

# Service Manual

**Interchangeable Lens for Digital Camera**

Model No. **H-HS043PP**

**H-HS043E**

**H-HS043GK**

**Colour**

**(S).....Silver Type**

**(K).....Black Type**



**POWER  
O.I.S.**

**HD**



## Specifications

Specifications are subject to change without notice.


INTERCHANGEABLE LENS FOR DIGITAL CAMERA "LUMIX G 42.5 mm/F1.7 ASPH/POWER O.I.S."

<b>Focal length</b>
f=42.5 mm (35 mm film camera equivalent: 85 mm)
<b>Aperture type</b>
7 diaphragm blades/circular aperture diaphragm
<b>Maximum aperture</b>
F1.7
<b>Minimum aperture value</b>
F22
<b>Lens construction</b>
10 elements in 8 groups (1 aspherical lens)
<b>In focus distance</b>
0.31 m to $\infty$ [from the focus distance reference line]
<b>Maximum image magnification</b>
0.2 $\times$ (35 mm film camera equivalent: 0.4 $\times$ )
<b>Optical image stabilizer</b>
Available
<b>[O.I.S.] switch</b>
None (Setting of the [Stabilizer] is done in [Rec] mode menu by LUMIX digital cameras.)
<b>Mount</b>
"Micro Four Thirds Mount"
<b>Angle of view</b>
29°
<b>Filter diameter</b>
37 mm
<b>Max. diameter</b>
Approx. 55 mm
<b>Overall length</b>
Approx. 50 mm (from the tip of the lens to the base side of the lens mount)
<b>Mass</b>
Approx. 130 g

### 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.

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

# 1 Service Navigation

## 1.1 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 supplement service manual.

## 1.2 Important Notice

### 1.2.1 About LENS MAIN UNIT (Ref. 203)

1. LENS MAIN UNIT (Ref. 203) is not supplied due to difficulty of the transportation issue (Fragile, Dust-free packing), and requires critical lens adjustments.

Therefore, any needs of the "LENS MAIN UNIT" (Ref. 203), carefully confirm its performance in advance.

2. Once "LENS MAIN UNIT" (Ref. 203) is confirmed as defective, place order "LENS UNIT" (Ref. 200) and replace SHADING FRAME (Ref. 209), to maintain Serial number of owner's original lens.

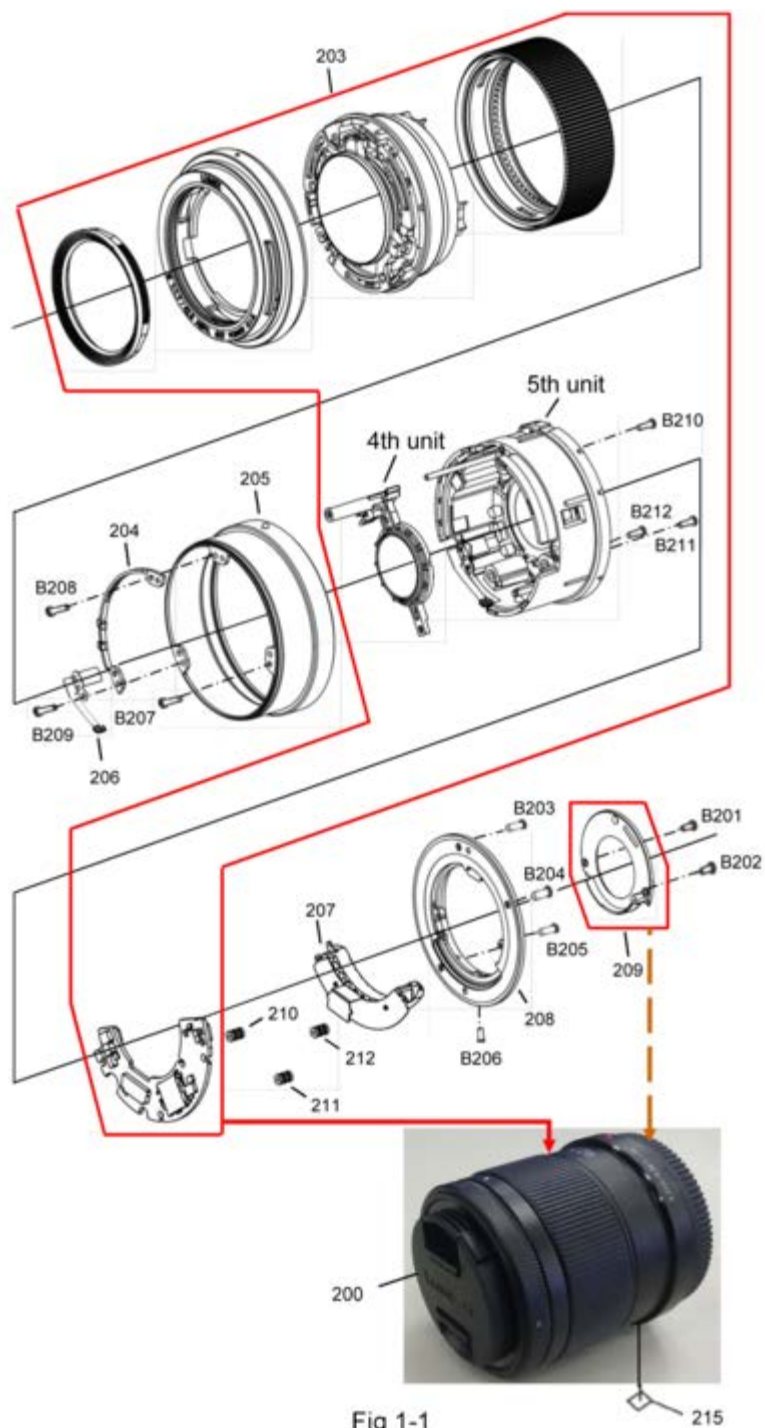


Fig 1-1

- No adjustment is required when replacing the part mentioned on Fig.1-1. But, when tighten the concerned screws, apply proper torque mentioned on "4. Disassembly and Assembly Instruction" section.

# 2 Operating Guide

## 2.1 Before Use

### Information for Your Safety

Keep the unit as far away as possible from electromagnetic equipment (such as microwave ovens, TVs, video games, radio transmitters, high-voltage lines etc.).

- Do not use the camera near cell phones because doing so may result in noise adversely affecting the pictures and sound.
- If the camera is adversely affected by electromagnetic equipment and stops functioning properly, turn the camera off and remove the battery and/or the connected AC adaptor. Then reinsert the battery and/or reconnect the AC adaptor and turn the camera on.

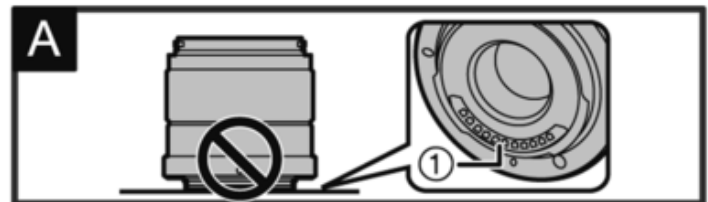
The lens can be used with a digital camera compatible with the lens mount standard for the "Micro Four Thirds™ System".

- It cannot be mounted on the Four Thirds™ mount specification camera.
- The digital camera illustrations in these operating instructions show DMC-GM5 as an example.
- The appearance and specifications of products described in this manual may differ from the actual products you have purchased due to later enhancements.
- Micro Four Thirds™ and Micro Four Thirds Logo marks are trademarks or registered trademarks of Olympus Imaging Corporation, in Japan, the United States, the European Union and other countries.
- Four Thirds™ and Four Thirds Logo marks are trademarks or registered trademarks of Olympus Imaging Corporation, in Japan, the United States, the European Union and other countries.
- G MICRO SYSTEM is an interchangeable lens type digital camera system of LUMIX based on a Micro Four Thirds System standard.
- Other names of systems and products mentioned in these instructions are usually the registered trademarks or trademarks of the manufacturers who developed the system or product concerned.

### Precautions

#### ■ Lens Care

- Sand and dust can damage the lens. Make sure that no sand or dust gets inside the lens or the terminals when using the lens on a beach, etc.
- The lens is neither waterproof nor splash-proof. If drops of water get onto the lens, wipe the lens with a dry cloth.
- Do not press the lens with excessive force.
- When there is dirt (water, oil, and fingerprints, etc.) on the surface of the lens, the picture may be affected. Lightly wipe the surface of the lens with a soft, dry cloth before and after taking pictures.
- Do not place the lens mount facing downwards. Do not allow the lens contact points ① to become dirty. (See illustration **A**)



#### ■ About Condensation (Fogging of the Lens)

- Condensation occurs when there are differences in temperature and humidity as described below. Condensation can cause the lens to become dirty and lead to mold and malfunctioning, so exercise caution in the following situations:
  - When the camera is brought indoors from outside during cold weather
  - When the camera is brought into an air-conditioned car
  - When cold air from an air conditioner is directly blown onto the lens
  - In humid places
- Put the camera into a plastic bag to allow it to acclimatize to the surrounding temperature in order to prevent condensation. If condensation occurs, turn the power off and leave it for about two hours. Once the camera acclimatizes to the surrounding temperature the condensation will go away naturally.

## 2.2 Cautions For Use

### Cautions for Use

Take care not to drop or knock the lens. Also take care not to put a lot of pressure on the lens.

- Take care not to drop the bag that you inserted the lens in as it may strongly shock the lens. The camera may stop operating normally and pictures may no longer be recorded. Also, the lens may be damaged.

When using pesticides and other volatile substances around the camera make sure that they do not get onto the lens.

**onto the lens.**

- If such substances get onto the lens they can damage the exterior case or cause the paint to peel.

**Do not carry the unit when it is still attached to the camera body.**

- Under no circumstances should the unit be stored in any of the following locations since doing so may cause problems in operation or malfunctioning.
  - In direct sunlight or on a beach in summer
  - In locations with high temperatures and humidity levels or where the changes in temperature and humidity are acute
  - In locations with high concentrations of sand, dust or dirt
  - Where there is fire
  - Near heaters, air conditioners or humidifiers
  - Where water may make the unit wet
  - Where there is vibration
  - Inside a vehicle
- Refer also to the operating instructions of the digital camera.
- When the unit is not going to be used for a prolonged period, we recommend storing with a desiccant (silica gel). Failure to do so may result in performance failure caused by mold, etc. It is recommended that you check the unit's operation prior to use.
- Do not leave the lens in contact with rubber or plastic products for extended periods of time.
- Do not touch the lens contact point. Doing so can cause failure of the unit.
- Do not disassemble or alter the unit.

**Do not use benzine, thinner, alcohol or other similar cleaning agents to clean the lens glass or exterior cabinet.**

- Using solvents can damage the lens or cause the paint to peel.
- Wipe off any dust or fingerprints with a soft, dry cloth.
- Use a dry, dust cloth to remove dirt and dust on the focus ring.
- Do not use a household detergent or a chemically treated cloth.

## **Troubleshooting**

**A sound is heard when the camera is turned on or off.  
A sound is heard from the lens when taking a picture of a bright subject such as when outdoors.**

- This is the sound of lens or aperture movement and is not a malfunction.

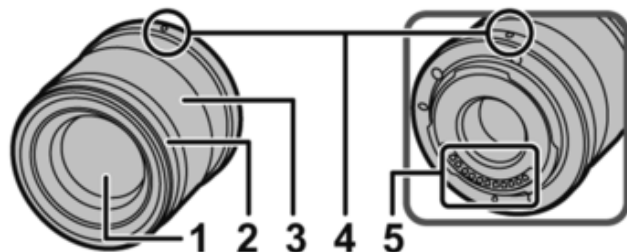
**When this lens is attached to digital camera, stabiliser function cannot be turned off or stabiliser function does not work.**

- The Optical Image Stabiliser function of this lens only works correctly with supported cameras.
  - When older Panasonic digital cameras (DMC-GF1, DMC-GH1, DMC-G1) are used, [Stabilizer] in the [Rec] mode menu cannot be set to [OFF]. It is recommended to update the firmware of the digital camera at the following website.  
<http://panasonic.jp/support/global/cs/dsc/download/>
  - When using this lens with another make of digital cameras, contact the respective company about details.

## **2.3 Components**



# Names and Functions of Components



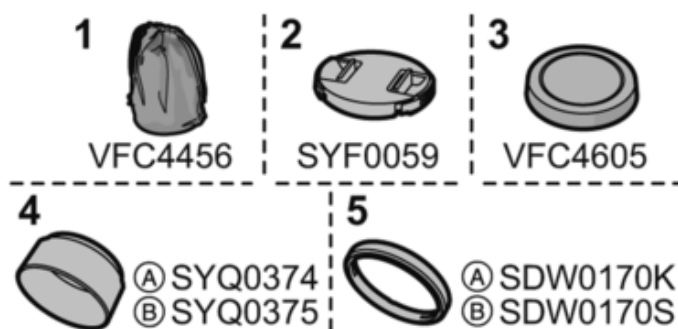
- 1** Lens surface
- 2** Decoration ring  
Remove this cover when using the lens hood.
- 3** Focus ring  
Rotate to focus when taking pictures with manual focus (MF).
- 4** Lens fitting mark
- 5** Contact points



## Note

- When flash recording with a close subject, the light of the flash will be blocked by the lens and part of the picture may be dark. Check the distance from the subject when recording.

## 2.3.1 Accessories



- 1** Lens Pouch
  - 2** Lens Cap
  - 3** Lens Rear Cap
  - 4** Lens Hood  
(A): Black, (B): Silver
  - 5** Decoration ring  
(A): Black, (B): Silver
- (The lens cap, lens rear cap, and decoration ring are attached to the lens at the time of purchase.)

## 2.3.2 Attaching/Detaching the Lens

- Refer also to the camera's operating instructions for attaching and detaching the lens.
- Check that the camera is turned off.
- Remove the lens rear cap from the lens. (See illustration **1**)

## ■ Attaching the Lens (See illustration **2**)

Align the lens fitting marks **(A)** on the camera body and the lens and then rotate the lens in the direction of the arrow until it clicks.

- Do not press the lens release button **(B)** when you attach a lens.
- Do not try to attach the lens when holding it at an angle to the camera body as the lens mount may get scratched.
- Check that the lens is attached correctly.

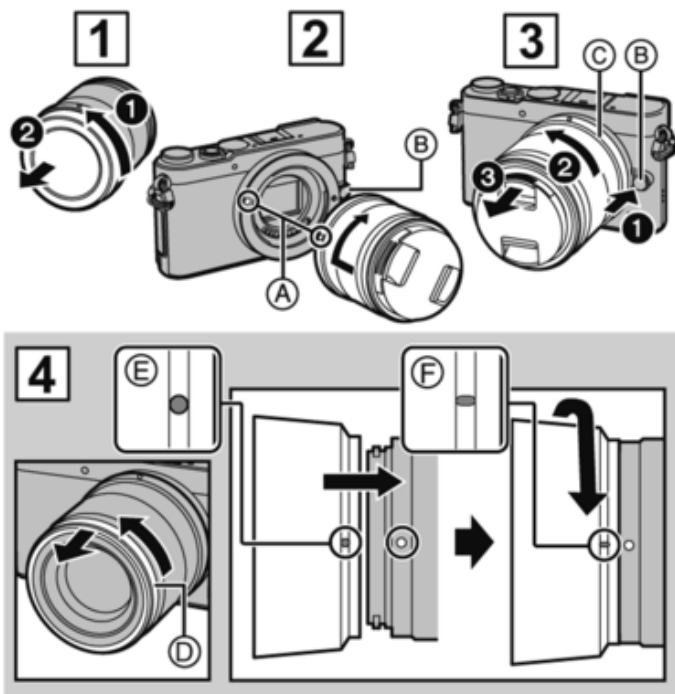
## ■ Detaching the Lens (See illustration **3**)

While pressing on the lens release button **(B)**, rotate the lens toward the arrow until it stops and then remove.

- When rotating the lens, hold **(C)**, the portion near the base of the lens.
- Attach the lens rear cap so that the lens contact point does not get scratched.
- Attach the body cap to the camera so no dirt or dust will get inside the main unit.

## ■ Attaching the Lens Hood (Supplied Accessory) (See illustration **4**)

- 1 Rotate the decoration ring **(D)** in the direction of the arrow and then remove.
- 2 Align the mark **(E)** (●) on the lens hood with the mark on the tip of the lens.
- 3 Rotate the lens hood in the direction of the arrow until it clicks and then align the mark **(F)** (◐) on the lens hood with the mark on the tip of the lens.





## ■ Temporarily Storing the Lens Hood (See illustration **5**)

- 1 Rotate the lens hood **G** in the direction of the arrow and then remove.
- 2 Align the mark **F** (●) on the lens hood with the mark on the tip of the lens.
- 3 Rotate the lens hood in the direction of the arrow until it clicks into place.

## ● Note

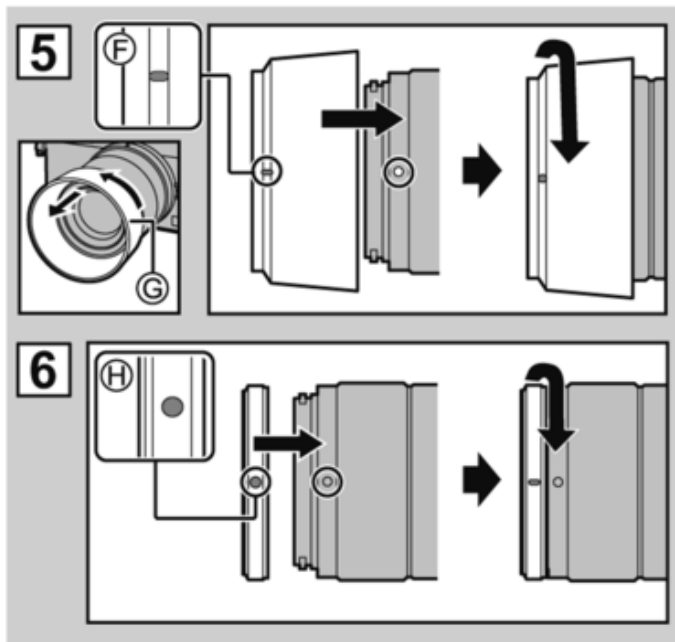
- When taking pictures with the flash with the lens hood attached, the lower portion of the screen may turn dark (vignetting effect) and the control of the flash may be disabled because the photo flash may be obscured by the lens hood. We recommend detaching the lens hood.
- When using the AF assist lamp in the dark, detach the lens hood.

## ■ Attaching the decoration ring (See illustration **6**)

- 1 Align the mark **H** (●) on the decoration ring with the mark on the tip of the lens.
- 2 Rotate the decoration ring in the direction of the arrow until it clicks into place.

## ■ Attaching Filters




- Vignetting may occur if using 2 or more MC protectors (optional: DMW-LMCH37), PL filters (optional: DMW-LPL37, DMW-LPLA37) or ND filters (optional: DMW-LND37), or if using thick protectors and/or filters.
- The filter may become impossible to remove if excessively tightened, so please refrain from tightening it too strongly.
- It is possible to attach the lens cap with the filter already attached.
- When the lens hood is attached to this lens, you cannot attach a filter to it.
- You cannot attach a conversion lens or adaptor to this lens. A filter may be used, but attaching any other element may cause damage to the lens.



# 3 Service Fixture and Tools

## 3.1 Service Fixture and Tools

The following Service Fixture and Tools are used for Checking & Servicing for this unit.

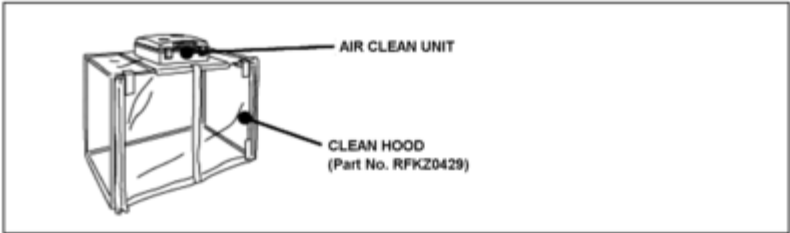
Lens Cleaning Kit (BK) VFK1900BK	TORQUE DRIVER RFKZ0456	Driver VFK1390
 * Only supplied as 10 set/box.	 Spec.:2-30N・cm (Equiv.0.2-3kgf/cm)	

## 3.2 Clean Box

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

[NOTE]

- Work in the environment of satisfied clean level less than class 10,000 (Federal Standard 209D) when cleaning the inside of a lens.



# 4 Disassembly and Assembly Procedure

## 4.1 Outline

It is recommended dealing with clean box, to keep maintaining the dustproof environment.

(Refer to “3.2. Clean Box” section of this service manual for details.)

### Important:

1. When servicing the enclosure part (refer to Fig. W1), it must be performed inside of satisfied clean level.

(Satisfied clean level: Less than class 10,000 (Federal Standard 209D))

As for procedure, refer to the “5 Maintenance” for details.

2. To minimize the possibilities/risk of getting the dust/dirt on the lens surface, keep covering the lens unit with lens caps (front & rear), other than necessary cases.
3. Do not touch the surface of the lens glasses with your fingers.
4. Blow off the dust on the surface of the lens with a blower brush.
5. Use lens cleaning KIT (BK)(VFK1900BK).

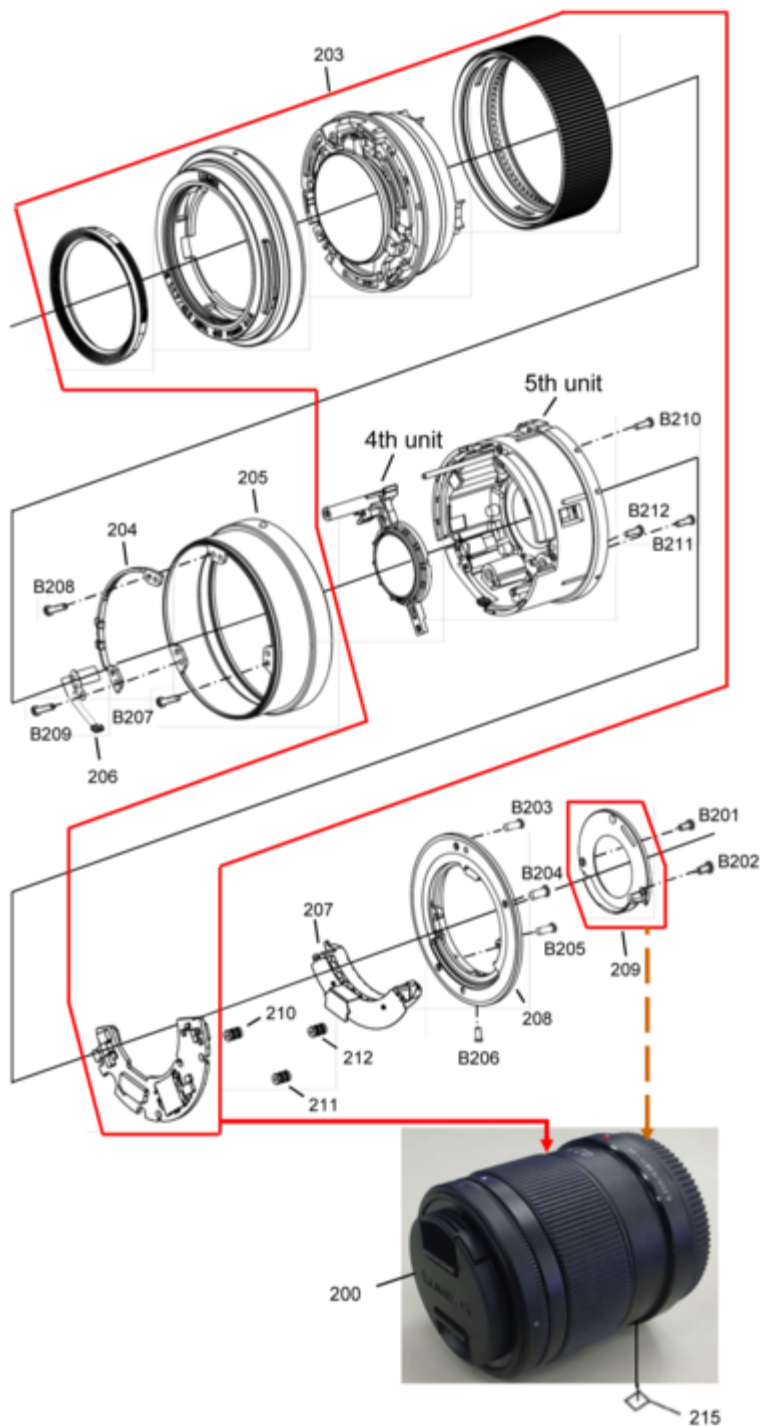
Proceed disassemble/assemble, by referring the following table and Fig. W1.

### NOTE:

1. When installing the screws, be sure to use the torque driver (RFKZ0456) and tighten the screws with specified torque, mentioned on the following table.
2. Use small driver (VFK1390) when removing/tightening B206.

### Interchangeable Lens (H-HS043)

<b>Caution :</b> Keep covering the lens unit with Lens caps (front & rear) other than necessary cases.							
Concerned parts		Screws					Remarks
Part name	Ref. No.	Ref. No.	Color	Length (mm)	Order	Torque value	
SHADING FRAME	209	B201	Black	3.0 mm	1	10±1N·cm	
		B202	Black	3.0 mm	2	10±1N·cm	
L MOUNT UNIT	208	B203	Silver	5.0 mm	1	20±1N·cm	
		B204	Silver	5.0 mm	2	20±1N·cm	
		B205	Silver	5.0 mm	3	20±1N·cm	
MOUNT CONTACT UNIT	207	B206	Silver	3.0 mm	-	-	Use Small Driver (VFK1390).
4,5TH UNIT	-	B210	Silver	5.0 mm	1	10±1N·cm	
		B211	Silver	5.0 mm	2	10±1N·cm	
		B212	Silver	5.0 mm	3	10±1N·cm	
REAR FRAME UNIT	205	B207	Silver	6.0 mm	1	8±1N·cm	
		B208	Silver	6.0 mm	2	8±1N·cm	
		B209	Silver	6.0 mm	3	8±1N·cm	



\*It must be performed inside of satisfied clean level.  
(Satisfied clean level : Less than class 10,000 Federal Standard 209D)

(Fig. W1)

## 4.2 Disassembly procedure

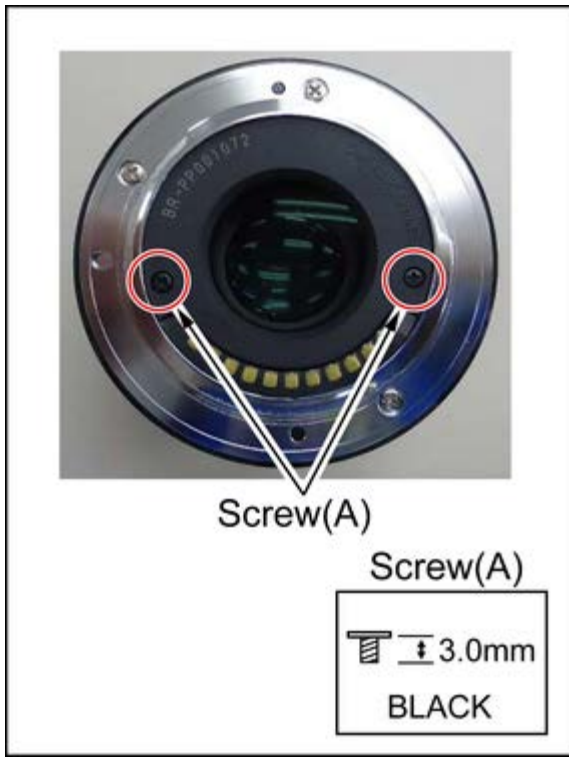
### Important:

It must be performed inside of satisfied clean level.

(Satisfied clean level: Less than class 10,000 (Federal Standard 209D))

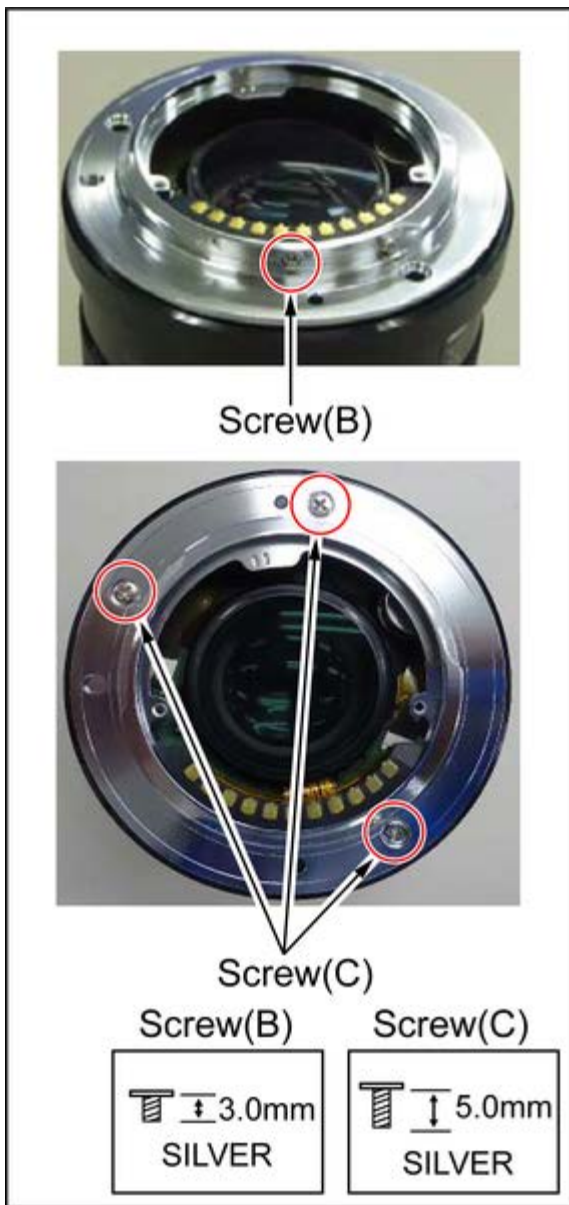
### 4.2.1 Removal of the Shading frame

1. Remove the 2 screws (A).



#### 4.2.2 Removal of the L mount unit

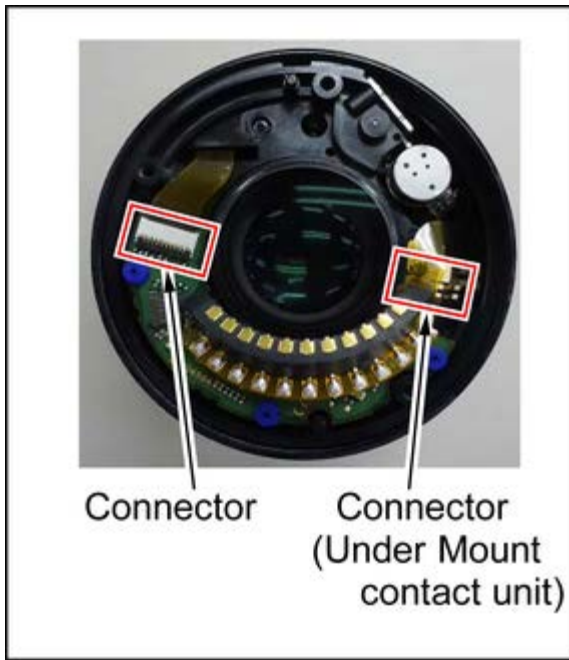
1. Remove 1 screw (B) and 3 screws (C).



#### 4.2.3 Removal of the Lens P.C.B. unit and the Mount contact unit

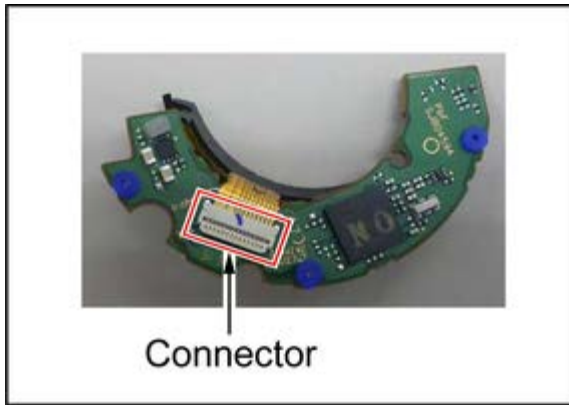
1. Disconnect 2 connectors.





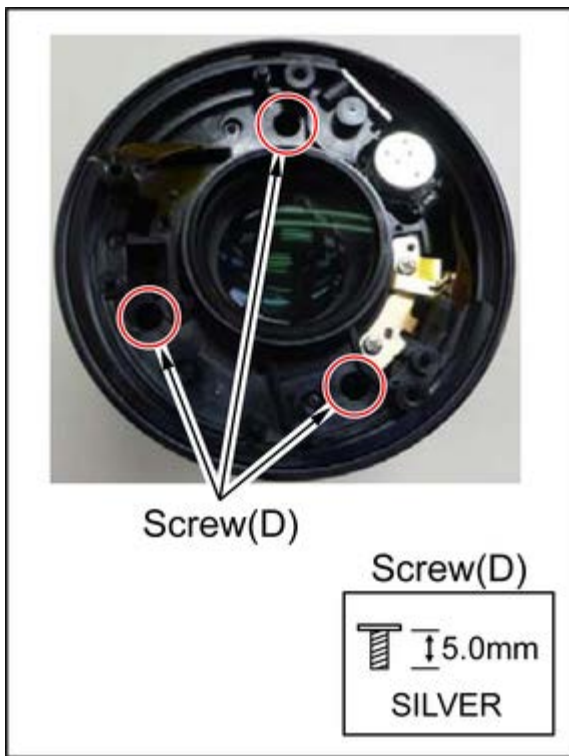
#### 4.2.4 Removal of the Mount contact unit

1. Disconnect 1 connector.



#### 4.2.5 Removal of the 4,5th unit

1. Remove 3 screws (D).



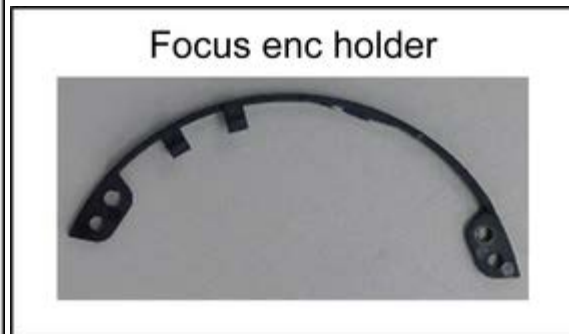
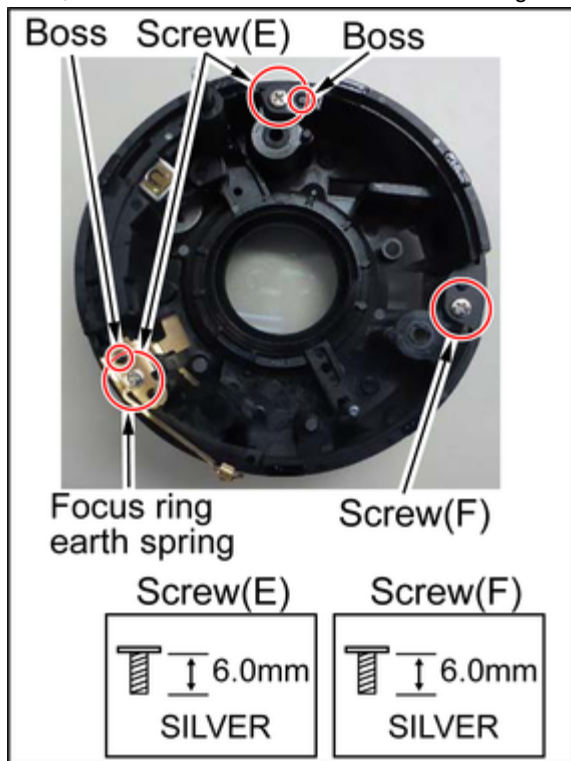
#### 4.2.6 Removal of the Rear frame unit

1. After removing 2 screws (E), remove the Focus ring earth spring.

And, remove the Focus enc holder from bosses.

(Be careful not to break it.)

Then, remove the Rear frame unit after removing screw (F).



#### 4.3 Assembly procedure

**Important:**

When tightening the screw, use a torque driver (RFKZ0456) by ordering the screwing order with specified torque described in each step.

### 4.3.1 Installation of the Rear frame unit

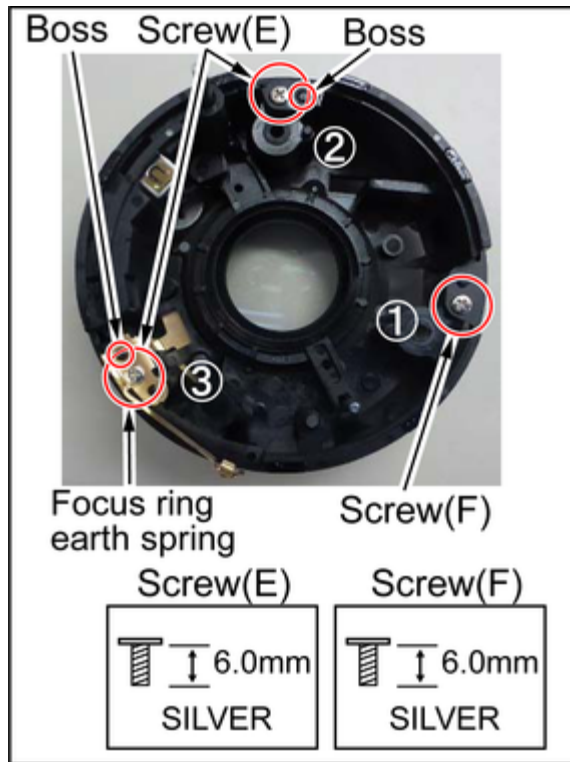
1. Tighten 1 screw (F) for fixing the Rear frame unit in numerical order by using the torque driver with specified torque.

Then, install the Focus enc holder to bosses.

After that, tighten 2 screws (E) for fixing the Focus enc holder and the Focus ring earth spring in numerical order by using the torque driver with specified torque.

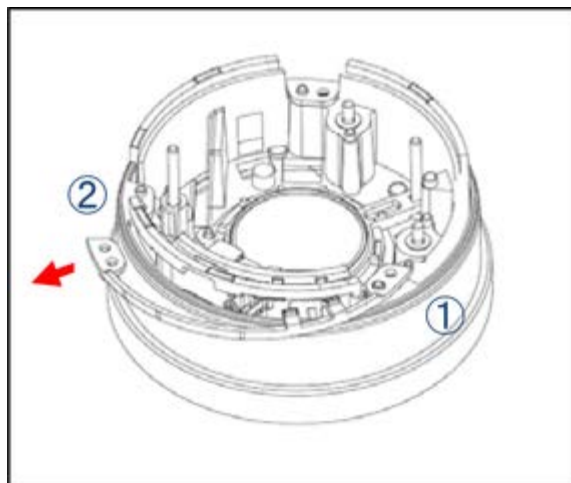
(Torque Driver : RFKZ0456)

(Torque :  $8 \pm 1$  N cm)



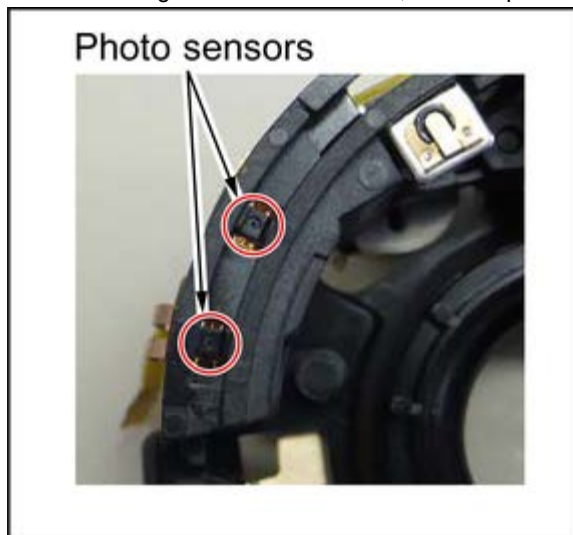
\*How to install the Focus enc holder.

- (1) Put boss ① into a positioning hole (long) of the Focus enc holder.
- (2) Deform the Focus enc holder in the direction of the arrow.
- (3) Put boss ② into the other positioning hole (circle) of the Focus enc holder.



**Note:**

When installing the Focus enc holder, note the position of the photo sensors.

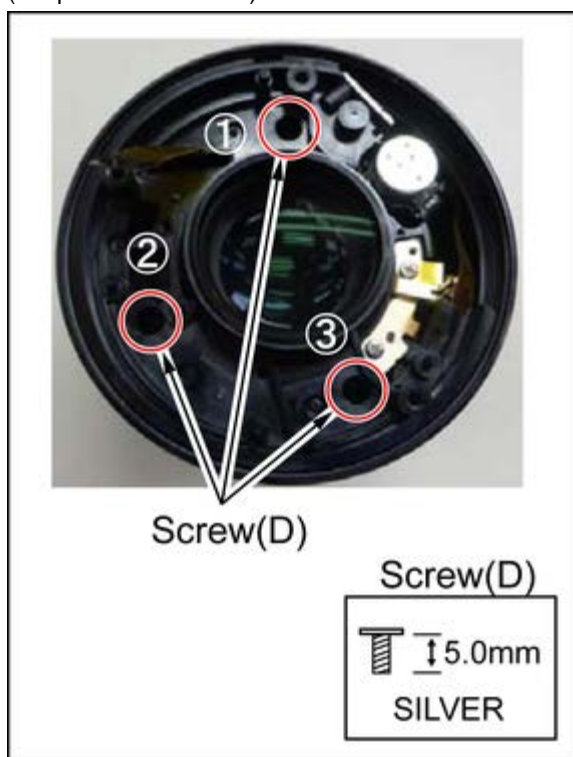


### 4.3.2 Installation of the 4,5th unit

1. Tighten 3 screws (D) in numerical order by using the torque driver with specified torque.

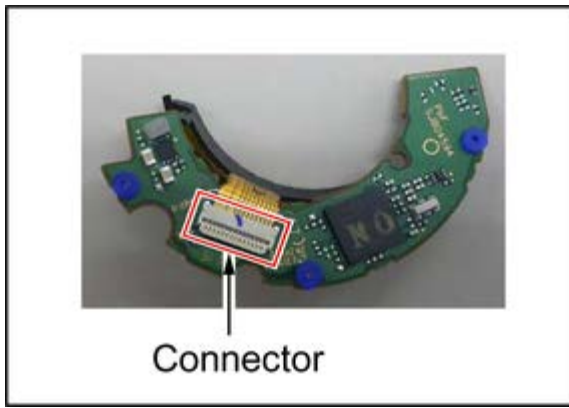
(Torque Driver : RFKZ0456)

(Torque :  $10 \pm 1$  N · cm)



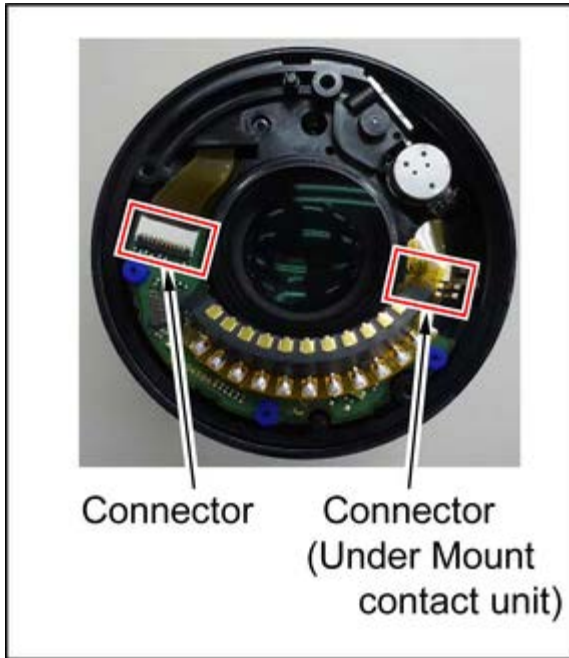
### 4.3.3 Installation of the Mount contact unit

1. Connect FPC to 1 connector.



#### 4.3.4 Installation of the Lens P.C.B.unit and the Mount contact unit

1. Connect FPCs to 2 connectors



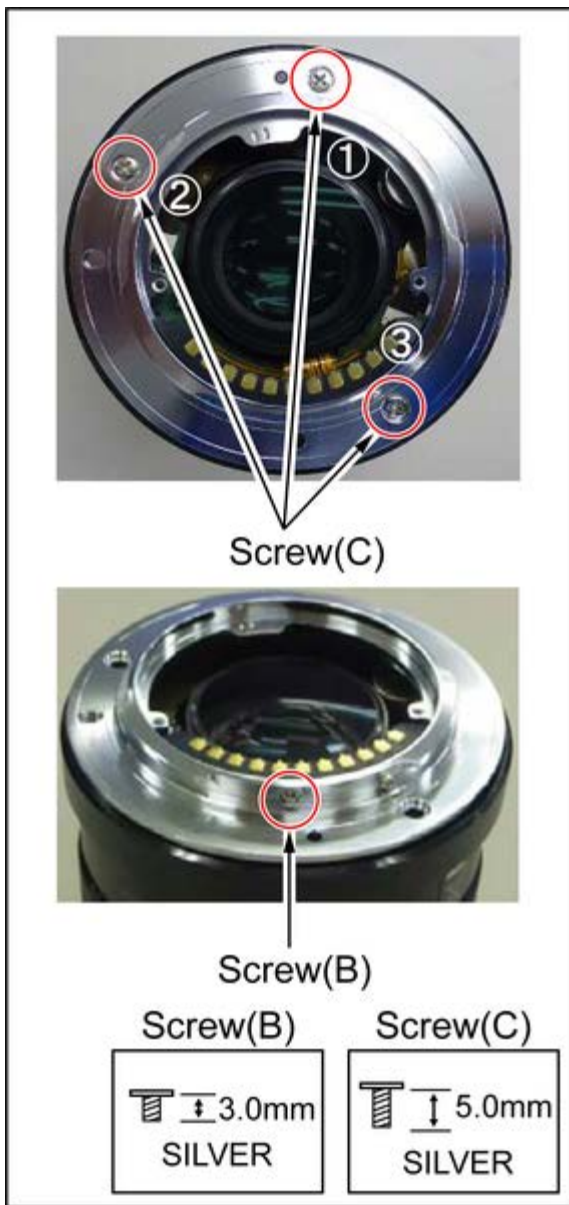
#### 4.3.5 Installation of the L mount unit

1. Tighten 3 screws (C) in numerical order by using the torque driver with specified torque.

(Torque Driver : RFKZ0456)

(Torque :  $20 \pm 1$  N cm)

And, tighten 1 screw (B) by using the small driver.



#### 4.3.6 Installation of the Shading frame

1. Tighten 2 screws (A) in numerical order by using the torque driver with specified torque.

(Torque Driver : RFKZ0456)

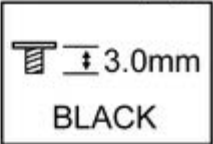
(Torque :  $10 \pm 1 \text{ N} \cdot \text{cm}$ )





Screw(A)

Screw(A)



# 5 Maintenance

## 5.1 Lens Cleaning

### 5.1.1 Dust / Dirt on the outer casing part(s)

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

### 5.1.2 Dust / Dirt on the Lens Glasses.

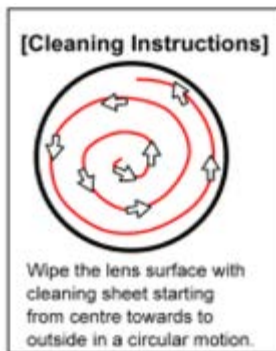
Define the location of the dust / dirt first, whether it is outside lens surface or not.

1. When it is outside surface of the lens

When the dust and / or dirt gets on the outer side surface of the Lens glasses, order the following procedures.

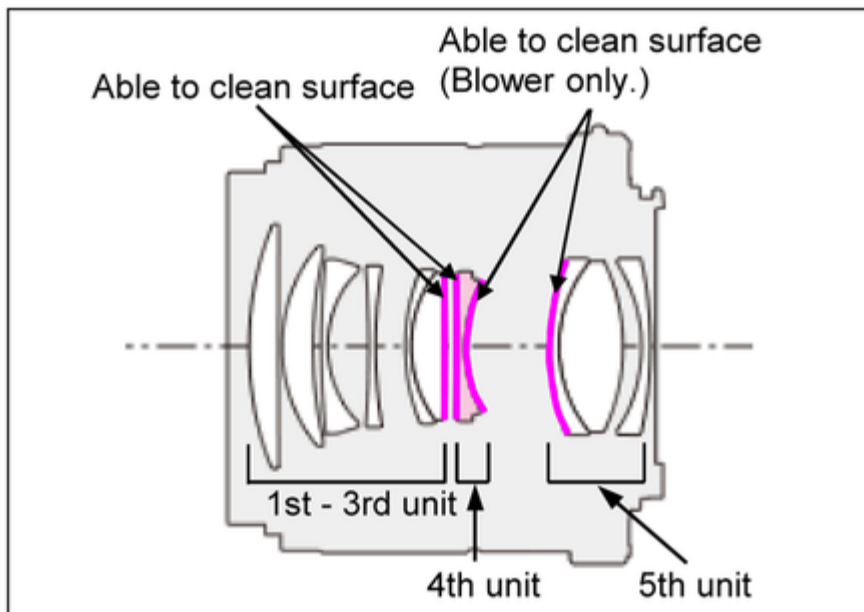
- a. Blow off the dust on the Lens glass surface with the Blower, gently. (Do not Blow too strongly.)
- b. Wipe out the dirt on the lens glass surface with Lens cleaning KIT (VFK1900BK) if necessary.

(Consult the Instruction sheet which is included in the Lens cleaning KIT in details.)



2. When it is inside of the lens

When there is dust / dirt inside of the lens, remove it by referring to the following procedures.



1. When removing 1st - 3rd,4th and 5th unit, it has to be proceed inside of satisfied clean level.

(Less than class 10,000 (Federal Standard 209D))

As for clean box, refer to the "3.2. Clean Box", in details.

2. When install the screws, use torque driver (RFKZ0456) with specified torque.

3. To keep the Lens performance, can only use the original 1st - 3rd,4th and 5th unit .

So the 1st - 3rd,4th and 5th unit is not supplied as spare parts.


Also do not exchange the 1st - 3rd,4th and 5th unit taking from others.

---

**Model No. : H-H043PP/E/GK    Parts list note**

---

- Note:

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

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

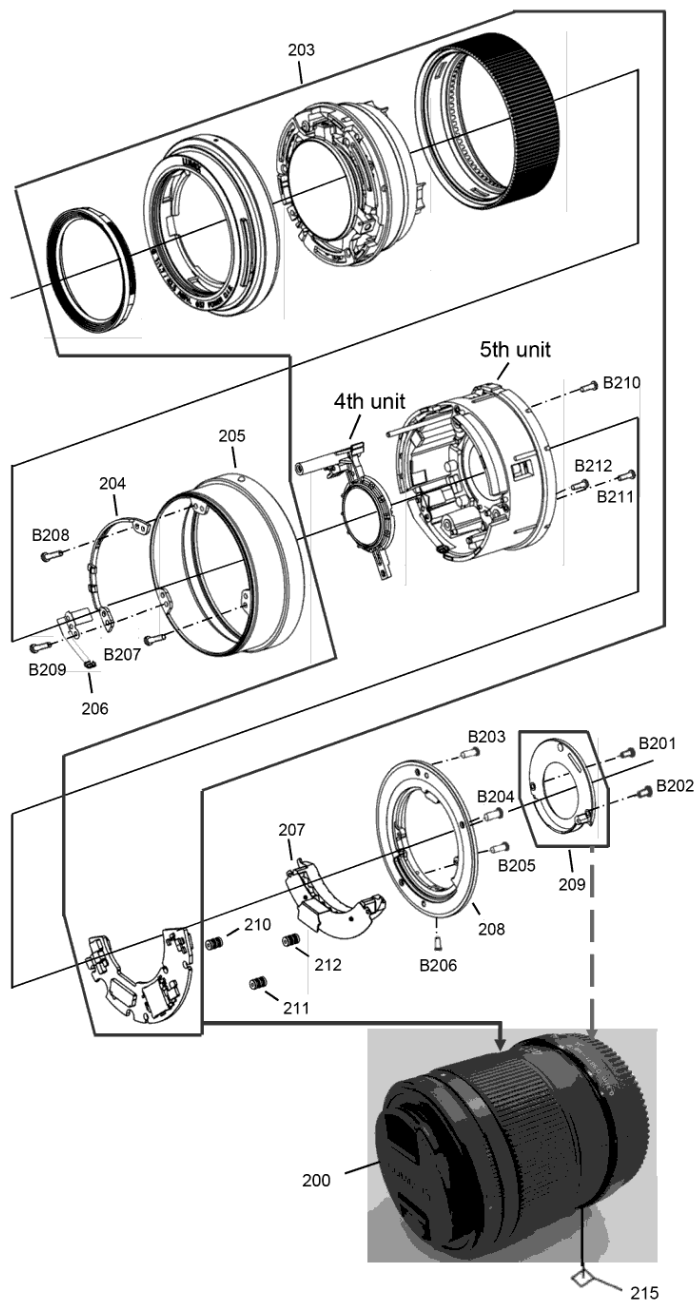
**Definition of Parts supplier:**

- 1. Parts marked with [ENERGY] in the remarks column are supplied from Panasonic Corporation Energy Company.
- 2. Parts marked with [PAVCX] in the remarks column are supplied from PAVCX.  
Others are supplied from AVC-IMAGING.

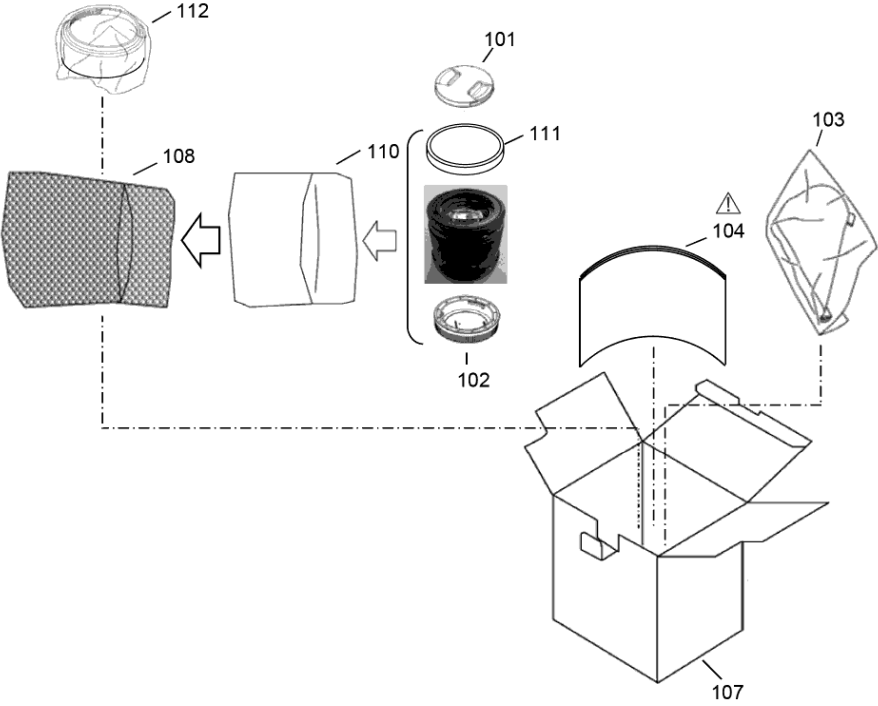
---

**Model No. : H-H043PP/E/GK    Frame and Casing Section**


---






**Model No. : H-H043PP/E/GK    Packing Parts and Accessories**



Model No. : H-H043PP/E/GK    Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
		101	SYF0059	LENS FRONT CAP	1	
		102	VFC4605	LENS REAR CAP	1	
		103	VFC4456	LENS STORAGE BAG	1	
		104	SQT0843	OPERATING INSTRUCTIONS(ENGLISH/GERMAN/FRENCH/SPANISH)	1	E



		104	SQT0844	OPERATING INSTRUCTIONS(ITALIAN/CHINESE(TRADITIONAL)/RUSSIAN)	1	E
		104	SQT0842	OPERATING INSTRUCTIONS(ENGLISH/CANADIAN-FRENCH/SPANISH)	1	PP
		104	SQT0845	OPERATING INSTRUCTIONS(CHINESE(SIMPLIFIED))	1	GK
		107	SPK0077	PACKING CASE	1	E-K
		107	SYQ0381	PACKING CASE	1	E-S
		107	SYQ0565	PACKING CASE	1	GK-K
		107	SYQ0566	PACKING CASE	1	GK-S
		107	SYQ0377	PACKING CASE	1	PP-K
		107	SYQ0380	PACKING CASE	1	PP-S
		108	VPF1328	BAG, POLYETHYLENE	1	
		110	VPF1509	LENS BAG	1	
		111	SDW0170K	DECORATION RING	1	(-K)
		111	SDW0170S	DECORATION RING	1	(-S)
		112	SYQ0374	LENS HOOD	1	(-K)
		112	SYQ0375	LENS HOOD	1	(-S)
		200	SXW0174	LENS UNIT	1	(-K)
		200	SXW0175	LENS UNIT	1	(-S)
		203	-----	LENS MAIN UNIT	1	(NOT SUPPLIED)
		204	SML0050	FOCUS ENC HOLDER	1	
		205	SXQ0321	REAR FRAME UNIT	1	(-K)
		205	SXQ0322	REAR FRAME UNIT	1	(-S)
		206	SMC0047	FOCUS RING EARTH SPRING	1	
		207	VEJ2336	MOUNT CONTAT UNIT	1	
		208	SXQ0337	L MOUNT UNIT	1	
		209	-----	SHADING FRAME	1	(NOT SUPPLIED)
		210	VMG1855	FLOATING RUBBER	1	
		211	VMG1855	FLOATING RUBBER	1	
		212	VMG1855	FLOATING RUBBER	1	
		215	VQL1V24	WEEE LABEL	1	E
		215	VQL1W22	TEN YEARS LABEL	1	GK
		B201	VHD2246	SCREW	1	
		B202	VHD2246	SCREW	1	
		B203	VHD2299	SCREW	1	
		B204	VHD2299	SCREW	1	
		B205	VHD2299	SCREW	1	
		B206	VHD2298	SCREW	1	
		B207	VHD2277	SCREW	1	
		B208	VHD2277	SCREW	1	
		B209	VHD2277	SCREW	1	
		B210	VHD1974	SCREW	1	
		B211	VHD1974	SCREW	1	
		B212	VHD1974	SCREW	1	