SAL18200

(3.5-6.3/18-200) (DT 18-200mm F3.5-6.3)

SERVICE MANUAL

Ver 1.3 2007.03
Revision History

How to use Acrobat Reader

US Model
Canadian Model
AEP Model
Chinese Model

Link

SPECIFICATIONS	DISASSEMBLY	ADJUSTMENTS
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- About the Lens Test Projector

LENS FOR DSLR CAMERA

SONY

2007C0800-1

Published by Kohda TEC

SPECIFICATIONS

- This lens is equipped with a distance encoder. The distance encoder allows more accurate measurement (ADI) by using a flash for ADI.
- Depending on the lens mechanism, the focal length may change with any change of the shooting distance. The focal length assumes the lens is focused at infinity.

Equivalent 35mm-format focal length *1 (mm)
27-300

Lens groups elements
13-15

Angle of view *1
76°-8°

*1 The values for equivalent 35mm-format focal length and angle of view are based on Digital Single Lens Reflex Cameras equipped with an APS-C sized image sensor.

Minimum focus *2 (m (feet))
0.45 (1.5)

*2 Minimum focus is the shortest distance from the image sensor to the subject.

Maximum magnification (X)
0.27

Minimum f-stop
f/22-40

Filter diameter (mm)
62

Dimensions (maximum diameter × height) (mm (in.))
Approx. 73 × 85.5 (2 7/8 × 3 3/8)

Mass (g (oz.))
Approx. 405 (14 5/16)

Included items
Lens (1), Front lens cap (1), Rear lens cap (1), Lens hood (1), Set of printed documentation

Designs and specifications are subject to change without notice.

TABLE OF CONTENTS

1. SERVICE NOTE

1-1. Chemicals

Some chemicals used for servicing are highly volatile.
Their evaporation caused by improper management affects your health and environment, and wastes resources.
Manage the chemicals carefully as follows.

- Store chemicals sealed in a specific place to prevent from exposure to high temperature or direct sunlight.
- Avoid dividing chemicals into excessive numbers of small containers to reduce natural evaporation.
- Keep containers sealed to avoid natural evaporation when chemicals are not in use.
- Avoid using chemicals as much as possible. When using chemicals, divide only required amount to a small plate from the container and use up it.

1-2. Exterior Parts

Be careful to the following points for exterior parts used in this unit.

- Use a piece of cleaning paper or cleaning cloth for cleaning exterior parts. Avoid using chemicals.
  Even if you have to use chemicals to clean heavy dirt, don't use paint thinner, ketone, nor alcohol.
- Insert the specific screws vertically to the part when installing a exterior part.
  Be careful not to tighten screws too much.

1-3. Unleaded Solder

This unit uses unleaded solder.
Boards requiring use of unleaded solder are printed with the lead free mark (LF) indicating the solder contains no lead.
(**Caution:** Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK
Be careful to the following points to solder or unsolder.

- Set the soldering iron tip temperature to 350 °C approximately.
  If cannot control temperature, solder/unsolder at high temperature for a short time.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.

- Be sure to control soldering iron tips used for unleaded solder and those for leaded solder so they are managed separately. Mixing unleaded solder and leaded solder will cause detachment phenomenon.

1-4. SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270 °C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

SAFETY-RELATED COMPONENT WARNING!!

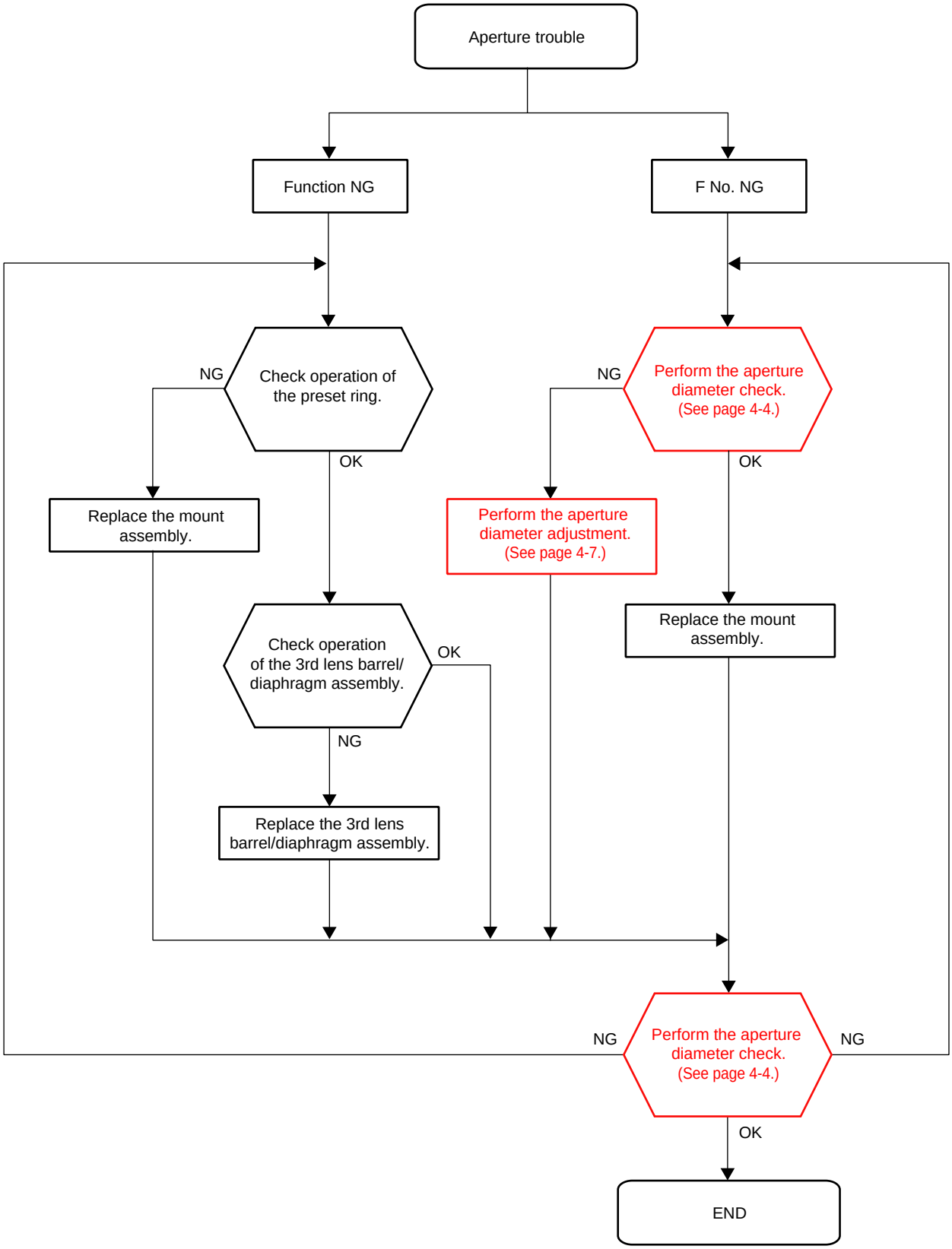
COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

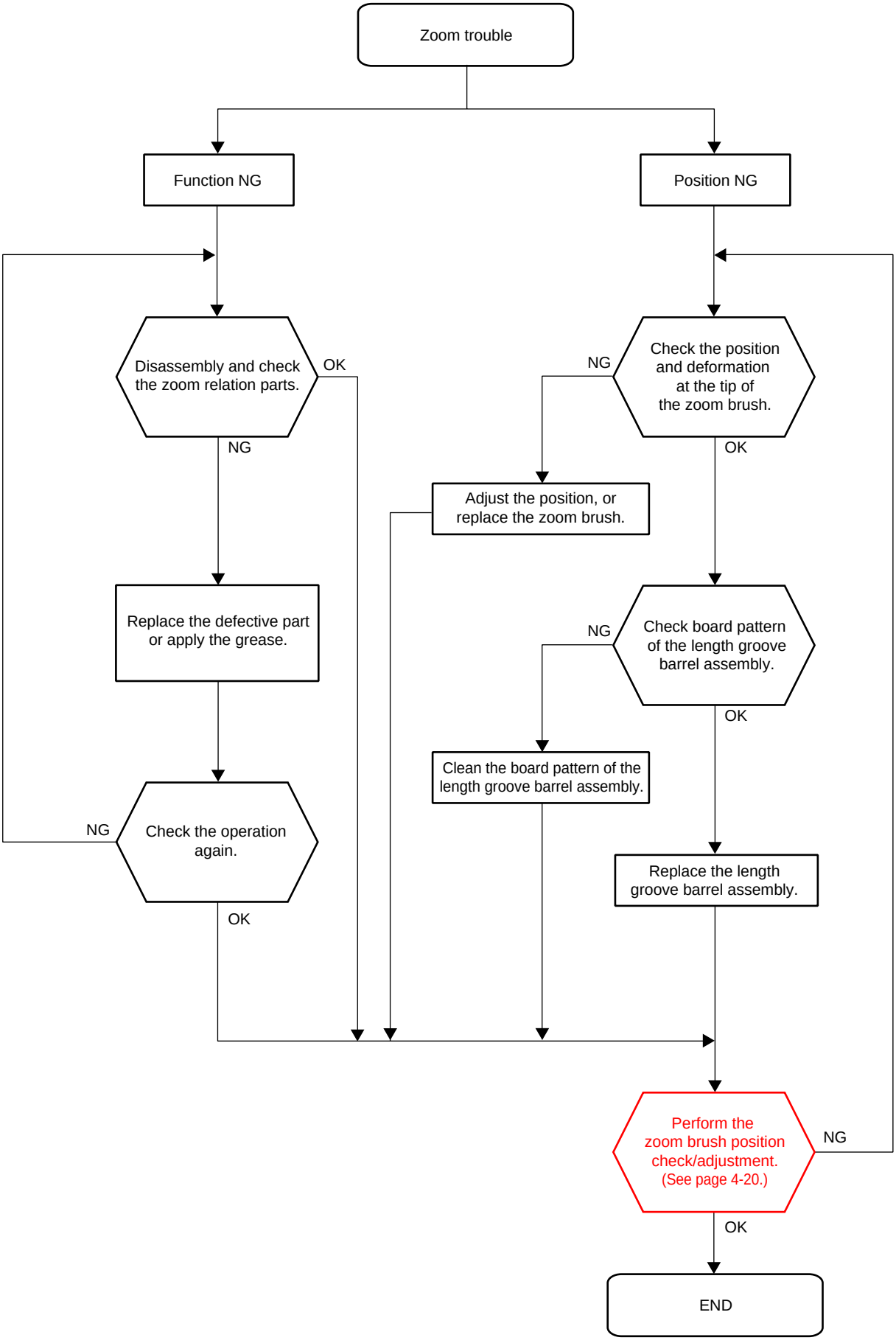
LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

1-5. TROUBLESHOOTING

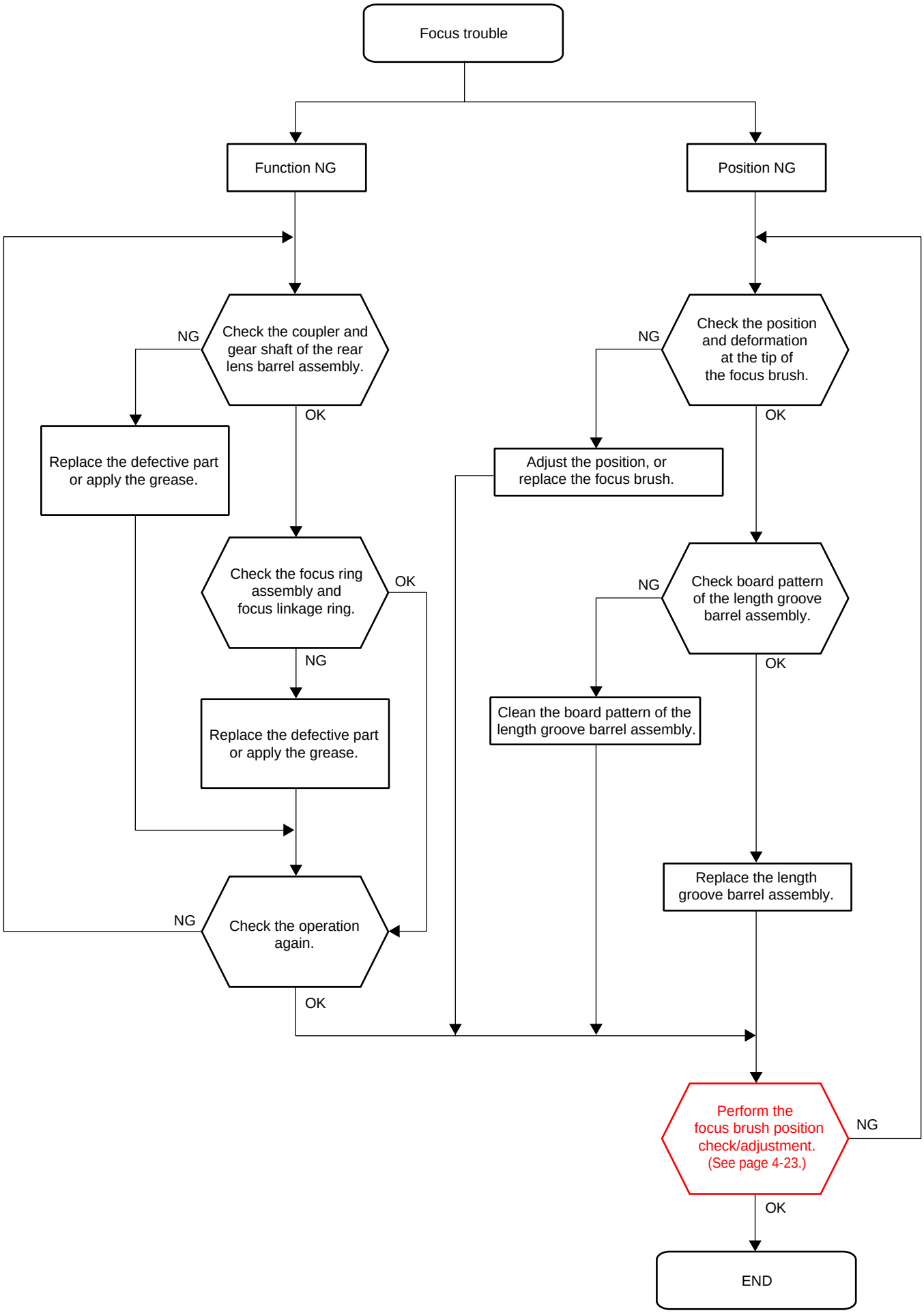
1-5-1. Aperture Trouble



1-5-2. Zoom Trouble



1-5-3. Focus Trouble

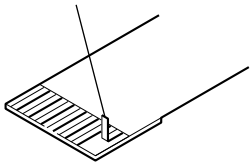


2. DISASSEMBLY

NOTE FOR REPAIR

- Make sure that the flat cable and flexible board are not cracked of bent at the terminal. Do not insert the cable insufficiently nor crookedly.
- When remove a connector, dont' pull at wire of connector. It is possible that a wire is snapped.
- When installing a connector, dont' press down at wire of connector. It is possible that a wire is snapped.
- Do not apply excessive load to the gilded flexible board.

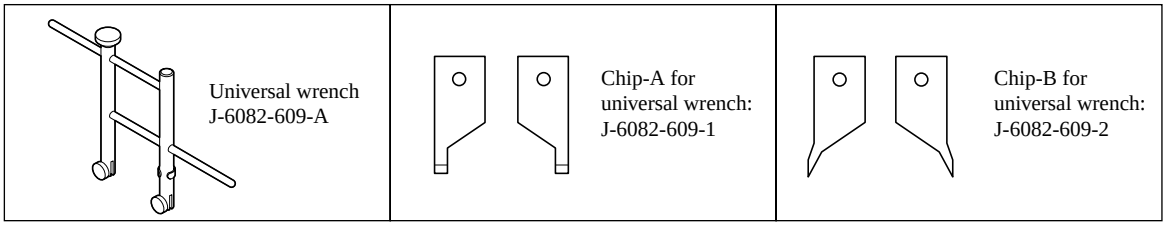
Cut and remove the part of gilt which comes off at the point. (Be careful or some pieces of gilt may be left inside)



UNIVERSAL WRENCH

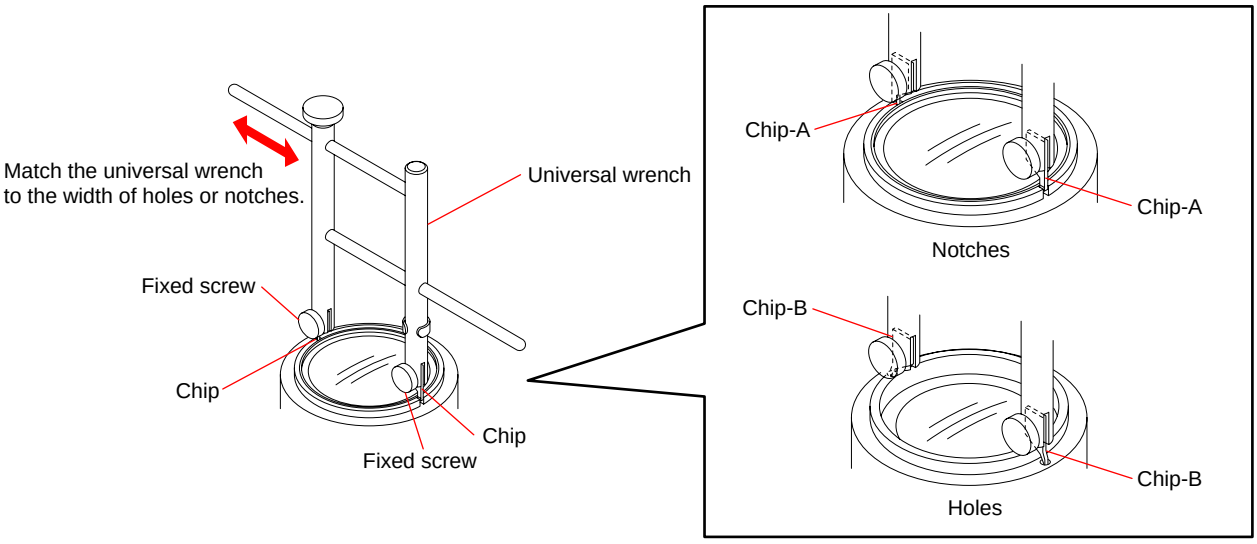
In case of the following notches or holes are located in the lens block, etc during disassembling/ assembling the lens, Use the universal wrench.

How to Use



Attach the chip-A or chip-B to the universal wrench.
For the notches: chip-A
For the holes: chip-B

Match the universal wrench to the holes or notches of the lens block, etc.

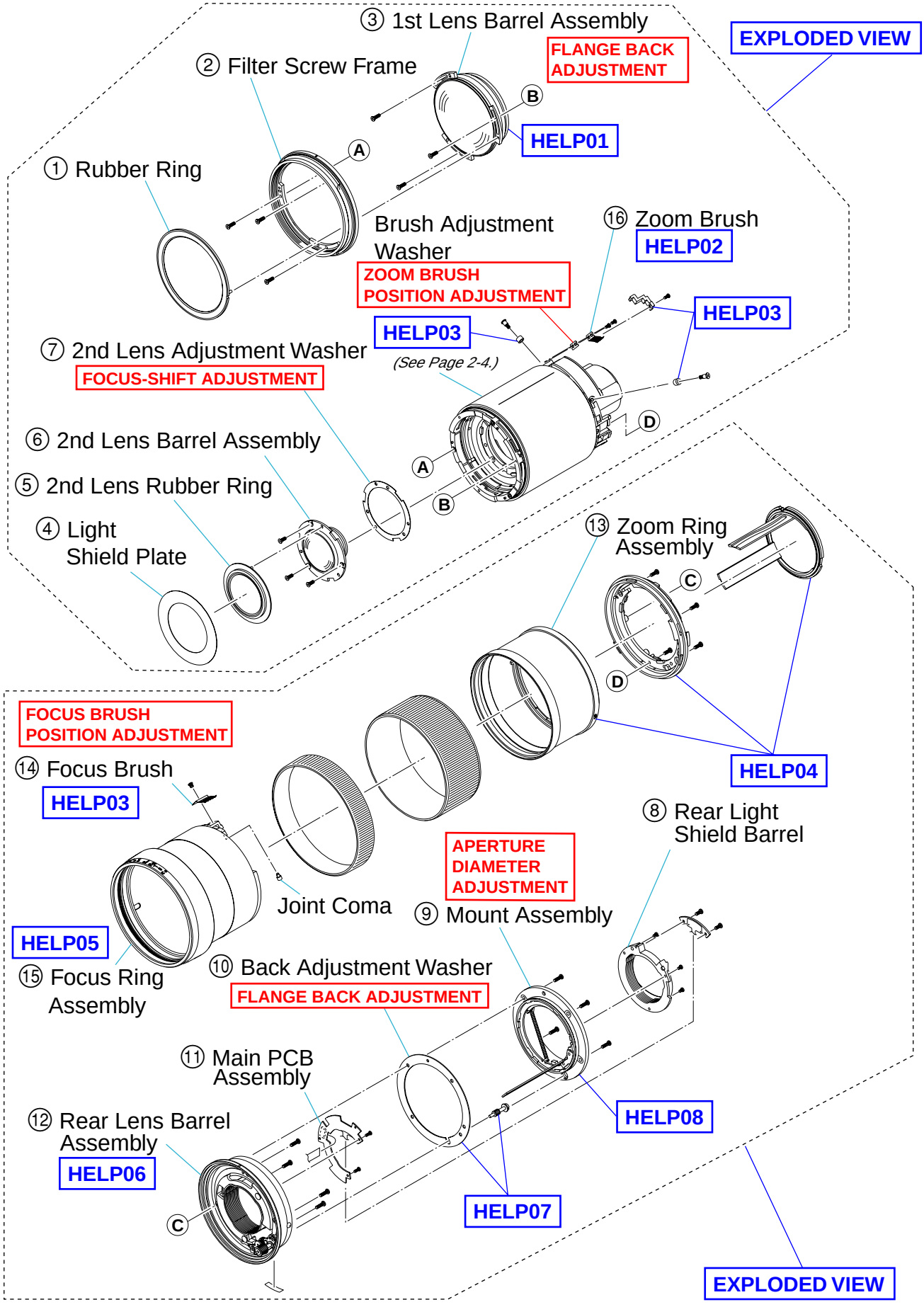


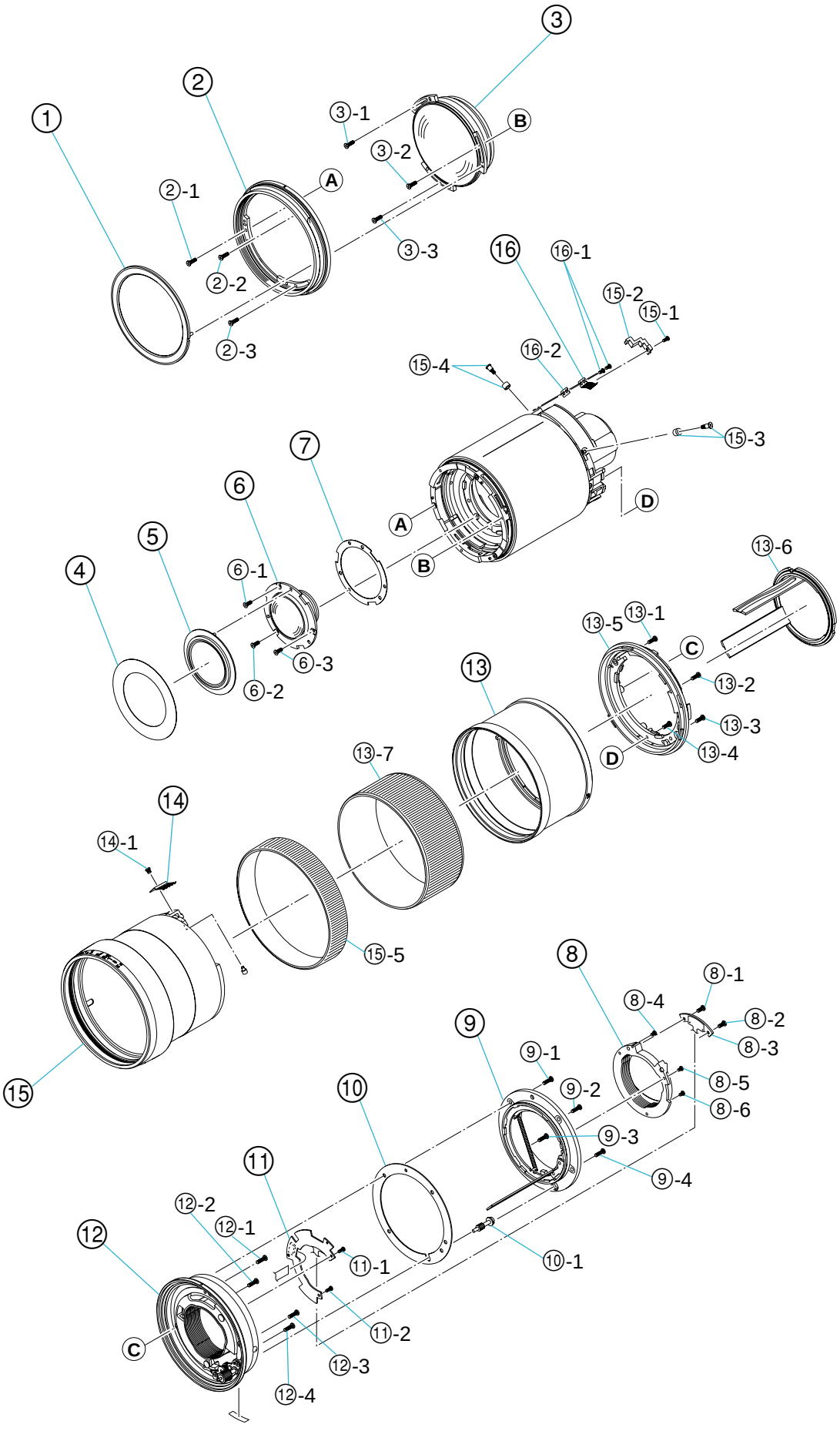
When top of tip does not reach holes or notches because the fixed screw becomes obstructive, replace the fixed screw to below.
+B 3X5 7-682-546-09

2-1. DISASSEMBLY

2-1-1. 1ST LENS BARREL ASSEMBLY, MOUNT ASSEMBLY AND ZOOM RING ASSEMBLY

Note: For more detail procedure, see page 2-3.




1
2
3
2-1
2-2
2-3
3-1
3-2
3-3
A
B
16
16-1
16-2
15-1
15-2
15-3
15-4
7
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5
4
6-1
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D
13-6
13-5
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8-6
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9-1
9-2
9-3
9-4
10
10-1
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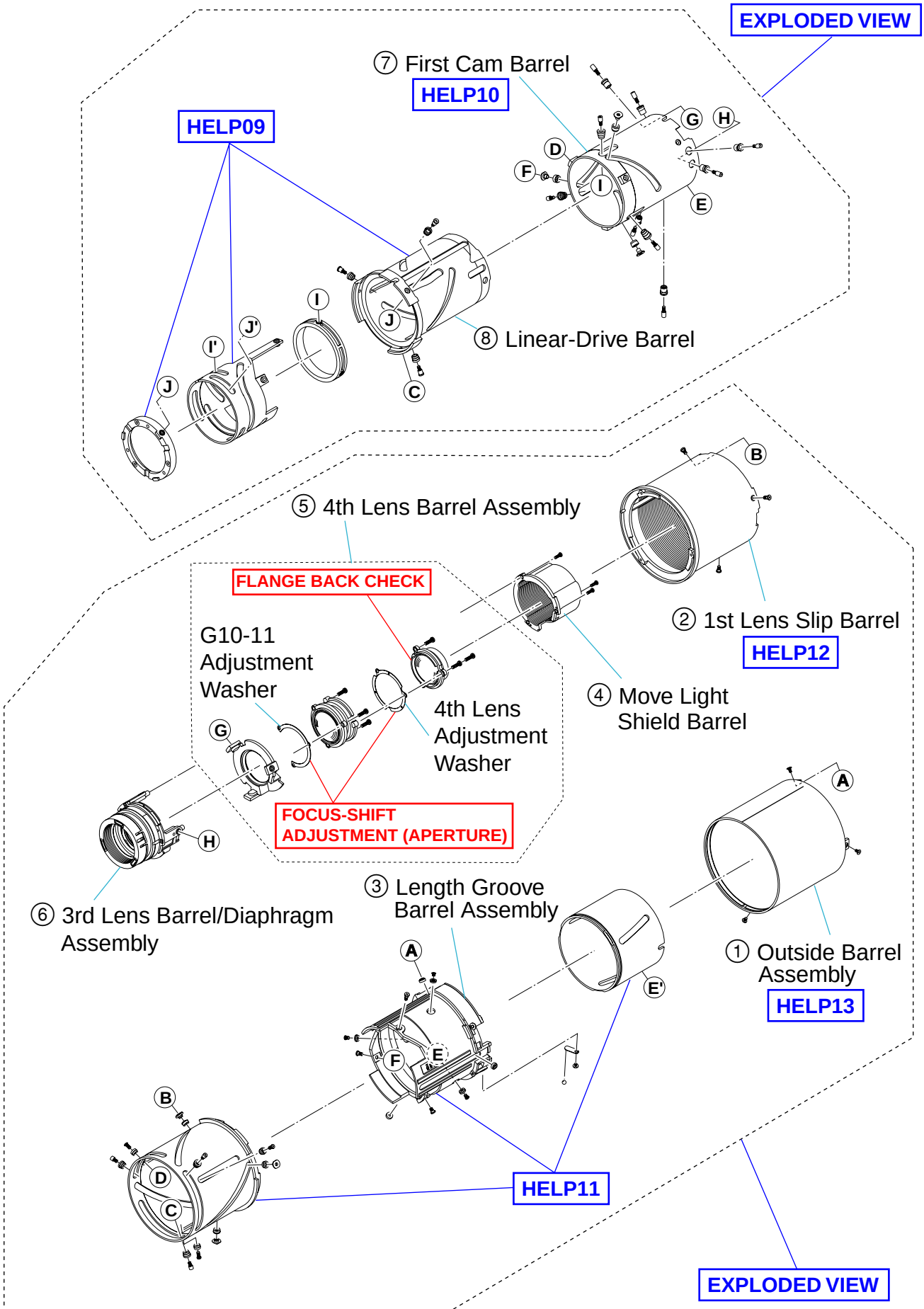
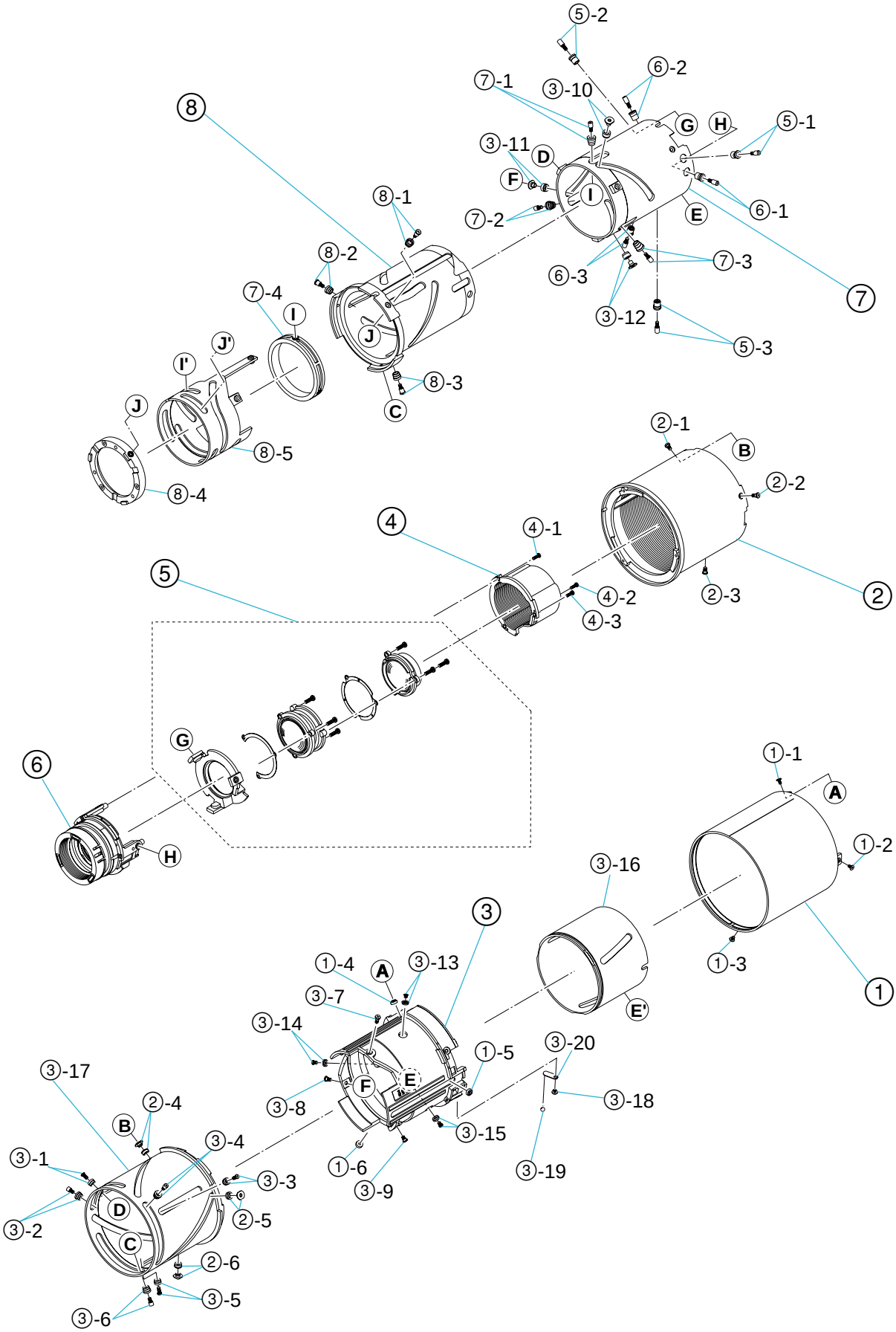
11-1
11-2
12
12-1
12-2
12-3
12-4

2-1-2. 3RD LENS BARREL/DIAPAGM ASSEMBLY

Note: For more detail procedure, see page 2-5.





SAL18200 (3.5-6.3/18-200) (DT 18-200mm F3.5-6.3)

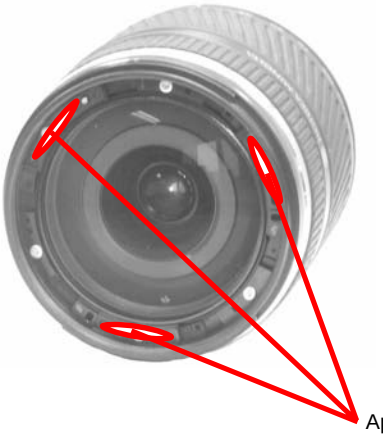
HELP

Note for assembling and grease applying positions are shown.

HELP01

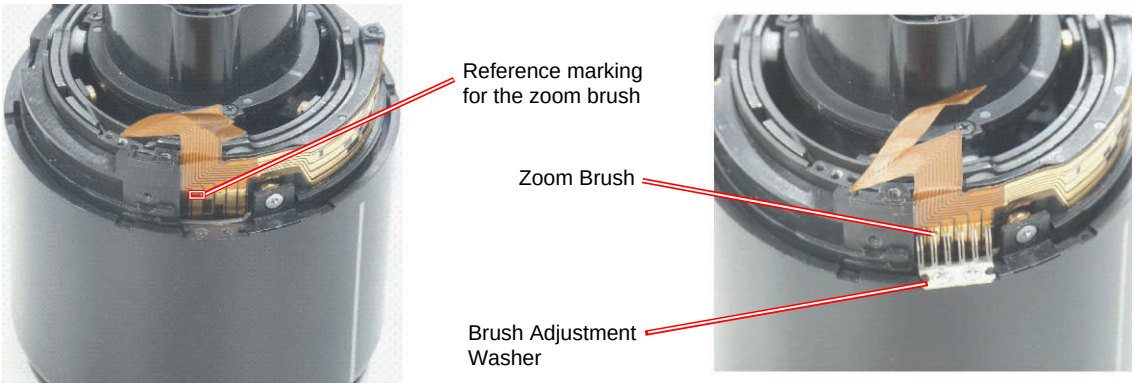
Adhesive bond (B-10): J-6082-612-A

After the flange back (f'F) adjustment is completed, apply the adhesive bond (B-10) as shown in the figure.



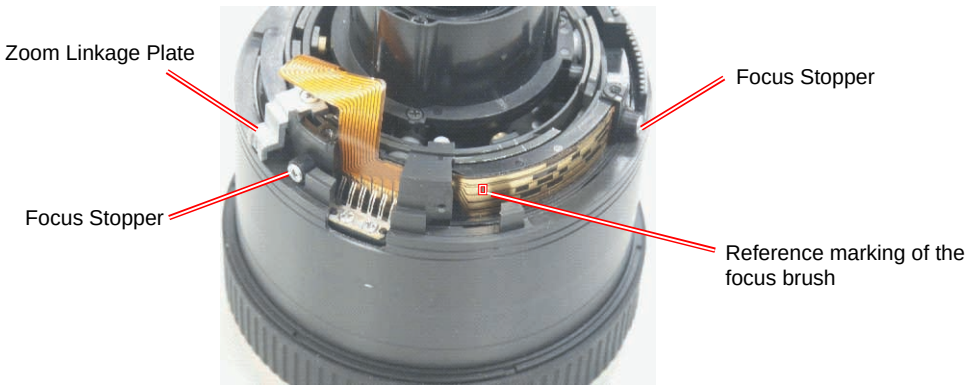
HELP02

1. Attach the zoom brush as shown in the figure, and fix it with the screw tentatively.
2. Confirm to the reference marking for the tip of the zoom brush, adjust position by increasing and decreasing the brush adjustment washer.

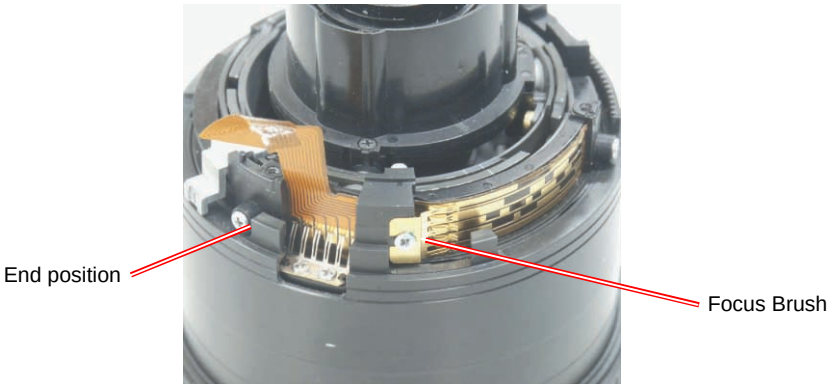


HELP03

1. Attach the zoom linkage plate and the two focus stoppers as shown in the figure.



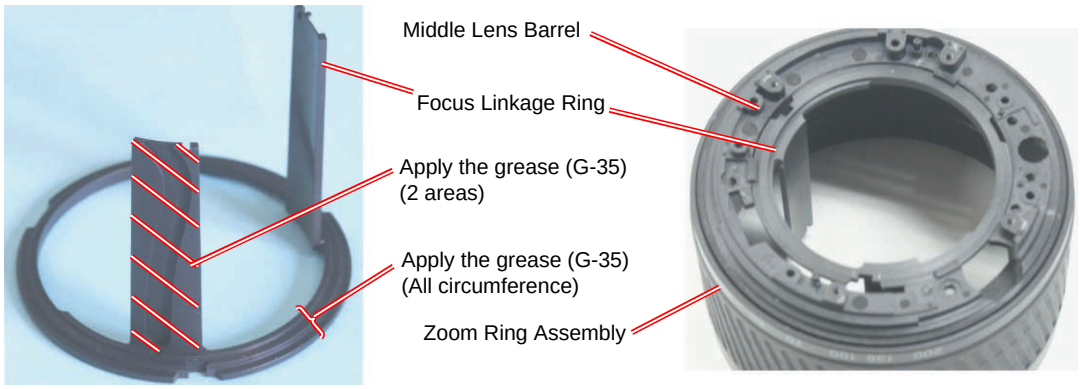
2. Confirm to the reference marking for the tip of the focus brush (above figure), and attach the focus brush as shown in the figure.



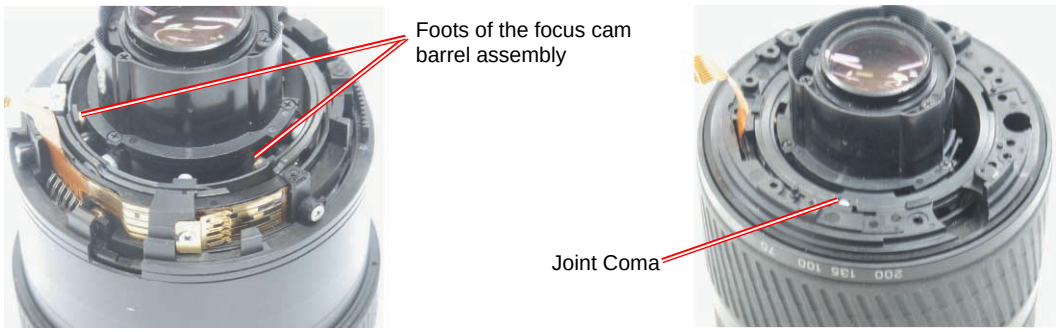
HELP04

Grease (G-35): J-6082-621-A

1. Apply the grease (G-35) to the instruction part of the focus linkage ring.
2. Attach the middle lens barrel and focus linkage ring to the zoom ring assembly as shown in the figure.



3. Set the cam parts of the focus linkage ring and the foots of the focus cam barrel assembly, then attach the zoom ring assembly assembled in step 2 as shown in the figure.



HELP05

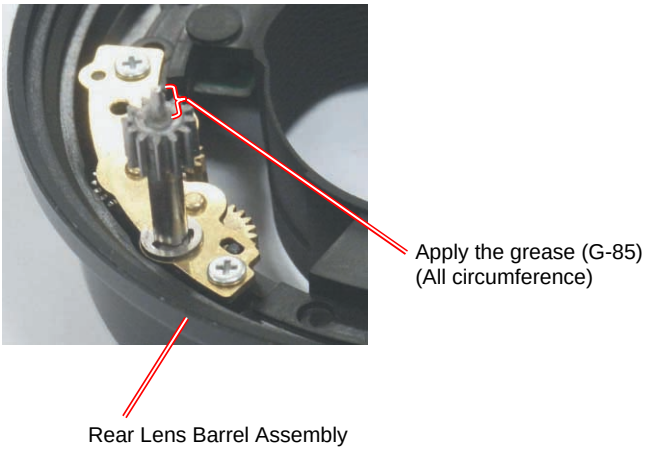
Grease (G-15): J-6082-619-A
Grease (G-85): J-6082-626-A

Apply the grease (G-15, G-85) to the instruction part of the focus ring assembly.

HELP06

Grease (G-85): J-6082-626-A

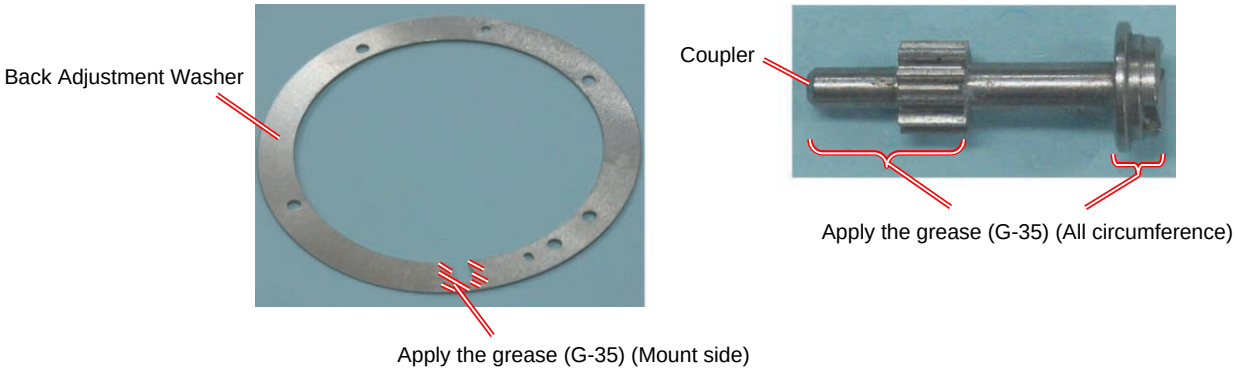
Apply the grease (G-85) to the gear shaft of the rear lens barrel assembly.



HELP07

Grease (G-35): J-6082-621-A

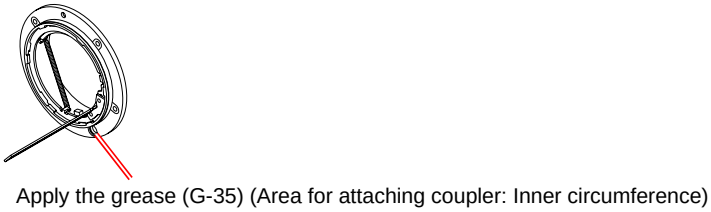
Apply the grease (G-35) to the instruction part of the back adjustment washer and coupler as shown in the figure.



HELP08

Grease (G-35): J-6082-621-A

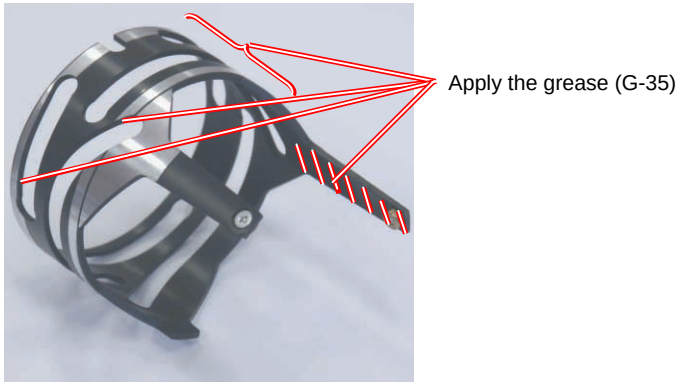
Apply the grease (G-35) to the instruction part of the mount assembly.



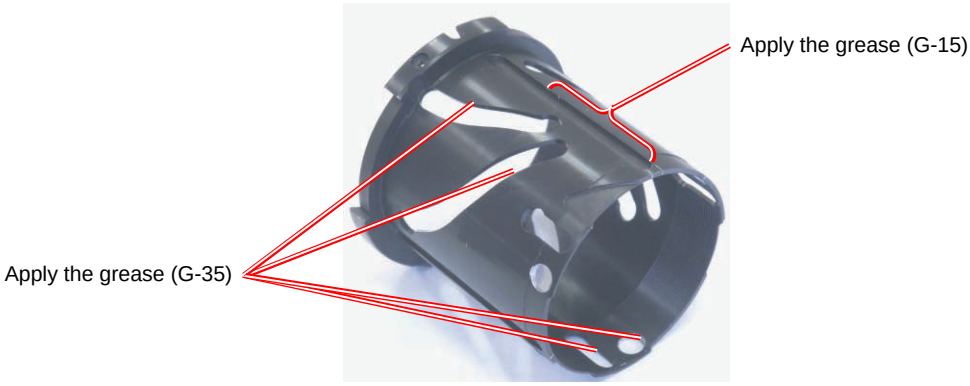
HELP09

Grease (G-15): J-6082-619-A
Grease (G-35): J-6082-621-A

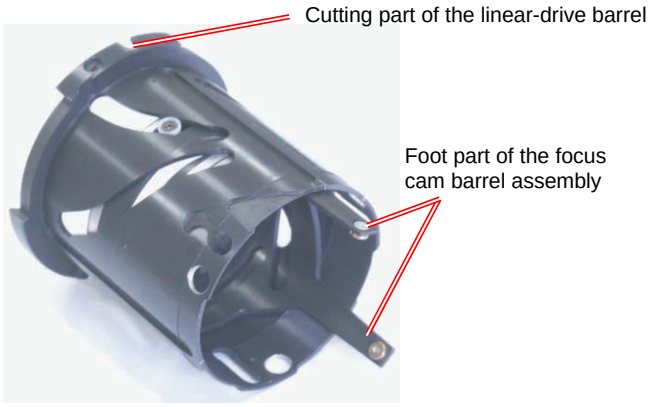
1. Apply the grease (G-35) to the cam areas (6 areas), shaded areas (2 areas) and circumference of instruction part of the focus cam barrel assembly.



2. Apply the grease (G-15, G-35) to the cam areas (9 areas), holes of the circle areas (3 areas) and width of instruction parts (3 parts) of the linear-drive barrel.



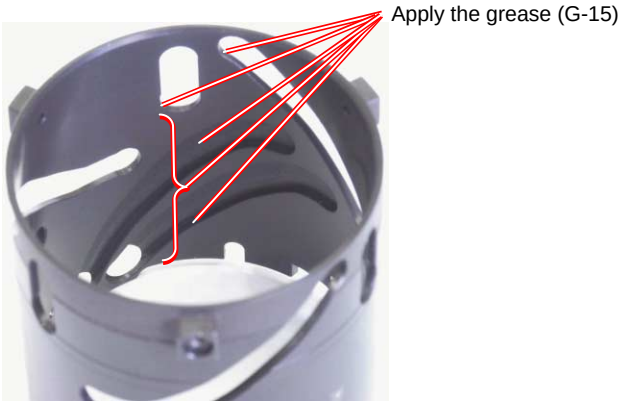
3. Insert the focus cam barrel assembly into the linear-drive barrel as shown in the figure.

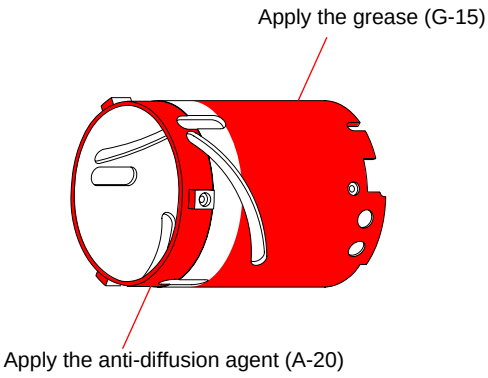


HELP10

Grease (G-15): J-6082-619-A
Anti-diffusion agent (A-20): J-6082-611-A

Apply the grease (G-15) to the cam areas (12 areas) and inside circumference of instruction part, anti-diffusion agent (A-20) to the shaded areas (3 areas) or tip and side instruction part of the first cam barrel.

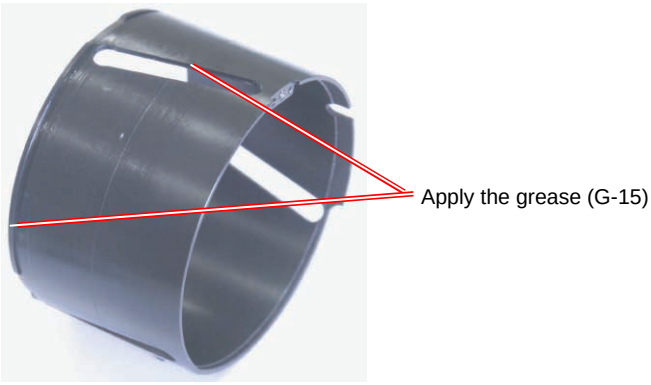




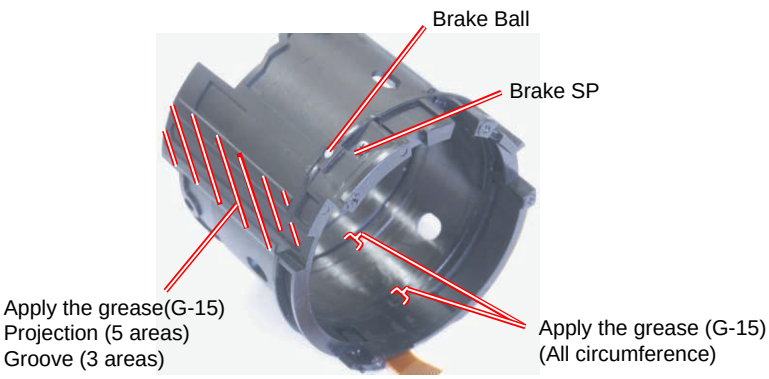
HELP11

Grease (G-15): J-6082-619-A
Grease (G-35): J-6082-621-A

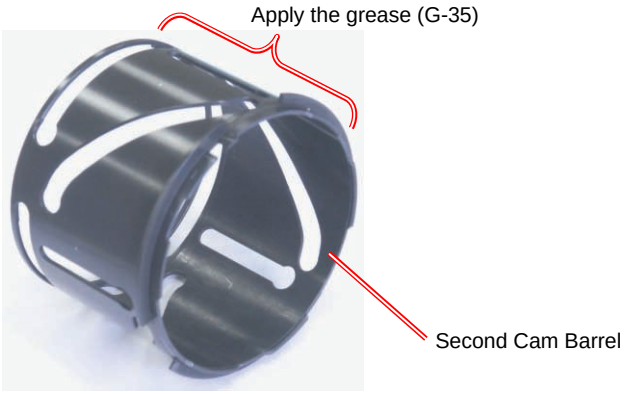
1. Apply the grease (G-15) to the cam areas (3 areas) and bayonet area of the zoom linkage ring.



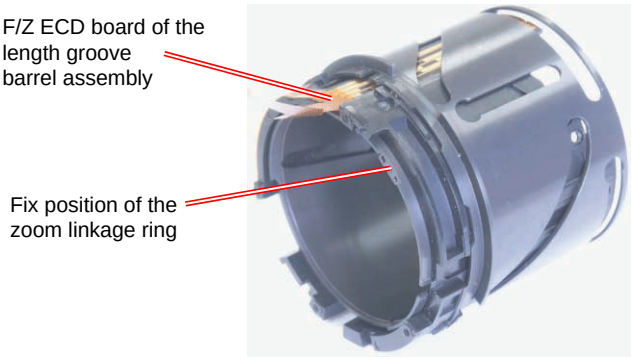
2. Attach the brake ball and brake SP to the length groove barrel assembly.
3. Apply the grease (G-15) to the instruction part of the length groove barrel assembly.



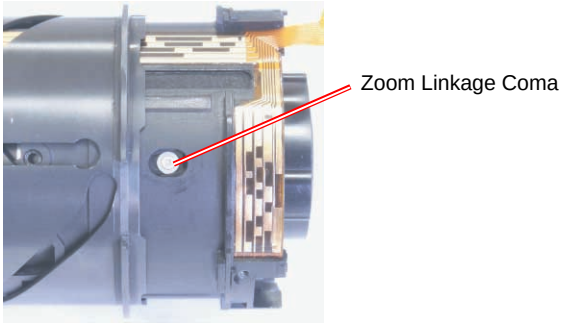
4. Apply the grease (G-35) to the entire width of instruction part of the second cam barrel.
(inside circumference, outside circumference and cam areas)



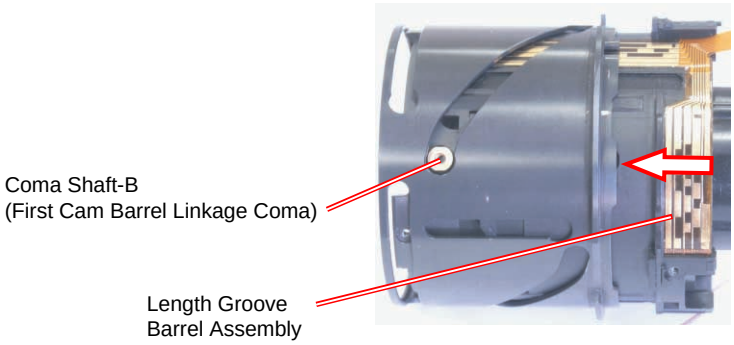
5. Assemble the zoom linkage ring, length groove barrel assembly and second cam barrel as shown in the figure.



6. Confirm the positions in step 5, and attach the zoom linkage coma.



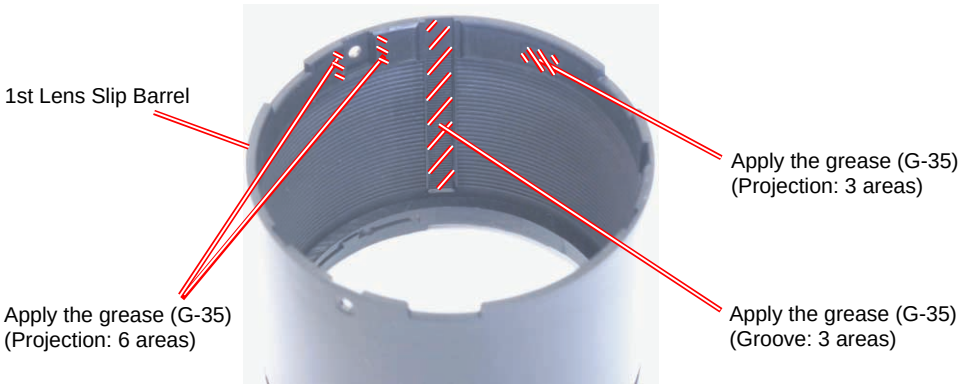
7. Attach the coma shaft-B (3 pieces) and first cam barrel linkage coma (3 pieces), and set the length groove barrel assembly and holes of the screw to the direction of the arrow.



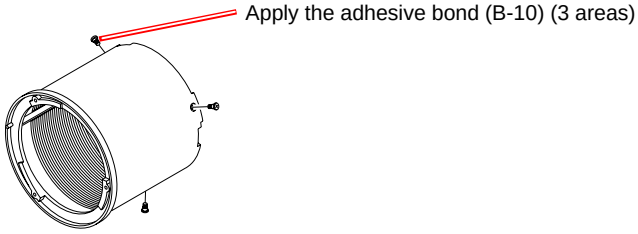
HELP12

Grease (G-35): J-6082-621-A
Adhesive bond (B-10): J-6082-612-A

1. Apply the grease (G-35) to the shaded areas of the 1st lens slip barrel.



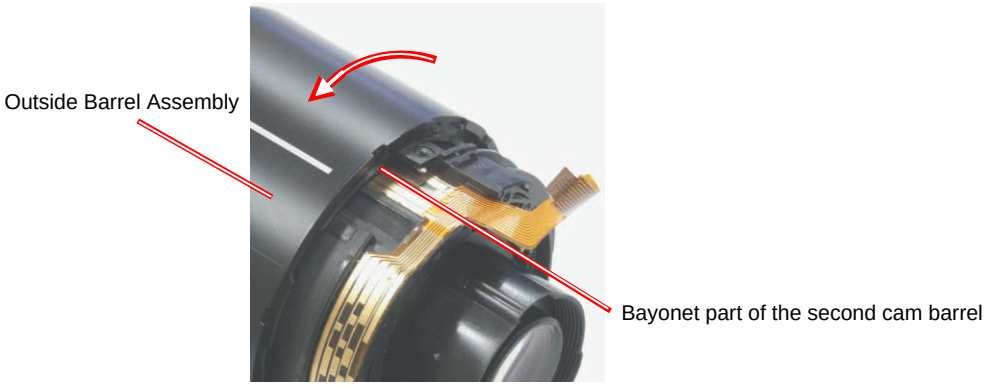
2. Attach the 1st lens slip barrel, and apply the adhesive bond (B-10) to the three coma screws as shown in the figure.



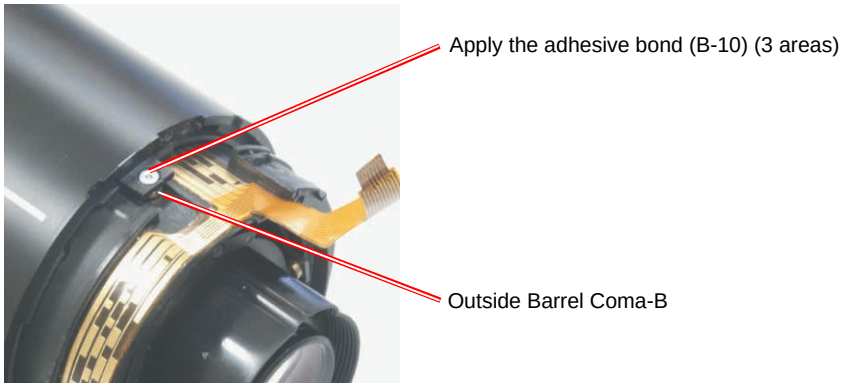
HELP13

Adhesive bond (B-10): J-6082-612-A

1. Turn the outside barrel assembly in the direction of the arrow to attach the bayonet of the outside barrel assembly into the bayonet part of the second cam barrel.



2. Attach the outside barrel coma-B (3 pieces) as shown in the figure.
3. Apply the adhesive bond (B-10) to the three screws fixing the outside barrel coma-B.



3. REPAIR PARTS LIST

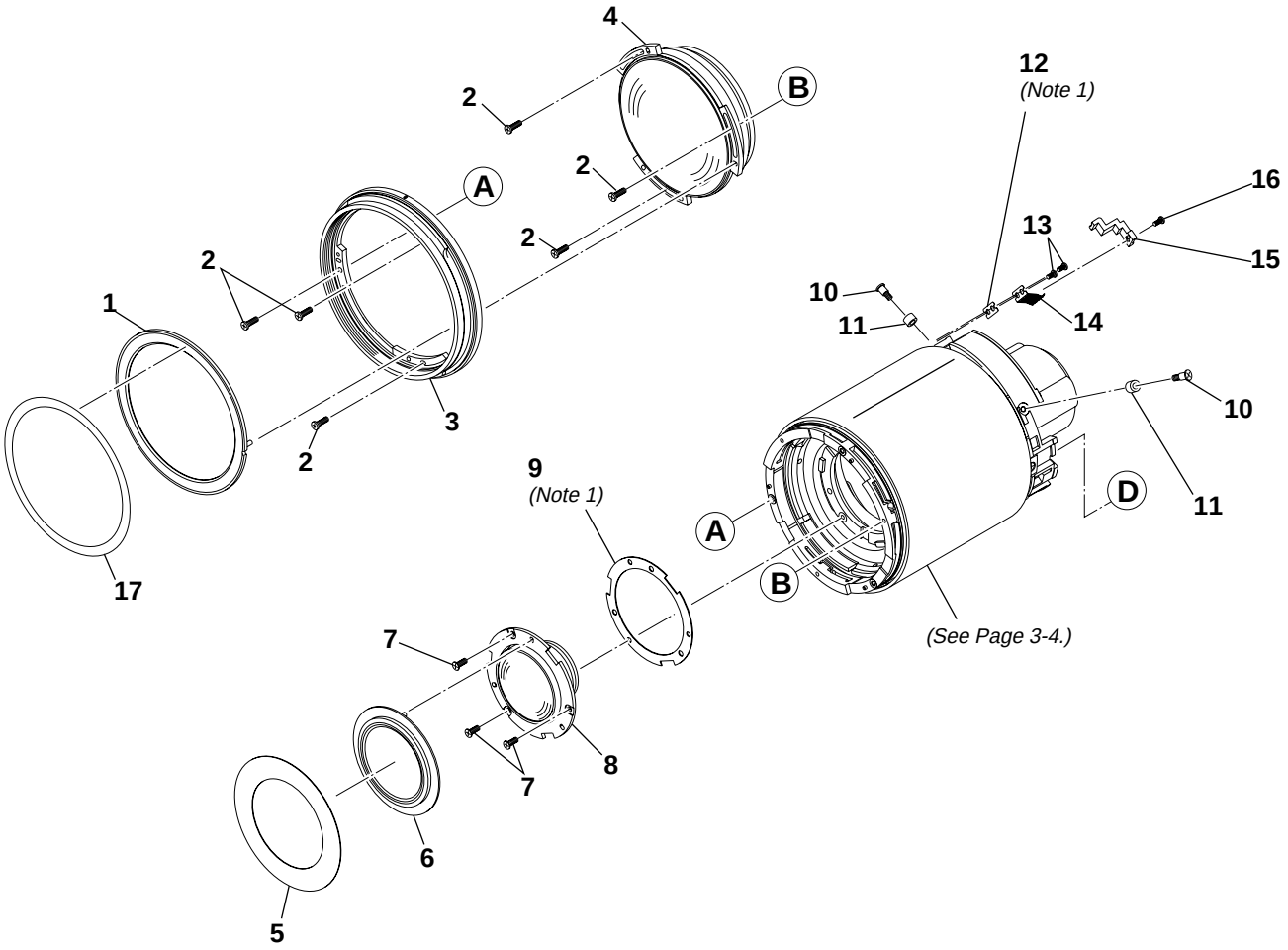
DISASSEMBLY

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

3-1. EXPLODED VIEWS

3-1-1. 1ST LENS BARREL ASSEMBLY



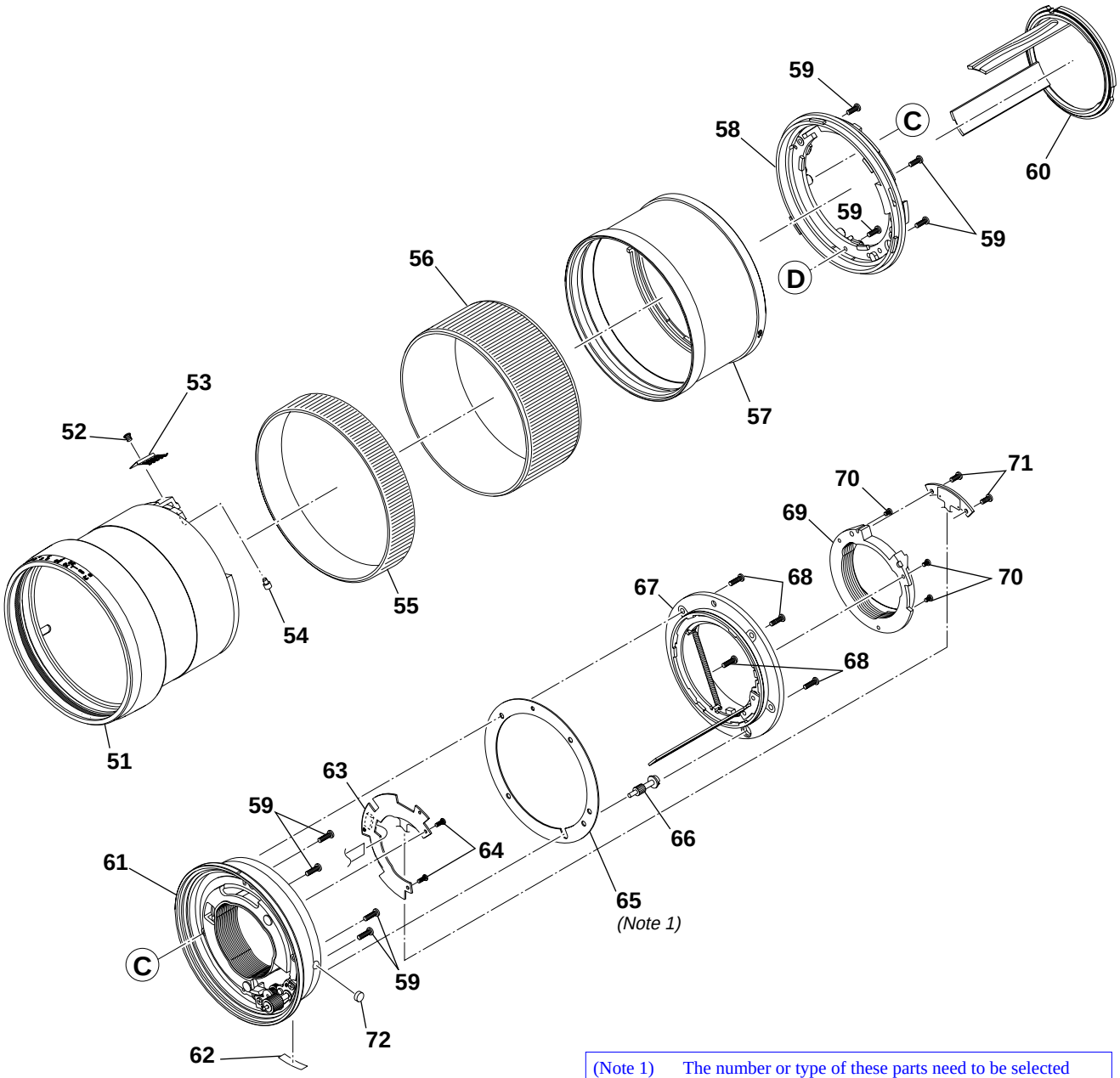
(Note 1) The number or type of these parts need to be selected according to adjustment etc..
Select the part referring to page 3-5.

Ref. No.	Part No.	Description
1	2-699-028-01	RUBBER RING
2	2-699-029-01	SCREW (BT2P1.7X4.5C3C)
3	2-699-030-01	FILTER SCREW FRAME
4	A-1204-572-A	1ST LENS BARREL ASSY
5	2-699-031-01	LIGHT SHIELD PLATE
6	2-699-032-01	2ND LENS RUBBER RING
7	2-699-033-01	SCREW (BTUT3.0P1.7X4C3C)
8	A-1204-573-A	2ND LENS BARREL ASSY
9	Selection part	2ND LENS ADJUSTMENT WASHER (A to E) (Note 1)

Ref. No.	Part No.	Description
10	2-699-076-01	FOCUS STOPPER SCREW
11	2-699-077-01	FOCUS STOPPER RUBBER
12	Selection part	BRUSH ADJUSTMENT WASHER (A to C) (Note 1)
13	2-699-093-01	SCREW (BT1P1.7X2C3C)
14	2-699-092-01	ZOOM BRUSH
15	2-699-086-01	ZOOM LINKAGE PLATE
16	2-699-087-01	SCREW (2P1.7X3C3C IB LOCK)
17	2-888-828-01	FRONT ORNAMENTAL PLATE

DISASSEMBLY

3-1-2. MOUNT ASSEMBLY AND ZOOM RING ASSEMBLY

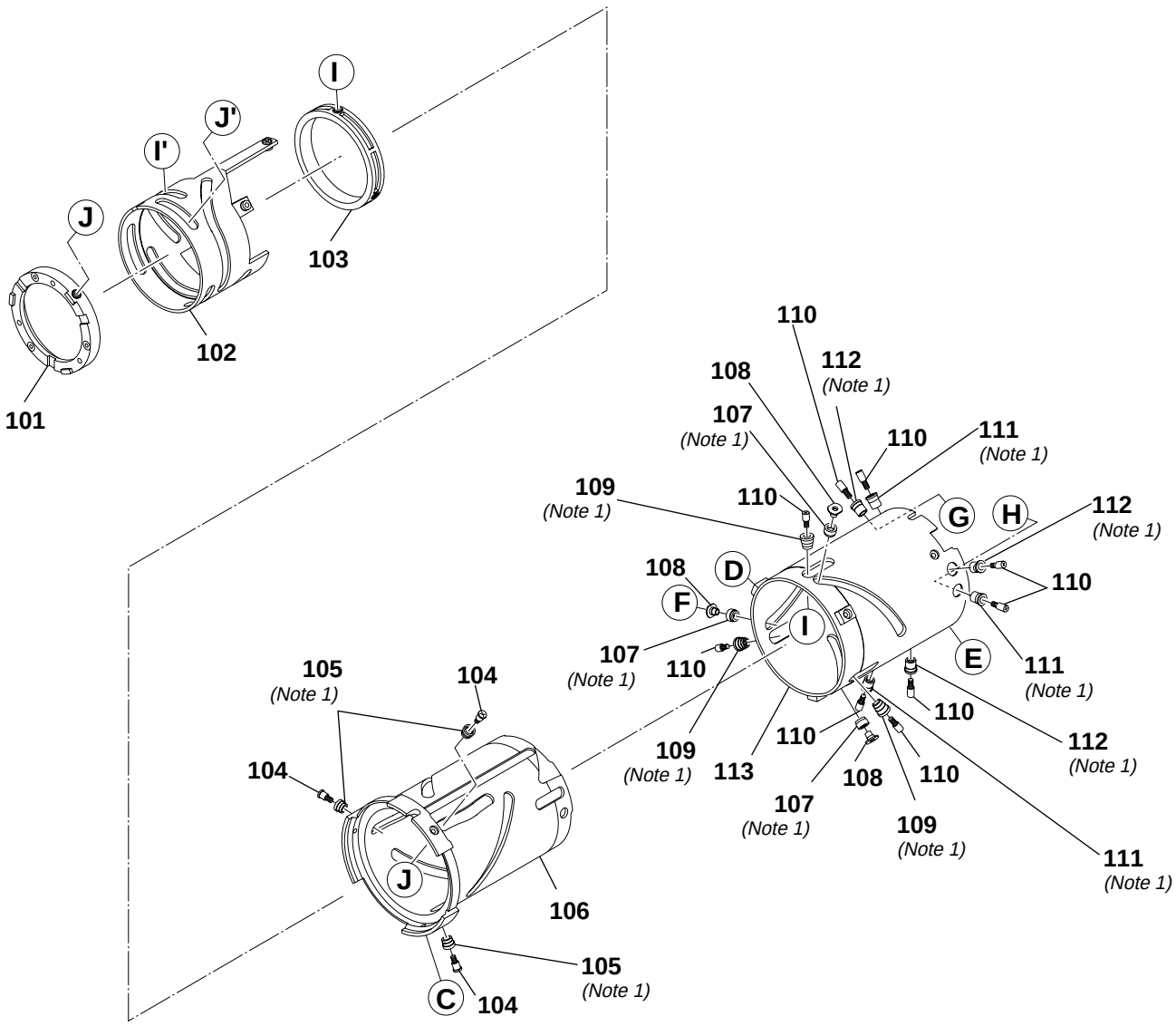


(Note 1) The number or type of these parts need to be selected according to adjustment etc..
Select the part referring to page 3-5.

Ref. No.	Part No.	Description
51	A-1204-579-A	FOCUS RING ASSY
52	2-699-096-01	SCREW (2P1.7X1.6C3C)
53	2-699-095-01	FOCUS BRUSH
54	2-699-097-01	JOINT COMA
55	2-699-094-01	FOCUS RUBBER
56	2-699-100-01	ZOOM RUBBER
57	A-1204-580-A	ZOOM RING ASSY
58	2-699-099-01	MIDDLE LENS BARREL
59	2-699-027-01	SCREW (BT2P1.7X5C3C)
60	2-699-098-01	FOCUS LINKAGE RING
61	A-1204-581-A	REAR LENS BARREL ASSY

Ref. No.	Part No.	Description
62	2-699-101-01	NUMBER SEAL
63	A-1204-582-A	MAIN PCB ASSY
64	2-699-029-01	SCREW (BT2P1.7X4.5C3C)
65	Selection part	BACK ADJUSTMENT WASHER (A to D, F) (Note 1)
66	2-699-108-01	COUPLER
67	A-1204-583-A	MOUNT ASSY
68	2-699-109-01	MOUNT FIX SCREW
69	2-699-110-01	REAR LIGHT SHIELD BARREL
70	2-699-111-01	SCREW (BT1P1.4X3.5GR301)
71	2-699-026-01	SCREW (BT101.7XGR301)
72	2-683-692-01	CHIP (MOUNT INDEX)

3-1-3. FIRST CAM BARREL AND LINEAR-DRIVE BARREL



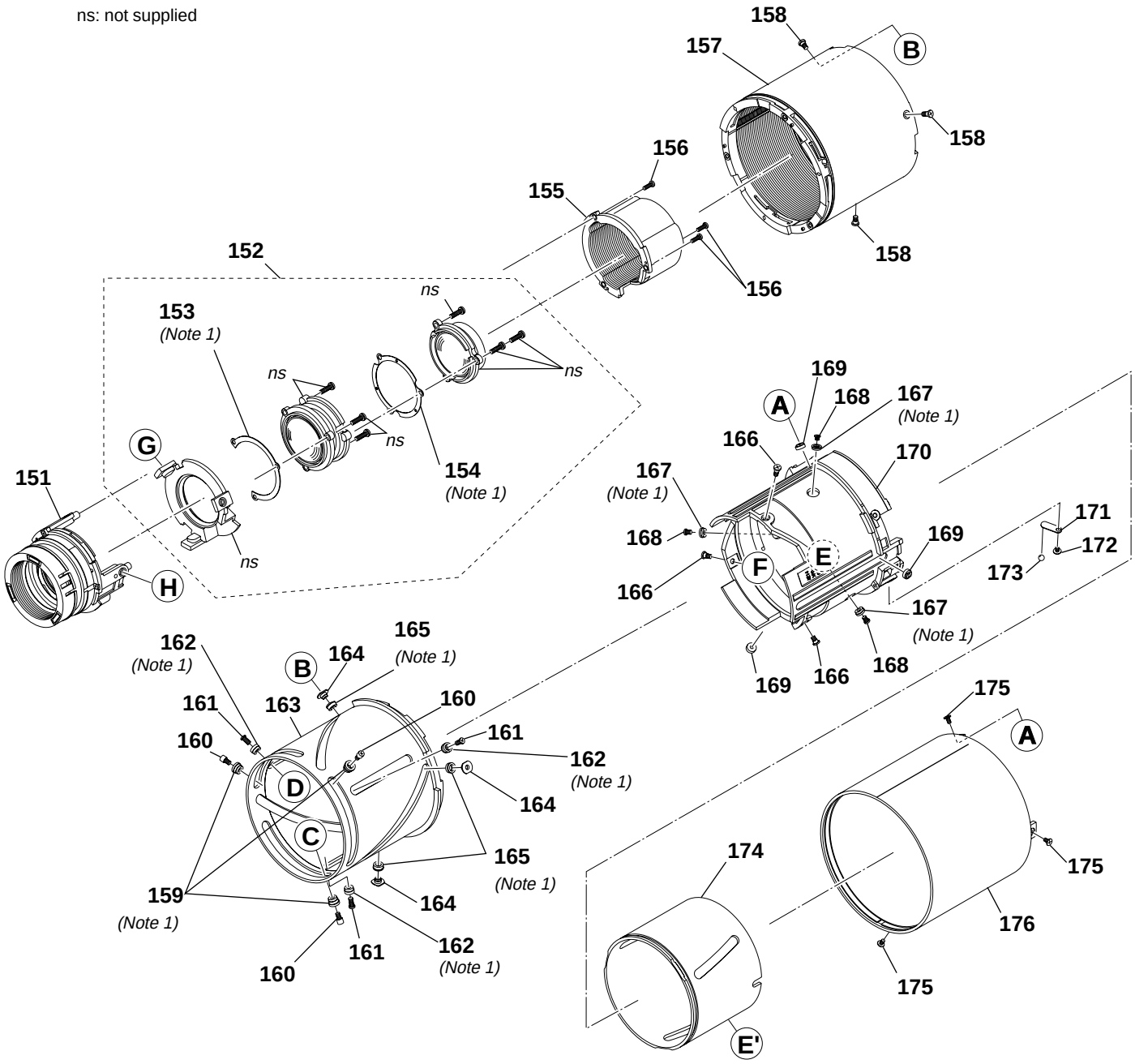
(Note 1) The number or type of these parts need to be selected according to adjustment etc..
Select the part referring to page 3-5.

Ref. No.	Part No.	Description
101	2-699-039-01	FOCUS SLIP BARREL
102	A-1204-574-A	FOCUS CAM BARREL ASSY
103	2-699-040-01	2ND LENS SLIP BARREL
104	2-699-057-01	COMA SCREW-D
105	Selection part	FOCUS SLIP COMA (A, K, L) (Note 1)
106	2-699-053-01	LINEAR-DRIVE BARREL
107	Selection part	FIRST CAM BARREL LINKAGE COMA (A, K) (Note 1)

Ref. No.	Part No.	Description
108	2-699-060-01	COMA SHAFT-B
109	Selection part	2ND COMA (U, W) (Note 1)
110	2-699-061-01	COMA SCREW-D
111	Selection part	3RD COMA (R, S) (Note 1)
112	Selection part	4TH COMA (A, D) (Note 1)
113	2-699-066-01	FIRST CAM BARREL

3-1-4. 3RD LENS BARREL/DIAPHRAGM ASSEMBLY

ns: not supplied



(Note 1) The number or type of these parts need to be selected according to adjustment etc..
Select the part referring to page 3-5.

Ref. No.	Part No.	Description
151	A-1204-575-A	3RD LENS BARREL /DIAPHRAGM ASSY
152	A-1204-576-A	4TH LENS BARREL ASSY
153	Selection part	G10-11 ADJUSTMENT WASHER (A to C) (Note 1)
154	Selection part	4TH LENS ADJUSTMENT WASHER (A to D) (Note 1)
155	2-699-071-01	MOVE LIGHT SHIELD BARREL
156	2-699-072-01	SCREW (BT1P1.7X3.5C3C)
157	2-699-041-01	1ST LENS SLIP BARREL
158	2-699-042-01	COMA SCREW
159	Selection part	1ST LENS SLIP BARREL GUIDE COMA (D, G) (Note 1)
160	2-699-046-01	INSIDE LOCK SCREW
161	2-699-045-01	SCREW (1P1.7X3.5C3C IB LOCK)
162	Selection part	SECOND CAM BARREL LINKAGE COMA (B, D) (Note 1)
163	2-699-049-01	SECOND CAM BARREL
164	2-699-052-01	COMA SHAFT-A
165	Selection part	1ST COMA (B, C) (Note 1)
166	2-699-075-01	COMA SCREW (CB3C IB LOCK)
167	Selection part	ZOOM LINKAGE COMA (B, D, E) (Note 1)
168	2-699-078-01	SCREW (1P1.7X2C3C IB LOCK)
169	2-699-073-01	OUTSIDE BARREL COMA-B
170	A-1204-577-A	LENGTH GROOVE BARREL ASSY
171	2-699-082-01	BRAKE SP
172	2-699-084-01	SCREW (BT2P1.7X2B3C)
173	2-699-083-01	BRAKE BALL
174	2-699-085-01	ZOOM LINKAGE RING
175	2-699-088-01	SCREW (UT3.0P1.4X2C3C)
176	A-1204-578-A	OUTSIDE BARREL ASSY

3-1-5. SELECTION PARTS

Ref. No.9

These washers are provided for focus-shift adjustment.
Change the thickness (t) according to result of adjustment.

Part No.	Description
2-699-034-01	2ND LENS ADJUSTMENT WASHER-A (t=0.2 mm)
2-699-035-01	2ND LENS ADJUSTMENT WASHER-B (t=0.1 mm)
2-699-036-01	2ND LENS ADJUSTMENT WASHER-C (t=0.05 mm)
2-699-037-01	2ND LENS ADJUSTMENT WASHER-D (t=0.03 mm)
2-699-038-01	2ND LENS ADJUSTMENT WASHER-E (t=0.02 mm)

Ref. No.12

These washers are provided for zoom brush position adjustment.
Change the thickness (t) to adjust.

Part No.	Description
2-699-089-01	BRUSH ADJUSTMENT WASHER-A (t=0.15 mm)
2-699-090-01	BRUSH ADJUSTMENT WASHER-B (t=0.1 mm)
2-699-091-01	BRUSH ADJUSTMENT WASHER-C (t=0.05 mm)

Ref. No.65

These washers are provided for flange back adjustment.
Change the thickness (t) according to result of adjustment.

Part No.	Description
2-699-102-01	BACK ADJUSTMENT WASHER-A (t=0.5 mm)
2-699-103-01	BACK ADJUSTMENT WASHER-B (t=0.3 mm)
2-699-104-01	BACK ADJUSTMENT WASHER-C (t=0.1 mm)
2-699-105-01	BACK ADJUSTMENT WASHER-D (t=0.05 mm)
2-699-106-01	BACK ADJUSTMENT WASHER-F (t=0.03 mm)

Ref. No.105

Select the type of part according to the operation load of the associated parts.

Part No.	Description
2-699-054-01	FOCUS SLIP COMA-A
2-699-055-01	FOCUS SLIP COMA-K
2-699-056-01	FOCUS SLIP COMA-L

Ref. No.107

Select the type of part according to the operation load of the associated parts.

Part No.	Description
2-699-058-01	FIRST CAM BARREL LINKAGE COMA-A
2-699-059-01	FIRST CAM BARREL LINKAGE COMA-K

Ref. No.109

Select the type of part according to the operation load of the associated parts.

Part No.	Description
2-699-062-01	2ND COMA-U
2-699-063-01	2ND COMA-W

Ref. No.111

Select the type of part according to the operation load of the associated parts.

Part No.	Description
2-699-067-01	3RD COMA-R
2-699-068-01	3RD COMA-S

Ref. No.112

Select the type of part according to the operation load of the associated parts.

Part No.	Description
2-699-064-01	4TH COMA-A
2-699-065-01	4TH COMA-D

Ref. No.153

These washers are provided for focus-shift adjustment.
Change the thickness (t) according to result of adjustment.

Part No.	Description
2-699-069-01	G10-11 ADJUSTMENT WASHER-A (t=0.2 mm)
2-699-112-01	G10-11 ADJUSTMENT WASHER-B (t=0.1 mm)
2-699-114-01	G10-11 ADJUSTMENT WASHER-C (t=0.05 mm)

Ref. No.154

These washers are provided for focus-shift adjustment.
Change the thickness (t) according to result of adjustment.

Part No.	Description
2-699-070-01	4TH LENS ADJUSTMENT WASHER-A (t=0.1 mm)
2-699-113-01	4TH LENS ADJUSTMENT WASHER-B (t=0.05 mm)
2-699-118-01	4TH LENS ADJUSTMENT WASHER-C (t=0.03 mm)
2-699-119-01	4TH LENS ADJUSTMENT WASHER-D (t=0.02 mm)

Ref. No.159

Select the type of part according to the operation load of the associated parts.

Part No.	Description
2-699-047-01	1ST LENS SLIP BARREL GUIDE COMA-D
2-699-048-01	1ST LENS SLIP BARREL GUIDE COMA-G

Ref. No.162

Select the type of part according to the operation load of the associated parts.

Part No.	Description
2-699-043-01	SECOND CAM BARREL LINKAGE COMA-B
2-699-044-01	SECOND CAM BARREL LINKAGE COMA-D

Ref. No.165

Select the type of part according to the operation load of the associated parts.

Part No.	Description
2-699-050-01	1ST COMA-B
2-699-051-01	1ST COMA-C

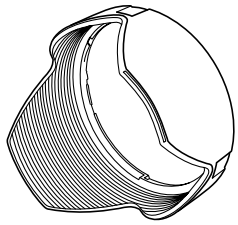
Ref. No.167

Select the type of part according to the operation load of the associated parts.

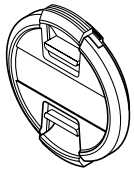
Part No.	Description
2-699-079-01	ZOOM LINKAGE COMA-B
2-699-080-01	ZOOM LINKAGE COMA-D
2-699-081-01	ZOOM LINKAGE COMA-E

3-2. SUPPLIED ACCESSORIES

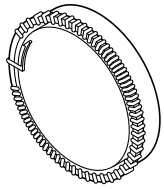
Checking supplied accessories.



Lens Hood (SH0008)
2-687-329-01



Front Lens Cap
2-687-233-01



Rear Lens Cap
2-683-615-01

Other accessories

2-686-121-01 MANUAL, INSTRUCTION
(JAPANESE, ENGLISH, FRENCH, SPANISH, SIMPLIFIED CHINESE)
2-686-121-11 MANUAL, INSTRUCTION
(GERMAN, DUTCH, SWEDISH, ITALIAN) (AEP)
2-686-121-21 MANUAL, INSTRUCTION (PORTUGUESE, RUSSIAN,
TRADITIONAL CHINESE, KOREAN, ARABIC) (AEP)

4. ADJUSTMENTS

Note: After the service repair, perform the adjustments referring to this section.

4-1. PREPARATIONS

4-1-1. List of Service Tools and Equipments

- Variable Transformer (Output voltage: AC 100 V) (Note 3)
- Camera DSLR-A100
- Compact Flash (CF) Card (For image saving)
- Screen (Art paper)
- Tape Measure
- Plane Mirror (For SLRs)
- Adhesive bond (B-10): J-6082-612-A
- Color Calculator 2

  Note: Color Calculator 2 is downloadable from the ESI homepage.

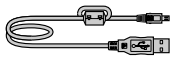
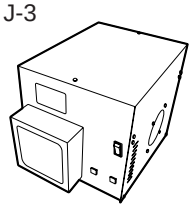
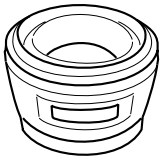
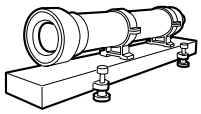
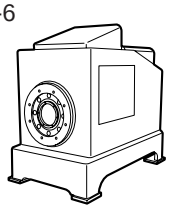
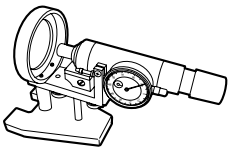
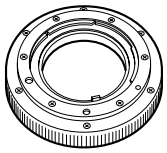
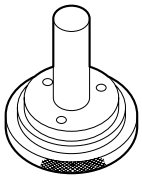
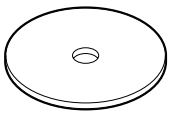
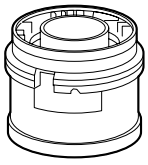
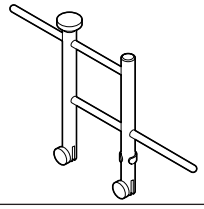
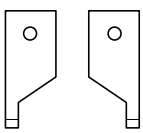
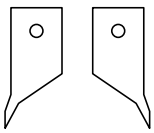
J-1  Personal computer (Note 1)	J-2  USB cord with connector 1-833-062-11	J-3  Luminance box J-6082-581-A
J-4  AE master lens J-6082-597-A	J-5  1000 mm Collimator 110V: J-6082-604-A 240V: J-6082-604-B (Note 2)	J-6  Lens test projector J-6082-605-A (Note 3)
J-7  Flange back tester J-6082-606-A	J-8  A-mount attachment J-6082-607-A	J-9  Flange back gauge (43.50mm) J-6082-608-A
J-10  Aberration measuring cap 62mm (SAL18200) J-6082-633-A	J-11  Zoom ring jig (Note 4)	J-12  Universal wrench J-6082-609-A
J-13  Chip-A for universal wrench J-6082-609-1	J-14  Chip-B for universal wrench J-6082-609-2	

Fig. 4-1-1

Note 1: Personal Computer (PC)
(Color Calculator 2 installed)

OS:	Windows2000 Professional/XP
MEMORY:	40 M Byte or more recommended
Hard disk free area:	15 M Byte or more recommended
USB terminal:	Standard equipment
Graphics:	32,000 colors or more recommended VGA monitor

Note 2: Attach the chart to the 1000 mm collimator as shown in Fig. 4-1-2.

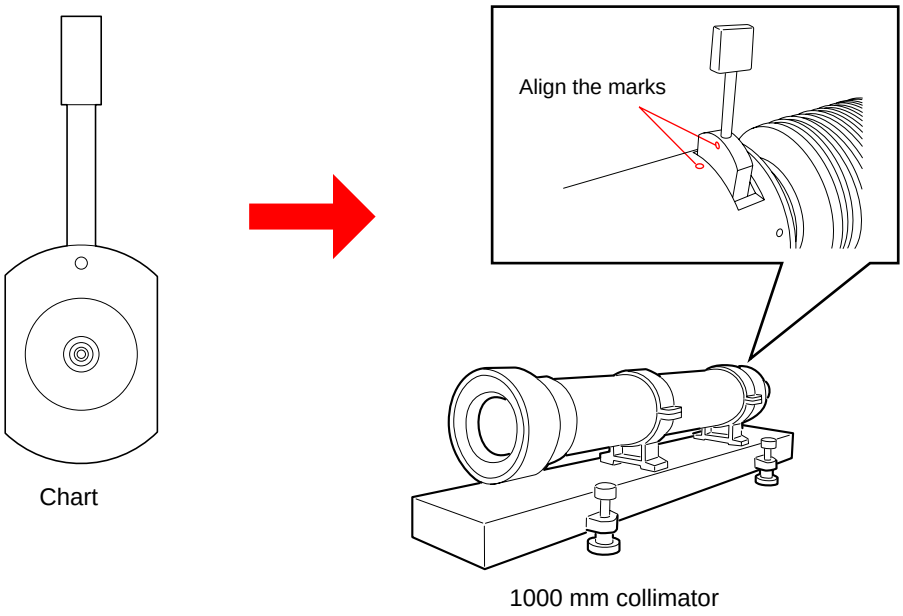


Fig. 4-1-2

Note 3: Connect the variable transformer (Output voltage: **AC 100 V**) to the lens test projector.

Note 4: Make the zoom ring jig as follows.

Required Part

Zoom ring assembly:	A-1204-580-A
Rear lens barrel assembly:	A-1204-581-A
Middle lens barrel:	2-699-099-01

Making Method

1) Assemble the zoom ring assembly, rear lens barrel assembly and middle lens barrel and set them to Wide end position.
2) Modify the parts as shown in the Fig. 4-1-3.

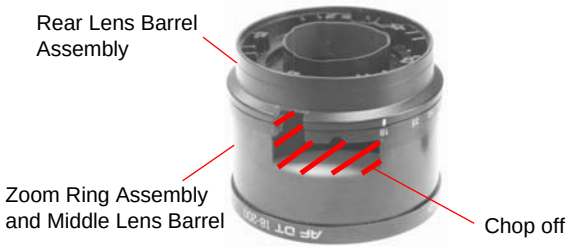


Fig. 4-1-3

4-1-2. Lens Adjustment Program

The lens adjustment program is required for the following check/adjustment.
4-7. LENS ROM CHECK
4-8. ZOOM BRUSH POSITION CHECK/ADJUSTMENT AND PATTERN CHECK
4-9. FOCUS BRUSH POSITION CHECK/ADJUSTMENT AND PATTERN CHECK

Prepare/start the Lens adjustment program with the following steps.

Equipment

- Personal Computer (PC)
- Camera DSLR-A100
- USB Cord With Connector
- Lens Adjustment Program

  Note: Lens Adjustment Program is downloadable from the ESI homepage.

1. Installation of the Lens Adjustment Program

For installation of the lens adjustment program, refer to the link "• Preparing the DSLR-A100 adjustment program" described on the top cover of the camera DSLR-A100 service manual "9-852-130-5□".

Note: Store the lens adjustment program "LensAdjustment.exe" and related file "AlphaLensAdjust.txt" in the folder that contains the DSLR-A100 adjustment program "DSLRadj_cs.exe".

4. Start the Lens Adjustment Program

1) Connect the camera and PC with the USB cord with connector.
2) Set the mode dial of camera to "M".
3) Turn the POWER switch of the camera to OFF, then turn the POWER switch to ON while pressing the shutter button halfway down with pressed the ▲ button of controller keys and MENU buttons.
4) Check that the remaining number of recordable images on the LCD monitor is "BBBB".

   Note: When "BBBB" is displayed, the camera activates in the adjustment mode.

5) Start the lens adjustment program "LensAdjustment.exe".

4-2. APERTURE DIAMETER CHECK/ADJUSTMENT

4-2-1. Aperture Diameter Check

Equipment

- Luminance Box
- Camera DSLR-A100
- AE Master Lens
- Compact Flash (CF) Card (For image saving)
- Personal Computer (PC)
  (Color Calculator 2 installed)

1. Preparations

1) Install the CF card to the camera.
2) Set the equipments, camera and master lens as shown in Fig.4-2-1.

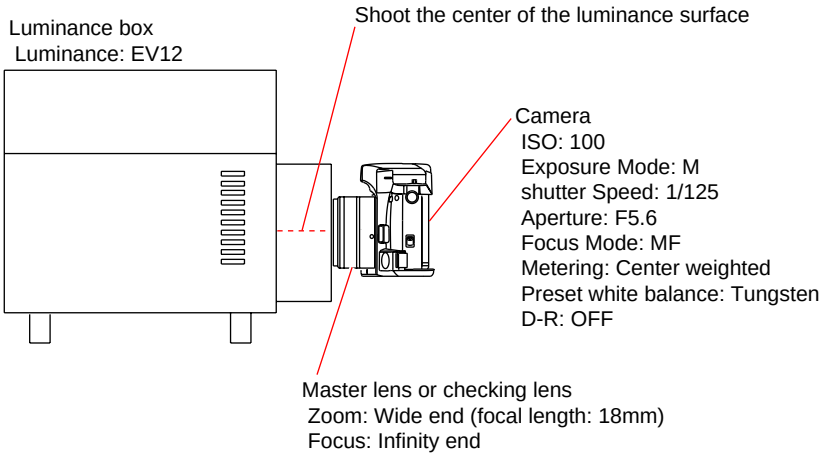


Fig.4-2-1

3) Shoot the images under the following conditions and save them.
   Note: Shoot the center of the luminance surface three times with the master lens and checking lens.

Setting of Luminance box:

Luminance:	EV12

Setting of Lens:

Zoom:	Wide end (focal length: 18mm)
Focus:	Infinity end

Setting of Camera:

ISO:	100
Exposure Mode:	M
shutter Speed:	1/125
Aperture:	F5.6
Focus Mode:	MF
Metering:	Center weighted
Preset white balance:	Tungsten
D-R:	OFF

2. Checking of Image

Note: Check the image of both master lens and checking lens.

1) Start the Color Calculator 2.

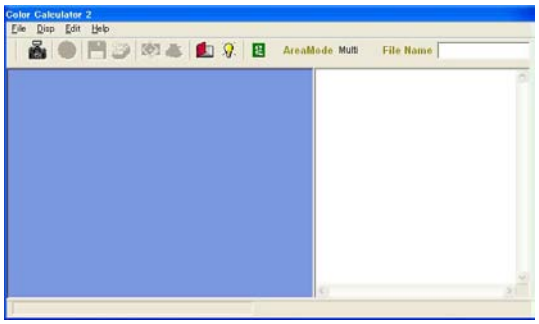


Fig.4-2-2

2) Read the image from the file menu.

Fig.4-2-3

3) Set the Color Calculator 2 as follows.
Measured value display (Display menu): RGB+L*a*b*
Measuring method (Display menu): Center Single Area

Fig.4-2-4

Color space (Edit menu): sRGB

Fig.4-2-5

Area size for calculate (Edit menu →Option): 256×256 Pixels

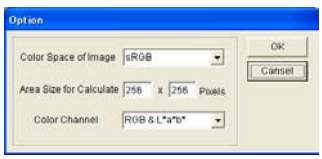


Fig.4-2-6

4) Click the calculate button to measure the image.

5) After measuring, check the “G” values.

Average “G” value of the three images shoot with master lens: (a)

Average “G” value of the three images shoot with checking lens: (b)

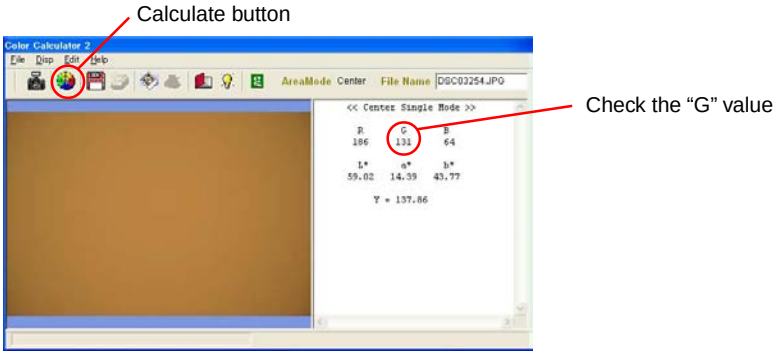


Fig.4-2-7

3. Checking Method

1) Calculate aperture error using the following formula, and check that the aperture error is within the specification.

Aperture error = Average “G” value of master lens (a) - Average “G” value of checking lens (b)

Specification

Aperture error = 0 ±20

2) When the aperture error is out of specification, perform “4-2-2. Aperture Diameter Adjustment”.

4-2-2. Aperture Diameter Adjustment

Equipment

- Luminance Box
- Camera DSLR-A100
- AE Master Lens
- Compact Flash (CF) Card (For image saving)
- Personal Computer (PC)
  (Color Calculator 2 installed)
- Adhesive bond (B-10)

1. Preparations

1) Remove the rear light interception tube.

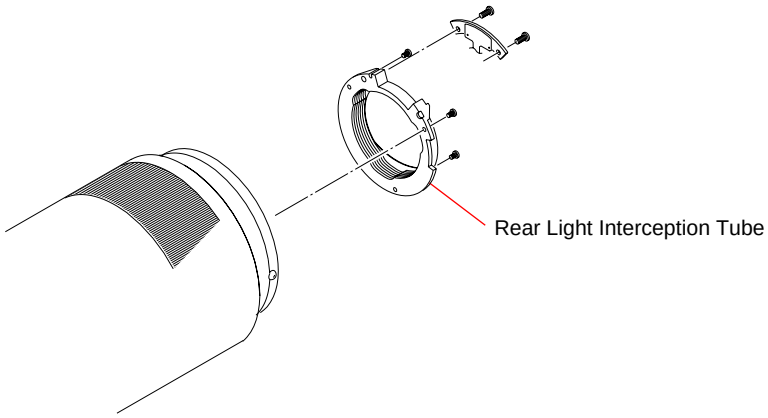


Fig.4-2-8

2) Set the zoom ring at the Wide end position.
3) Move the preset lever to set the preset ring at the open aperture position.

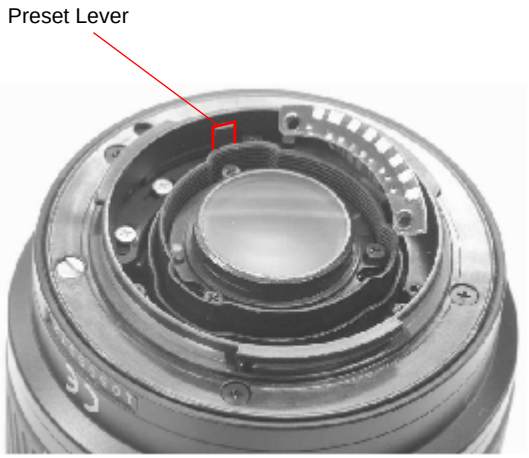


Fig.4-2-9

2. Adjusting Method

1) Let the operation lever of the preset ring move to left and right sides by loosening two screws slightly to move to left and right sides.
2) Move the two screws while seeing the lights from the rear lens element side, and tighten two screws at the point where the diaphragm blades are hidden into the edge completely.

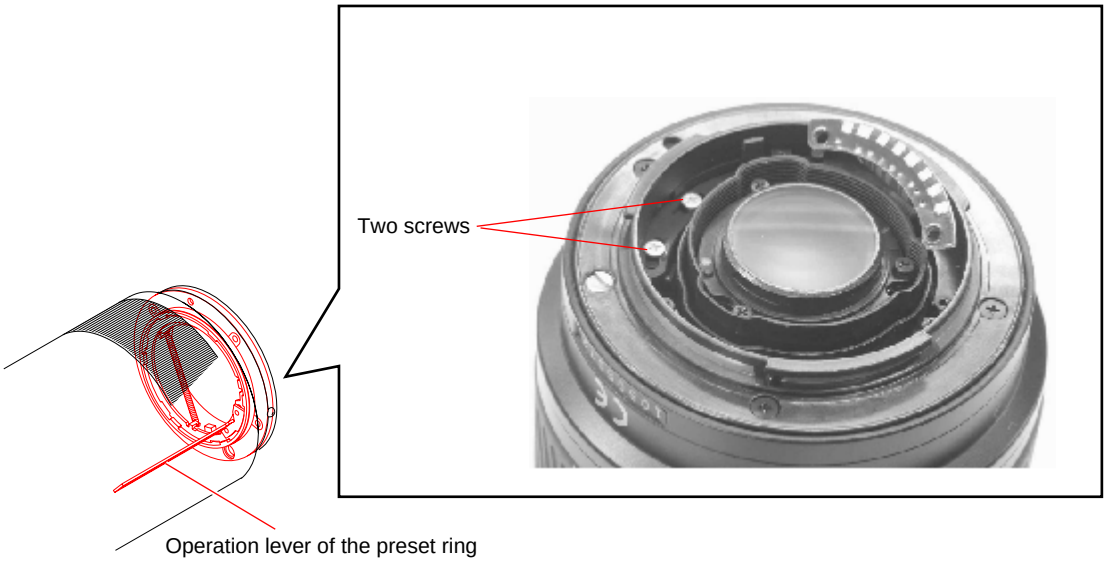


Fig.4-2-10

3) Perform “4-2-1. Aperture Diameter Check”, and repeat steps 1) to 3) until the aperture error is within the specification.
4) After the adjustment is completed, apply the adhesive bond (B-10) to the two screws tightened in step 2).

4-3. PROJECTIVE RESOLVING POWER CHECK

Equipment

- Lens Test Projector and Variable Transformer (Output voltage: AC 100 V)
  Note: Connect the variable transformer (Output voltage: AC 100 V) to the lens test projector.

- A-mount Attachment
- Screen (Art paper)
- Tape Measure
- Plane Mirror (For SLRs)

1. Preparations

Note: Check the projective resolving power of the checking lens at the following focal-length and distance.

Focal-length f (mm)	distance (m)
18	1.2
35	2.1
70	4.2
200	10.7

Table 4-3-1

1) Perform the following steps (1) to (3), and incorporate the internal lenses of the lens test projector according to the checking focal-length.
   (1) Open the lid of the lens test projector.
   (2) Pull up and turn the fixed levers on the right and left sides of the lens test projector.
   (3) Remove or insert the lens.
   Note: Be sure to have the right position and direction of the lens.

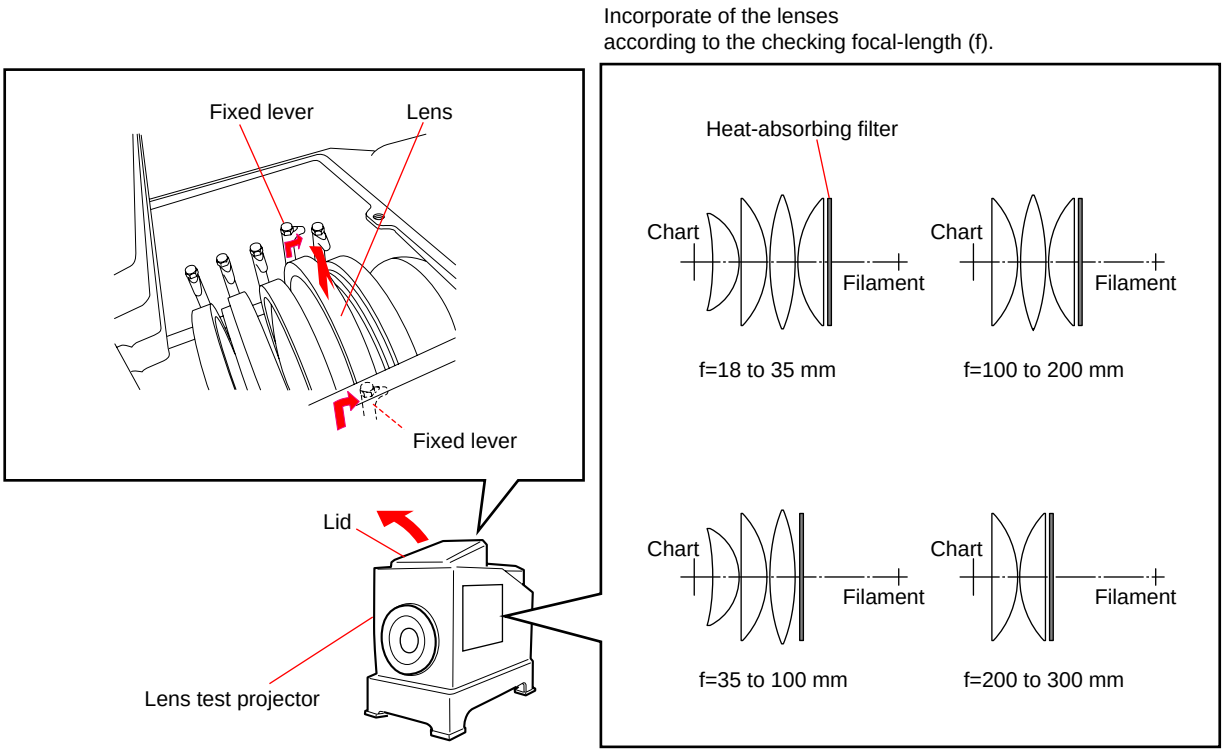


Fig.4-3-1

2) Attach the checking lens to the lens test projector, and set the equipments as shown in Fig.4-3-2.
3) Turn the fan switch of the lens test projector to ON, then turn the lamp switch to ON.

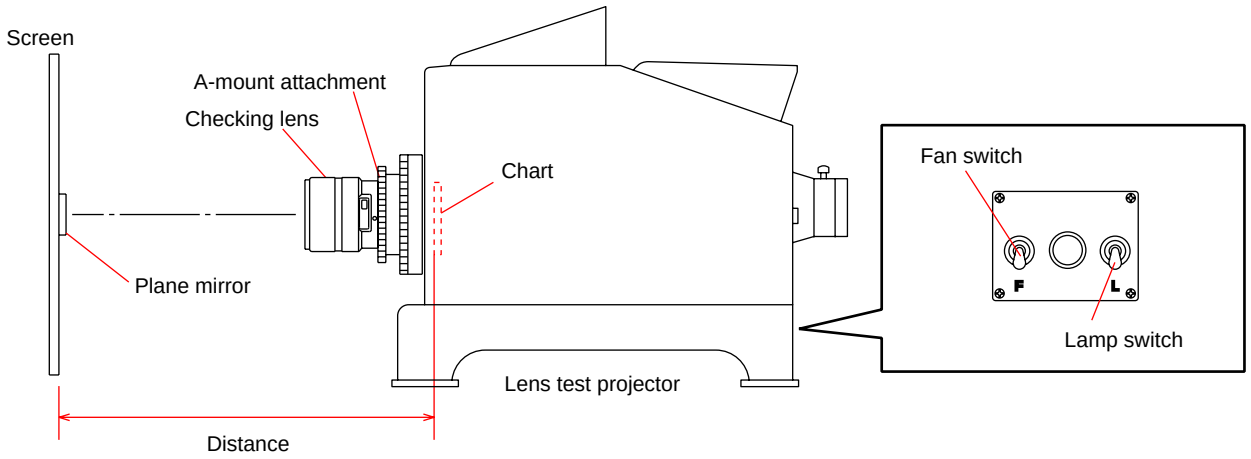


Fig.4-3-2

4) Turn the focus ring of the checking lens until the chart image projected on the screen is the sharpest at the center (y'=0).
5) Set the plane mirror to the center of the projected image (y'= 0), and adjust the projector position so that the mirror reflects the light to the center of the lens.

2. Checking Method

1) Turn the focus ring of the checking lens until the chart image projected on the screen is the sharpest at the center (y'=0).
2) Read the number of the smallest pitched lines at the center (y'= 0).

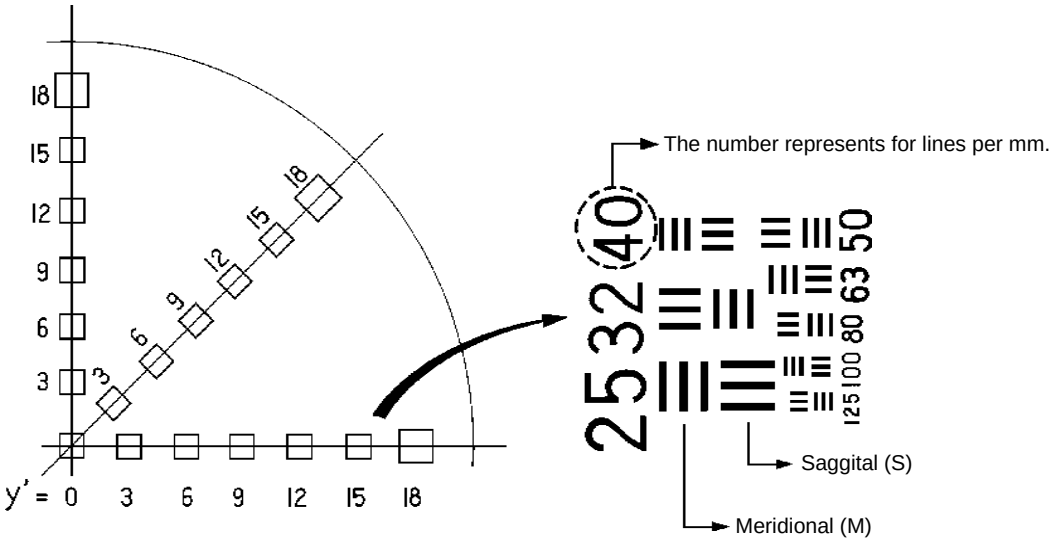


Fig.4-3-3

3) Turn the mount rotation ring of lens test projector until the projected image at a certain peripheral point (y'= 9) on the screen appears the most unsharp.
Read the number of the smallest pitched lines (both saggital and meridional: 3 lines) at the peripheral point.

Note: When reading the number of the smallest pitched lines, be careful of the spurious resolution.
Spurious resolution is the reversed image of 2 or 4 lines which appears on screen when focus is beyond maximum revolving power.
Do not confuse spurious resolution for the smallest pitched lines.

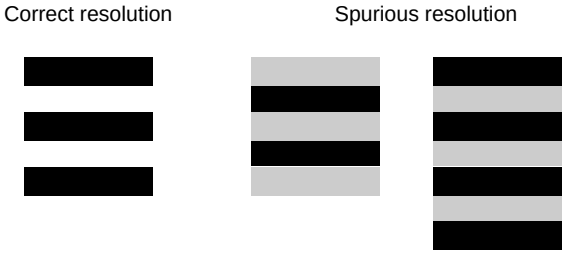


Fig.4-3-4

4) Change the focal-length (zoom) and distance of the checking lens, and check that the all readings (y'= 0, saggital (S) and meridional (M) at y'= 9) at each focal-length (zoom) and distance is within the specification of the Table 4-3-2.

Specification

Focal-length f (mm)	distance (m)	Number of the smallest pitched lines	
		Center (y'= 0) (Lines per mm)	Peripheral (y'= 9) (Lines per mm)
18	1.2	100 or greater	25 or greater
35	2.1	100 or greater	20 or greater
70	4.2	100 or greater	20 or greater
200	10.7	100 or greater	20 or greater

Table 4-3-2

5) After the checking is completed, turn the lamp switch of the lens test projector to OFF and cool the inside of the lens test projector, then turn the fan switch to OFF.

4-4. OPTICAL AXIS/FOCUS-SHIFT/FLANGE BACK (f'F) CHECK/ADJUSTMENT

4-4-1. Optical Axis Check/Adjustment and Focus-shift/Flange Back (f'F) Check

Equipment

- 1000 mm Collimator
- Flange Back Tester
- A-mount Attachment
- Flange Back Gauge (43.50mm)

1. Preparations

1) Set the equipments as shown in the Fig.4-4-1.

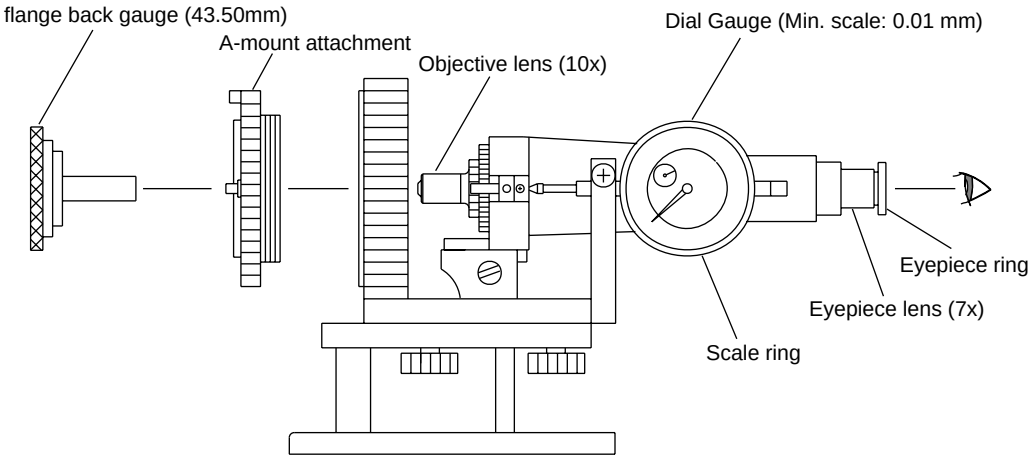


Fig.4-4-1

2) Looking through the eyepiece lens, turn the eyepiece ring of the flange back tester so that cross line or scale in the view is the sharpest.
3) Attach the flange back gauge (43.50mm) securely to the A-mount attachment and hold them together.
4) Turn the focusing knob of the flange back tester so that fine scratches on the flange back gauge (43.50mm) is the sharpest.
   Note: Turn the knob in the direction of the arrow of Fig.4-4-2 for correct reading.

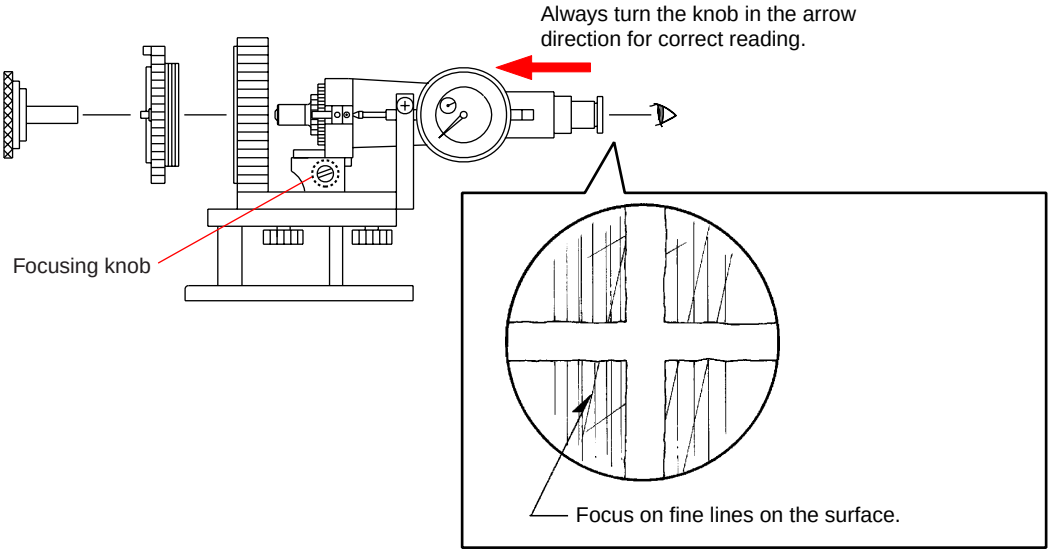


Fig.4-4-2

5) Turn the scale ring of the dial gauge until the long pointer indicates "0".
   Note: This position is the flange back (f'F) = 43.50 mm.
   Memorize the position of short-pointer.

2. Optical Axis Check/Adjustment

1) Attach the checking lens to the flange back tester, and set the 1000 mm collimator.

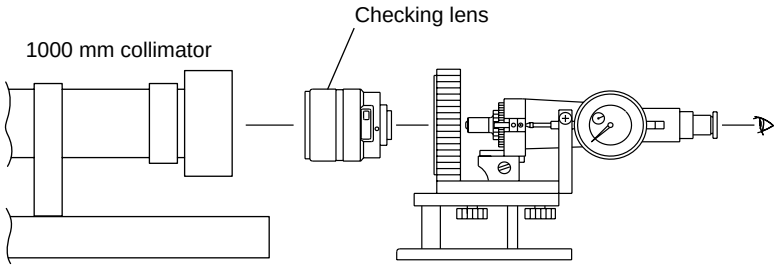


Fig.4-4-3

2) Set the focus ring of the checking lens to infinity end position while looking through the microscope, and align the optical axis to the center of the chart image accurately.

3) Turn the focusing knob of the tester until the chart image is the sharpest (red and green color areas are equal on the chart *).

*: Position in which the color of collimator chart changes from green into red and come into focus.

Also check the optical axis aligns with the chart center. (Refer to Fig.4-4-4.)

Note: Figure shows example. The cause depends on individual lens.

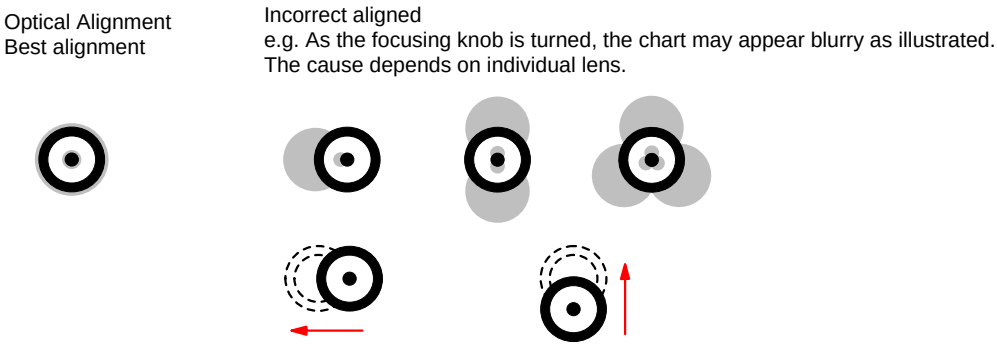


Fig.4-4-4

4) If the optical axis aligns the most unsharp, loosen the three screws shown in the Fig.4-4-5 and shift the 4th lens barrel-B assembly to let the vertical and horizontal.

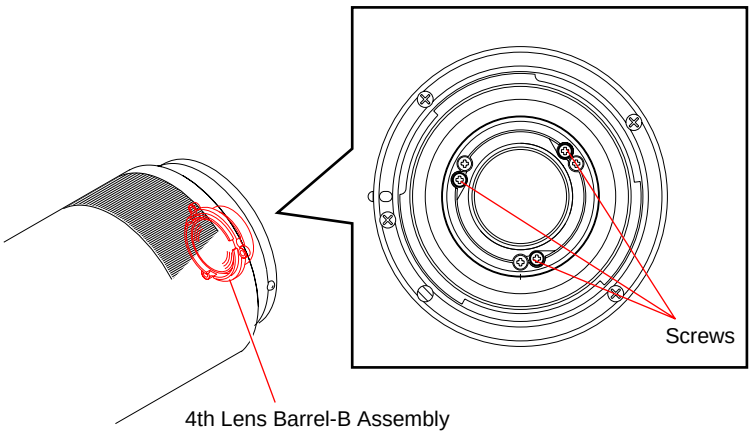


Fig.4-4-5

3. Focus-shift/Flange Back (f'F) Check

1) Attach the lens to be checked to the flange back tester and set the 1000 mm collimator.
2) By rotating the focus ring of lens to be checked, align with the infinity mark shown in Fig.4-4-6.

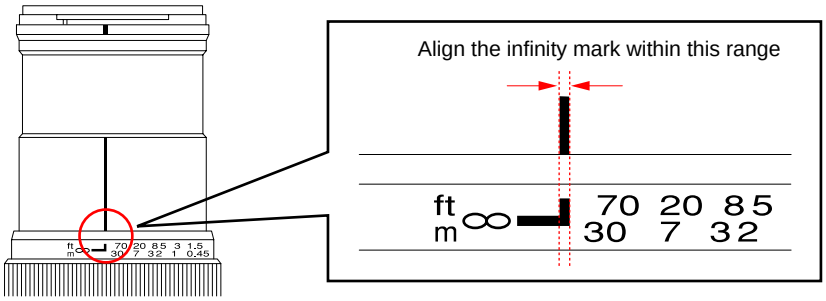


Fig. 4-4-6

3) While looking through the eyepiece of microscope, focus by turning the knob of flange back tester.
4) Read the flange back values (f'F) of each focal length and confirm that they meet the specification in Table 4-4-1.

Flange back (f'F) of the checking lens = (SR flange back gauge) + (Number of short-pointer revolution) + (Reading of long-pointer)

Specification

Focal-length f (mm)	**18**	**35**	**50**	**70**	**100**	**135**	**200**
Tolerance of f'F (mm) Basis value: 44.60 mm	+0.10 0	+0.15 –0.04	+0.16 –0.07	+0.18 –0.14	+0.20 –0.20	+0.21 –0.21	+0.03 –0.03

Table 4-4-1

5) If the flange back values of lens checked do not meet the specification in Table 4-4-1, perform [4-4-2. Focus-shift/Flange Back (f'F) Adjustment].

4-4-2. Focus-shift/Flange Back Adjustment

Equipment

- 1000 mm Collimator
- Flange Back Tester
- A-mount Attachment
- Flange Back Gauge (43.50mm)

1. Preparations

1) Perform “4-4-1. Optical Axis Check/Adjustment and Focus-shift/Flange Back Check”, and check that the flange back (f’F) at each focal length is out of specification of the Table 4-4-1.

2. Focus-shift Adjustment

1) Turn the knob of the flange back tester, and set the dial gauge value to the over infinity specification “44.95 mm”.
2) Set the zoom ring of the checking lens to Tele end position (focal length: 200 mm).
3) Loosen three screws fixing the 1st lens barrel assembly.
   While looking through the eyepiece of microscope, focus by rotating the 1st lens barrel assembly. Then tighten three screws. (Refer to Fig.4-4-7.)

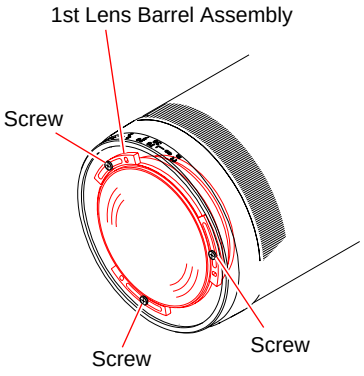


Fig.4-4-7

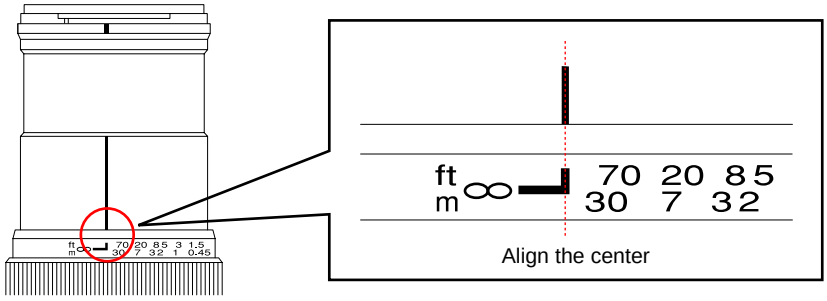


Fig.4-4-8

4) By rotating the focus ring of 1st lens barrel assembly, align with the infinity mark in Fig.4-4-8.
5) Set the zoom to the focal length (f = 200 mm) and check the flange back value.
6) Set the zoom to the focal length (In the middle of f = 100-70 mm) and check the flange back value.
7) According to the value checked in step 6), choose the 2nd lens adjustment washer in the manner shown below. (Table 4-4-2, Fig.4-4-9)
   - Adjust by repeating steps.

   t = ((f’F at f = 200 mm) - (f = f’F in the middle of 100-70 mm))/4

   t = “In case of negative”: Increase the thickness of 2nd adjustment washer by the value t.

   t = “In case of +”: Decrease the thickness of 2nd adjustment washer by the value t.

2nd lens adjustment washer	Parts No.	T1 (mm)
A	2-699-034-01	0.2
B	2-699-035-01	0.1
C	2-699-036-01	0.05
D	2-699-037-01	0.03
E	2-699-038-01	0.02

Table 4-4-2

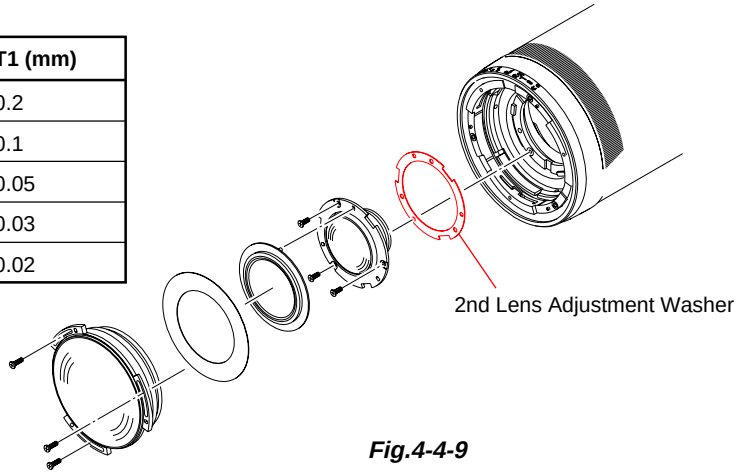


Fig.4-4-9

8) Repeat steps 1) to 4).
9) Confirm the flange back values of focal length (f = 200 mm) and focal length (f = 18 mm) of zoom.
10) Adjust by rotating the 1st lens barrel so that the shift amount of focal point shown below is achieved. And then tighten three screws. (Refer to Fig.4-4-7.)
    f'F of focal length (f = 18 mm) = f'F of focal length (f = 200 mm) + 0.05mm
    • Adjust by repeating steps.
11) Set the zoom to the focal point (f = 200 mm), and check the flange back value.
12) Choose the back adjustment washer in the manner below and adjust. (Table 4-4-2, Fig.4-4-9)
    t = (f = f'F at 200 mm) - 44.60 mm
    t = "In case of negative": Decrease the thickness of 2nd lens adjustment washer by the value t.
    t = "In case of positive": Increase the thickness of 2nd lens adjustment washer by the value t.

Back adjustment washer	Parts No.	T2 (mm)
A	2-699-102-01	0.5
B	2-699-103-01	0.3
C	2-699-104-01	0.1
D	2-699-105-01	0.05
F	2-699-106-01	0.03

Table 4-4-3

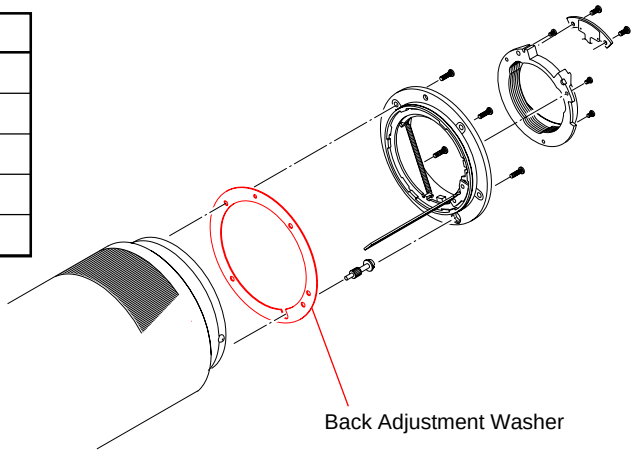


Fig.4-4-10

13) Perform [4-4-1. Optical Axis Check/Focus-Shift Adjustment/Flange Back (f'F) Check] and confirm that the flange back (f'F) values meet the specification in Table 4-4-1.
14) After finishing the confirmation, apply the adhesive bond (B-10) to the oblong grooves (3 locations) of 1st lens barrel assembly.

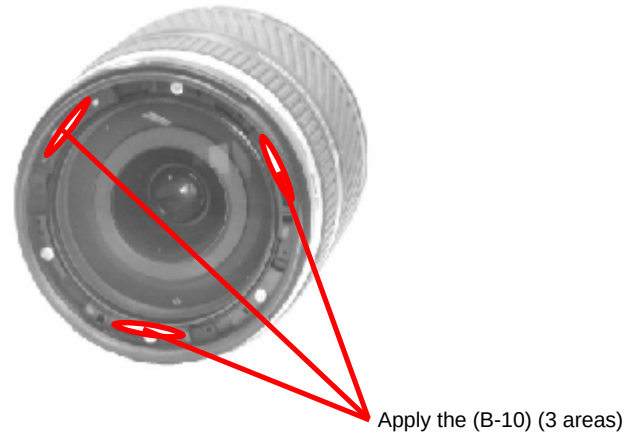


Fig.4-4-11

4-5. FOCUS-SHIFT CHECK/ADJUSTMENT (APERTURE)

This section describes the check/adjustment of focus-shift amount resulting change of focal-length by aperture setting.

Equipment

- 1000 mm Collimator
- Flange Back Tester
- A-mount Attachment
- Flange Back Gauge (43.50mm)
- Aberration measuring cap 62mm

1. Preparations

1) Perform “1. Preparations” of “4-4-1. Optical Axis Check/Adjustment and Focus-shift Flange Back (f’F) Check”.
2) Turn the zoom ring of the checking lens, and set the focal length to 200 mm.
3) Turn the focus ring until the flange back (f’F) at focal length (200 mm) is “44.60 ±0.03 mm”.

2. Checking Method

1) Set the lens aperture to the open aperture position, and measure the flange back (f’F).
2) Set the aberration measuring cap 62mm (F11 equivalent) on the tip of lens as shown in the Fig.4-5-1, then measure the flange back (f’F).

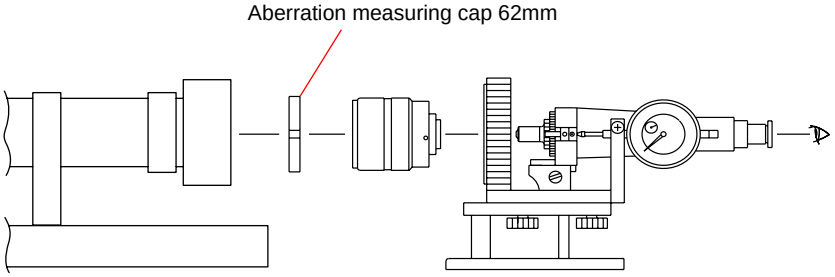


Fig.4-5-1

3) Calculate amount of focus-shift using the following formula, and check that the specification is satisfied.
When the focus-shift is out of specification, perform “3. Adjusting Method”.

Note: The focus-shift amount of the checking lens is difference between the flange back (f’F) of open aperture and flange back (f’F) reading (using aberration measuring cap 62mm).

Focus-shift = flange back (f’F) of open aperture reading - flange back (f’F) reading (using aberration measuring cap 62mm)

Specification

Focus-shift (mm) = –0.12 to +0.21

3. Adjusting Method

1) Adjust the 4th lens adjustment washer thickness according to the result of step 3) in “2. Checking Method”. (Refer to Table 4-5-1 and Fig.4-5-2.)

When the focus-shift is a positive value: Increase 4th lens adjustment washer thickness by the amount of focus-shift.

When the focus-shift is a negative value: Decrease 4th lens adjustment washer thickness by the amount of focus-shift.

Note: The thickness total of 4th lens adjustment washer is 0.15mm to 0.25mm within the range.
And “Curvature of field” is amendable by the variation of the G10-11 adjustment washer.

4th lens adjustment washer	Parts No.	T (mm)
A	2-699-070-01	0.1
B	2-699-113-01	0.05
C	2-699-118-01	0.03
D	2-699-119-01	0.02

G10-11 adjustment washer	Parts No.	T (mm)
A	2-699-069-01	0.2
B	2-699-112-01	0.1
C	2-699-114-01	0.05

Table 4-5-1

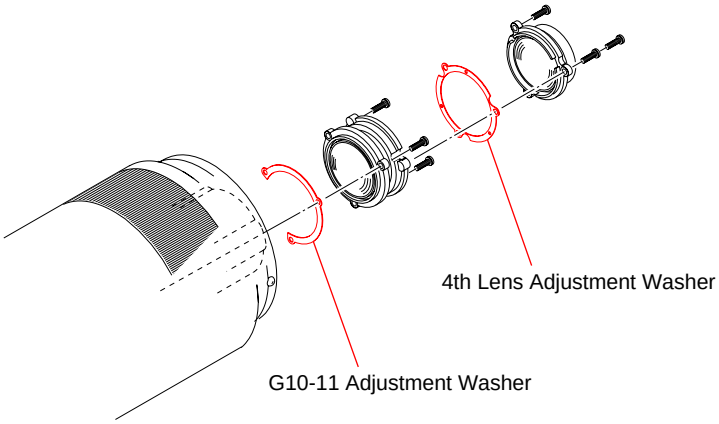


Fig.4-5-2

4-6. LENS ROM CHECK

Note: If dialog box of error code appears during the checking, check the reason of error referring to page 4-26.

Equipment

- Personal Computer (PC)
- Camera DSLR-A100
- USB Cord With Connector
- Lens Adjustment Program

  Note: Lens Adjustment Program is downloadable from the ESI homepage.

1. Preparations

1) Connect the checking lens to the camera.
2) Start the lens adjustment program “LensAdjustment.exe” referring to “4-1-2. Lens Adjustment Program”.

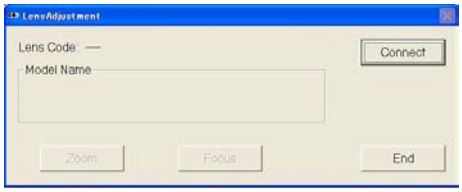


Fig. 4-6-1

2. Checking Method

1) Click the Connect button on the lens adjustment program.

   Note: Click the End button to disconnect the USB connection, then lens adjustment program will terminate.

2) Check that the display of “Lens Code” and “Model Name” is correct.

   Note: Zoom and focus position setting is not required.

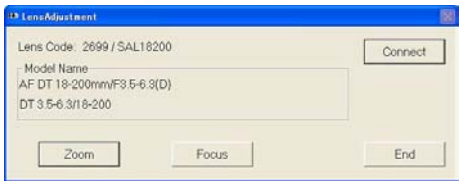


Fig. 4-6-2

3) Click the End button to terminate the lens adjustment program.
4) Turn the POWER switch of the camera to OFF.

4-7. ZOOM BRUSH POSITION CHECK/ADJUSTMENT AND PATTERN CHECK

Note: If dialog box of error code appears during the checking or adjustment, check the reason of error referring to page 4-26.

4-7-1. Zoom Brush Position Check

Equipment

- Personal Computer (PC)
- Camera DSLR-A100
- USB Cord With Connector
- Lens Adjustment Program

Note: Lens Adjustment Program is downloadable from the ESI homepage.

1. Preparations

1) Connect the checking lens to the camera.
2) Start the lens adjustment program “LensAdjustment.exe” referring to “4-1-2. Lens Adjustment Program”.

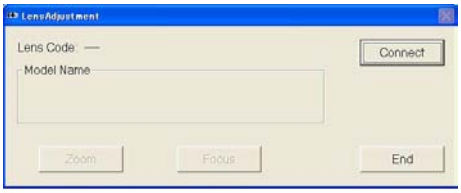


Fig. 4-7-1

2. Checking Method

1) Click the Connect button on the lens adjustment program.

Note: Click the End button to disconnect the USB connection, then lens adjustment program will terminate.

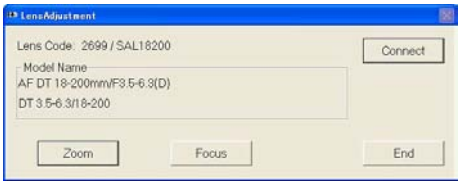


Fig. 4-7-2

2) Click the Zoom button on the lens adjustment program.
3) Set the zoom position to Wide end, and check that the OK (Green) indicator of “Position” lights as shown in Fig. 4-7-3.

Note: Lens focus position setting is not required.

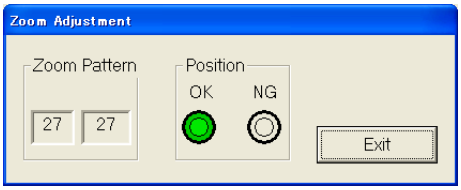


Fig. 4-7-3

If the NG (Red) indicator of “Position” lights, perform the “4-7-2. Zoom Brush Position Adjustment and Pattern Check”.

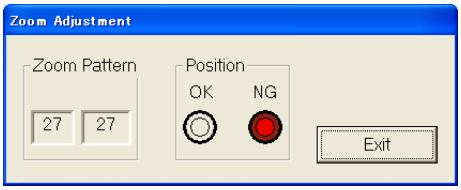


Fig. 4-7-4

4) Click the Exit button.
5) Click the End button to terminate the lens adjustment program.
6) Turn the POWER switch of the camera to OFF.

4-7-2. Zoom Brush Position Adjustment and Pattern Check

Equipment

- Personal Computer (PC)
- Camera DSLR-A100
- USB Cord With Connector
- Adhesive Bond (B-10)
- Lens Adjustment Program

  Note: Lens Adjustment Program is downloadable from the ESI homepage.

- Zoom Ring Jig

  Note: For details of the jig making method, refer to “4-1-1. List of Service Tools and Equipments”.

1. Preparations

1) Attach the zoom ring jig to the checking lens and assemble the lens.

Fig. 4-7-5

2. Zoom Brush Position Adjustment

1) Set the zoom position to Wide end.
2) Remove the two screws fixing the zoom brush.

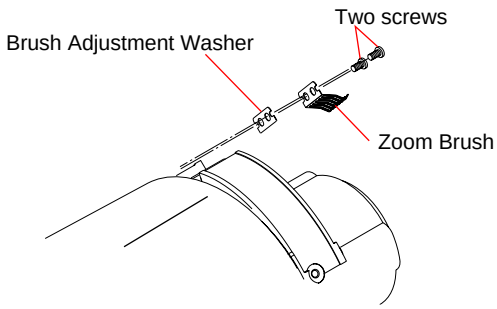


Fig. 4-7-6

3) Perform the “4-7-1. Zoom Brush Position Check”, and change the number of brush adjustment washer until the OK (Green) indicator of “Position” lights.

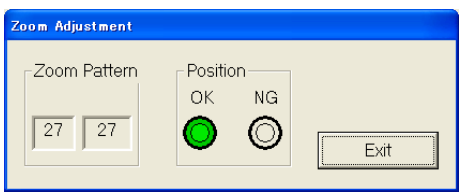


Fig. 4-7-7

4) Fix the zoom brush with the two screws as shown in Fig. 4-7-6.

3. Pattern Check

Note: When the NG (Red) indicator of “Position” lights during checking, does not care about it (It is normal performance).

1) Turn the zoom ring slowly from the Tele end “Zoom Pattern : 1” to Wide end “Zoom Pattern : 27” and check that the value of “Zoom Pattern” change from 1 to 27 continuously.

2) Turn the zoom ring slowly from Wide end (Zoom Pattern : 27) to the Tele end (Zoom Pattern : 1) and check that the value of “Zoom Pattern” change from 27 to 1 continuously.

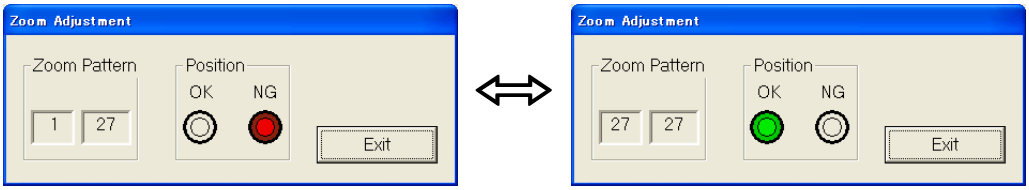


Fig. 4-7-8

3) Click the Exit button.
4) Click the End button to terminate the lens adjustment program.
5) Turn the POWER switch of the camera to OFF.
6) After the pattern check is completed, apply the adhesive bond (B-10) as shown in Fig. 4-7-9.

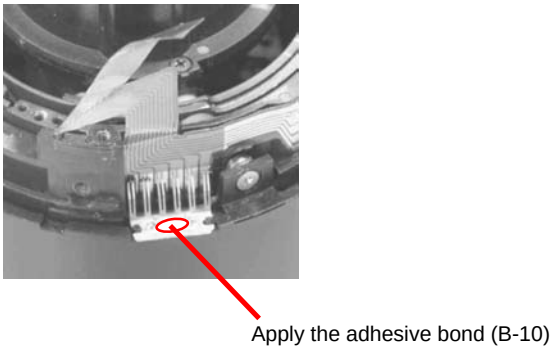


Fig. 4-7-9

4-8. FOCUS BRUSH POSITION CHECK/ADJUSTMENT AND PATTERN CHECK

Note: If dialog box of error code appears during the checking or adjustment, check the reason of error referring to page 4-26.

4-8-1. Focus Brush Position Check

Equipment

- Personal Computer (PC)
- Camera DSLR-A100
- USB Cord With Connector
- Lens Adjustment Program

  Note: Lens Adjustment Program is downloadable from the ESI homepage.

1. Preparations

1) Connect the checking lens to the camera.
2) Start the lens adjustment program “LensAdjustment.exe” referring to “4-1-2. Lens Adjustment Program”.

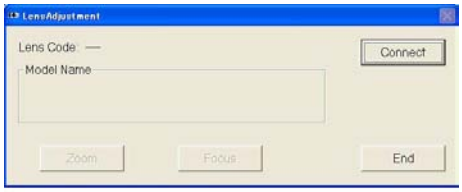


Fig. 4-8-1

2. Checking Method

1) Click the Connect button on the lens adjustment program.

   Note: Click the End button to disconnect the USB connection, then lens adjustment program will terminate.

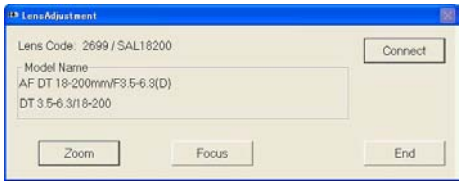


Fig. 4-8-2

2) Click the Focus button on the lens adjustment program.
3) Set the zoom position to Wide end and the focus position to infinity end, then check that the OK (Green) indicator of “Position” lights as shown in Fig. 4-8-3.

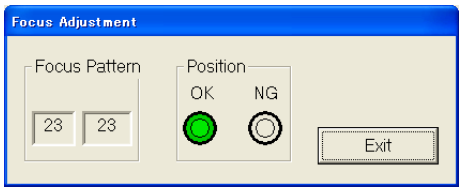


Fig. 4-8-3

If the NG (Red) indicator of “Position” lights, perform the “4-8-2. Focus Brush Position Adjustment and Pattern Check”.

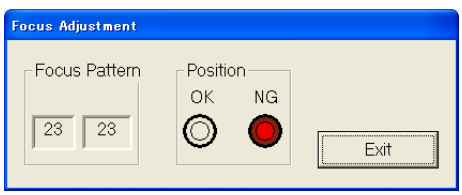


Fig. 4-8-4

4) Click the Exit button.
5) Click the End button to terminate the lens adjustment program.
6) Turn the POWER switch of the camera to OFF.

4-8-2. Focus Brush Position Adjustment and Pattern Check

Equipment

- Personal Computer (PC)
- Camera DSLR-A100
- USB Cord With Connector
- Adhesive bond (B-10)
- Lens Adjustment Program

  Note: Lens Adjustment Program is downloadable from the ESI homepage.

- Zoom Ring Jig

  Note: For details of the jig making method, refer to “4-1-1. List of Service Tools and Equipments”.

1. Preparations

1) Attach the zoom ring jig to the checking lens and assemble the lens.

Fig. 4-8-5

2. Focus Brush Position Adjustment

1) Set the focus position to infinity end.
2) Loosen the screw fixing the focus brush.

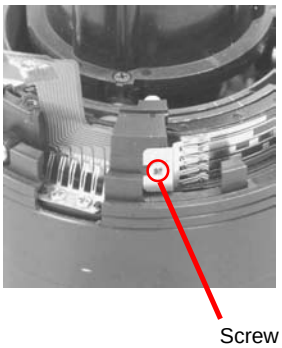


Fig. 4-8-6

3) Perform the “4-8-1. Focus Brush Position Check”, and adjust the focus brush position until the OK (Green) indicator of “Position” lights.

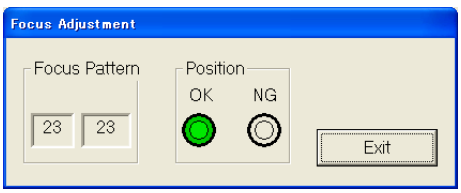


Fig. 4-8-7

4) Tighten the screw loosened in step 2).

3. Pattern Check

Note: When the NG (Red) indicator of “Position” lights during checking, does not care about it (It is normal performance).

1) Turn the focus ring slowly from the near end “Focus Pattern : 1” to the infinity end “Focus Pattern : 23” and check that the value of “Focus Pattern” change from 1 to 23 continuously.

2) Turn the focus ring slowly from the infinity end “Focus Pattern : 23” to the near end “Focus Pattern : 1” and check that the value of “Focus Pattern” change from 23 to 1 continuously.

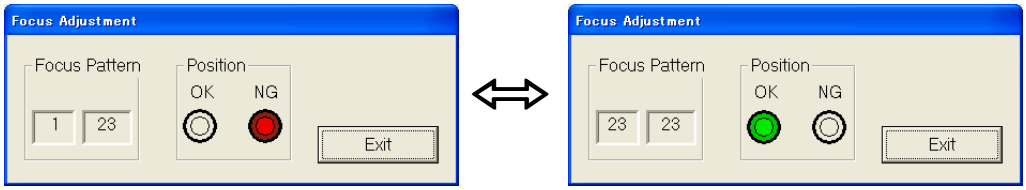


Fig. 4-8-8

3) Click the Exit button.
4) Click the End button to terminate the lens adjustment program.
5) Turn the POWER switch of the camera to OFF.
6) After the pattern check is completed, apply the adhesive bond (B-10) as shown in Fig. 4-8-9.

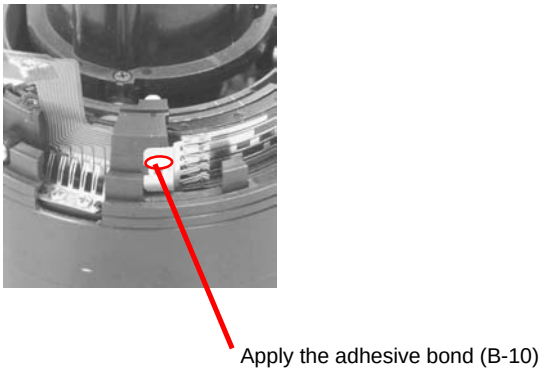
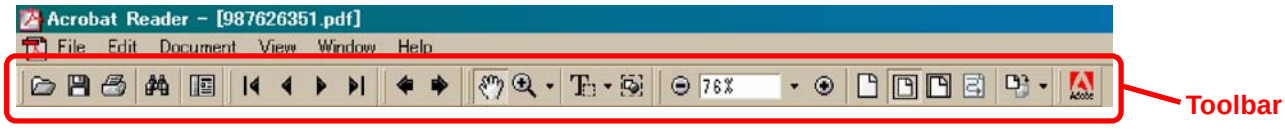


Fig. 4-8-9

4-9. ERROR CODE LIST

Error code		Description
Corrupt Data		Zoom/focus data of check pattern is out of sync with the number of check pattern.
Error, No Lens		Lens is not connected correctly.
Error, Unknown Lens		Unidentified lens is connected.
Communication Error,	Code#:E600	Communication error with the camera
	Code#:F000	Input data error to DLL file
	Code#:F100	Setting error of USB port
	Code#:2531	Communication error of main signal on the camera

[Description of main button functions on toolbar of the Adobe Acrobat Reader Ver5.0 (for Windows)]



Printing a text

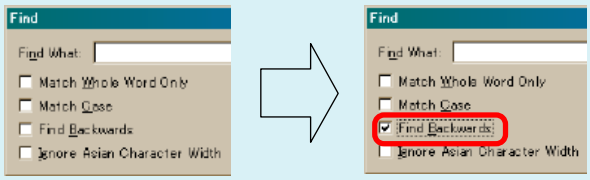
1. Click the Print button .
2. Specify a printer, print range, number of copies, and other options, and then click [OK].

Application of printing:
To set a range to be printed within a page, select the graphic selection tool and drag on the page to enclose a range to be printed, and then click the Print button.

Finding a text

1. Click the Find button .
2. Enter a character string to be found into a text box, and click the [Find]. (Specify the find options as necessary)

Application to the Service Manual:
To execute "find" from current page toward the previous pages, select the check box "Find Backward" and then click the "Find".



3. Open the find dialog box again, and click the [Find Again] and you can find the matched character strings displayed next. (Character strings entered previously are displayed as they are in the text box.)

Application to the Service Manual:
The parts on the drawing pages (block diagrams, circuit diagrams, printed circuit boards) and parts list pages in a text can be found using this find function. For example, find a Ref. No. of IC on the block diagram, and click the [Find Again] continuously, so that you can move to the Ref. No. of IC on the circuit diagram or printed circuit board diagram successively.
Note: The find function may not be applied to the Service Manual depending on the date of issue.

Switching a page

- To move to the first page, click the .
- To move to the last page, click the .
- To move to the previous page, click the .
- To move to the next page, click the .

Reversing the screens displayed once

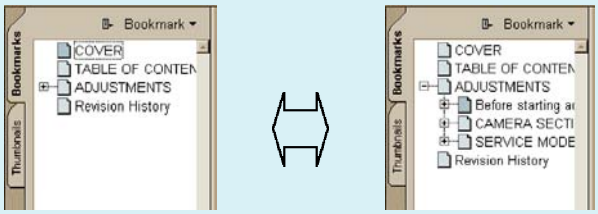
- To reverse the previous screens (operation) one by one, click the .
- To advance the reversed screens (operation) one by one, click the .

Application to the Service Manual:
This function allows you to go and back between circuit diagram and printed circuit board diagram, and accordingly it will be convenient for the voltage check.

Moving with link

1. Select either palm tool , zoom tool , text selection tool , or graphic selection tool .
2. Place the pointer in the position in a text where the link exists (such as a button on cover and the table of contents page, or blue characters on the removal flowchart page or drawing page), and the pointer will change to the forefinger form .
3. Then, click the link. (You will go to the link destination.)

Moving with bookmark:
Click an item (text) on the bookmark pallet. and you can move to the link destination. Also, clicking can display the hidden items.
(To go back to original state, click)



Zooming or rotating the screen display

"Zoom in/out"

- Click the triangle button in the zoom control box to select the display magnification. Or, you may click or for zooming in or out.

"Rotate"

- Click rotate tool , and the page then rotates 90 degrees each.

Application to the Service Manual:
The printed circuit board diagram you see now can be changed to the same direction as the set.

Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2006.06	Official Release	—	—
1.1	2006.10	Correction-1 (C1)	• Correction of Repair Parts S.M Correction : Page 3-2, 3-5, 4-16	Yes
1.2	2007.02	Revised-1	• Change of Repair Parts (Section 2, Section 3, Section 4) • Addition of guide of [About the Lens Test Projector] (Cover)	Yes
1.3	2007.03	Revised-2	• Change of HELP01, HELP10 • Change of ADJUSTMENTS (Section 4-4)	Yes