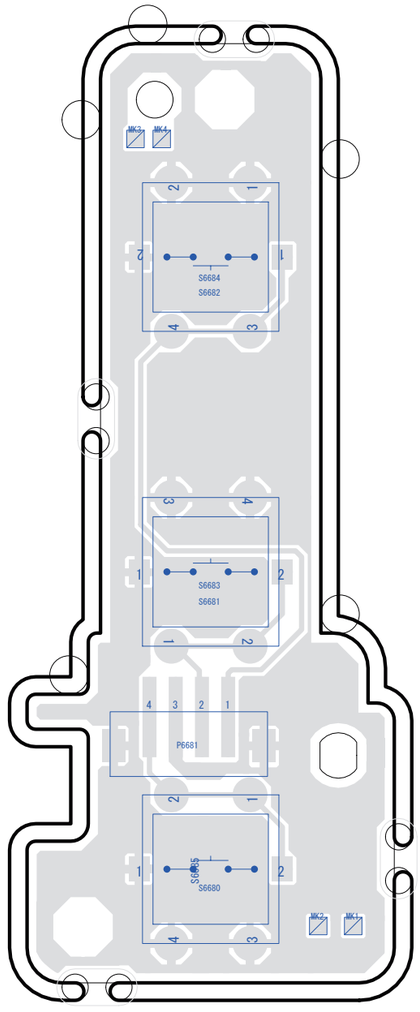


(Foil Side)

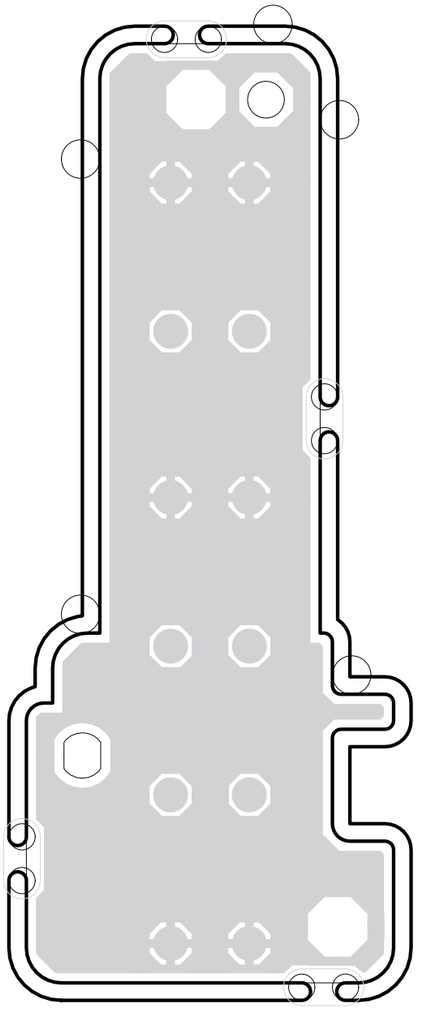
HDC-MDH1
EXT MIC P.C.B.
(Foil Side)
4/4

11 12 13 14 15 16 17 18 19 20 21

S5.9. Handle Zoom P.C.B.



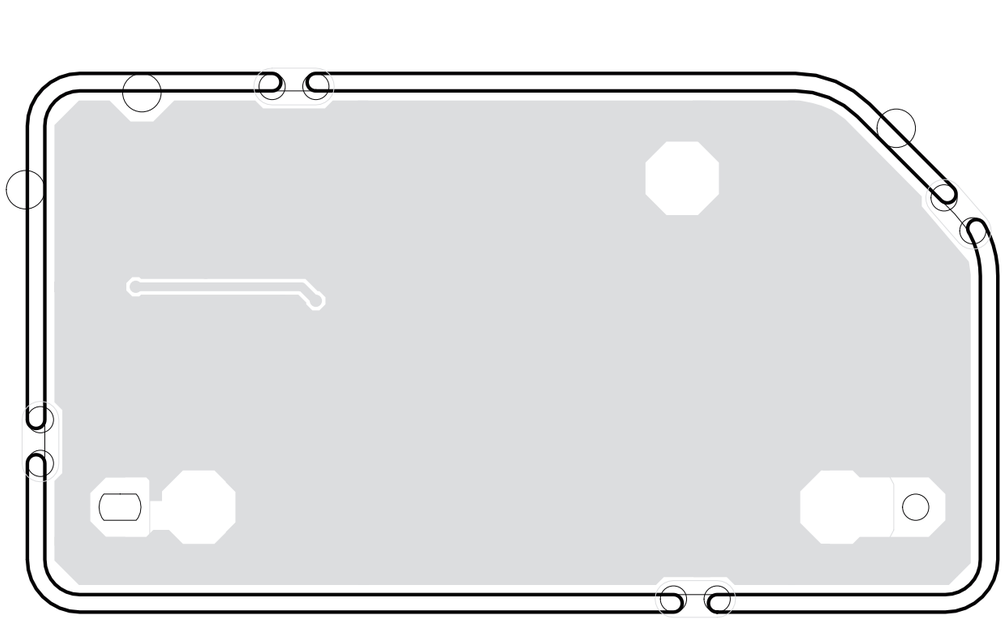
(Component Side)



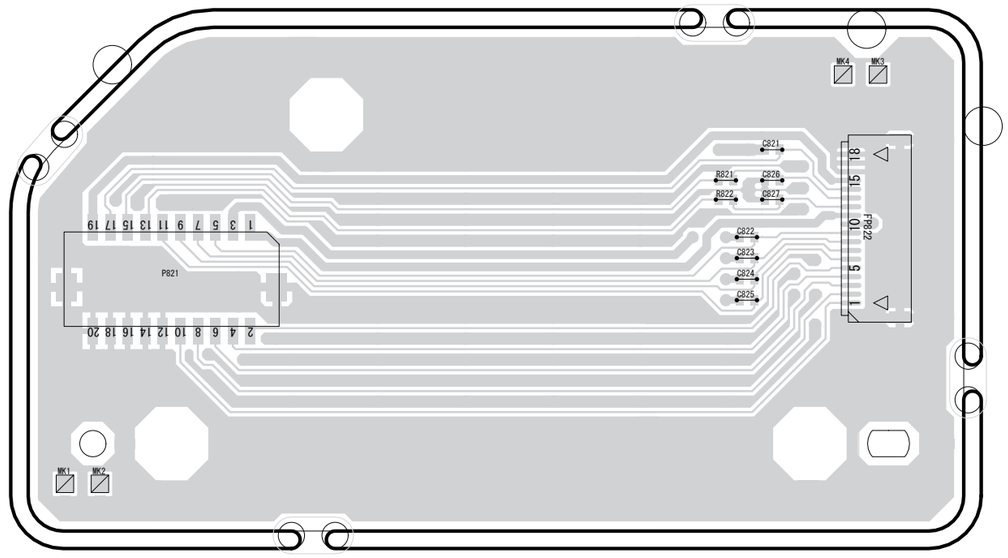
(Foil Side)

HDC-MDH1
Handle Zoom P.C.B.

S5.10. EVF INT P.C.B.



(Component Side)

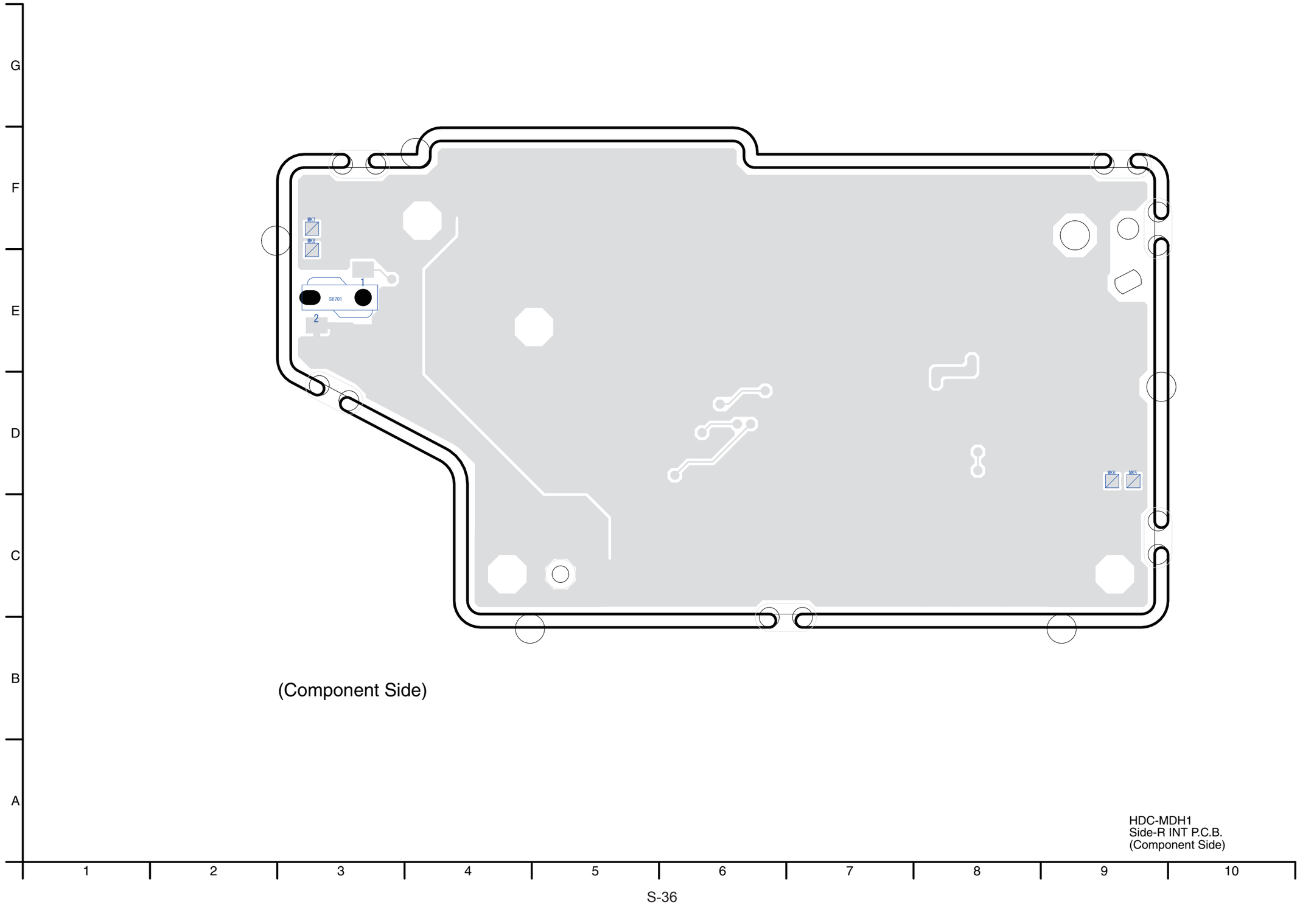


(Foil Side)

HDC-MDH1
EVF INT P.C.B.

S5.11. Side-R INT P.C.B.

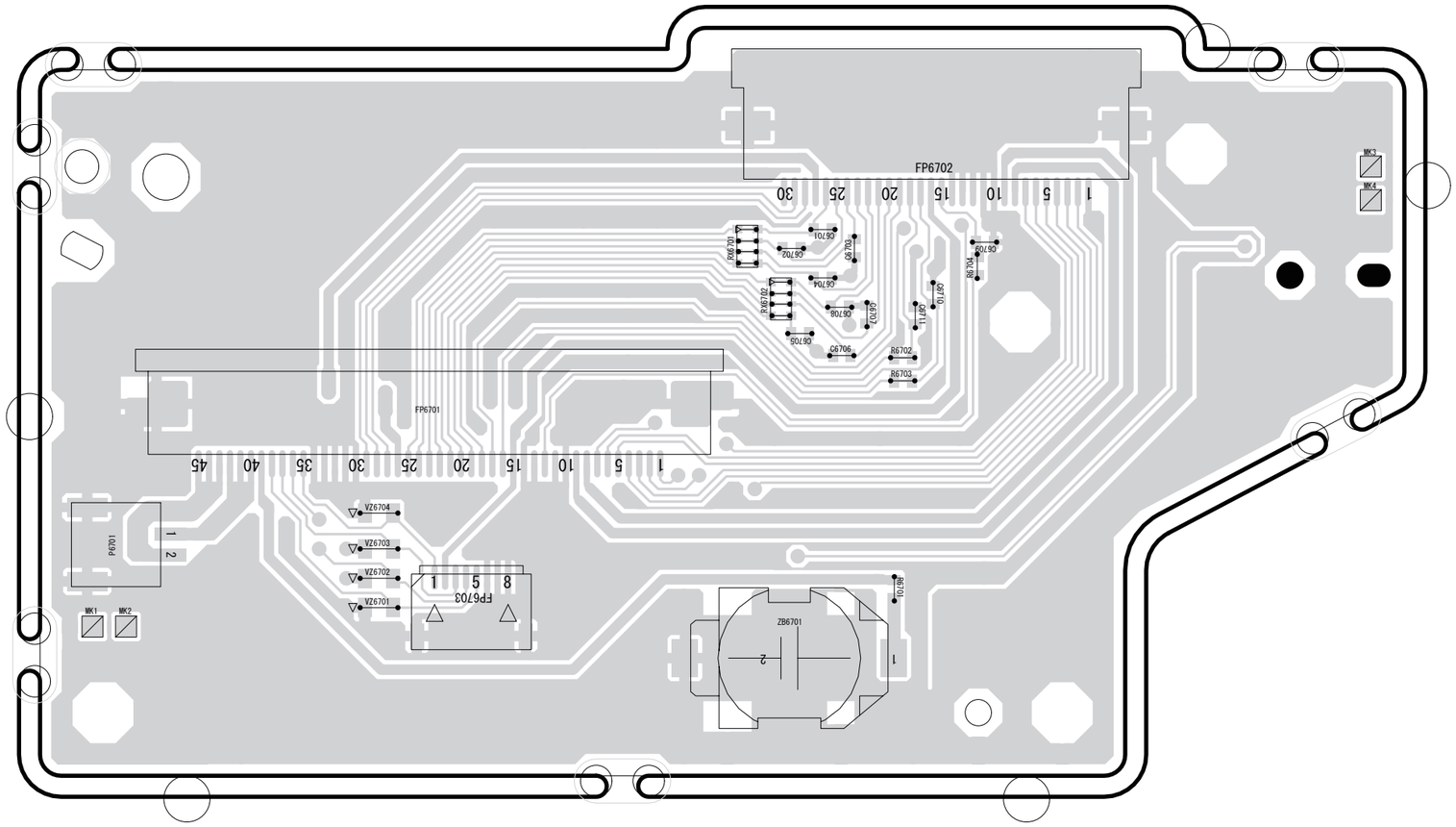
S5.11.1. Side-R INT P.C.B. (Component Side)



(Component Side)

HDC-MDH1
Side-R INT P.C.B.
(Component Side)

S5.11.2. Side-R INT P.C.B. (Foil Side)

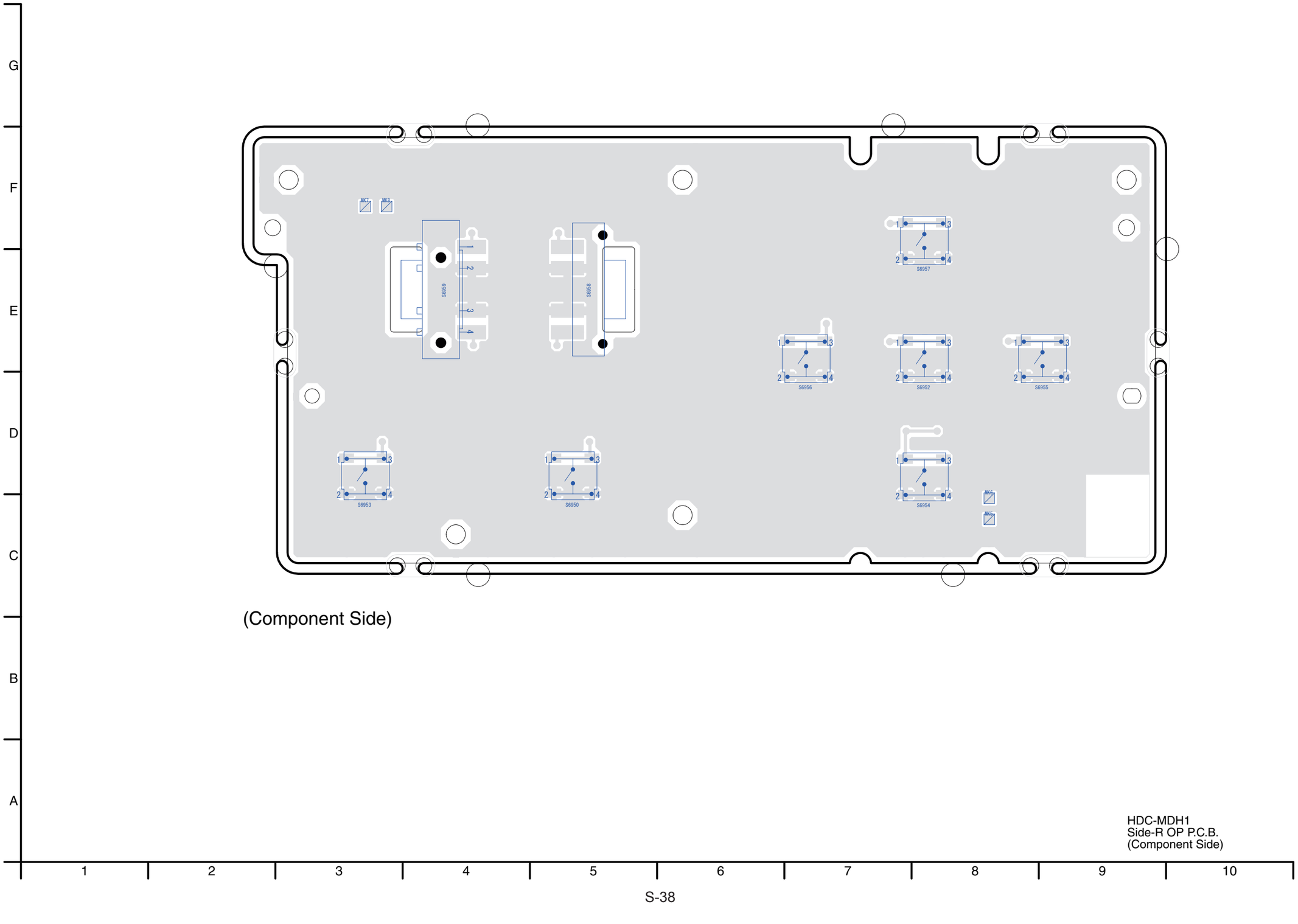


(Foil Side)

HDC-MDH1
Side-R INT P.C.B.
(Foil Side)

S5.12. Side-R OP P.C.B.

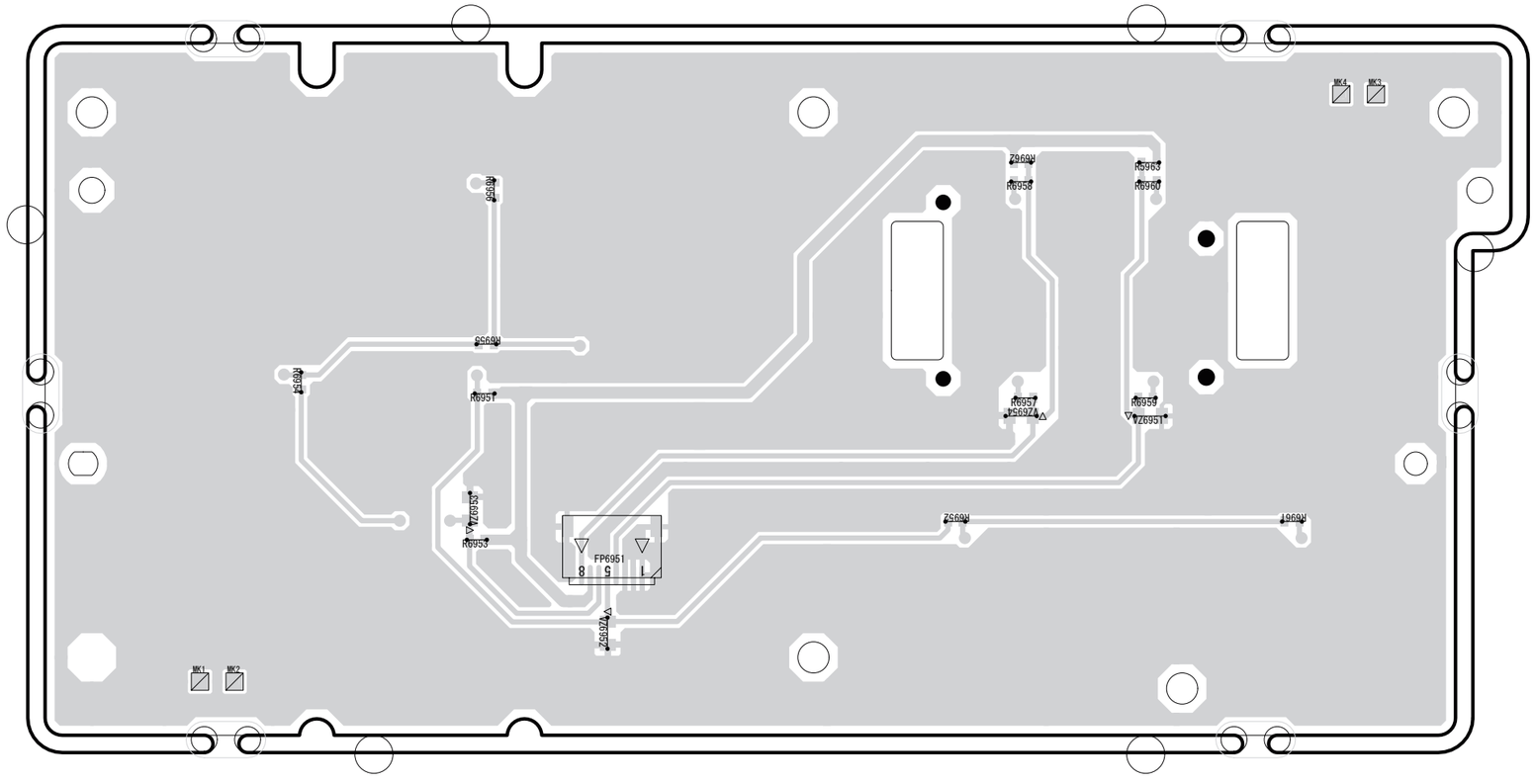
S5.12.1. Side-R OP P.C.B. (Component Side)



(Component Side)

HDC-MDH1
Side-R OP P.C.B.
(Component Side)

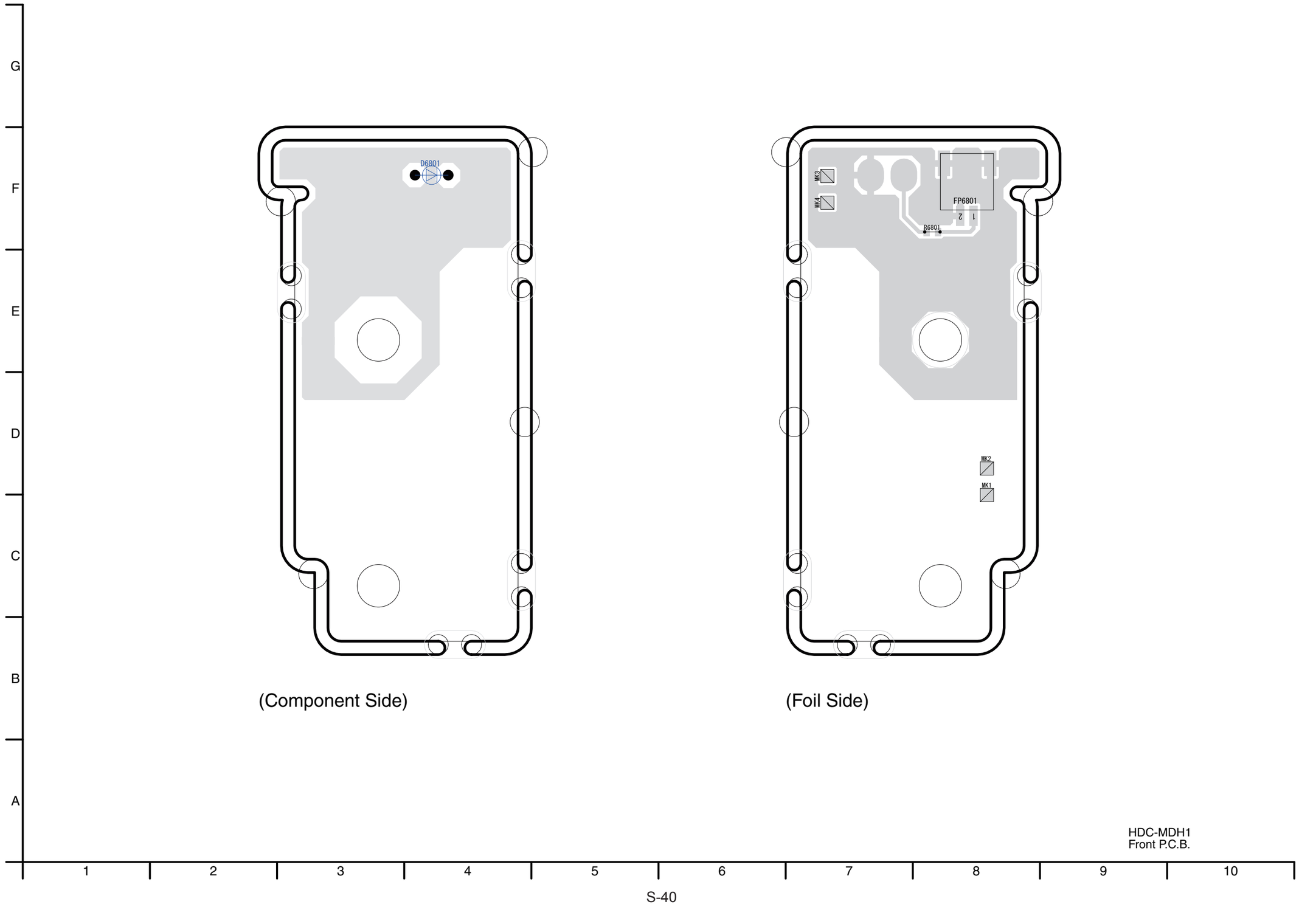
S5.12.2. Side-R OP P.C.B. (Foil Side)



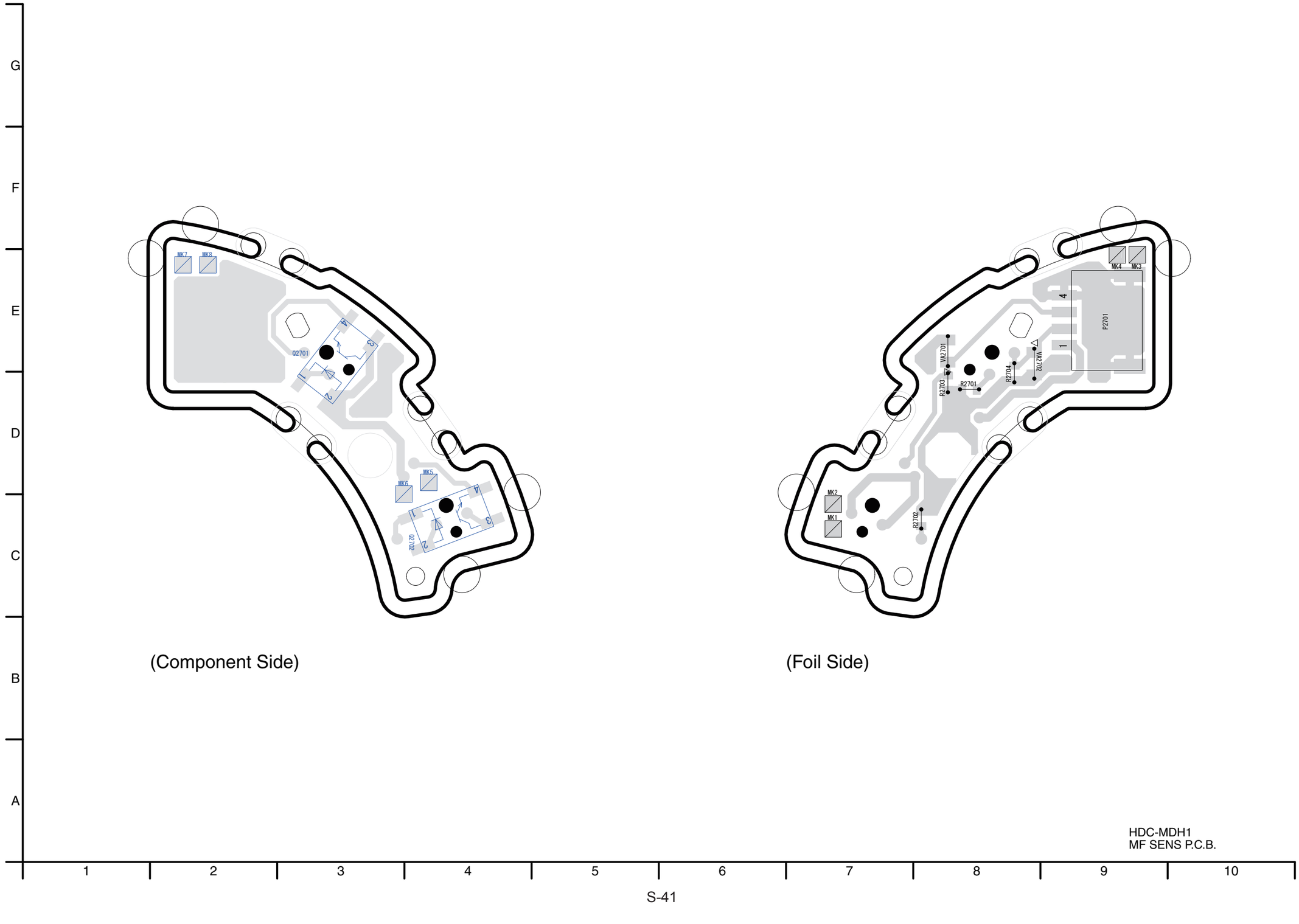
(Foil Side)

HDC-MDH1
Side-R OP P.C.B.
(Foil Side)

S5.13. Front P.C.B.

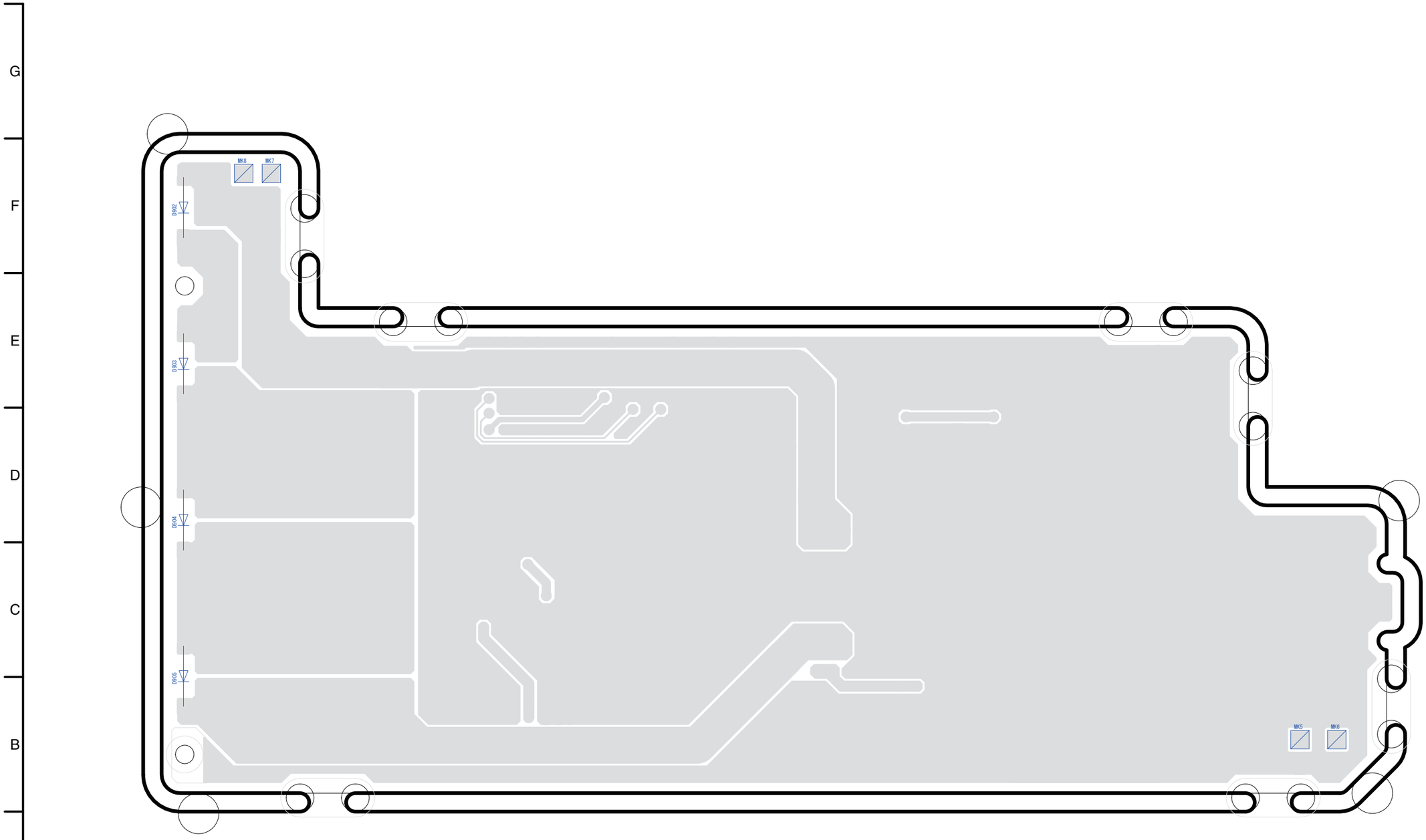


S5.14. MF SENS P.C.B.



S5.15. Monitor P.C.B.

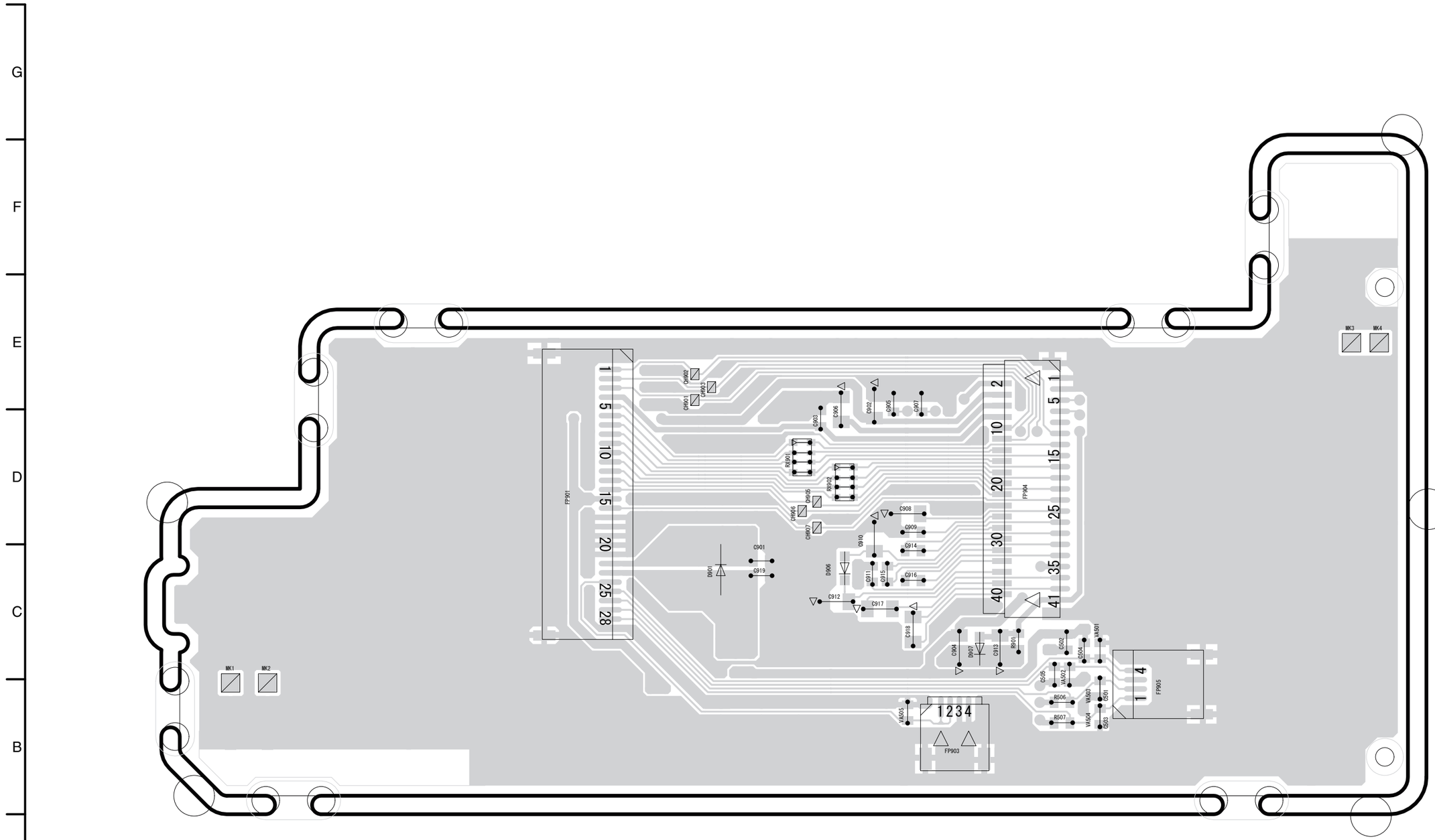
S5.15.1. Monitor P.C.B. (Component Side)



(Component Side)

HDC-MDH1
Monitor P.C.B.
(Component Side)

S5.15.2. Monitor P.C.B. (Foil Side)



(Foil Side)

HDC-MDH1
Monitor P.C.B.
(Foil Side)

S6. Replacement Parts List

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

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
##	VEP03H99A-S	MAIN P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP29227A	EVF BL P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP03J00A	SD HOLDER P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP04969A	JACK P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP01A42A	BATT POWER P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP27226A	LENS INT UNIT	1	(RTL) E.S.D.
##	VEP06G57A	SS GYRO P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP06G58A	ZOOM PHOTO P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP04970A	EXT MIC P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP06G54A	HANDLE ZOOM P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP29228A	EVF INT P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP06G55A	SIDE-R INT P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP002E8A	SIDE-R OP P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP06G56A	FRONT P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP27227A	MF SENS P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP26334A	MONITOR P.C.B. UNIT	1	(RTL) E.S.D.
##	VEP29227A	EVF BL P.C.B. UNIT		(RTL) E.S.D.
C801	F1G1C104A077	C.CAPACITOR CH 16V 0.1U	1	
C802	F1G1C104A077	C.CAPACITOR CH 16V 0.1U	1	
C803	ECJ1VB1A105K	C.CAPACITOR CH 10V 1U	1	
C804	F1G1C104A077	C.CAPACITOR CH 16V 0.1U	1	
C805	F1G1C104A077	C.CAPACITOR CH 16V 0.1U	1	
D801	B0BC6R2A0266	DIODE	1	E.S.D.
D803	B3AFB0000129	DIODE	1	E.S.D.
D804	B0BC5R6A0266	DIODE	1	E.S.D.
FP801	K1MN18A00064	CONNECTOR 18P	1	
FP802	K1MY20BA0370	CONNECTOR 20P	1	
Q801	B1ABDF000017	TRANSISTOR	1	E.S.D.
R801	ERJ2RHD562	M.RESISTOR CH 1/16W 5.6K	1	
R802	ERJ2RKD910	M.RESISTOR CH 1/16W 91	1	
R803	ERJ2GEJ105	M.RESISTOR CH 1/10W 1M	1	
R804	ERJ2RHD122	M.RESISTOR CH 1/16W 1.2K	1	
R805	ERJ2RHD122	M.RESISTOR CH 1/16W 1.2K	1	
R806	ERJ2RHD222	M.RESISTOR CH 1/16W 2.2K	1	
##	VEP03J00A	SD HOLDER P.C.B. UNIT		(RTL) E.S.D.
C3906	F1G1C104A077	C.CAPACITOR CH 16V 0.1U	1	
C3907	F3G0J107A017	C.CAPACITOR CH 6.3V 100U	1	
C3908	F1G1E1030005	C.CAPACITOR CH 25V 0.01U	1	
C3909	F1G1C104A077	C.CAPACITOR CH 16V 0.1U	1	
C3910	F1G1E1030005	C.CAPACITOR CH 25V 0.01U	1	
C3911	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
D3901	B3AAB0000343	LED	1	E.S.D.
FP3901	K1MN22BA0197	CONNECTOR 22P	1	
HS3901	K1NA09E00038	CONNECTOR 9P	1	
Q3901	B1ADKB000015	TRANSISTOR	1	E.S.D.
R3901	ERJ2GEJ220	M.RESISTOR CH 1/16W 22	1	
R3902	ERJ2GEJ390	M.RESISTOR CH 1/16W 39	1	
R3903	ERJ2GEJ103	M.RESISTOR CH 1/10W 10K	1	
R3904	ERJ2GEJ271	M.RESISTOR CH 1/10W 270	1	
R3905	ERJ2GEJ331	M.RESISTOR CH 1/16W 330	1	
R3906	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	
R3907	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	
R3909	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R3910	D0GB150JA057	M.RESISTOR CH 1/10W 15	1	
RX3901	D1H83904A024	RESISTOR NETWORKS	1	
RX3902	EXB28V103JX	RESISTOR NETWORKS	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
##	VEP04969A	JACK P.C.B. UNIT		(RTL) E.S.D.
C4501	F1G1H472A571	C.CAPACITOR CH 50V 4700P	1	
C4502	F1G1E1030005	C.CAPACITOR CH 25V 0.01U	1	
C4503	F1G1E1030005	C.CAPACITOR CH 25V 0.01U	1	
C4504	F1G1E1030005	C.CAPACITOR CH 25V 0.01U	1	
C4505	F1G1H472A571	C.CAPACITOR CH 50V 4700P	1	
C4506	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C4599	F1G1H1020008	C.CAPACITOR CH 50V 1000P	1	
FP4501	K1MN16AA0058	CONNECTOR 16P	1	
JK4501	K2HC106E0007	JACK, AV	1	
JK4502	K2HA306B0067	JACK	1	
JK4503	K2HZ110E0003	JACK, TYPE "D"	1	
LB4501	J0JCC0000276	FILTER	1	
LB4503	J0JCC0000408	FILTER	1	
LB4504	J0JCC0000408	FILTER	1	
LB4505	J0JCC0000408	FILTER	1	
LB4506	J0JCC0000276	FILTER	1	
LB4507	J0JCC0000276	FILTER	1	
LB4508	J0JCC0000276	FILTER	1	
LB4509	J0JCC0000276	FILTER	1	
LB4510	J0JCC0000276	FILTER	1	
LB4511	J0JHC0000078	FILTER	1	
R4501	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	
R4502	ERJ2GEJ2R2X	M.RESISTOR CH 1/16W 2.2	1	
R4503	ERJ2RKD750	M.RESISTOR CH 1/16W 75	1	
R4504	ERJ2RKD750	M.RESISTOR CH 1/16W 75	1	
R4505	ERJ2RKD750	M.RESISTOR CH 1/16W 75	1	
R4506	ERJ2RKD750	M.RESISTOR CH 1/16W 75	1	
R4599	ERJ2GEJ102Y	M.RESISTOR CH 1/10W 1K	1	
VZ4501	D4ED18R00008	VARISTOR	1	
VZ4502	D4ED16R80001	VARISTOR	1	
VZ4503	D4ED16R80001	VARISTOR	1	
##	VEP01A42A	BATT POWER P.C.B. UNIT		(RTL) E.S.D.
C6751	F1J1A106A043	C.CAPACITOR CH 10V 10U	1	
D6751	B0ECKP000002	DIODE	1	E.S.D.
FL6751	J0MAB0000221	FILTER	1	
FP6752	K1MN14AA0058	CONNECTOR 14P	1	
⚠ IP6751	K5H4021A0011	IC PROTECTOR	1	
JK6751	K2EZYE000004	JACK, DC IN	1	
LB6751	J0JJC0000015	FILTER	1	
P6751	K1KA04BA0050	CONNECTOR 4P	1	
R6751	ERJ2GEJ224	M.RESISTOR CH 1/10W 220K	1	
R6752	ERJ2GEJ683	M.RESISTOR CH 1/16W 68K	1	
VA1001	D4ED1270A011	VARISTOR	1	
VA1504	D4ED18R00008	VARISTOR	1	
##	VEP27226A	LENS INT UNIT		(RTL) E.S.D.
FP6108	K1MY33AA0199	CONNECTOR 33P	1	
P6109	K1KA04BA0047	CONNECTOR 4P	1	
PS6201	K1KB40AA0021	CONNECTOR 40P	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
##	VEP06G57A	SS GYRO P.C.B. UNIT		(RTL) E.S.D.
C6401	F1J1A106A043	C.CAPACITOR CH 10V 10U	1	
C6408	F1G1H1020008	C.CAPACITOR CH 50V 1000P	1	
C6409	F1G1H1020008	C.CAPACITOR CH 50V 1000P	1	
D6601	B3AAB0000343	LED	1	E.S.D.
FP6401	K1MY18BA0370	CONNECTOR 18P	1	
FP6602	K1KA02BA0014	CONNECTOR 2P	1	
FP6603	K1KA04BA0047	CONNECTOR 4P	1	
IC6401	EWTS9CVE11	IC	1	E.S.D.
L6401	G1C100MA0408	CHIP INDUCTOR 10UH	1	
LB6601	J0JCC0000276	FILTER	1	
LB6602	J0JHC0000078	FILTER	1	
LB6603	J0JCC0000276	FILTER	1	
LB6604	J0JHC0000078	FILTER	1	
LB6605	J0JCC0000276	FILTER	1	
LB6606	J0JCC0000276	FILTER	1	
S6601	ESE22MV21T	SWITCH	1	
S6602	K0H1BA000338	SWITCH	1	
##	VEP06G58A	ZOOM PHOTO P.C.B. UNIT		(RTL) E.S.D.
P6691	K1KA04BA0047	CONNECTOR 4P	1	
S6691	D2B1B15B0001	SWITCH	1	
S6692	K0H1BA000338	SWITCH	1	
##	VEP04970A	EXT MIC P.C.B. UNIT		(RTL) E.S.D.
C4803	F1G1A473A032	C.CAPACITOR CH 10V 0.047U	1	
C4804	F1G1H680A565	C.CAPACITOR CH 50V 68P	1	
C4809	F1G1A473A032	C.CAPACITOR CH 10V 0.047U	1	
C4810	F1G1H680A565	C.CAPACITOR CH 50V 68P	1	
C4816	F3F0J226A032	T.CAPACITOR CH 6.3V 22U	1	
C4818	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C4901	F1G1H472A571	C.CAPACITOR CH 50V 4700P	1	
C4902	F1G1H472A571	C.CAPACITOR CH 50V 4700P	1	
C4903	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C4905	F3F0J226A032	T.CAPACITOR CH 6.3V 22U	1	
C4906	F3F0J226A032	T.CAPACITOR CH 6.3V 22U	1	
C4908	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C4910	F3F0J226A032	T.CAPACITOR CH 6.3V 22U	1	
C6405	F1G1C104A077	C.CAPACITOR CH 16V 0.1U	1	
FP4801	K1MY04BA0370	CONNECTOR 4P	1	
FP4802	K1MY10BA0370	CONNECTOR 10P	1	
IC4803	C0ABBB000369	IC	1	E.S.D.
JK4901	K2HC104B0047	JK, EXT MIC	1	
LB4923	J0JCC0000276	FILTER	1	
LB4924	J0JCC0000276	FILTER	1	
LB4926	J0JCC0000276	FILTER	1	
Q4901	B1ABDF000017	TRANSISTOR	1	E.S.D.
Q4902	B1ADCF000161	TRANSISTOR	1	E.S.D.
Q4903	B1ABDF000017	TRANSISTOR	1	E.S.D.
Q4904	B1ADCF000161	TRANSISTOR	1	E.S.D.
Q4907	B1ABDF000017	TRANSISTOR	1	E.S.D.
R4801	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	1	
R4804	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	1	
R4808	ERJ2GEJ183	M.RESISTOR CH 1/10W 18K	1	
R4809	ERJ2GEJ683	M.RESISTOR CH 1/16W 68K	1	
R4814	ERJ2GEJ183	M.RESISTOR CH 1/10W 18K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R4815	ERJ2GEJ683	M.RESISTOR CH 1/16W 68K	1	
R4817	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R4818	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R4902	ERJ2GEJ472	M.RESISTOR CH 1/10W 4.7K	1	
R4905	ERJ2GEJ471	M.RESISTOR CH 1/10W 470	1	
R4906	ERJ6GEYJ103V	M.RESISTOR CH 1/8W 10K	1	
R4907	ERJ6GEYJ154V	M.RESISTOR CH 1/8W 150K	1	
R4908	ERJ6GEYJ563	M.RESISTOR CH 1/8W 56K	1	
R4909	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	
R4910	ERJ2GEJ562	M.RESISTOR CH 1/10W 5.6K	1	
R4911	ERJ2GEJ151	M.RESISTOR CH 1/10W 150	1	
R4912	ERJ2GEJ471	M.RESISTOR CH 1/10W 470	1	
R4913	ERJ6GEYJ103V	M.RESISTOR CH 1/8W 10K	1	
R4914	ERJ6GEYJ154V	M.RESISTOR CH 1/8W 150K	1	
R4915	ERJ6GEYJ563	M.RESISTOR CH 1/8W 56K	1	
R4916	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	
R4917	ERJ2GEJ562	M.RESISTOR CH 1/10W 5.6K	1	
R4918	ERJ2GEJ151	M.RESISTOR CH 1/10W 150	1	
VA4901	D4ED18R00008	VARISTOR	1	
##	VEP06G54A	HANDLE ZOOM P.C.B. UNIT		(RTL) E.S.D.
P6681	K1KA04AA0083	CONNECTOR 4P	1	
S6680	K0H1BA000338	SWITCH	1	
S6683	K0H1BA000338	SWITCH	1	
S6684	K0H1BA000338	SWITCH	1	
##	VEP29228A	EVF INT P.C.B. UNIT		(RTL) E.S.D.
FP822	K1MY18BA0370	CONNECTOR 18P	1	
P821	K1KA20AA0184	CONNECTOR 20P	1	
##	VEP06G55A	SIDE-R INT P.C.B. UNIT		(RTL) E.S.D.
⚠ B6701	ML-614S/ZTK	BATTERY	1	
C6701	F1G1H180A565	50V 18P	1	
C6702	F1G1H180A565	50V 18P	1	
C6703	F1G1H180A565	50V 18P	1	
C6704	F1G1H180A565	50V 18P	1	
C6705	F1G1H180A565	50V 18P	1	
C6706	F1G1H180A565	50V 18P	1	
C6707	F1G1H180A565	50V 18P	1	
C6708	F1G1H180A565	50V 18P	1	
FP6701	K1MN45BA0153	CONNECTOR 45P	1	
FP6702	K1MN30BA0079	CONNECTOR 30P	1	
FP6703	K1MY08BA0370	CONNECTOR 8P	1	
P6701	K1KA02BA0014	CONNECTOR 2P	1	
R6701	ERJ2GEJ222	M.RESISTOR CH 1/10W 2.2K	1	
R6704	ERJ2GEJ220	M.RESISTOR CH 1/16W 22	1	
S6701	ESE22MV21T	SWITCH	1	
ZB6701	K3ZZ00500014	BATTERY HOLDER	1	
##	VEP002E8A	SIDE-R OP P.C.B. UNIT		(RTL) E.S.D.
FP6951	K1MY08BA0370	CONNECTOR 8P	1	
R5963	ERJ2GEJ103	M.RESISTOR CH 1/10W 10K	1	
R6952	ERJ2RHD272	M.RESISTOR CH 1/16W 2.7K	1	
R6954	ERJ2RHD272	M.RESISTOR CH 1/16W 2.7K	1	
R6955	ERJ2GEJ562	M.RESISTOR CH 1/10W 5.6K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R6956	ERJ2GEJ183	M.RESISTOR CH 1/10W 18K	1	
R6957	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R6958	ERJ2GEJ472	M.RESISTOR CH 1/10W 4.7K	1	
R6959	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R6960	ERJ2GEJ472	M.RESISTOR CH 1/10W 4.7K	1	
R6961	ERJ2GEJ562	M.RESISTOR CH 1/10W 5.6K	1	
R6962	ERJ2GEJ103	M.RESISTOR CH 1/10W 10K	1	
S6950	K0F111A00589	SWITCH	1	
S6952	K0F111A00589	SWITCH	1	
S6953	K0F111A00589	SWITCH	1	
S6954	K0F111A00589	SWITCH	1	
S6955	K0F111A00589	SWITCH	1	
S6956	K0F111A00589	SWITCH	1	
S6957	K0F111A00589	SWITCH	1	
S6958	K0D113B00027	SWITCH	1	
S6959	VSS0300	SWITCH	1	
##	VEP06G56A	FRONT P.C.B. UNIT		(RTL) E.S.D.
D6801	B3AAA0001076	LED	1	E.S.D.
FP6801	K1KA02BA0014	CONNECTOR 2P	1	
R6801	ERJ2GEJ102X	M.RESISTOR CH 1/16W 1K	1	
##	VEP27227A	MF SENS P.C.B. UNIT		(RTL) E.S.D.
P2701	K1KA04BA0014	CONNECTOR 4P	1	
Q2701	B3NBA0000017	TRANSISTOR	1	E.S.D.
Q2702	B3NBA0000017	TRANSISTOR	1	E.S.D.
R2701	ERJ2GEJ101	M.RESISTOR CH 1/10W 100	1	
R2702	ERJ2GEJ101	M.RESISTOR CH 1/10W 100	1	
R2703	ERJ2RHD682X	M.RESISTOR CH 1/10W 6.8K	1	
R2704	ERJ2RHD682X	M.RESISTOR CH 1/10W 6.8K	1	
##	VEP26334A	MONITOR P.C.B. UNIT		(RTL) E.S.D.
C502	F1G1C104A077	C.CAPACITOR CH 16V 0.1U	1	
C504	F1G1H1020008	C.CAPACITOR CH 50V 1000P	1	
C505	F1G1H1020008	C.CAPACITOR CH 50V 1000P	1	
C901	F1G1E1040001	C.CAPACITOR CH 25V 0.1U	1	
C903	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C904	F1H0J475A010	C.CAPACITOR CH 6.3V 4.7U	1	
C905	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C906	F1H1A105A036	C.CAPACITOR CH 10V 1U	1	
C907	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C908	F1H1A105A036	C.CAPACITOR CH 10V 1U	1	
C909	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C910	F1H1A105A036	C.CAPACITOR CH 10V 1U	1	
C911	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C912	F1H1E105A116	C.CAPACITOR CH 25V 1U	1	
C913	F1H1E105A116	C.CAPACITOR CH 25V 1U	1	
C914	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C915	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C916	F1G0J1050007	C.CAPACITOR CH 6.3V 1U	1	
C917	F1H1A105A036	C.CAPACITOR CH 10V 1U	1	
C918	F1H1A105A036	C.CAPACITOR CH 10V 1U	1	
C919	F1G1C104A077	C.CAPACITOR CH 16V 0.1U	1	
D901	B0BC016A0267	DIODE	1	E.S.D.
D902	B3AFB0000321	DIODE	1	E.S.D.
D903	B3AFB0000321	DIODE	1	E.S.D.
D904	B3AFB0000321	DIODE	1	E.S.D.
D905	B3AFB0000321	DIODE	1	E.S.D.
FP901	K1MN28BA0197	CONNECTOR 28P	1	
FP903	K1MY04BA0370	CONNECTOR 4P	1	
FP904	K1MY41BA0369	CONNECTOR 41P	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
FP905	K1MN04BA0262	CONNECTOR 4P	1	
R901	ERJ2GEJ824	M.RESISTOR CH 1/16W 820K	1	
VA501	D4ED18R00008	VARISTOR	1	
VA502	D4ED18R00008	VARISTOR	1	
VA503	D4ED18R00008	VARISTOR	1	
VA504	D4ED18R00008	VARISTOR	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
12	VEP06G55A	SIDE-R INT P.C.B. UNIT	1	(RTL) E.S.D.
13	VEP002E8A	SIDE-R OP P.C.B. UNIT	1	(RTL) E.S.D.
15	VEP27227A	MF SENS P.C.B. UNIT	1	(RTL) E.S.D.
82	VYQ5819	ND CASE UNIT	1	
83	VFC4129	LENS HOOD UNIT	1	
85	VGQ0S68	SHEET	1	
86	VGQ0S73	SHEET	1	
87	VGU0H09	CAMERA OP BUTTON	1	
88	VGQ0R71	SHEET	1	
89	VGU9872	SLIDE BUTTON	1	
90	VGU9872	SLIDE BUTTON	1	
91	VWJ2132	SIDE-R OP FPC	1	
92	VWJ2224	SIDE-R FPC	1	
93	L0AA01A00056	SPEAKER	1	
94	VMP9589	SP ANGLE	1	
95	VYK4H39	SIDE CASE-R UNIT	1	
102	VXP3512	MF RING UNIT	1	
123	VGP6367	FACE PANEL	1	
125	VMG1357	FOCUS RING	1	
126	VMP9822	LENS FRAME-R	1	
127	VMG1107	MECHANISM DUMPER RUBBER	1	
128	VMP9821	LENS FRAME-L	1	
129	VMG1107	MECHANISM DUMPER RUBBER	1	
130	VMG1107	MECHANISM DUMPER RUBBER	1	
201	VXW1151	LENS UNIT	1	
202	VXQ1970	MOS UNIT	1	
203	VMX3811	MOS CUSHION	1	
204	VDL2467	IR FILTER	1	
205	L6HA66NC0015	ZOOM MOTOR	1	
206	L6HA66NC0016	FOCUS MOTOR	1	
B71	XQN16+BJ6FJK	SCREW	1	
B72	XQN16+BJ6FJK	SCREW	1	
B73	XQN16+BJ6FJK	SCREW	1	
B74	XQN16+BJ6FJK	SCREW	1	
B75	XQN16+BJ6FJK	SCREW	1	
B76	XQN16+BJ6FJK	SCREW	1	
B77	XQN16+BJ6FJK	SCREW	1	
B78	XQN16+BJ6FJK	SCREW	1	
B79	XQN16+BJ5FN	SCREW	1	
B80	XQN16+BJ5FN	SCREW	1	
B81	XQN16+BJ5FN	SCREW	1	
B82	XQN16+BJ5FN	SCREW	1	
B83	XQN16+BJ5FN	SCREW	1	
B84	XQN16+BJ4FN	SCREW	1	
B85	XQN16+BJ4FN	SCREW	1	
B108	XTB3+10GFJK	SCREW	1	
B109	XTB3+10GFJK	SCREW	1	
B110	XTB3+10GFJK	SCREW	1	
B111	XTB3+10GFJK	SCREW	1	
B120	XTB3+10GFJK	SCREW	1	
B121	XTB3+10GFJK	SCREW	1	
B122	XQN2+B5FJK	SCREW	1	
B123	XQN2+B5FJK	SCREW	1	
B124	XQN2+B5FJK	SCREW	1	
B126	XQN2+BJ6FJK	SCREW	1	
B127	XQN2+BJ6FJK	SCREW	1	
B128	XQN2+BJ6FJK	SCREW	1	
B129	XQN2+BJ6FJK	SCREW	1	
B130	XQN2+BJ6FJK	SCREW	1	
B131	XQN2+BJ6FJK	SCREW	1	
B132	XQN2+BJ6FJK	SCREW	1	
B136	XYN3+J10FJK	SCREW	1	
B137	XYN3+J10FJK	SCREW	1	
B138	XYN3+J10FJK	SCREW	1	
B139	XYN3+J10FJK	SCREW	1	
B142	XQN2+BJ5FN	SCREW	1	
B143	XQN2+BJ5FN	SCREW	1	
B144	XQN2+BJ5FN	SCREW	1	
B201	VHD2072	SCREW	1	
B202	VHD2072	SCREW	1	
B203	VHD2073	SCREW	1	
B204	VHD2073	SCREW	1	
B205	VHD2073	SCREW	1	
B206	VHD2073	SCREW	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	VEP03H99A-S	MAIN P.C.B. UNIT	1	(RTL) E.S.D.
3	VEP03J00A	SD HOLDER P.C.B. UNIT	1	(RTL) E.S.D.
4	VEP04969A	JACK P.C.B. UNIT	1	(RTL) E.S.D.
5	VEP01A42A	BATT POWER P.C.B. UNIT	1	(RTL) E.S.D.
6	VEP27226A	LENS INT UNIT	1	(RTL) E.S.D.
68	VMP9819	SD FRAME	1	
69	VMP8330	WEIGHT ANGLE	1	
70	VMP8368	DV TERMINAL ANGLE	1	
71	VMD6405	TRIPOD FRAME	1	
72	VMP8328	TRIPOD FRAME ANGLE	1	
73	VMP9818	AV JACK PLATE	1	
74	VWJ2208	AV JACK FPC	1	
75	VEK0Q98	BATTERY CATCHER UNIT	1	
76	VEE1J74	BATTERY CATCHER WIRE UNIT	1	
77	VWJ2129	REAR FPC	1	
78	VGL1358	SD ACCESS PANELIGHT	1	
79	VMP8450	SHOULDER BELT PLATE	1	
80	VYK4H28	SIDE CASE-L UNIT	1	
124	VMG1973	SHOULDER PAD	1	
131	VSC6280	MAIN EARTH PLATE	1	
B50	VHD1919	SCREW	1	
B51	XQN16+B5FJK	SCREW	1	
B52	XQN16+B5FJK	SCREW	1	
B53	XQN16+B5FJK	SCREW	1	
B54	XQN2+B5FJK	SCREW	1	
B55	XQN2+B5FJK	SCREW	1	
B56	XSB3+8FJK	SCREW	1	
B57	XSB3+8FJK	SCREW	1	
B58	XSB3+8FJK	SCREW	1	
B59	XSB3+8FJK	SCREW	1	
B60	XSB3+8FJK	SCREW	1	
B61	VHD1411	SCREW	1	
B62	XQN2+BJ5FN	SCREW	1	
B63	XQN2+BJ6FJK	SCREW	1	
B64	XQN2+BJ6FJK	SCREW	1	
B65	XQN2+BJ6FJK	SCREW	1	
B66	XQN2+BJ6FJK	SCREW	1	
B67	XQN2+BJ6FJK	SCREW	1	
B68	XQN2+BJ6FJK	SCREW	1	
B69	XQN2+BJ6FJK	SCREW	1	
B70	XQN2+BJ6FJK	SCREW	1	
B102	XTB3+10GFJK	SCREW	1	
B103	XTB3+10GFJK	SCREW	1	
B104	XTB3+10GFJK	SCREW	1	
B105	XTB3+10GFJK	SCREW	1	
B106	XTB3+10GFJK	SCREW	1	
B107	XTB3+10GFJK	SCREW	1	
B119	XTB3+10GFJK	SCREW	1	
B125	XQN2+B5FJK	SCREW	1	
B133	XQN2+BJ6FJK	SCREW	1	
B134	XQN2+BJ6FJK	SCREW	1	
B135	XQN2+BJ6FJK	SCREW	1	
B145	VHD1919	SCREW	1	
B146	VHD1904	SCREW	1	
B147	XYN3+F6FN	SCREW	1	
B148	XYN3+F6FN	SCREW	1	
B149	VHD1919	SCREW	1	
B150	VHD1919	SCREW	1	

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

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
9	VEP04970A	EXT MIC P.C.B. UNIT	1	(RTL) E.S.D.
10	VEP06G54A	HANDLE ZOOM P.C.B. UNIT	1	(RTL) E.S.D.
38	VYK1Q65	HANDLE UNIT	1	
39	VKF4044	HANDLE COVER	1	
40	VJF0804	LENS CABLE CLAMPER	1	
41	J0KG00000100	CLAMPER	1	
42	VMP2407	SHOE HOLD PLATE	1	
43	VMC1288	SHOE SPRING	1	
44	VGQ5995	SLIDE COVER	1	
45	VMP7613	BELT ANGLE (REAR)	1	
46	VMP8327	HANDLE HOLD ANGLE (REAR)	1	
103	VYK4H37	MIC CASE UNIT	1	
104	VMP8326	HANDLE HOLD ANGLE (FRONT)	1	
105	VJF1526	CABLE CLAMPER	1	
106	VGQ7110	MIC SPACER	1	
107	VMP8329	MIC JACK SHIELD	1	
108	VWJ2045	OPERATION CN JACK FPC	1	
109	VMC1288	SHOE SPRING	1	
110	VMP2407	SHOE HOLD PLATE	1	
111	VGQ6038	MIC HOLDER PLATE	1	
113	VEE1J71	HANDLE ZOOM WIRE UNIT	1	
114	VKH0415	HANDLE COVER	1	
115	VGU8868	ZOOM BUTTON	1	
116	VMS7039	ZOOM SHAFT	1	
117	VGQ0Q48	ZOOM BUTTON SPACER	1	
118	VGU0H12	SUB REC BUTTON	1	
119	VMX3854	NYLON WASHER	1	
120	XUC2FP	E-RING	1	
121	VGQ7109	SHEET	2	
122	VGQ7109	SCREW	1	
B10	XQN2+CJ6FJK	SCREW	1	
B11	XQN2+CJ6FJK	SCREW	1	
B12	XQN2+CJ6FJK	SCREW	1	
B13	XQN2+CJ6FJK	SCREW	1	
B14	XQN2+CJ6FJK	SCREW	1	
B15	XTB3+10GFJK	SCREW	1	
B16	XTB3+10GFJK	SCREW	1	
B17	XTB3+10GFJK	SCREW	1	
B18	XTB3+10GFJK	SCREW	1	
B19	XTB3+10GFJK	SCREW	1	
B20	XQS2+AJ7FJK	SCREW	1	
B21	XQS2+AJ7FJK	SCREW	1	
B22	XQS2+AJ7FJK	SCREW	1	
B23	XQS2+AJ7FJK	SCREW	1	
B24	XQN2+B3FJK	SCREW	1	
B25	XTN3+8GFJK	SCREW	1	
B26	XTN3+8GFJK	SCREW	1	
B27	XYN26+K6FJ	SCREW	1	
B28	XYN26+K6FJ	SCREW	1	
B29	XTV4+8GFJ	SCREW	1	
B30	XTV4+8GFJ	SCREW	1	
B89	XQN2+B4FN	SCREW	1	
B90	XQN2+B4FN	SCREW	1	
B91	XQN2+B4FN	SCREW	1	
B92	XQN2+B4FN	SCREW	1	
B93	XSB26+4FN	SCREW	1	
B94	XSB26+4FN	SCREW	1	
B95	XQN2+B3FJK	SCREW	1	
B96	XQS2+AJ7FJK	SCREW	1	
B97	XQS2+AJ7FJK	SCREW	1	
B98	XQS2+AJ7FJK	SCREW	1	
B99	XQS2+AJ7FJK	SCREW	1	
B100	XQN2+BJ8FN	SCREW	1	
B101	XQN2+BJ8FN	SCREW	1	
B112	XTB3+10GFJK	SCREW	1	
B113	XTB3+10GFJK	SCREW	1	
B114	XTB3+10GFJK	SCREW	1	
B115	XTB3+10GFJK	SCREW	1	
B140	XTV4+8GFJ	SCREW	1	
B141	XTV4+8GFJ	SCREW	1	
B151	XQN2+B5FN	SCREW	1	
B152	XQN2+B5FN	SCREW	1	

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

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
7	VEP06G57A	SS GYRO P.C.B. UNIT	1	(RTL) E.S.D.
8	VEP06G58A	ZOOM PHOTO P.C.B. UNIT	1	(RTL) E.S.D.
14	VEP06G56A	FRONT P.C.B. UNIT	1	(RTL) E.S.D.
47	VGU0H08	PHOTO BUTTON	1	
48	VGQ0Q47	ZOOM SW HOLD FRAME	1	
49	VEE1J72	ZOOM WIRE UNIT	1	
50	VMT2107	ZOOM LEVER CUSSION-B	1	
51	VYQ5881	ZOOM SW UNIT	1	
52	VGU9215	ZOOM LEVER	1	
53	VMT2106	ZOOM LEVER CUSSION-A	1	
54	VGQ0Q67	GRIP COVER PLATE	1	
55	VGP6362	GRIP COVER	1	
56	VKW2418	REMOTE CONTROLLER WINDOW	1	
57	VEE1J75	FRONT WIRE UNIT	1	
58	VMP8333	P.C.B. ANGLE	1	
59	VWJ2218	SS GYRO FPC	1	
60	VGQ0Q45	P.C.B. HOLDER	1	
61	VGL1359	VTR PANELIGHT	1	
62	VMC2157	SS CLICK SPRING	1	
63	VGQ4494	S/S LEVER	1	
64	VGQ0Q46	SS BUTTON PIECE	1	
65	VGU7577	S/S BUTTON	1	
66	VYC1017	GRIP BELT UNIT	1	
67	VMP8331	BELT FIXATION ANGLE	1	
134	VGQ0S80	CUSHION	1	
B31	XQN2+BJ6FN	SCREW	1	
B32	XQN16+BJ4FJK	SCREW	1	
B33	XQN16+BJ4FJK	SCREW	1	
B34	XTB3+10GFJK	SCREW	1	
B35	XTB3+10GFJK	SCREW	1	
B36	XTB3+10GFJK	SCREW	1	
B37	XTB26+6GFJK	SCREW	1	
B38	XTB26+6GFJK	SCREW	1	
B39	XTB26+6GFJK	SCREW	1	
B40	XTB26+6GFJK	SCREW	1	
B41	XYN3+K6FN	SCREW	1	
B42	XYN3+K6FN	SCREW	1	
B43	XQN2+BJ4FJK	SCREW	1	
B44	XQN2+BJ4FJK	SCREW	1	
B45	XQN2+BJ4FJK	SCREW	1	
B46	XQN2+BJ4FJK	SCREW	1	
B47	XQN2+BJ4FJK	SCREW	1	
B48	XQN2+BJ4FJK	SCREW	1	
B49	XQN2+BJ4FJK	SCREW	1	
B116	XTB3+10GFJK	SCREW	1	
B117	XTB3+10GFJK	SCREW	1	
B118	XTB3+10GFJK	SCREW	1	

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

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
2	VEP29227A	EVF BL P.C.B. UNIT	1	(RTL) E.S.D.
11	VEP29228A	EVF INT P.C.B. UNIT	1	(RTL) E.S.D.
17	VGQ0Q49	LCD PIECE	1	
18	L5BDDXH00033	LCD	1	
19	VGL1304	EVF DIFFUSION SHEET	1	
20	VGL1341	EVF B/L POLARIZE LENS PLATE	1	
21	VGQ0D03	LCD REINFORCEMENT PIECE	1	
22	VGQ0D04	B/L PIECE	1	
23	VGQ0D02	PRISM REINFORCEMENT PIECE	1	
24	VGL1340	POLARIZE LENS PLATE	1	
25	VKM6796-1	EVF TOP CASE	1	
26	VKM6797-2	EVF BOTTOM CASE	1	
27	VEE1J73	EVF INT WIRE UNIT	1	
28	VYQ5818	EVF ANGLE ADJ. CASE UNIT	1	
29	VMG1372	RUBBER	1	
30	VMG1372	RUBBER	1	
31	VMG1464-1	EYE CAP	1	
32	VGQ6999-1	EVF LOCK RING	1	
33	VGQ7001-1	HOLD PIECE	1	
34	VGQ5994	EVF RING	1	
35	VMT1739	EVF RING TAPE	1	
36	VWJ2185	MECHANISM INT 1 FPC	1	
37	VDL2175	EVF LENS (A)	1	
B1	XTN26+8GFJK	SCREW	1	
B2	XTN26+8GFJK	SCREW	1	
B3	XTN26+8GFJK	SCREW	1	
B4	XTN26+8GFJK	SCREW	1	
B5	XTN26+8GFJK	SCREW	1	
B6	XTN26+8GFJK	SCREW	1	
B7	XTN26+8GFJK	SCREW	1	
B8	XTN3+10GFN	SCREW	1	
B9	XTN3+10GFN	SCREW	1	

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

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
16	VEP26334A	MONITOR P.C.B. UNIT	1	(RTL) E.S.D.
81	L5BDDXM00034	LCD	1	
84	VYK4H41	LCD CASE TOP UNIT	1	
96	VSC6282	LCD FRAME	1	
97	K0RE00100033	LCD FRAME (W/PANEL SW)	1	
98	VGQ0K73	LENS HOLDER	1	
99	VGL1330	PRISM SHEET-A	1	
100	VGL1331	PRISM SHEET-B	1	
101	VGL1296	DIFFUSION SHEET	1	
132	LSGL1526	LIGHT GUIDE PLATE	1	
133	VGL1333	REFLECTION SHEET	1	
B86	VHD1828	SCREW	1	
B87	VHD1828	SCREW	1	
B88	XQN14+BJ4FN	SCREW	1	

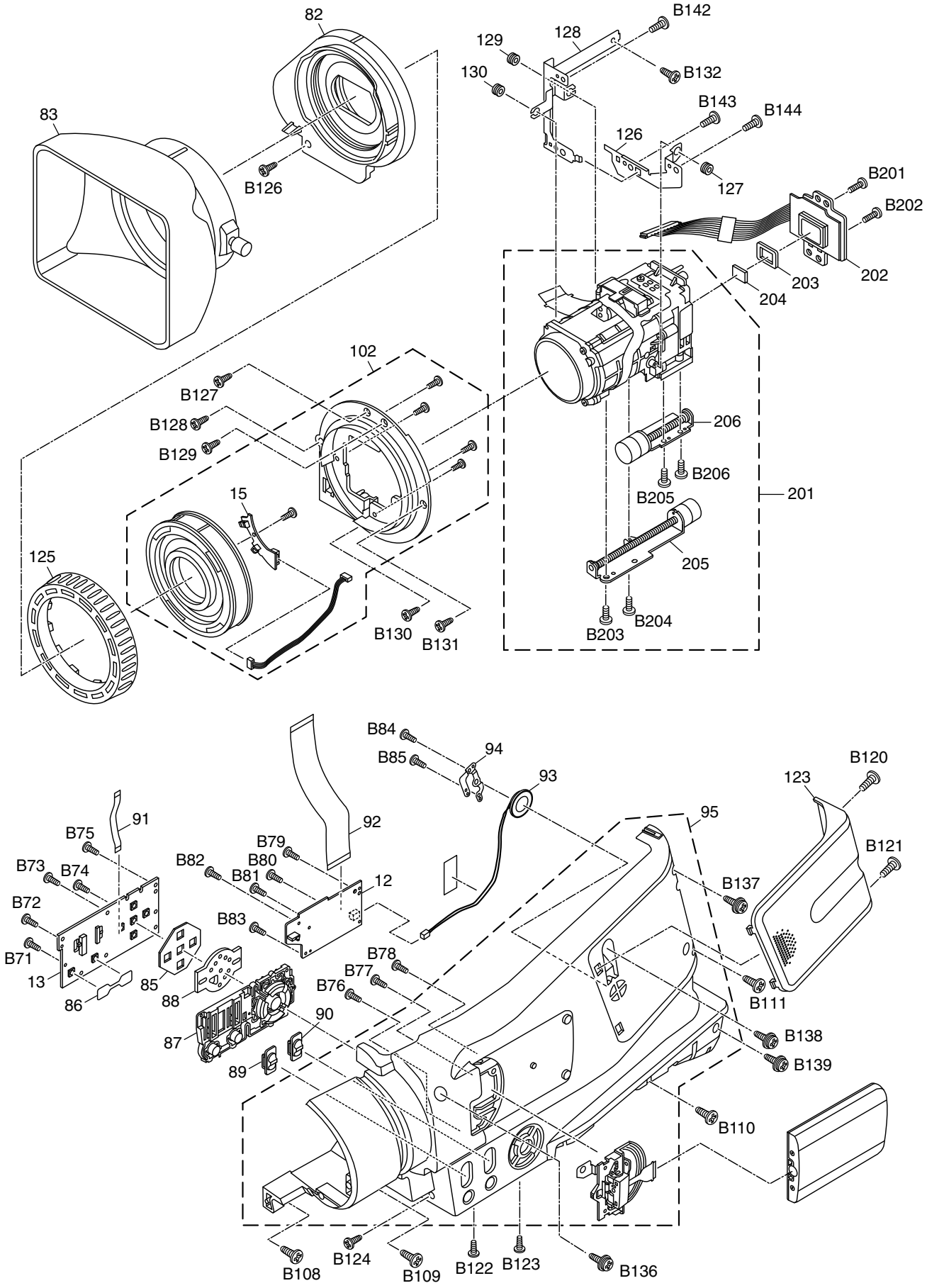
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
301	VPK0825	ACCESSORY BOX	1	
⚠ 302	DE-A51CB	AC ADAPTOR	1	GC
⚠ 302	DE-A51DB	AC ADAPTOR	1	GK
303	K2GJYDC00004	DC CABLE	1	
304	K2KA6CA00001	AV CABLE	1	
305	K1HY04YY0032	USB CABLE	1	
306	K1HY10YY0005	COMPONENT CABLE	1	
⚠ 307	K2CQ29A00002	AC CABLE	1	GC
⚠ 308	K2CT39A00002	AC CABLE	1	GC
309	VFC3877	SHOULDER STRAP	1	
310	VKF3305	LENS CAP	1	
311	VGQ0C14	STYLUS PEN	1	
312	VW-VMS2A/1	EXTERNAL STEREO MICROPHONE	1	
313	VFF0694-S	CD-ROM	1	GC
313	VFF0695-S	CD-ROM	1	GK
314	VPF1294	BAG, POLYETHYLENE	1	
⚠ 315	VQT2Z66	OPERATING INSTRUCTIONS (E	1	GC
⚠ 315	VQT2Z67	OPERATING INSTRUCTIONS (T	1	GC
⚠ 315	VQT2Z70	OPERATING INSTRUCTIONS (C	1	GC
⚠ 315	VQT2Z71	OPERATING INSTRUCTIONS (C	1	GK
316	VPF1294	BAG, POLYETHYLENE	1	
⚠ 317	VQT2Z68	OPERATING INSTRUCTIONS (A	1	GC
⚠ 317	VQT2Z69	OPERATING INSTRUCTIONS (P	1	GC
318	VPN5481	PAD (T)	1	
319	VPN5482	PAD (B)	1	
320	VPG2Q01	PACKING CASE	1	GC
320	VYQ5998	PACKING CASE UNIT	1	GK
321	VPN5880	MIC PAD	1	
322	VPF1256	POLY BAG	1	
⚠ 323	K2CA2YY00070	AC CABLE	1	GK
⚠ 325	---	BATTERY	1	GC
⚠ 325	---	BATTERY	1	GK

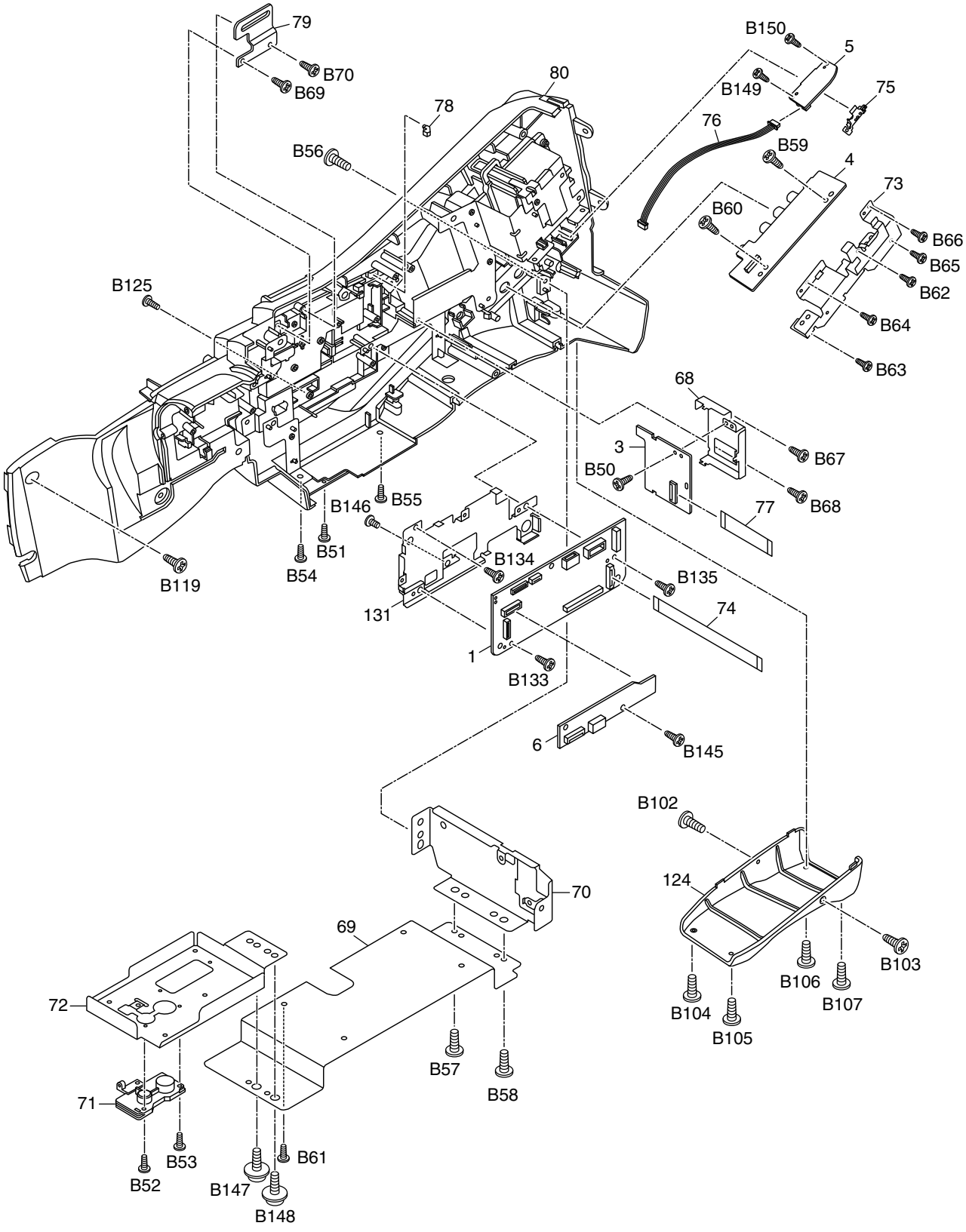
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks

S7. Exploded View

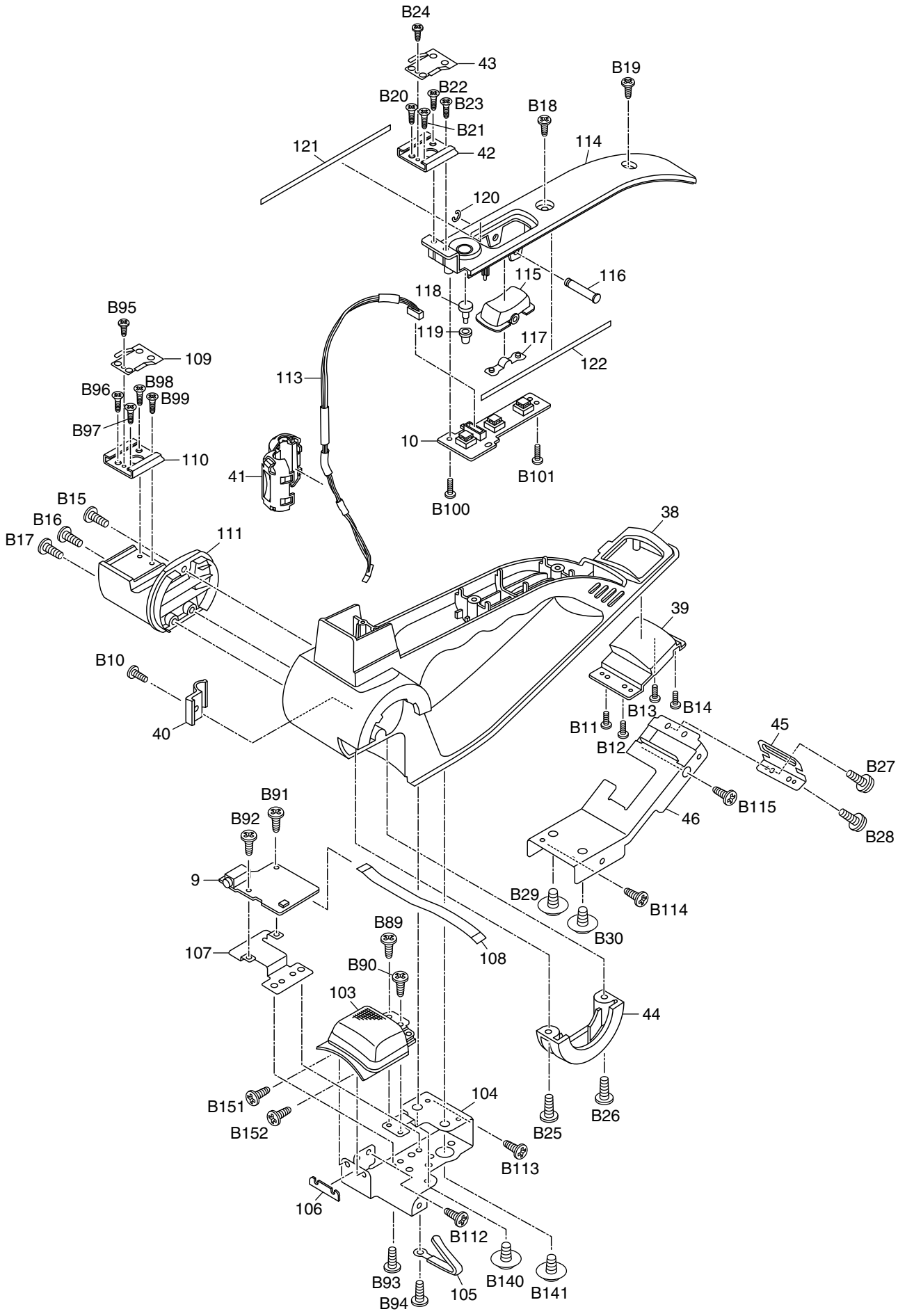
S7.1. Frame and Casing Section (1)



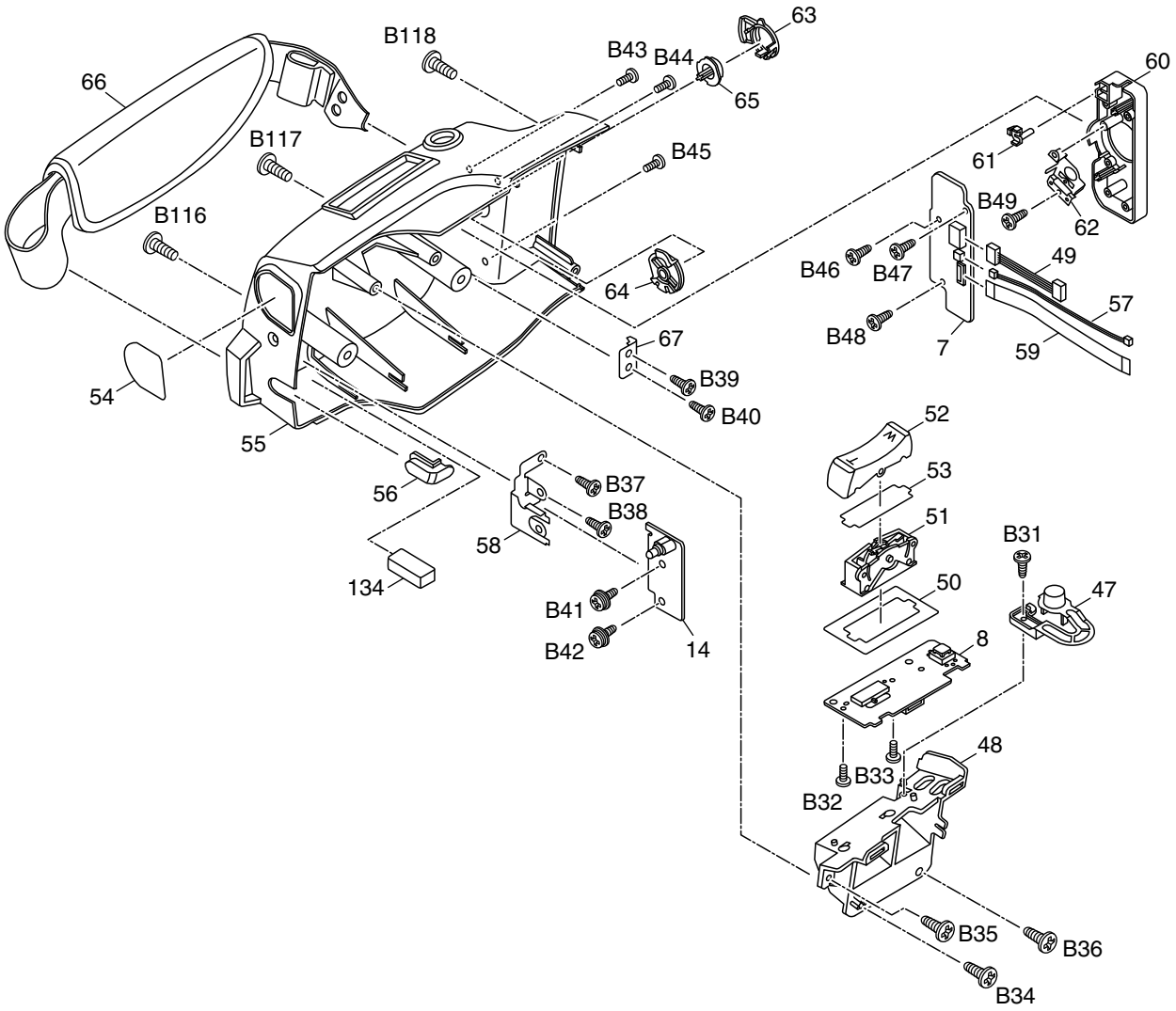
S7.2. Frame and Casing Section (2)



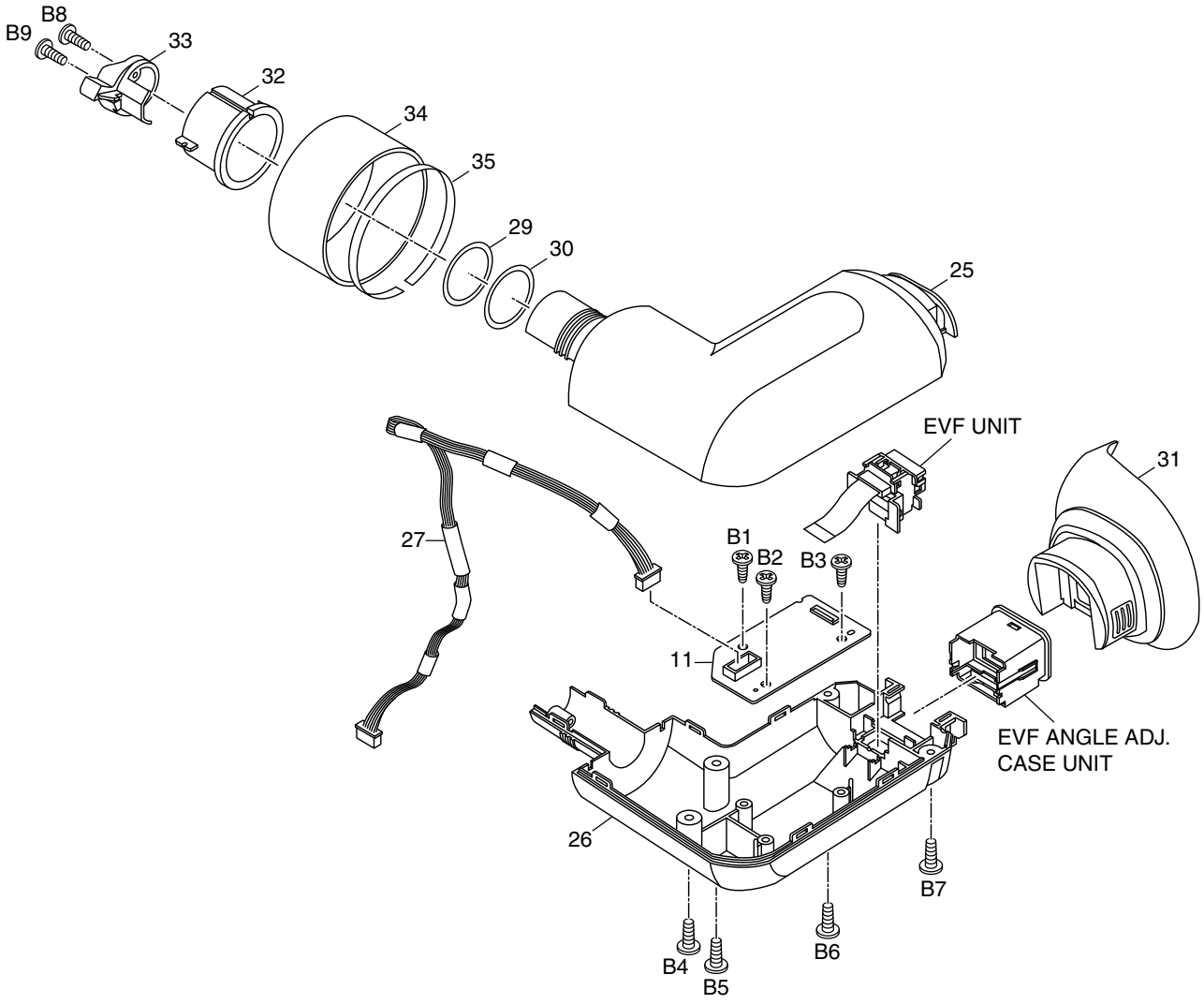
S7.3. Handle Section



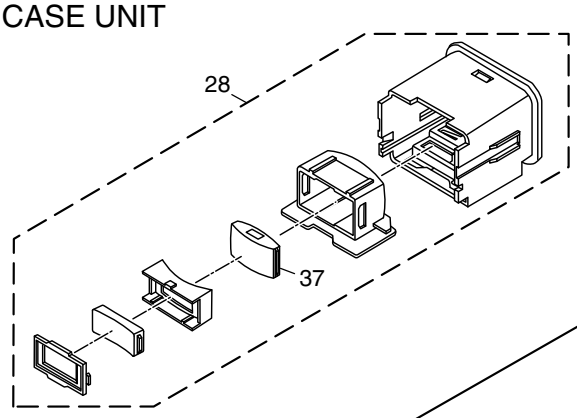
S7.4. Cover Section



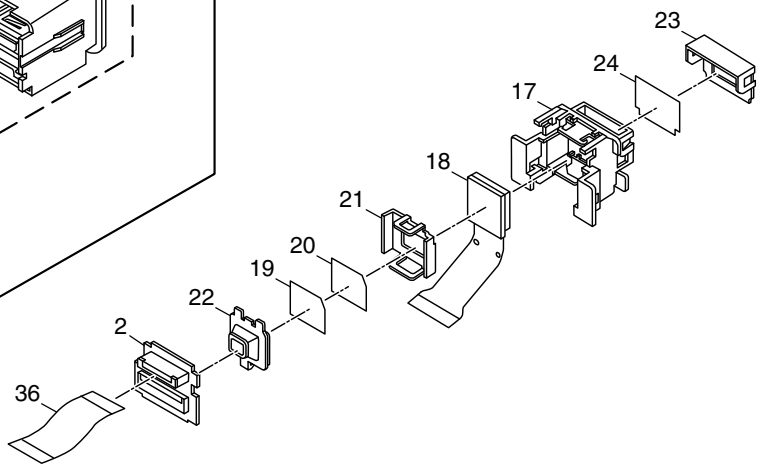
S7.5. EVF Section



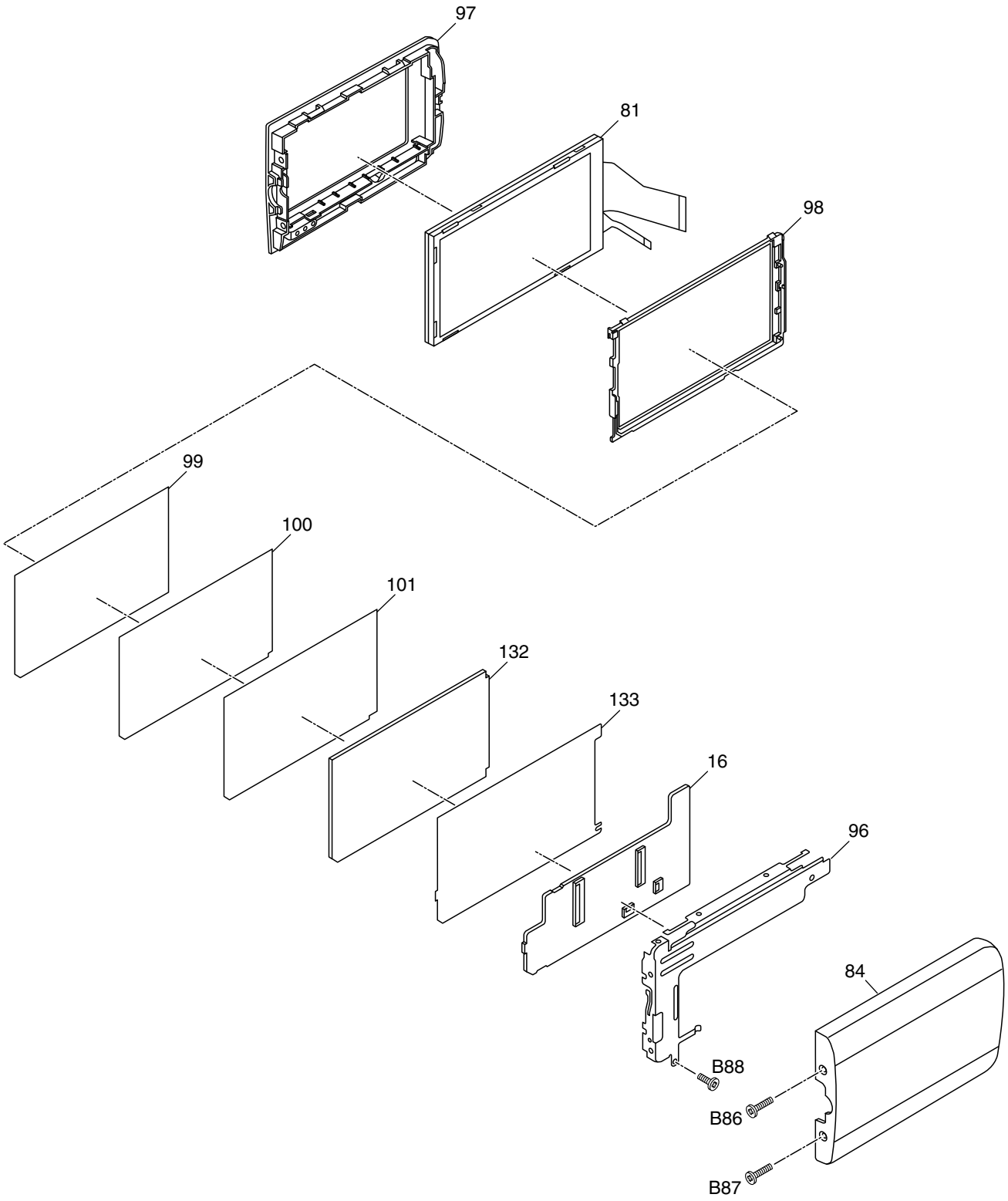
EVF ANGLE ADJ.
CASE UNIT



EVF UNIT



S7.6. LCD Section



S7.7. Packing Parts and Accessories Section