

Service Manual

Interchangeable Lens for Digital Camera

Model No. **H-FS1442APP**

H-FS1442AE

H-FS1442AGK

Colour

(S).....Silver Type

(K).....Black Type



MÉGA S.O.I.

HD



Specifications

Specifications are subject to change without notice.

INTERCHANGEABLE LENS FOR DIGITAL CAMERA

"LUMIX G VARIO 14–42 mm/F3.5–5.6 II ASPH./MEGA O.I.S."

Focal length	f=14 mm to 42 mm (35 mm film camera equivalent: 28 mm to 84 mm)
Aperture type	7 diaphragm blades/circular aperture diaphragm
Aperture range	F3.5 (Wide) to F5.6 (Tele)
Minimum aperture value	F22
Lens construction	9 elements in 8 groups (2 aspherical lenses)
In focus distance	0.2 m (0.66 feet) to ∞ (focal length 14 mm to 20 mm) [from the focus distance reference line], 0.3 m (0.98 feet) to ∞ (focal length 21 mm to 42 mm) [from the focus distance reference line]
Maximum image magnification	0.17× (35 mm film camera equivalent: 0.34×)
Optical image stabilizer	Available
[O.I.S.] switch	None (Setting of the [Stabilizer] is done in [Rec] mode menu by LUMIX digital cameras.)
Mount	"Micro Four Thirds Mount"
Angle of view	75° (Wide) to 29° (Tele)
Filter diameter	46 mm
Max. diameter	Approx. 56 mm (2.21 inch)
Overall length	Approx. 49 mm (1.93 inch) (from the tip of the lens to the base side of the lens mount)
Mass (Weight)	Approx. 110 g (0.24 lb)

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. 208)

1. LENS MAIN UNIT (Ref. 208) 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. 208), carefully confirm its performance in advance.

2. Once "LENS MAIN UNIT" (Ref. 208) is confirmed as defective, place order "LENS Unit" (Ref. 200) and replace SHADING FRAME (Ref. 202), to maintain Serial number of owner's original lens.

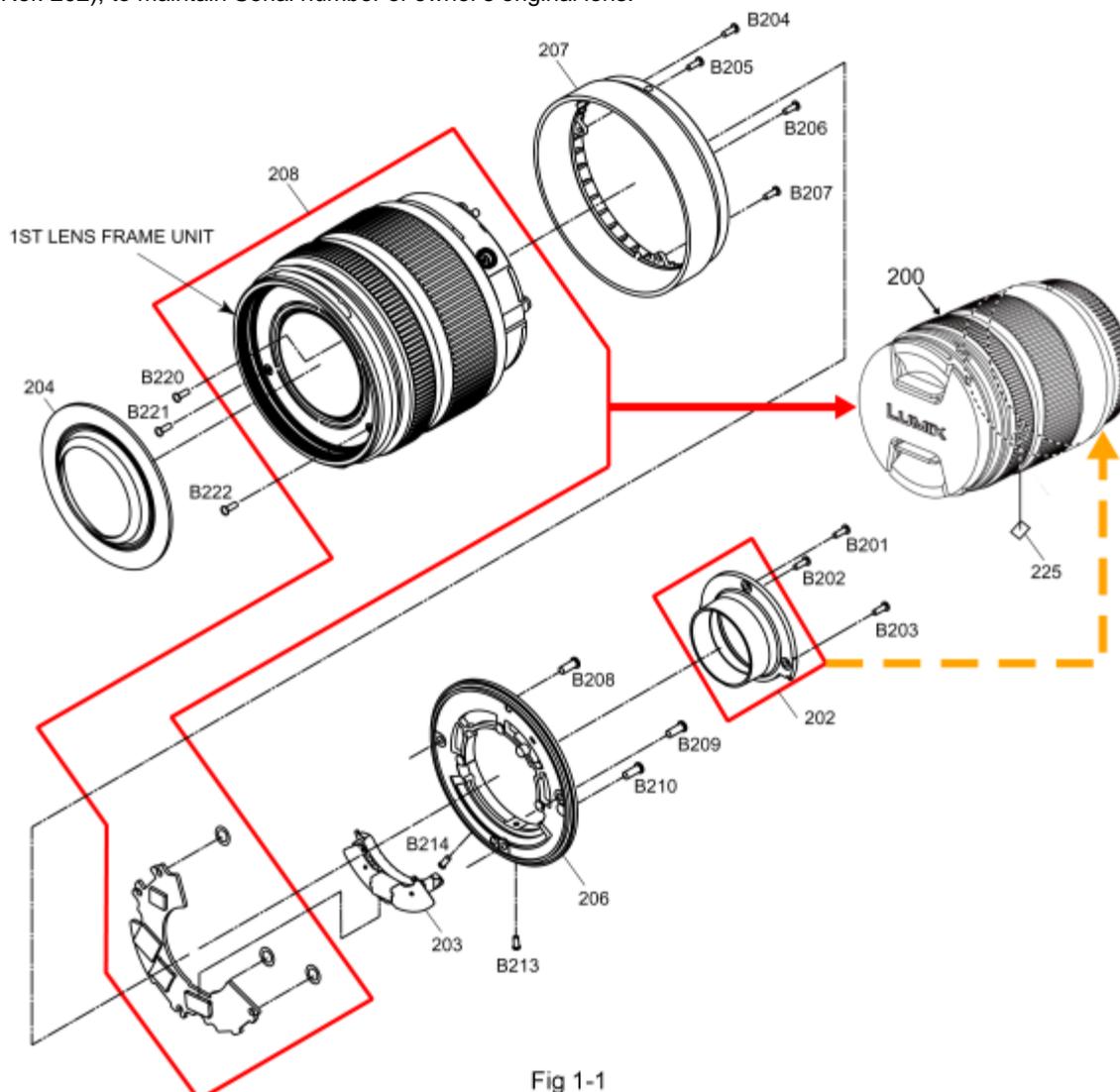


Fig 1-1

3. 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)

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 this owner's manual show DMC-G5 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.
- 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.



■ 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 damage the lens. The camera may stop operating normally and pictures may no longer be recorded.

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

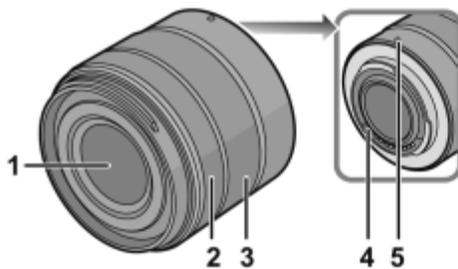
- Refer also to the owner's manual of the digital camera.
- When the unit is not going to be used for a prolonged period, we recommend storing with a desiccant (silica gel). Failure to do so may result in performance failure caused by mold, etc. It is recommended that you check the unit's operation prior 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 zoom ring and focus ring.
- Do not use a household detergent or a chemically treated cloth.

2.3 Components

Names and Functions of Components

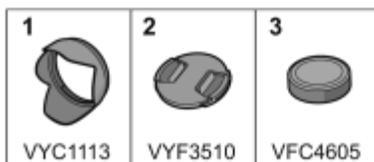


- 1 Lens surface
- 2 Focus ring
Rotate to focus when taking pictures with manual focus.
- 3 Zoom ring
Rotate the zoom ring when you wish to take large (tele) or wide (wide angle) pictures. (35 mm film camera equivalent: 28 mm to 84 mm)
- 4 Contact points
- 5 Lens fitting mark

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.
- If you zoom after focusing, focusing errors may occur. After zooming, please perform the focusing again.

2.3.1 Accessories



- 1 Lens Hood
- 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

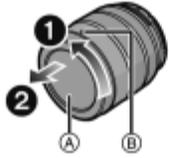
- Refer also to the camera's owner's manual for attaching and detaching the lens.

■ 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.

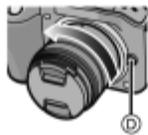


■ Detaching the Lens

- Check that the camera is turned off.

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

- 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

Pinch the lens cap as shown in the figure to attach or detach.

- Be careful not to lose the lens cap.



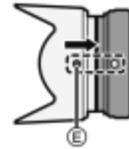
■ Attaching the Lens Hood (Supplied Accessory)

Hold the lens hood with your fingers placed as shown in the picture.

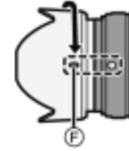
- Do not hold the lens hood in a way that twists or bends it.



1 Align the fitting mark (E) on the short side of the lens hood with the mark on the tip of the lens.



2 Turn the lens hood in the direction of the arrow until it stops, and align the stop mark (F) on the long side of the lens hood with the mark on the tip of the lens.



■ Temporarily Storing the Lens Hood

1 Turn the lens hood in the direction of the arrow to detach it.



2 Reverse the lens hood and then attach it in the same way as shown previously.



● 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 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 and Tools

3.1 Service Fixture and Tools

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

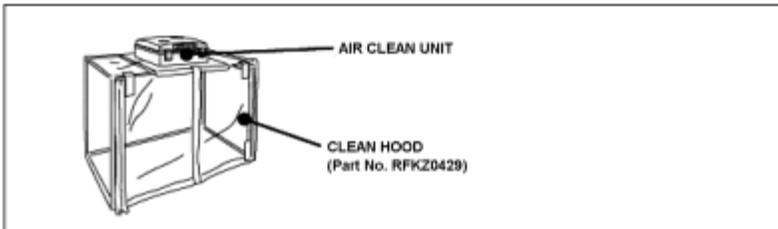
Lens Cleaning Kit (BK) VFK1900BK	Adjustment Shaft x 3 VMS7941	TORQUE DRIVER RFKZ0456
 * Only supplied as 10 set/box.	 2.0mm An equivalent type can be used (Less than 2.0mm)	 Spec.:2-30N·cm (Equiv.0.2-3kgf/cm)
Driver VFK1390		
		

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 cleaning the inside of a lens, it is indispensable.)

[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).

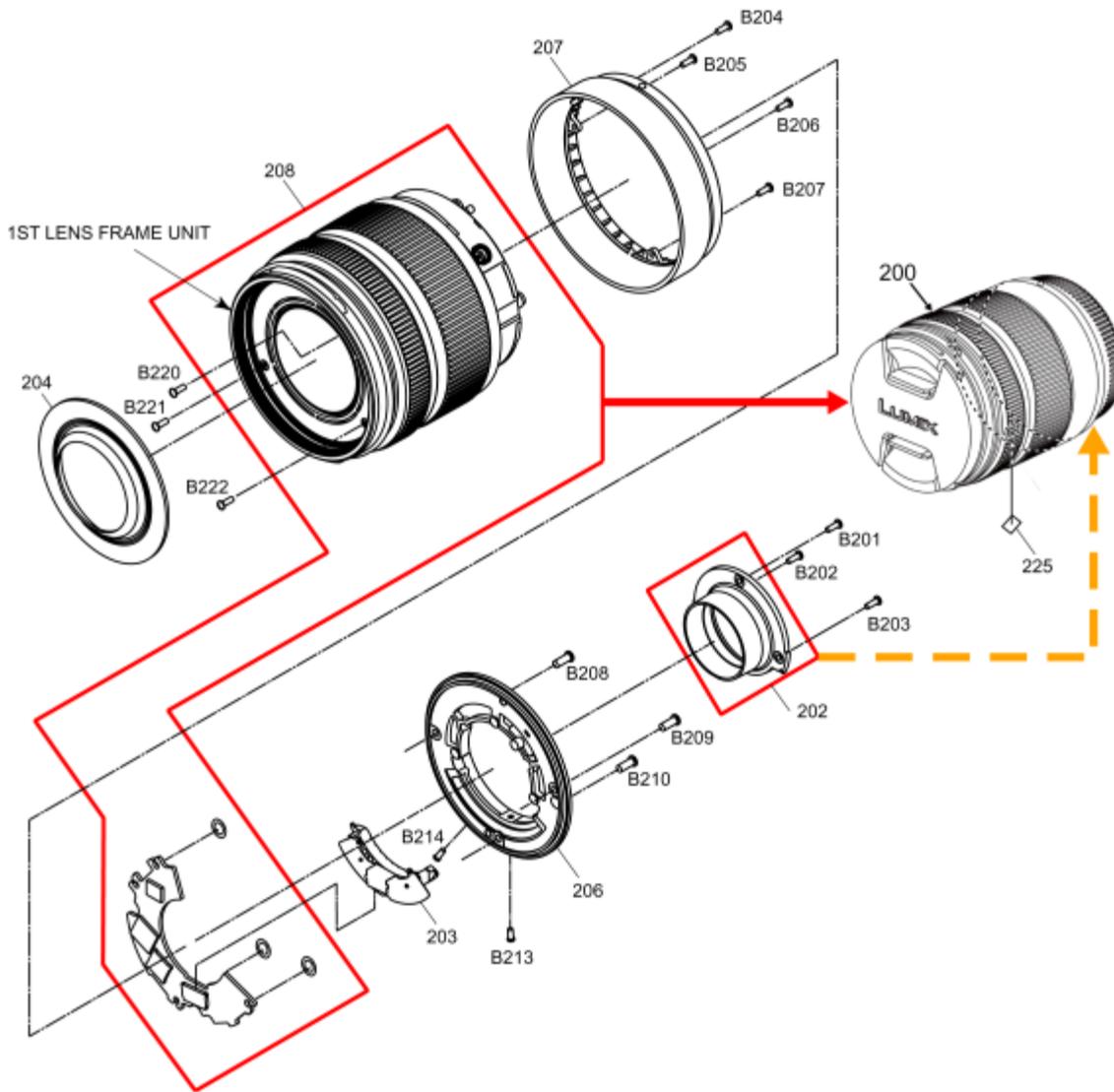
Proceed disassemble/assemble, by referring the following table and Fig. W1.

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 VFK1390 (small driver) when screwing Ref. B213.

Interchangeable Lens (H-FS1442A)

Concerned parts							Remarks
Part name	Ref.No.	Ref.No.	Color	Length (mm)	Order	Torque value	
SHADING FRAME	202	B201	Black	3.0 mm	①	7.5±0.5N·cm	
		B202	Black	3.0 mm	③	7.5±0.5N·cm	
		B203	Black	3.0 mm	②	7.5±0.5N·cm	
L MOUNT UNIT	208	B208	Silver	5.0 mm	②	16±0.5N·cm	
		B209	Silver	5.0 mm	①	16±0.5N·cm	
		B210	Silver	5.0 mm	③	16±0.5N·cm	
		B213	Silver	3.0 mm	---	---	Use Small Driver (VFK1390)
REAR FRAME UNIT	207	B204	Black	4.0 mm	④	8±0.5N·cm	
		B205	Black	4.0 mm	②	8±0.5N·cm	
		B206	Black	4.0 mm	①	8±0.5N·cm	
		B207	Black	4.0 mm	③	8±0.5N·cm	
1ST LENS FRAME UNIT	-	B220	Black	3.5 mm	①	8±0.5N·cm	
		B221	Black	3.5 mm	②	8±0.5N·cm	
		B222	Black	3.5 mm	③	8±0.5N·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))

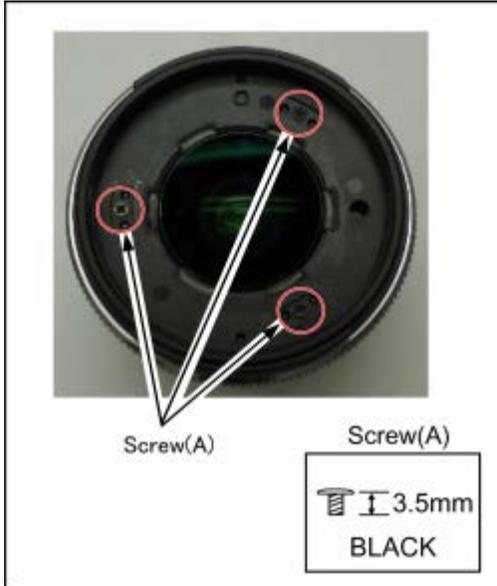
4.2.1 Removal of the Decoration Ring

1. Decoration ring is stuck on the 1st lens frame unit.
2. Put the sheet so that the lens glass is fully covered.
3. Insert the small flat blade screwdriver to Gap(between the decoration ring and lens glass), and peel off the decoration ring gently.



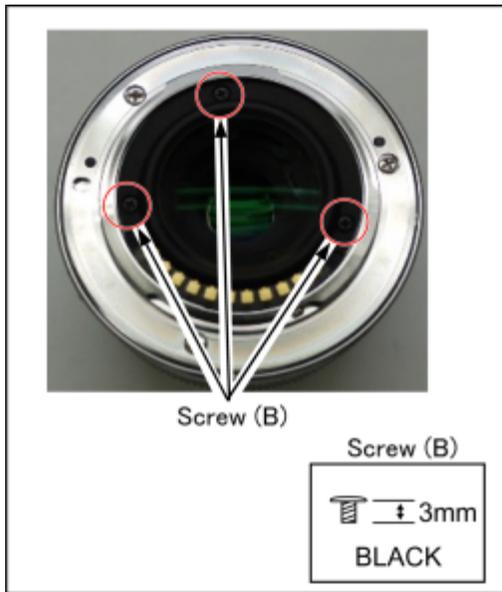
4.2.2 Removal of the 1st lens frame unit

1. Remove the 3 screws (A).



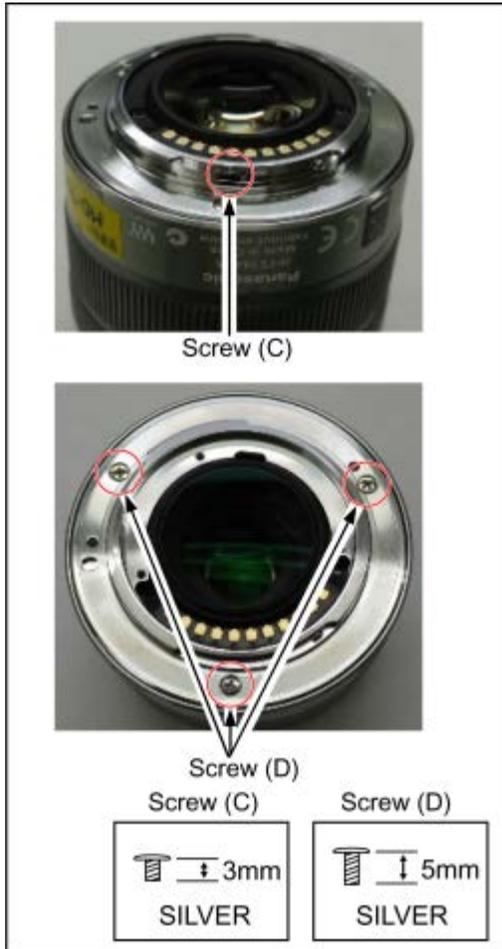
4.2.3 Removal of the Shading frame

1. Remove the 3 screws (B).

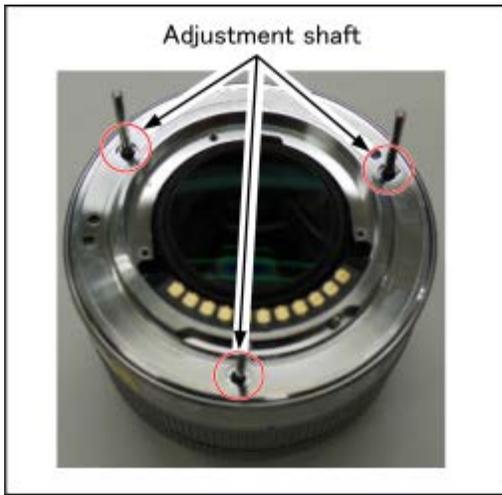


4.2.4 Removal of the L mount unit

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

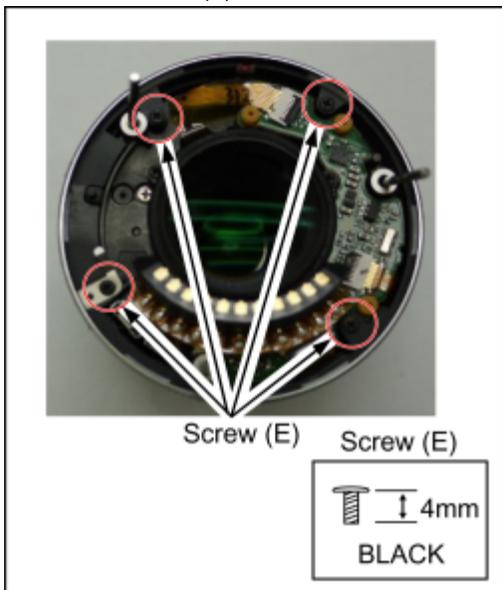


2. Insert 3 adjustment shafts(VMS7941 or an equivalent one) to screw holes in order not to remove Back adjustment washers. Then, remove the L mount unit.



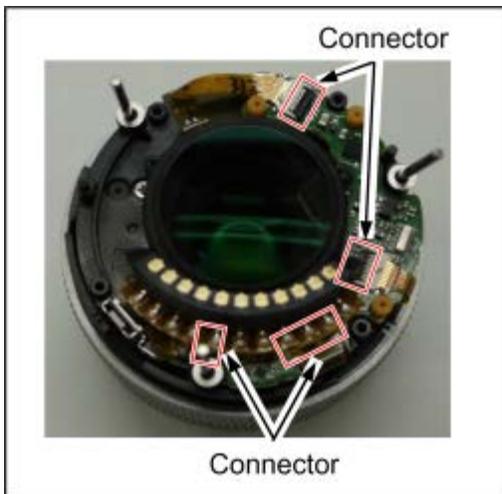
4.2.5 Removal of the Rear frame unit

1. Remove 4 screws (E).



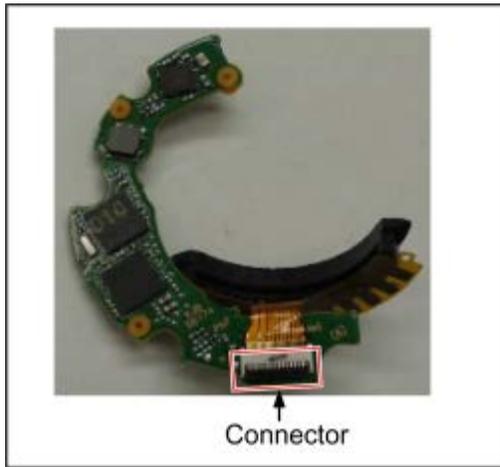
4.2.6 Removal of the Lens P.C.B.unit and the Lens mount contact unit

1. Disconnect 4 connectors.



4.2.7 Removal of the Lens mount contact unit

1. Disconnect 1 connector.



4.3 Assembly procedure

Important:

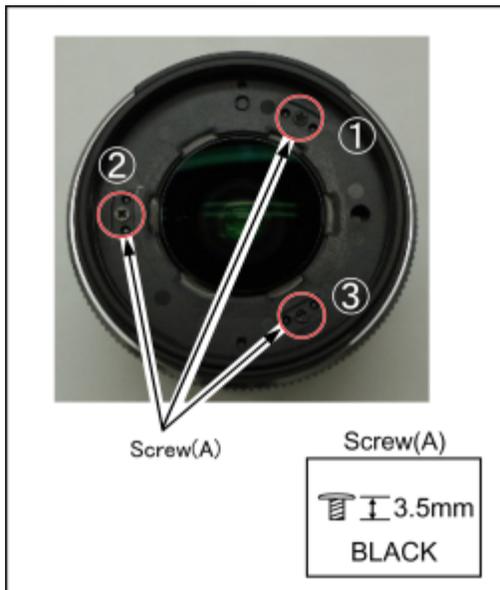
When tightening the screw, use a torque driver (RFKZ0456) by ordering the screwing order with specified torque described in each step.

4.3.1 Installation of the 1st lens frame unit

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

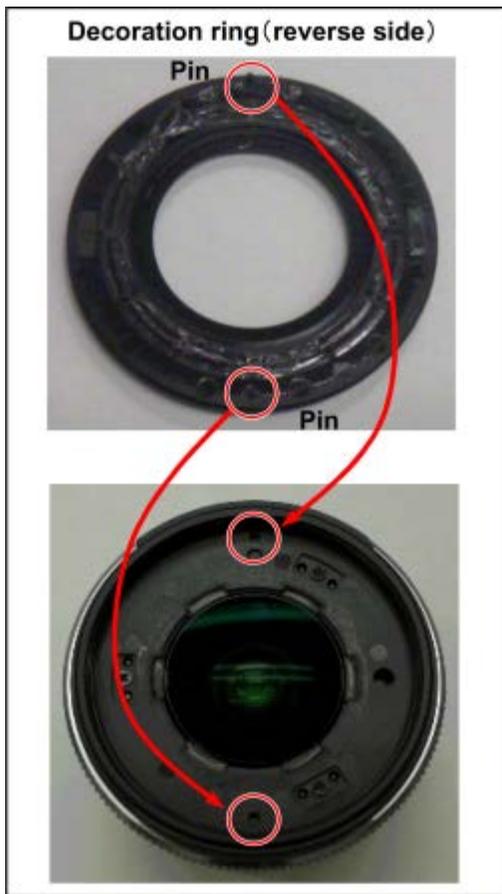
(Torque Driver : RFKZ0456)

(Torque : 8 ± 0.5 N cm)



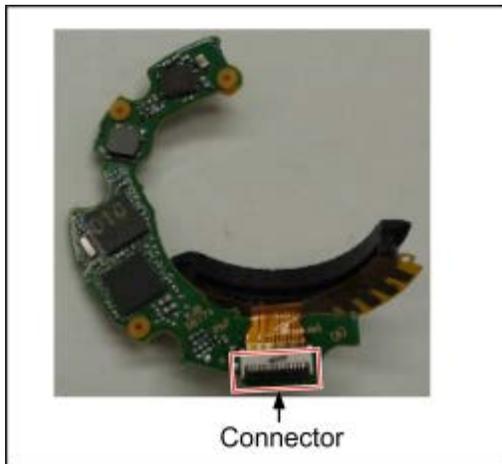
4.3.2 Installation of the Decoration ring

1. Please insert the pins of the Decoration ring to the hole of the Lens top unit
 - Use new one, do not use the one which is removed.
 - Double-stick tape sticks to the Decoration ring of therepair part.
Please remove the old double-stick tape from the Lenstop unit.
2. After installing the Decoration ring, use a soft cloth to press it into place.



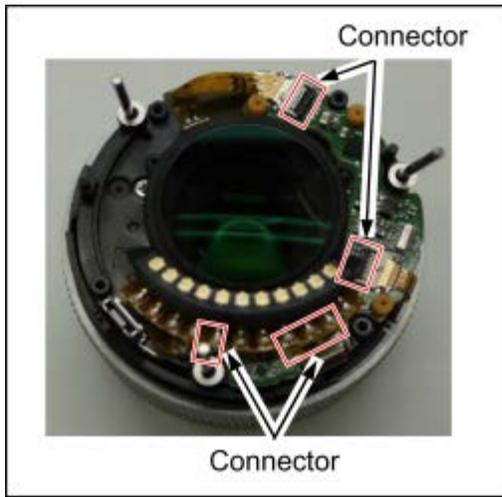
4.3.3 Installation of the Lens mount contact unit

1. Connect 1 connector.



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

1. Connect 4 connectors.

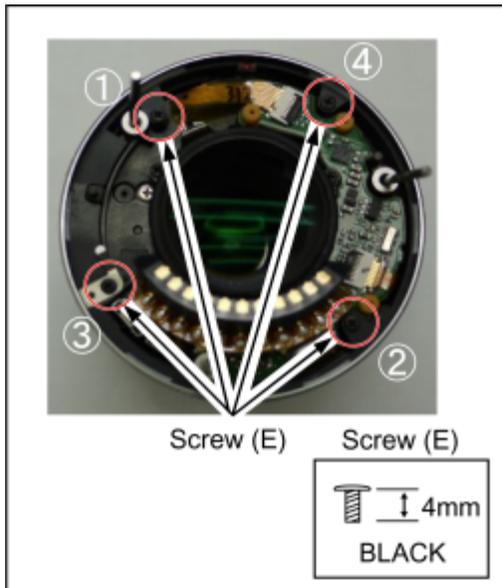


4.3.5 Installation of the Rear frame unit

1. Tighten 4 screws (E) in numerical order by using the torque driver with specified torque.

(Torque Driver : RFKZ0456)

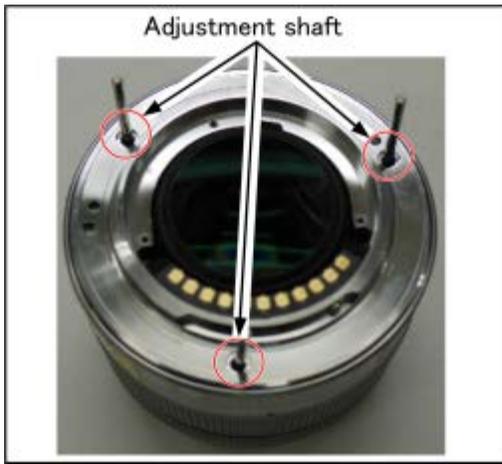
(Torque : 8 ± 0.5 N cm)



4.3.6 Installation of the L mount unit

1. Install the L mount unit.

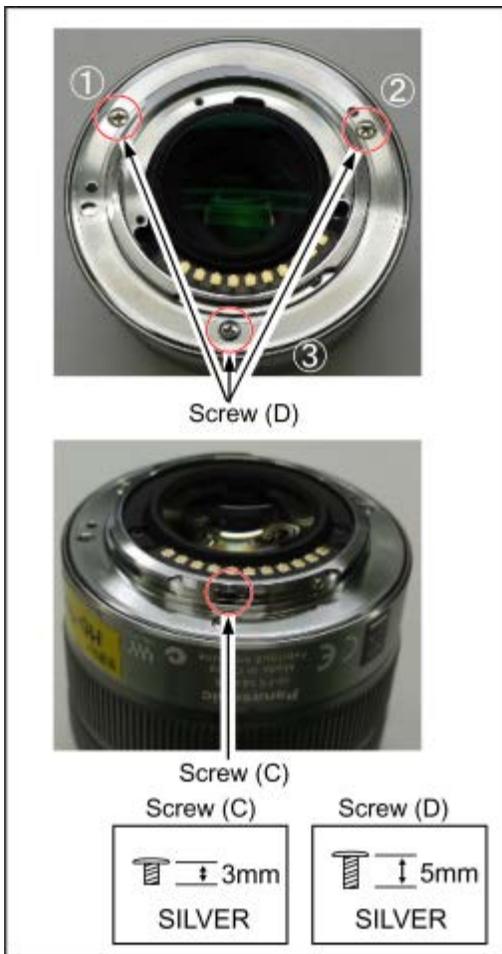
Then, remove 3 adjustment shafts(VMS7941 or an equivalent one).



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

(Torque Driver : RFKZ0456)

(Torque for screw (D) : 16 ± 0.5 N cm)

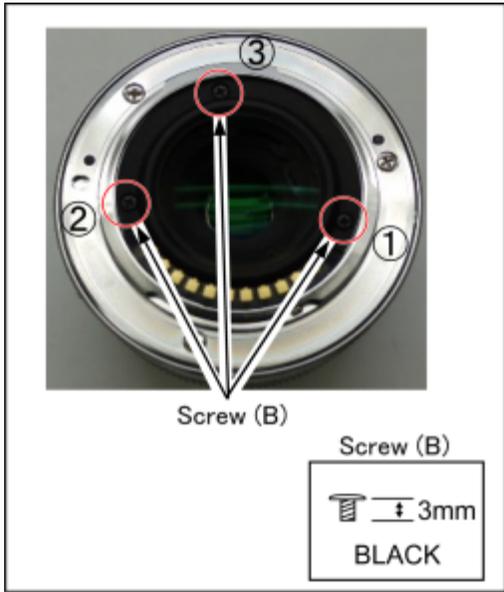


4.3.7 Installation of the Shading frame

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

(Torque Driver : RFKZ0456)

(Torque for screw (B) : 7.5 ± 0.5 N cm)



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.

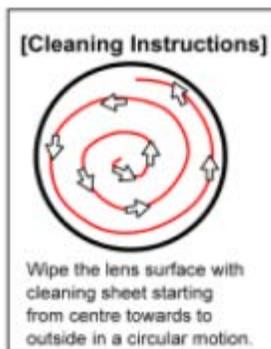
Define the location of the dust / dirt first, whether it is outside lens surface or not.

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.

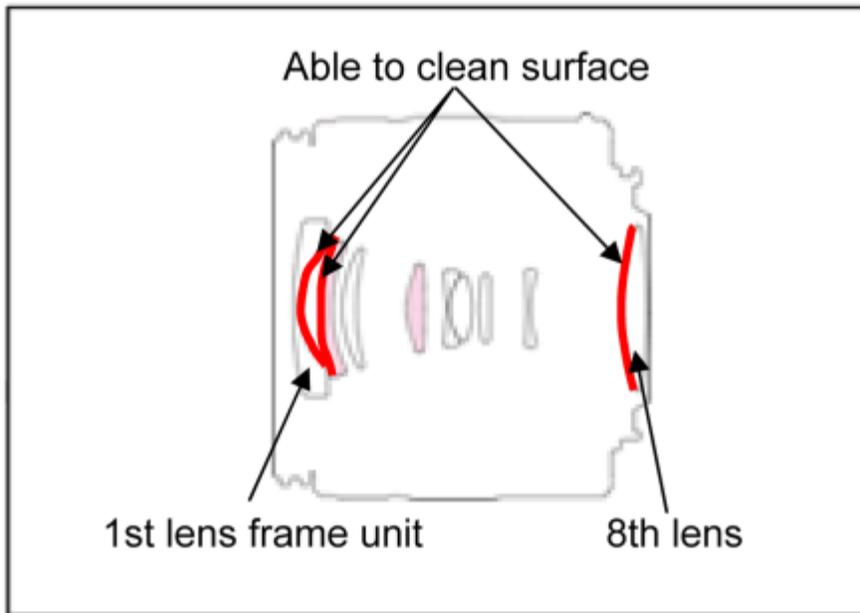
1. Blow off the dust on the Lens glass surface with the Blower, gently. (Do not Blow too strongly.)
2. Wipe out the dirt on the lens glass surface with Lens cleaning KIT (VFK1900BK) if necessary.

(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 surface of the 1st lens frame unit and 8th lens, remove it by referring to the following procedures.



1. When removing 1st lens frame unit and 8th lens, 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 lens frame unit and 8th lens.

So the 1st lens frame unit and 8th lens is not supplied as spare parts.

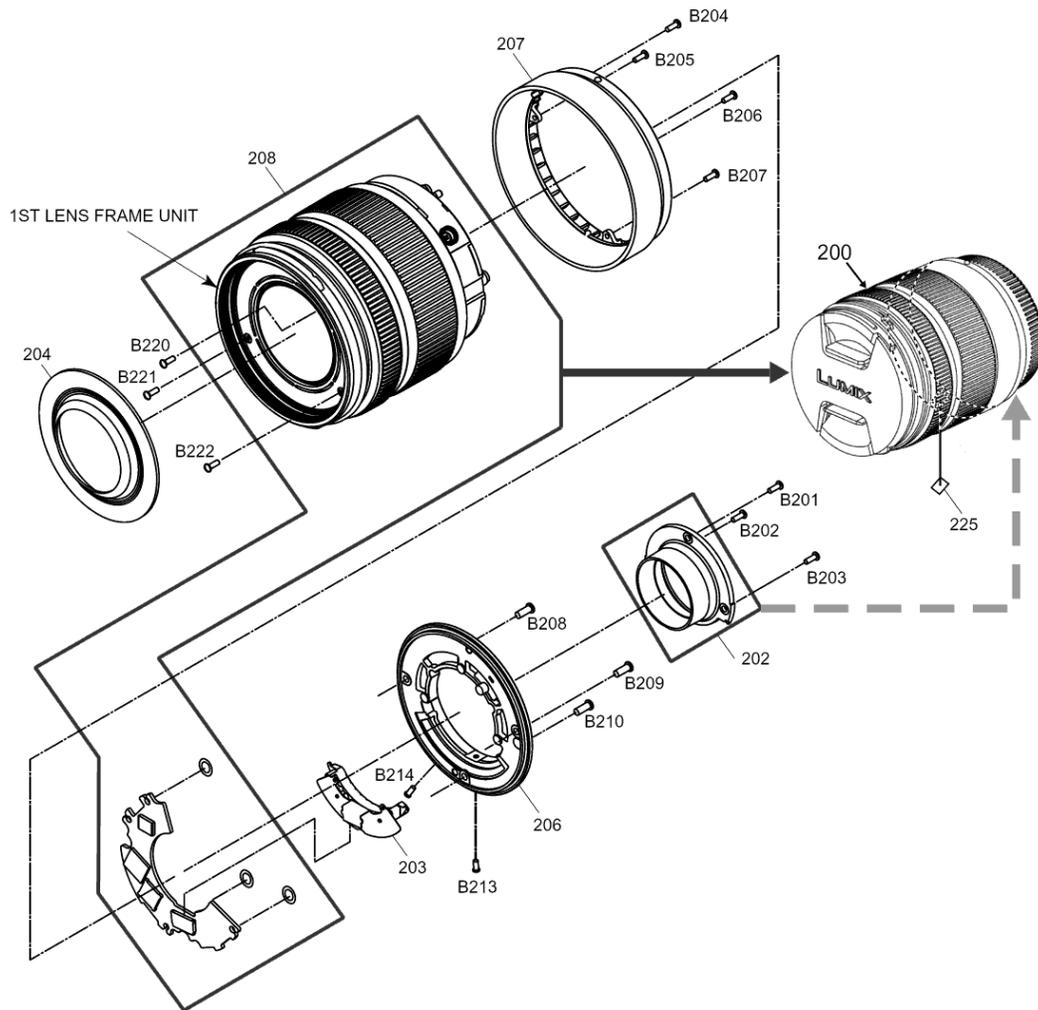
Also do not exchange the 1st lens frame unit and 8th lens taking from others.

4. When clean inside 8th lens, blow out dust by gas duster at Tele side.

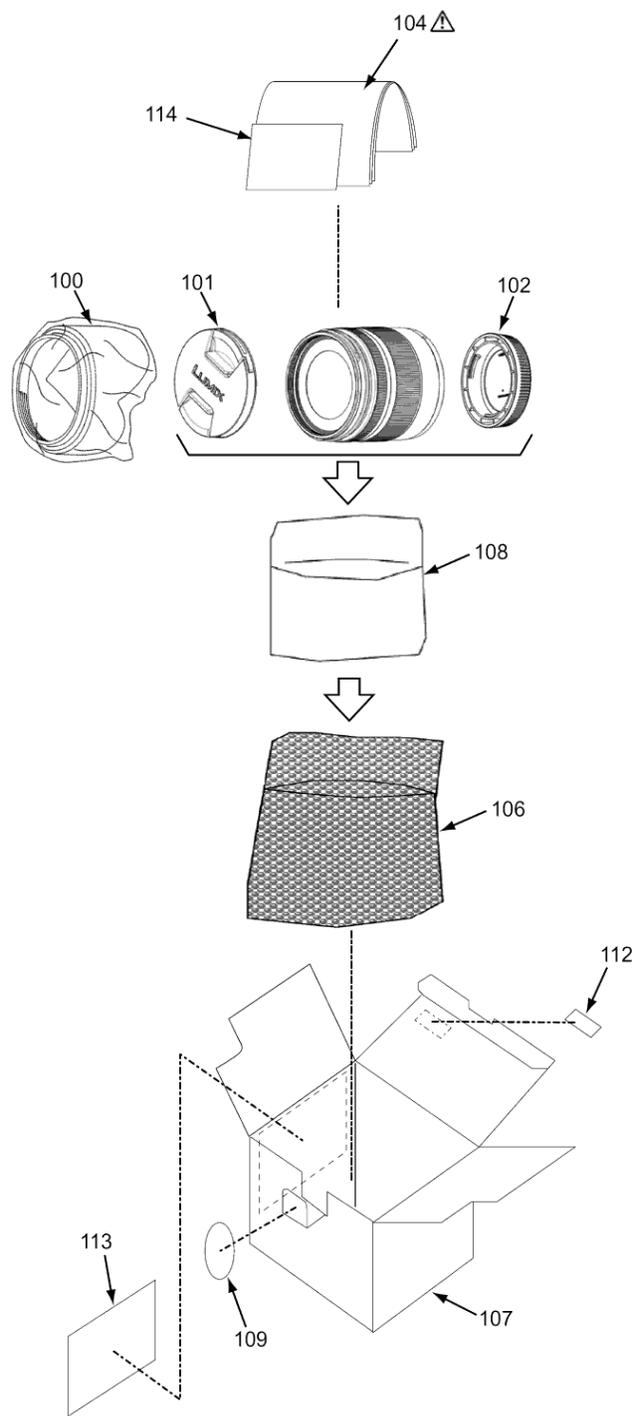
(Refer to the following picture.)



Model No. : H-FS1442APP/E/GK Frame and Casing Section



Model No. : H-FS1442APP/E/GK Packing Parts and Accessories



Model No. : H-FS1442APP/E/GK Parts List

Change	Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
		200	VXW1562	LENS UNIT	1	(-K)
		200	VXW1566	LENS UNIT	1	(-S)
		202	-----	SHADING FRAME	1	(NOT SUPPLIED)
		203	VEJ2337	LENS MOUNT CONTACT UNIT	1	
		204	VGH5356	DECORATION RING	1	
		206	VXQ2435	L MOUNT UNIT	1	

		207	VYF3545	REAR FRAME UNIT	1	(-K)
		207	VYF3546	REAR FRAME UNIT	1	(-S)
		208	-----	LENS MAIN BLOCK UNIT	1	(NOT SUPPLIED)
		225	VQL1V24	WEEE LABEL	1	E
		225	VQL1W22	TEN YEARS LABEL	1	GK
		B201	VHD2246	SCREW	1	
		B202	VHD2246	SCREW	1	
		B203	VHD2246	SCREW	1	
		B204	VHD2296	SCREW	1	
		B205	VHD2296	SCREW	1	
		B206	VHD2296	SCREW	1	
		B207	VHD2296	SCREW	1	
		B208	VHD2299	SCREW	1	
		B209	VHD2299	SCREW	1	
		B210	VHD2299	SCREW	1	
		B213	VHD2298	SCREW	1	
		B214	VHD1868	SCREW	1	
		B220	VHD2496	SCREW	1	
		B221	VHD2496	SCREW	1	
		B222	VHD2496	SCREW	1	
		100	VYC1113	LENS HOOD UNIT	1	
		101	VYF3510	LENS FRONT CAP	1	
		102	VFC4605	LENS REAR CAP	1	
		104	VQT4N34	OPERATING INSTRUCTIONS (ENGLISH/GERMAN/FRENCH/SPANISH/ITALIAN/CHINESE (TRADITIONAL)/RUSSIAN)	1	E
		104	VQT4N33	OPERATING INSTRUCTIONS (ENGLISH/CANADIAN-FRENCH/SPANISH)	1	PP
		104	VQT4N35	OPERATING INSTRUCTIONS (CHINESE (SIMPLIFIED))	1	GK
		106	VPF1328	BAG, POLYETHYLENE	1	
		107	VPK5461	PACKING CASE	1	E, PP
		107	VPK5462	PACKING CASE	1	GK
		108	VPF1484	LENS BAG	1	
		109	VQL1S66	LABEL	1	GK
		112	VQL2N16	COLOR LABEL	1	E-S
		112	VQL2B48	COLOR LABEL	1	GKS
		112	VQL2P53	COLOR LABEL	1	PPK
		112	VQL2N07	COLOR LABEL	1	PPS
		113	VQL2V61	CARTON LABEL	1	E-S
		113	VQL2V58	CARTON LABEL	1	PPK
		113	VQL2V60	CARTON LABEL	1	PPS
		114	VQL2N81	OPERATING LABEL	1	PP