

Service Manual

Interchangeable Lens for Digital Camera



Model No. **H-H014PP**
H-H014E
H-H014GK

Vol.1



Specifications

INTERCHANGEABLE LENS FOR DIGITAL CAMERA
"LUMIX G 14 mm/F2.5 ASPH."

Focal length	f=14 mm (35 mm film camera equivalent: 28 mm)
Aperture type	7 diaphragm blades/circular aperture diaphragm
Aperture range	F2.5
Minimum aperture value	F22
Lens construction	6 elements in 5 groups (3 aspherical lenses)
In focus distance	0.18 m to ∞ (from the focus distance reference line)
Maximum image magnification	0.1 \times (35 mm film camera equivalent: 0.2 \times)
Optical image stabilizer	Not available
Mount	"Micro Four Thirds Mount"
Angle of view	75°
Filter diameter	46 mm
Max. diameter	Approx. 55.5 mm
Overall length	Approx. 20.5 mm (from the tip of the lens to the base side of the lens mount)
Mass	Approx. 55 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.

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1 INTRODUCTION

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 Block unit (Ref. 202)

1. This Service Manual does not contain the repair service information for "LENS MAIN BLOCK UNIT"(Ref.202), because it requires special facilities and equipment.
2. The "LENS MAIN BLOCK UNIT"(Ref.202) performance must be confirmed.
3. In case of the "LENS MAIN BLOCK UNIT"(Ref.202) defects, contact to the service department of sales company.

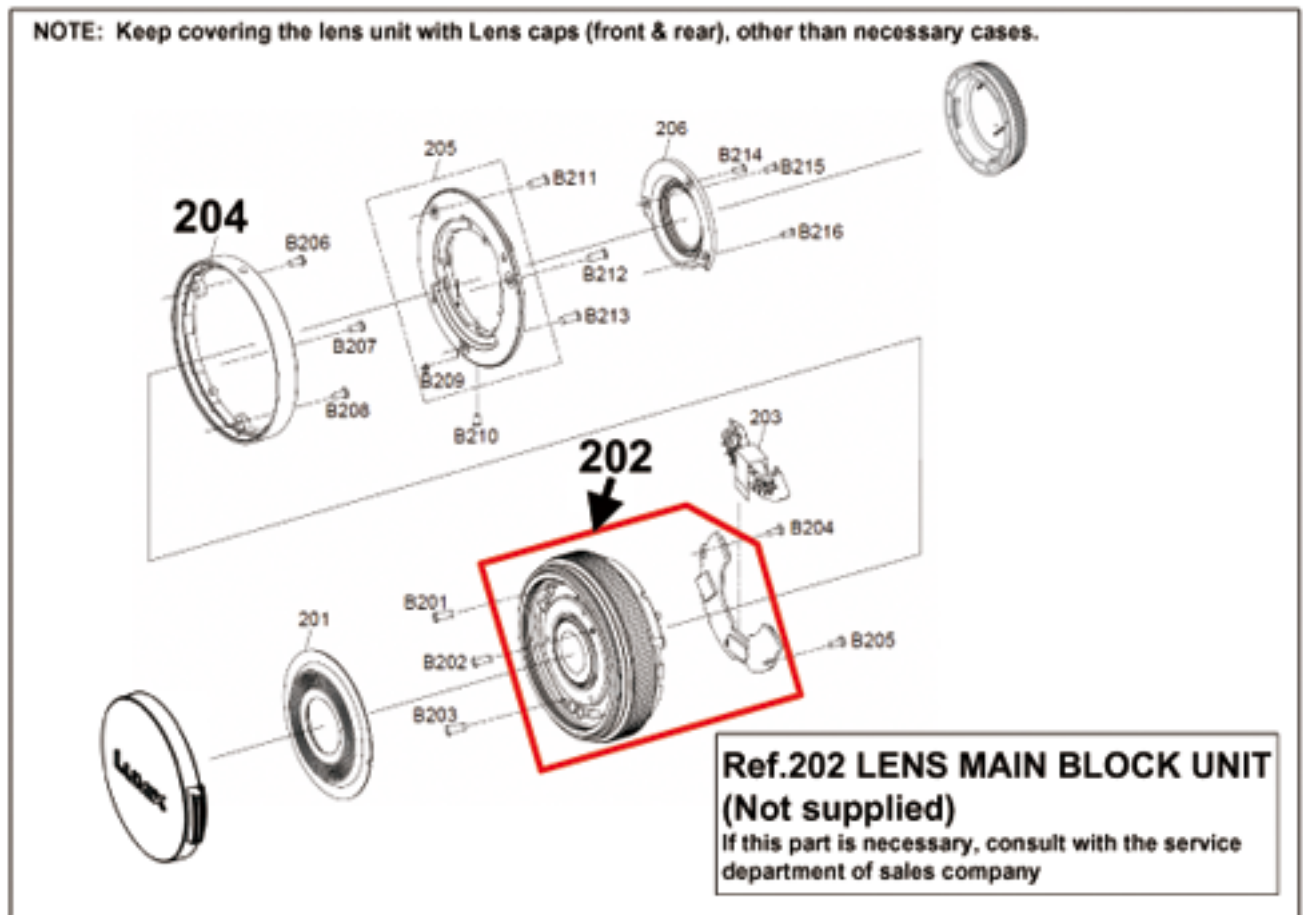


Fig. S1

4. No adjustment is required when replacing the part mentioned on Fig.S1. But, when tighten the concerned screws, apply proper torque mentioned on "4 Disassemble / Assemble 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.

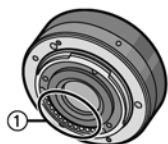
The lens can be used with a digital camera compatible with the lens mount standard for the "Micro Four Thirds™ System".

- It cannot be mounted on the Four Thirds™ mount specification camera.
- The digital camera illustrations in these operating instructions show DMC-GF1 as an example.

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.**
- **This lens is not waterproof. 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.



- 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 a lens exchange type digital camera system of LUMIX based on a Micro Four Thirds System standard.
- Other names, company names, and product names printed in these instructions are trademarks or registered trademarks of the companies concerned.

■ 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

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.

- 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

Troubleshooting

A sound is heard when the camera is turned on or off.

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

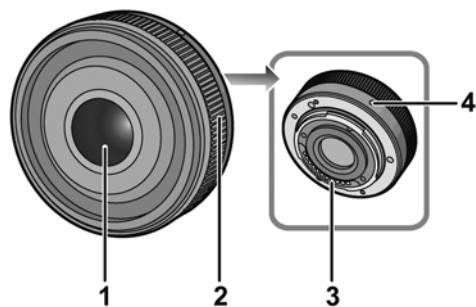
- Refer also to the operating instructions of the digital camera.
- When the unit is not going to be used for a prolonged period, we recommend storing with a desiccant (silica gel). Failure to do so may result in performance failure caused by mold, etc. It is recommended that you check the unit's operation 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.

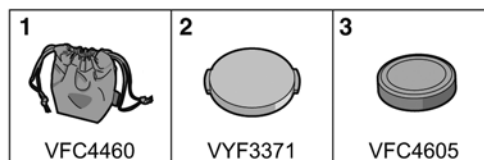
2.3. COMPONENTS

Names and Functions of Components



- 1 Lens surface
- 2 Focus ring
Rotate to focus when taking pictures with manual focus.
- 3 Contact points
- 4 Lens fitting mark

2.3.1. Accessories



- 1 Lens Storage Bag
- 2 Lens Cap
- 3 Lens Rear Cap
(The lens rear cap and lens cap are attached to the interchangeable lens at the time of purchase.)

2.3.2. Attaching/Detaching the Lens

Attaching/Detaching the Lens

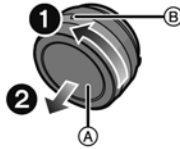
- Refer also to the camera's operating instructions for attaching and detaching the lens.

■ Attaching the Lens

- Check that the camera is turned off.

1 Turn the lens rear cap to detach it.

(A): Lens Rear Cap



2 Align the lens fitting marks (B) (red marks) 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 (C) 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

- Check that the camera is turned off.

Press the lens release button (D) while turning the lens as far as possible in the direction of the arrow to detach it.



- 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 and Detaching the Lens Cap

- Be careful not to lose the lens cap.






■ Attaching Filters

- Vignetting may occur if using 2 or more MC protectors (optional: DMW-LMC46), PL filters (optional: DMW-LPL46) or ND filters (optional: DMW-LND46), 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.
- 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 & TOOLS

3.1. SERVICE FIXTURE AND TOOLS

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

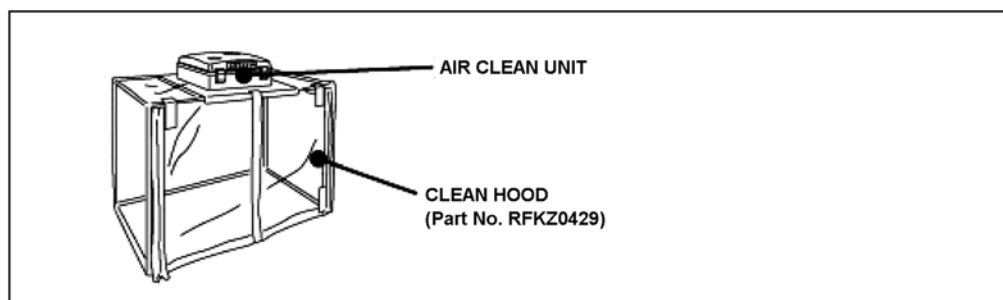
Lens Cleaning Kit (BK) VFK1900BK	TORQUE DRIVER RFKZ0456	Driver VFK1390
 <p>* Only supplied as 10 set/box.</p>	 <p>Spec.:2-30N・cm (Equiv.0.2-3kgf/cm)</p>	

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).
(When remove the 1st lens frame, it is indispensable.)

[NOTE]

- Work in the environment of satisfied clean level less than class 10,000 (Federal Standard 209D) when remove the 1st lens frame for cleaning.
- *Refer to "5.2. General description" section of this service manual for details.



4 Disassembly/Assembly procedures

4.1. Disassembly/Assembly procedures

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 surrounding part with red line (refer to Fig.D1), 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/ and assemble, by referring the following table and Fig.D1.

NOTE:

1. When tightening the screw, use a Torque driver (RFKZ0456) by ordering the screwing order with specified torque mentioned in each step.
2. The screw Ref.B209 is no need to remove for disassembly.
3. Use VFK1390 (small driver) when screwing/unscrewing the B209 and B210.

CAUTION:
Keep covering the lens unit with Lens caps (front & rear), other than necessary cases.

CONCERNED PART		SCREW					REMARKS
Part Name	Ref No.	Ref. No.	Color	Length	Screwing order	Torque spec.	
SHADING FRAME	206	B214	Black	3mm	[2]	10±1.2N-cm	
		B215	Black	3mm	[1]	10±1.2N-cm	
		B216	Black	3mm	[3]	10±1.2N-cm	
L MOUNT UNIT	205	B211	Silver	3mm	[3]	20±1.0N-cm	
		B212	Silver	3mm	[1]	20±1.0N-cm	
		B213	Silver	3mm	[2]	20±1.0N-cm	
		B210	Silver	3mm	[1]	-----	Use VFK1390 (Small Driver)
REAR FRAME 2U	214	B206	Black	4mm	[2]	10±1.2N-cm	
		B207	Black	4mm	[3]	10±1.2N-cm	
		B208	Black	4mm	[1]	10±1.2N-cm	
LENS BODY U							
LENS P.C.B.	--	B204	Silver	3mm	[2]	6.0±1.0N-cm	
		B205	Silver	3mm	[1]	6.0±1.0N-cm	
1ST LENS FRAME U	--	B201	Silver	4mm	[1]	10±1.2N-cm	
		B202	Silver	4mm	[3]	10±1.2N-cm	
		B203	Silver	4mm	[2]	10±1.2N-cm	

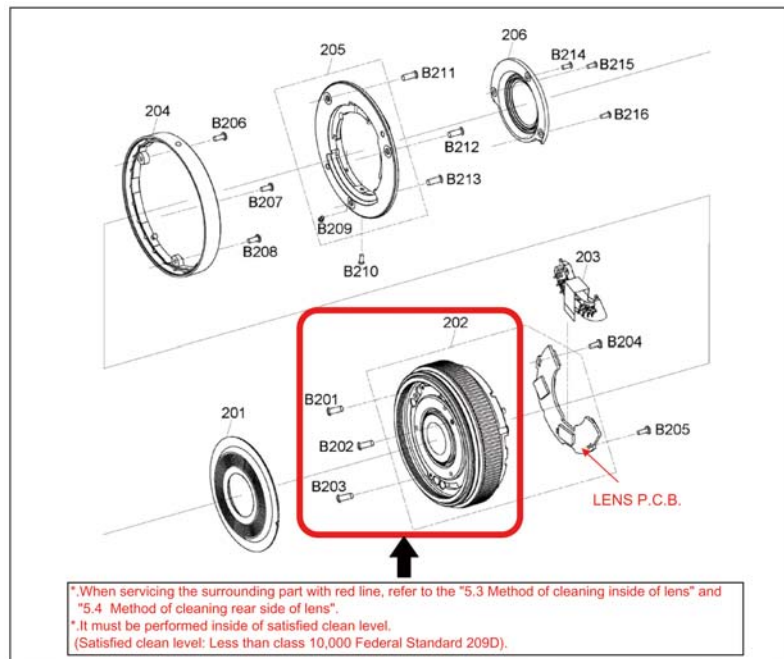


Fig. D1

5 MAINTENANCE

5.1. ABOUT THE LENS

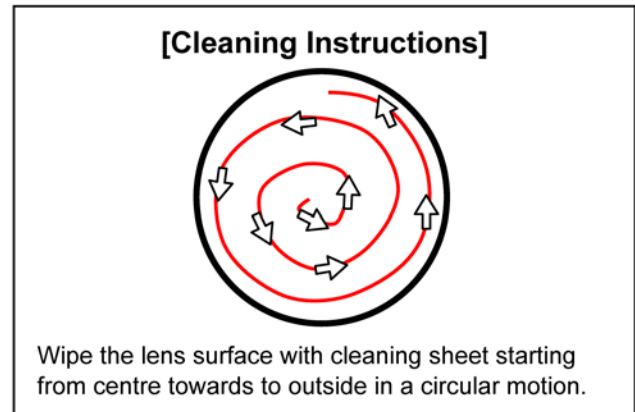
5.1.1. DUST/DIRT ON THE OUTER CASING PART(S)

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

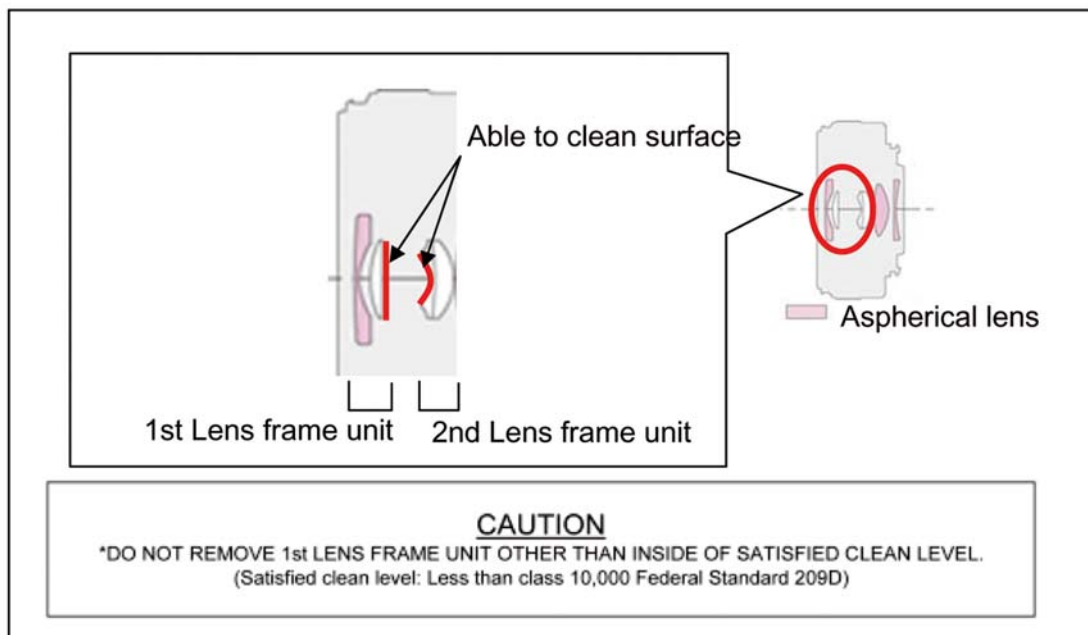
Define the location of the dust/dirt first, whether it is outside lens surface or not.

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:
Refer to the "5.3 Method of cleaning inside of lens" section of this service manual.



5.2. General description (Lens cleaning)

When there is a dust/dirt inside surface of the 1st lens frame unit and/or subject side surface of the 2nd lens frame unit, remove it by referring the following procedures.



Important:

1. When removing the 1st lens frame 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 tighten the screws (A), use torque driver (RFKZ0456) with specified torque.
3. To keep the Lens performance, use only the 1st lens frame unit which was fitted as it was.
Therefore, the 1st lens frame unit is not supplied as spare parts.
Also do not exchange the 1st lens unit taking from others.

5.3. Method of cleaning inside of lens

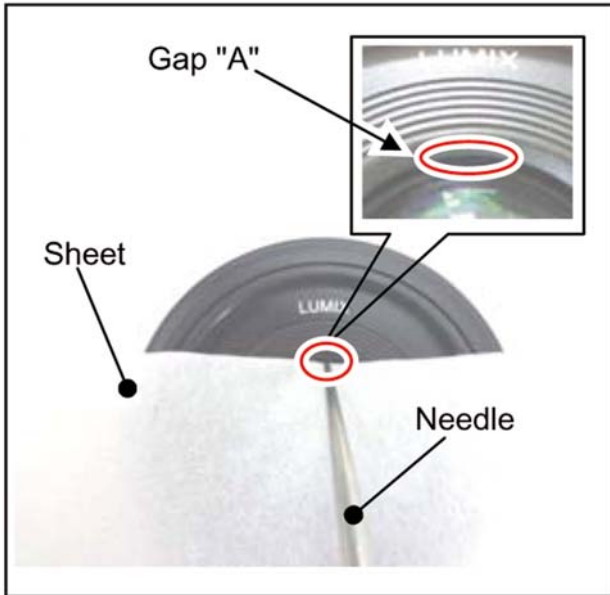
5.3.1. Disassembly Procedure

IMPORTANT

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

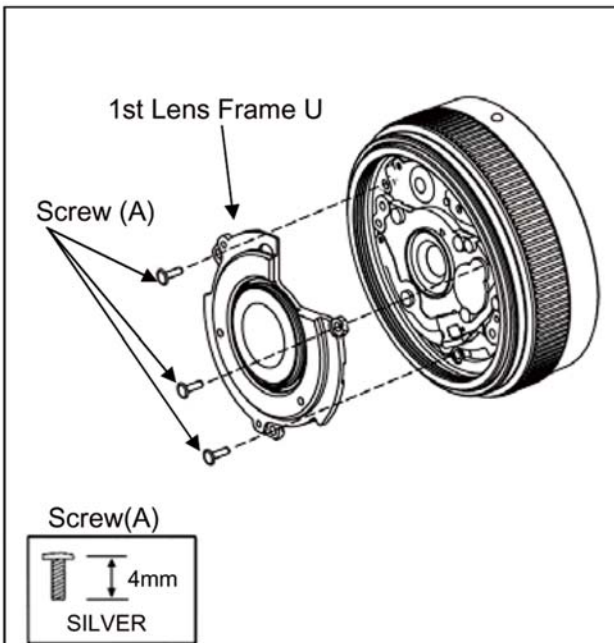
1. Removal of the Decoration Ring

- *.Decoration ring is stuck on the 1st lens frame unit.
- *.Put the sheet so that the lens glass is fully covered.
- *.Insert the needle to Gap "A" (between the Decoration ring and Lens glass), and peel off the Decoration ring gently.



2. Removal of the 1st Lens frame unit

- *.Remove 3 screws (A).



- *. Blow off the dust on the surface of the lens with a blower brush.
- *. Use lens cleaning KIT (BK)(VFK1900BK), if necessary.

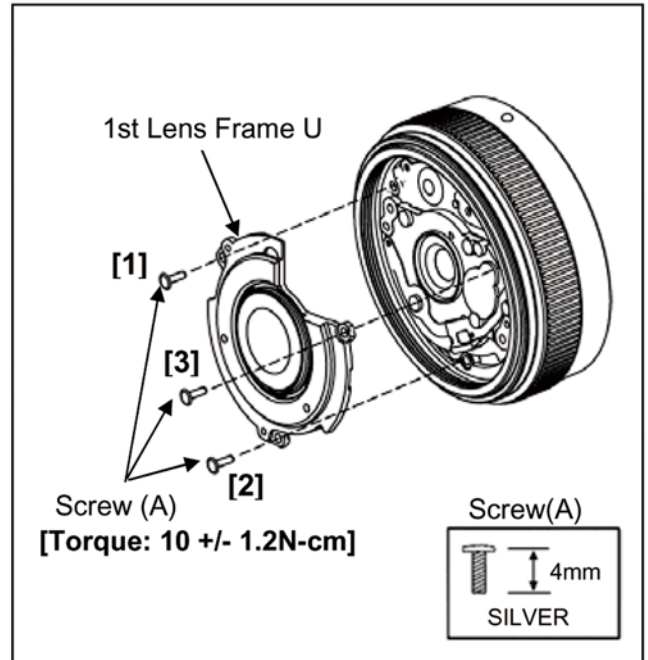
5.3.2. Assembly Procedure

IMPORTANT NOTICE:

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

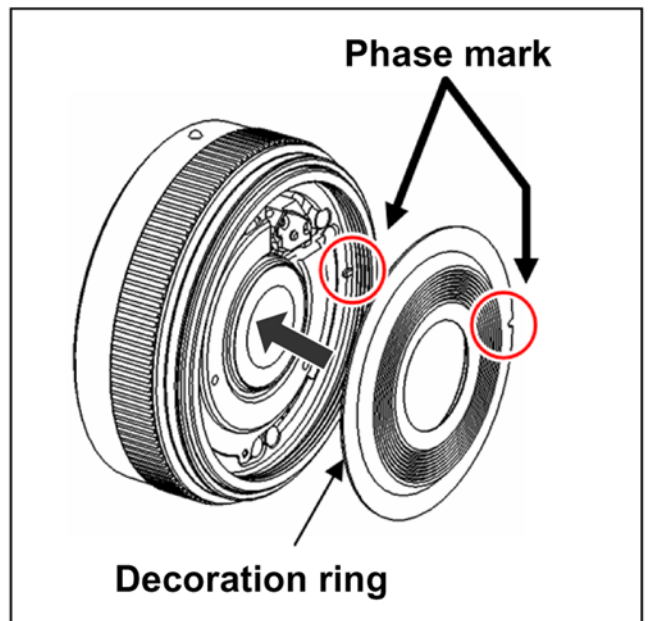
1. Installation of the 1st Lens frame unit

- *Tighten the 3 screws (A) with specified torque in numerical order.



2. Installation of the Decoration ring

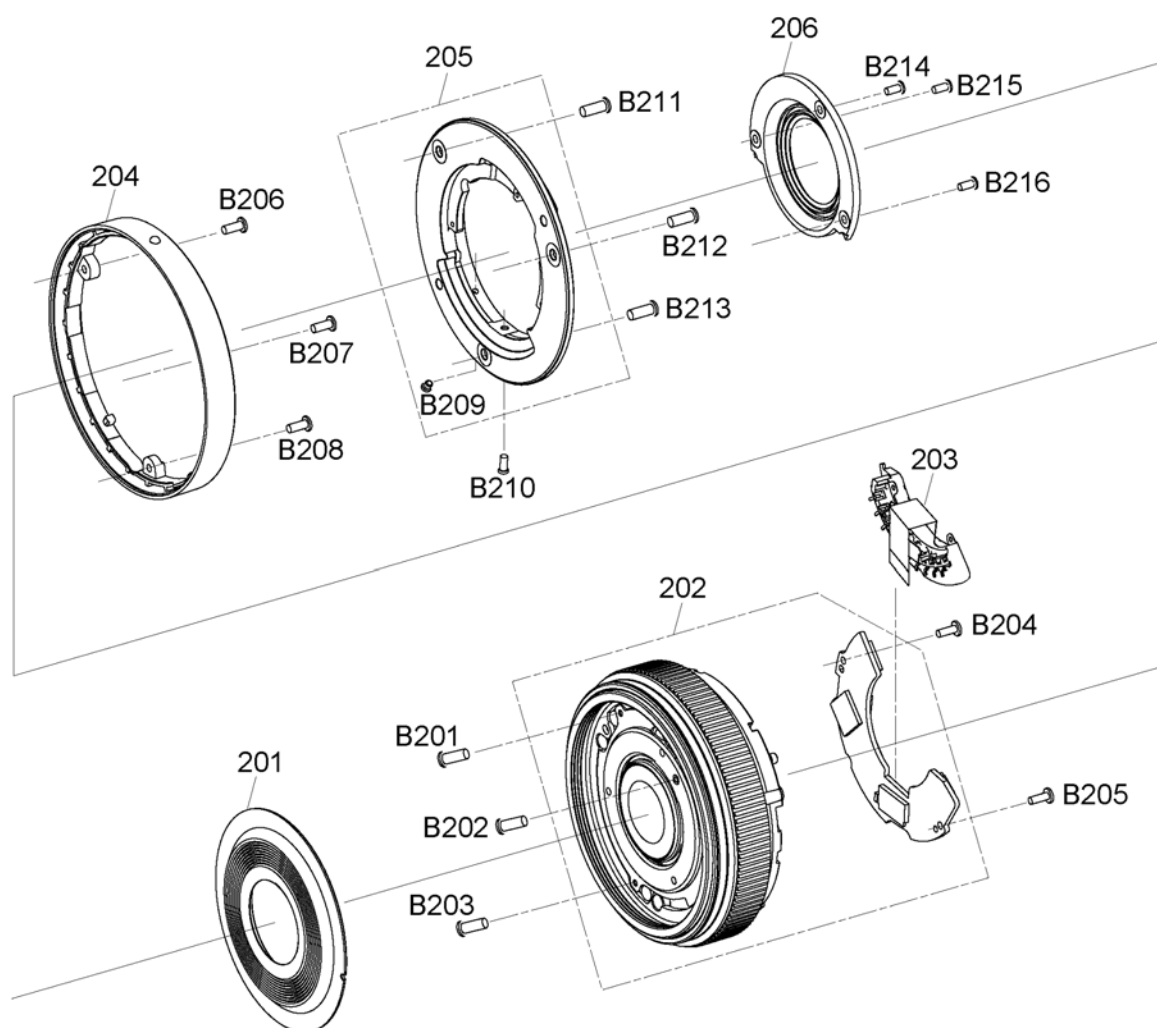
- *Install the Decoration ring by referring the phase mark.
(Use new one, Do not use the one which is removed.)



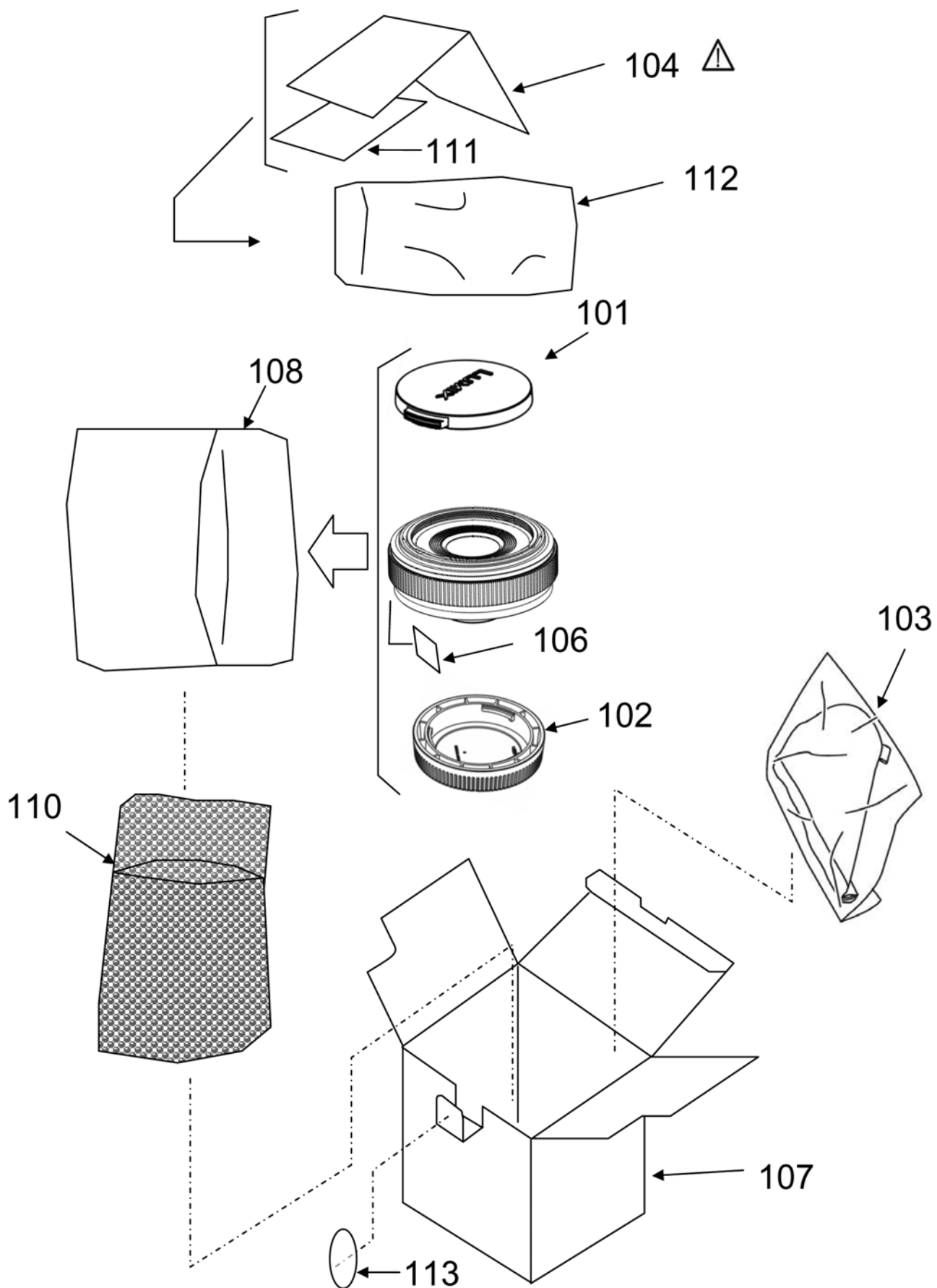
- * After installing the Decoration ring, press the decoration ring with your finger.

6 EXPLODED VIEWS

6.1. Frame & Casing Section




6.2. PACKING PARTS & ACCESSORIES SECTION



7 REPLACEMENT PARTS LIST

7.1. MECHANICAL REPLACEMENT PARTS LIST

Notes: 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. 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.
 4. Supply of CD-ROM, in accordance with license protection, is allowable as replacement parts only for customers who accidentally damaged or lost their own.

7.1.1. FRAME & CASING SECTION PARTS LIST

	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	201	VYC1015	DECO. RING U	1	
	202	-----	LENS MAIN UNIT	1	
	203	VEJ2295	MOUNT CONTACT UNIT	1	
	204	-----	REAR FRAME UNIT	1	(Not supplied)
	205	VXQ1940	L MOUNT UNIT	1	
	206	VDW2116	SHADING FRAME	1	
	B201	XQN16+BJ4FN	SCREW	1	
	B202	XQN16+BJ4FN	SCREW	1	
	B203	XQN16+BJ4FN	SCREW	1	
	B204	XQN14+BJ3FN	SCREW	1	
	B205	XQN14+BJ3FN	SCREW	1	
	B206	XQN14+BJ4FNK	SCREW	1	
	B207	XQN14+BJ4FNK	SCREW	1	
	B208	XQN14+BJ4FNK	SCREW	1	
	B209	VHD1868	SCREW	1	
	B210	XQN14+AJ3FN	SCREW	1	
	B211	XQN2+AJ5FN	SCREW	1	
	B212	XQN2+AJ5FN	SCREW	1	
	B213	XQN2+AJ5FN	SCREW	1	
	B214	VHD2246	SCREW	1	
	B215	VHD2246	SCREW	1	
	B216	VHD2246	SCREW	1	

7.1.2. PACKING PARTS & ACCESSORIES SECTION PARTS LIST

	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	101	VYF3371	FRONT LENS CAP	1	
	102	VFC4605	LENS REAR CAP	1	
	103	VFC4460	LENS STORAGE BAG	1	
⚠	104	VQT2Z62	OPERATING INSTRUCTIONS (ENGLISH/SPANISH/ CANADIAN-FRENCH)	1	PP
⚠	104	VQT2Z63	OPERATING INSTRUCTIONS (ENGLISH/GERMAN/ FRENCH/SPANISH/ITALIAN/ CHINESE(TRADITIONAL)/ RUSSIAN)	1	E
⚠	104	VQT2Z64	OPERATING INSTRUCTIONS (CHINESE(SIMPLIFIED))	1	GK
	106	VQL1V24	WEEE LABEL	1	E
	107	VPK4592BKIT	PACKING CASE U	1	PP
	107	VPK4592	PACKING CASE	1	E
	107	VPK4593	PACKING CASE	1	GK
	108	VPF1371	LENS BAG(POLYETHYLENE)	1	
	110	VPF1328	BAG, POLYETHYLENE	1	
	111	VQL1M13	OPERATING LABEL (CANADIAN-FRENCH)	1	PP
	112	VPF1230	POLYETHYLENE COVER	1	PP/E
	113	VQL1S66	LABEL	1	GK