

SAL35F14G

(1.4/35G) (35mm F1.4G)

SERVICE MANUAL

[Ver 1.1 2007.02](#)

[Revision History](#)

[How to use
Acrobat Reader](#)



*US Model
Canadian Model
AEP Model
Chinese Model*

Link

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LENS FOR DSLR CAMERA

SONY[®]



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)

52.5

*1 The value for equivalent 35mm-format focal length is based on Digital Single Lens Reflex Cameras equipped with an APS-C sized image sensor.

Lens groups elements

8-10

Angle of view 1 *2

63°

Angle of view 2 *2

44°

*2 The value of angle of view 1 is based on 35mm-format cameras, and that of angle of view 2 is based on Digital Single Lens Reflex Cameras equipped with an APS-C sized image sensor.

Minimum focus (m (feet)) *3

0.3 (1.0)

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

Maximum magnification (×)

0.2

Minimum f-stop

f/22

Filter diameter (mm)

55

Dimensions (maximum diameter × height) (mm (in.))

Approx. 69 × 76 (2 3/4 × 3)

Mass (g (oz.))

Approx. 510 (18)

Included items

Lens (1), Front lens cap (1), Rear lens cap (1), Lens hood (1), Carrying case (1), Set of printed documentation

Designs and specifications are subject to change without notice.

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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!!

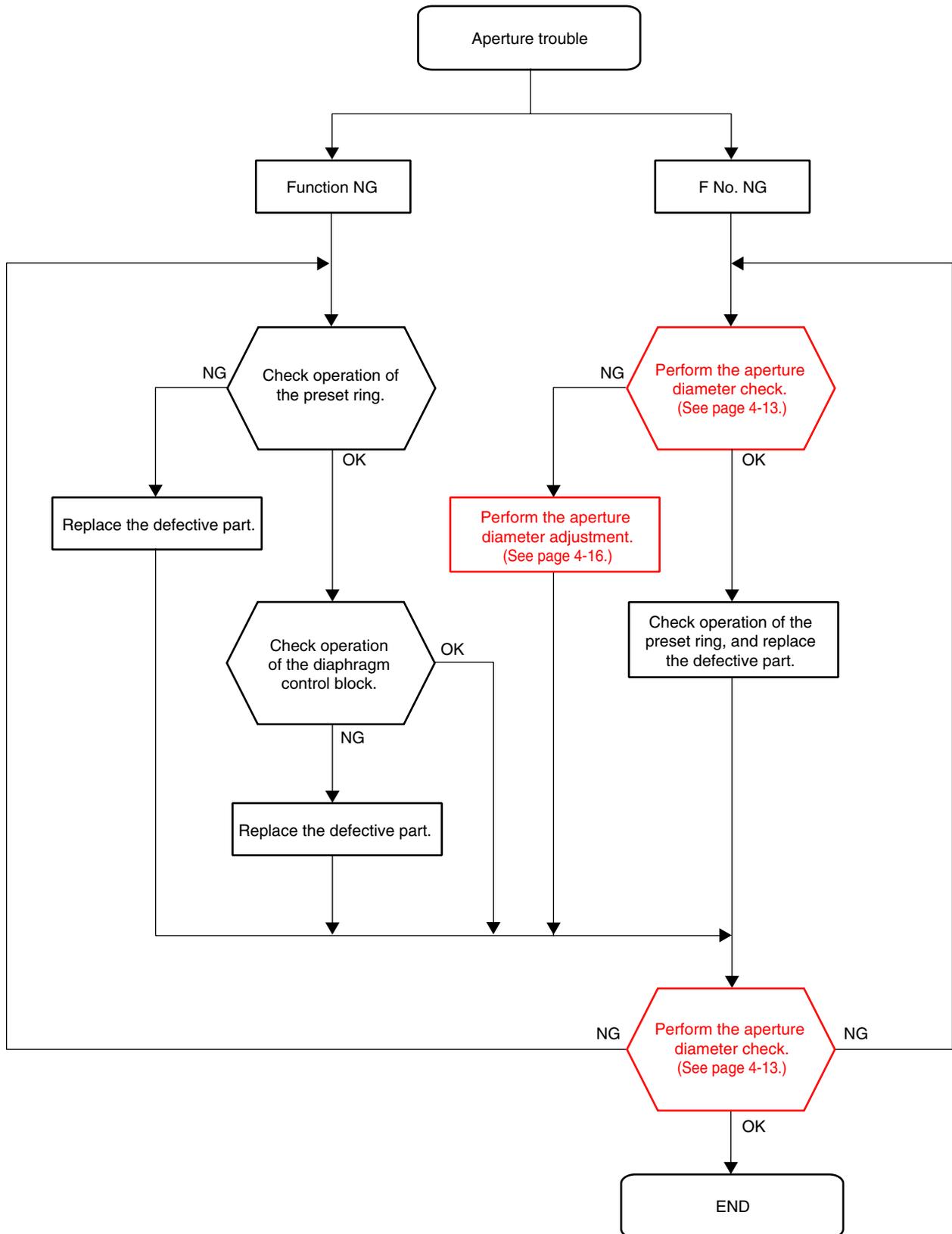
COMPONENTS IDENTIFIED BY MARK \triangle OR DOTTED LINE WITH MARK \triangle ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

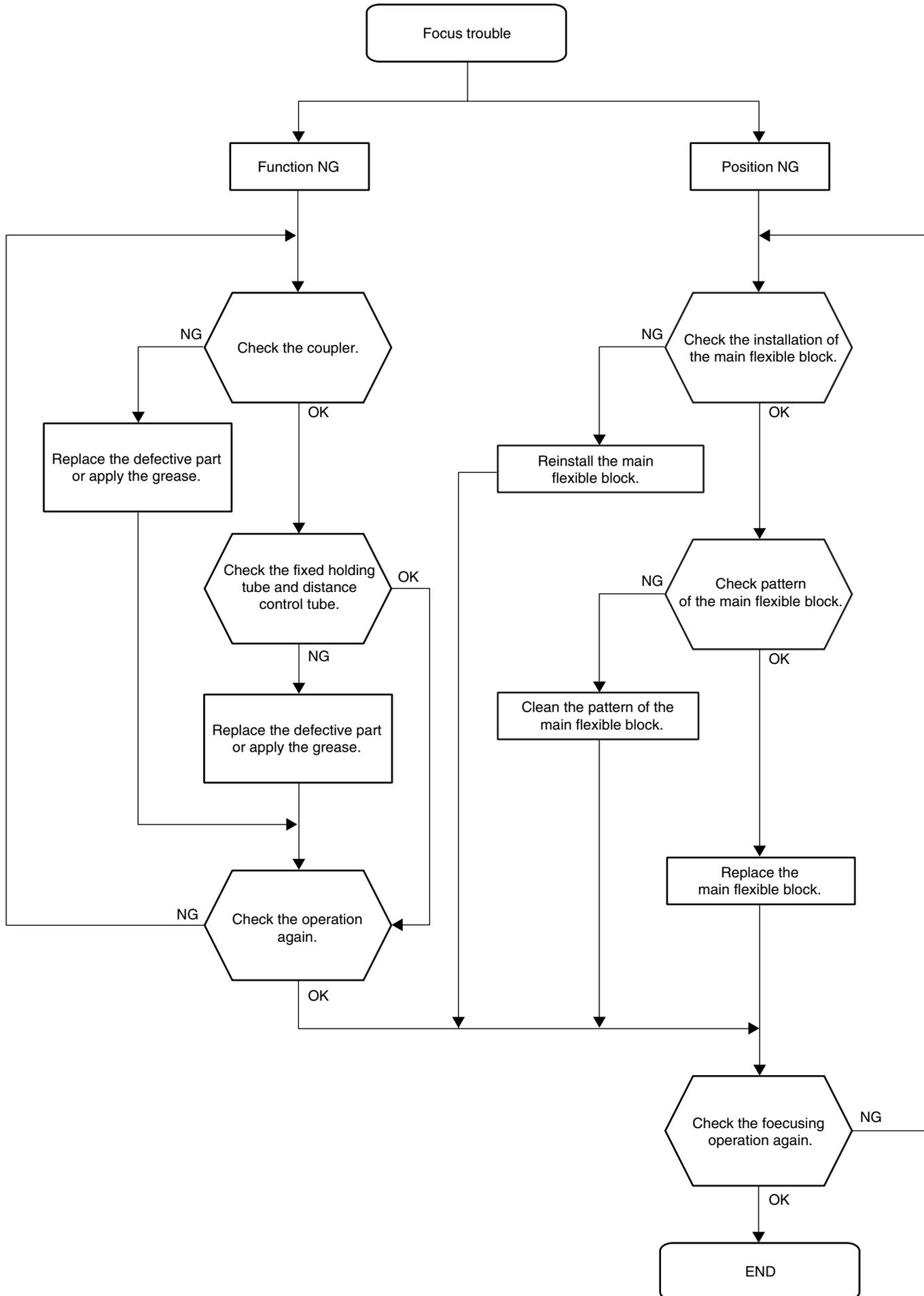
LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE \triangle SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

1-5. TROUBLESHOOTING

1-5-1. Aperture Trouble



1-5-2. Focus Trouble

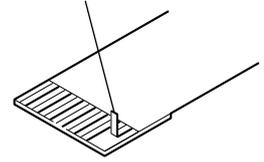


2. DISASSEMBLY

NOTE FOR REPAIR

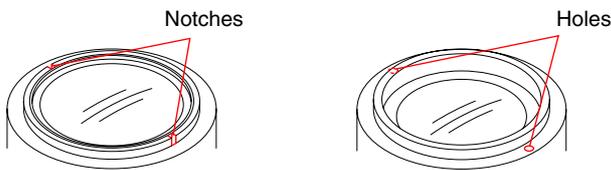
- Make sure that the flat cable and flexible board are not cracked or bent at the terminal. Do not insert the cable insufficiently nor crookedly.
- When remove a connector, don't pull at wire of connector. It is possible that a wire is snapped.
- When installing a connector, don't press down at wire 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)

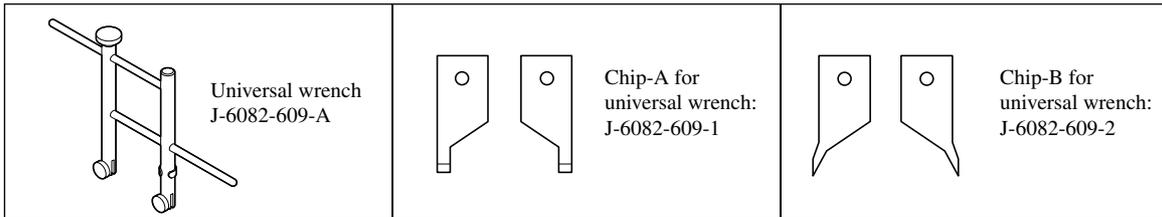


UNIVERSAL WRENCH

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

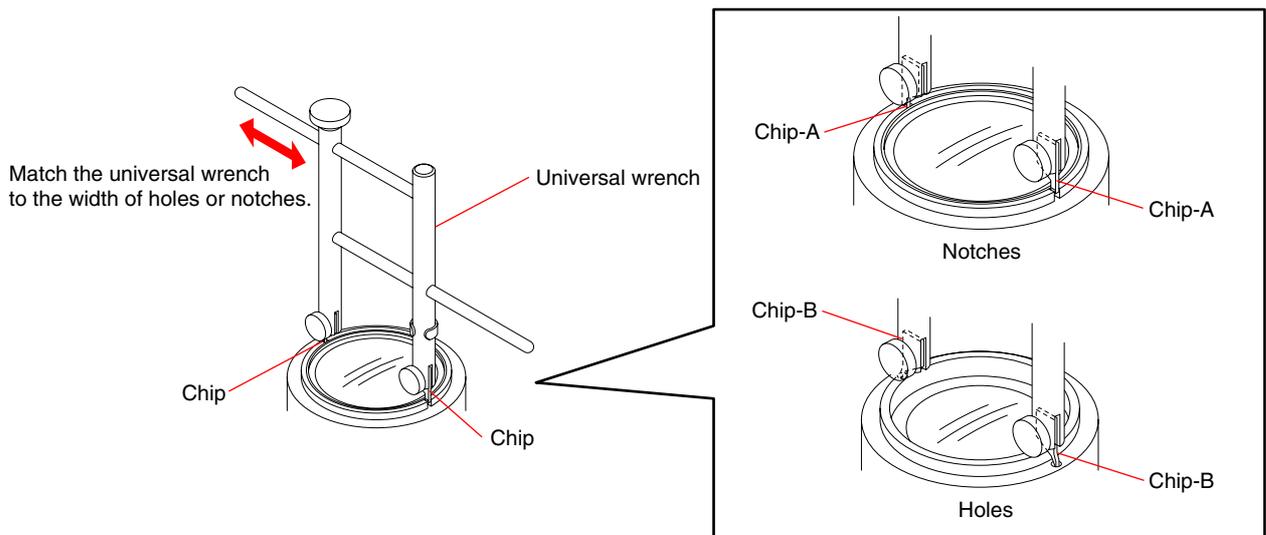


Attach the chip-A or chip-B to the universal wrench.

For the notches: chip-A

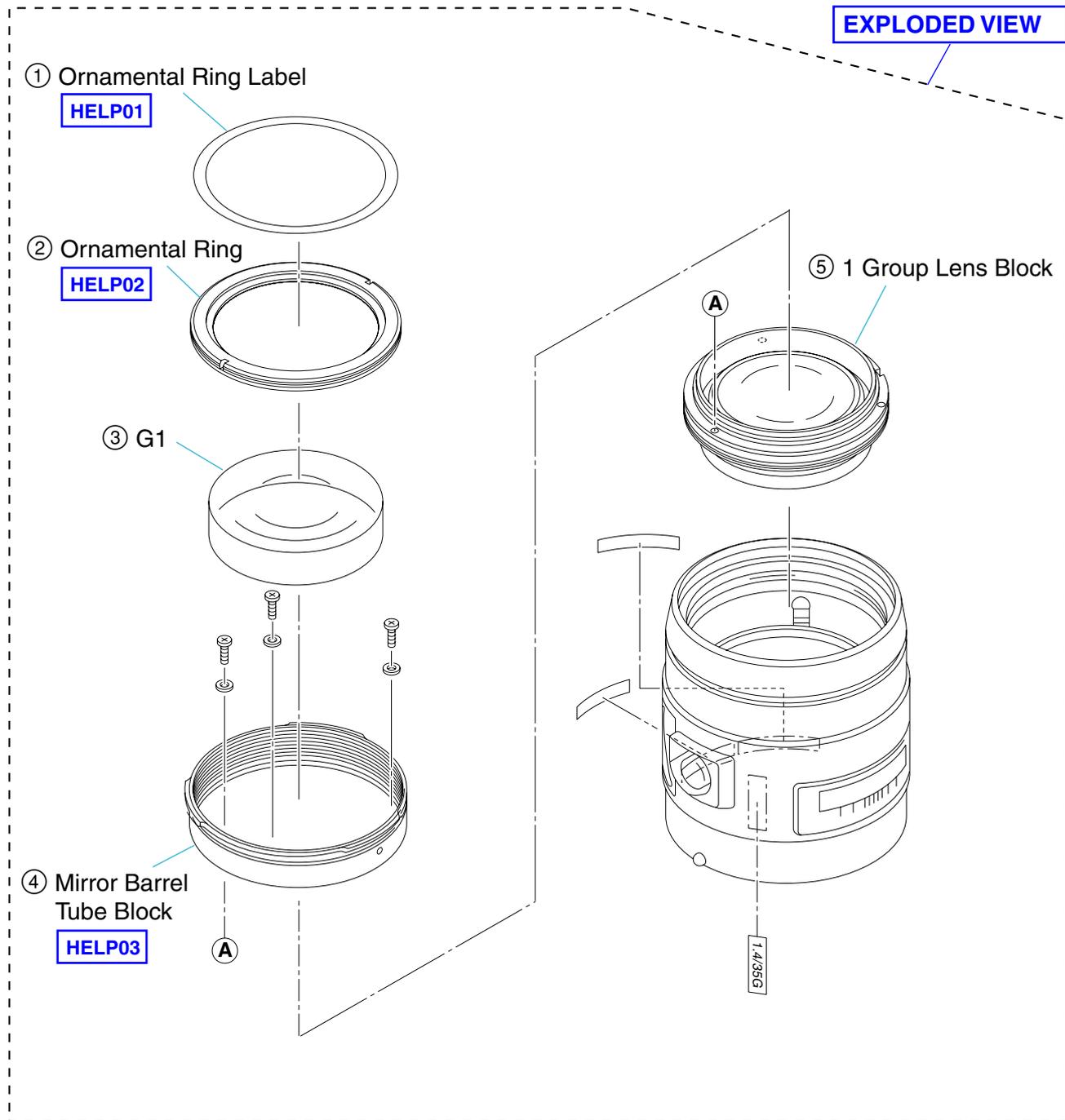
For the holes: chip-B

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

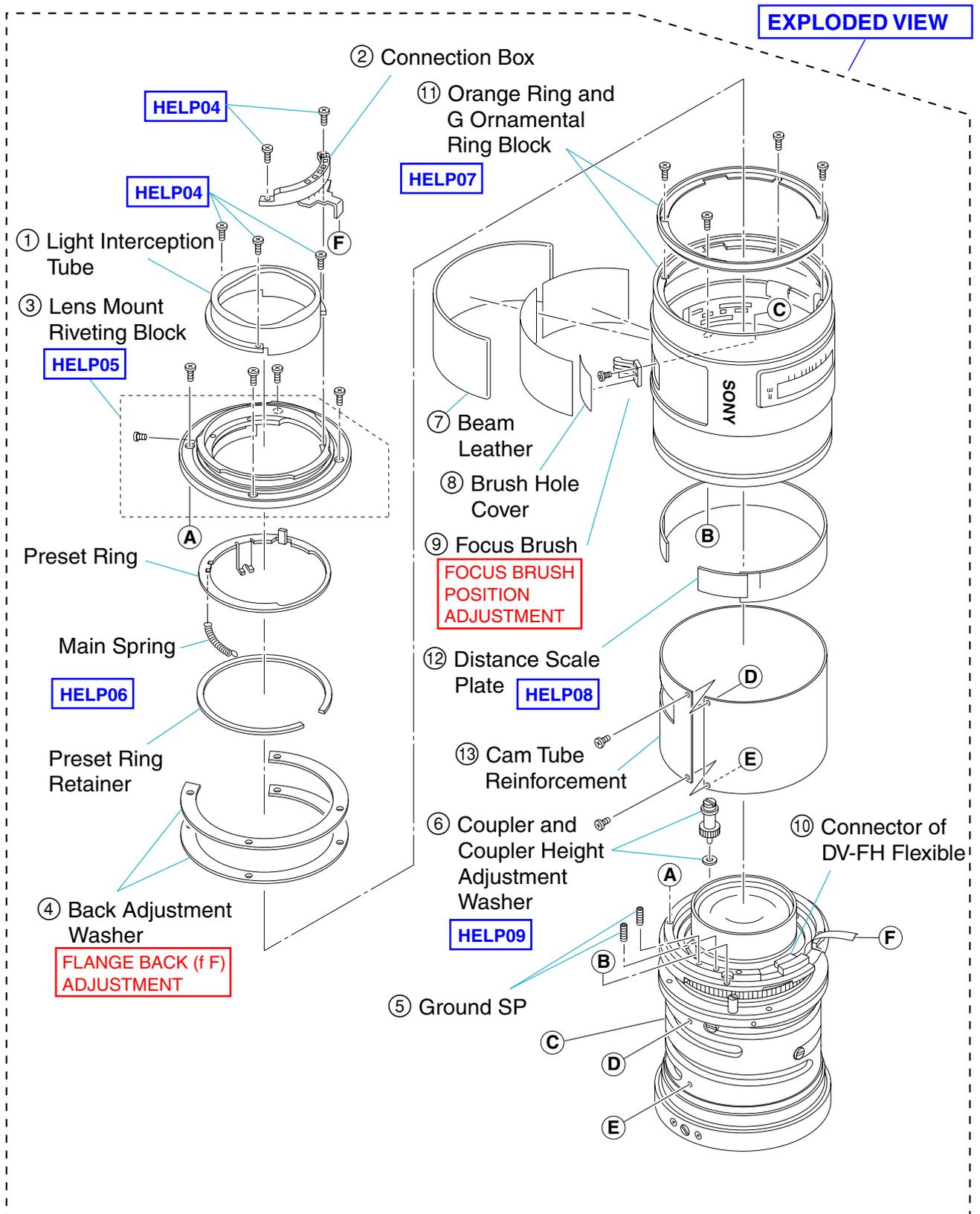


2-1. DISASSEMBLY

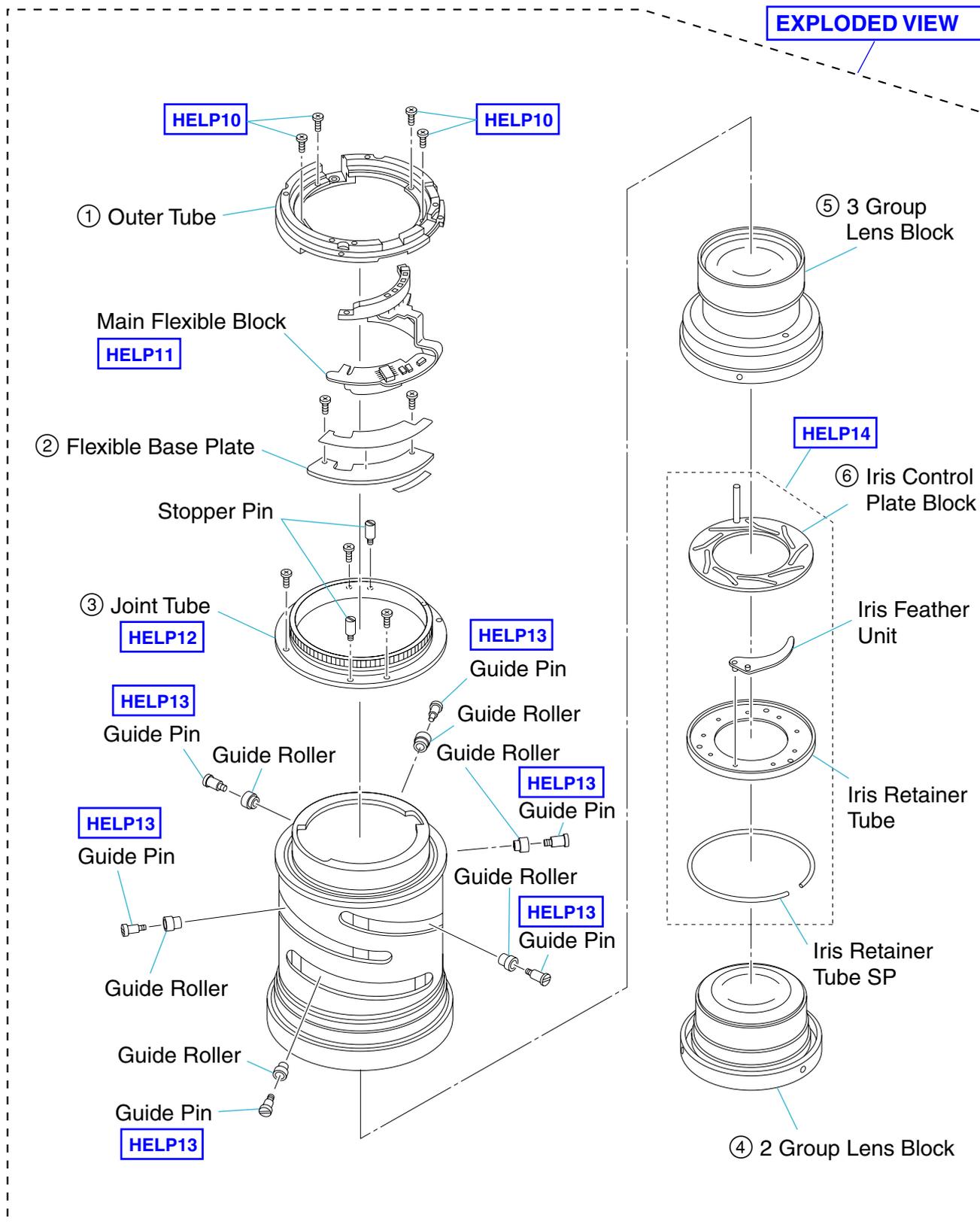
2-1-1. ORNAMENTAL RING LABEL AND MIRROR BARREL TUBE BLOCK



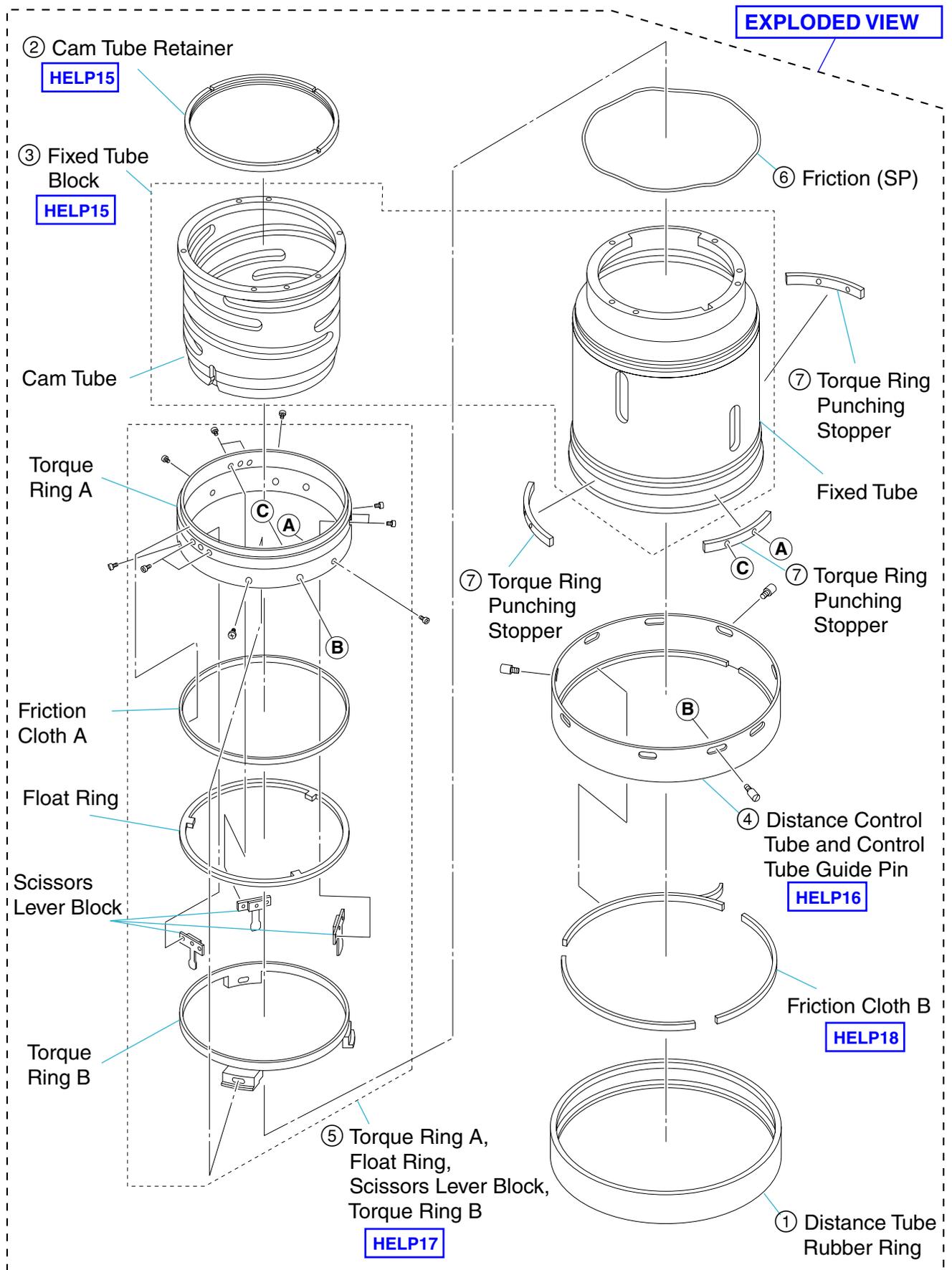
2-1-2. LENS MOUNT RIVETING BLOCK AND LIGHT INTERCEPTION TUBE



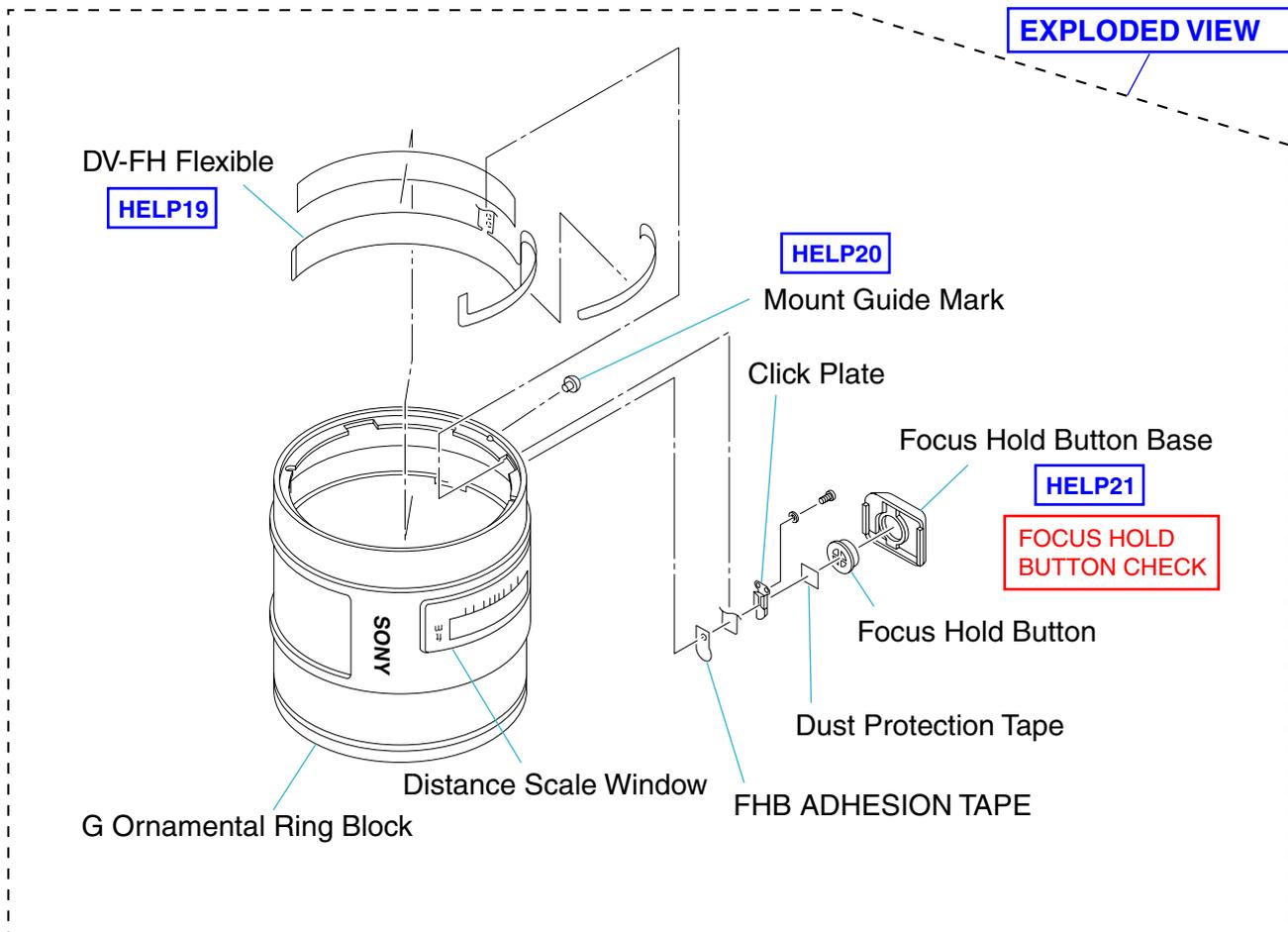
2-1-3. OUTER TUBE AND JOINT TUBE



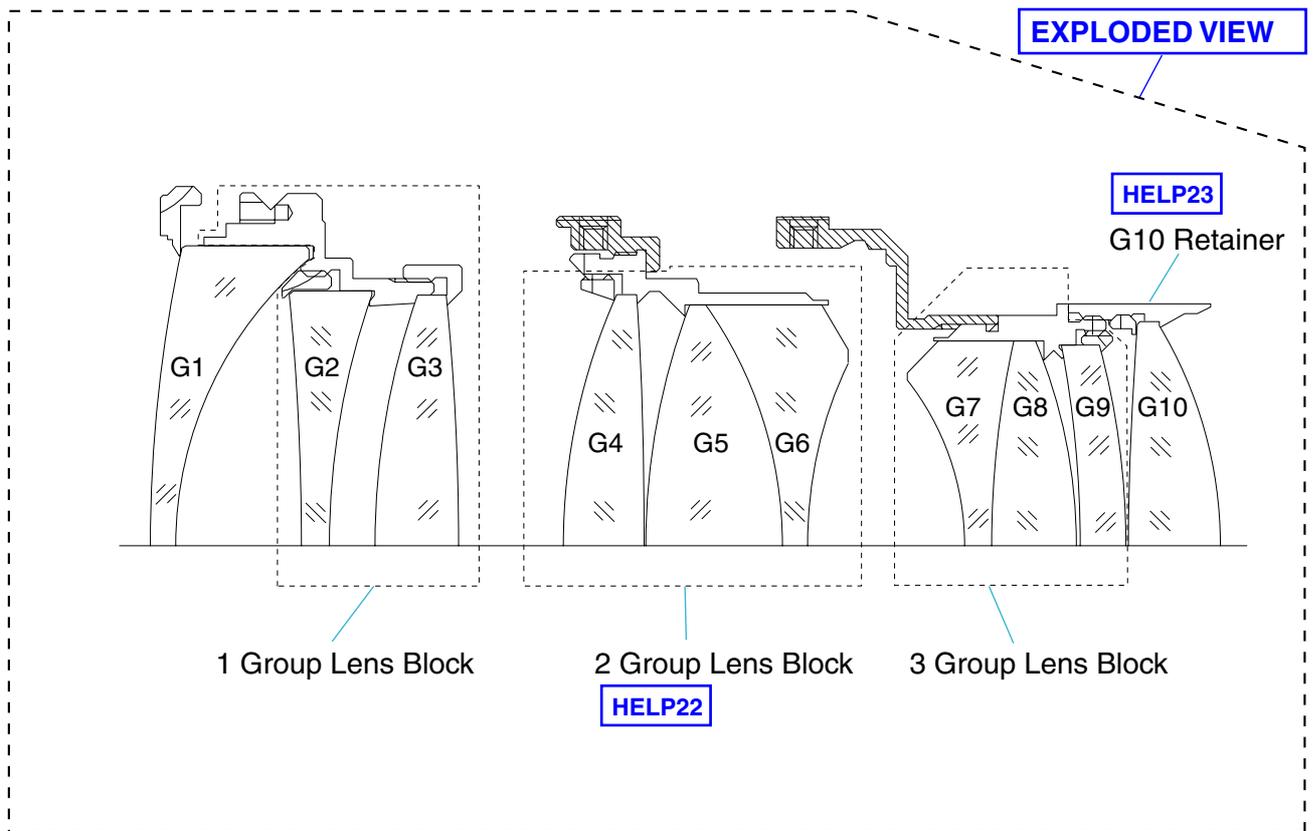
2-1-4. FIXED TUBE BLOCK AND DISTANCE CONTROL TUBE



2-1-5. G ORNAMENTAL RING BLOCK AND FOCUS HOLD BUTTON BASE



2-1-6. 1 GROUP, 2 GROUP AND 3 GROUP LENS BLOCK



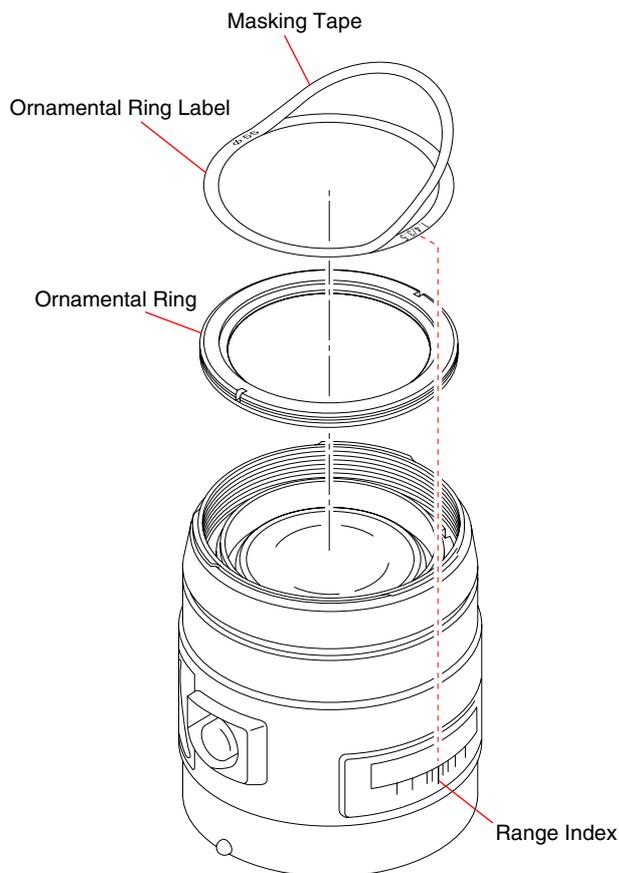
HELP

Note for assembling and grease applying positions are shown.

HELP01

1. Align of "I" of "1.4/35" of the ornamental ring label with range index, and stick the ornamental ring label onto the ornamental ring.
2. Remove the masking tape of the ornamental ring label.

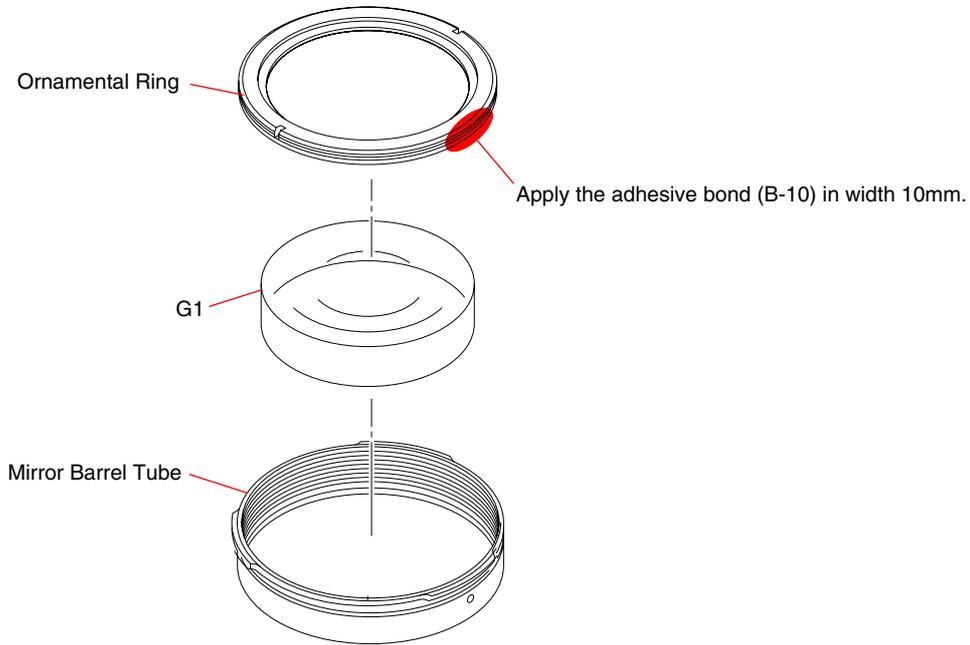
Note: Tolerance: $\pm 2.5 \approx \pm 1$ mm



HELP02

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

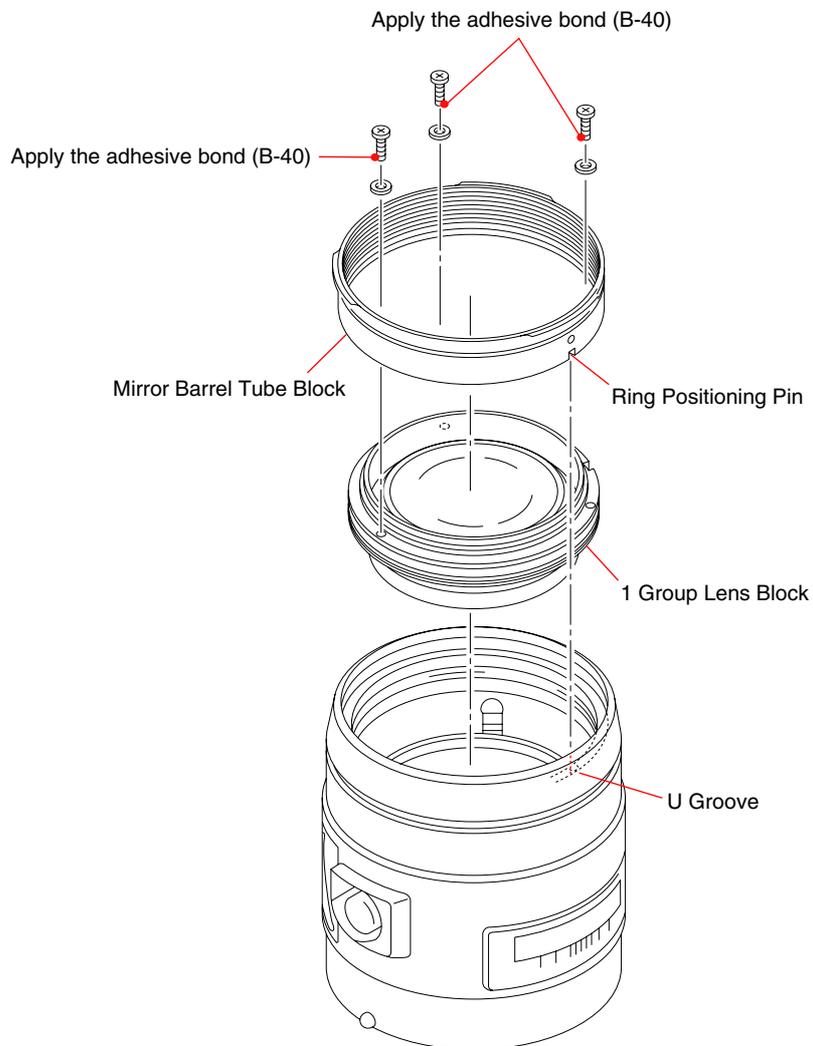
After applying the adhesive bond (B-10) to the indicated portion, tighten the ornamental ring with the special lens fixture.



HELP03

Adhesive bond (B-40): J-6082-614-A

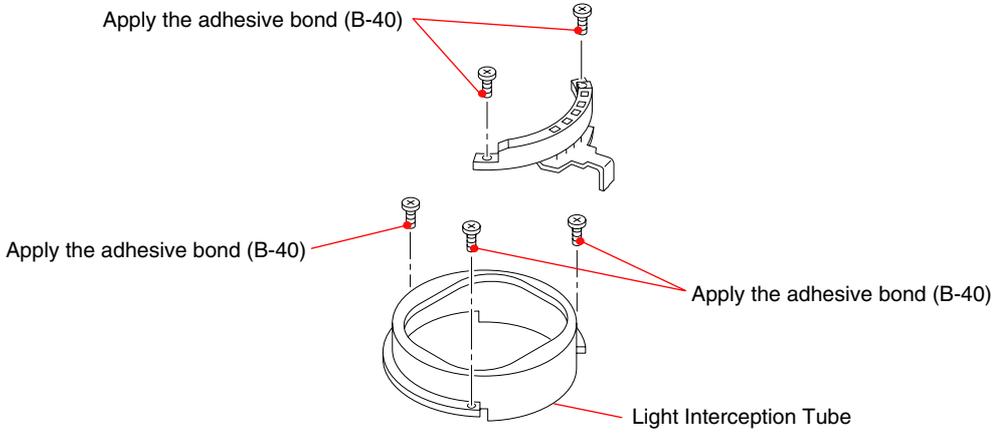
1. Align the ring positioning pin of the mirror barrel tube block to U groove of the fixed tube, attach them.
2. Apply the adhesive bond (B-40) to 3 screws shown in figure and tighten the screws.



HELP04

Adhesive bond (B-40): J-6082-614-A

Apply the adhesive bond (B-40) to 5 screws shown in figure and tighten the screws.



HELP05

Adhesive bond (LOCTITE 460) (Note)

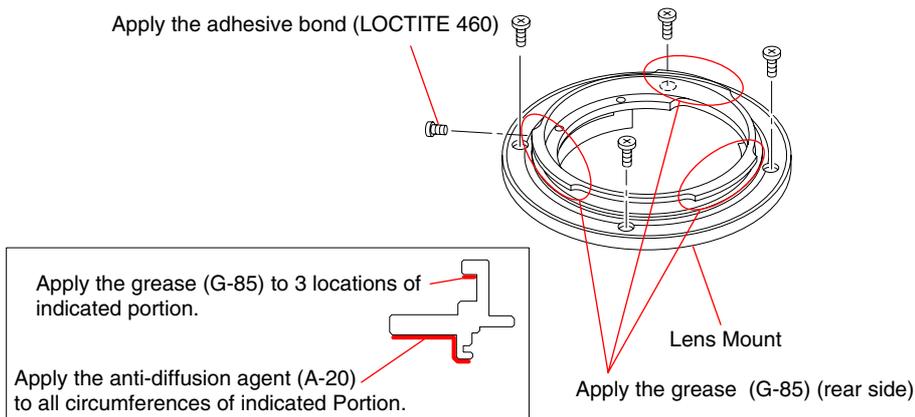
Note: Use adhesive bond (LOCTITE 460) or an equivalent article.

Do not use what becomes white after drying like quick-drying glue.

Anti-diffusion agent (A-20): J-6082-611-A

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

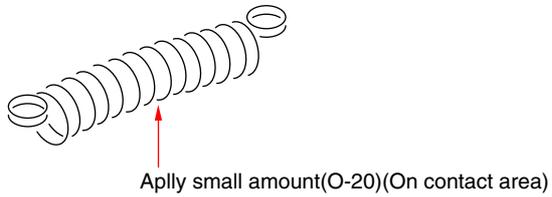
1. Apply the anti-diffusion agent (A-20) to the indicated portions of lens mount.
2. Apply the grease (G-85) to 3 locations of indicated portion3 (3 locations) of lens mount.
3. Apply the adhesive bond (LOCTITE 460) to the stopper screw and attach it to the lens mount.



HELP06

Oil (O-20): J-6082-610-A

Apply small amount of oil (O-20) to the instruction portion of the main spring.

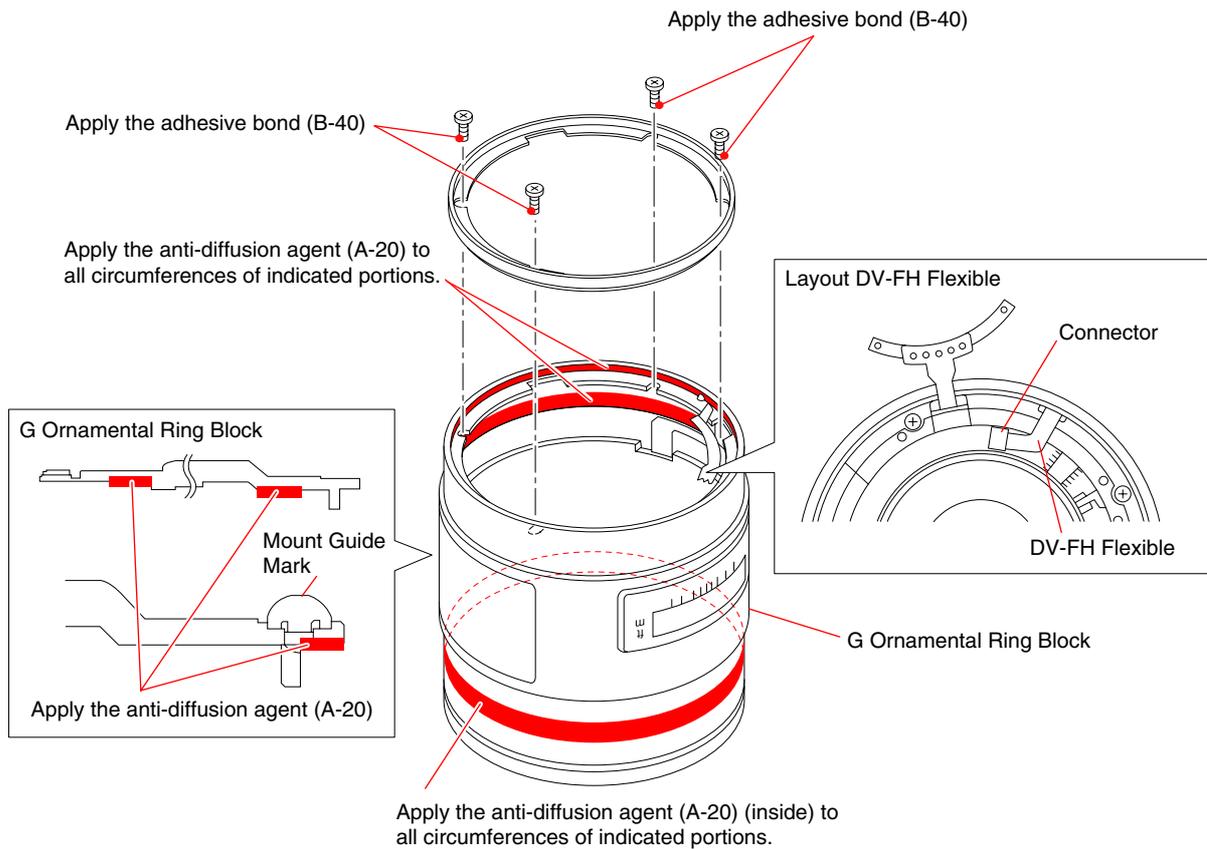


HELP07

Adhesive bond (B-40): J-6082-614-A

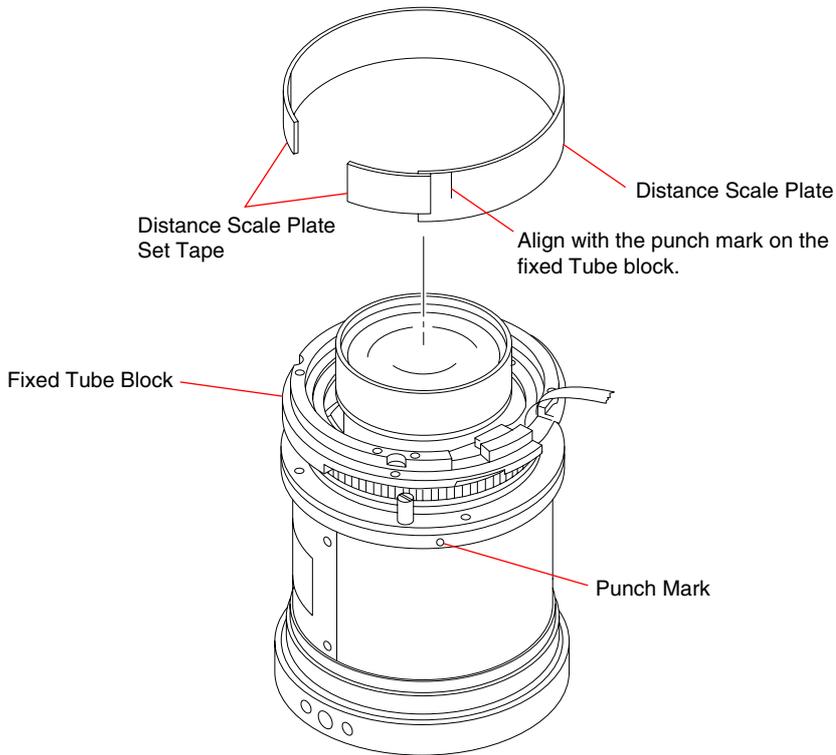
Anti-diffusion agent (A-20): J-6082-611-A

1. Apply the anti-diffusion agent (A-20) to the indicated portion of G ornamental ring.
2. Apply the adhesive bond (B-40) to 4 screws shown in figure and tighten the screws.
3. Lay out the DV-FH flexible properly.



HELP08

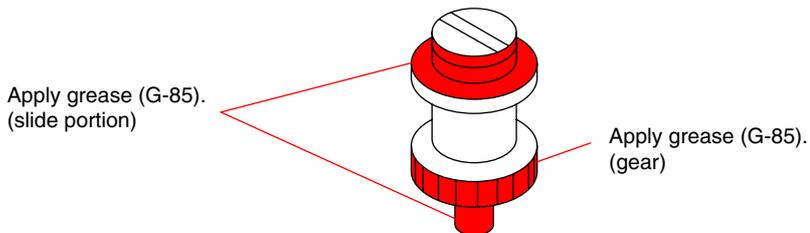
Affix the distance scale plate with distance scale plate set tape, aligning with the punch mark on the cam tube set.



HELP09

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

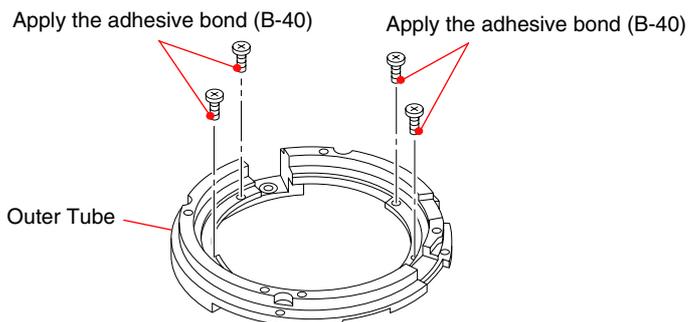
Apply grease (G-85) to the gear of coupler and the slide portion.



HELP10

Adhesive bond (B-40): J-6082-614-A

Apply bond (B-40) to 4 screws shown in figure and tighten the screws.

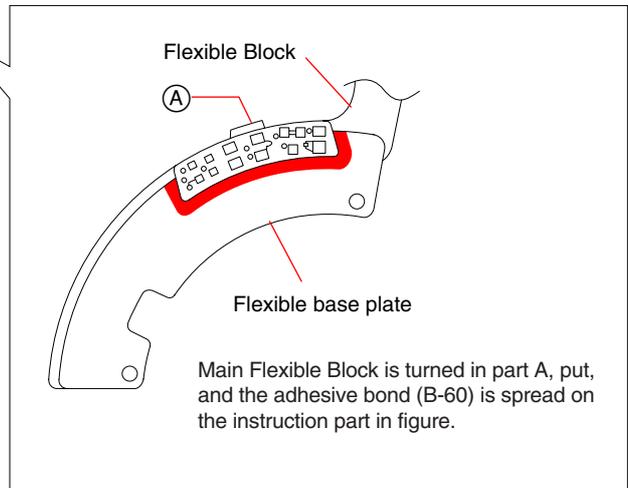
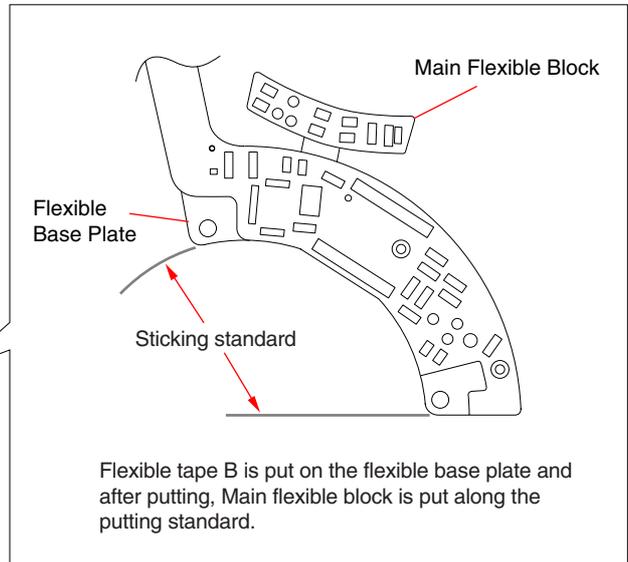
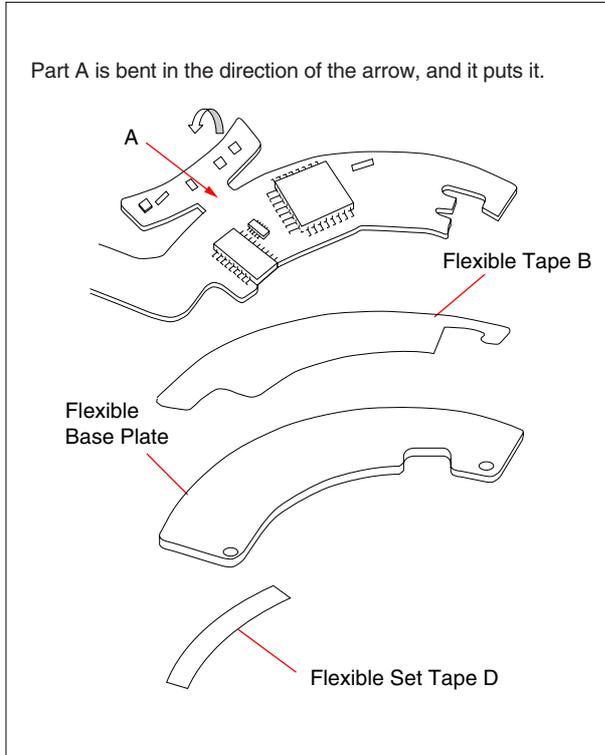


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HELP11

Adhesive bond (B-60): J-6082-616-A

Please follow the following points at the time of obtaining a main flexible block.

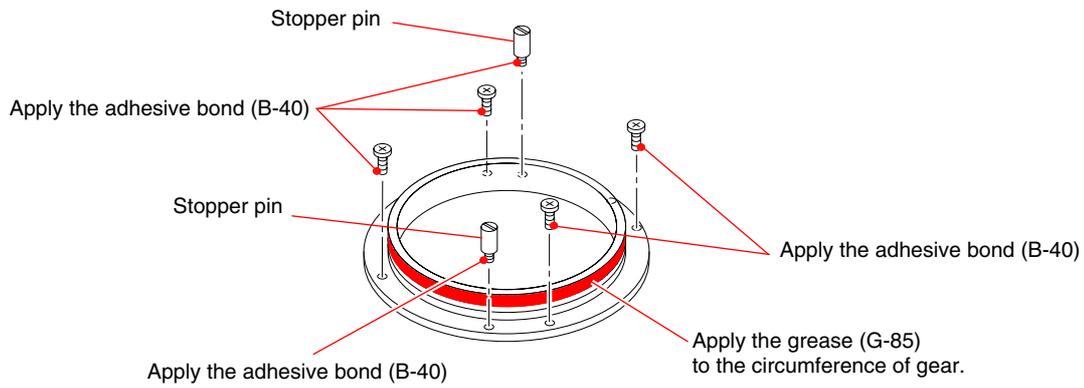


HELP12

Adhesive bond (B-40): J-6082-614-A

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

1. Apply the adhesive bond (B-40) to the tips of screwed portions of 2 stopper pins and tighten 2 stopper pins.
2. Apply the adhesive bond (B-40) to the tips of 4 screws shown in figure and tighten 4 screws.
3. Apply the grease (G-85) to all circumferences of gear of joint tube.

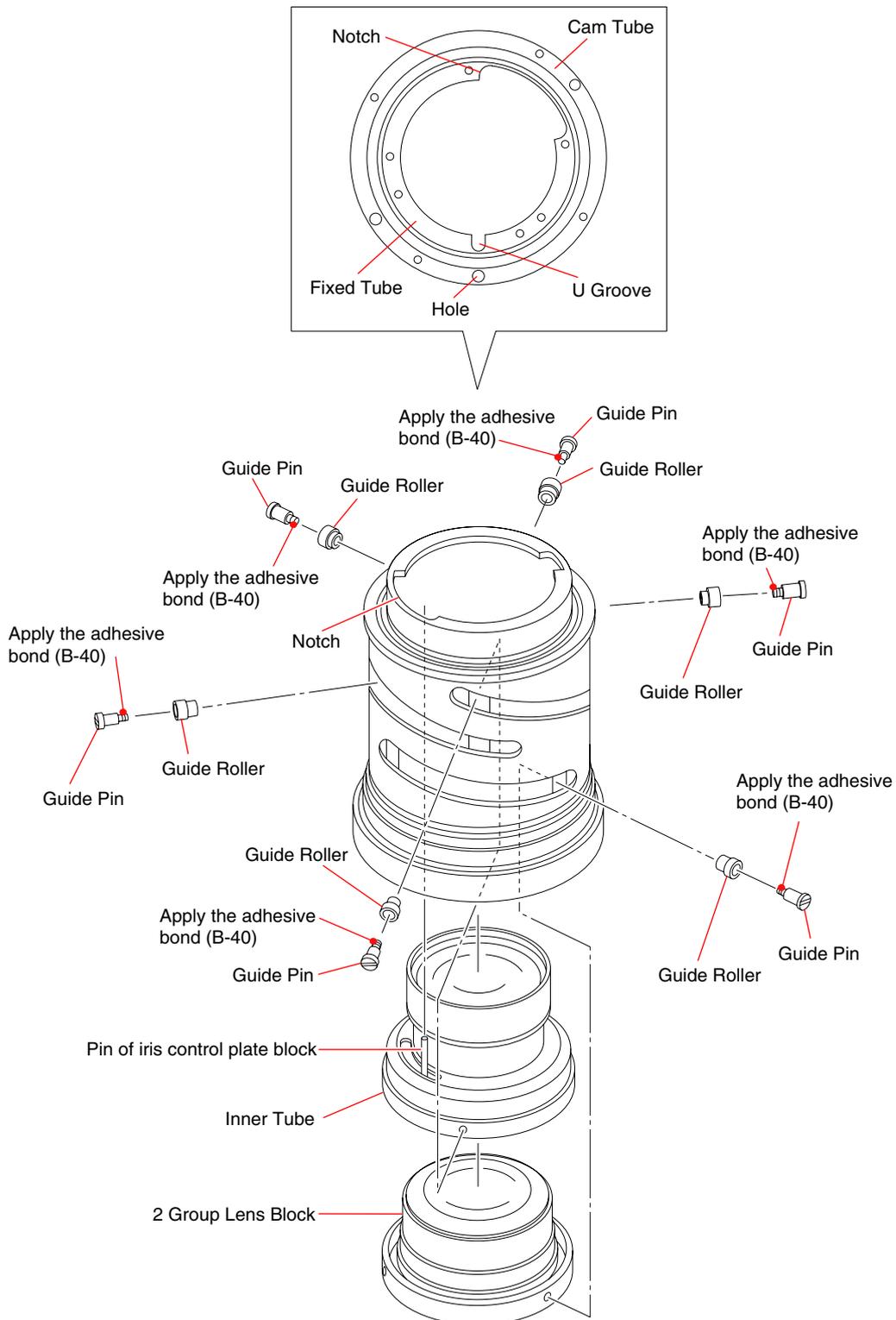


HELP13

Adhesive bond (B-40): J-6082-614-A

1. Rotating the cam tube, affix indicated hole of the cam tube and U groove of the fixed tube.
2. Align the notch of the fixed tube and pin of the iris control plate block, attach the inner tube.
3. Select the guide rollers fitting to the grooves of cam tube set, apply the adhesive bond (B-40) to the tips of screwed portions of guide pins, and tighten the guide pins.

Note: Confirm that the cam tube rotates smoothly.

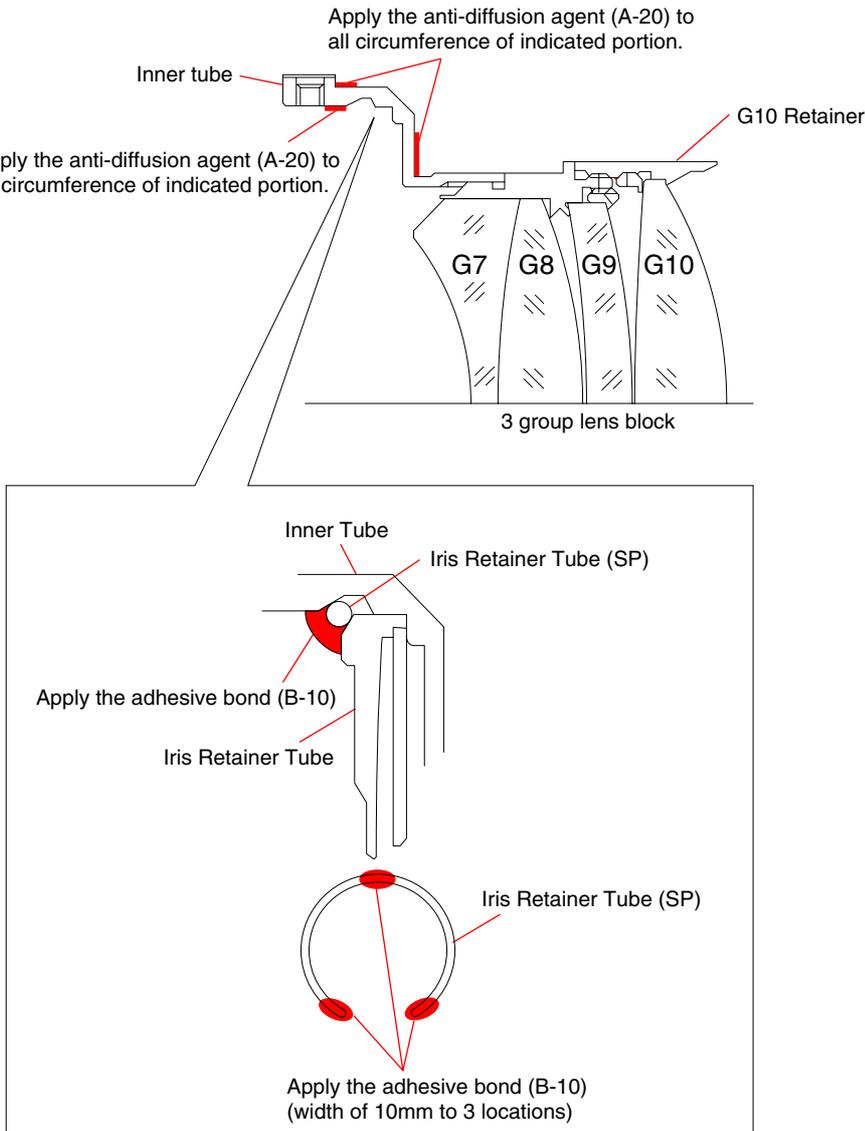


HELP14

Anti-diffusion agent (A-20): J-6082-611-A

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

1. Apply anti-diffusion agent (A-20) to the indicated portion of Inner Tube.
2. After “4-2-2. Aperture Diameter Adjustment”, apply the adhesive bond (B-10) in with of 10mm to all circumferences of portions indicated in figure at Inner Tube, Iries Retainer Tube and Iris Retainer (SP).



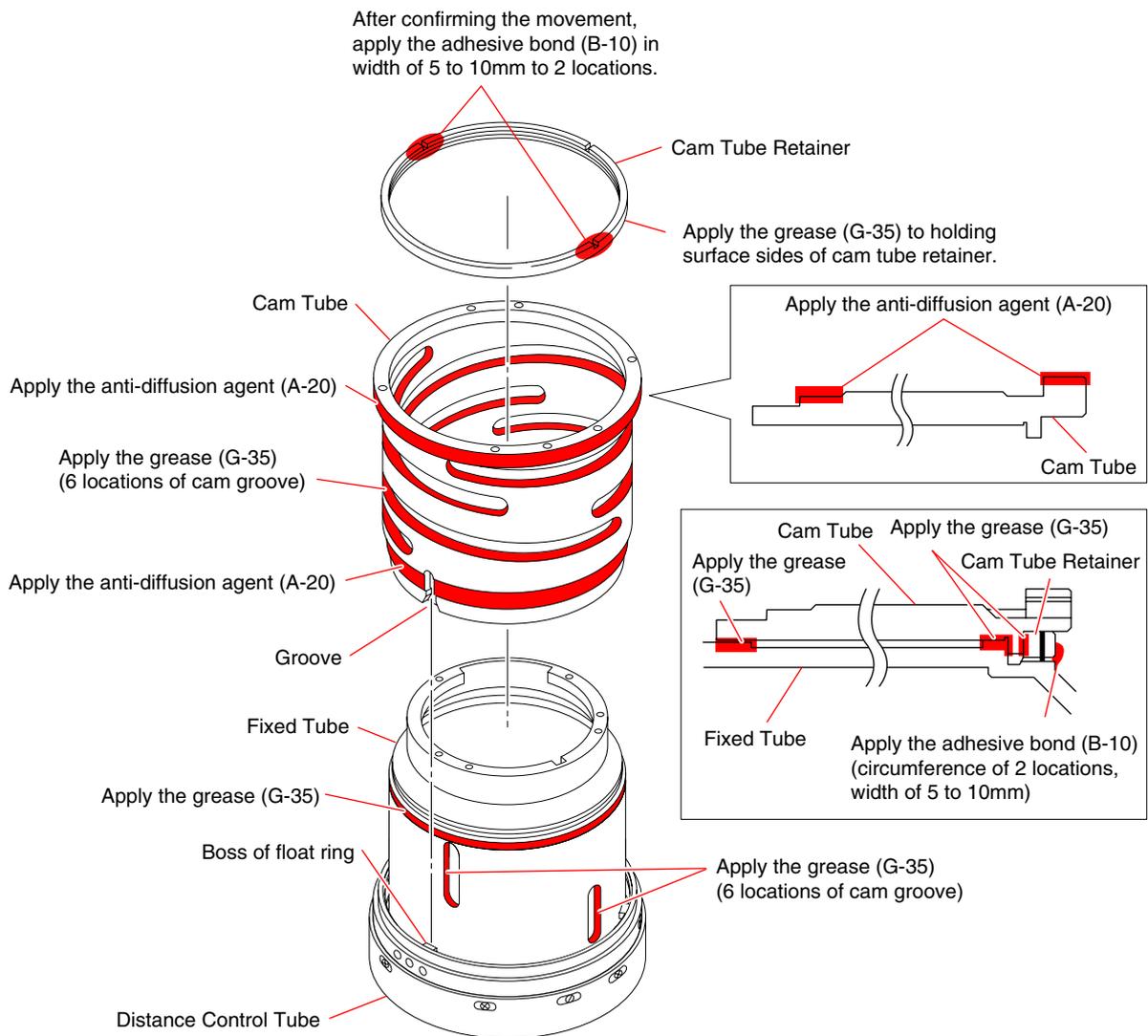
HELP15

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

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

Anti-diffusion agent (A-20): J-6082-611-A

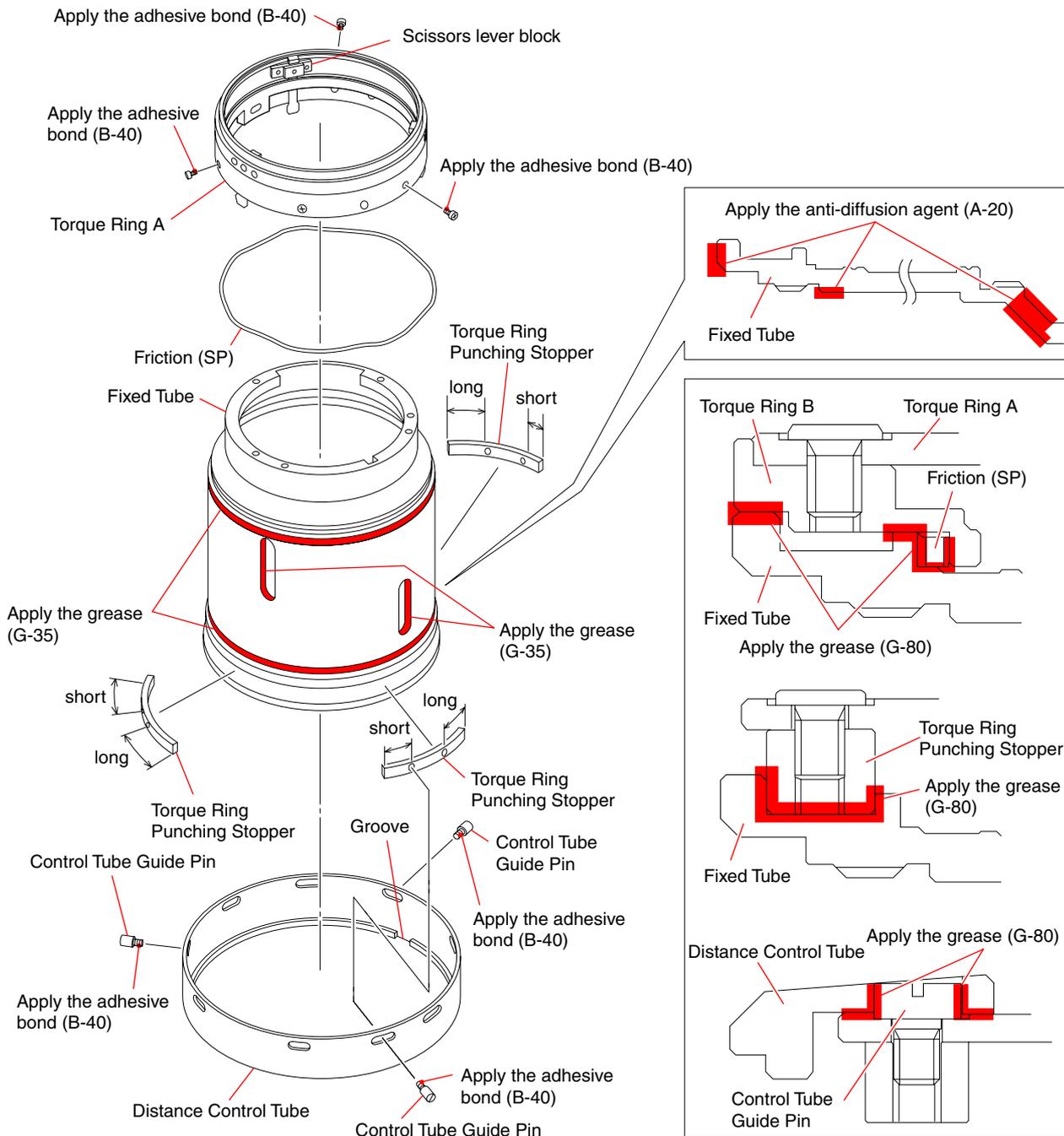
1. Apply the anti-diffusion agent (A-20) to the indicated portions of cam tube.
2. Apply the grease (G-35) to the cam tube, cam groove and them contact zone.
3. Attach the float ring so that the groove of cam tube places the bosses of float ring.
4. Apply the grease (G-35) to the indicated portions of cam tube retainer.
5. After tightening the cam tube retainer, loosen it about 10 to 15mm from dead end, apply the adhesive bond (B-10) to indicated portion.
6. Conform the movement of the cam tube.



HELP16

Adhesive bond (B-40): J-6082-614-A
 Grease (G-35): J-6082-621-A
 Grease (G-80): J-6082-625-A
 Anti-diffusion agent (A-20): J-6082-611-A

1. Apply the anti-diffusion agent (A-20) and the grease (G-35) to the indicated portion of the fixed tube.
2. Apply the grease (G-80) to contact zone of the torque ring B, the fixed tube and the friction (SP).
3. Apply the grease (G-80) to contact zone of the torque ring punching stopper and the float ring and the fixed tube.
4. Attach the torque ring punching stopper to the fixed tube with indicated.
5. Attach the friction (SP) and torque ring A shown in the figure, apply the adhesive bond (B-40) to the screws and tighten them.
6. Apply the grease (G-80) to contact zone of the distance control tube and the control tube guide pin.
7. Loosen the stopper screw of the scissors lever block, align the distance control tube to the scissors lever and attach them. Apply the adhesive bond (B-40) to the control tube guide pin and tighten them.
8. Tighten the stopper screw of the scissors lever block.



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HELP17

Adhesive bond (B-40): J-6082-614-A

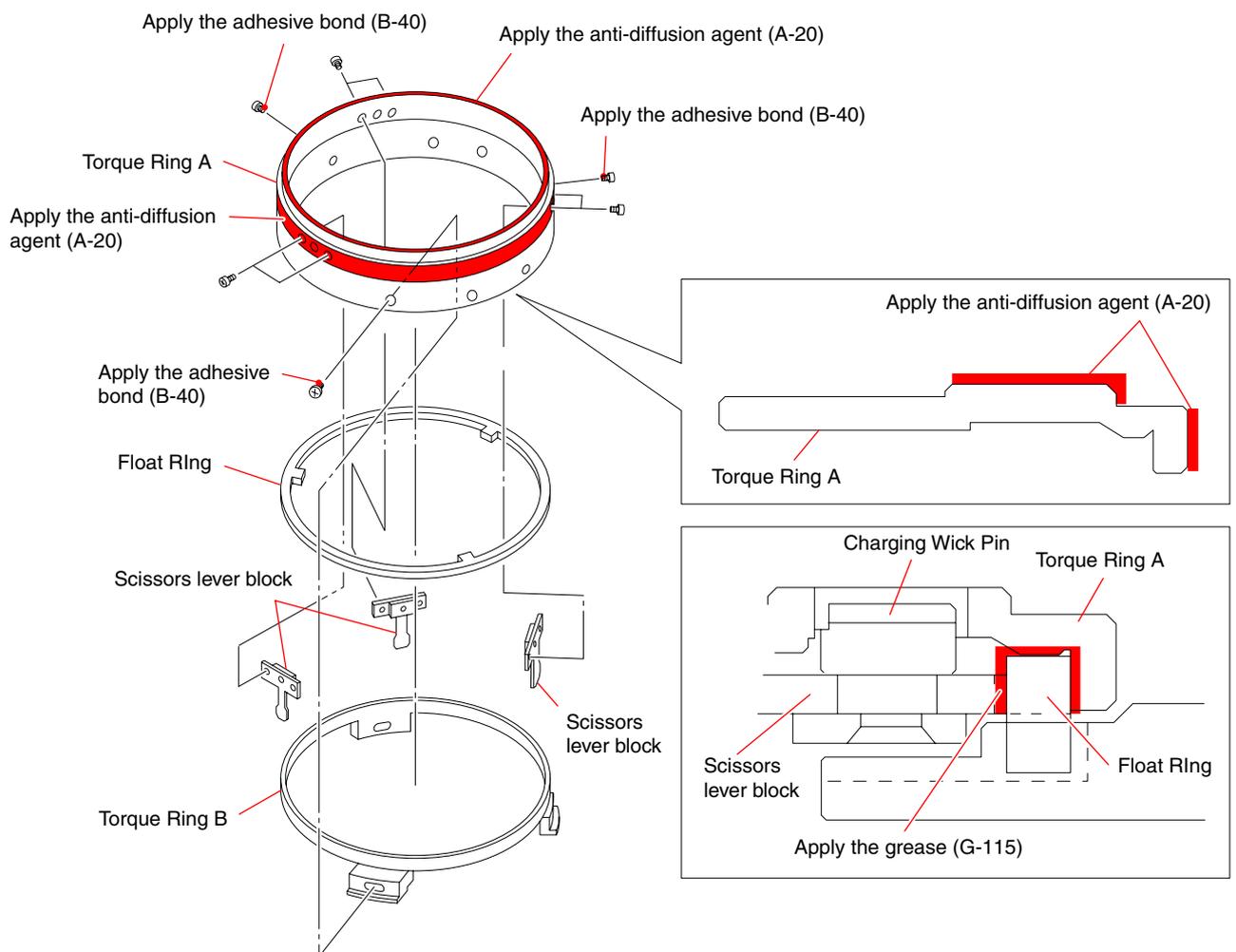
Grease (G-115): J-6082-627-A

Anti-diffusion agent (A-20): J-6082-611-A

1. Apply the anti-diffusion agent (A-20) to the indicated portions of the torque ring A.
2. Apply the grease (G-115) to contact zone of the torque ring A, the float ring and the scissors lever block.
3. Attach the float ring and the scissors lever block to the torque ring A, tighten the screw temporarily.

Note: When turning the float ring, to become shake is minimized and to become turn the float ring smoothly, do the adjustment of the changing wick pin of scissors lever block.

4. Attach the float ring B to float ring A shown in the figure, apply the adhesive bond (B-40) to the screws and tighten them.

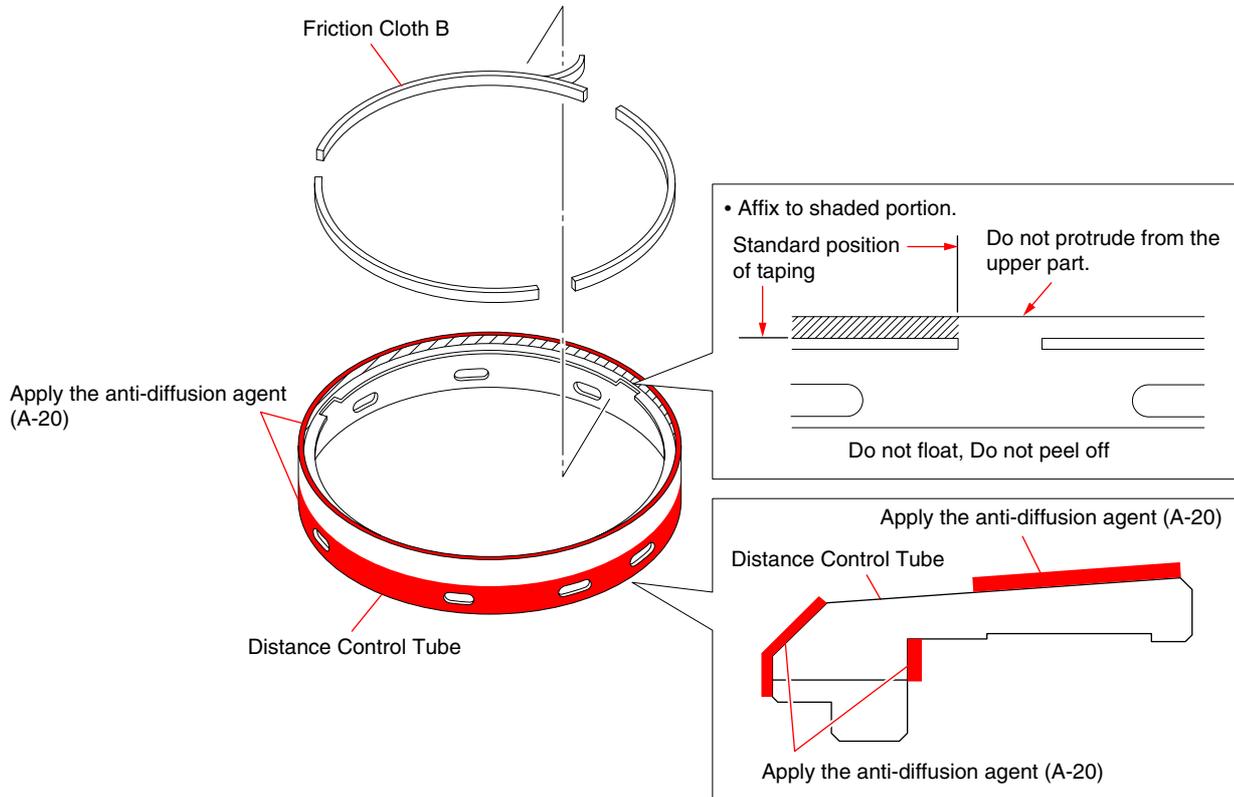


HELP18

Anti-diffusion agent (A-20): J-6082-611-A

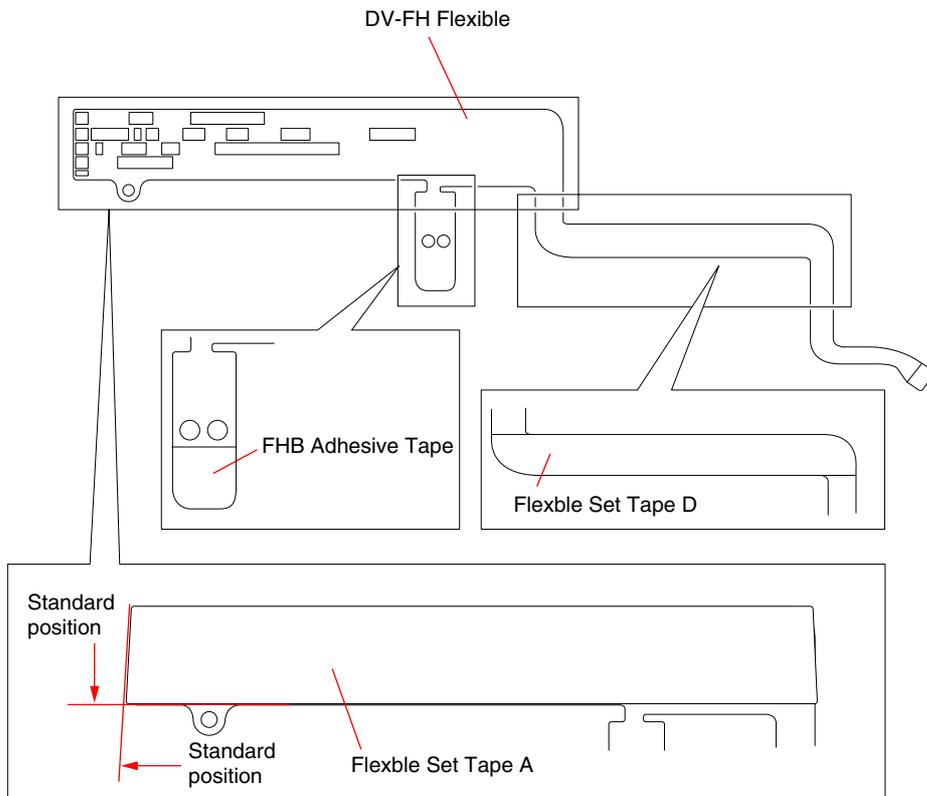
1. Apply the anti-diffusion agent (A-20) to the indicated portion of the distance control tube.
2. Affix the friction cloth B shown in figure.

Note: Do not flow the anti-diffusion agent into affix side of friction cloth B.

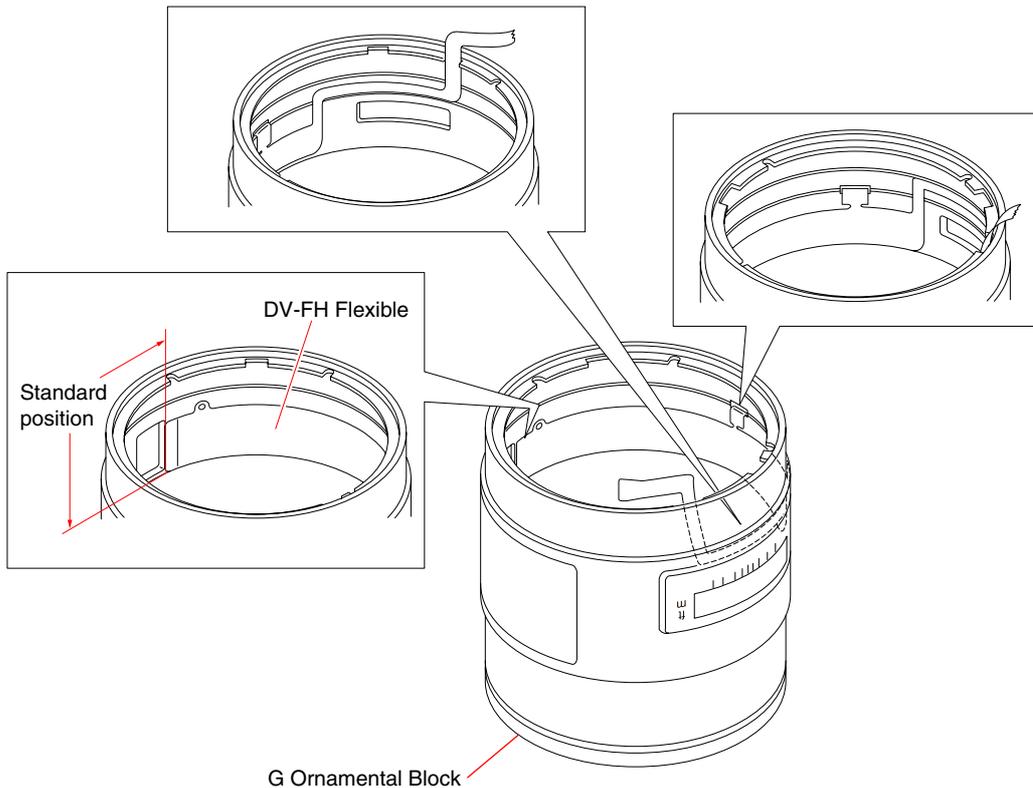


HELP19

1. Affix the flexible set tape A, the flexible set tape D and the FHB adhesion tape to the DV-FH flexible shown in figure.



2. Affix the DV-FH flexible to G ornamental block shown in figure.



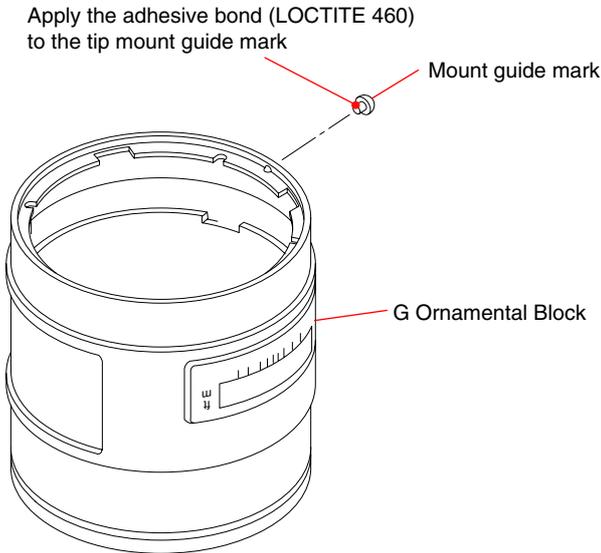
HELP20

Adhesive bond (LOCTITE 460) (Note)

Note: Use adhesive bond (LOCTITE 460) or an equivalent article.

Do not use what becomes white after drying like quick-drying glue.

Apply the adhesive bond (LOCTITE 460) to the tip of mount guide mark and install it to the G ornamental block.



HELP21

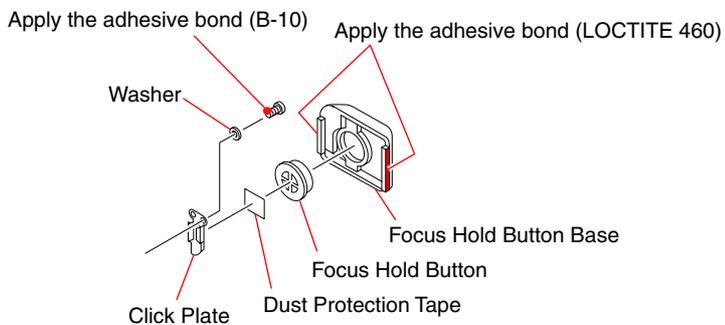
Adhesive bond (LOCTITE 460) (Note)

Note: Use adhesive bond (LOCTITE 460) or an equivalent article.

Do not use what becomes white after drying like quick-drying glue.

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

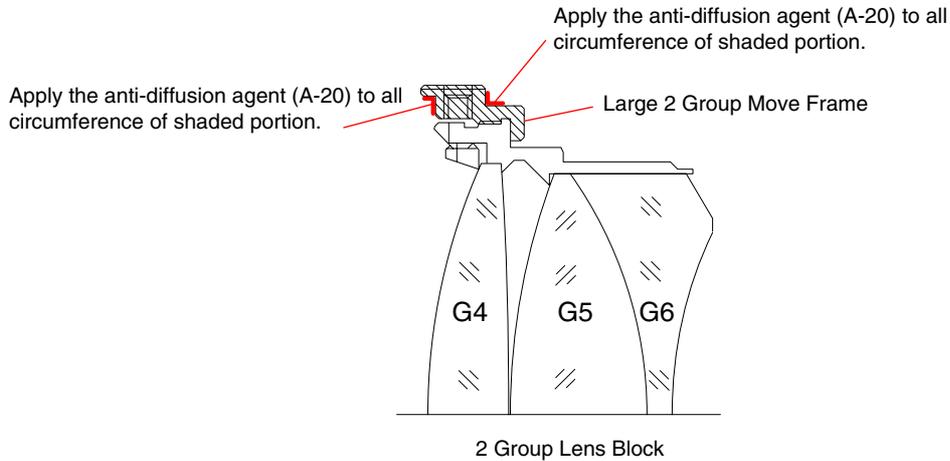
1. Apply a little amount of the adhesive bond (LOCTITE 460) to the indicated portions of focus hold button base.
2. Apply the adhesive bond (B-10) to the tip of one screw shown in figure and tighten the screw.
3. Perform "4-8. FOCUS HOLD BUTTON CHECK (FOCUS HOLD BUTTON)".



HELP22

Anti-diffusion agent (A-20): J-6082-611-A

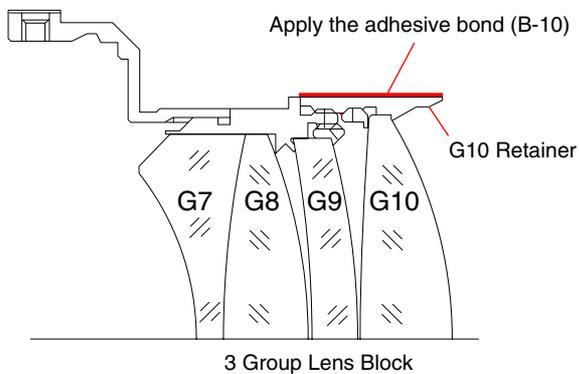
Apply the anti-diffusion agent (A-20) to all circumferences of indicated portions.



HELP23

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

After the optical axis adjustment (Refer to 4-22 page), apply the adhesive bond (B-10) to the indicated portion of G10 retainer.



3. REPAIR PARTS LIST

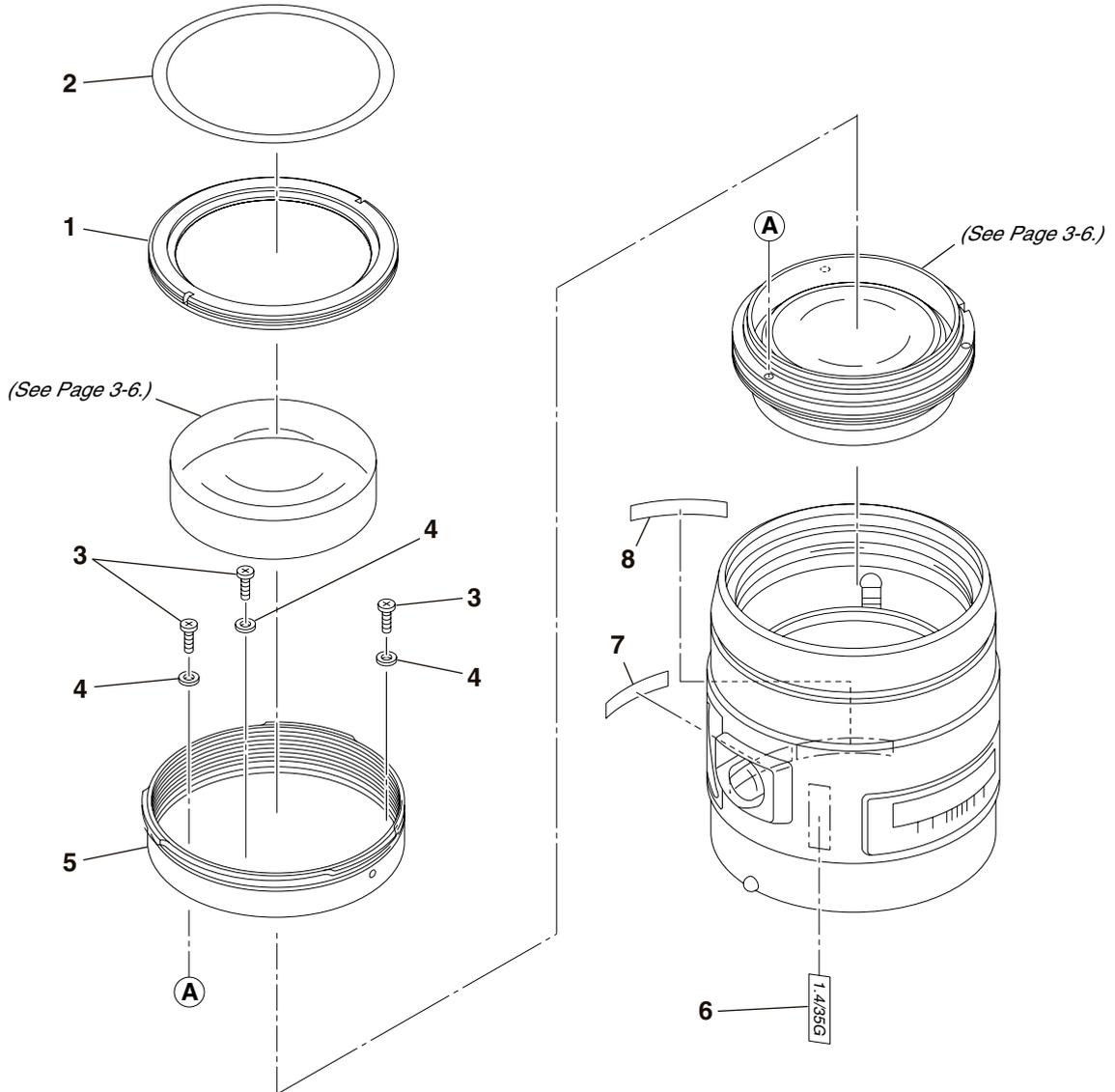
DISASSEMBLY

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.

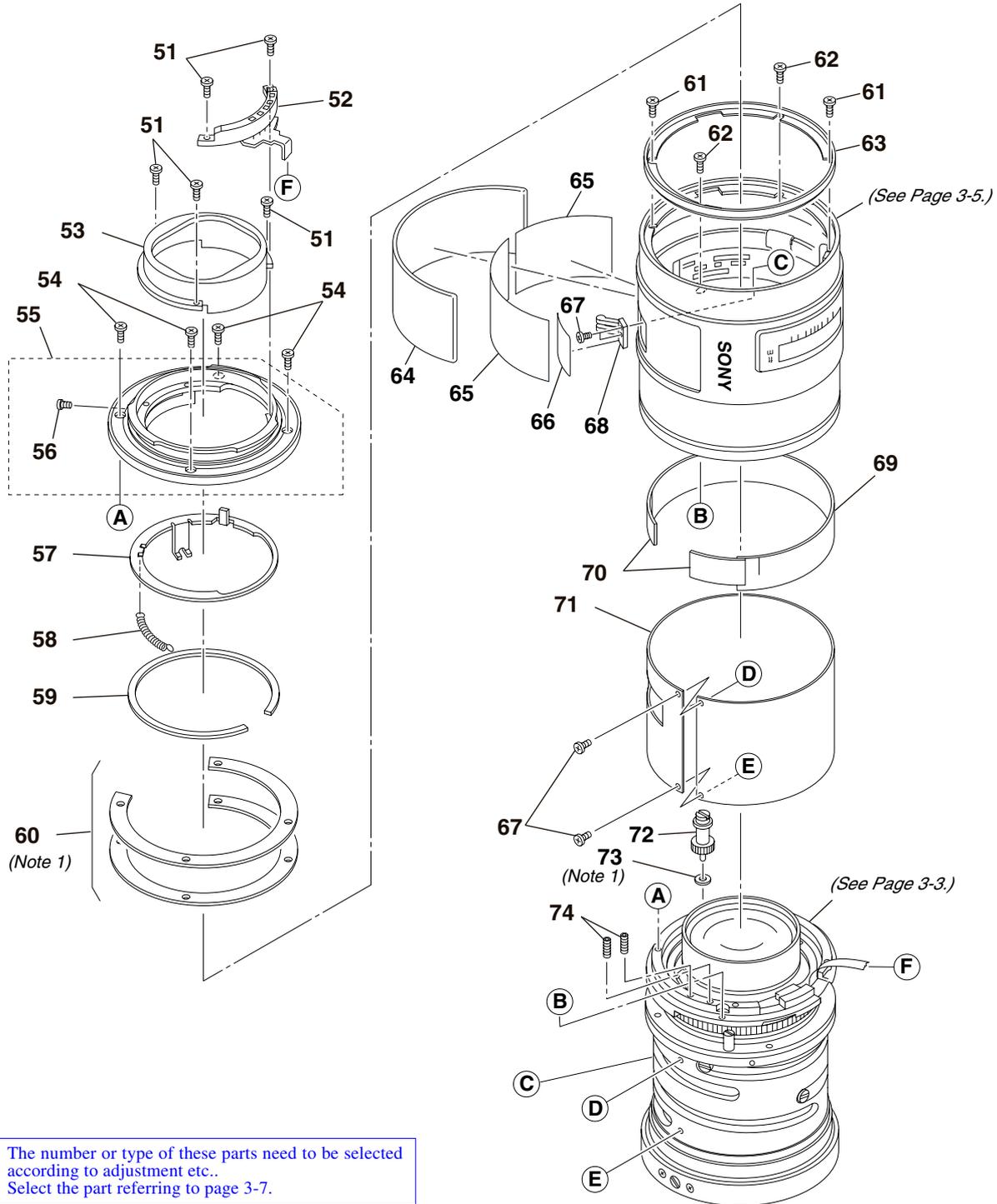
3-1. EXPLODED VIEWS

3-1-1. ORNAMENTAL RING LABEL AND MIRROR BARREL TUBE BLOCK



Ref. No.	Part No.	Description
1	2-684-732-01	RING, ORNAMENTAL
2	2-887-838-01	LABEL, ORNAMENTAL RING
3	2-684-731-01	SCREW, TAPPING M1.6X3.5
4	2-684-730-01	WASHER, FLAT
5	A-1191-451-A	BLOCK, MIRROR BARREL TUBE
6	2-684-737-01	NAME PLATE 3514
7	2-684-073-01	LABEL, LENS (NO.)
8	2-695-837-01	LABEL, MODEL NAME

3-1-2. LENS MOUNT RIVETING BLOCK AND LIGHT INTERCEPTION TUBE

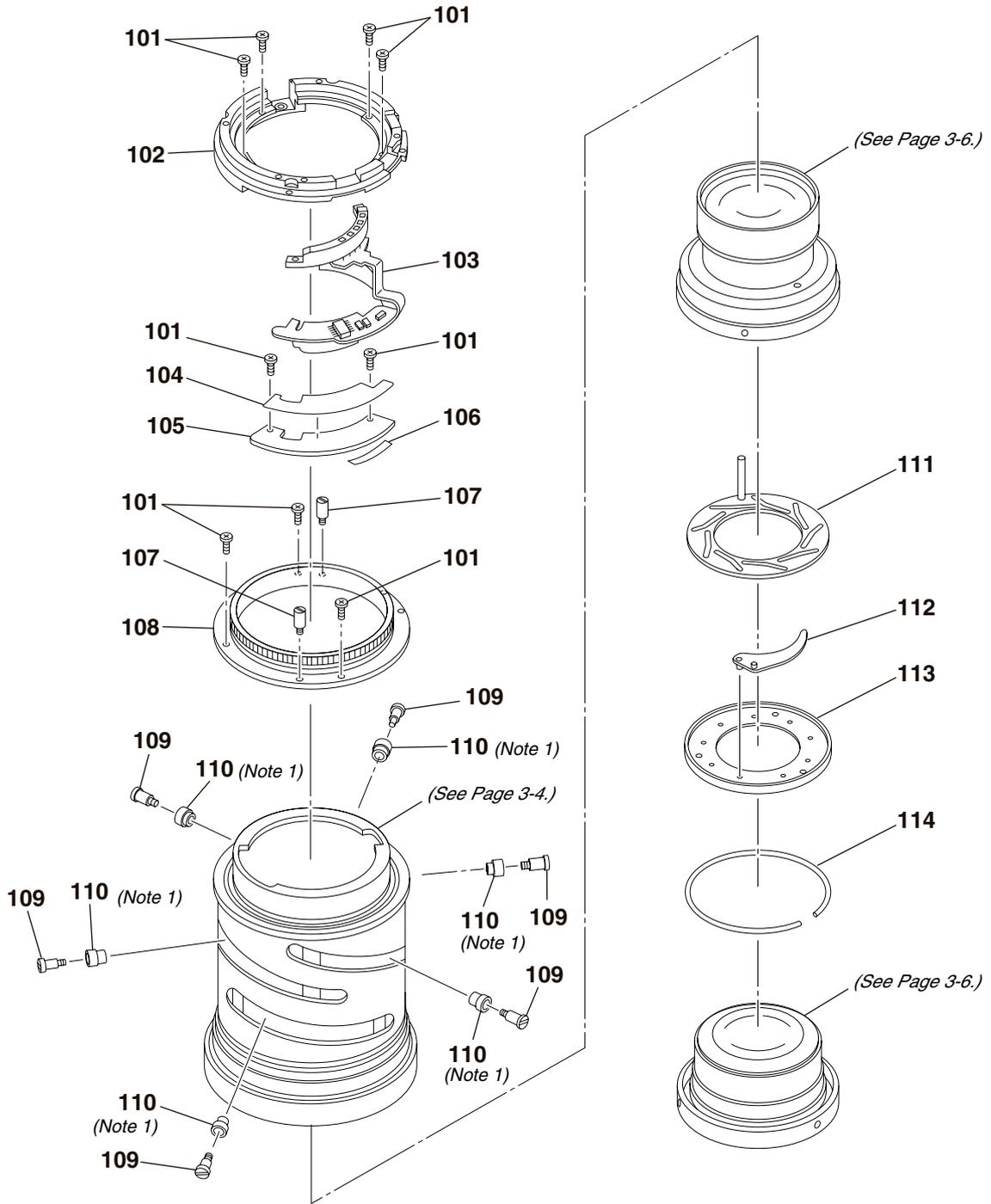


(Note 1) The number or type of these parts need to be selected according to adjustment etc..
Select the part referring to page 3-7.

Ref. No.	Part No.	Description
51	2-684-064-01	SCREW, M1.4X2.2 P1
52	2-684-844-01	CONNECTION BOX
53	2-684-736-01	TUBE, LIGHT INTERCEPTION
54	2-687-685-01	SCREW, TAPPING M2.0X4.0
55	A-1191-450-A	BLOCK, LENS MOUNT RIVETING
56	2-684-244-01	SCREW, STOPPER
57	2-684-856-01	RING, PRESET
58	2-684-233-01	SPRING, MAIN
59	2-684-234-01	RETAINER, PRESET RING
60	Selection parts WASHER (A) to (E), BACK ADJUSTMENT (Note 1)	
61	2-687-690-01	SCREW, M1.6X3.0
62	2-684-170-01	SCREW, M1.6X3.0

Ref. No.	Part No.	Description
63	2-684-961-01	RING, ORANGE
64	2-684-740-01	LEATHER, BEAM
65	2-684-738-01	TAPE, BEAM LEATHER FIXED
66	2-684-739-01	COVER, BRUSH HOLE
67	2-684-774-01	SCREW, M1.4X2.0 P2
68	2-684-786-01	BRUSH, FOCUS
69	2-684-775-01	PLATE, DISTANCE SCALE
70	2-684-776-01	TAPE, DISTANCE SCALE PLATE SET
71	2-684-773-01	REINFORCEMENT, CAM TUBE
72	2-684-784-01	COUPLER
73	Selection Parts WASHER (A) to (E) (Note 1)	
74	2-684-735-01	GROUND SP

3-1-3. OUTER TUBE AND JOINT TUBE

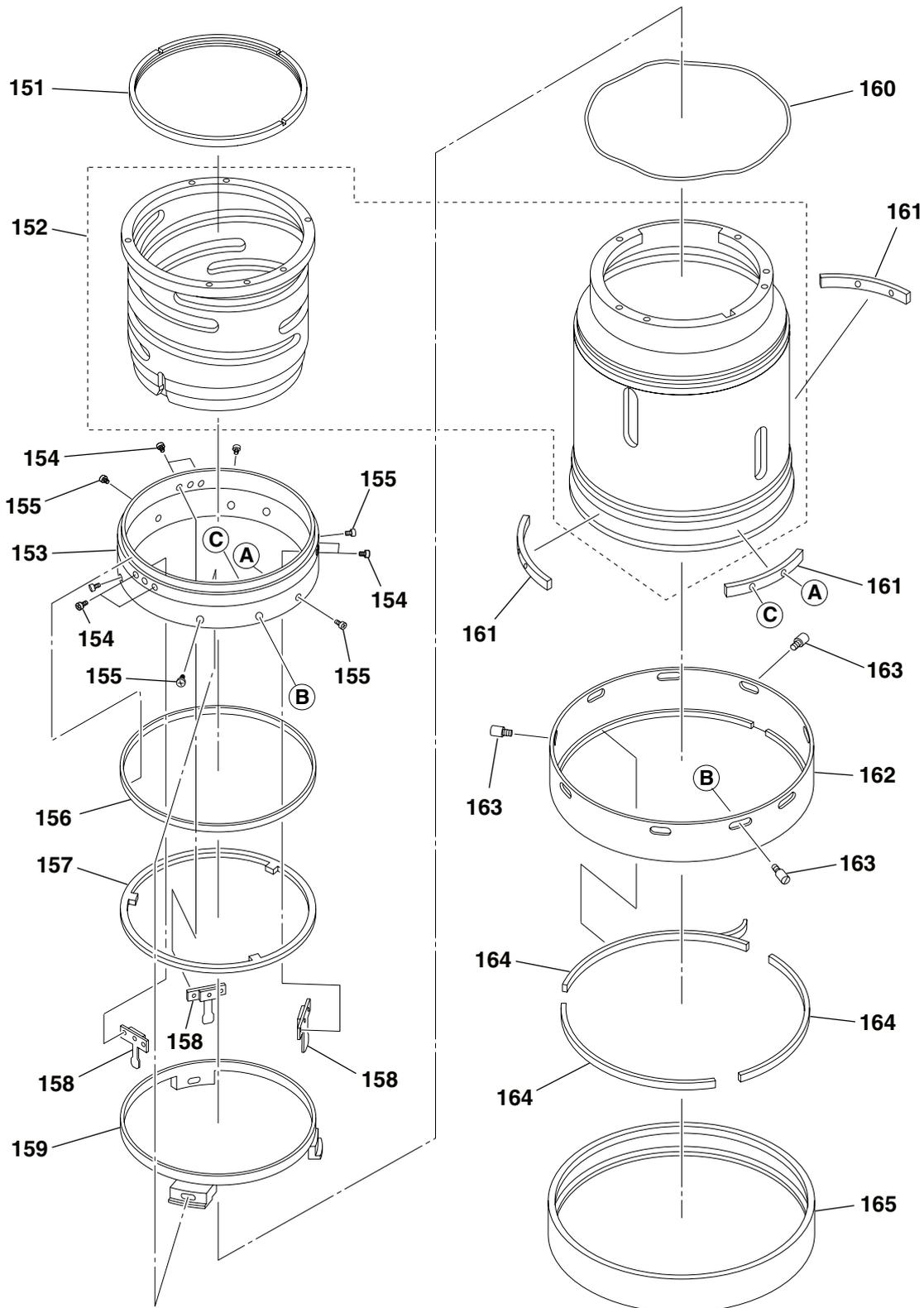


(Note 1) The number or type of these parts need to be selected according to adjustment etc..
Select the part referring to page 3-7.

Ref. No.	Part No.	Description
101	2-687-690-01	SCREW, M1.4 P3 M1.6X3.0
102	2-684-781-01	TUBE, OUTER
103	A-1191-446-A	BLOCK, MAIN FLEXIBLE
104	2-684-841-01	TAPE (B), FLEXIBLE
105	2-684-840-01	PLATE, FLEXIBLE BASE
106	2-684-842-01	TAPE (D), FLEXIBLE SET
107	2-684-779-01	PIN, STOPPER

Ref. No.	Part No.	Description
108	2-684-777-01	TUBE, JOINT
109	2-684-749-01	PIN, GUIDE
110	Selection parts	ROLLER (A) to (I), GUIDE (Note 1)
111	A-1191-444-A	BLOCK, IRIS CONTROL PLATE
112	A-1191-443-A	FEATHER UNIT, IRIS
113	2-684-814-01	TUBE, IRIS RETAINER
114	2-684-815-01	TUBE (SP), IRIS RETAINER

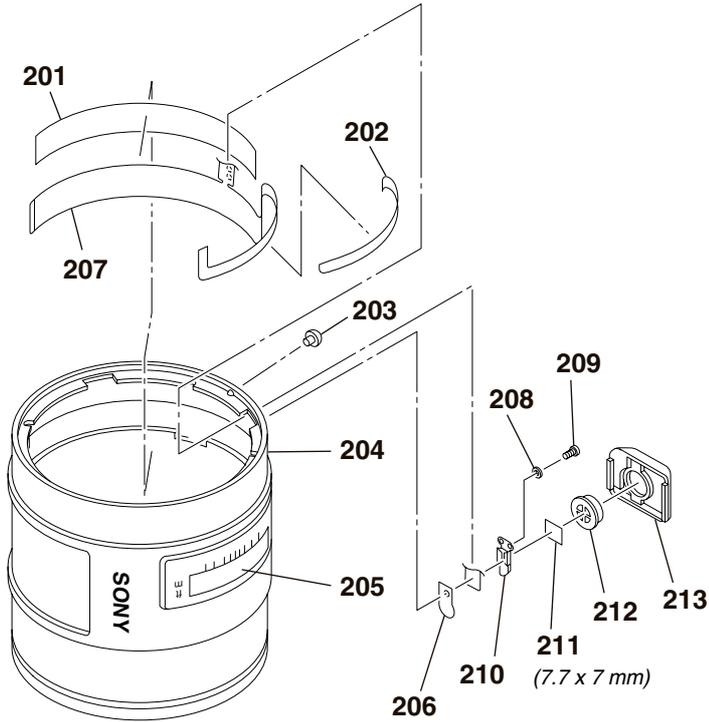
3-1-4. FIXED TUBE BLOCK AND DISTANCE CONTROL TUBE



Ref. No.	Part No.	Description
151	2-684-748-01	RETAINER, CAM TUBE
152	A-1191-438-A	BLOCK, FIXED TUBE
153	2-684-802-01	RING (A), TORQUE
154	2-684-119-01	SCREW, M1.6X2.5
155	2-684-762-01	SCREW, M1.6X2.5
156	2-684-803-01	CLOTH (A), FRICTION
157	2-684-804-01	RING, FLOAT
158	A-1191-440-A	BLOCK, SCISSORS LEVER

Ref. No.	Part No.	Description
159	2-684-806-01	RING (B), TORQUE
160	2-684-745-01	FRICTION (SP)
161	2-684-746-01	STOPPER, TORQUE RING PUNCHING
162	2-684-811-01	TUBE, DISTANCE CONTROL
163	2-684-747-01	PIN, CONTROL TUBE GUIDE
164	2-684-812-01	CLOTH (B), FRICTION
165	2-684-741-01	RING, DISTANCE TUBE RUBBER

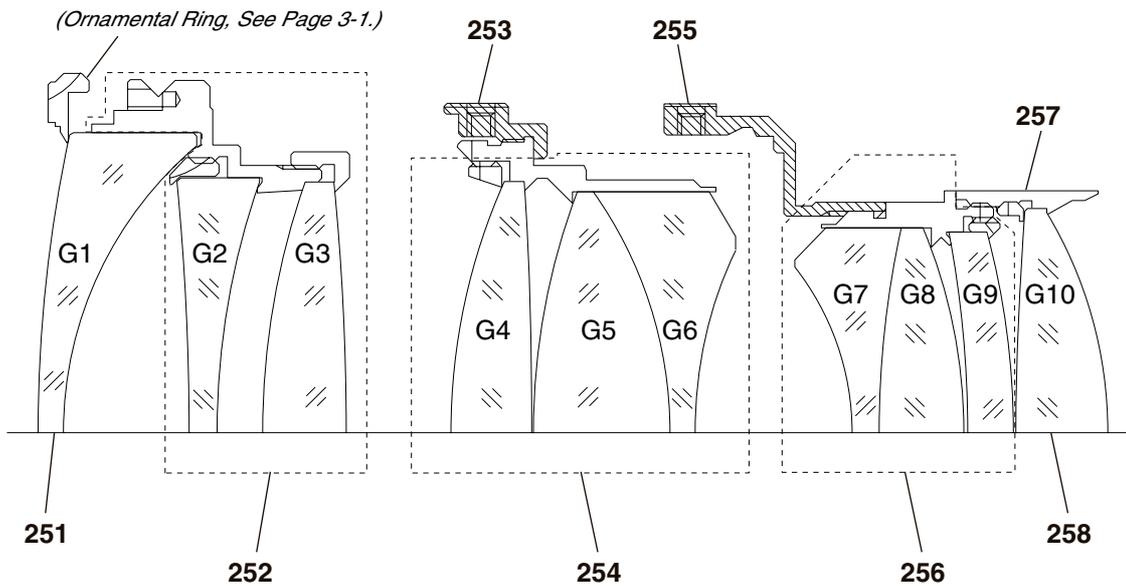
3-1-5. G ORNAMENTAL RING BLOCK AND FOCUS HOLD BUTTON BASE



Ref. No.	Part No.	Description
201	2-684-847-01	TAPE (A), FLEXIBLE SET
202	2-684-848-01	TAPE (D), FLEXIBLE SET
203	2-683-692-01	GUIDE MARK, MOUNT
204	A-1191-448-A	BLOCK, G ORNAMENTAL RING
205	A-1191-455-A	WINDOW, DISTANCE SCALE
206	2-684-846-01	TAPE, FHB ADHESION
207	2-684-849-01	FLEXIBLE, DV-FH

Ref. No.	Part No.	Description
208	2-684-850-01	WASHER, STANDARD
209	2-684-209-01	SCREW, M1.4X1.5 P1
210	2-684-208-01	PLATE, CLICK
211	2-689-275-01	TAPE, DUST PROTECTION
212	2-684-853-01	BUTTON, FOCUS HOLD
213	2-684-852-01	BASE, FOCUS HOLD BUTTON

3-1-6. 1 GROUP, 2 GROUP AND 3 GROUP LENS BLOCK



Ref. No.	Part No.	Description
251	2-684-879-01	G1
252	A-1191-451-A	BLOCK, 1 GROUP LENS
253	2-684-759-01	FRAME, LARGE 2 GROUP MOVE
254	A-1191-452-A	BLOCK, 2 GROUP LENS
255	2-684-813-01	TUBE, INNER
256	A-1191-453-A	BLOCK, 3 GROUP LENS
257	2-684-872-01	RETAINER, G10
258	2-684-871-01	G10

3-1-7. SELECTION PARTS

Ref. No.60

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

Part No.	Description
2-684-123-01	WASHER (A), BACK ADJUSTMENT (t=0.05mm)
2-684-124-01	WASHER (B), BACK ADJUSTMENT (t=0.07mm)
2-684-125-01	WASHER (C), BACK ADJUSTMENT (t=0.1mm)
2-684-126-01	WASHER (D), BACK ADJUSTMENT (t=0.2mm)
2-684-127-01	WASHER (E), BACK ADJUSTMENT (t=0.5mm)

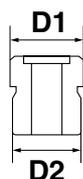
Ref. No.73

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

Part No.	Description
2-684-057-01	WASHER (A) (t=0.05mm)
2-684-058-01	WASHER (B) (t=0.07mm)
2-684-059-01	WASHER (C) (t=0.1mm)
2-684-060-01	WASHER (D) (t=0.2mm)
2-684-061-01	WASHER (E) (t=0.5mm)

Ref. No.110

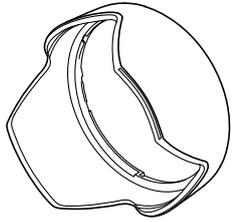
Select the type of part according to the operation load of the associated parts.



Part No.	Description
2-684-750-01	ROLLER (A), GUIDE (D1=4.53mm, D2=4.03mm)
2-684-751-01	ROLLER (B), GUIDE (D1=4.53mm, D2=4.02mm)
2-684-752-01	ROLLER (C), GUIDE (D1=4.53mm, D2=4.01mm)
2-684-753-01	ROLLER (D), GUIDE (D1=4.52mm, D2=4.03mm)
2-684-754-01	ROLLER (E), GUIDE (D1=4.52mm, D2=4.02mm)
2-684-755-01	ROLLER (F), GUIDE (D1=4.52mm, D2=4.01mm)
2-684-756-01	ROLLER (G), GUIDE (D1=4.51mm, D2=4.03mm)
2-684-757-01	ROLLER (H), GUIDE (D1=4.51mm, D2=4.02mm)
2-684-758-01	ROLLER (I), GUIDE (D1=4.51mm, D2=4.01mm)

3-2. SUPPLIED ACCESSORIES

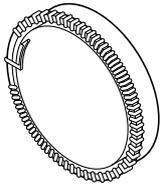
Checking supplied accessories.



Lens Hood (SH0001)
2-687-324-01



Front Lens Cap
2-683-616-01



Rear Lens Cap
2-683-615-01



Carrying Case
2-694-833-01

Other accessories

- 2-685-162-01 MANUAL, INSTRUCTION
(JAPANESE, ENGLISH, FRENCH, SPANISH)
- 2-685-162-11 MANUAL, INSTRUCTION
(GERMAN, DUTCH, SWEDISH, ITALIAN) (AEP)
- 2-685-162-21 MANUAL, INSTRUCTION (PORTUGUESE, RUSSIAN,
TRADITIONAL CHINESE, KOREAN) (AEP)
- 2-685-162-31 MANUAL, INSTRUCTION
(SIMPLIFIED CHINESE, ARABIC) (AEP, CH)

- Abbreviation
CH: chinese model

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
- Lens Adjustment Program (ActuatorChecker.exe)
- PC Card Setup File (InstaCal.exe)
- Color Calculator 2

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

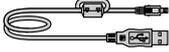
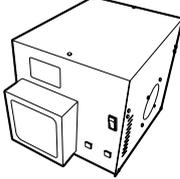
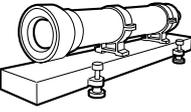
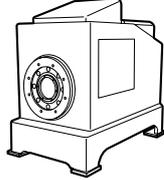
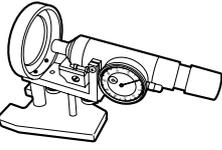
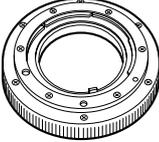
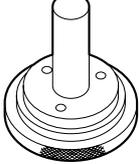
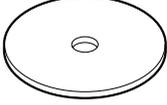
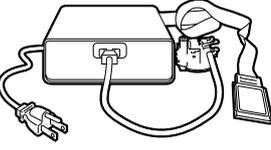
<p>J-1</p>  <p>Personal computer (Note 1)</p>	<p>J-2</p>  <p>USB cord with connector 1-833-062-11</p>	<p>J-3</p>  <p>Luminance box J-6082-581-A</p>
<p>J-4</p>  <p>AE master lens J-6082-597-A</p>	<p>J-5</p>  <p>1000 mm Collimator 110V: J-6082-604-A 240V: J-6082-604-B (Note 2)</p>	<p>J-6</p>  <p>Lens test projector J-6082-605-A (Note 3)</p>
<p>J-7</p>  <p>Flange back tester J-6082-606-A</p>	<p>J-8</p>  <p>A-mount attachment J-6082-607-A</p>	<p>J-9</p>  <p>Flange back gauge (43.50mm) J-6082-608-A</p>
<p>J-10</p>  <p>Aberration measuring cap (SAL35F14G) J-6082-641-A</p>	<p>J-11</p>  <p>Finished Inspection JIG J-6082-645-A (Note 4)</p>	

Fig.4-1-1

- Note 1:** Personal Computer (PC)
(Color Calculator 2 installed)
OS: Windows 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.

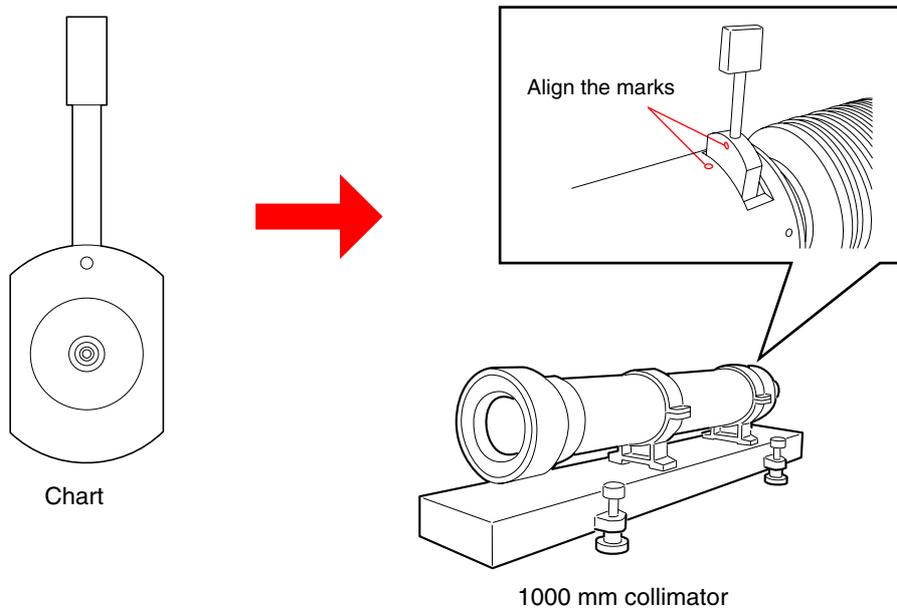


Fig.4-1-2

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

Note 4: Finished Inspection JIG is AC 100 V only.

4-1-2. Lens Adjustment Program (ActuatorChecker)

The lens adjustment program is required for the following check/adjustment.

- 4-5. FOCUS-SHIFT CHECK/ADJUSTMENT (APERTURE)
- 4-6. LENS ROM CHECK
- 4-7. FOCUS BRUSH POSITION CHECK/ADJUSTMENT AND PATTERN CHECK
- 4-8. FOCUS HOLD BUTTON CHECK
- 4-9. Write dSB

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

Equipment used

- Personal Computer
- Lens Adjustment Program (ActuatorChecker.exe)
- PC Card Setup File (InstaCal.exe)

Note 1: Lap top PC with PC card slot on which Windows XP runs

Note 2: Obtain the PC card setup file (InstaCal.exe) from the ESI homepage.

Note 3: Obtain the lens adjustment program (ActuatorChecker Ver. x.x.x.x.zip) from the ESI homepage.

1. Download of PC card setup file (InstaCal.exe)

- 1) Create the “MCC” folder in the C drive.

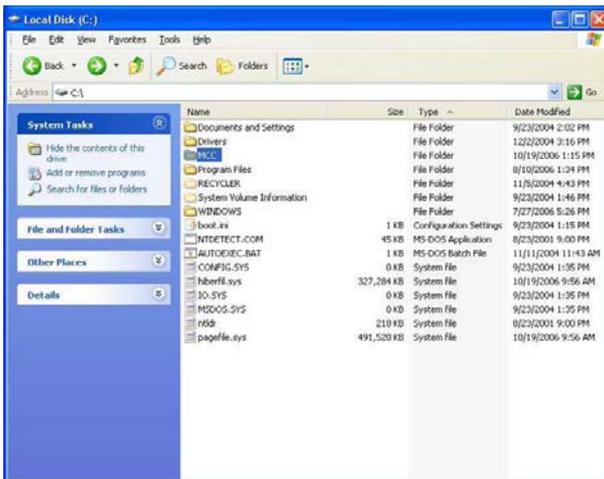


Fig.4-1-3

- 2) Download the file from Service Fixture and Software of ESI homepage, and save it in “C:\MCC”.
- 3) Double-click the downloaded file “InstaCal.exe” to extract it.
- 4) The window to specify the extract destination folder appears. Click **Browse...**.



Fig.4-1-4

- 5) Specify "C:\MCC" for the extract destination folder.



Fig.4-1-5

- 6) The window returns to the menu to specify the extract destination folder. Click **Unzip**.



Fig.4-1-6

- 7) When the window below appears, click **OK**.



Fig.4-1-7

- 8) Return to the menu to specify the extract destination folder. Then, click **Close** to close the window.

2. Setup of PC Card

- 1) Double-click “InstaCal.exe” in “C:\MCC” folder to begin the installation.

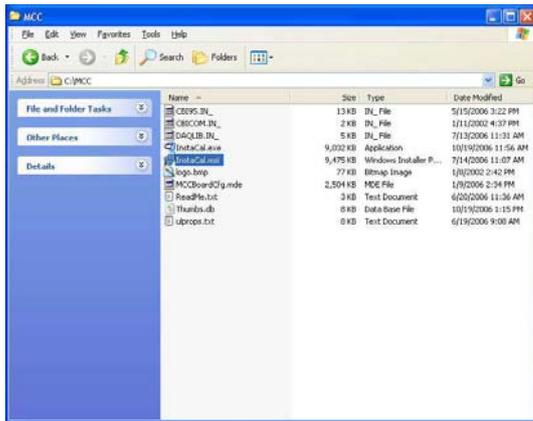


Fig.4-1-8

- 2) The menu to begin the installation appears. Click **Next>**.



Fig.4-1-9

- 3) Specify the install destination folder. As the default is used for it, click **Next>**.



Fig.4-1-10

- 4) The menu to tell that the wizard is ready to install appears. Click **Install**.



Fig.4-1-11

- 5) The installation is completed. Click **Finish**.

Note: To refer to the “readme” file, check the “Show the readme file” and click **Finish**.



Fig.4-1-12

- 6) To make the configuration installed effective, the window to prompt the restart appears. Click “Yes” to restart the PC.

Note: If a device is connected without restarting, the program may not work properly.



Fig.4-1-13

- 7) After restarting the PC, insert the PC-CARD-DIO48 in the PC card slot.
- 8) The software installation window appears.
Click “Install the software automatically. (Recommended)”.



Fig.4-1-14

- 9) The software is detected and installed. When the window below appears, click **Finish** to terminate the installation.



Fig.4-1-15

3. Confirmation of PC card setting

- 1) Select “All programs” - “MeasurementComputing” - “InstaCal” from the startup menu, and start up the software.

Note: Depending on the Windows setting, the window below may differ.

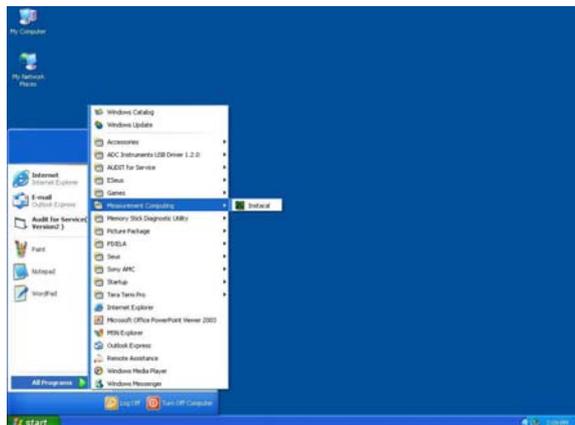


Fig.4-1-16

- 2) When “PC-CARD-DIO48” is detected, the window below appears. Confirm that the PC-CARD-DIO48” is checked.

Note: Depending on the slot inserted, the slot No. differs.



Fig.4-1-17

- 3) Confirm that “PC-CARD-DIO48” is recognized as “Board#0”.

Note: If not recognized as “Board#0”, the program does not work properly.

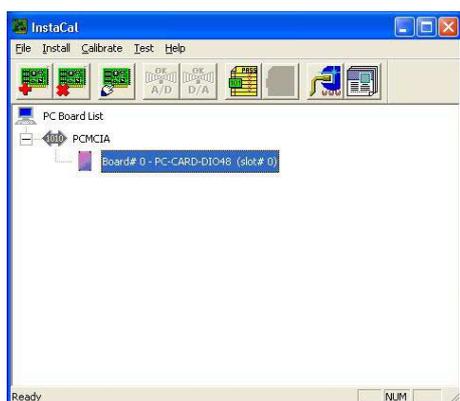


Fig.4-1-18

- 4) Click “File” - “Exit” to terminate “InstaCal”.

4. Startup of Lens Adjustment Program (ActuatorChecker.exe)

- 1) Download the file “ActuatorChecker VerX.X.X.X.zip” from Service Fixture and Software of ESI homepage, save and extract it.
- 2) Start up “ActuatorChecker.exe” from an arbitrary folder.
- 3) If “PC-CARD-DIO48” is properly installed, the window below appears.

Note: The version of “ActuatorCheker” might be updated.

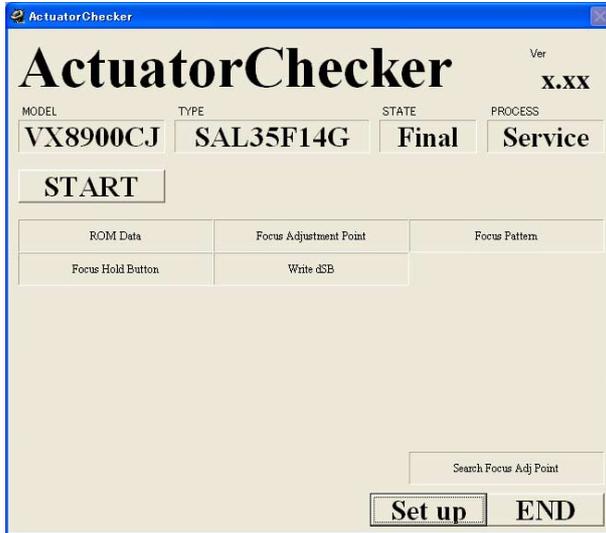


Fig.4-1-19

4-1-3. Connection of Finished Inspection JIG and Lens Adjustment Program (ActuatorChecker.exe)

Note: Confirm “4-1-2. Lens Adjustment Program (ActuatorChecker)” has been completed before this procedure is executed.

Equipment

- Personal Computer
- USB cord with connector
- Finished Inspection JIG
- Lens Adjustment Program (ActuatorChecker.exe)

1. Connect equipment and checking lens as shown Fig.4-1-20.

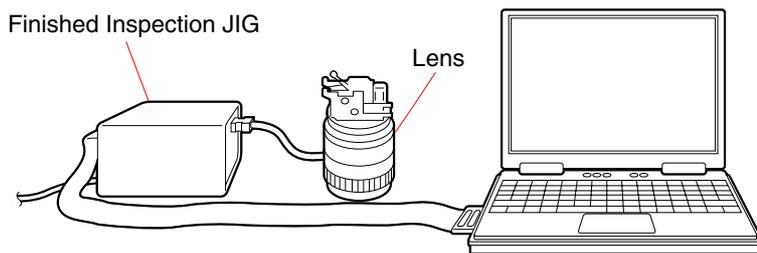


Fig.4-1-20

2. Turn on the finished inspection JIG.
3. Turn on the personal computer.
4. Start up “ActuatorChecker.exe” from an arbitrary folder, conform that start up program normally.

Note: Turn off the finished inspection jig after use.

4-1-4. Initial Setting of “ActuatorChecker”

1. Start up “ActuatorChecker.exe”.

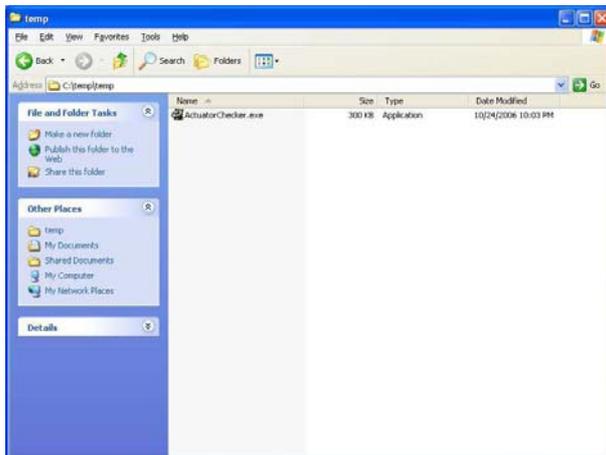


Fig.4-1-21

2. Depending on the initial startup or setting made at the previous startup, the window differs. When the English window appears, click the **Set up** button.

Note: When any button is clicked, the Serial window appears. The window to enter the lens serial number appears.

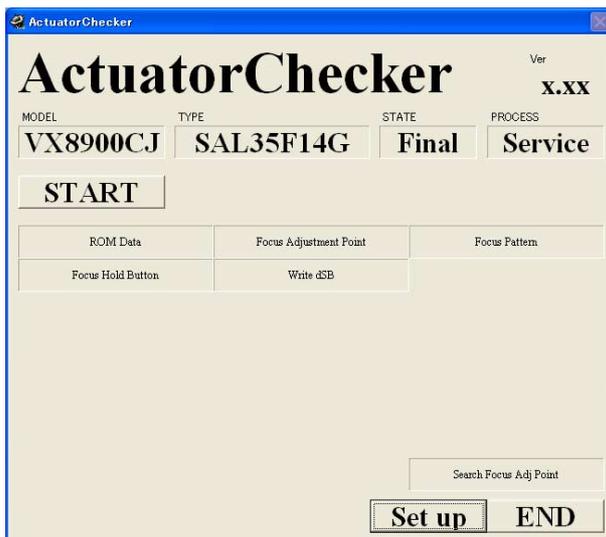


Fig.4-1-22

3. Set the following contents in the SETUP window.
 - MODEL Model to be adjustment this time
 - Language English
 - State FINAL
 - PROCESS SERVICE
4. Confirm that all of the items are set, and click **OK**.



Fig.4-1-23

4-1-5. About Inspection Procedure of Lens Adjustment Program (ActuatorChecker)

The inspection method has the method of executing the method of inspecting the corresponding model as everything continues and the inspection of each item one by one.

Click **START** from the start up window when you inspect the corresponding model as everything continues.

The procedure for executing the inspection of each item one by one has been described in this manual.

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.

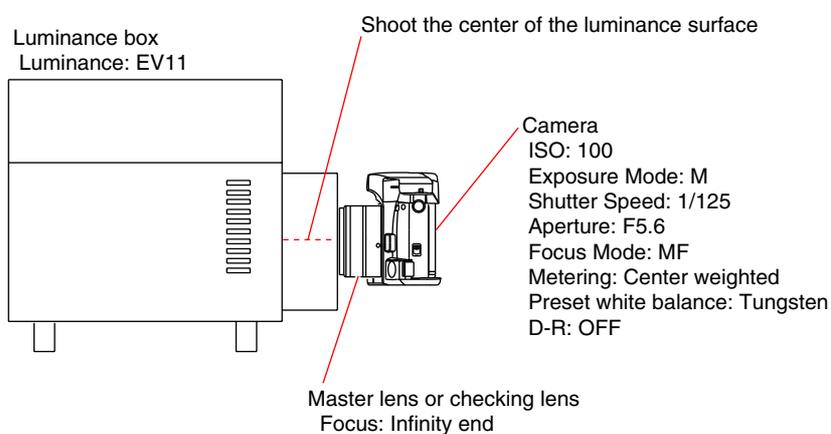


Fig.4-2-1

- 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: EV11

Setting of Lens:

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.

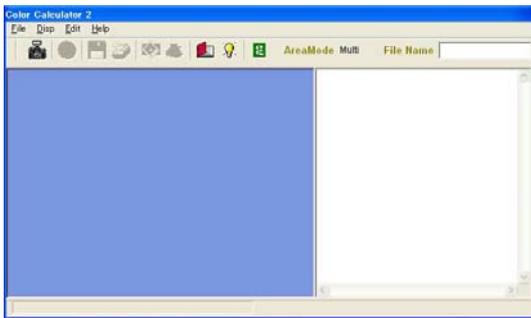


Fig.4-2-2

- 2) Read the image from the file menu.

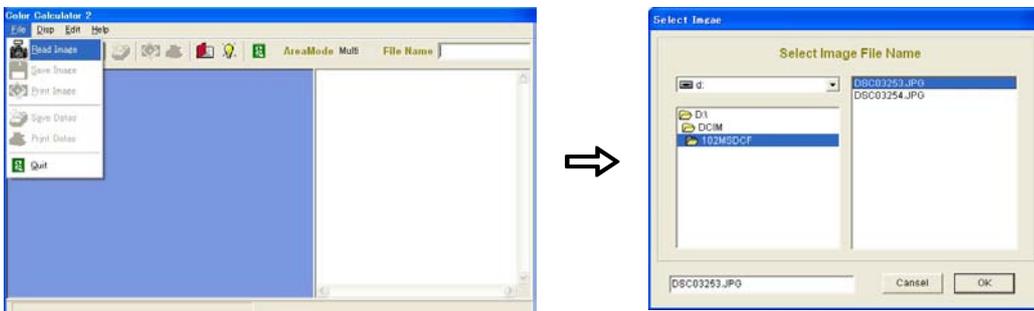


Fig.4-2-3

- 3) Set the Color Calculator 2 as follows.

Measured value display (Display menu): RGB+L*a*b*

Measuring method (Display menu): Center Single Area

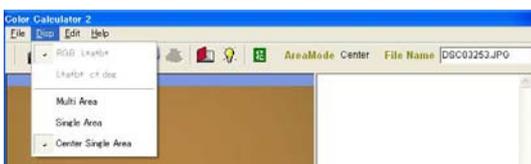


Fig.4-2-4

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)

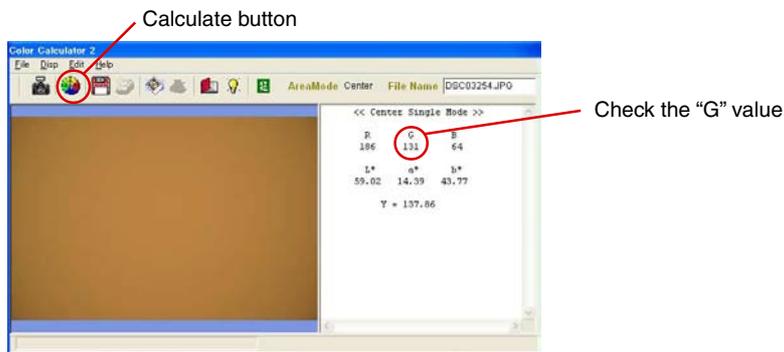


Fig.4-2-7

3. Checking Method

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

$$\text{Aperture error} = \text{Average "G" value of master lens (a)} - \text{Average "G" value of checking lens (b)}$$

Specification

$$\text{Aperture error} = 0 \pm 12$$

- 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) Disassemble up to the group lens block.
- 2) Assemble the lens mount (including the preset ring).

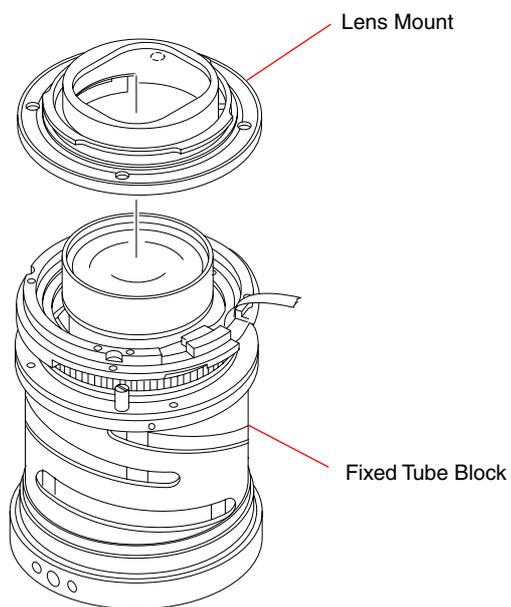


Fig.4-2-8

- 3) Remove the adhesive bond fixing the iris retainer tube (SP).

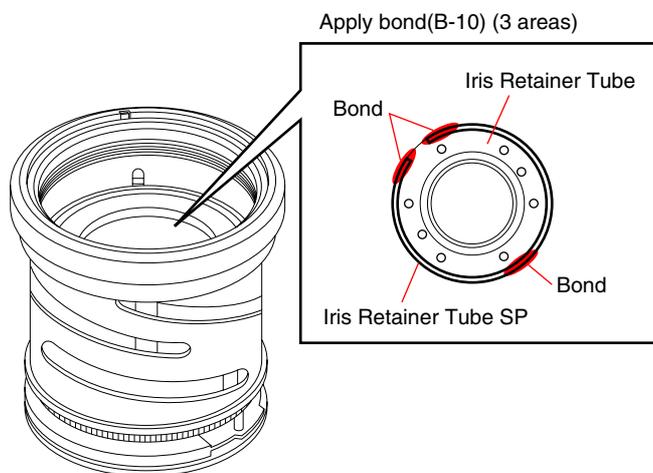


Fig.4-2-9

2. Adjusting Method

- 1) Move the preset ring and fix it at the fully opened position.

Set the preset ring at the open aperture position.

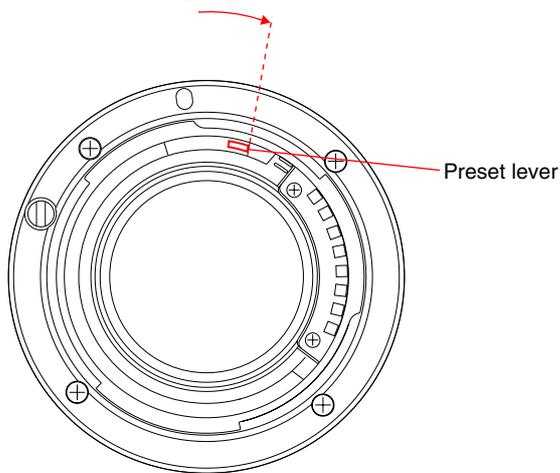


Fig.4-2-10

- 2) Adjust by rotating the iris retainer ring so that the blades of iris are just hidden within the inner diameter of iris retainer ring.

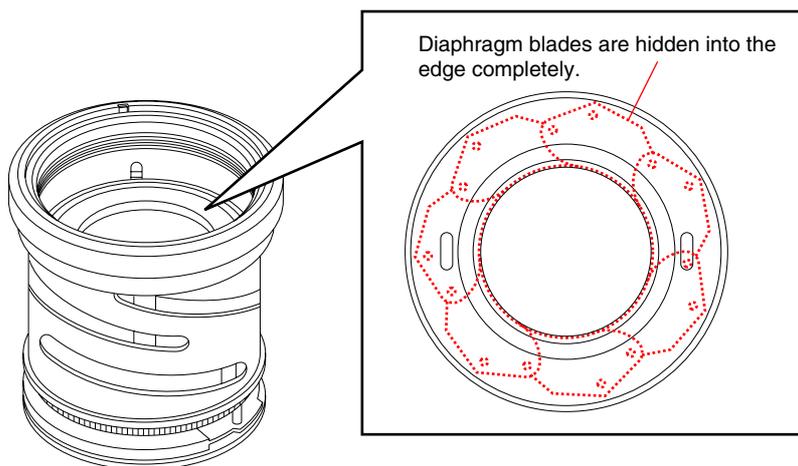


Fig.4-2-11

- 3) After adjustment, apply the adhesive bond (B-10) to portions shown in Fig.4-2-9.
- 4) Assemble the lens in the state of near completion. Perform "4-2-1. Confirmation of iris diameter".

Note: Repeat "4-2-2. Adjustment of iris diameter" and "4-2-1. Confirmation of iris diameter" until the iris tolerance meets the specification.

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)
35	1.4

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.

Incorporate of the lenses according to the checking focal-length (f).

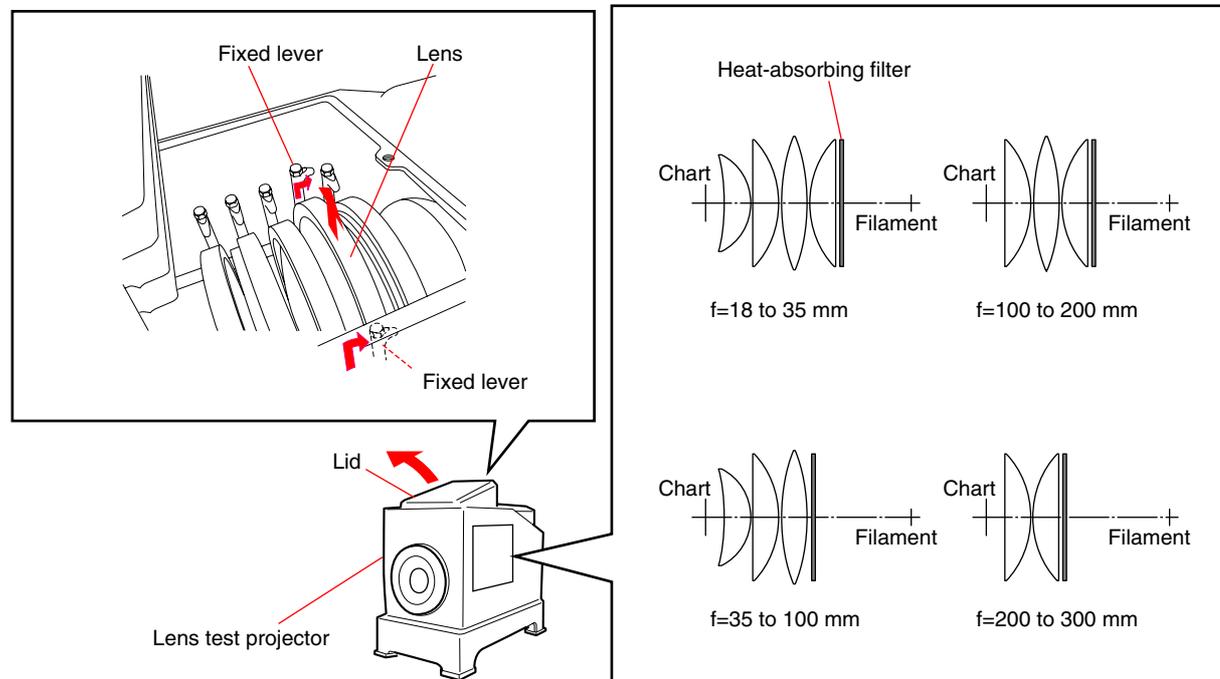


Fig.4-3-1

- 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.

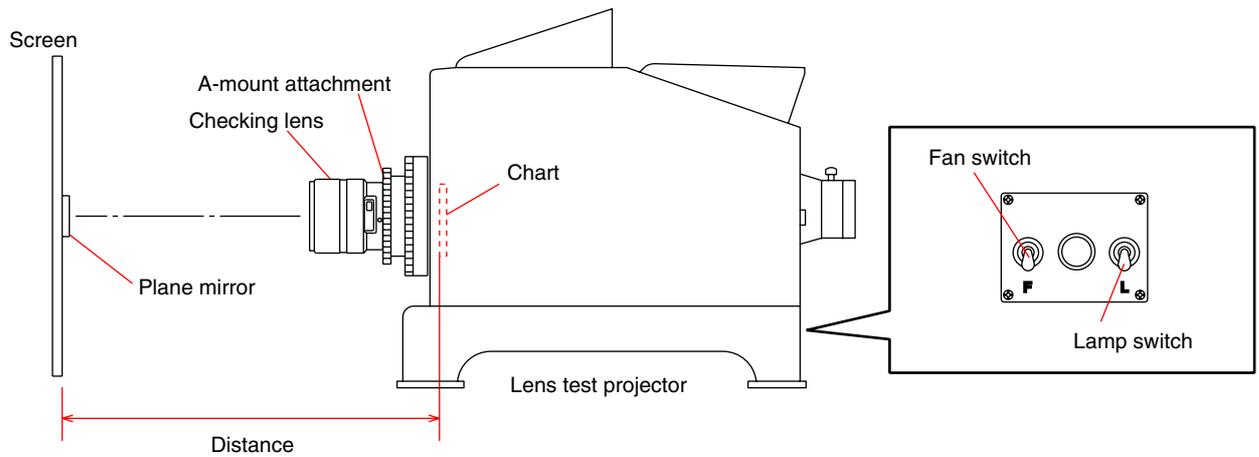


Fig.4-3-2

- 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 ($y'=0$).

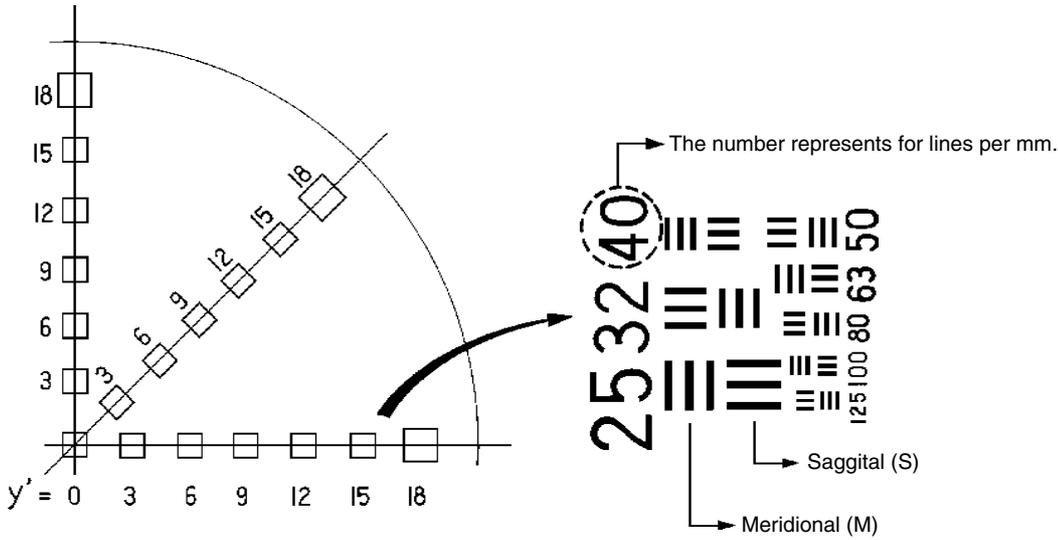


Fig.4-3-3

- 3) Turn the mount rotation ring of lens test projector until the projected image at a certain peripheral point ($y'=15$) 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.

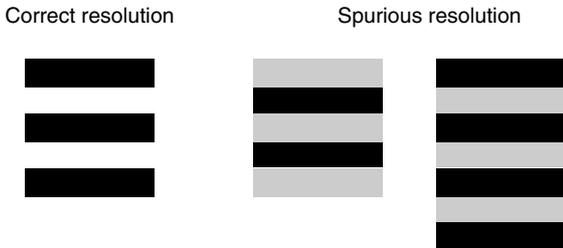


Fig.4-3-4

- 4) Check that the all readings ($y'=0$, saggital (S) and meridional (M) at $y'=15$) is within the specification of the Table 4-3-2.

Specification

Distance (m)	Number of the smallest pitched lines		
	Center ($y'=0$) (Lines per mm)	Peripheral ($y'=15$) (Lines per mm)	
		S	M
1.4	125 or greater	50 or greater	40 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. FLANGE BACK (f'F) CHECK/ADJUSTMENT

4-4-1. 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.

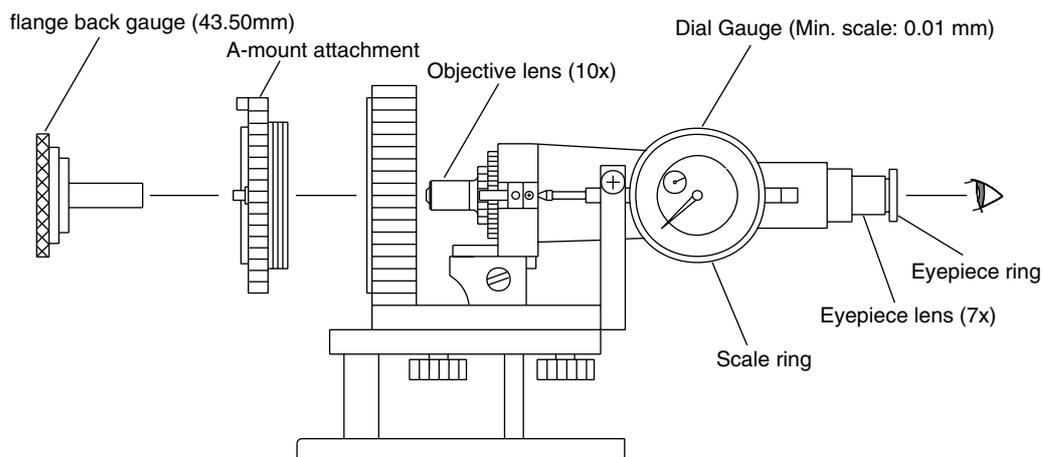


Fig.4-4-1

- 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.

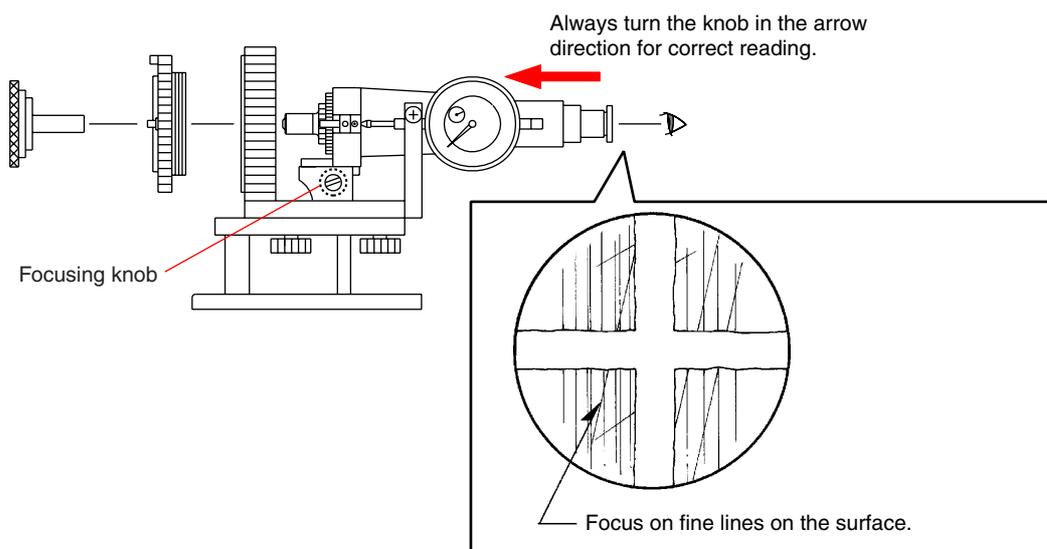


Fig.4-4-2

- 5) Turn the scale ring of the dial gauge until the long pointer indicates "0".

Note: This position is the flange back (f'F) = 43.5 mm.

Memorize the position of short-pointer.

2. Fringe Back (f'F) Check

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

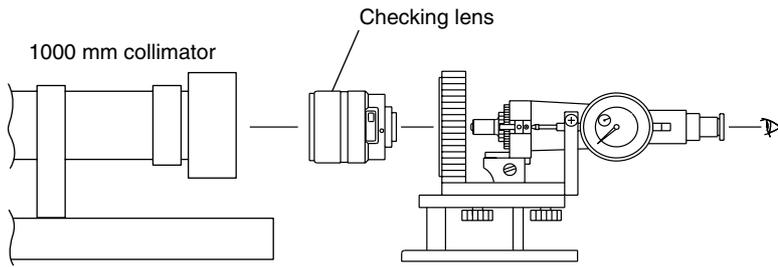


Fig.4-4-3

- 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.

Optical Alignment
Best alignment

Incorrect aligned
e.g. As the focusing knob is turned, the chart may appear blurry as illustrated.
The cause depends on individual lens.

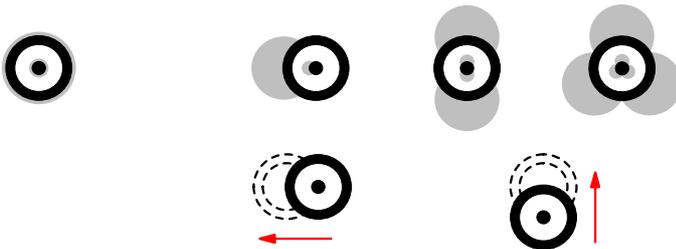


Fig.4-4-4

Optical Axis Adjustment

- 1) Turn the G10, or do the adjustment of looseness. After align the axis.
- 2) Apply the adhesive bond (B-10) to the G10 retainer.

Note: Tolerance: 0.02 mm or less

3. Checking Method

- 1) Calculate the flange back (f'F) of the checking lens using the following formula, and check that the specification of the Table 4-4-1 is satisfied.

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

Specification

Focal-length f (mm)	f'F (mm) (Infinity position)
35	44.58 to 44.60

Table 4-4-1

- 2) When the flange back (f'F) of the checking lens is out of specification of the Table 4-4-1, perform "4-4-2. Flange Back (f'F) Adjustment".

4-4-2. Over Infinity (Infinity End) Flange Back (f'F) Adjustment

Equipment

- 1000 mm Collimator
- Flange Back Tester
- A-mount Attachment
- Flange Back Gauge (43.50mm)
- Adhesive bond (B-10)

Adjusting Method

- 1) Perform “4-4-1. Confirmation of flange-back (f'F)” and confirm that the flange-back value (f'F) of lens does not meet the specification in Table 4-4-1.
- 2) Adjust the lens focus to the infinite.
- 3) Observing the microscope, adjust the focus by turning the knob of flange-back measuring equipment.
- 4) Calculate the shift amount by formula below.

$$\text{Shift Amount (x)} = f'F \text{ (measured value) at infinite} - 44.59\text{mm}$$

x: Shift amount to be adjusted by backwasher

- 5) Depending on the result in step 4), adjust the thickness of backwasher. (Refer to Table 4-4-2.)

Note: Measure the thickness of backwasher with micrometer or calipers.

- When the shift amount (x) is the positive (+) value: Increase the thickness of backwasher by a value of x.
- When the shift amount (x) is the negative (-) value: Decrease the thickness of backwasher by a value of x.

- 6) Build in the backwasher and perform “4-4-1. Confirmation of flange-back (f'F)” again.

Specification

Focal-length f(mm)	f'F (mm) (Infinity position)
35	44.58 to 44.60

Table 4-4-2

- 7) When the flange back (f'F) is out of specification of the Table 4-4-2, repeat steps 2) to 6) again.

Part No.	Description
2-684-123-01	WASHER (A), BACK ADJUSTMENT (t=0.05mm)
2-684-124-01	WASHER (B), BACK ADJUSTMENT (t=0.07mm)
2-684-125-01	WASHER (C), BACK ADJUSTMENT (t=0.1mm)
2-684-126-01	WASHER (D), BACK ADJUSTMENT (t=0.2mm)
2-684-127-01	WASHER (E), BACK ADJUSTMENT (t=0.5mm)

4-5. FOCUS-SHIFT CHECK/ADJUSTMENT (APERTURE (AMOUNT OF SPHERICAL ABERRATION))

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 55mm (SAL35F14G)

1. Preparations

- 1) Perform “1. Preparations” of “4-4-1. Flange Back (f’F) Check”.
- 2) Set the checking lens focus to the infinite.

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 55mm (F8 equivalent) on the tip of lens as shown in the Fig.4-5-1, then measure the flange back (f’F).

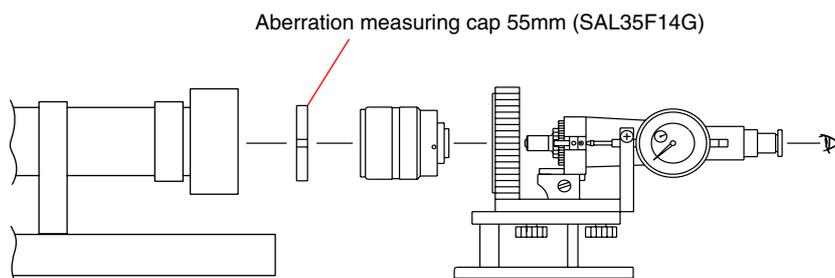


Fig.4-5-1

- 3) Calculate amount of focus-shift using the following formula, and check that the specification is satisfied.

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 55mm).

$$\text{Focus-shift} = \text{flange back (f’F) of open aperture reading} - \text{Flange back (f’F) reading (using aberration measuring cap 55mm)}$$

Specification

Focus-shift (mm) = 0 to +0.15

- 4) Perform the “4-9. WRITE dSB”.

4-6. LENS ROM CHECK

Equipment

- Personal Computer
- Finished Inspection JIG
- Lens Adjustment Program (ActuatorChecker.exe)

1. Preparations

- 1) Connected to equipment with checking lens. (Refer to Section 4-1-3.)
- 2) Start up of “ActuatorChecker.exe”.
- 3) Click **Set up**, and perform the initial setting. (Refer to Section 4-1-4.)

2. Checking Method

- 1) Click **ROM Data**.

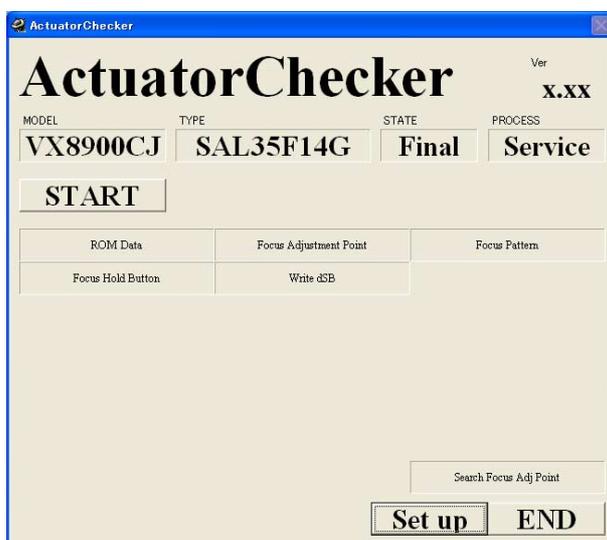


Fig.4-6-1

- 2) The Serial window appears. Input the lens serial number.

Note: When **OK** is clicked without inputting the serial number, the date executed is displayed on the completion window of each item.

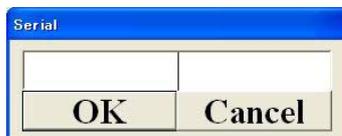


Fig.4-6-2

- 3) The message “Move FOCUS to Infinity position. Then push [ENTER].” is displayed on the pop-up window. Set the focus to the infinity position and press down the ENTER key.

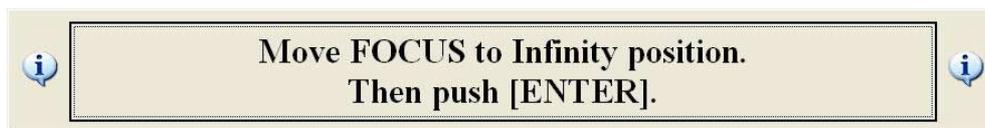


Fig.4-6-3

- 4) When “OK” is displayed on the pop-up window, press the ENTER key to return to the initial window.



Fig.4-6-4

3. In case of error display in the ROM Data

- 1) When the error display and the NG display appear to the pop up window, press the ENTER key to return to the initial window, and perform “2. Checking Method” again.



Fig.4-6-5



Fig.4-6-6

- 2) Although the lens is positioned at the infinity position, if the “NG” appears, confirm or perform the following.
- 4-7-1. FOCUS BRUSH POSITION CHECK(Search Focus Adjustment Point)
 - Cleaning of flexible pattern or the brush.
 - Replacing the brush.
 - Replacing the main flexible unit.
- 3) Perform “2. Checking Method” again, repeat the inspection until “OK” appears on the pop-up window.

4-7. FOCUS BRUSH POSITION CHECK/ADJUSTMENT

4-7-1. Focus Brush Position Check (Search Focus Adjustment Point)

Equipment

- Personal Computer
- Finished Inspection JIG
- Lens Adjustment Program (ActuatorChecker.exe)

1. Preparations

- 1) Connected to equipment with checking lens. (Refer to Section 4-1-3.)
- 2) Start up of “ActuatorChecker.exe”.
- 3) Click [Set up], and perform the initial setting. (Refer to Section 4-1-4.)

2. Checking Method

- 1) Set the focus position to infinity position.
- 2) Remove the beam leather, confirm that can see the brush base plate.
- 3) Loosen two screws fixing the brush base plate.



Fig.4-7-1

- 4) Click the [Search Focus Adj Point].

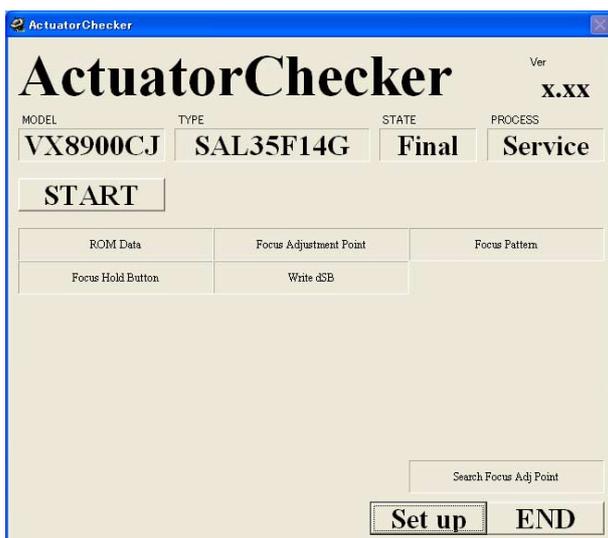


Fig.4-7-2

- 5) The message “If Focus-Adjustment-Point is found, Buzzer sounds”. is displayed on the pop-up window. Search the position where the sound beeps by turning the lens to the infinity position.



Fig.4-7-3

- 6) At the position where the sound beeps, tighten two screws loosened, apply the adhesive bond (B-10) to the screws.
7) Perform “4-7-2. Focus Brush Position Check” and “4-7-3. Focus Brush Pattern Check”

3. In case of error display in the Search Focus Adjustment Point

- 1) When the error display and the NG display appear to the pop-up window, press the ENTER key to return to the initial window, and perform “2. Checking Method” again.

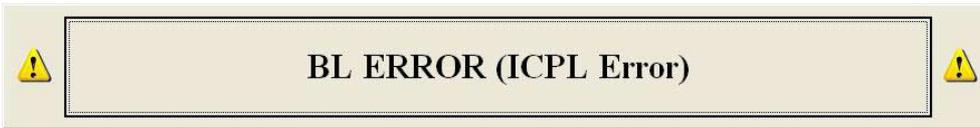


Fig.4-7-4



Fig.4-7-5

- 2) If the “NG” appears again, thought cause communication error of the finished inspection JIG and checking lens, confirm or perform the following.
- Improper connection of connector.
 - Improper of BL contact.
 - Disconnection of mirror box fixture.

4-7-2. Focus Brush Position Check (Focus Adjustment Point)

Equipment

- Personal Computer
- Finished Inspection JIG
- Lens Adjustment Program (ActuatorChecker.exe)

1. Preparations

- 1) Connected to equipment with checking lens. (Refer to Section 4-1-3.)
- 2) Start up of “ActuatorChecker.exe”.
- 3) Click **[Set up]**, and perform the initial setting. (Refer to Section 4-1-4.)

2. Checking Method

- 1) Click the **[Focus Adjustment Point]**.

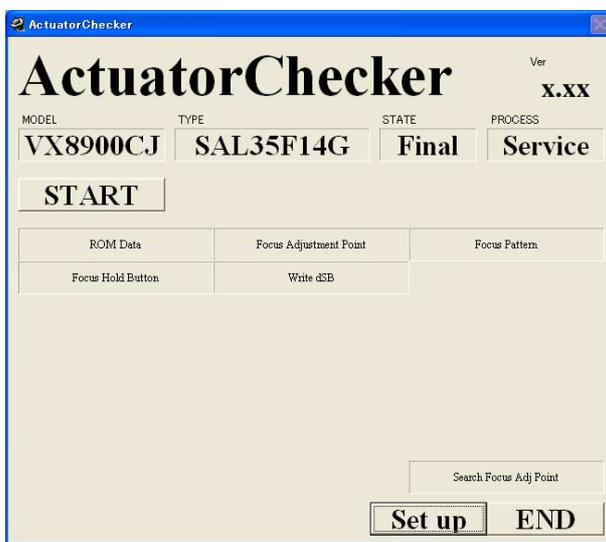


Fig.4-7-6

- 2) The Serial window appears. Input the lens serial number.

Note: When **[OK]** is clicked without inputting the serial number, the date executed is displayed on the completion window of each item.

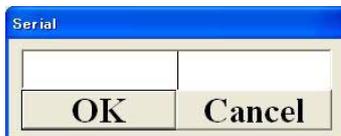


Fig.4-7-7

- 3) The message “Move FOCUS to Near position. Then push [ENTER].” is displayed on the pop-up window. Set the focus to the near position and press down the ENTER key.

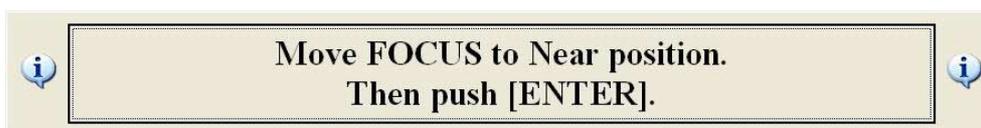


Fig.4-7-8

- 4) When the Near position check finishes normally, the message “Move FOCUS to Infinity position. Then push [ENTER].” is displayed on the pop-up window.

Set the focus to the infinity position and press down the ENTER key.

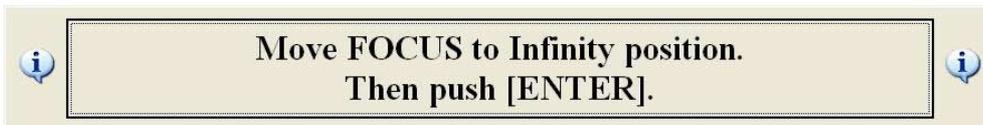


Fig.4-7-9

- 5) When the infinity position check finishes normally, “OK” is displayed on the pop-up window, and press the ENTER key to return to the initial window.



Fig.4-7-10

3. In case of error display in the Focus Adjustment Point

- 1) When the error display and the NG display appear to the pop up window, press the ENTER key to return to the initial window, and perform “2. Checking Method” again.
- In case of error at the near position in the Focus Adjustment Point

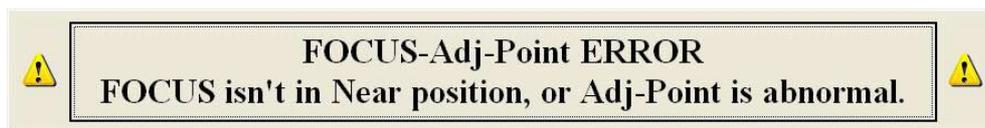


Fig.4-7-11



Fig.4-7-12

- In case of error at the infinity position in the Focus Adjustment Point

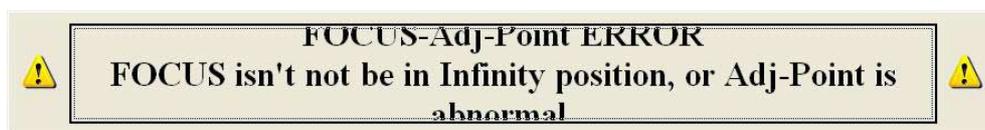


Fig.4-7-13



Fig.4-7-14

- 2) Although the lens is positioned at the near position or the infinity position, if “NG” appears, confirm or perform the following.
- 4-7-1. Focus Brush Position Check (Search Focus Adjustment Point)
 - Cleaning of flexible pattern or the brush.
 - Replacing the brush.
- 3) Perform “2. Checking Method” again, repeat the inspection until “OK” appears on the pop-up window.

4-7-3. Focus Brush Pattern Check(Focus Brush Pattern)

Equipment

- Personal Computer
- Finished Inspection JIG
- Lens Adjustment Program (ActuatorChecker.exe)

1. Preparations

- 1) Connected to equipment with checking lens. (Refer to Section 4-1-3.)
- 2) Start up of “ActuatorChecker.exe”.
- 3) Click **[Set up]**, and perform the initial setting. (Refer to Section 4-1-4.)

2. Checking Method

- 1) Click the **[Focus Pattern]**.



Fig.4-7-15

- 2) The Serial window appears. Input the lens serial number.

Note: When **[OK]** is clicked without inputting the serial number, the date executed is displayed on the completion window of each item.

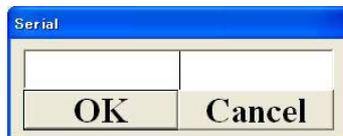


Fig.4-7-16

- 3) The message “Move FOCUS to Near position. Then push [ENTER].” is displayed on the pop-up window. Set the focus to the near position and press down the ENTER key.

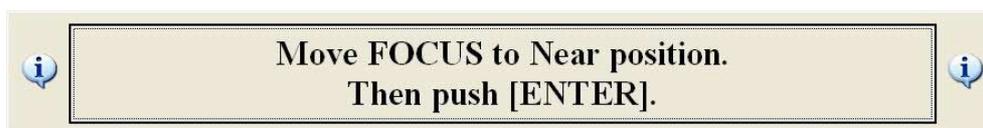


Fig.4-7-17

- 4) When the Near position check finishes normally, the message “Move FOCUS to Infinity position at about 5sec.” is displayed on the pop-up window.

Set the focus to the infinity position and press down the ENTER key.

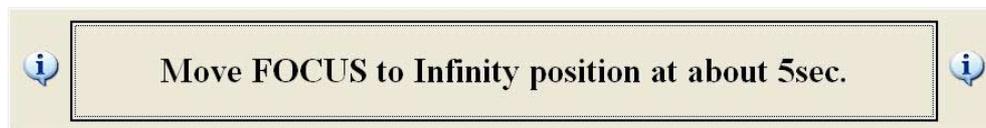


Fig.4-7-18

- 5) When the infinity position check finishes normally, “OK” is displayed on the pop-up window, and press the ENTER key to return to the initial window.



Fig.4-7-19

3. In case of error display in the Focus Pattern (near position)

- 1) When the error display and the NG display appear to the pop-up window, press the ENTER key to return to the initial window, and perform “2. Checking Method” again.

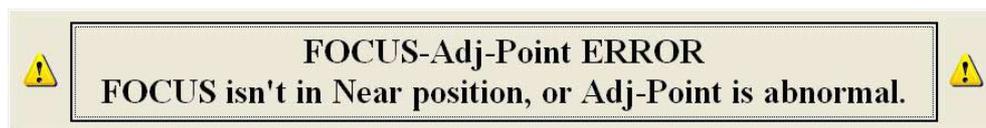


Fig.4-7-20



Fig.4-7-21

- 2) Although the lens is positioned at the near position, if “NG” appears, confirm or perform the following.
- 4-7-1. Focus Brush Position Check (Search Focus Adjustment Point)
 - Cleaning of flexible pattern or the brush.
 - Replacing the brush.
 - Rotating operation error of the focus ring (rotation speed is not suitable at a regulated speed.).
- 3) Perform “2. Checking Method” again, repeat the inspection until “OK” appears on the pop-up window.

4. In case of error display in the Focus Pattern (infinity position)

- 1) When the error display and the NG display appear to the pop-up window, perform the work with caution so that setting the lens to the infinity position can be done in more than 5 seconds and no more than 20 seconds.
 - When the focus pattern error

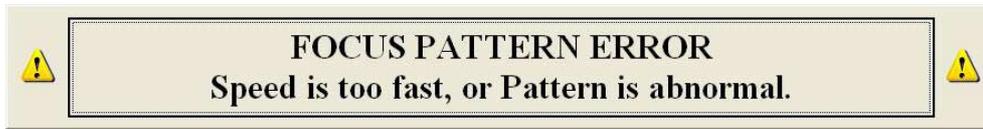


Fig.4-7-22



Fig.4-7-23

- When the lens does not reach the infinity end infinity position seconds.

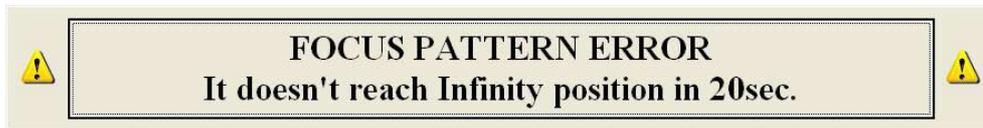


Fig.4-7-24

- 2) Perform "2. Checking Method" again, repeat the inspection until "OK" appears on the pop-up window.

4-8. FOCUS HOLD BUTTON CHECK (FOCUS HOLD BUTTON)

Equipment

- Personal Computer
- Finished Inspection JIG
- Lens Adjustment Program (ActuatorChecker.exe)

1. Preparations

- 1) Connected to equipment with checking lens. (Refer to Section 4-1-3.)
- 2) Start up of “ActuatorChecker.exe”.
- 3) Click **[Set up]**, and perform the initial setting. (Refer to Section 4-1-4.)

2. Checking Method

- 1) Click the **[Focus Hold Button]**.

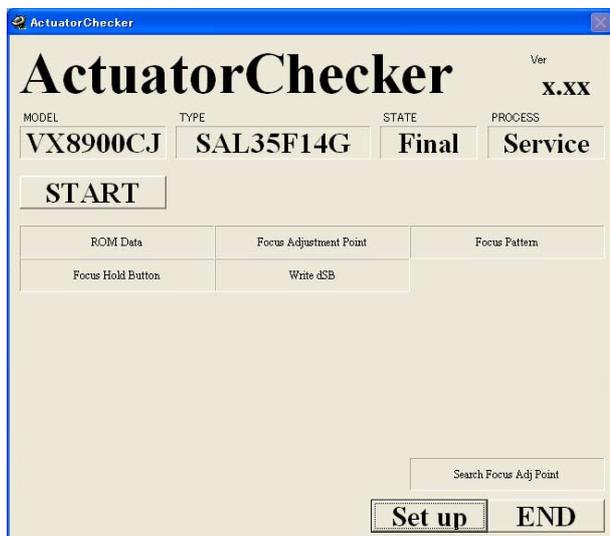


Fig.4-8-1

- 2) The Serial window appears. Input the lens serial number.

Note: When **[OK]** is clicked without inputting the serial number, the date executed is displayed on the completion window of each item.

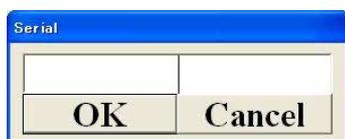


Fig.4-8-2

- 3) The message “Push [FOCUS HOLD] button once softly.” is displayed on the pop-up window. Press the focus hold button.

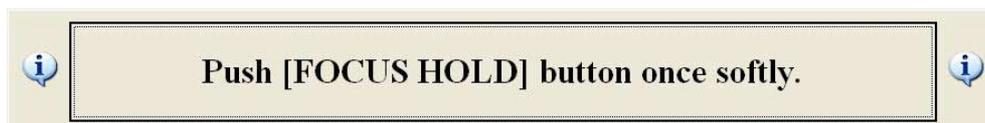


Fig.4-8-3

- 4) When the focus hold button check finishes normally, “OK” is displayed on the pop-up window.



Fig.4-8-4

3. In case of error display in the Focus Hold Button

- 1) When the Focus Hold Button cannot be pressed within a certain period of time or the button is defective, the window below appears.

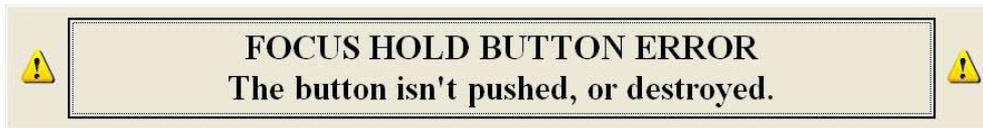


Fig.4-8-5

- 2) In case of error caused by time-out of key pressing, perform the work with caution so as to press the focus hold button within a certain period of time.
- 3) Although the button is pressed within a certain period of time, if the error occurs, replace parts relating to the focus hold button. (Refer to "2-1-5. G ORNAMENTAL RING BLOCK AND FOCUS HOLD BUTTON BASE")
- 4) Perform "2. Checking Method" again, repeat the inspection until "OK" appears on the pop-up window.

4-9. WRITE dSB

Equipment

- Personal Computer
- Finished Inspection JIG
- Lens Adjustment Program (ActuatorChecker.exe)

1. Preparations

- 1) Connected to equipment with checking lens. (Refer to Section 4-1-3.)
- 2) Start up of “ActuatorChecker.exe”.
- 3) Click [Set up], and perform the initial setting. (Refer to Section 4-1-4.)

2. Checking Method

- 1) Click the [Write dSB].

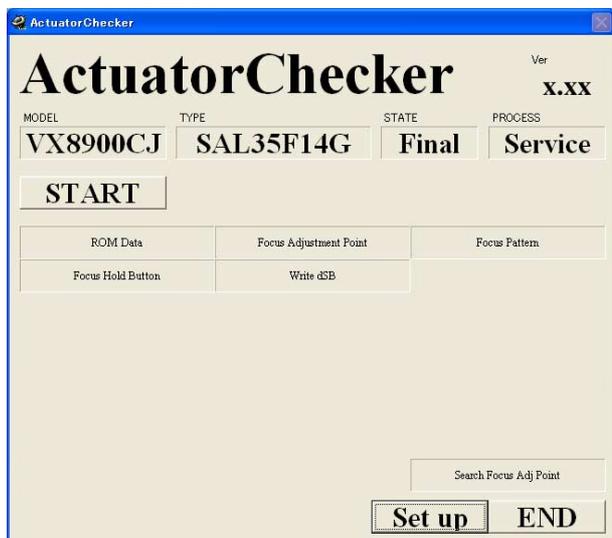


Fig.4-9-1

- 2) The Serial window appears. Input the lens serial number.

Note: When [OK] is clicked without inputting the serial number, the date executed is displayed on the completion window of each item.

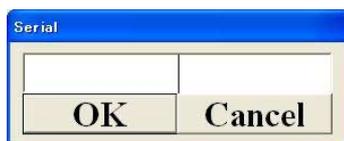


Fig.4-9-2

- 3) The “Select dsb” window appears.
- 4) Being based on the image point shift amount calculated by “4-5. FOCUS-SHIFT CHECK/ADJUSTMENT (APERTURE (AMOUNT OF SPHERICAL ABERRATION))”, select the button.

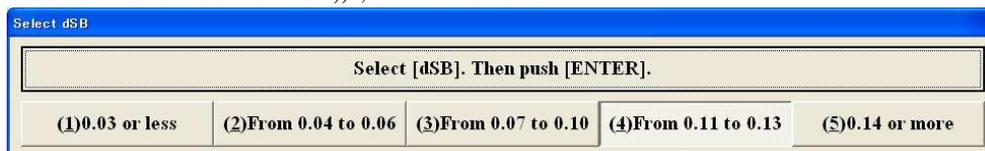


Fig.4-9-3

- 5) When the Write dSB finishes normally, “OK” appears on the pop-up window.



Fig.4-9-4

3. In case of error in the Write dSB

- 1) When the error display and the NG display appear to the pop-up window, press the ENTER key to return to the initial window.

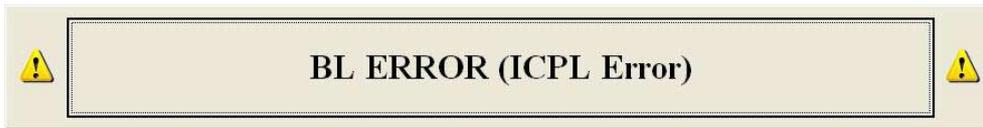


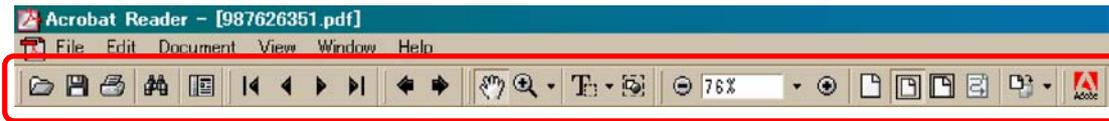
Fig.4-9-5



Fig.4-9-6

- 2) If the "NG" appears again, confirm or perform the following.
 - Replacing the main flexible unit.
 - Connected state of equipment (Improper connection of BL error.).
- 3) Perform "2. Checking Method" again, repeat the inspection until "OK" appears on the pop-up window.

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



Toolbar

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.

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:

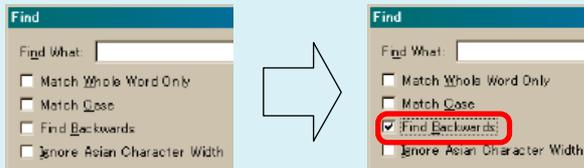
This function allows you to go and back between circuit diagram and printed circuit board diagram, and accordingly it will be convenient for the voltage check.

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.

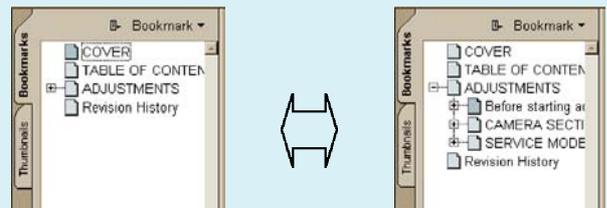
Moving with link

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.

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 .

Application to the Service Manual:

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

