作成承認印	配布許可印
ニコン 映像事業 CS推進部 GM	

AF-S Zoom-Nikkor 17-35mm f/2.8 D IF

REPAIR MANUAL

Nikon | NIKON CORPORATION
Tokyo, Japan

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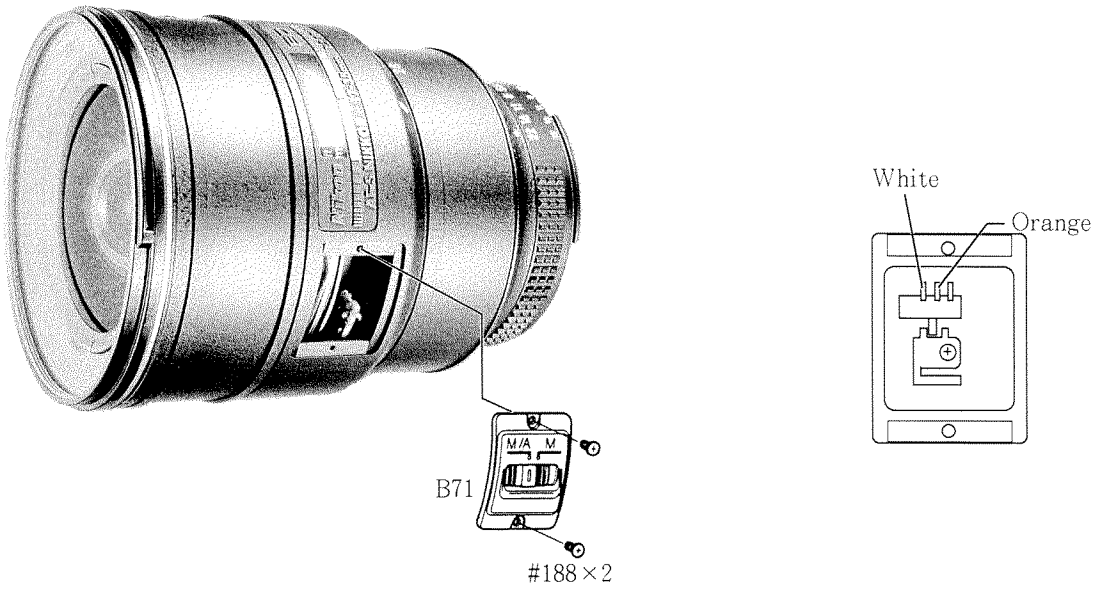
DISASSEMBLING／ASSEMBLING／ADJUSTMENT

Notes : ① Due to the trial product(s) used in the disassembly/assembly/adjustment processes, the shape may be sometimes different from the actual product(s).
② For disassembly, be sure to memorize where the lead wire(s) should go and how the FPCs should be placed and attached.
③ Due to specifically processed product(s) in the photo(s), the appearance of product(s) may be different from the actual one(s)'.

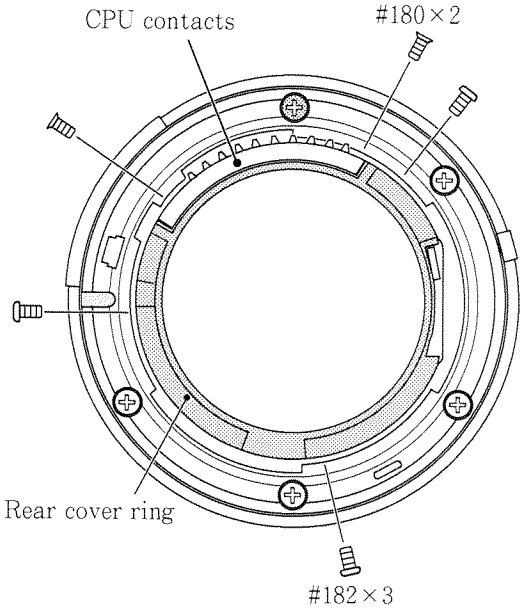
1. DISASSEMBLING

RUBBER RING

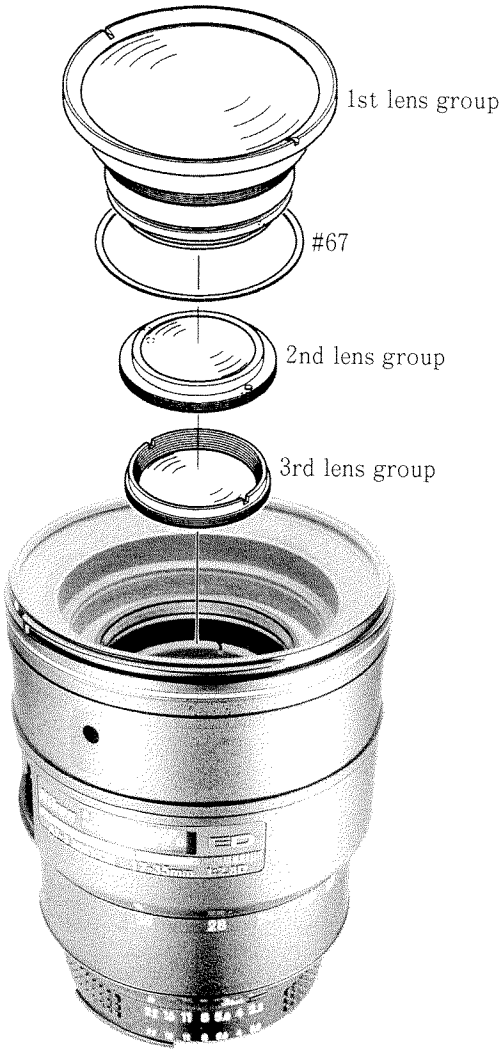
CHANGE-OVER SWITCH UNIT



REAR COVER RING



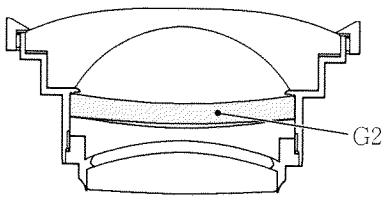
1st ～ 3rd LENS GROUP



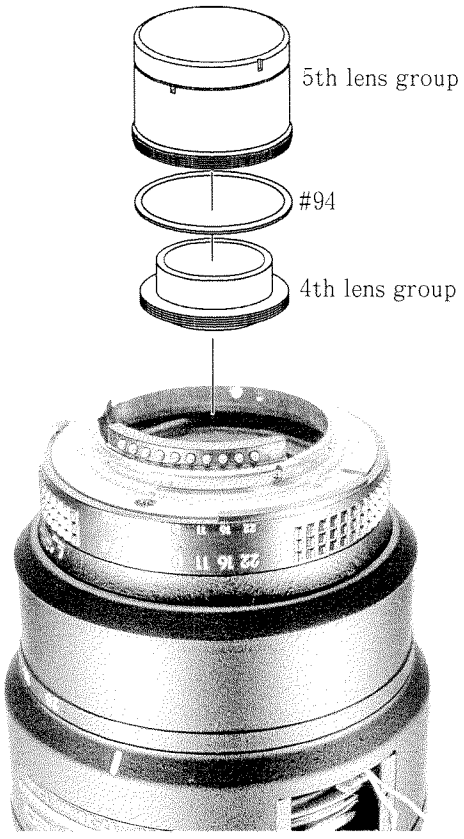
⚠ (Addition)

Note : The aspheric lens is employed on the G2 R1 side of 1st lens group unit.
For cleaning on the surface of G2 lens, use the A-level dustcloth.
For your information, the technical information No. L(AF)-970060 shall be referable.

(1st lens group)

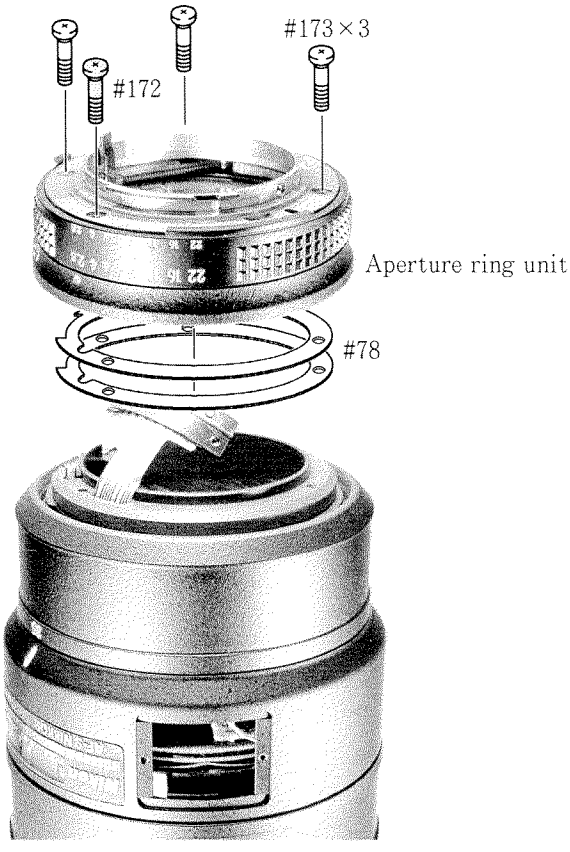


4th ～ 5th LENS GROUP

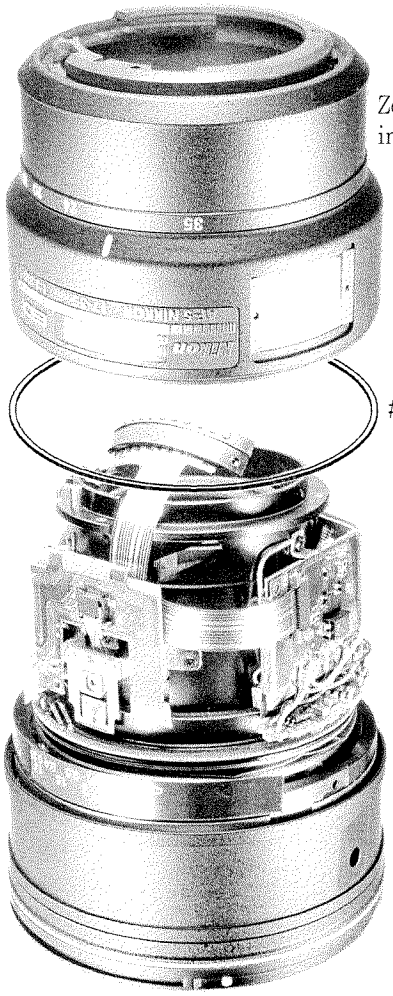


Caution : Due to already aligned 5th lens group including G10 to G13 and the lens housing, the 5nd lens group is set as a combined unit.
In this accord, be sure to avoid disassembling the 5nd lens group.

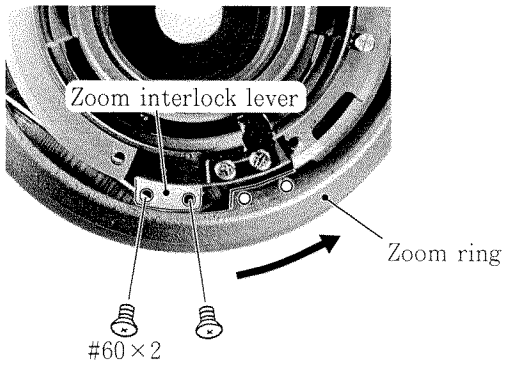
APERTURE RING UNIT



ZOOM RING, INDEX RING UNIT

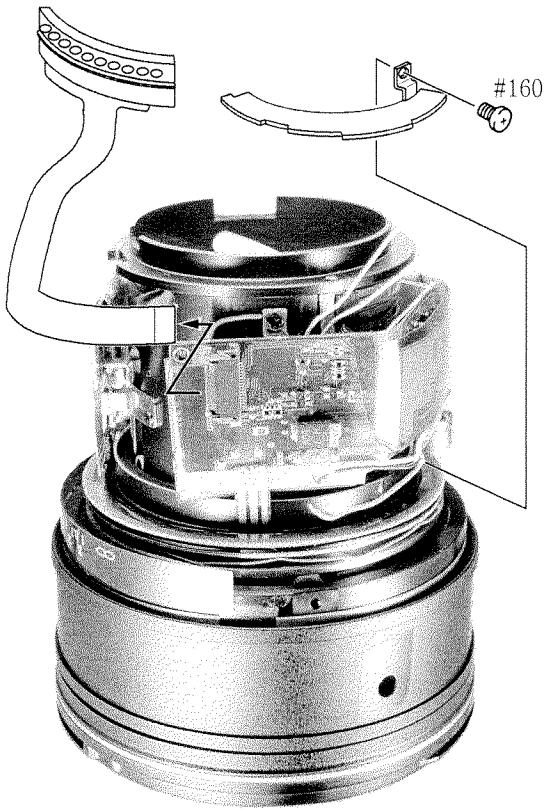


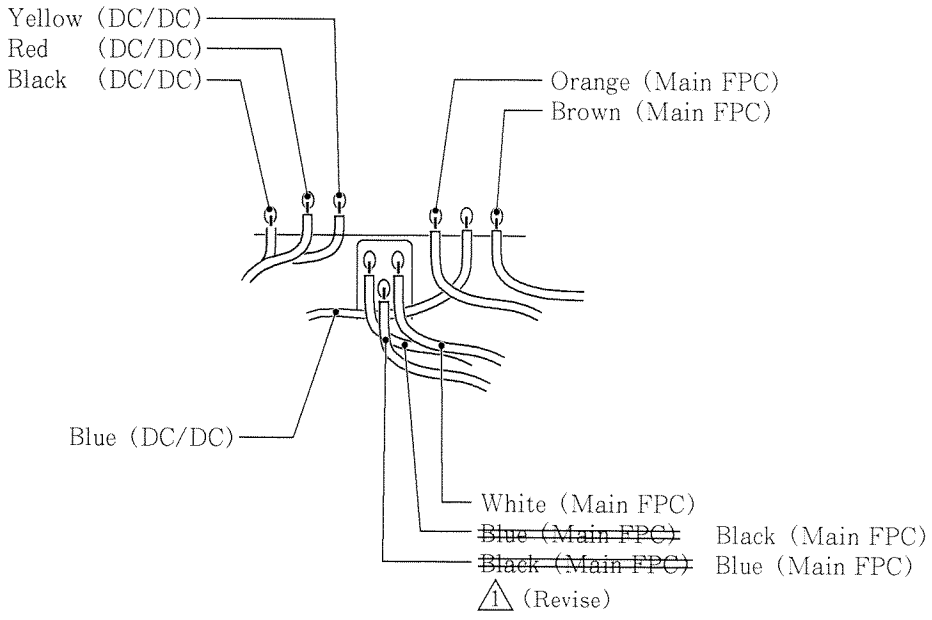
① Remove 2 pieces of the screw #60.
② As shown in the photo below, drive the zoom ring in the arrow direction.
③ Remove the zoom ring, index ring unit.



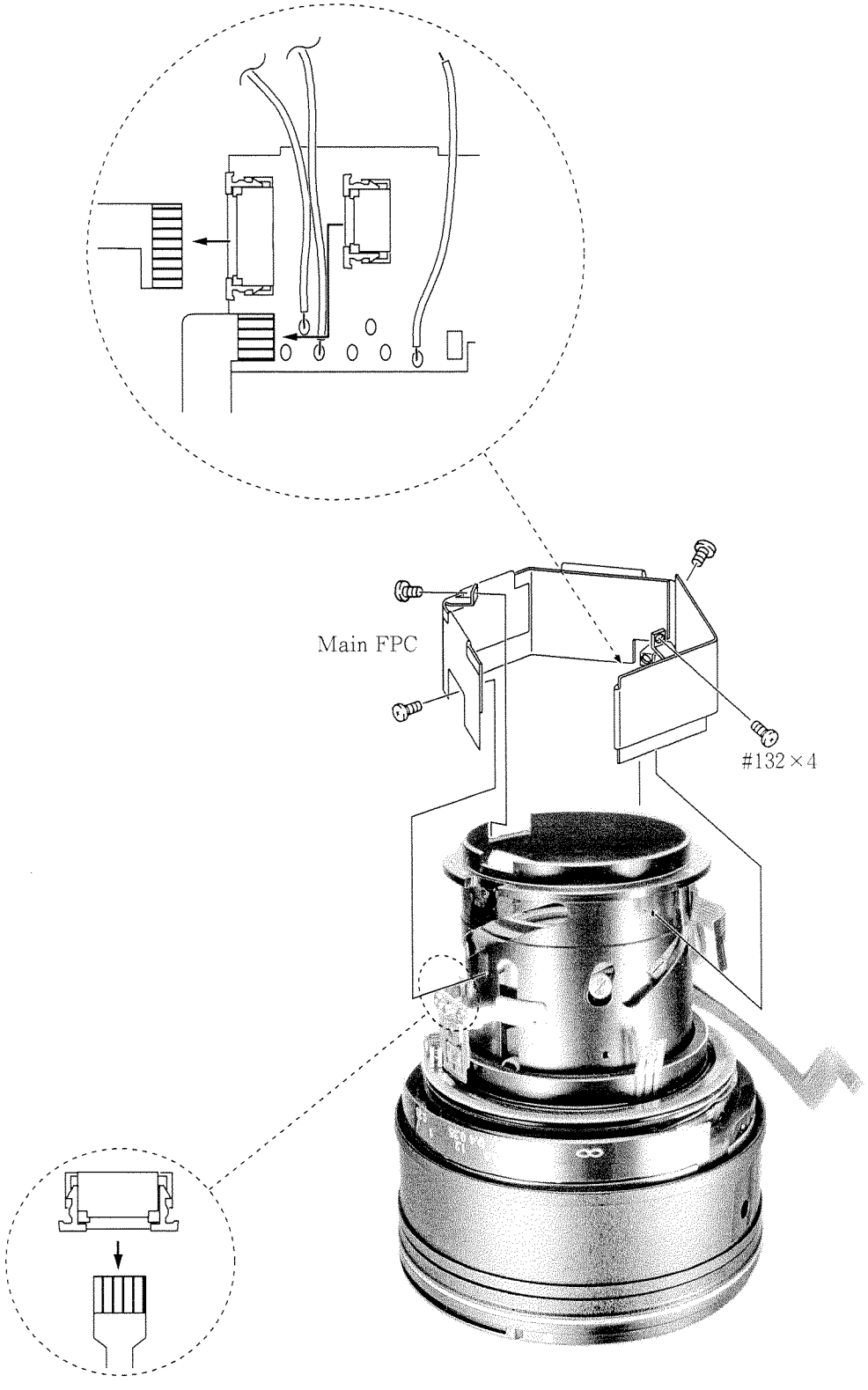
ZOOM INTERLOCK LEVER

DC-DC CONVERTER, CPU CONTACTS

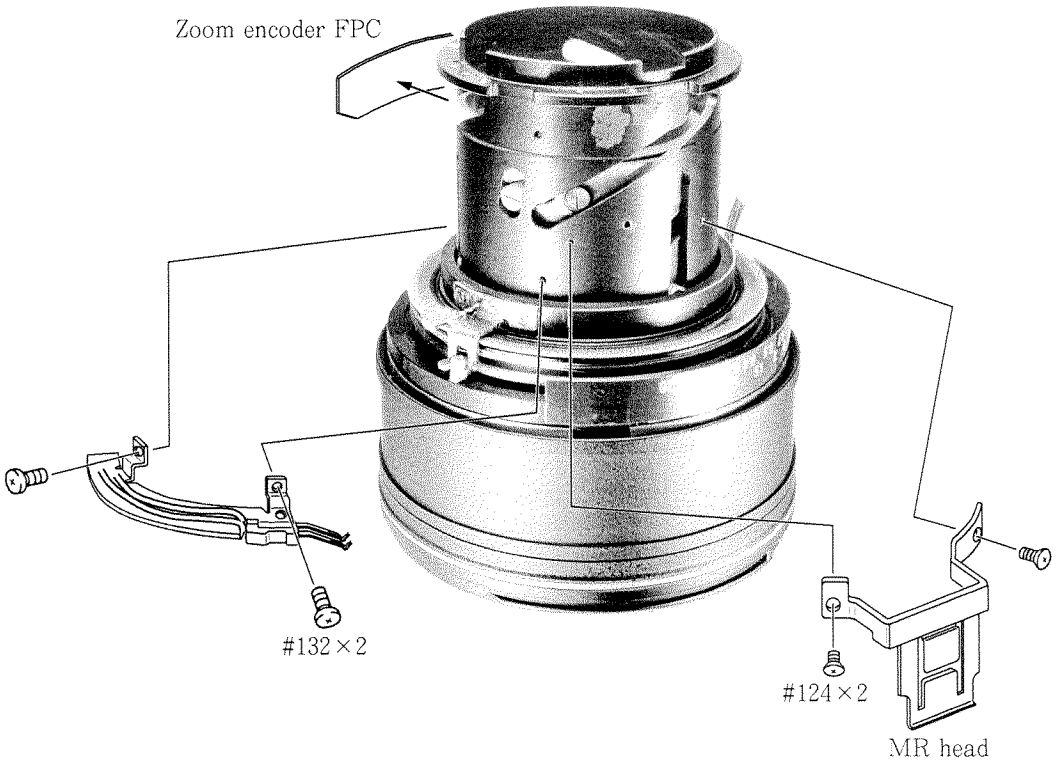




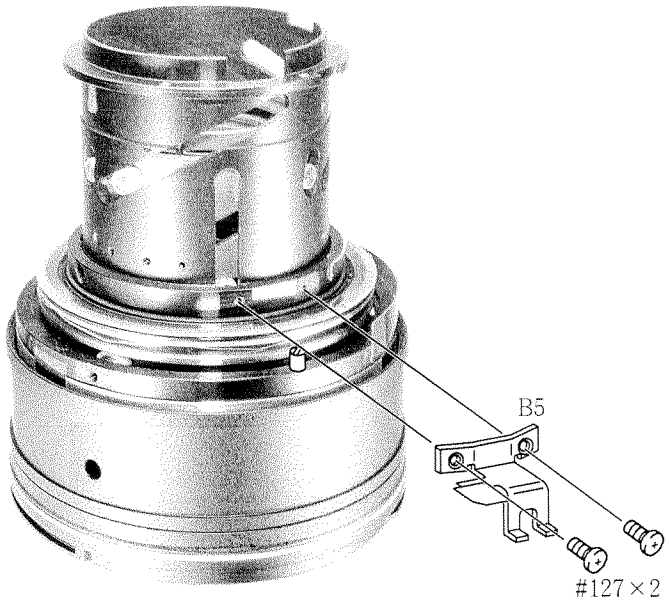
MAIN FPC



MR HEAD, ROTATION DETECTION BRUSH, ZOOM ENCODER FPC

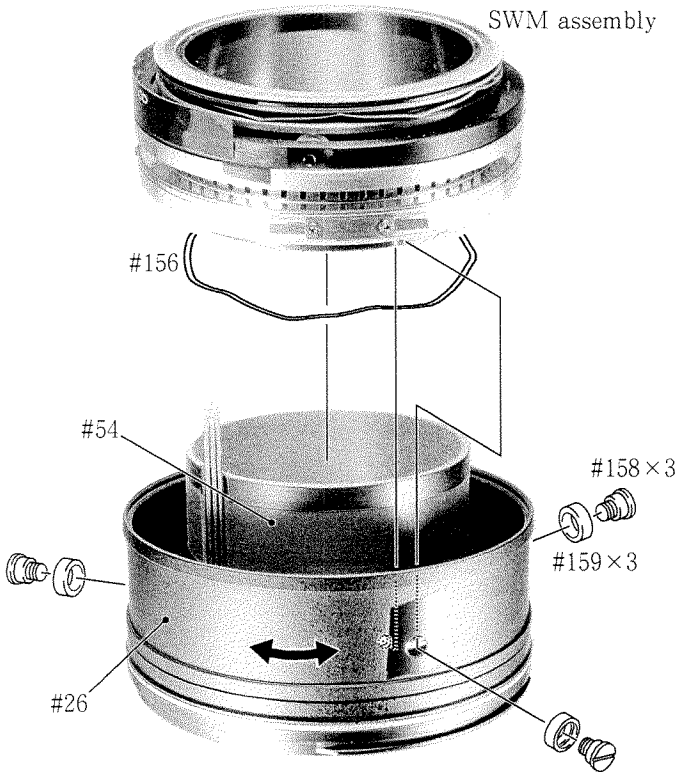


INTERLOCK KEY B5



SEPARATION OF THE CAM RING GROUP

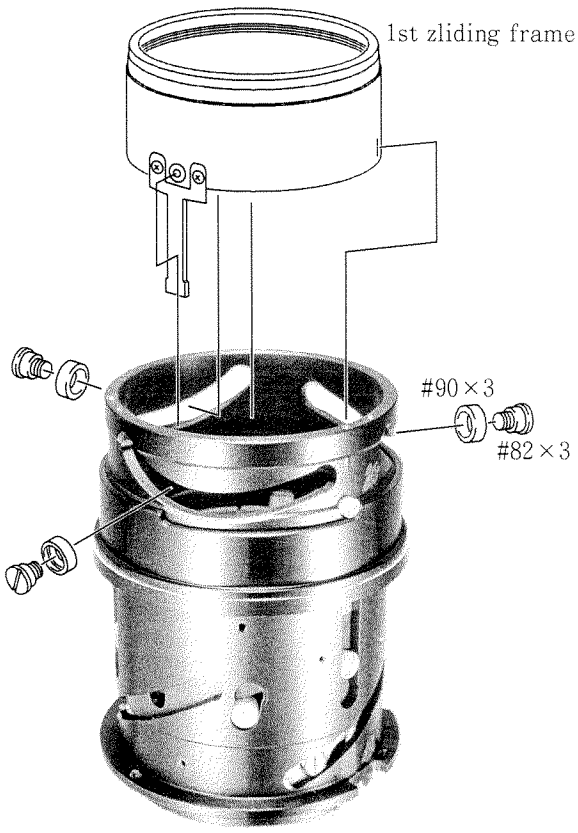
SWM ASSEMBLY



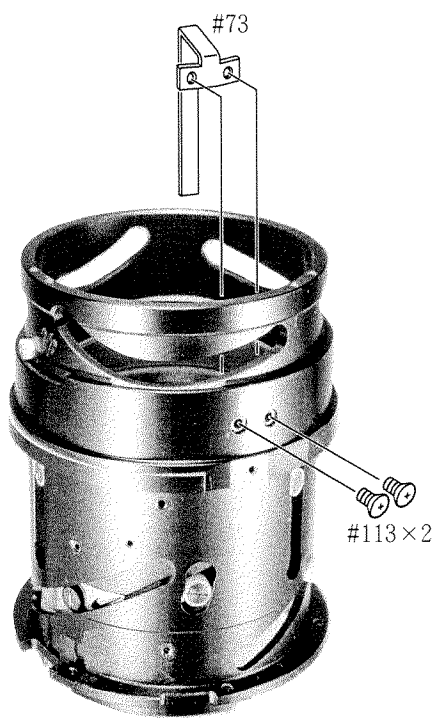
① Drive both the focus ring #26 and the SWM unit to align the holes with each other, and then remove each 3 pieces of #158 and #159.

② Remove both the SWM unit and the focus ring #26.

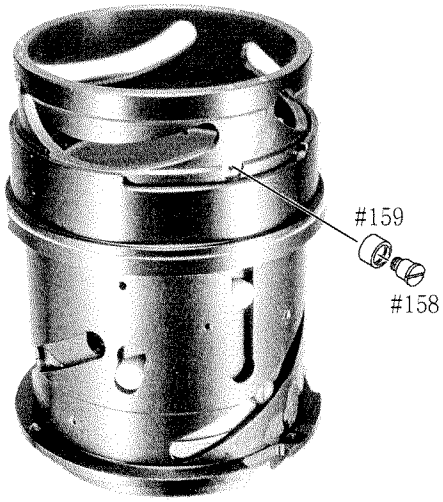
1st SLIDING FRAME

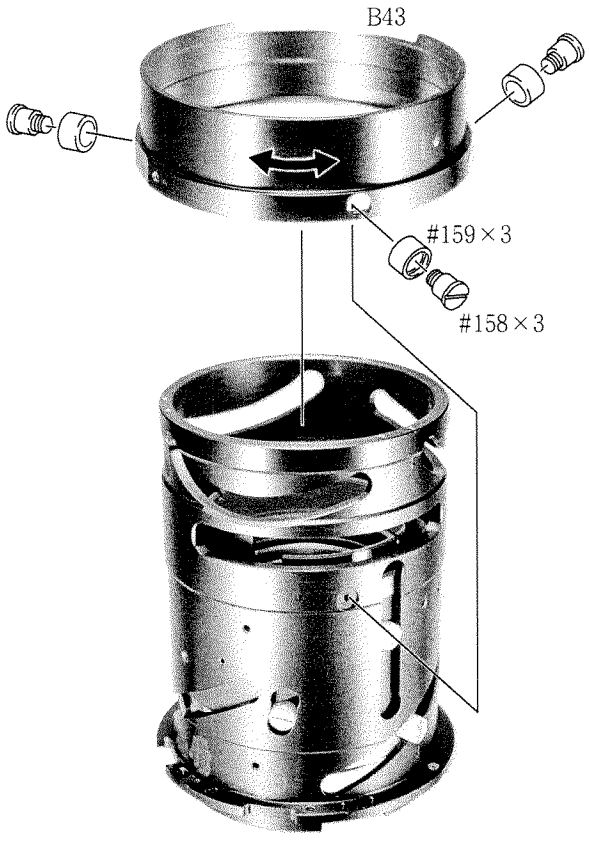


INTERLOCK KEY #73



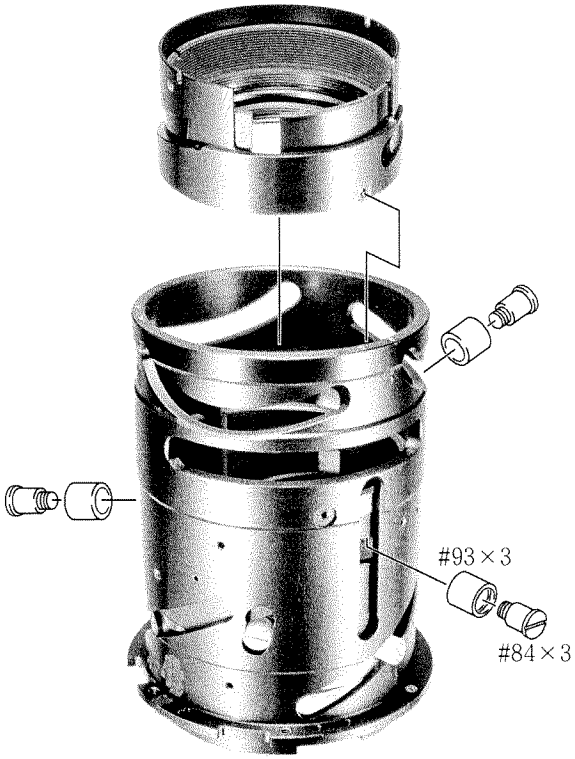
RELAY RING



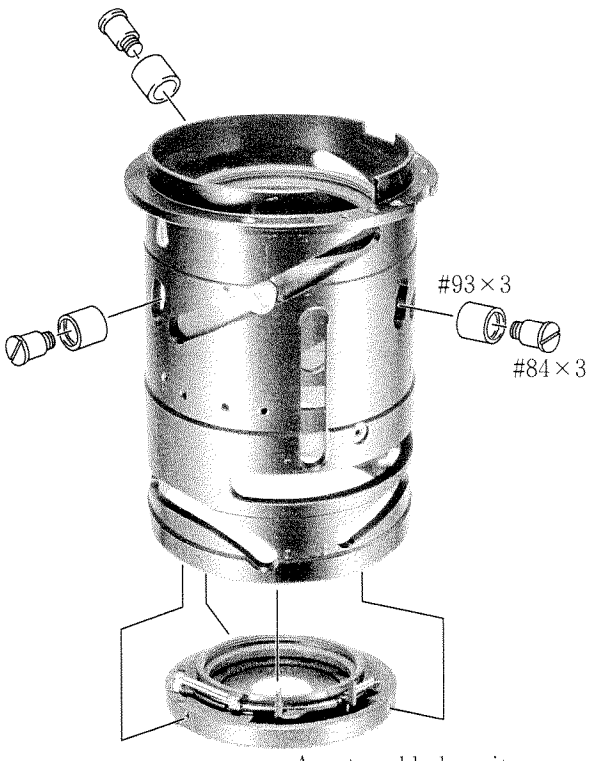


- Rotate B43 to align the B43's hole with a screw.
  Then, remove each #158 and #159.

2nd ～ 3rd SLIDING FRAME

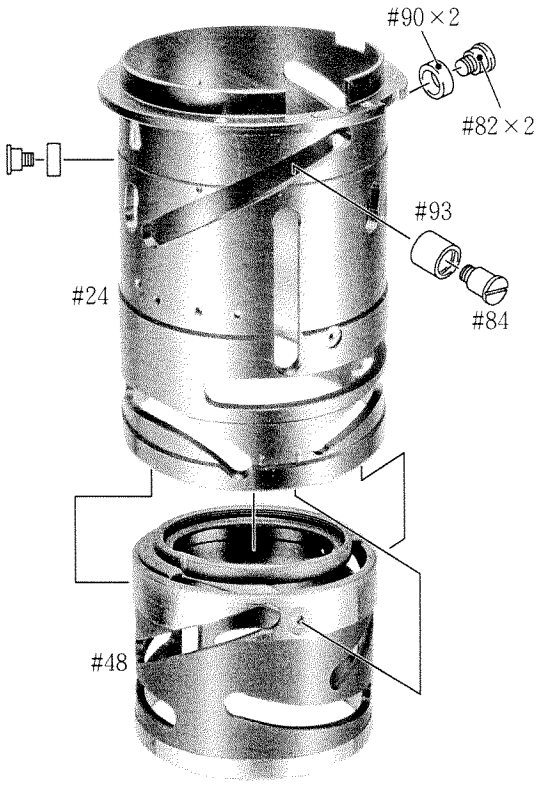


APERTURE BLADE UNIT



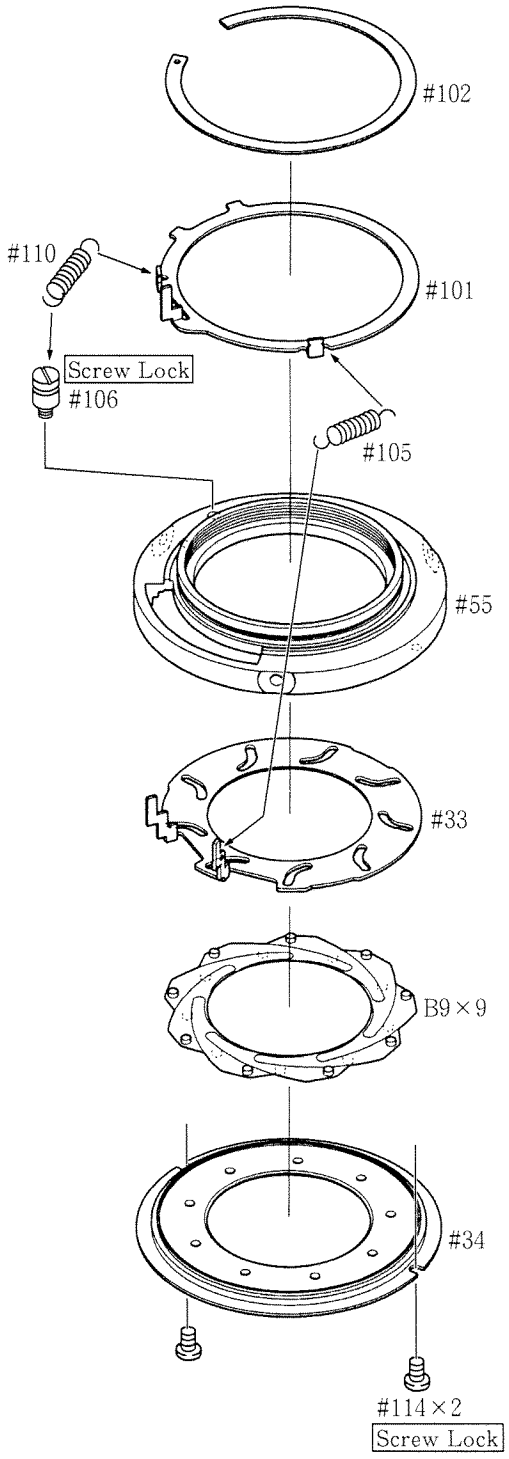
Aperture blade unit

CAM RING GROUP

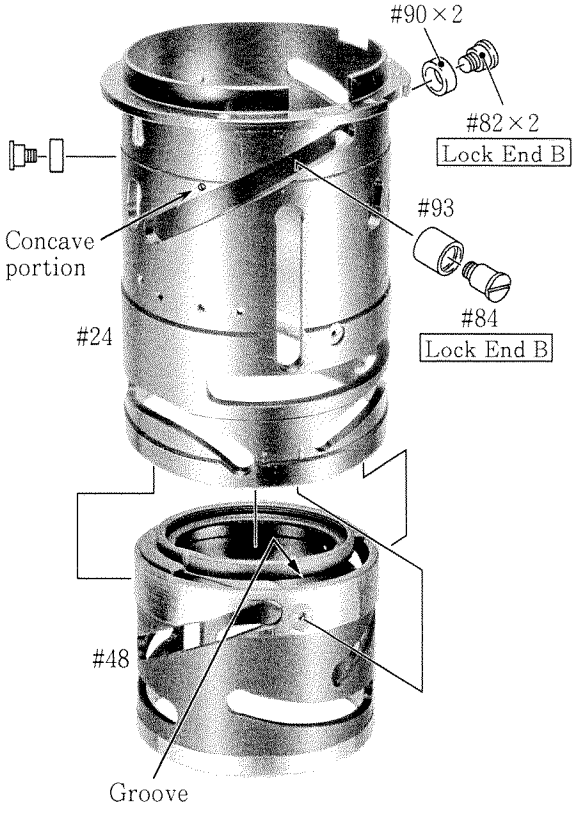


2. ASSEMBLING／ADJUSTMENT

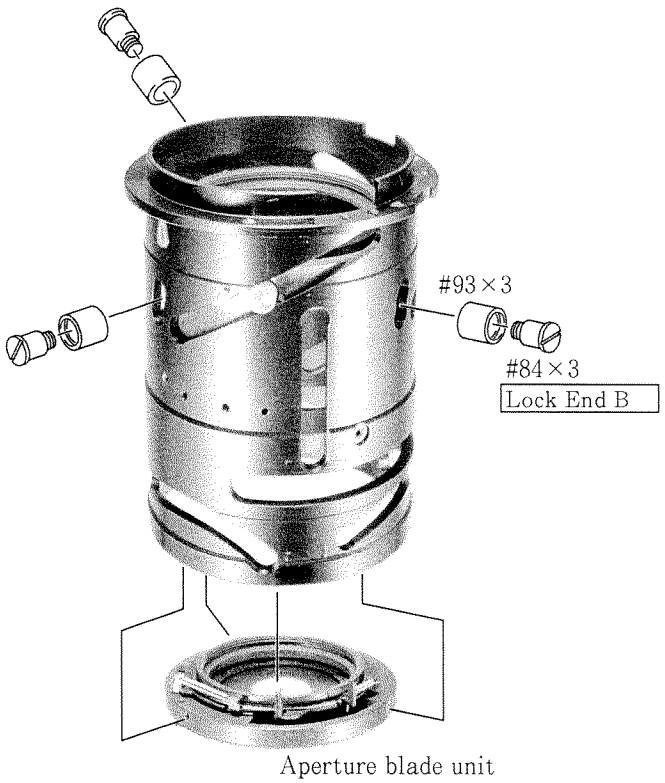
APERTURE BLADE GROUP



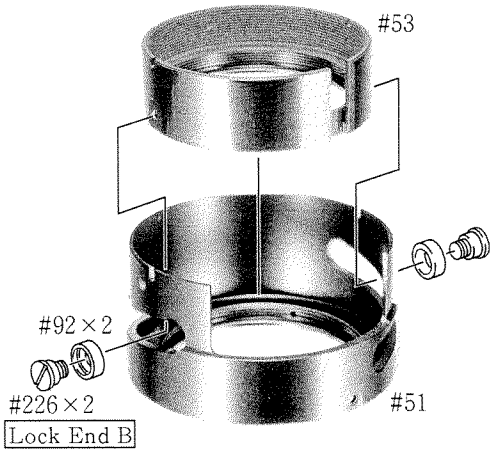
KAM RING GROUP



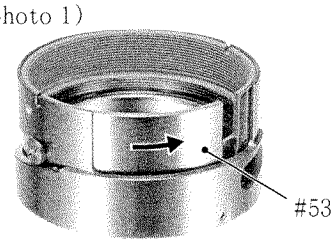
APERTURE BLADE UNIT



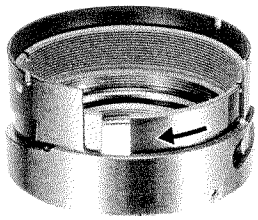
2nd ～ 3rd SLIDING FRAME



(photo 1)



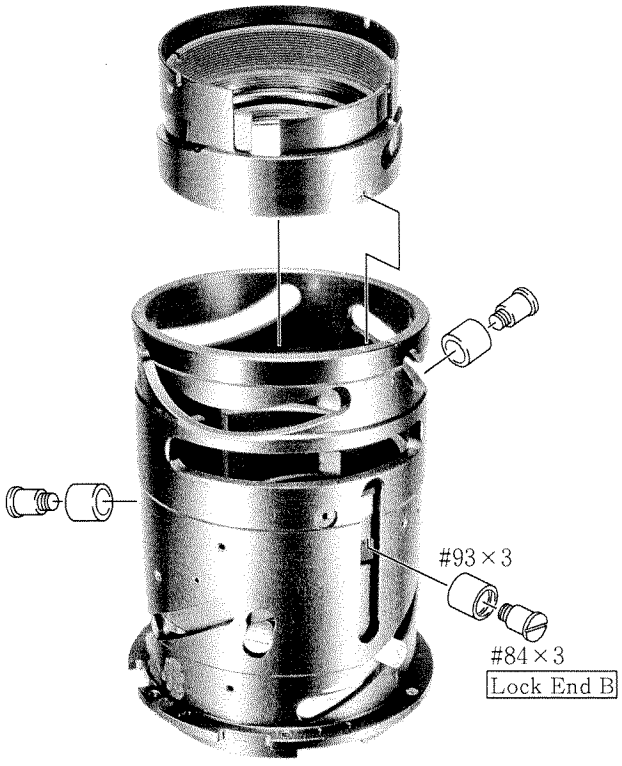
(photo 2)



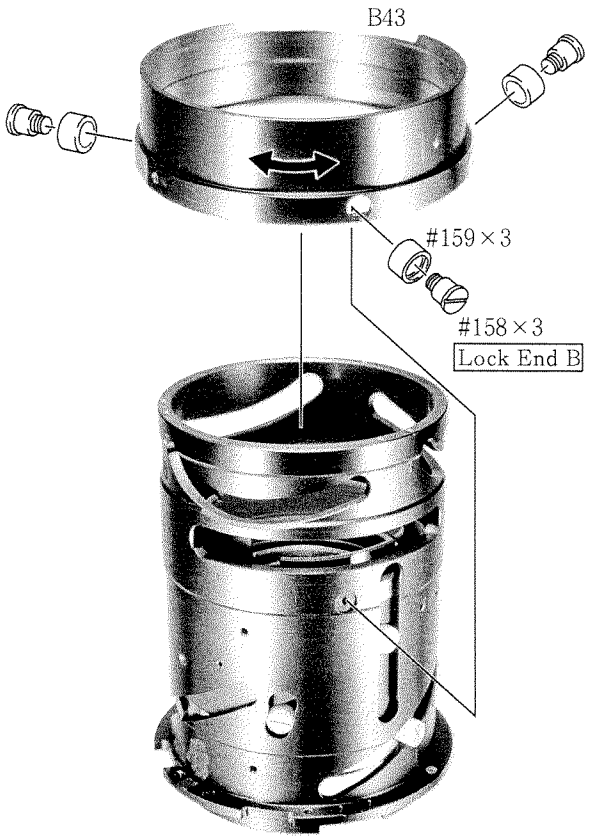
〈Inspection〉

As shown in the photo 1, rotate #53 in the arrow direction.

Then, after setting it free from a hand while rotating, #53 should be self-drop as shown in the photo 2.

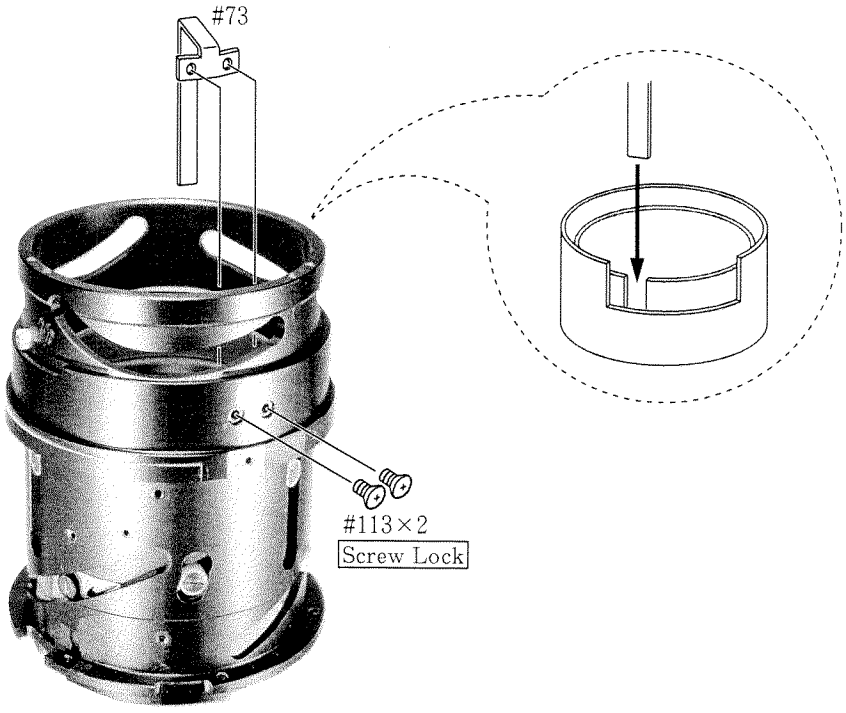


RELAY RING

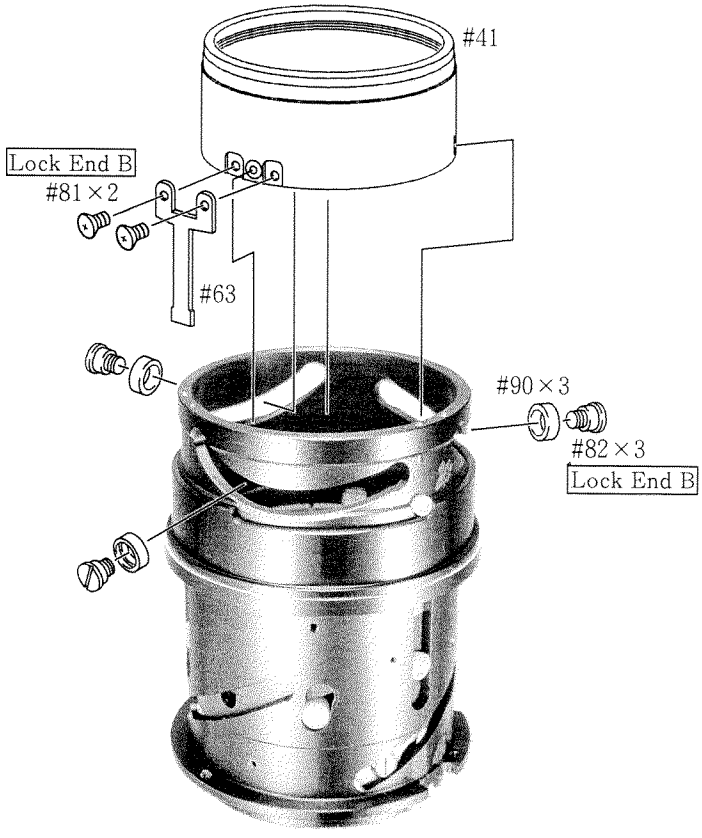


● Rotate B43 to align the B43's hole with another screw hole.
Then, attach #158 and #159.

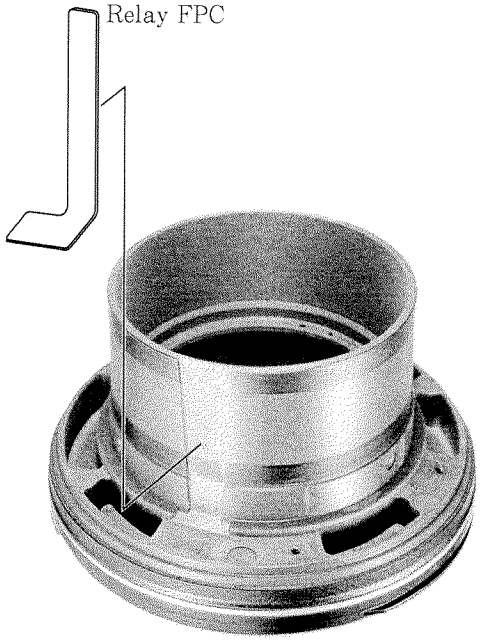
INTERLOCK KEY #73



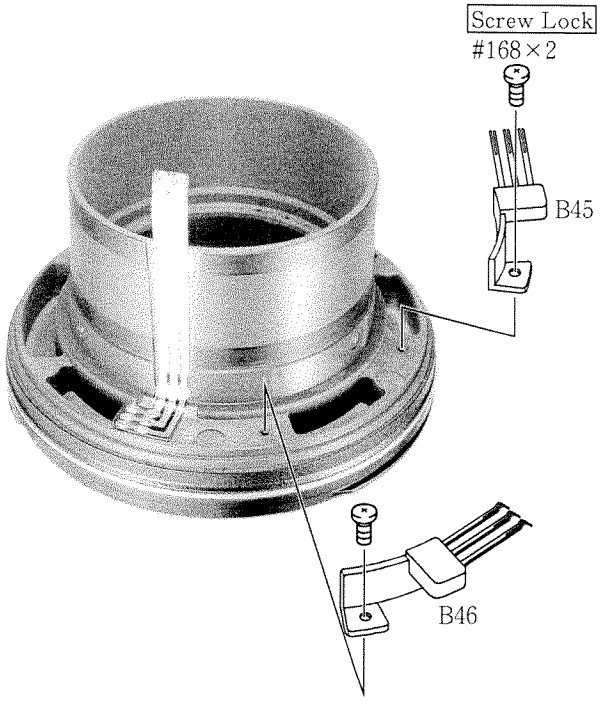
1st SLIDING FRAME

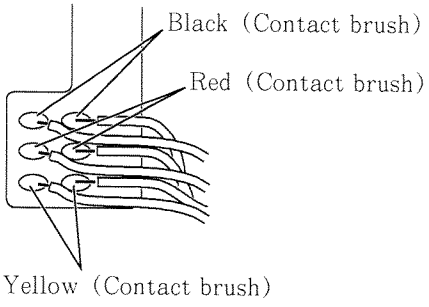


RELAY FPC

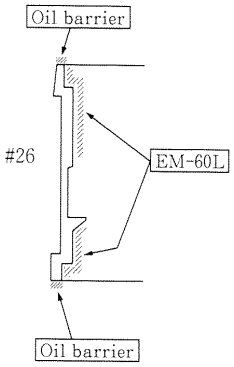


CONTACT BRUSH





FOCUS RING #26



SWM ASSEMBLY

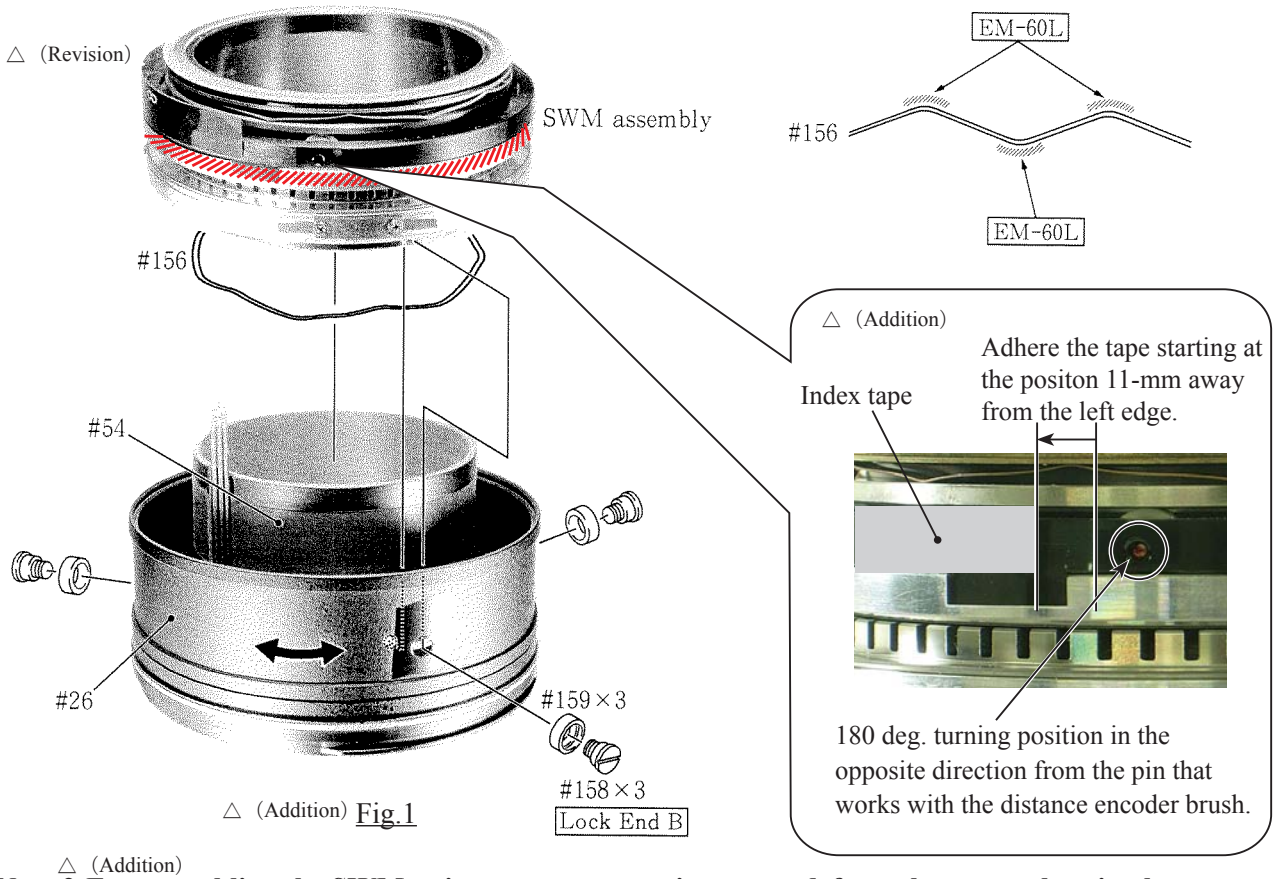
△ (Addition)

Caution 1: When the index tape (1K470-125) is adhered, be careful of the below and adhere it as shown in "Fig.1",

① Be careful of the bottom position of the tape, and the tape must not be overlapped on the red shaded area of Fig.1.

② After adhering the index tape, check for infinity focus.

△ (Revision)



△ (Addition) Fig.1

△ (Addition)

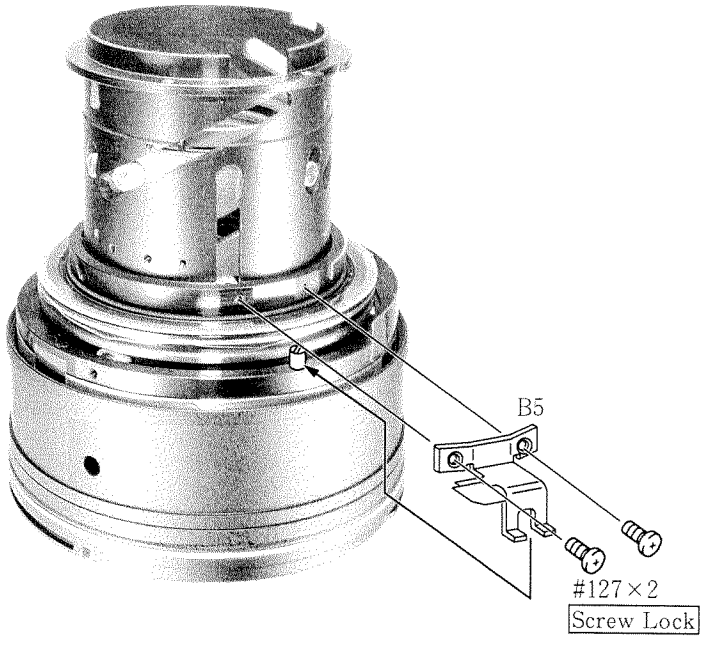
Note 2:For assembling the SWM unit, pay more attention not to deform the external spring bars.

・After assembling the SWM unit, rotate both the focus ring #26 and the SWM unit to align the holes with each other. Then, attach both #158 and #159 on the appointed three spots each.

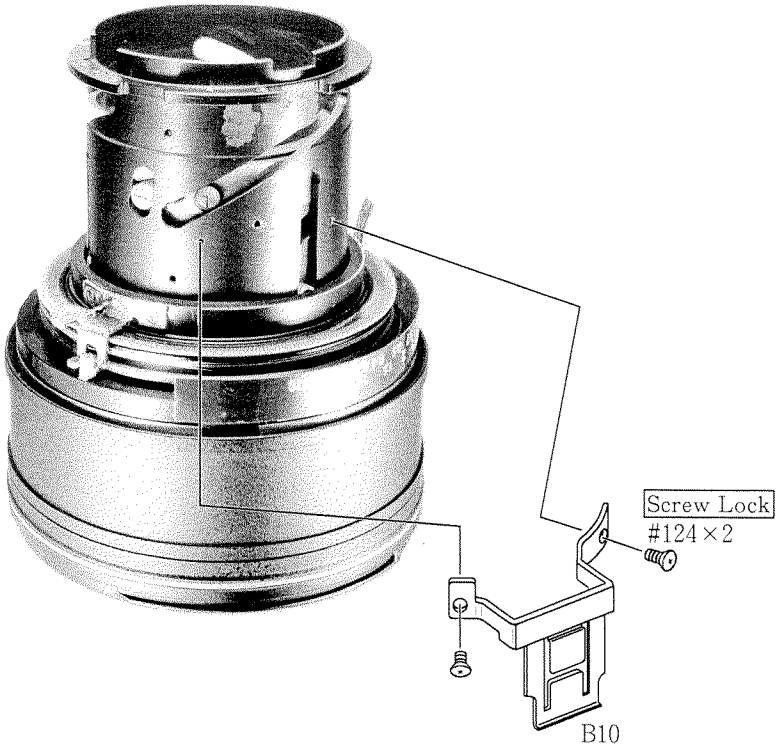
サービス計画課 M

MOUNTING THE CAM RING GROUP

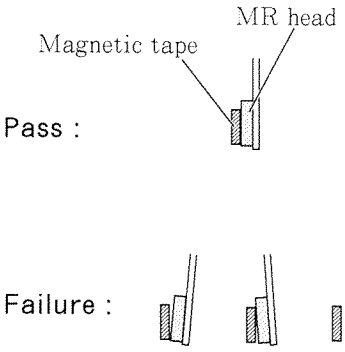
INTERLOCK KEY B5



MR HEAD



Note : For attaching the MR head, be sure to apply the magnetic tape on to the MR head in place as described in the right figure.
Then, do not peel off the protection tape attached on the MR head.



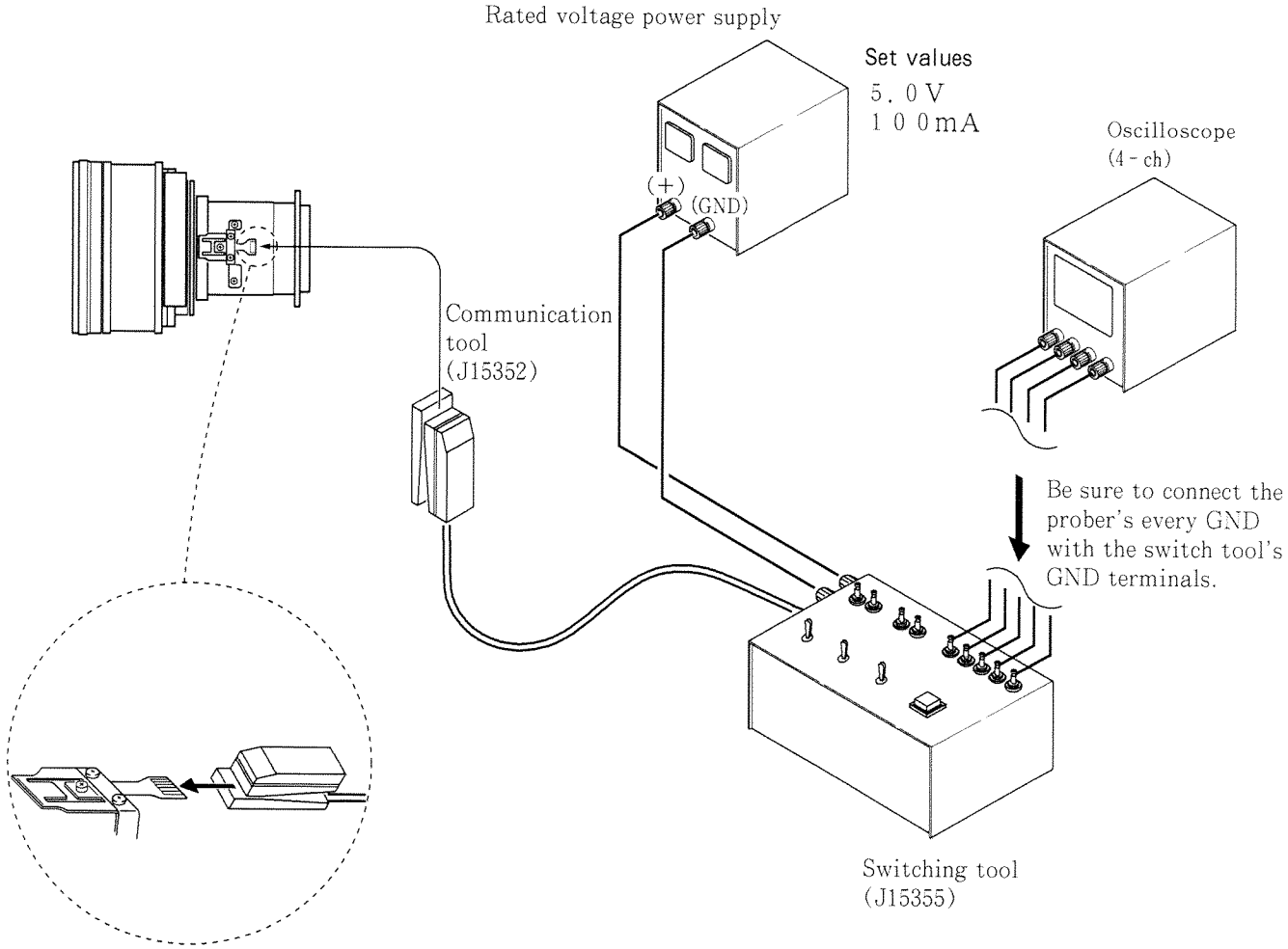
INSPECTION AND ADJUSTMENT FOR THE WAVEFORM OUTPUT FROM MR ENCODER

● In case of replacing the MR tape or the MR head, be sure to conduct adjustment.

1. Equipment and tools to be required
   - Rated voltage power supply for single output : Q'ty 1 With 5.0 V and 100 mA, applicable for the switch tool
   - Oscilloscope : 1
   - Communications tool J15352 : 1
   - Switch tool J15355 : 1

Note : In case of any trouble in conduction between the communications tool and the relay FPC, there may be corrosion or oxidation on the contact surface of relay FPC.
In this accord, be sure to polish the contact surface prior to getting connected with the communications tool.

2. Preparation of the lens applicable for measurement
   - As shown in the figure below, connect the rated voltage power supply with the measuring tool and the communications tool.



3. How to conduct inspection and adjustment

① Turn off the switch tool's switch 1 and 2. Then, turn the switch 3 on.

② Check whether or not both current and voltage from the connected rated voltage power supply are set values.

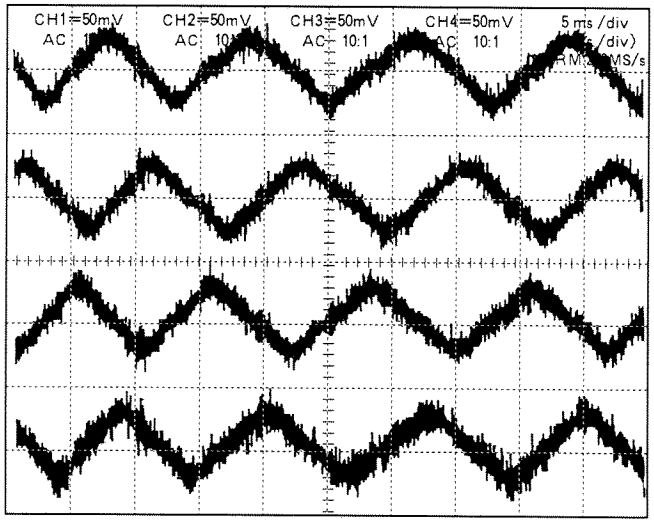
If they are to meet the set values, turn the main switch on.

③ Set the oscilloscope.

Then, hold the SWM unit and drive the focus ring.

④ Stop the waveform from the oscilloscope by 'START ／ STOP' key and check it.

Note : Since the shape of waveform varies according to the driving speed of focus ring, particularly and properly set Time ／ Div.



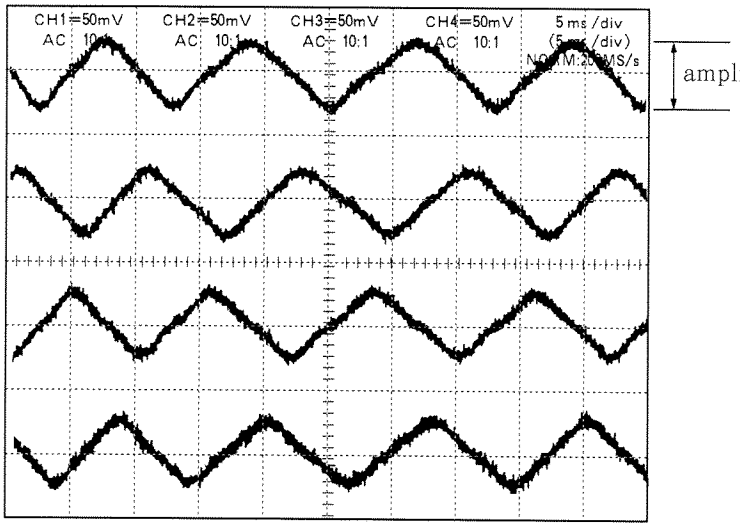
● Setting of oscilloscope

V／Div (CH 1)	: 5 0 mV
V／Div (CH 2)	: 5 0 mV
V／Div (CH 3)	: 5 0 mV
V／Div (CH 4)	: 5 0 mV
Coupling	: AC
Time／Div	: 5 ms (reference)

⑤ In the case of detecting any wider waveform noise, use the filter function.

How to set the filter function in the employment case of Yokogawa-manufactured DL1540

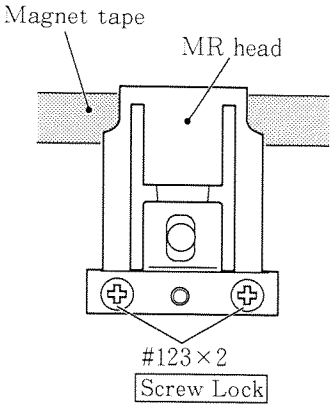
1. Press the filter button.
2. Select 'Smooth' in the menu on PC screen.



Criteria : The amplitude of every pulse ／ waveform should be more than 40 mV.

Precaution : Check the waveform by letting the focus ring to travel from the infinity-end position to the nearest distance and vice versa.

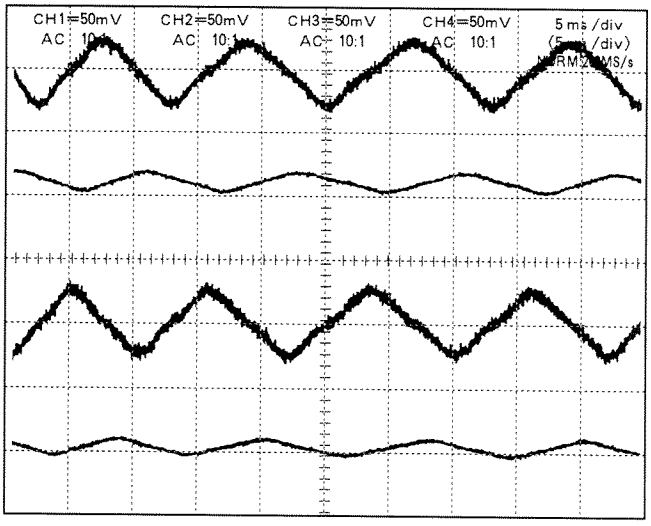
⑥ In the case of smaller amplitude, for adjustment, loosen two pieces of the screw #123 and then shift the MR head position as shown in the right figure.



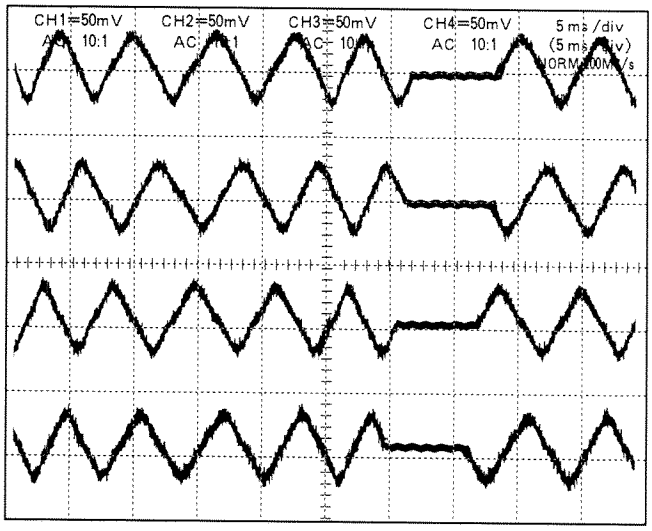
Precaution : Due to a cause to damage the magnetic data, during adjustment, avoid that the magnet tape and the MR head touch the magnetism-maintained driver bit.

《Reference》

- In case the amplitude of either 'CH 1 and 3 phases' or 'CH 2 and 4 phases' combination seems smaller, either of the two screws may loosen.
  Then, check the screws.
  Or, in case the both screws are enough tightened, the MR head may be troubled.
  Then, be sure to replace the MR head unit B10 and adjust it again.

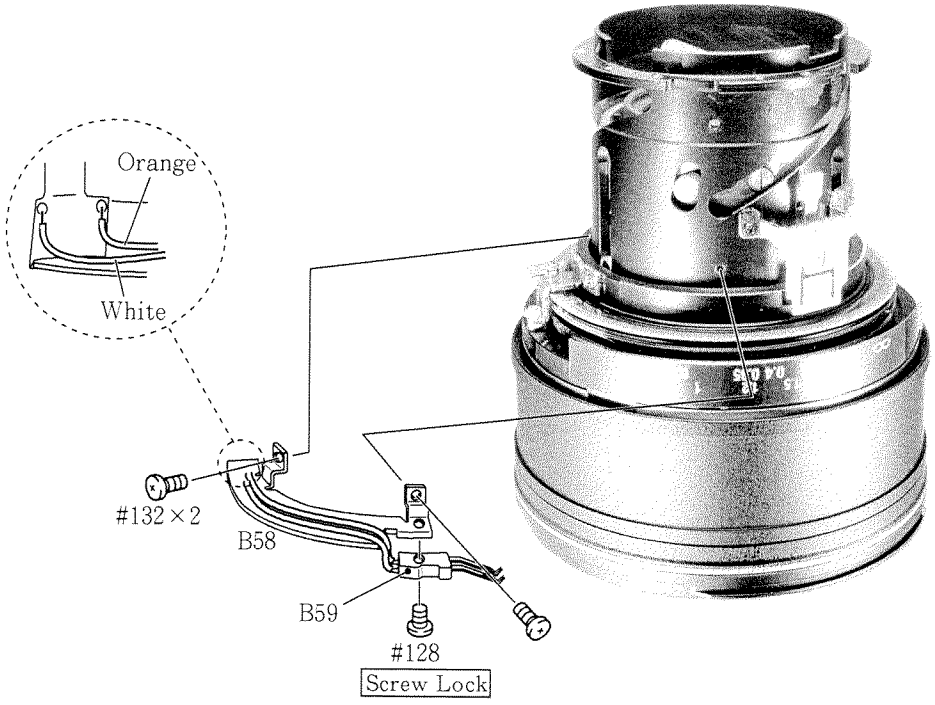


- In case of a presence of partial drop in the amplitude between the infinity and the closest distance, the magnetic data in magnetic tape may be damaged.
  Then, replace the magnetic tape and adjust it again.

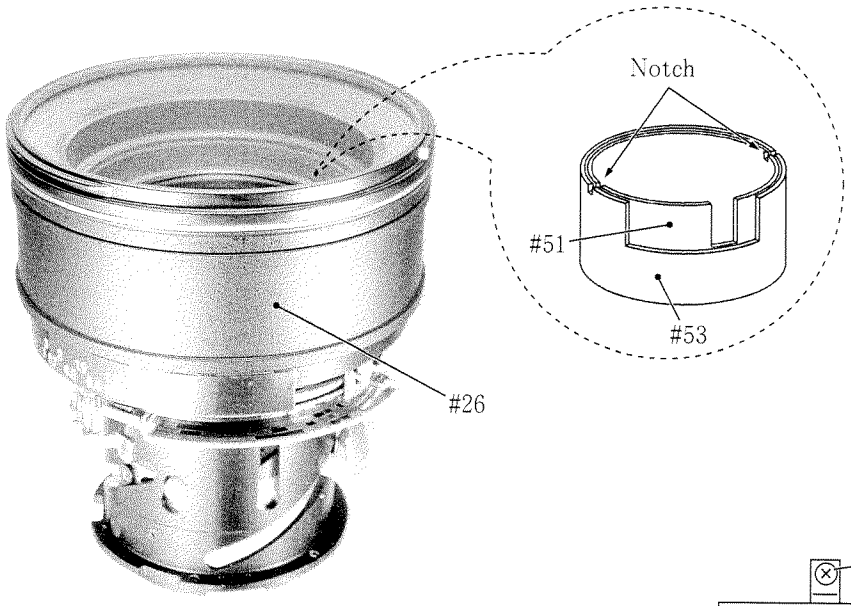


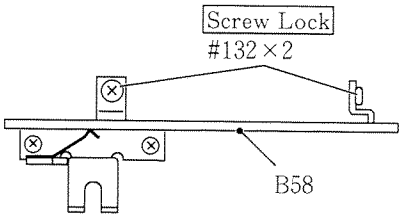
⑦ Turn the rated voltage power supply off.

ROTATION DETECTION BRUSH B59



ADJUSTMENT OF ENCODER BRUSH POSITION

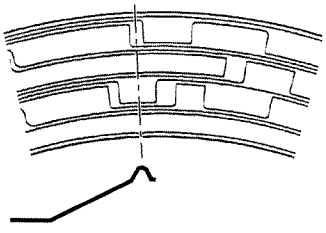




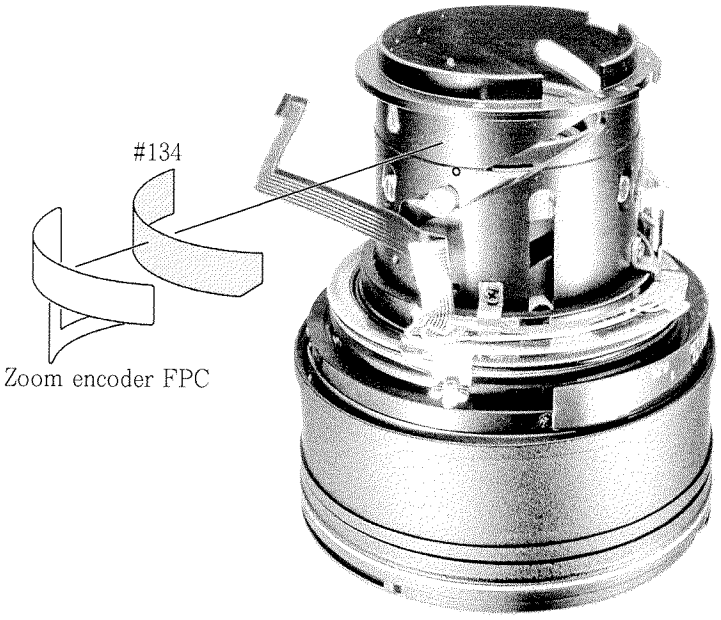
① Rotate the focus ring #26 and then align both #51's and #53's notches with each other.

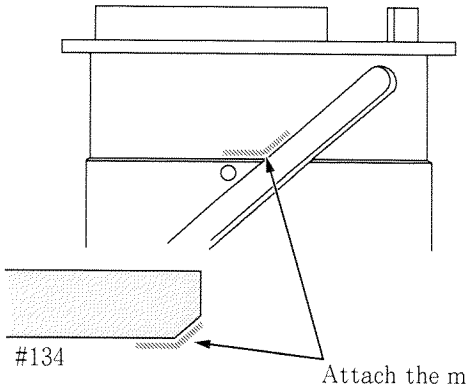
② In order to set the brush top to touch the line as shown in the right figure, loose the two screws #132.
Then, shift B58 for adjustment.

③ After adjustment, fix the two screws #132



ZOOM ENCODER FPC



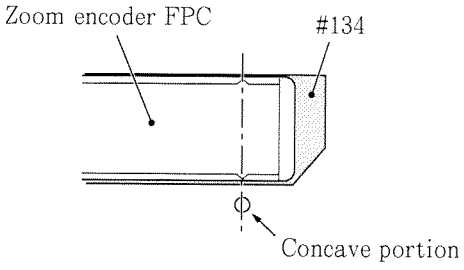


① Attach the brass plate #134 to the position advised in the left figure.

〈Reference〉

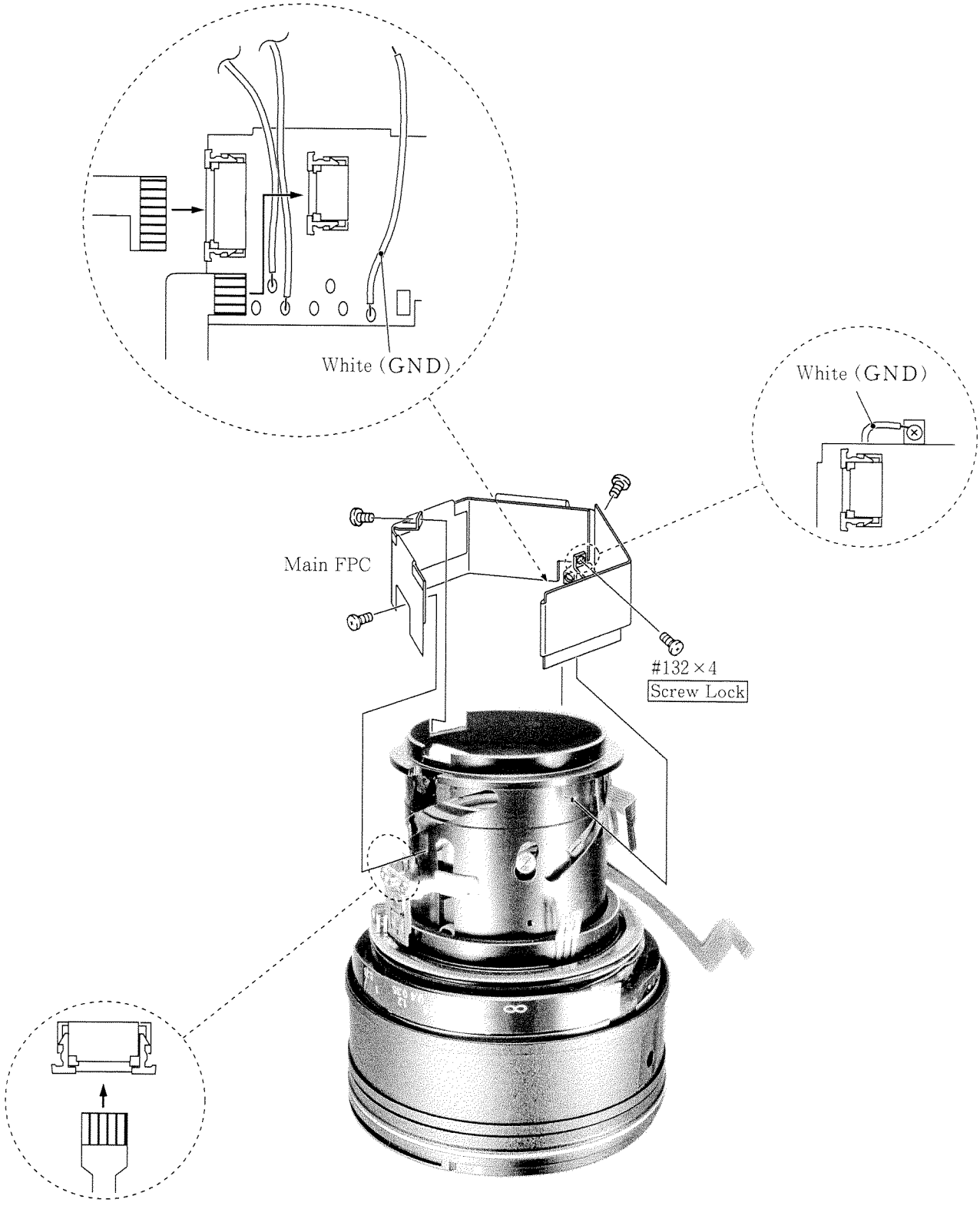
Coil the brass plate #134 round any fine pipe beforehand for making a habit suitable for the shape of where it is attached.

It also helps the brass plate #134 to be more firmly attached on it.

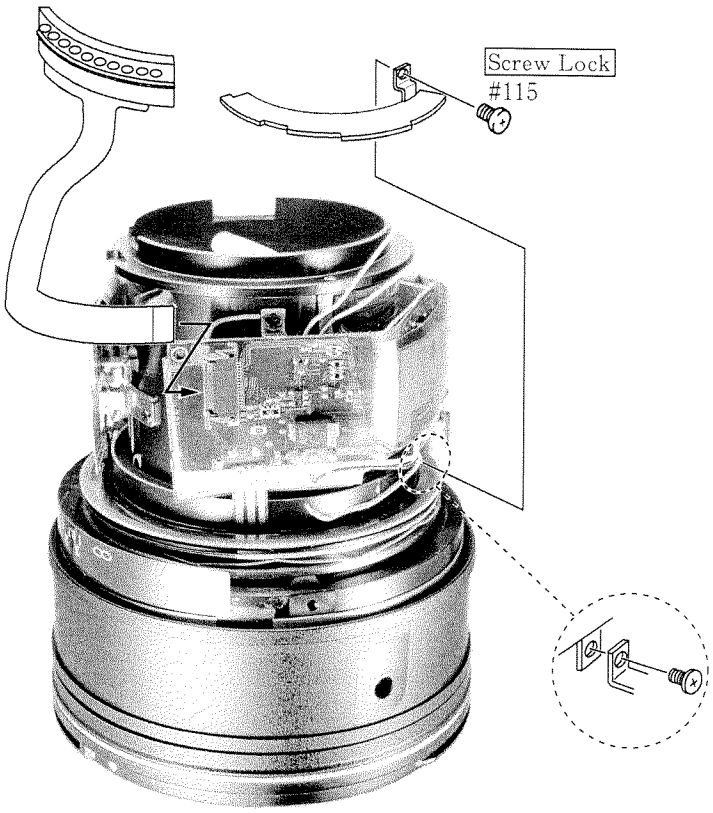


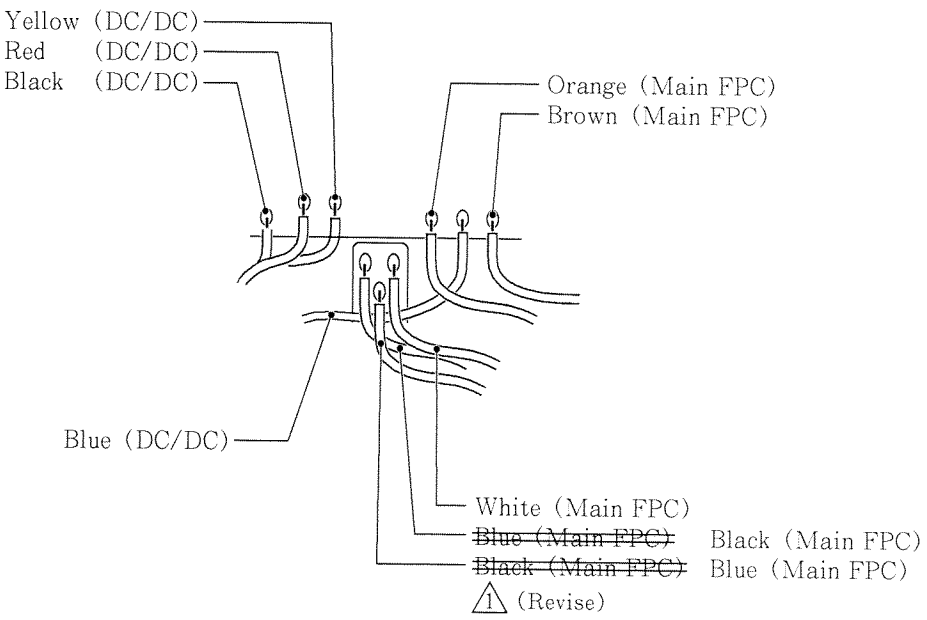
② Attach the zoom encoder FPC on to where is advised in the left figure.

MAIN FPC

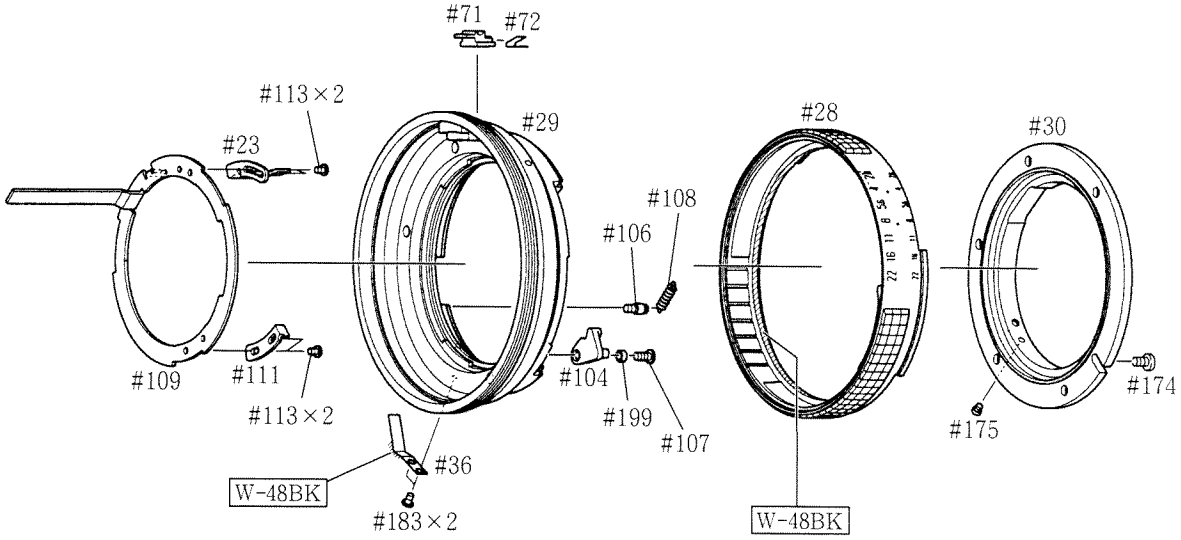


DC-DC CONVERTER, CPU CONTACTS

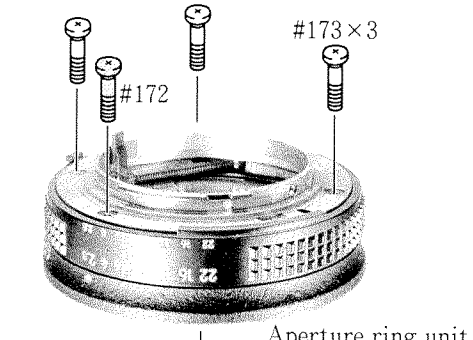




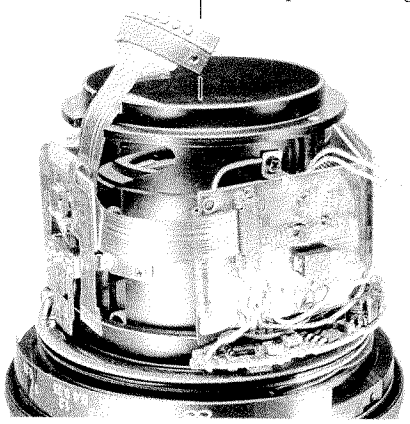
APERTURE RING, BAYONET MOUNT GROUP

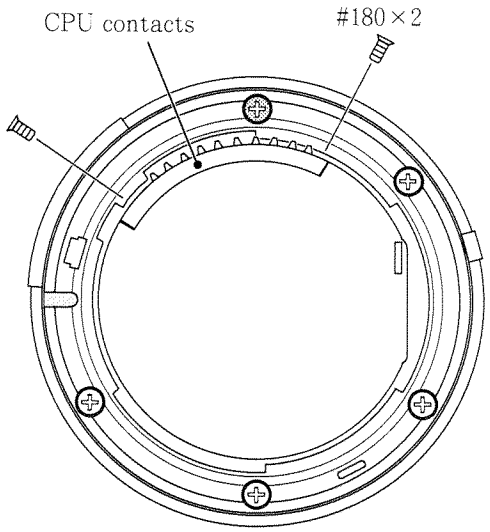


PREPARATION FOR ADJUSTMENT OF THE MAIN FPC



Aperture ring unit





① As shown in the photo above, mount and fix the aperture ring unit.

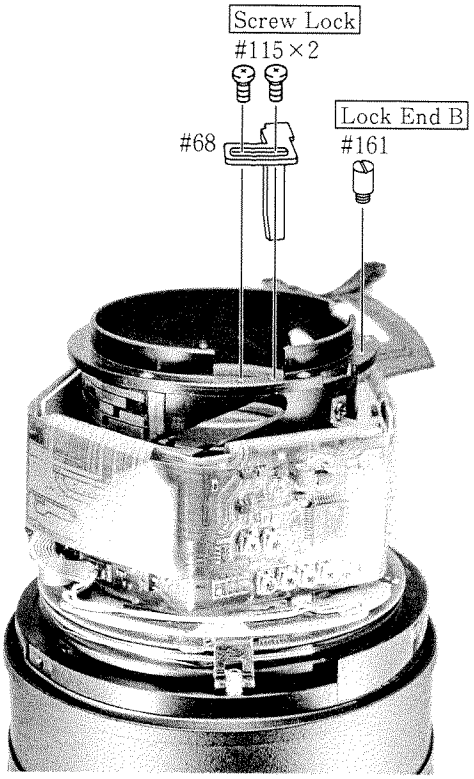
② Refer to the page L25 to L34-1 in the repair manual for AF-S 80-200／2.8D (JAA 76551) and then adjust the main FPC.

The following is the tolerance for criteria.

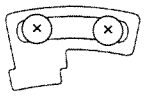
The numerical value of scanning speed : 2.2 ± 0.2 sec (10 ± 1 rpm)

③ After adjustment, remove the aperture ring unit.

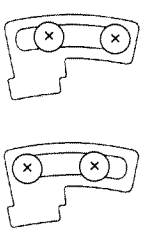
POSITIONING PIN, LEVER #68



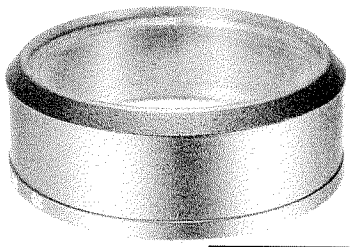
Pass :

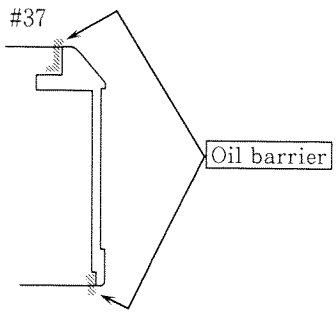


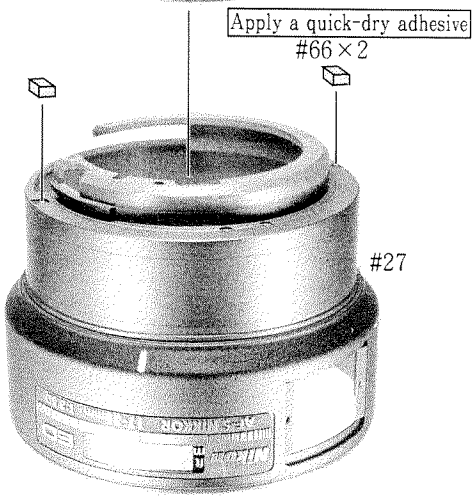
Failure :

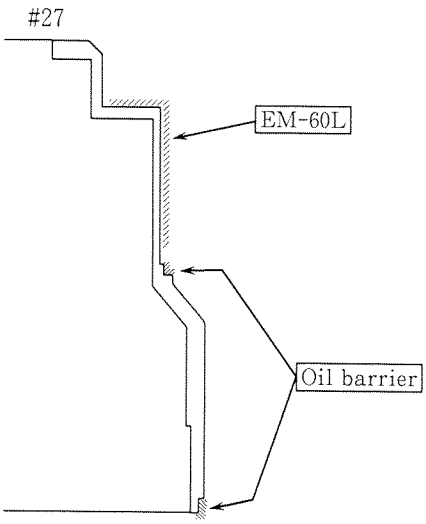


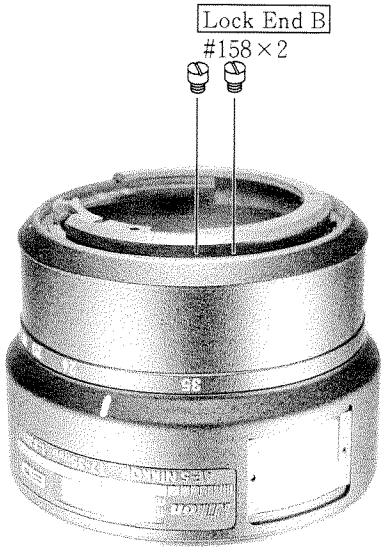
INDEX RING #27, ZOOM RING #37



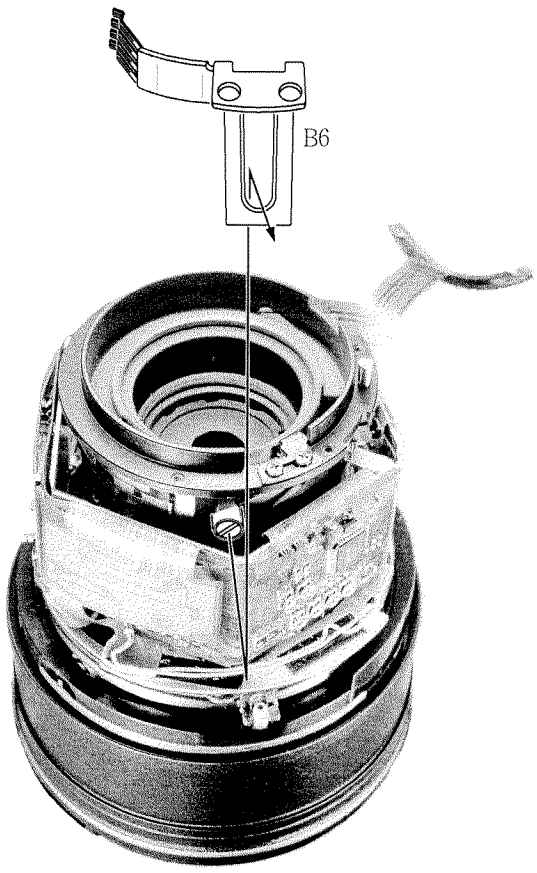




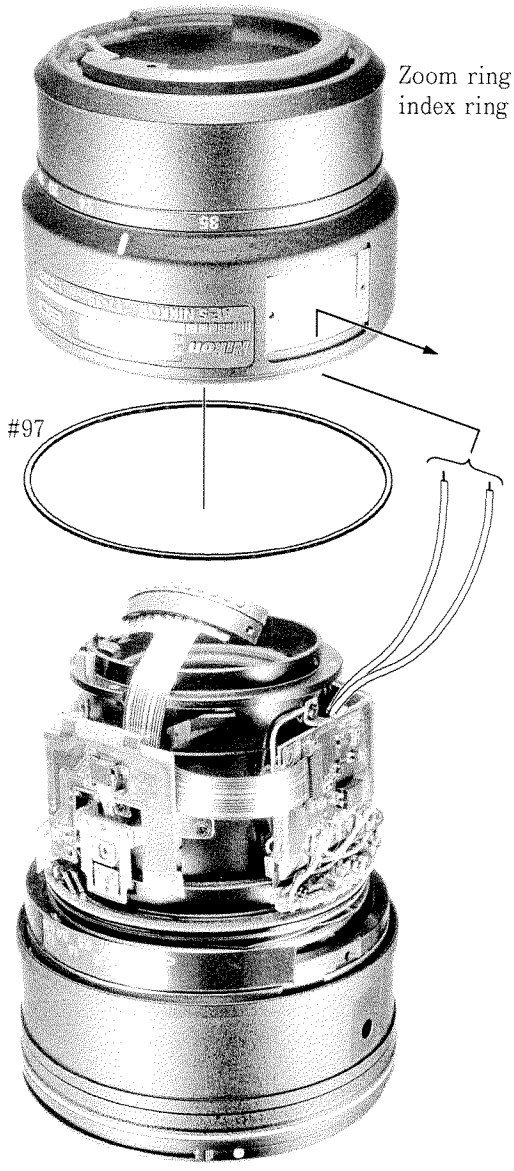




ZOOM INTERLOCK LEVER



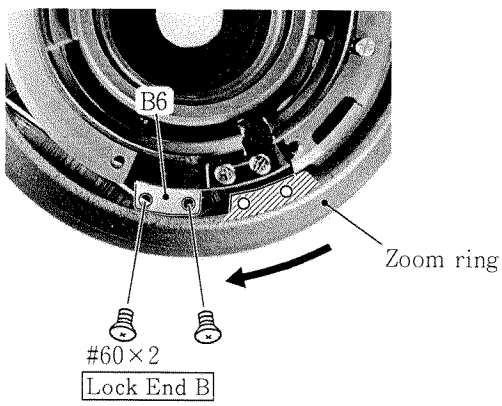
ZOOM RING, INDEX RING UNIT



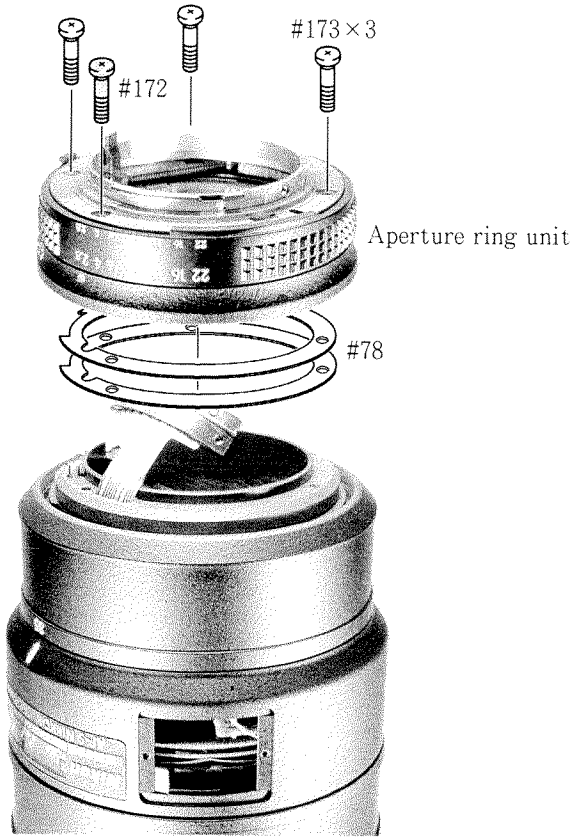
① Mount the zoom ring, index ring unit.

② Raise the zoom interlock lever B6.
Then, as shown in the photo below, drive the zoom ring in the arrow direction and set the diagonal-lined area to beneath B6.

③ Using 2 pieces of the screw #60, fix the B6.



APERTURE RING UNIT



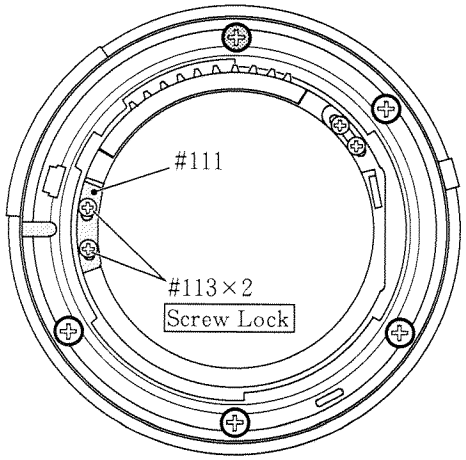
APERTURE DIAMETER ADJUSTMENT

① Unfasten screws #113×2 and move part #111 to adjust the aperture diameter.

Note : Make sure that the aperture diameter differs when the zoom ring is set to 35mm and to 17mm.

- Aperture lever should be within the allowable range when the aperture lever is snapped by your finger.

② After adjustment, secure screws #113×2 using Screw Lock.



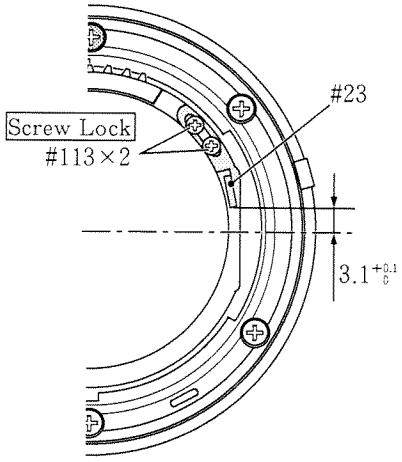
When the zoom ring is set to 35mm :

Aperture setting	Inscribed circle diameter (mm)	Toleance (mm)
2.8	21.66	22.85 ～ 20.59
4	15.44	16.68 ～ 14.30
5.6	10.83	12.16 ～ 9.65
8	7.63	8.56 ～ 6.80
11	5.39	6.31 ～ 4.61
16	3.80	4.45 ～ 3.25
22	2.69	3.15 ～ 2.30

When the zoom ring is set to 17mm :

Aperture setting	Inscribed circle diameter (mm)	Toleance (mm)
2.8	16.34	17.24 ～ 15.53
4	11.77	12.71 ～ 10.90
5.6	8.30	9.32 ～ 7.39
8	5.86	6.58 ～ 5.22
11	4.14	4.83 ～ 3.55
16	2.93	3.42 ～ 2.51
22	2.07	2.41 ～ 1.77

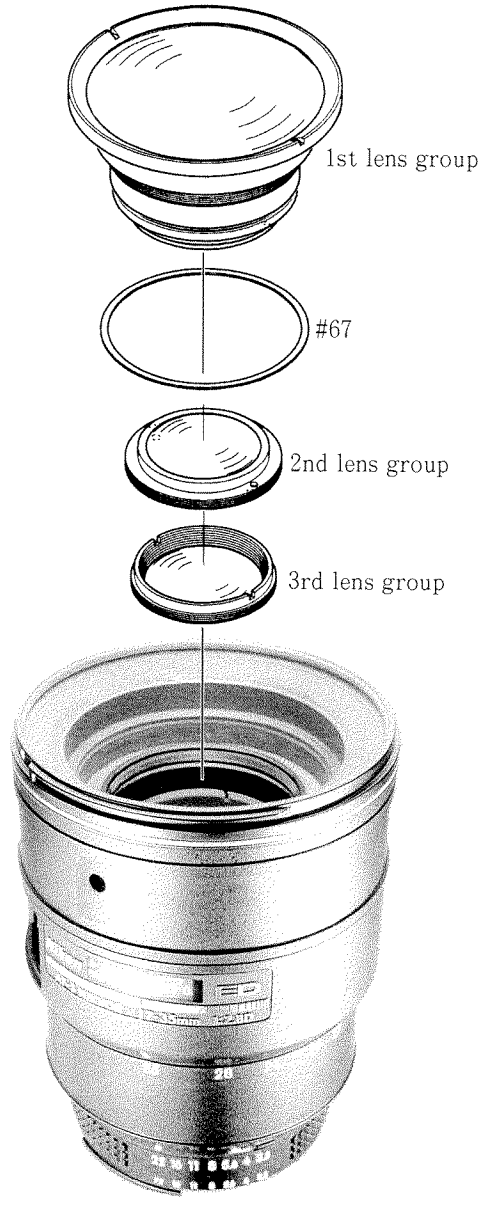
APERTURE LEVER POSITION ADJUSTMENT



Unfasten screws #113×2 to adjust the position of the aperture lever #23 so that it comes into the rated value of $3.1^{+0.1}_{0}$ to bring the aperture diameter whitin rated value at full aperture.
After adjustment, fix screws #113×2 using Screw Lock.

4th～5th LENS GROUP

1st ～ 3rd LENS GROUP



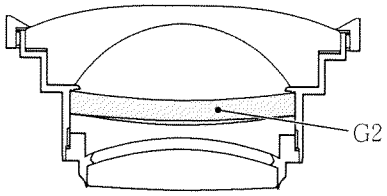
△1 (Addition)

Note : The aspheric lens is employed on the G2 R1 side of 1st lens group unit.

For cleaning on the surface of G2 lens, use the A-level dustcloth.

For your information, the technical information No. L(AF)-970060 shall be referable.

(1st lens group)



ADJUSTMENT AT BOTH ENDS OF FOCAL LENGTH

1. Align the ∞ mark on focus ring to index. Set aperture to full aperture.
2. Read the value on both Wide and Tele sides respectively.
3. Calculate the following equation.

$(A-B) \div 2.0 = C$

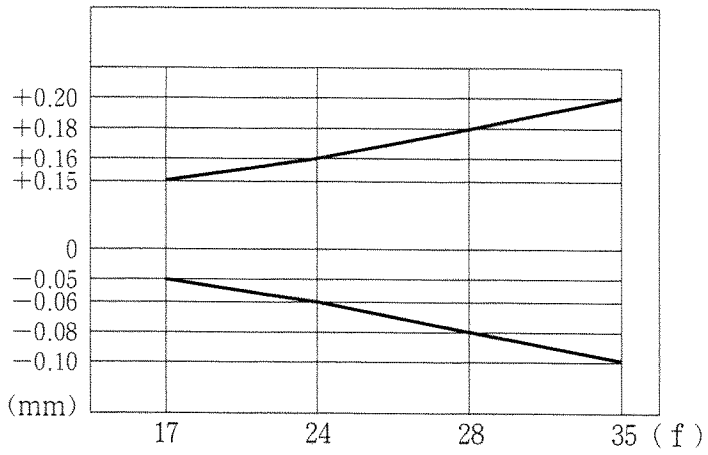
A＝ Value of Tele side (mm)
B＝ Value of Wide side (mm)
C＝ Amount (mm) of adjustment of 1st lens group washer #67

4. Adjust the thickness of washer #67 by the value C calculated from the above equation.
   If the value C is positive, thicken the washer by the value, and if negative, thin the washer.
   Note : Insert thin washer between thick washers when mounting washer #67.
   (Refer to page L35.)

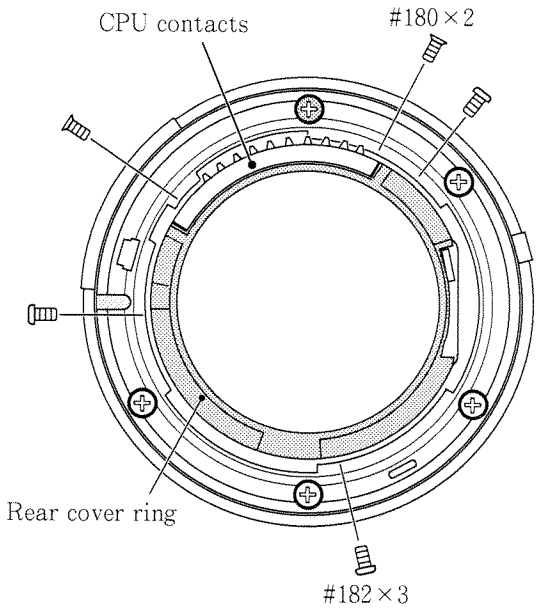
ADJUSTMENT OF BACK FOCUS

1. Align the ∞ mark on focus ring to index. Set aperture to full aperture.
2. Readout values at either Wide or Tele side.
3. Remove the aperture ring unit.
4. If the value is above the standard, increase the thickness of the washer, otherwise decrease it.
   (Refer to page L33.)

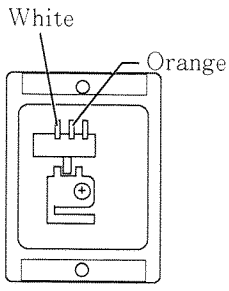
Focal lenght (f)	Standard (mm)
17mm	－0.05 ～ ＋0.15
24mm	－0.06 ～ ＋0.16
28mm	－0.08 ～ ＋0.18
35mm	－0.10 ～ ＋0.20



REAR COVER RING



CHANGE-OVER SWITCH UNIT



RUBBER RING

LENS OPERATION CHECK

Refer to the page L38 to L47 in the repair manual for AF-S 80-200／2.8D (JAA 76551) and check the operational conditions.

In addition, what is displayed on PC screen is slightly different from the statements in check list. The followings are the tolerances for standards.

⚠1 (Addition) (2) Image of "operation of MR encoder"

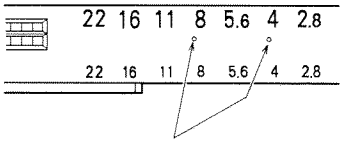
```
TYPE OF LENS : AF-S NIKKOR 17-35mm/2.8D              CPU VERSION : 1.01.01
OPERATION OF MR ENCODER.

POSITION WHEN CHECK BEGINS.   [PULSE (S)]  ----------------------   -8
POSITION WHEN CHECK IS ENDED. [PULSE (S)]  ----------------------    0
PULSE NUMBER DEFFERENCE BEFORE / AFTER CHECK. [PULSE (S)] ---        8
STANDARD FOR DIFFERENCE IN THE NUMBER : FROM  -10  TO  10  [PULSE (S)]
                                                              IN STANDARD.
**********************************************************
THE TOTAL NUMBER OF PULSE (S) AT INSPECTION.  [PULSE (S)] ---     3164
STANDARD FOR THE NUMBER : FROM 3070  TO  3240  [PLUSE (S)]
                                                              IN STANDARD.



PUSH ESC KEY TO RETURN TO MENY.EP.
```

(4) Image of "lens servo time"

```
TYPE OF LENS : AF-S NIKKOR 17-35mm/2.8D              CPU VERSION : 1.01.01
INSPECTION OF LENS SERVO TIME.

-------------------------------------------------------------------------------
    SERVO AMOUNT.                    STANDARD.
1.  [ Df1 ]                  50ms  OR LESS.
2.  [ Df2 ]                  62ms  OR LESS.
3.  [ Df3 ]                  75ms  OR LESS.
4.  [ Df4 ]                  95ms  OR LESS.
5.  [ Df5 ]                 120ms  OR LESS.
6.  [ Df6 ]                 140ms  OR LESS.
-------------------------------------------------------------------------------

7. DRIVE TO INFINITY.
8. DRIVE TO CLOSE.



SELECT A NUMBER.
PUSH ESC KEY TO MENU.
```

サービス計画課 M

MOUNTING THE COUPLING CLAW



Use these tow concaves.

① Remove the aperture ring #28.

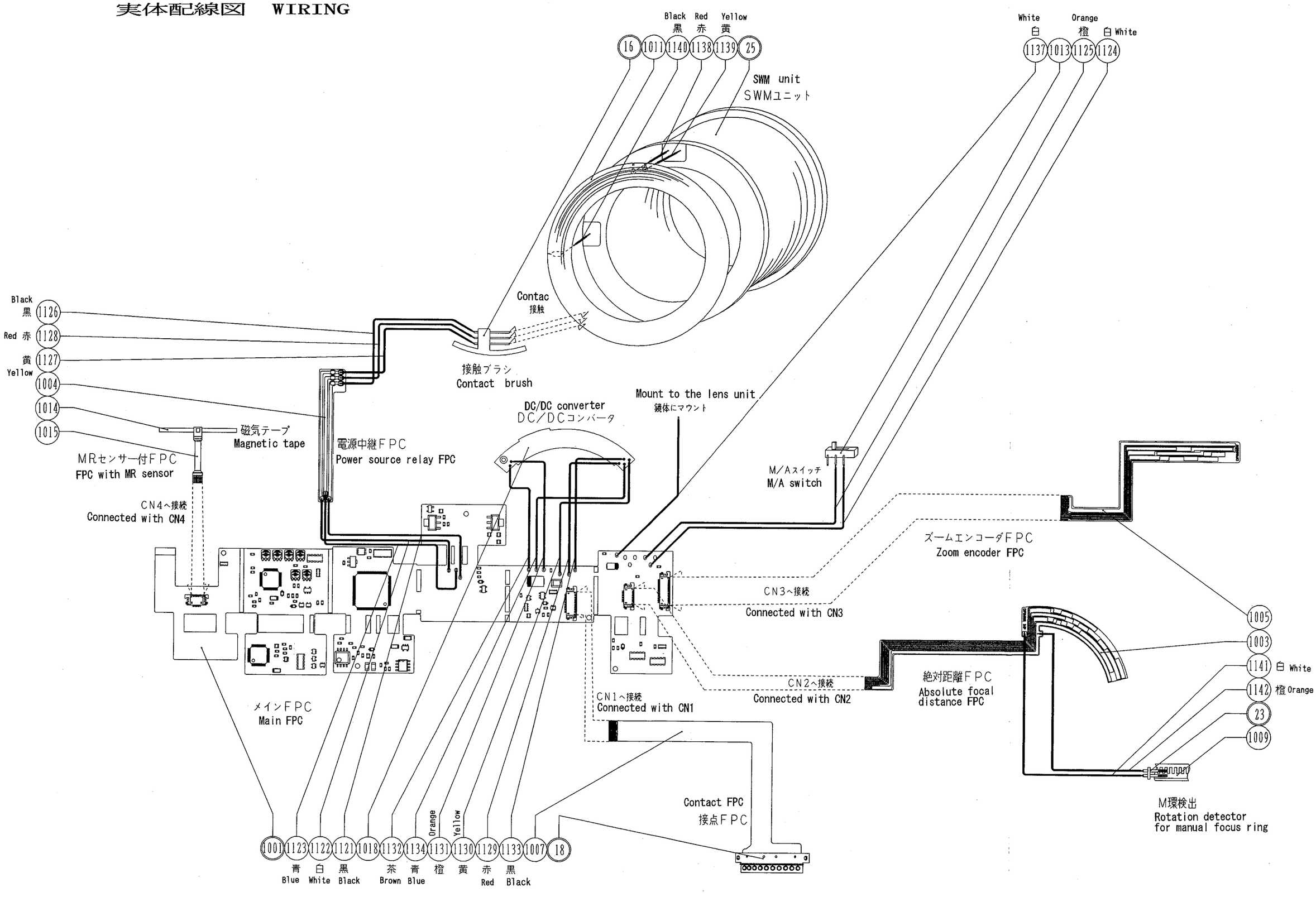
② Make holes (ϕ1.1) at the two concaves of the aperture ring.

③ Mount the coupling claw.

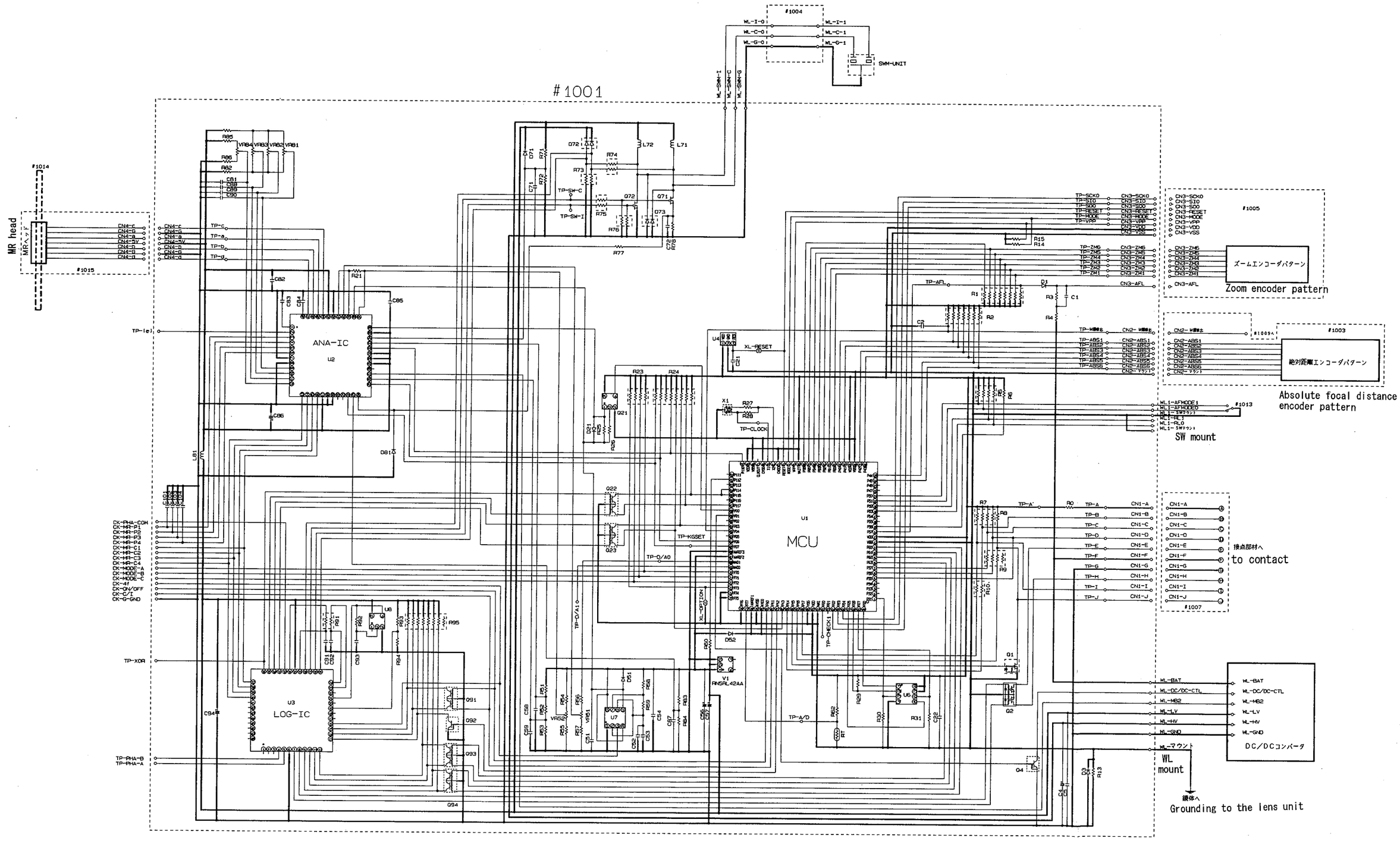
Coupling claw	1K406－029	×1
Screw	1K010－002－1	×2

④ Assemble the components.

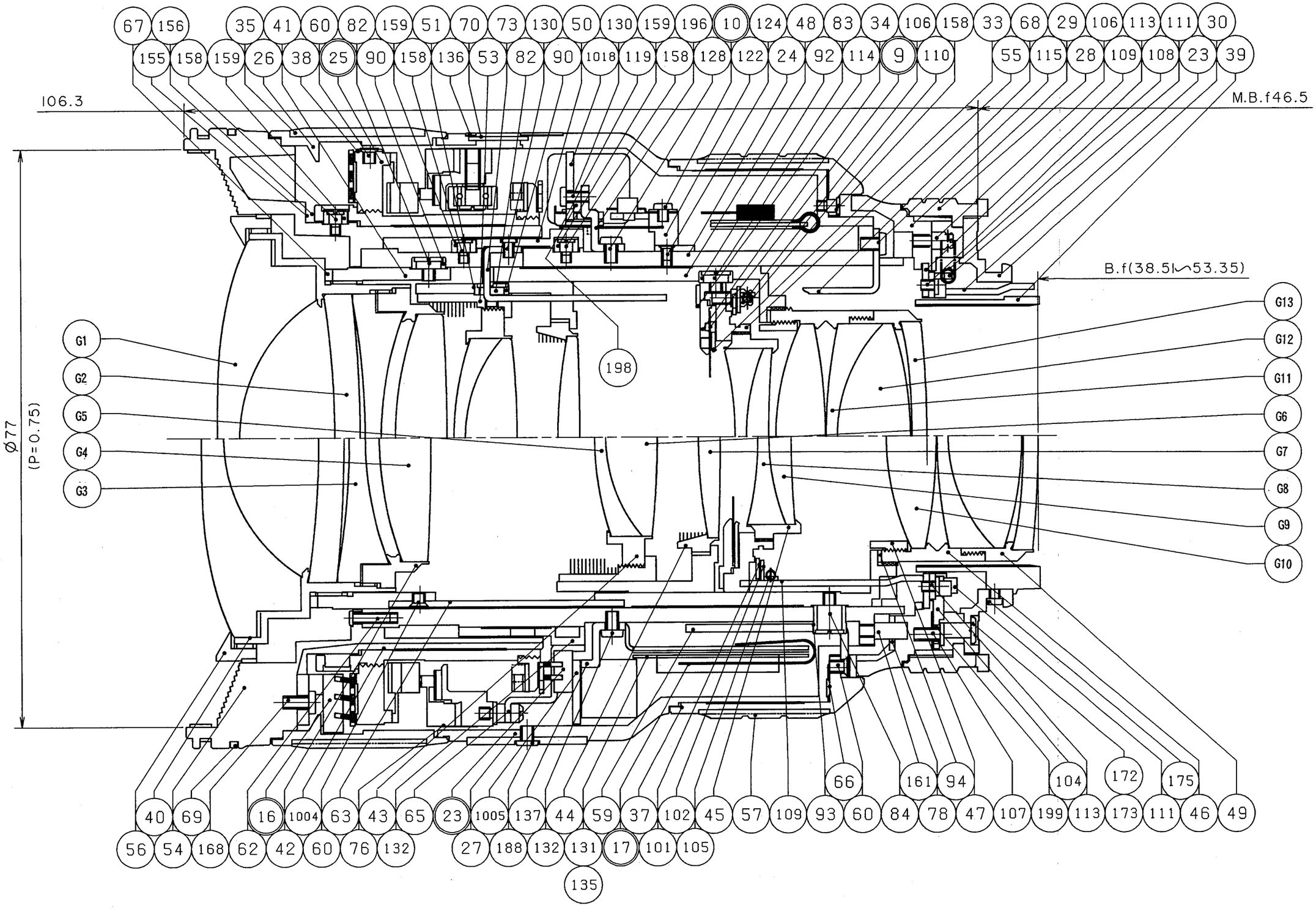
実体配線図　WIRING

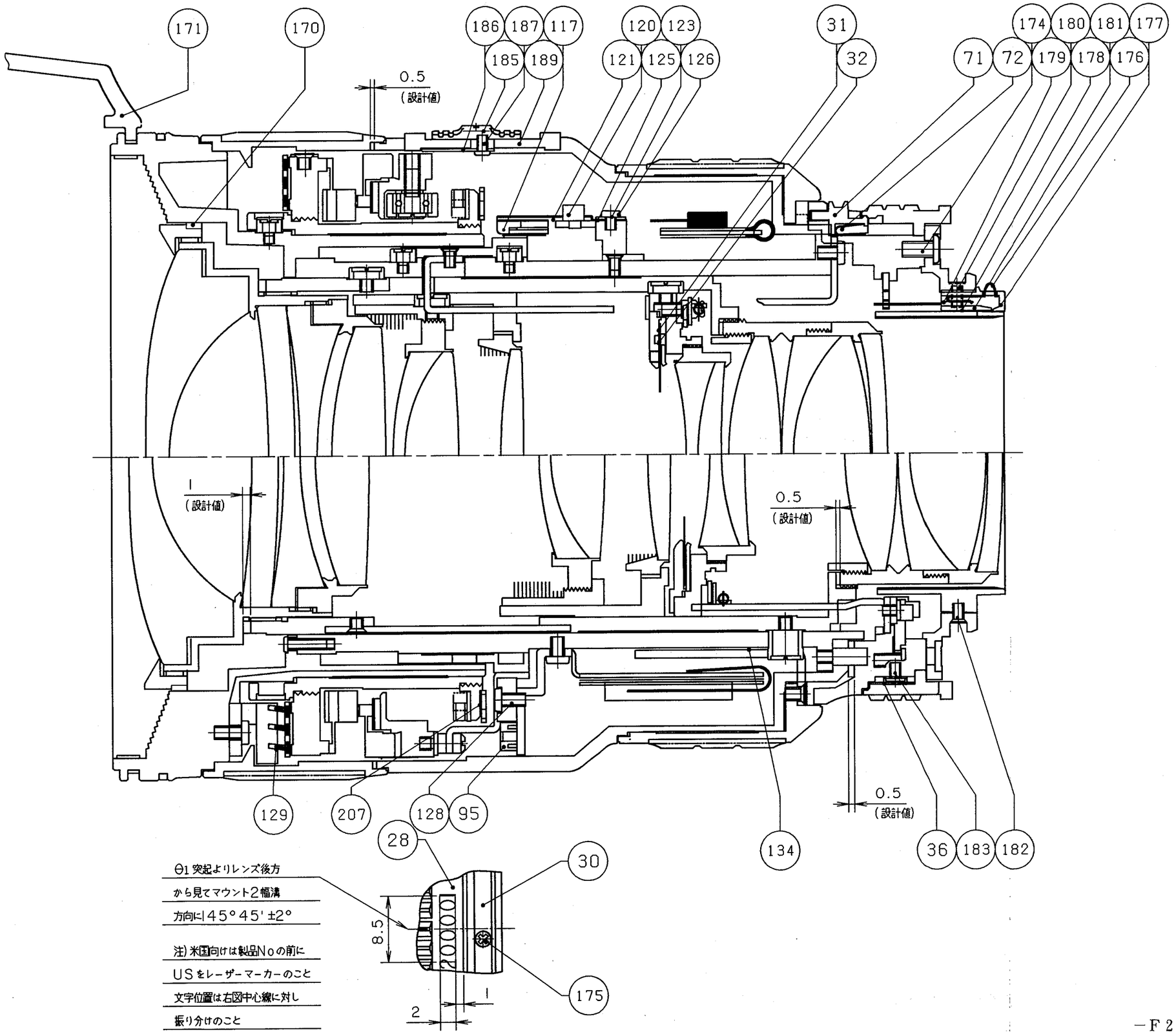


回路図 CIRCUIT DIAGRAM



組立図 Structure of the Lens




171
170
186
187
117
185
189
120
123
121
125
126
31
32
174
180
181
177
71
72
179
178
176
0.5
(設計値)
1
(設計値)
0.5
(設計値)
0.5
(設計値)
129
207
128
95
28
134
36
183
182
30
175
8.5
2
1
θ1 突起よりレンズ後方
から見てマウント2幅溝
方向に145°45'±2°
注) 米国向けは製品Noの前に
USをレーザーマーカーのこと
文字位置は右図中心線に対し
振り分けのこと