

AF-I Nikkor ED 600mm f/4 D IF

REPAIR MANUAL

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Tokyo, Japan

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Supplement

◎ CHECKING PROCEDURE OF TC-14E AND TC-20E

1. Attach the AF-I lens (300/2.8, 600/4) to the Teleconverter (TC-14E, TC-20E) .
2. Mount them on the F90 camera.
3. Set the AE mode of the camera to M position, and set the lens at the maximum aperture.
4. Confirm the display of the F value on the camera.

Combination	Display
AF-I 300/2.8 + TC-14E	F4
AF-I 300/2.8 + TC-20E	F5.6
AF-I 600/4 + TC-14E	F5.6
AF-I 600/4 + TC-20E	F8

5. Set the camera at AF mode, then check the AF function.
6. With a Teleconverter independently, check the continuity between camera side and lens side of each E and H contact.
These contacts are two of those lined counterclockwise (seen from the camera mounting side) in alphabetical order.

Standard : Less than 5 Ω (Both E and H contacts)

AF-I Nikkor ED 600mm f/4 D IF

JAA51951-R. 3310. A

1. Specifications

1-1. Function

AF:Auto focus MF:Manual focus FA: Focus aid

Lens		Lens focus mode		
Camera	Mode	M (MF)	M/A (MF OR AF)	A (AF)
P4	C	FA operation is performed manually while pressing the shutter release button slightly. * Shutter prerelease time is prolonged while operating the focusing ring.	<ul style="list-style-type: none"> • AF operation is activated when the shutter release button is pressed lightly pressing. • Press the shutter release button slightly and operate the focusing ring to change the focus mode from AF to MF, and turn the shutter prerelease timer OFF to change the focus mode from MF to AF. • Press the shutter release button slightly and operate the focusing ring to change the focus mode from AF to MF. 	AF operation is activated when the shutter release button is lightly pressing.
	S			
	M			
Other camera	C	FA operation is performed manually while pressing the shutter release button slightly.	AF and MF No operation	AF and MF NO operation
	S			
	M			
NON AF camera		AF NO operation	-ditto-	-ditto-

1-2. CPU contact

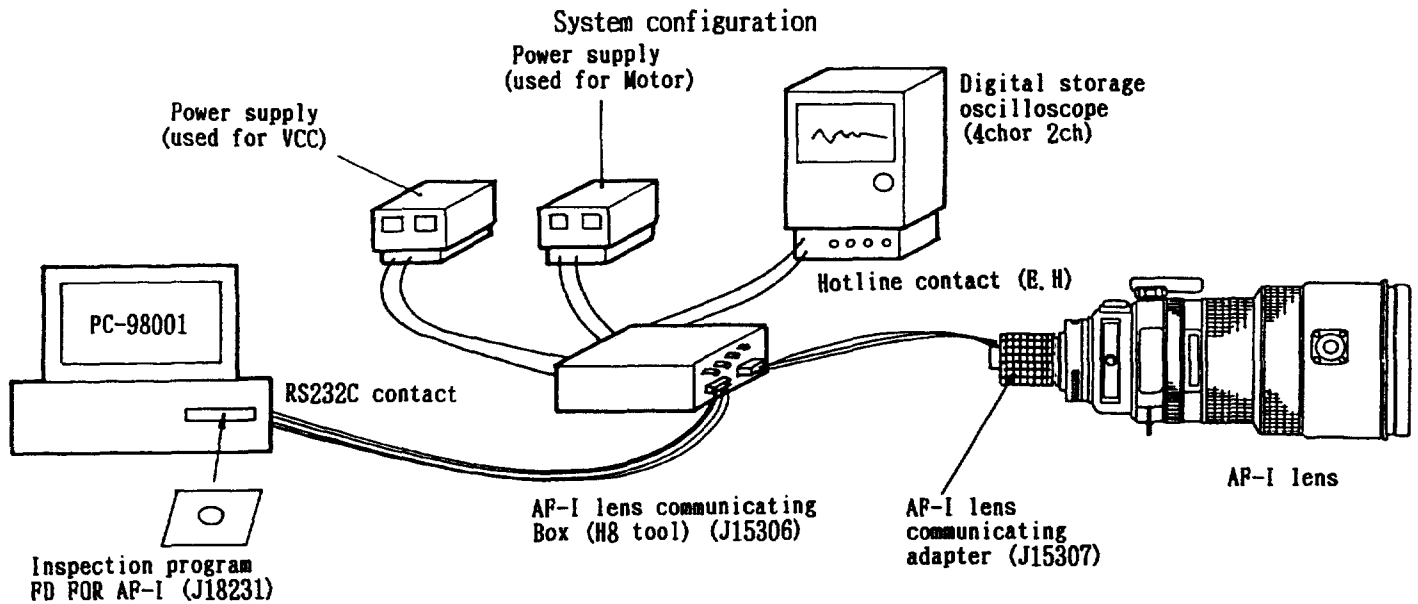
Contact	Contacts	Contact	Contacts
A	VCC	G	Motor GND
B	R/W1	H	Hotline, Pulse
C	Clock	I	Reserve
D	DATA	J	Reserve
E	Hotline, Pulse	Mount	GND
F	Power source for motor		

* Contacts are marked from "A" to "J" as viewed counter-clockwise from the rear of the lens (from the mount side).

2. AF-1 lens communication inspection system

2-1. Outline

This system consists of a box tool for AF-1 lens communication, an AF-1 communication adapter, and a personal computer. This system can simulate the state of the AF-1 lens being actually mounted on a camera body. This makes it possible to display and check the lens operation and lens condition, numerically on the computer screen, which, up till now, had been difficult without actually mounting the lens on a body. With this system, you can carry out measurements of lens accuracy, determine the lens condition and perform simple troubleshooting. You also can display waveforms of different parts on the oscilloscope, using this system, when you carry out inspection and adjustment.



2-2. Inspection of AF-1, and adjustment program menu.

- (1) Inspection of each switch and lens condition
- (2) Inspection of clutch motor operation
- (3) Inspection of lens driving stop accuracy
- (4) Inspection of hot-line signal output
- (5) Inspection of play of lens driving gears
- (6) Inspection of scanning driving operation
- (7) Inspection of lens go-and-return operation
- (8) Inspection of lens servo time
- (9) Return to the first menu.

(1) Inspection of each switch and lens condition

Inspection of each switch and lens condition.										
Type of lens : 600mm					CPU version of the lens : 2.00					
					P	P	P	P	P	P
					35	36	37	38	39	40
					41	42	43	44		
Focusing encoder	:	L	L	H	H	H	H	H	H	H
Focus mode selector	:	M/A						P51: H	P50: H	
Clutch SW	:	M						P47: H	P46: L	
Focus lock SW	:	OFF						P52: H		
Focusing range limiter SW	:	Infinity - middle						P49: H	P48: L	
Helicoid position	:	Infinity								
M mode interruption in M/A mode	:	interruption => pulse								-65243

Return to the main menu, if hit RETURN key.

- ① CPU Ver of the lens
Indicates the version of the lens being inspected.

As of August 1, 1992

Type	2.11	2.14	2.15	2.16
600/4	○	○	—	○
300/2.8	—	○	○	○

- ② Focusing encoder
Displays focusing encoder signal (L or H) by rotating the focusing ring manually in M or M/A mode.
- ③ Focus mode selector
Selects one of three modes: "M", "M/A", or "A".

Mode	CPU signal	
	51 Pin	50 Pin
M	L	H
M/A	H	H
A	H	L

④ Clutch switch

Changes, depending on the lens condition, by detecting the clutch position of switch A or switch M.

Mode	Switch condition	CPU signal	
		47 Pin	46 Pin
M	Always at the M side	H	L
M/A	At switch M side in manual interruption	H	L
A	Always at switch A side	L	H

* Signal state is "H, H" in M or A mode (while switching over.)

⑤ Focus lock switch

Switch condition	CPU signal
	52 Pin
Normal (off)	H
Focus lock (on)	L

⑥ Focus range limiter switch

Selects one of three positions by detecting the stopper position using focusing encoder signal.

Limiter switch position	CPU signal	
	48 Pin	49 Pin
FULL	H	L
Infinite to middle	L	H
middle to near	H	H

⑦ Helicoid position

Displays helicoid position that was read from the focusing encoder signal (near, medium, infinity distance).

⑧ M mode interruption in M/A mode

Displays the recognition of pulse generation (recognition of interruption) by manual rotation of the focusing ring and the pulse count. * Interruption can be recognized by two pluses in a specified period of time.

(2) Inspection of clutch motor operation

Inspection of clutch motor operation.	
Type of lens : 600mm	CPU version of the lens : 2.00
<p>Clutch SW ==>> A P47: L P46: H</p> <p>Hit SPACE key, while rotating focusing ring.</p> <p>Set focus mode selector to M/A.</p>	
<p>Return to the main menu, if hit RETERN key.</p>	

You can recognize the driving operation of the clutch selection motor and the selection of the clutch switch A or M pressing the space key of the personal computer while rotating the focusing ring manually.

(3) Inspection of lens driving stop accuracy

Inspection of lens driving stop accuracy.		92.10.09 14:10:46		
Type of lens : 600mm	CPU version of the lens : 2.00			
Number of lens go and return operation. :	1/ 10 times.			
Lens driving times :	12 times.			
Maximum pulse number.(absolute value) :	3 puls.			
Rate of occurrence of pulse 7 or more :	0.00 %.			
Over (under) run pulse :	0 puls.			
* : Close distance.				
Driving dir. :	$\infty \rightarrow *$	$\infty \rightarrow *$	$+ \rightarrow \infty$	$* \rightarrow \infty$
Amount of driv.:	Df0,Df2,Df3	Df1	Df0,Df2,Df3	Df1
	(-) (+)	(-) (+)	(-) (+)	(-) (+)
0 - 6 (Pulse):	1 4	2 1	0 2	1 0
7 - 14 :	0 0	0 0	0 0	0 0
15 - 20 :	0 0	0 0	0 0	0 0
21 - :	0 0	0 0	0 0	0 0
<p>Return to the main menu, if hit RETERN key.</p>				

In this menu, you can evaluate the accuracy of lenses, using overrun and underrun pulses, by inspecting and measuring stop accuracy against the standard stop position for each programmed driving operation.

- ① Number of lens go-and-return operations
Displays the number of go-and-return operations (up to 10 repetitions) by focusing the lens from infinity to near distance.
- ② Number of lens driving operations
Display the total number of lens driving operations of the four programmed driving operations (DF0, DF2, DF1, and DF3).
- ③ Maximum pulse number (absolute value)
Displays absolute value of the maximum overrun or underrun pulses against the standard stop position.
- ④ Rate of occurrence of pulses of 7 or more displays the rate of occurrence of overrun or underrun pulses of 7 or more against the standard stop pulse.

$$\frac{\text{No. of occurrence of pulses over 7}}{\text{No. of lens driving operations}} \times 100 = \text{Rate of occurrence (\%)}$$

- ⑤ Overrun (or underrun) pulse
Displays measured number of pulses for each time overrun pulses against the standard stop pulse. Modify the program to display variable pulse numbers.
- ⑥ Driving direction and the amount of lens driving
Displays the total number of pulses (exceeding 0 to 20 or more pulses) against the standard stop pulse according to overrun or underrun pulses in the four separate driving methods.

Driving operation	Amount of lens driving
Df0	Varies 10 repetitions for each go-and-return operation
Df1	Extremely small
Df2	Large
Df3	Small

Standard: · Acceptable range: up to 10% occurrence rate of pulse over 7
 · Acceptable range: up to one occurrence of 15 to 20 pulses.
 · Unacceptable range: one occurrence of 21 pulses or more.

(4) Inspection of hot-line signal output

Inspection of hot-line signal output.	
Type of lens : 600mm	CFU version of the lens : 2.00
<ol style="list-style-type: none"> 1. No hot line signal is out put. 2. Hot line signal is out put from E terminal. 3. Hot line signal is out put from H terminal. 4. Hot line signal is out put from H and E terminal. 	
<p>Hit the number to start out put the hot line signal.</p> <p>Return to the main menu, if hit RETERN key.</p>	

In this inspection, we define that waveforms (converted from four sinusoidal waveforms, output from the glass encoder, into two rectangular waveforms) are a hot-line signal. You can check the lens operation condition and hot-line output by monitoring the waveforms (phase A and phase B signal, or "exclusive OR" output signal through the circuitry built in the lens) output from E and H contacts on the oscilloscope.

- ① No hot-line signal is output
No hot-line signal is output to the lens contacts (E and H terminals).
- ②~③ Hot-line signal is output from E and H contacts.
"Exclusive OR" signal of phase A and phase B is output from the E or H terminal.
- ④ Hot-line signal is output from E and H terminals.
Signal is output to the lens contacts (E [phase B] and H [phase a] terminals).

(5) Inspection of play of lens driving gears

Inspection of play of lens driving gear.	
Type of lens : 600mm	CPU version of the lens : 2.00
<p>Hit SPACE key to inspect play of lens driving gears by oscilloscope.</p> <p>Hot line signal is out put from E terminal.</p>	
<p>Return to the main menu, if hit HELP key.</p>	

Signal output is deployed from the start of rotation of the lens driving AF motor until the output of hot-line signal in accordance with the play of the gears. If the amount of play is large, AF accuracy is affected. Therefore it is necessary to check the amount of play by counting the PI output pulses.

Count the number of PI output pulses generated from the start of rotation of the lens driving AF motor until the output of hot-line signal. (Standard value: within 10 pulses)

In this case, the "Exclusive OR" signal is output from the E contacts.

(6) Inspection of scanning driving operation

Inspection of scanning driving operation.	
Type of lens : 600mm	CPU version of the lens : 2.00
<p>1. Lens driving mode. : Duty drive mode</p> <p>2. Lens driving speed. : Low speed</p> <p>Lens drive direction. : * -> infinity</p> <p>Set focus mode selector to A.</p>	
<p>Hit SPACE key to start operation.</p> <p>Select the number, if changing the function value of each item.</p> <p>Return to the main menu, if hit RETURN key.</p>	

You can select one of the three lens driving speeds (low, medium, and high) and check lens operation by changing the lens driving mode to duty or normal mode.

* Duty driving mode: Drives the motor by controlling the time during which electric current flows in unit time. (Driving mode for inspection)

* Normal driving: Controls the speed using pulses output from the glass encoder.
(Driving mode in actual use)

(7) Inspection of lens go-and-return operation

Inspection of lens go and return operation.	
Type of lens : 690mm	CPU version of the lens : 2.00
1. Number of lens go and return operation.	: 5
2. Beaking time.	: 15 sec.
3. Total No. of lens go and return operation in one interval.:	1
4. Lens driving speed.	: High speed
Set focus mode selector to A or M/A.	
Hit SPACE key to start operation. Select the number, if changing the function value of each item.	
Return to the main menu, if hit RETURN key.	

Check lens go-and-return driving by performing interval driving while arbitrary setting the lens driving conditions and driving speed.

(8) Inspection of lens servo time

[AF-I lens checking program]	(C) Copyright Nikon CORP. 1992-03-01.
1. Inspection of each switch and lens condition.	
2. Inspection of clutch motor operation.	
3. Inspection of lens driving stop accuracy.	
4. Inspection of hot-line signal output.	
5. Inspection of play of lens driving gear.	
6. Inspection of scanning driving operation.	
7. Inspection of lens go and return operation.	
8. Inspection of lens servo time.	9. Return to the first menu.
Select the number.	

In this menu, you can check abnormal lens stop during servo operation by measuring the time taken to perform the programmed amount of driving (6mm).

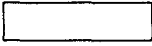

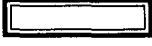
- ① Number of lens go-and-return operations
Displays the number of go-and return operations (5 repetitions) by focusing the lens from infinity to near distance.
- ② Number of lens driving operations
Displays the number of lens servo driving operations.
- ③ Ratio of driving time against the minimum driving time
Ratio of the minimum driving time taken to defocus the lens by 6mm against the driving time for each measurement. (The minimum driving time is defined as 1.)
- ④ maximum ratio of driving time
Ratio of the minimum driving time taken to defocus the lens by 6mm against the maximum driving time for the time of measurement.
- ⑤ Constant value of time ratio
Rate of occurrence in which lens driving time ratio against the average minimum time taken to defocus the lens by 6mm exceeds the constant value.
* Average minimum time: Average time (of 10 repetitions) taken for driving from the minimum to the maximum.

Standard rate of occurrence:

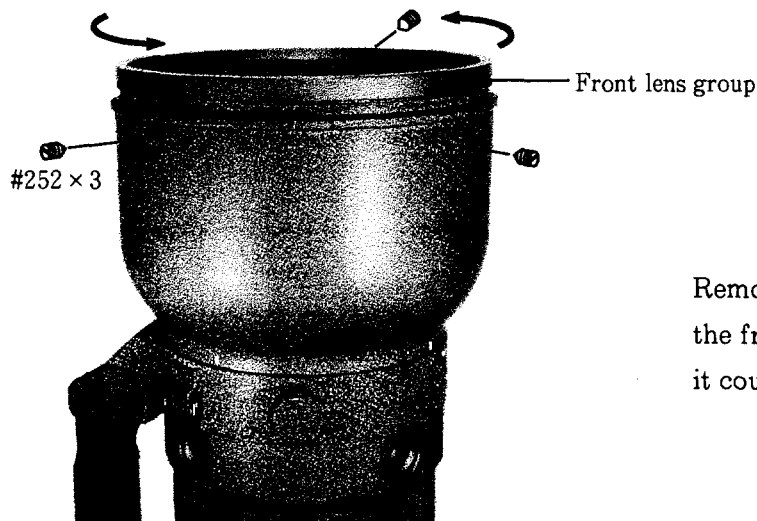
Lens than 1.8 sec.	Acceptable
From 1.8 to 3.6 sec.	Acceptable until 5% (within 3 repetitions)
Over 5.4 sec.	Not acceptable even if it occurs only once.

AF-I Nikkor ED 600mm f/4 D IF

DISASSEMBLING / ASSEMBLING / ADJUSTMENT

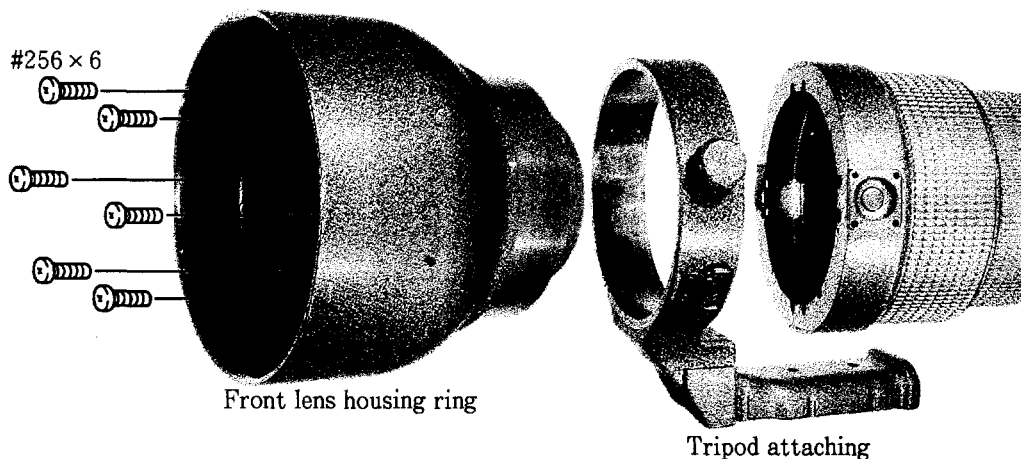
- Note:**
- ① The tone of pictures may be different from actual one. Make sure of the shape of parts when disassembling and assembling.
 - ② The mark ∇ shows the position of index.
 - ③  : Disassembling/ assembling
 : Adjustment
 : Additional work
 - ④ All screws mentioned in this publication are right-handed screws unless otherwise mentioned. Rotate screws counter-clockwise to unfasten, and clockwise to fasten.
 - ⑤ Send the lens back to Nikon if the front lens group (ED glass) is damaged.

FRONT LENS GROUP

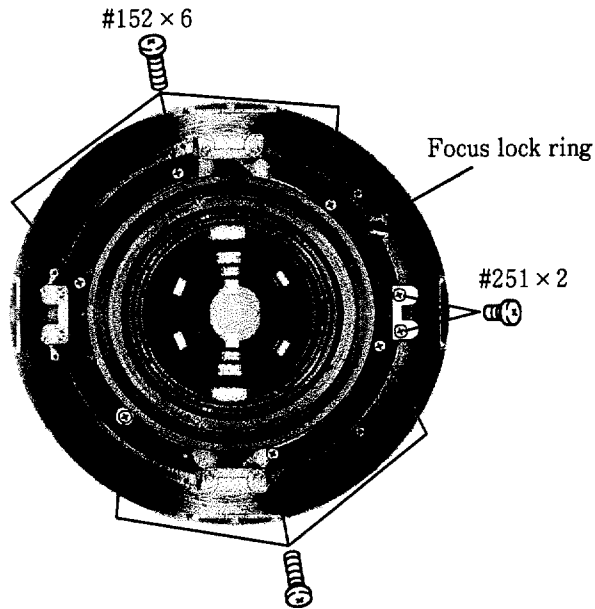


Remove screw #252 x 3 and remove the front lens group by rotating it counter-clockwise.

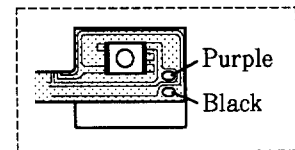
FRONT LENS HOUSING RING, TRIPOD ATTACHING



FOCUS LOCK RING, FOCUS LOCK FPC UNIT

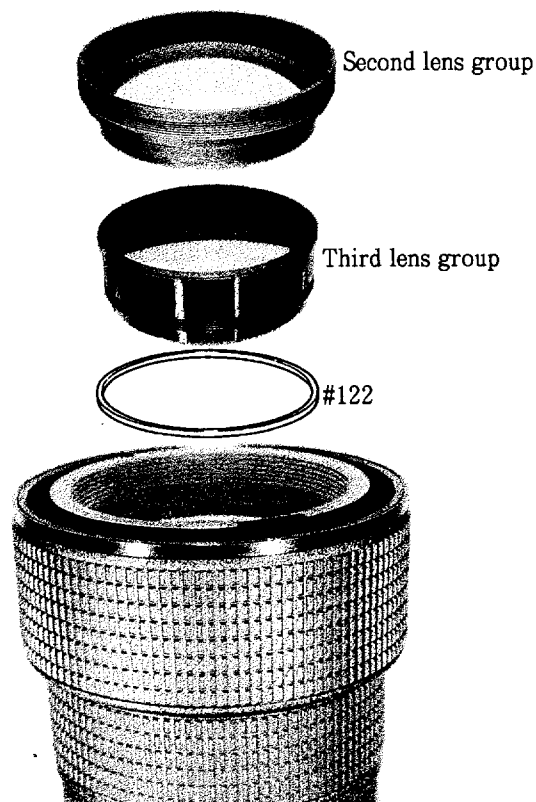


- ① Remove screws #251x2 on the switch unit with wires attached and remove soldering on the wires. (Refer to the figure below)



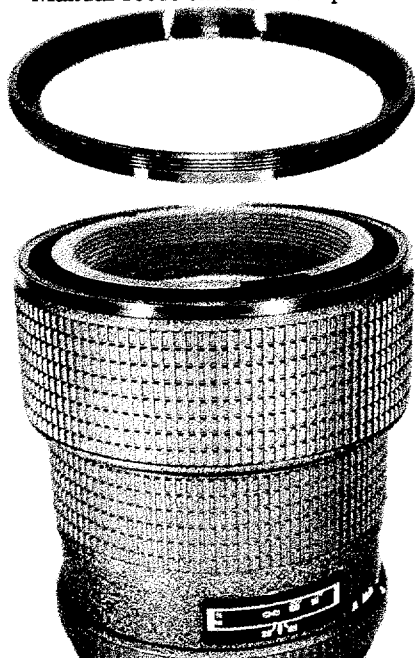
- ② Remove screws #152x6 to remove driving ring unit.

SECOND, THIRD LENS GROUP



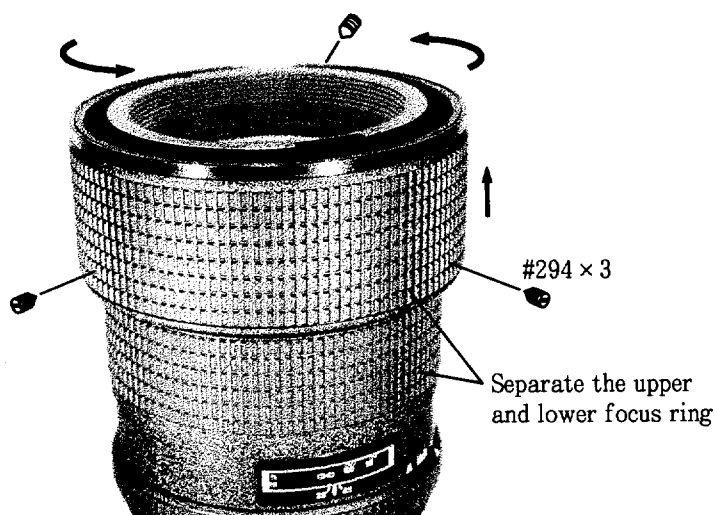
MANUAL FOCUS ENCODER BASE PLATE

Manual focus encoder base plate



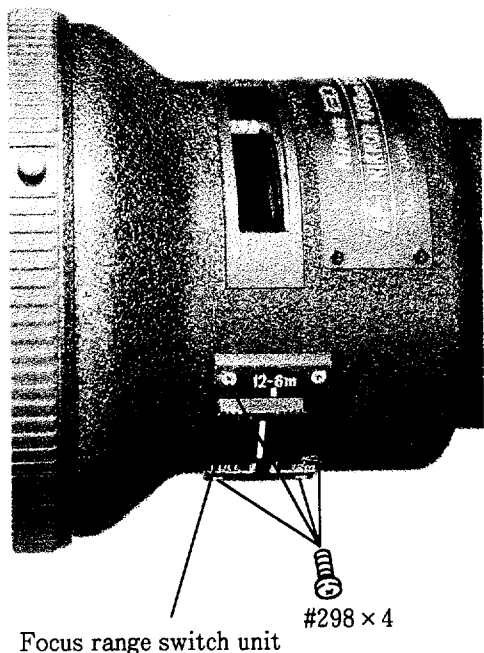
- Since the manual focus encoder base plate is secured by screw lock, use alcohol to dissolve screw lock and remove the base plate.

FOCUS RING



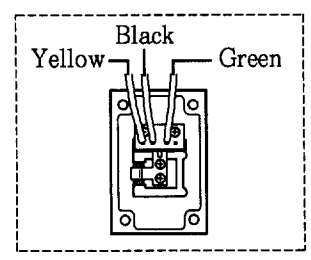
- Remove screw #294 x 3.
- Rotate the upper focus ring counter-clockwise to separate it from the lower it.

FOCUS RANGE SWITCH UNIT

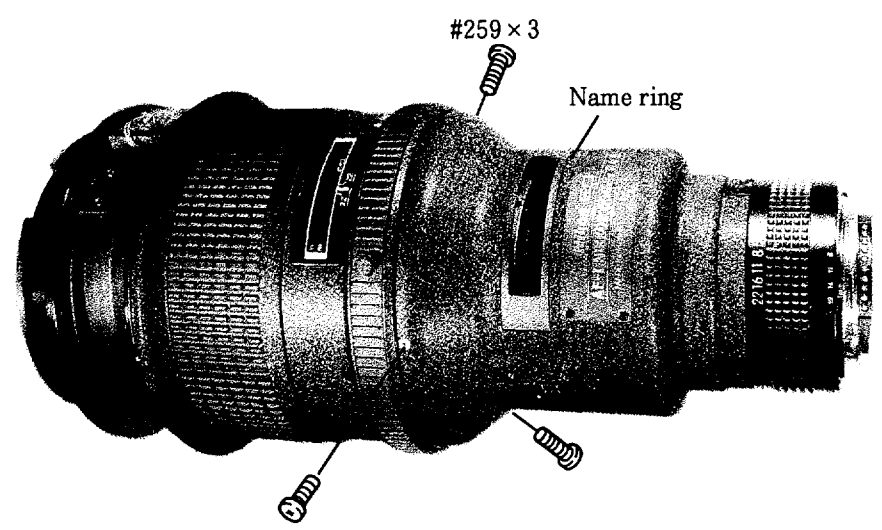


Focus range switch unit
#298 x 4

- Remove the screws #298 x 4.
- Remove the focus range switch unit and remove soldering of wires. (Refer to the figure below)

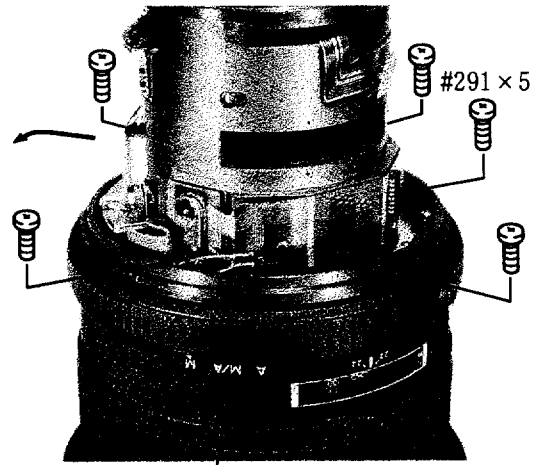
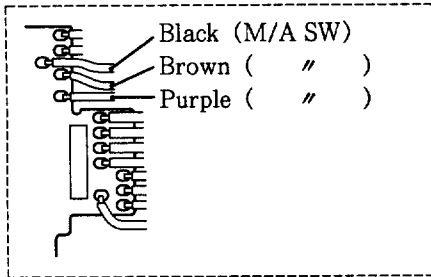


NAME RING



#259 x 3
Name ring

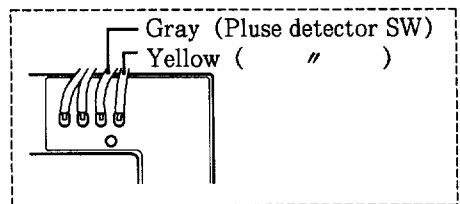
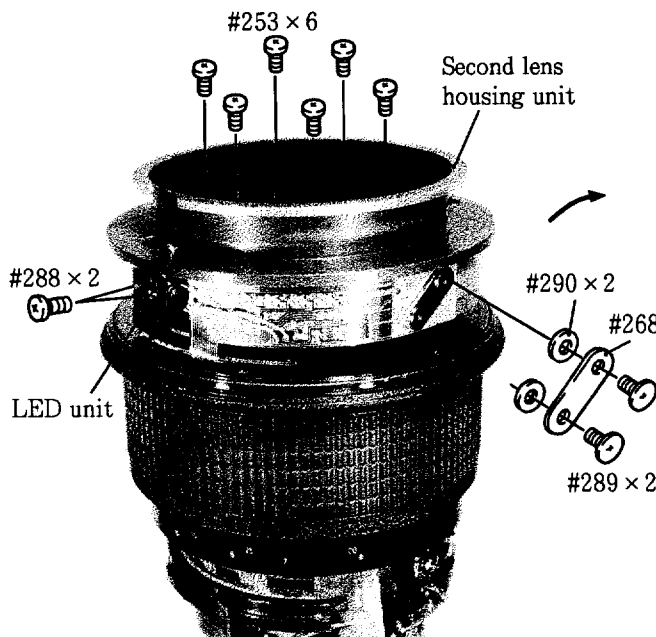
FOCUS MODE INDEX RING



Focus mode index ring

- The focus mode index ring can easily be removed at the position where the focus mode switch is adjusted to "M".

SECOND LENS HOUSING UNIT, LED UNIT

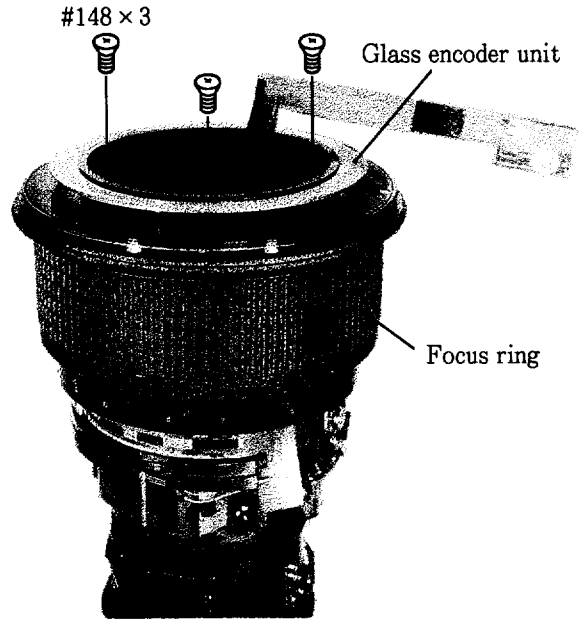


Note

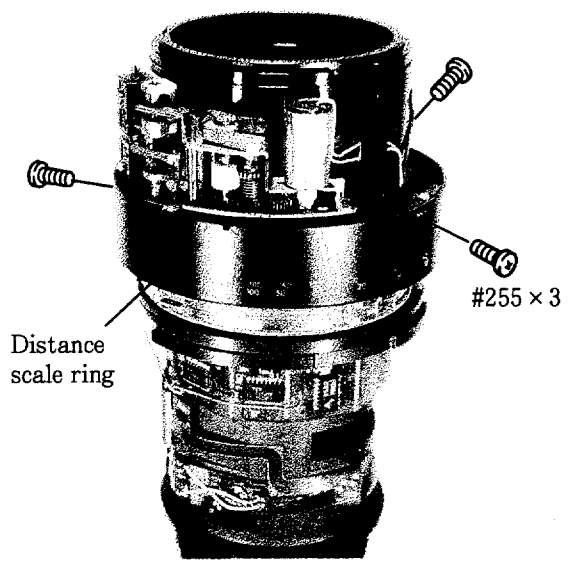
(LED unit)

Never remove this screw securing the LED unit.

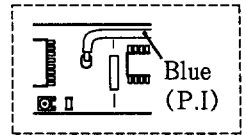
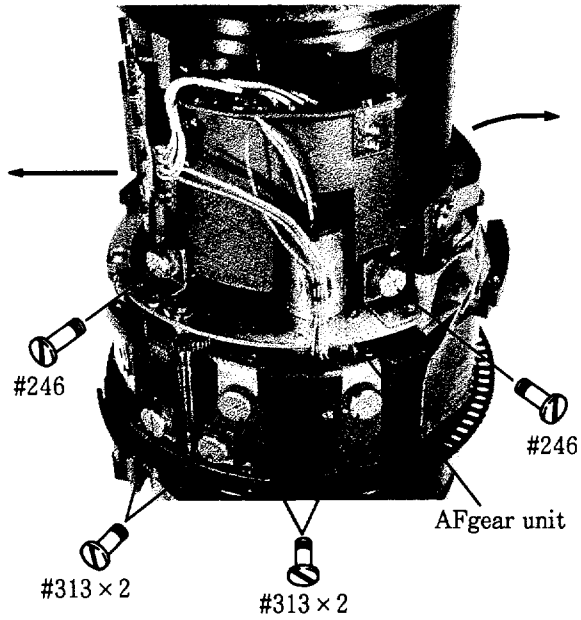
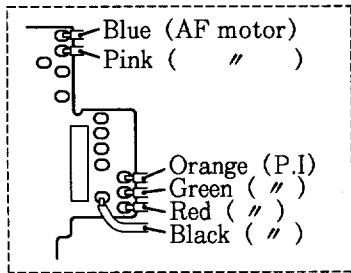
GLASS ENCODER UNIT, FOCUS RING



DISTANCE SCALE RING

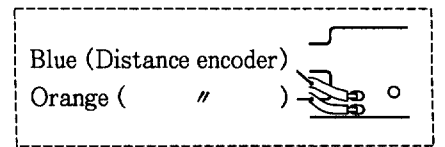
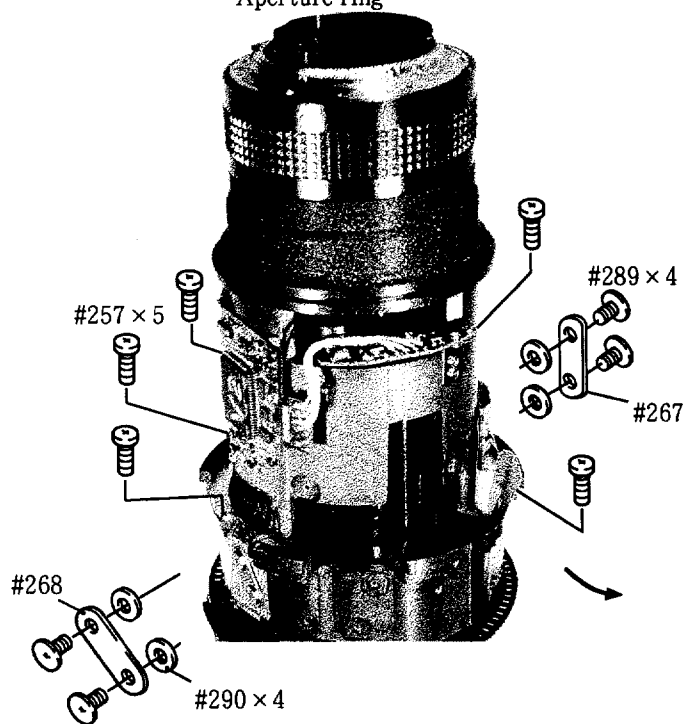


AF GEAR UNIT

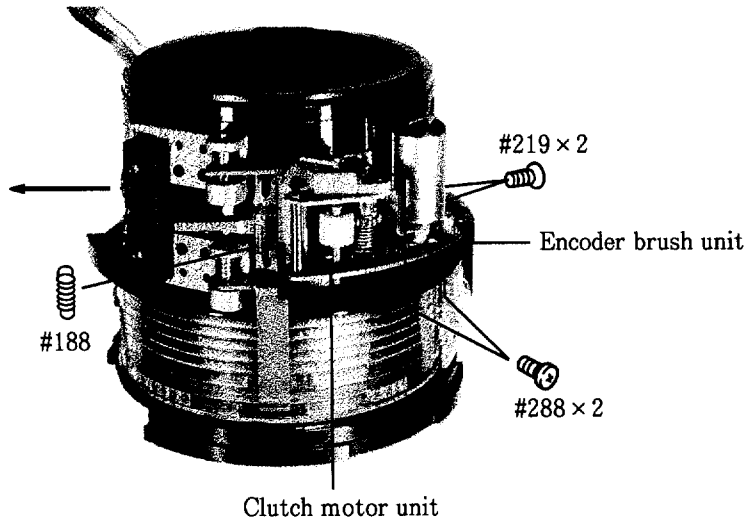
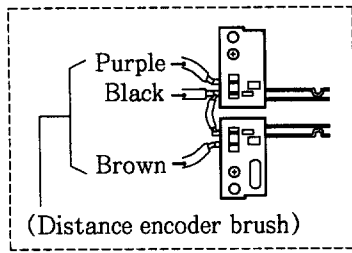


APERTURE RING

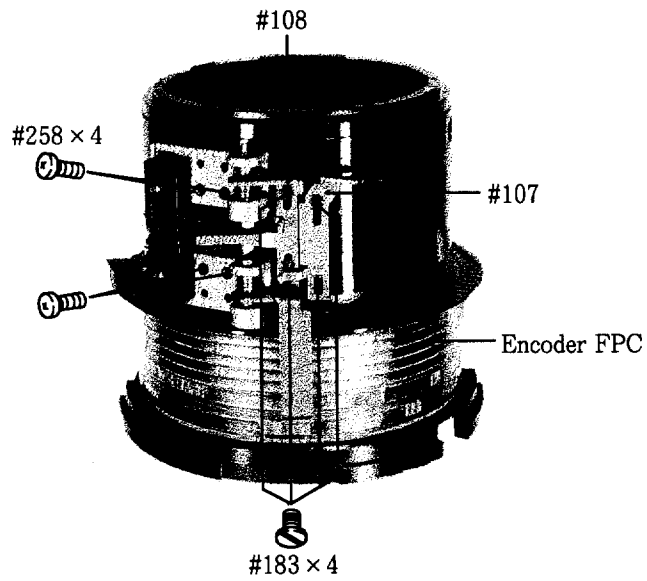
Aperture ring



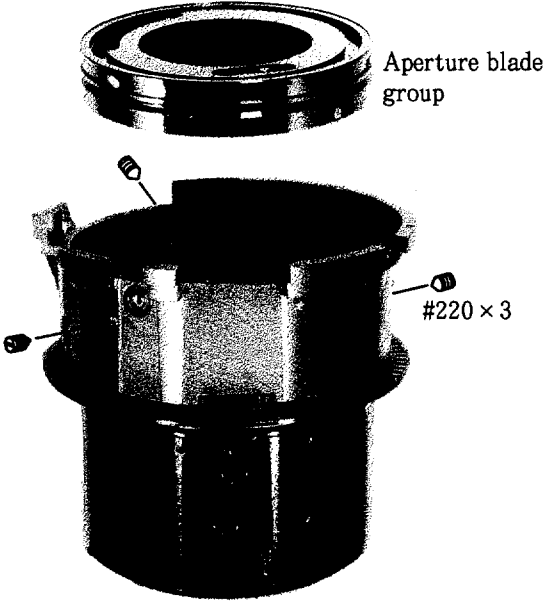
CLUTCH MOTOR UNIT, ENCODER BRUSH UNIT



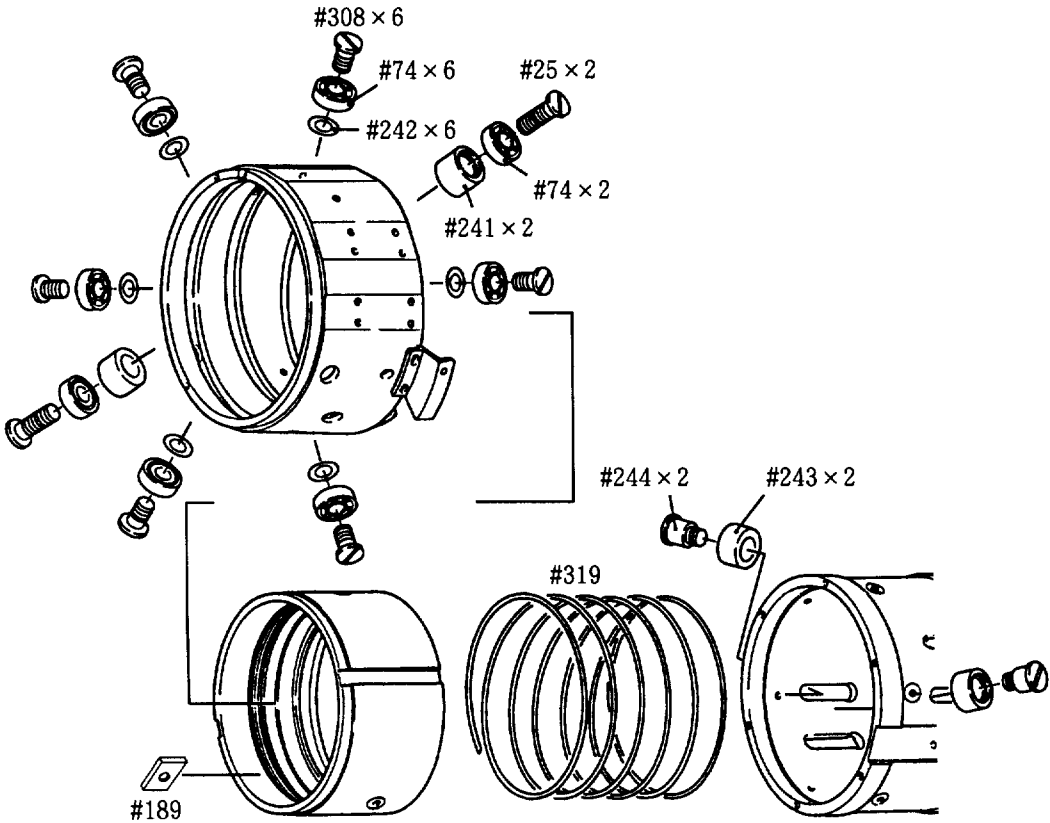
A/M SWITCH UNIT, ENCODER FPC



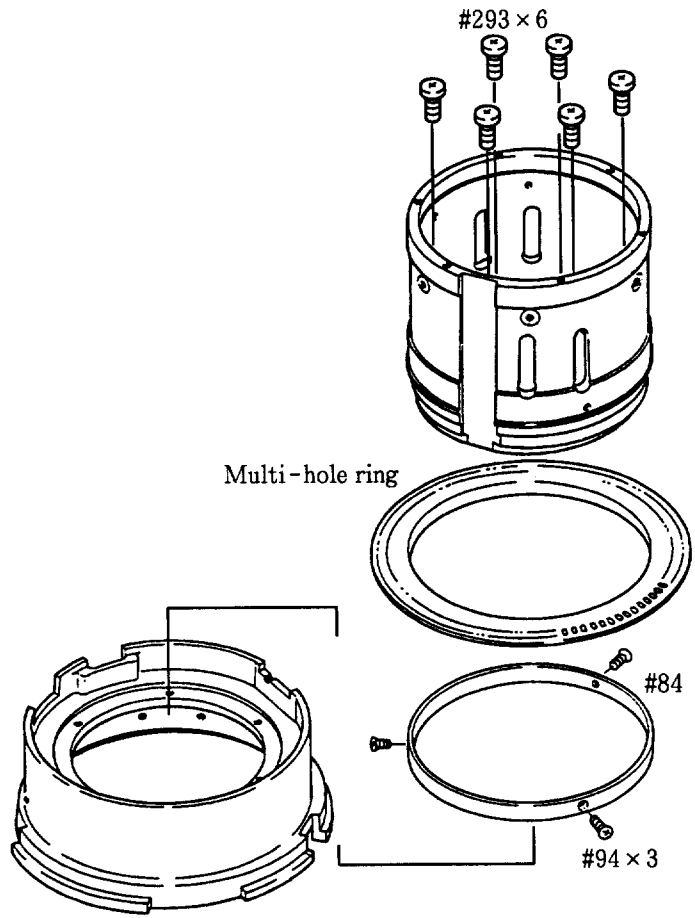
APERTURE BLADE GROUP



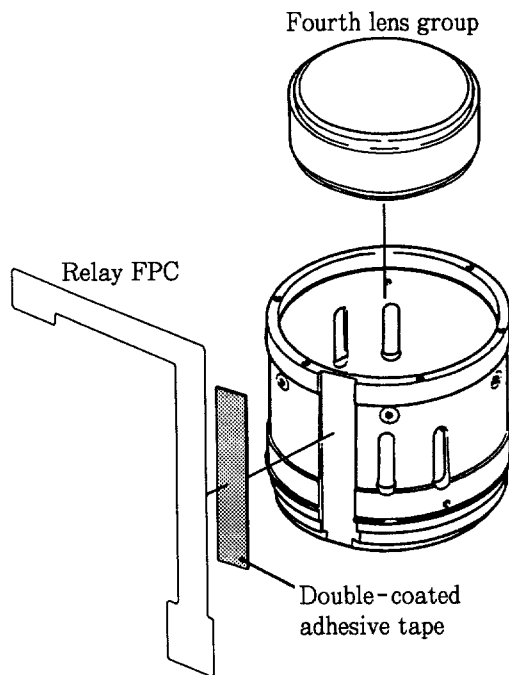
CAM RING GROUP



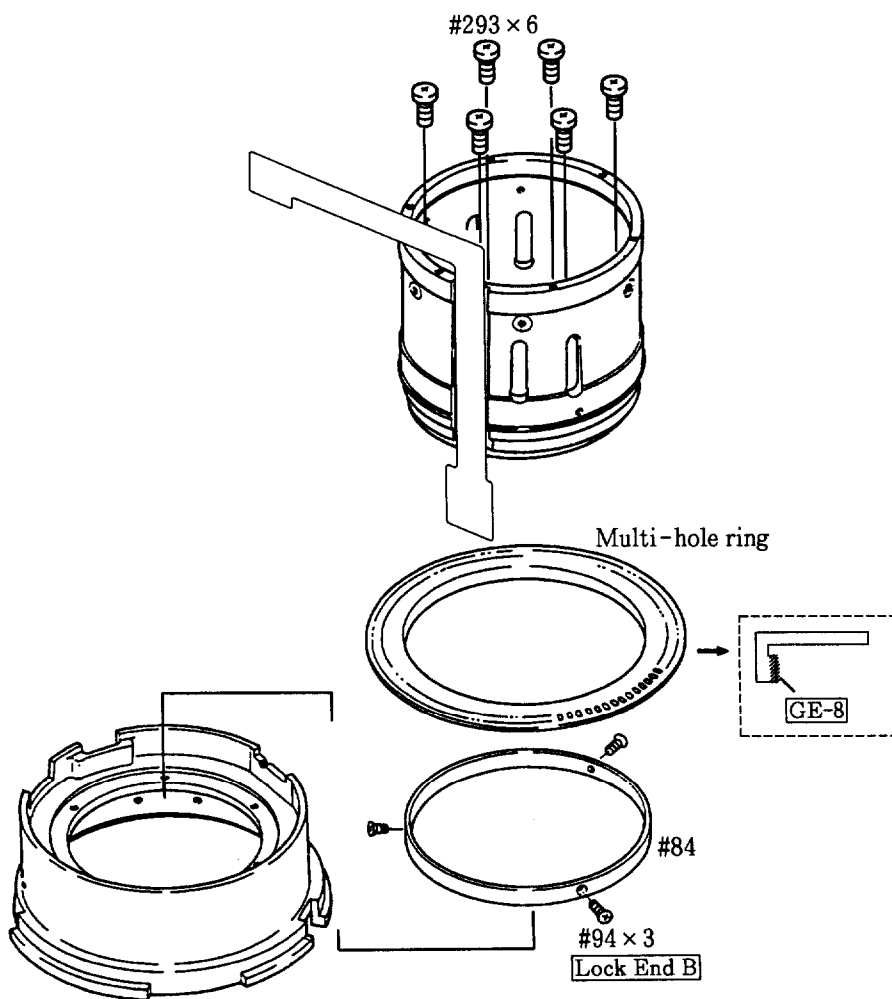
MULTI-HOLE RING



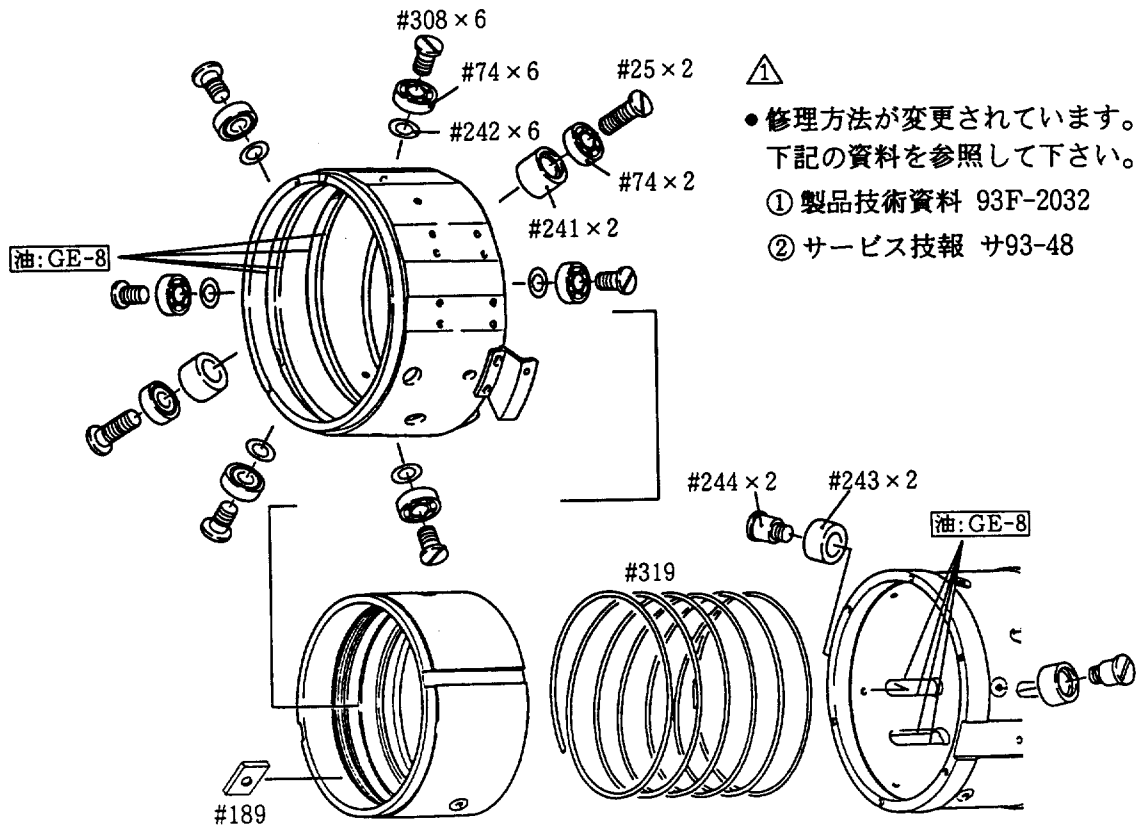
RELAY FPC, FOURTH LENS GROUP



MULTI-HOLE RING



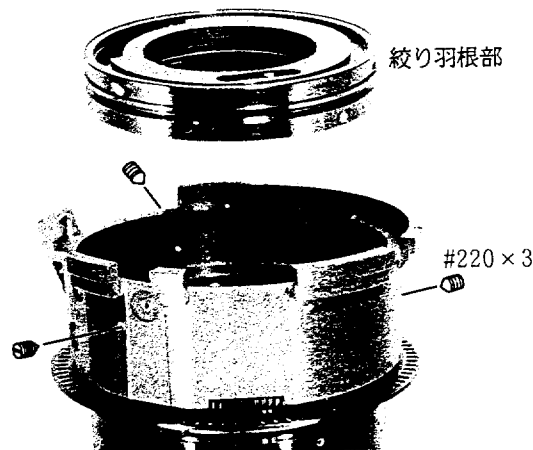
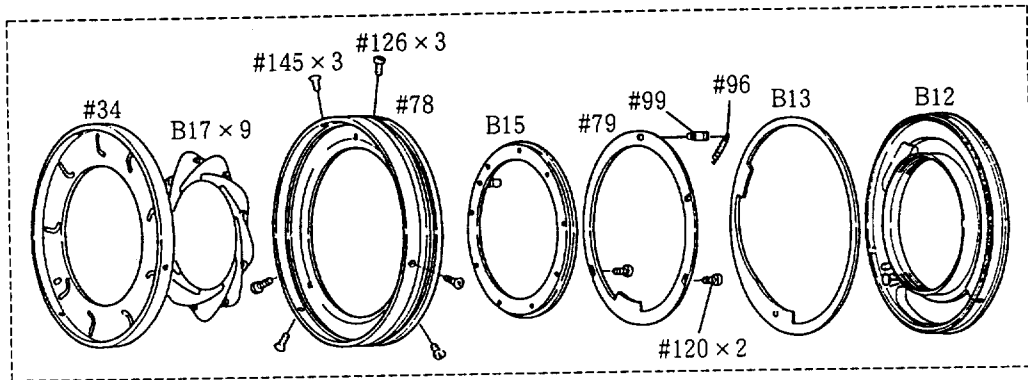
カム環部



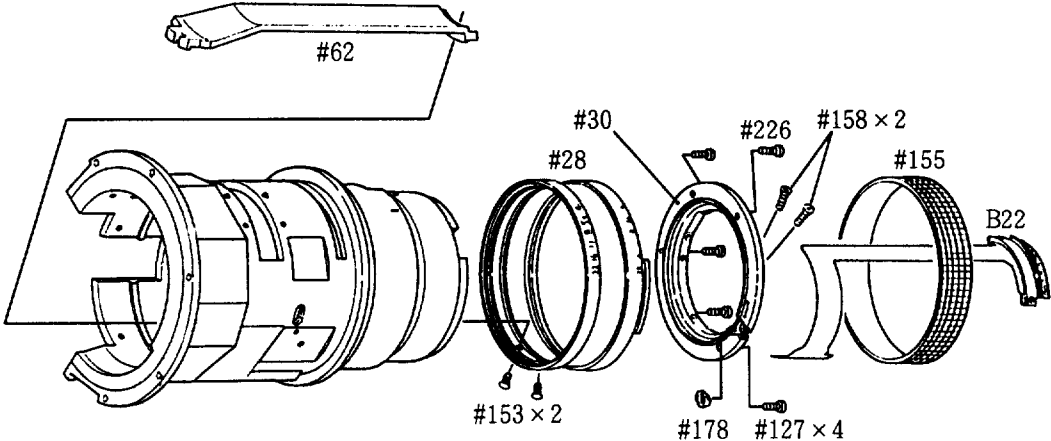
● 修理方法が変更されています。
下記の資料を参照して下さい。

- ① 製品技術資料 93F-2032
- ② サービス技報 サ93-48

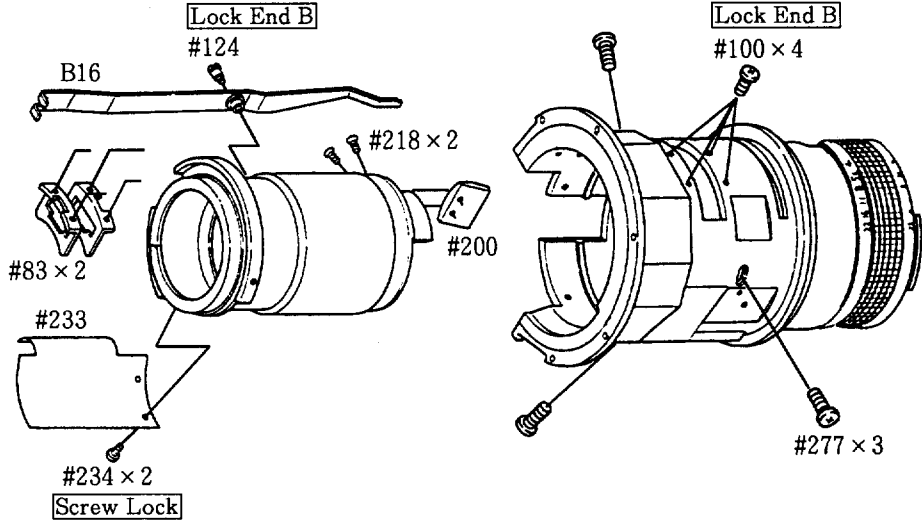
絞り羽根部



BAYONET MOUNT, APERTURE RING, CONNECTING FPC



APERTURE LEVER GROUP

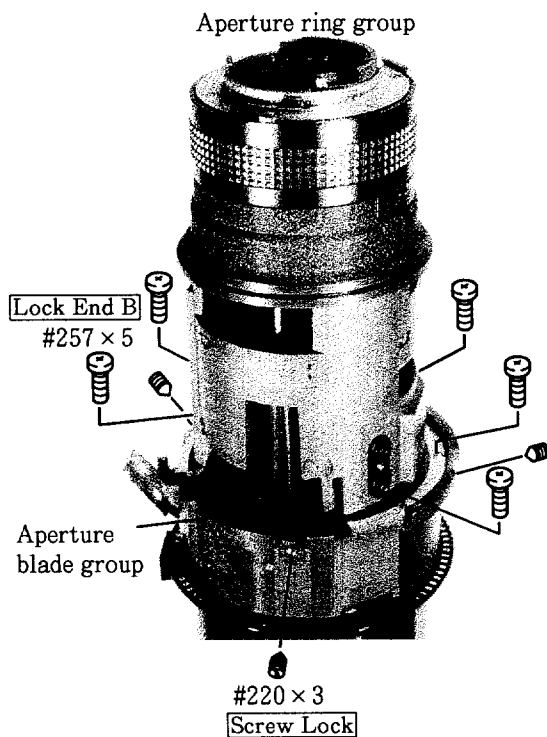


ADJUSTMENT OF APERTURE OPENING

- ① Mount the aperture ring group with screws #257 × 5

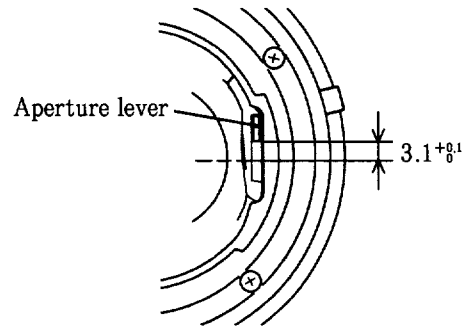
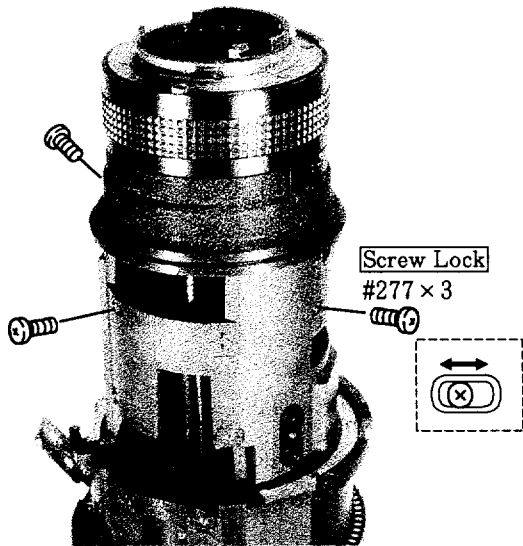
- ② Unfasten screws #220 × 3 and move aperture blade group to adjust the aperture diameter.
 As a guide to adjustment, the full aperture (f/4) should be the same size as the inside diameter of part #34. (The inside diameter of part #34, the same as that of inscribed circle diameter.)
 - Aperture diameter should be within the allowable range when the aperture ring is rotated forward and backward.
 - Aperture lever should be within the allowable range when the aperture lever is snapped by your finger.

- ③ After adjustment, secure screws #220 × 3 using Screw Lock.



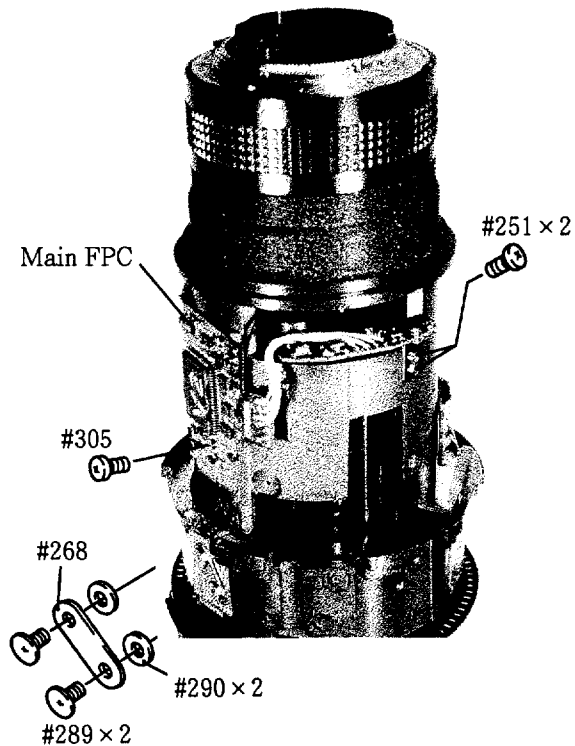
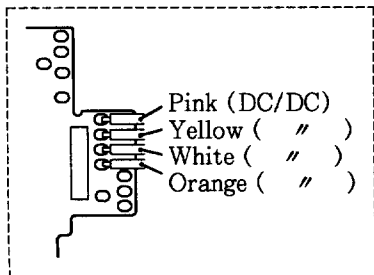
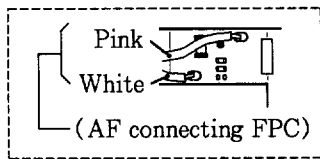
Aperture setting	Inscribed circle diameter (mm)	Tolerance (mm)
4	45.16	46.72 ~ 43.71
5.6	31.45	35.30 ~ 28.02
8	22.19	24.91 ~ 19.77
11	15.68	18.29 ~ 13.44
16	11.09	12.93 ~ 9.51
22	7.84	9.14 ~ 6.72

ADJUSTMENT OF APERTURE LEVER POSITION

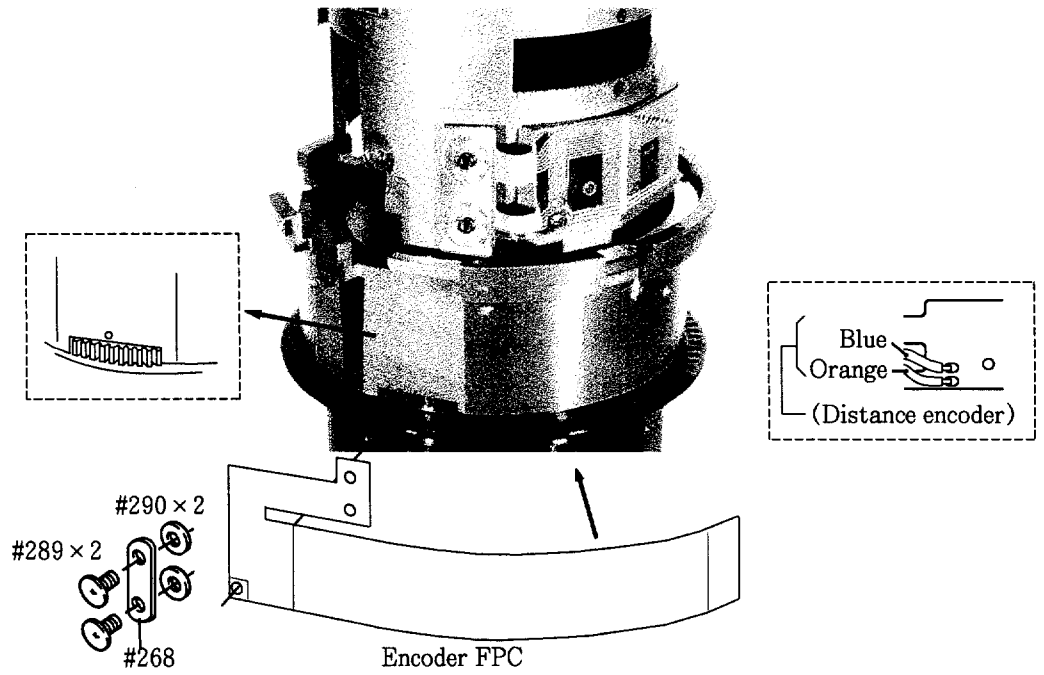


Unfasten screws #277 x 3 to adjust the position of the aperture lever so that it comes into the rated value of $3.1^{+0.1}$ to bring the aperture diameter within rated value at full aperture. Together with this, adjust the horizontal position so that it does not come in contact with the bayonet mount and rear cover ring. After adjustment, fix screws #277 x 3 using Screw Lock.

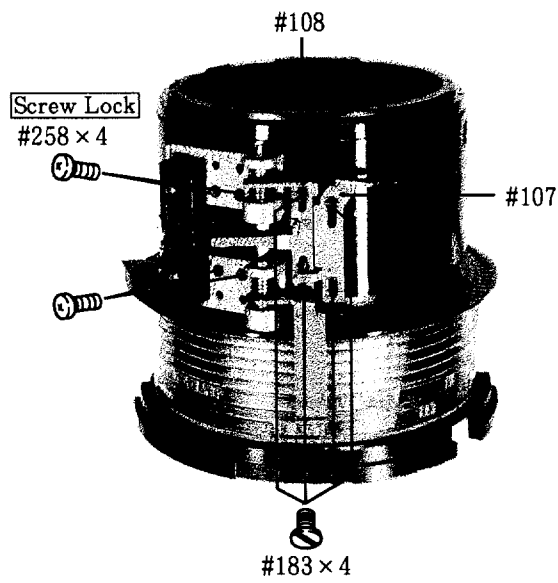
MAIN FPC



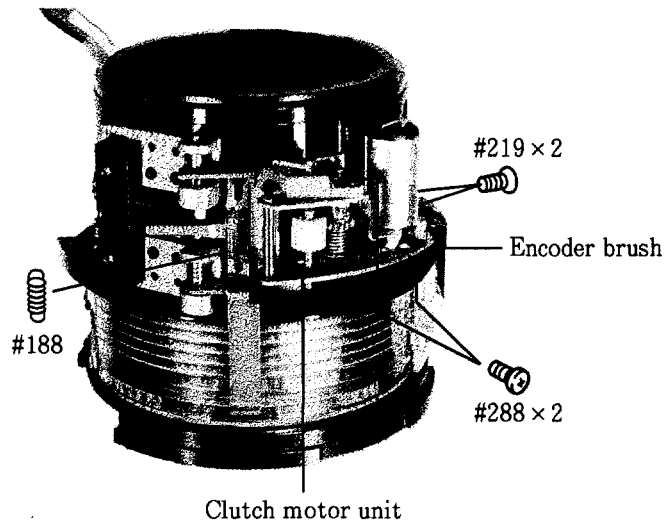
ENCODER FPC



A/M SWITCH UNIT

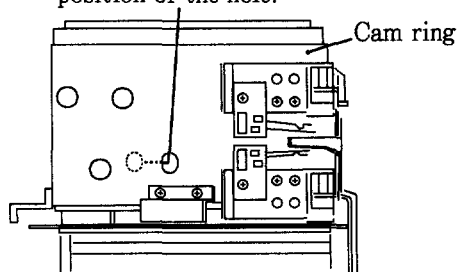


CLUTCH MOTOR UNIT, ENCODER BRUSH UNIT

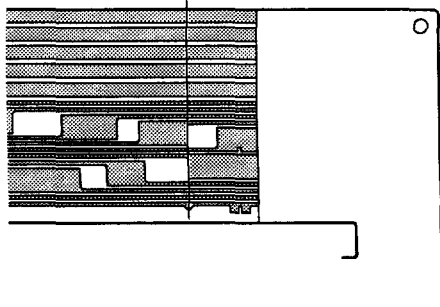
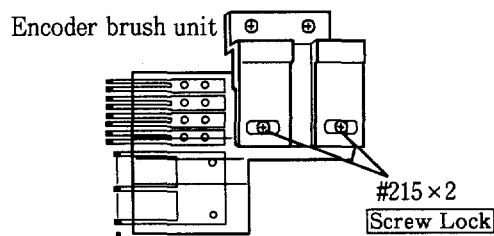


ADJUSTMENT OF ENCODER BRUSH POSITION

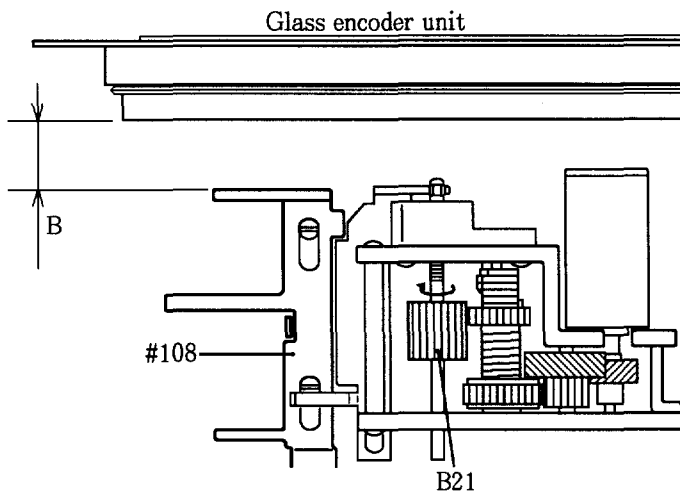
Turn the cam ring to align the position of the hole.



- ① Turn the cam ring to align the position of the hole.
- ② Unfasten screws #215 x 2 and let the brush tip come into contact with the line as shown in the figure.
- ③ Fasten screws #215 x 2 and turn the cam ring several times to check the location of the brush.
- ④ Secure screws #215 x 2 using Screw Lock.



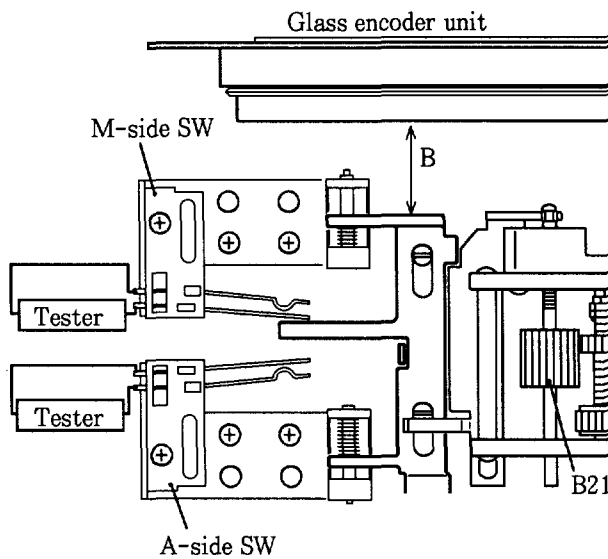
ADJUSTMENT OF CLUTCH MOTOR UNIT POSITION



- ① Temporarily attach the glass encoder unit.
- ② Rotate gear B21 in the direction of the arrow until it comes to a stop at the stopper.
- ③ Measure the distance "B" between the end of glass encoder unit and the bar #108.
- ④ If the difference is out of the standard value, move the attachment position of the clutch motor unit to adjust the distance "B".

Standard value : 11.45 ± 0.05

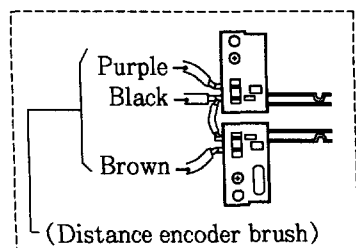
ADJUSTMENT OF A/M SWITCH POSITION



- ① Connect the contact of the M-side switch to the tester.
- ② Rotate gear B21 and measure the distance "B" where the switch turns ON and OFF.
- ③ If the distance "B" is out of the standard value, move the attachment position of the switch or adjust the distance by bending the contact.
- ④ Perform the same procedures ① ~ ③ for A-side switch.

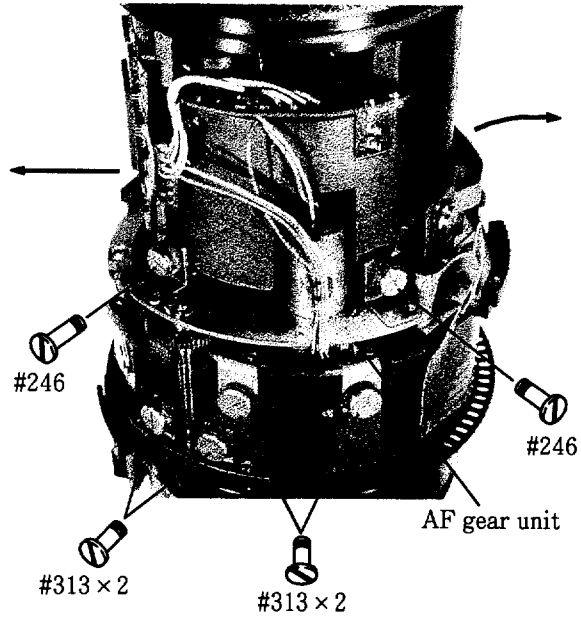
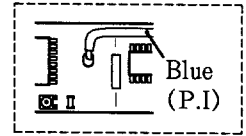
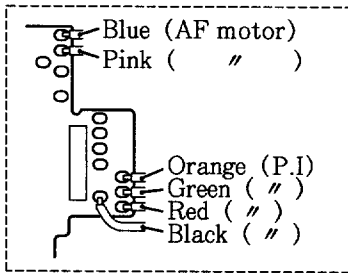
Standard value

A-side switch		M-side switch	
ON	OFF	ON	OFF
11.10~10.70	10.70 Less	8.10~7.60	7.60 Over

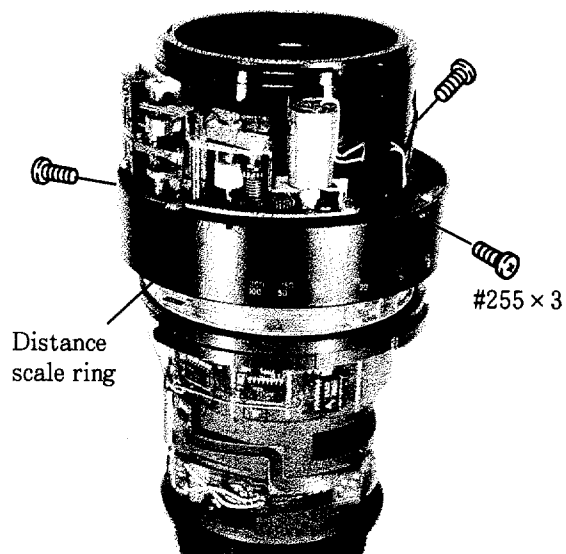


- ⑤ After adjustment, solder the wire and the A/M switch.

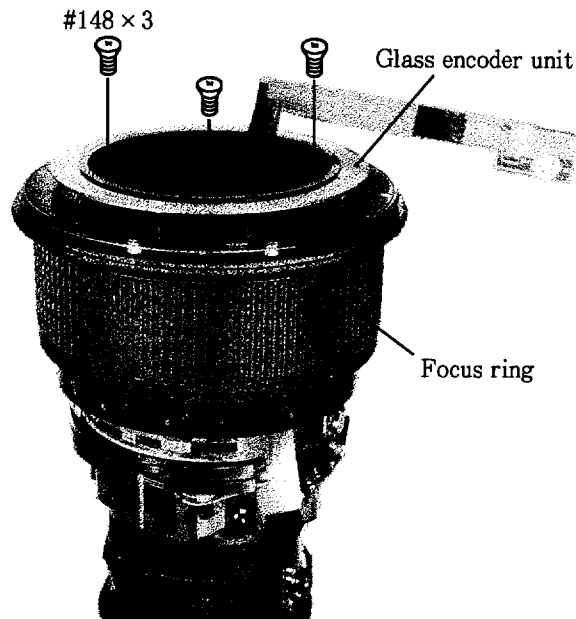
AF GEAR UNIT



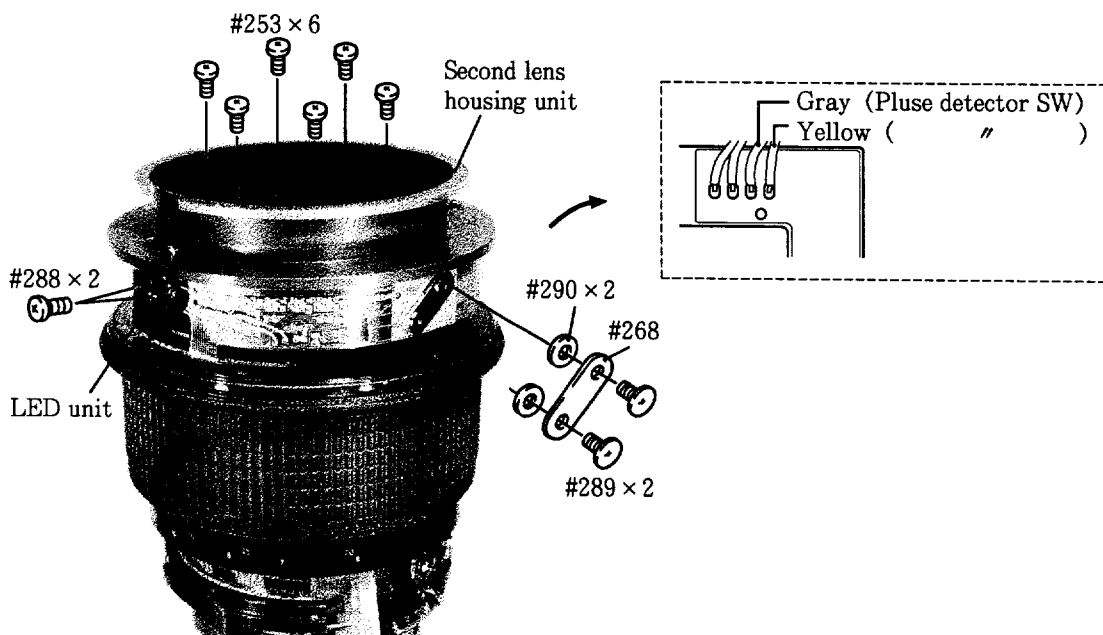
DISTANCE SCALE RING



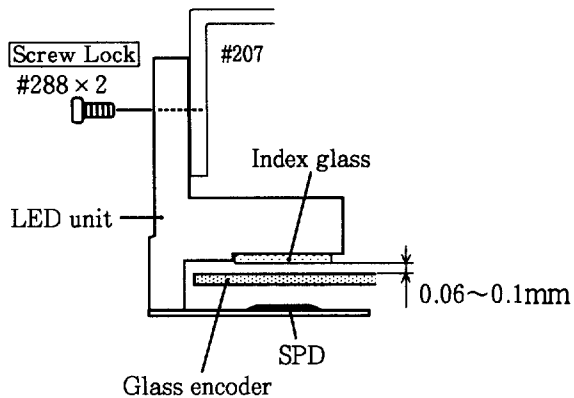
GLASS ENCODER UNIT, FOCUS RING



SECOND LENS HOUSING UNIT, LED UNIT



ADJUSTMENT OF GAP BETWEEN THE LED AND THE GLASS ENCODER



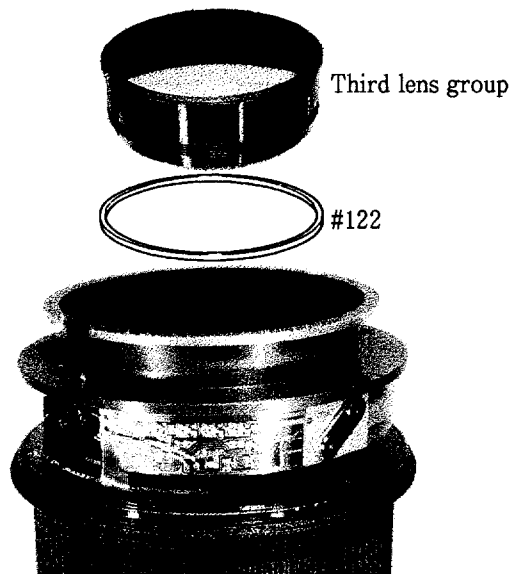
① Insert a 0.06 ~ 0.1mm thick spacer between the LED (index glass) and the glass encoder. Then fasten screws #288 × 2 to secure.

② Move the lens from near to infinity manually to check the gap between the LED (index glass) and the glass encoder and their parallelism.

Reference: Bend #207 to adjust when it is difficult to obtain parallelism.

③ Secure screws #288 × 2 using Screw Lock.

THIRD LENS GROUP



Note: As operation depends on whether or not the third lens unit is present, mount the third lens unit before inspecting lens operation.

INSPECTING LENS OPERATION

- Mount the lens on the camera body (F90 or F4) and check operation.

Note: If no communication is obtained between the camera body and the lens, it is possible that the wiring in the lens is incorrect. Check all wiring.

ADJUSTMENT

- Items to be adjusted

1. Phase difference and position adjustment between the glass encoder and the index glass.
2. Inspection and adjustment of play in the lens driving gear.
3. Inspection of lens driving stop accuracy (overrun) and the lens servo control time.

- Tools to be used

1. J18231 : AF-I lens inspection software
2. J15306 : AF-I lens communication box
3. J15307 : AF-I lens communication adapter
4. Personal computer (NEC PC-9800 series)
5. DC regulated power supplies × 2
6. 4ch digital storage oscilloscope

[Settings]

① Inspection equipment

Refer to the specifications for further details.

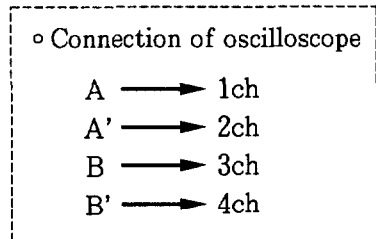
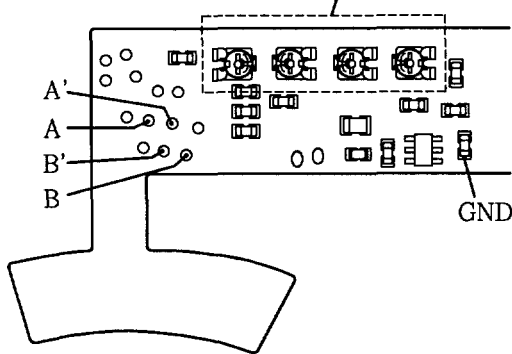
Note: Connect the AF-I lens communication box to the RS-232C interface located on the rear panel of the personal computer.

② Operating voltage

	Power supply for lens AFmotor	Power supply for AF-I lens communication box
Overrun inspection	$6.5V \pm 0.1$	$5.5V \pm 0.2$
Servo control stop time inspection	$5.5V \pm 0.1$	
Scanning time inspection	$6.0V \pm 0.1$	

1. Phase difference and position adjustment between the glass encoder and the index glass

Do not touch these parts as they have been factory adjusted.



Position adjustment

① Adjust check lands, as shown in the left-hand figure, and each channel of the oscilloscope so that A, A', B and B' output (sinusoidal) waveforms can be monitored on the oscilloscope.

◦ Setting oscilloscope (reference values)

VOLTS/DIV	200mV
TIME/DIV	1mS

② Inspection of each switch and lens condition from the main menu on the personal computer screen.

③ Turn the focusing ring to check the four waveforms. If the waveforms correspond to one of the items described in the following table, readjust the gap between the index glass and the glass encoder. (Refer to “Adjustment of gap between the LED and the glass encoder”.)

	Phenomenon	Cause	Adjustment
Fig 1.	Amplitude of four waveforms is different.	Gap between the glass encoder and the index glass is not parallel.	Bend #207.
Fig 2.	Amplitude of waveforms is abnormally large. There is almost no gap between phases.	No opening between the glass encoder and the index glass. They come into contact.	Check opening and make adjustment once again (0.06 ~ 0.1mm)
Fig 3.	Amplitude of for waveforms is abnormally small.	Too great an gap between the glass encoder and the index glass (more than 0.1 mm).	

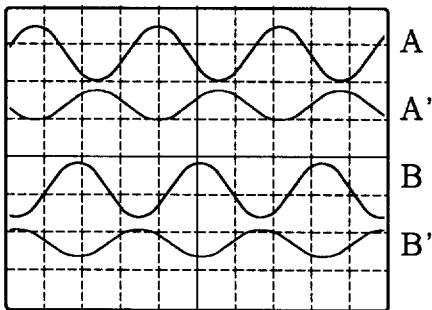


Fig 1.

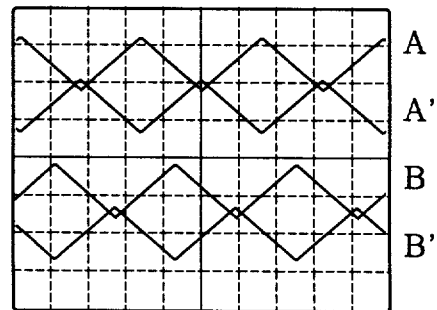


Fig 2.

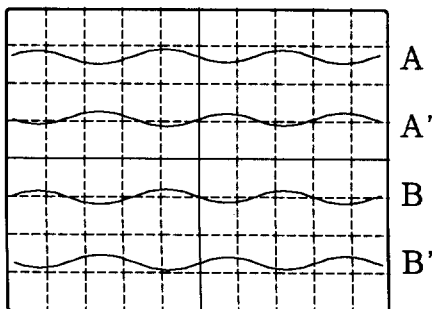
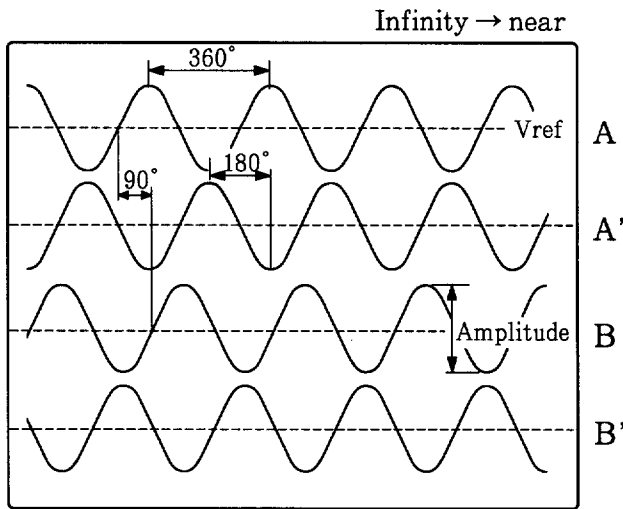


Fig 3.



Adjustment of phase difference

• Adjust eccentric pins (J15308A, J15308B) so that the waveforms are displayed exactly as shown in the left-hand figure.

- ① Unfasten screws #199×2.
- ② Turn the focusing ring (from infinity to near) to check waveforms. Adjust eccentric pin 2 so that phase A and phase A' advance phase B and phase B' by 90° .

Standard value: Within 90° ± 30°

*Recommended value: 90° ± 0°

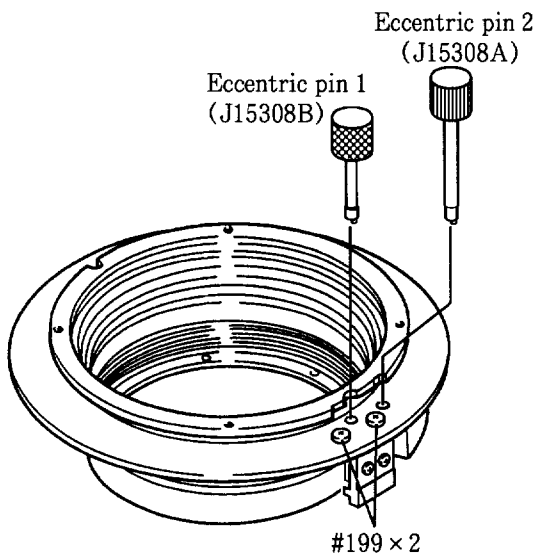
- ③ Turn the focusing ring (from infinity to near) to check waveforms. Adjust eccentric pin 1 so that the phase between A and A' and the phase between B and B' reverse by 180° .

Standard value: Within 180° ± 30°

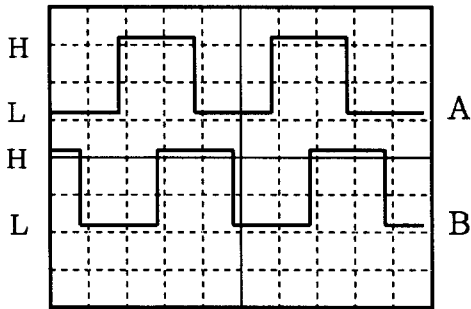
*Recommended value: 90° ± 0°

- ④ Repeat procedures ② and ③ above until the waveforms displayed are as shown in the above left-hand figure.

- ⑤ After adjustment, fasten screws #199×2 and secure them using Screw Lock.



Note: Waveform inspection as described above indicates the status when the focusing ring is turned from infinity to near. If the focusing ring is turned reversely (from near to infinity), phase B and phase B' advances 90° against phase A and phase A'.



Inspection of hot line output

- ① Connect the H-terminal of the AF-I lens communication box to the 1-ch terminal of the oscilloscope, and connect the E-terminal to the 2-ch terminal.

◦ Setting of oscilloscope (reference value)

VOLTS/DIV	2 V
TIME/DIV	1 mS

- ② Select " 4. Inspection of hot line signal output " from the main menu on the personal computer screen, and select " 4. Inspection of E, H output " from the sub menu.

- ③ Monitor the hot line output while the focusing ring is being turned from infinity to near.

- Check the ratio of H and L for each A and B phase.

Standard ratio H: L = 1:1 ~ 4:3

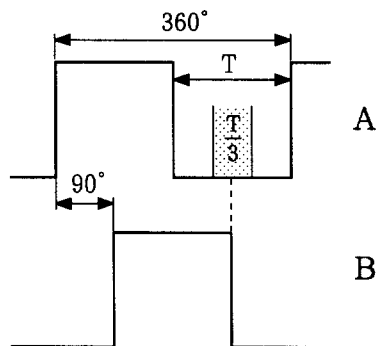
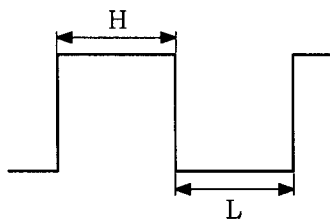
- Phase A should advance by 90° against B phase.

Standard ratio: Within 90° ± 30°

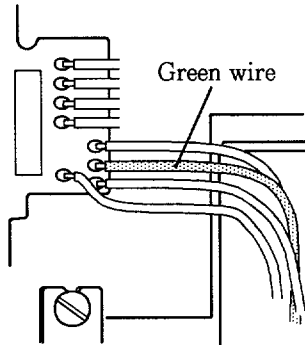
Discrimination method: Edge of waveform in phase B should be within the range of T/3 of waveform in phase A.

Note: When the focusing ring is turned from near to infinity, phase B advances by 90° against phase A.

- If the output value is out of the standard value, go back to " 11. Adjustment of phase difference " on page A15 and repeat the adjustment procedures.



2. Inspection and adjustment of play in lens driving gear



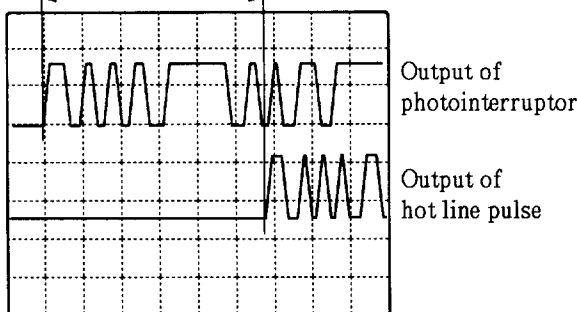
- ① Connect a green wire from the photointerruptor to the 1-ch of the oscilloscope and connect the E-terminal of the AF-I lens communication box to the 2-ch of the oscilloscope.

◦ Setting oscilloscope (reference values)

VOLTS/DIV	0.5V
TIME/DIV	5mS

- ② Select "Inspection of the play in lens driving gear." from the main menu on the personal computer screen, and monitor each waveform while moving the lens from infinity to near according to the instructions on the computer screen.

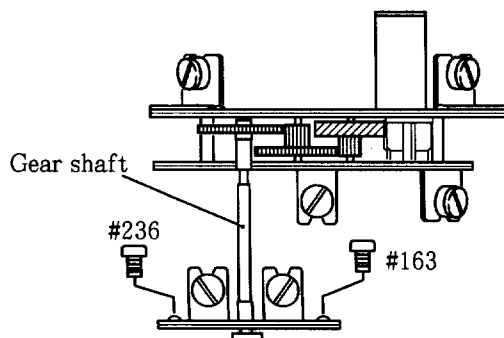
Read out pulse signal within this range.



- ③ Read out the number of pulses of the photointerruptor until the hot line pulse is output.

Standard value: within 10 pulses

Reference: Optimum value can be obtained when pulse numbers are counted from 5 ~ 10.



- ④ If the value is out of the standard value, unfasten screws #236, #163 to adjust the mounting position of the AF gear shaft.

3. Inspection of lens driving stop accuracy (overrun) and the lens servo control time

* The following inspections according to the flowchart.

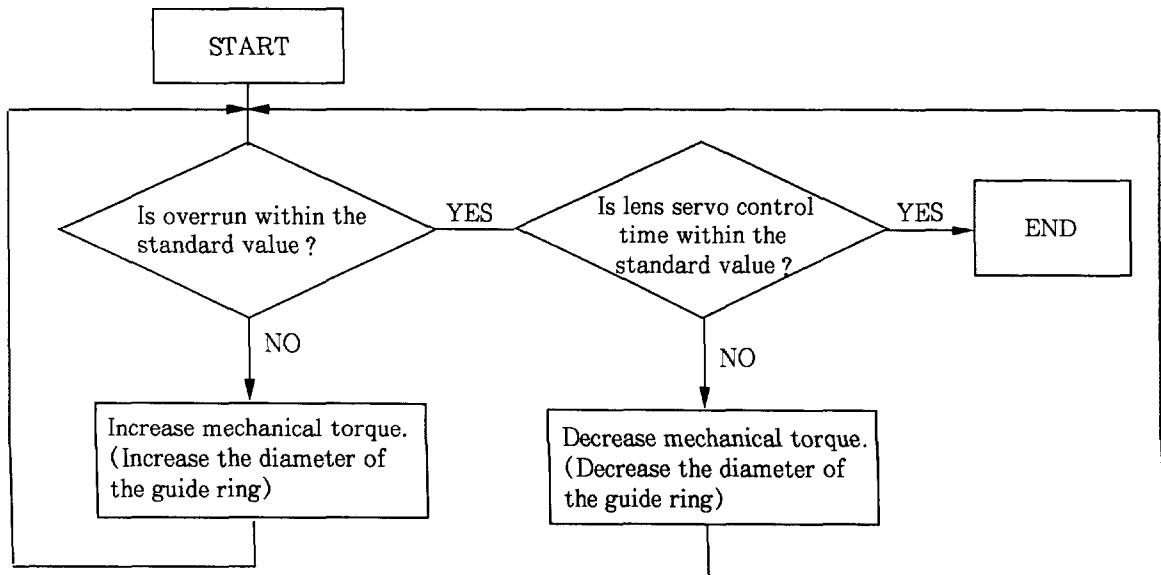
Note:

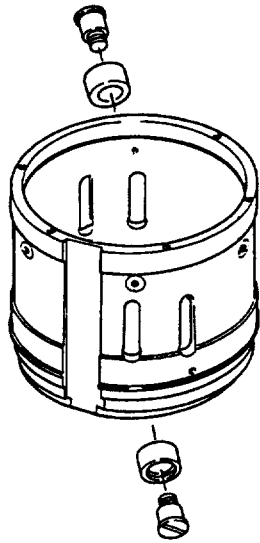
- Fix the lens in the horizontal plane when carrying out inspections to eliminate variations due to attitude.
- Please not that with 600mm f/4 AF-I Nikkor you cannot adjust the mechanical torque by changing the resistor value on the FPC.

Reference: Relationship between overrun and inspection and adjustment of lens servo control time.

Contents Adjustment item	Defective in overrun	Defective in lens servo control time.
Mechanical torque	(Guide ring, bearing) Small Large ----->	(Guide ring, bearing) Small Large -----<

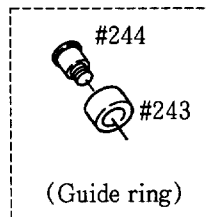
*Occurrence of defective phenomenon decreases according to the direction of the arrows.





• Mechanical torque adjustment

The mechanical torque is determined by changing the guide ring with the one of a different diameter. To minimize the torque, use the smallest ring and use the large one to raise the torque.



◦ Types and dimensions of guide rings

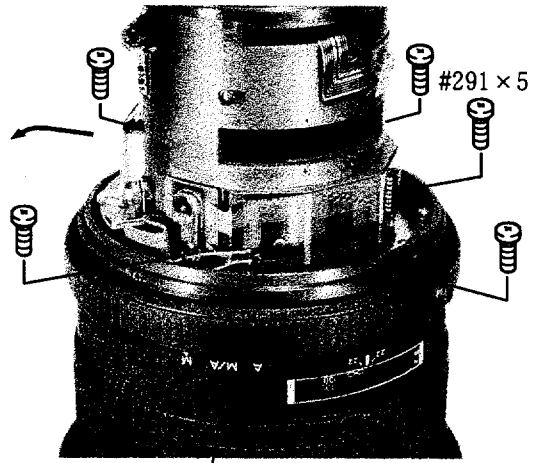
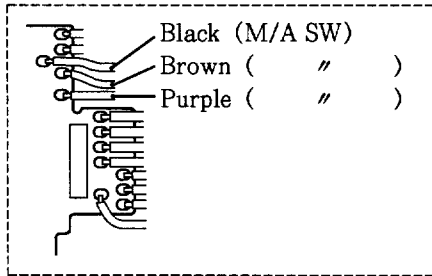
Parts No	Dimensions
1K117-603	$4.5_{-0.03}^{\pm 0.03}$ mm
1K116-450	$4.5_{-0.02}^{\pm 0.02}$ mm
1K116-451	$4.5_{-0.01}^{\pm 0.02}$ mm
1K116-452	$4.5_{-0.01}^{\pm 0.01}$ mm
1K116-453	$4.5_{+0.01}^{\pm 0.01}$ mm

When replacing a part listed below, some adjustment and inspection may be required

Item to be check and adjusted Parts replaced		Inspection and adjustment of the glass encoder unit		Inspection of play in the lens driving gear	Inspection of accuracy in halting of the lens drive (overrun) *1.	Inspection of lens servo control time *1.
		Phase difference	Output signal adjustment			
Assembly	Main FPC					
	HIC FPC	○	○		○	○
	AF connecting FPC					
	Relay FPC	○	○		○	○
	Distance encoder					
	Glass encoder	○	○		○	○
	DC/DC converter					
Part	CPU					
	AF driving motor			○		
	Photo interrupter (P.I)			○		
	MD IC					
	Guide ring or bearing				○	○
	Focus ring	○	○		○	○

*1. Regardless of the version of the CPU, always change a guide ring in order to adjust the mechanical torque of 600mm f/4 AF-I Nikkor.

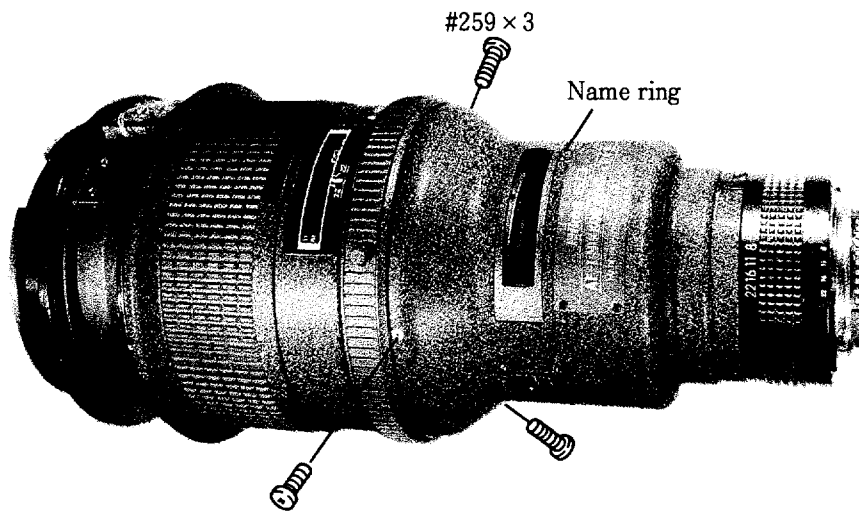
FOCUS MODE INDEX RING



Focus mode index ring

- Mount the focus mode index ring at the position where the focus mode selector is set to " M " .

NAME RING

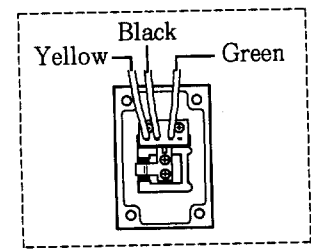


FOCUS RANGE SWITCH UNIT

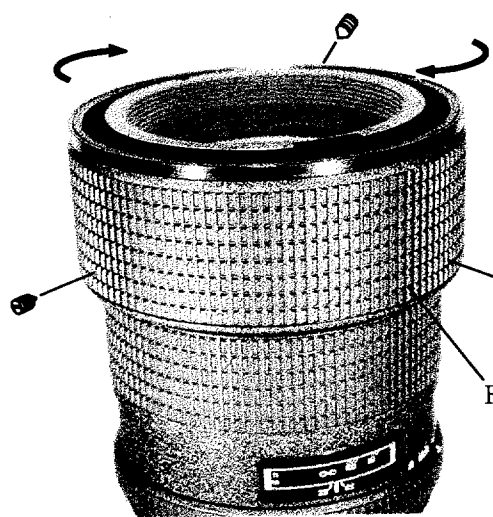


Focus range switch unit

#298 x 4



FOCUS RING



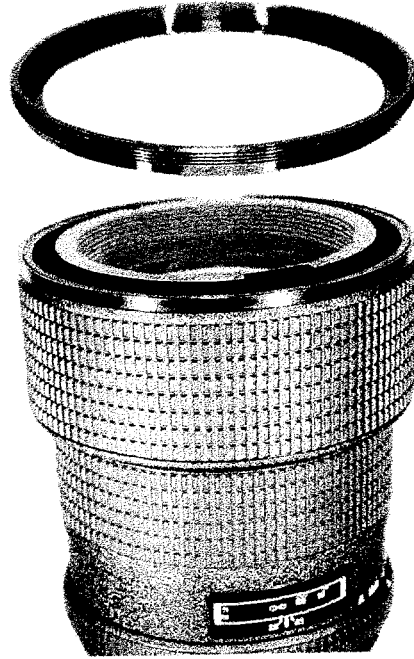
#294 x 3

Focus ring

- Mount the focusing ring and secure it with screw #294 x 3.

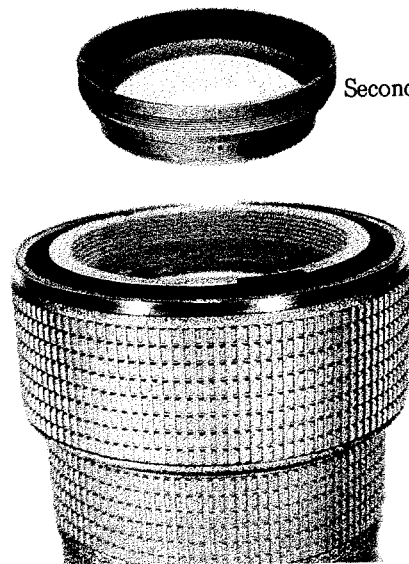
MANUAL FOCUS ENCODER BASE PLATE

Manual focus encoder base plate

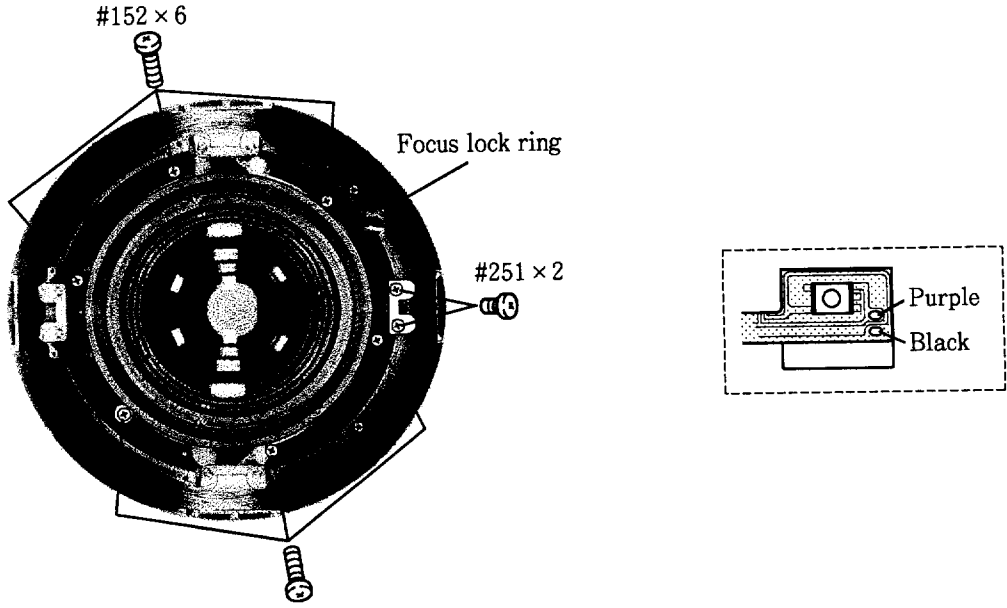


SECOND LENS GROUP

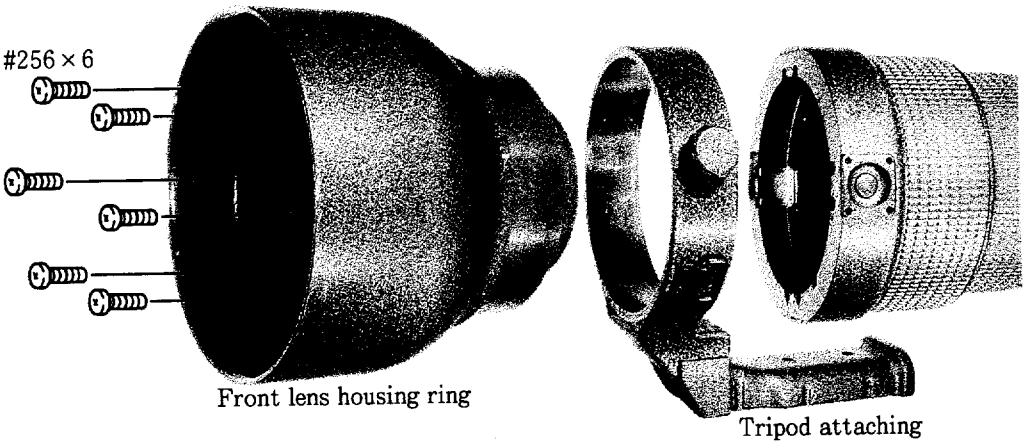
Second lens group



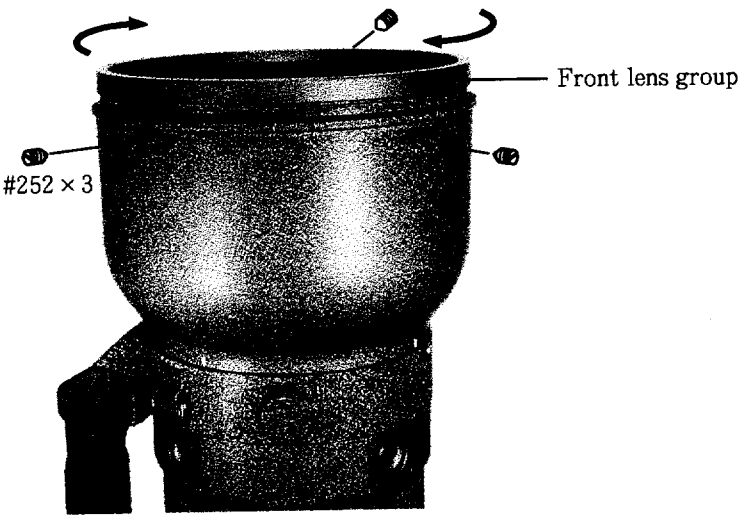
FOCUS LOCK RING, FOCUS LOCK FPC



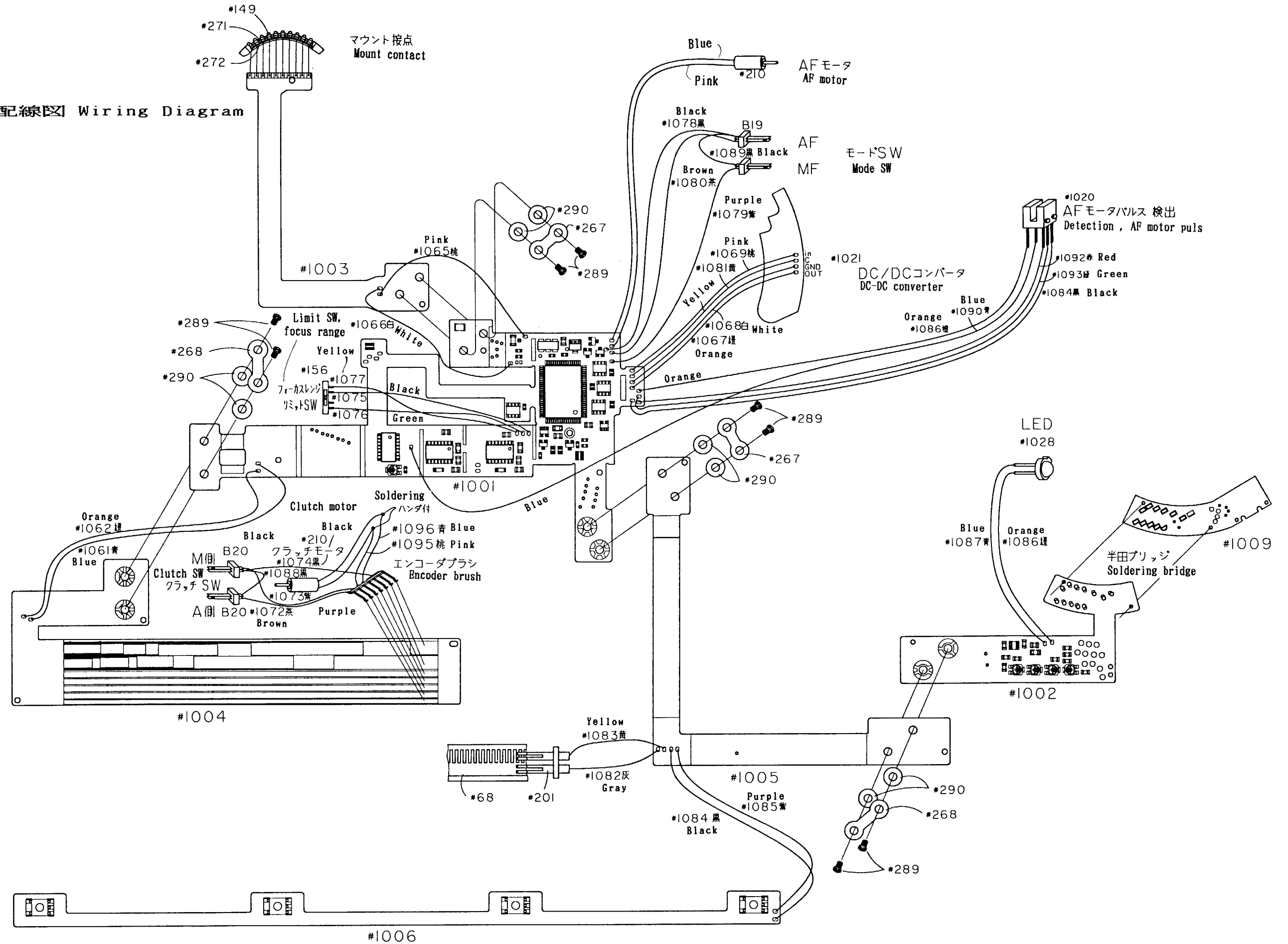
FRONT LENS HOUSING RING, TRIPOD ATTACHING



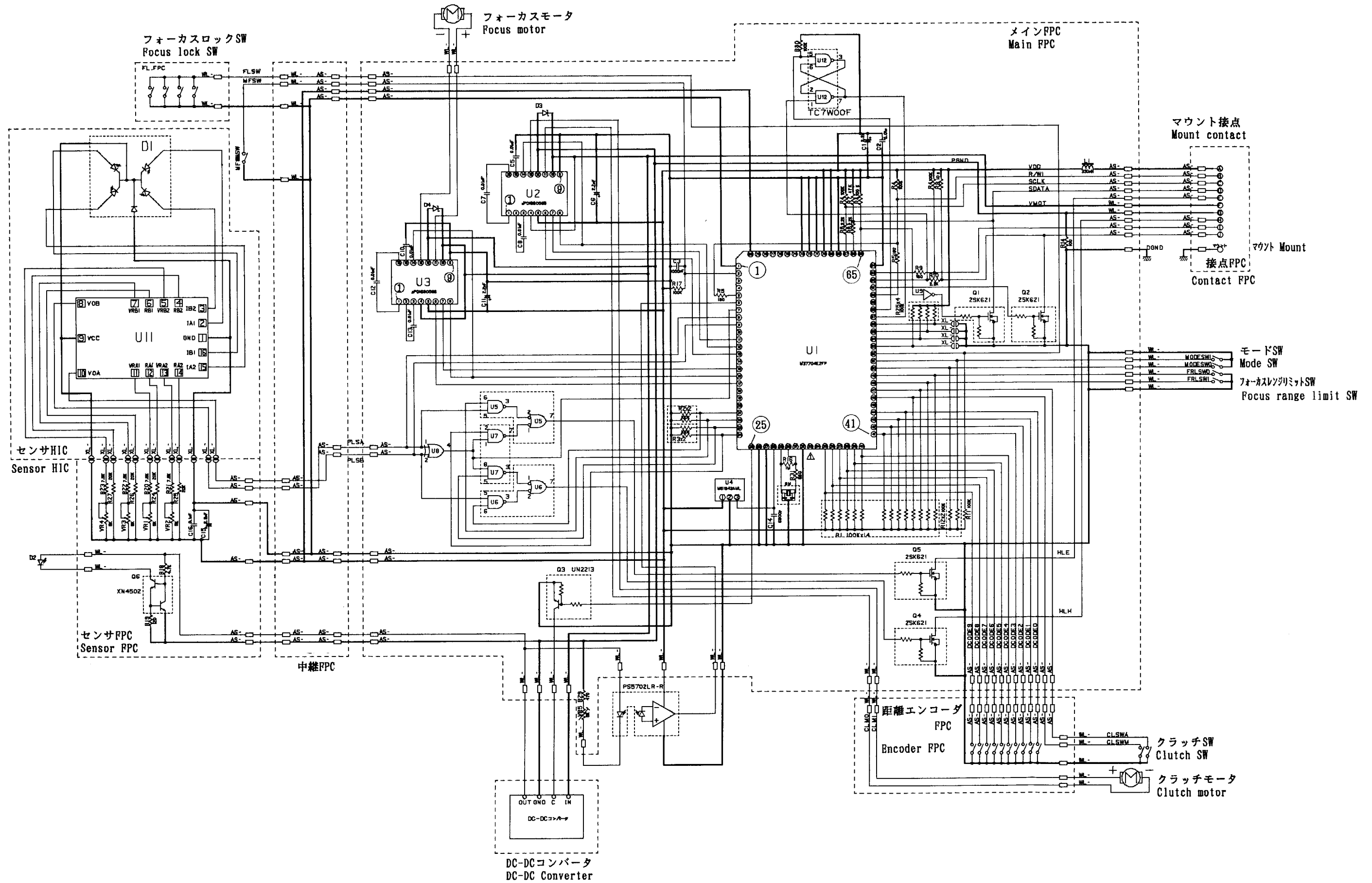
FRONT LENS GROUP



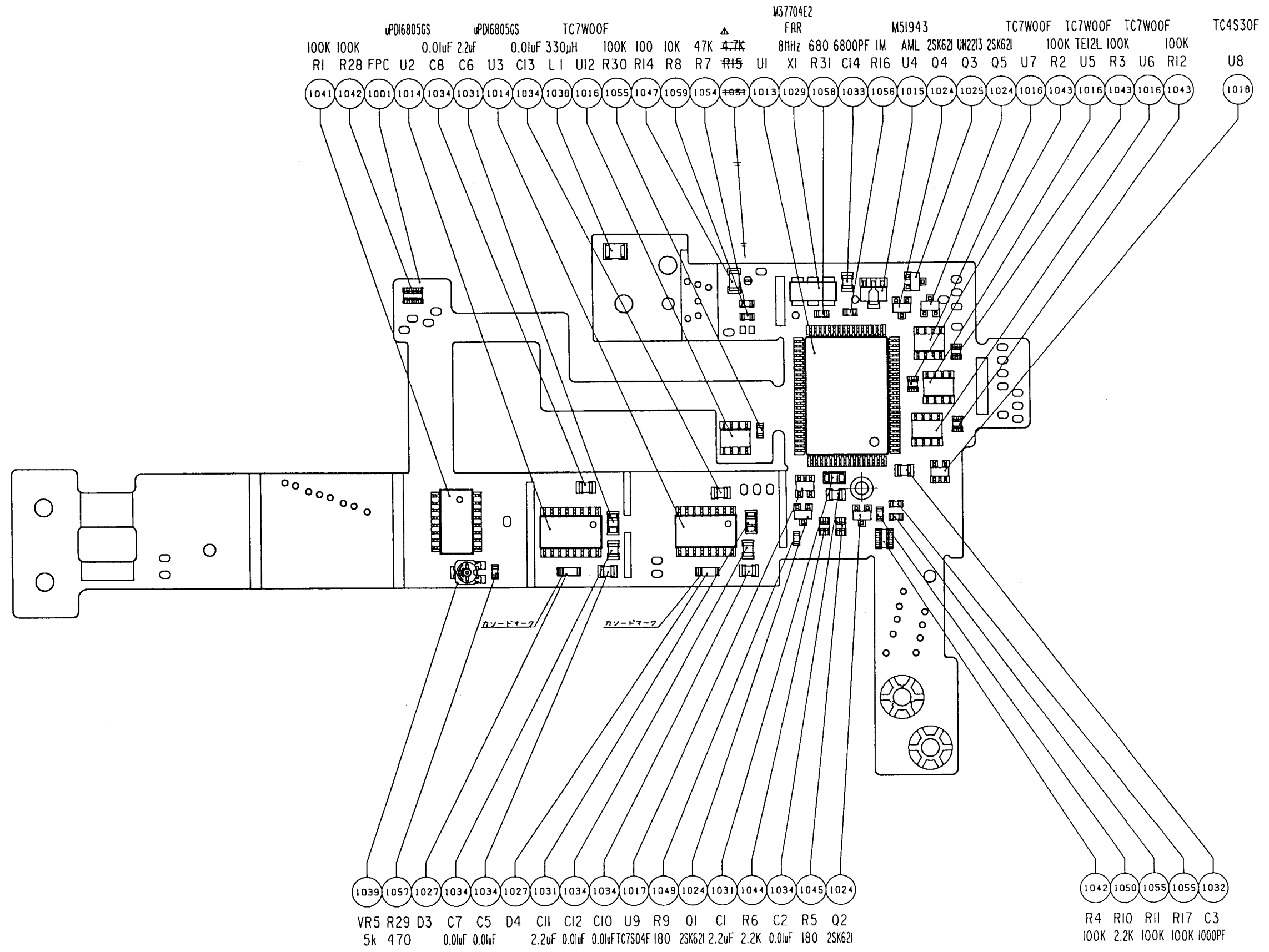
実体配線図 Wiring Diagram



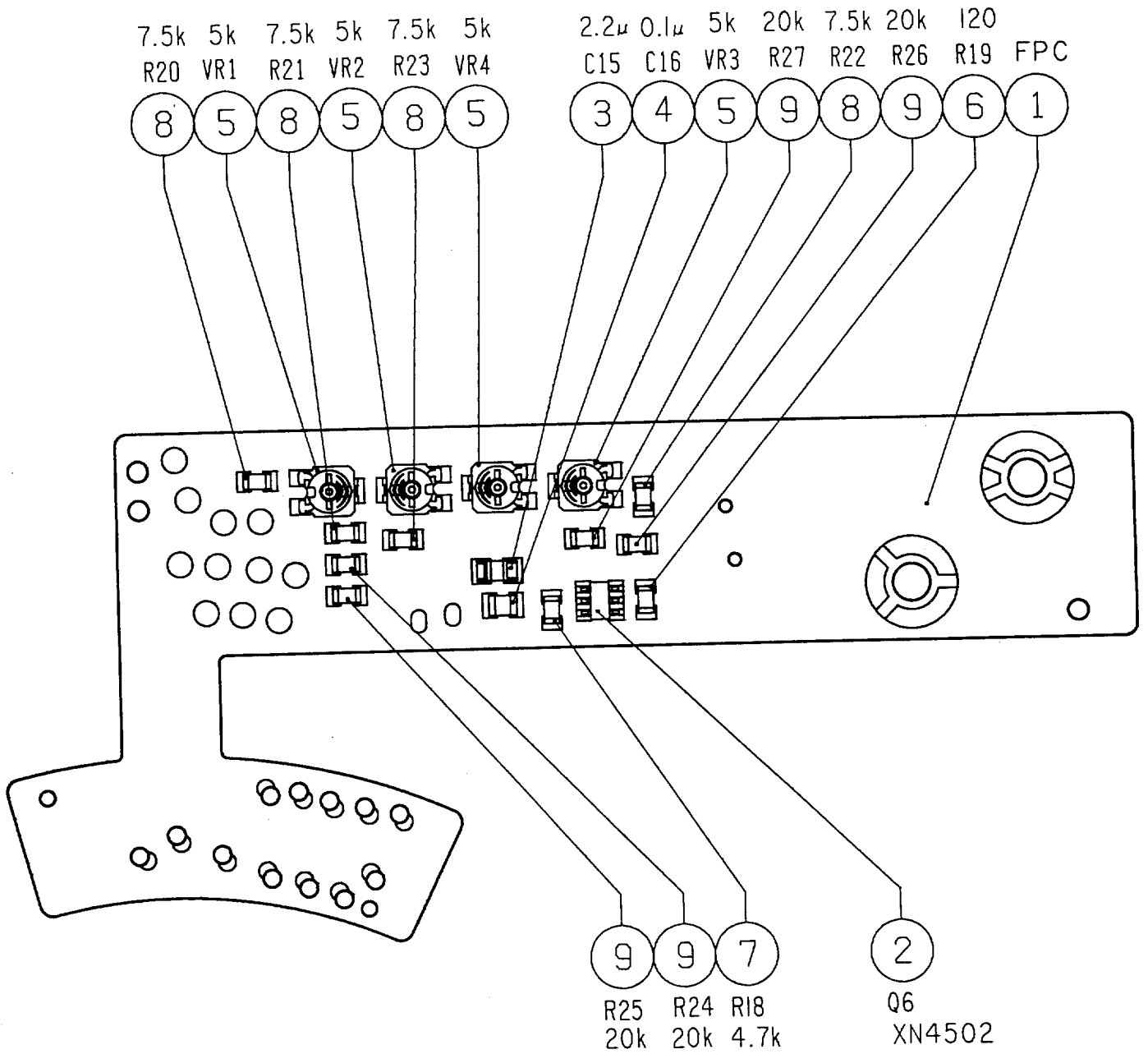
回路図 Circuit Diagram



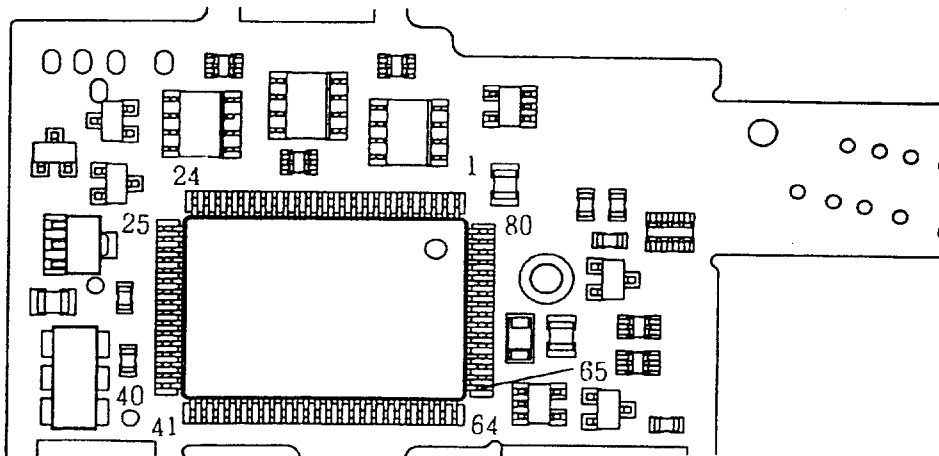
MAIN FPC



LED FPC

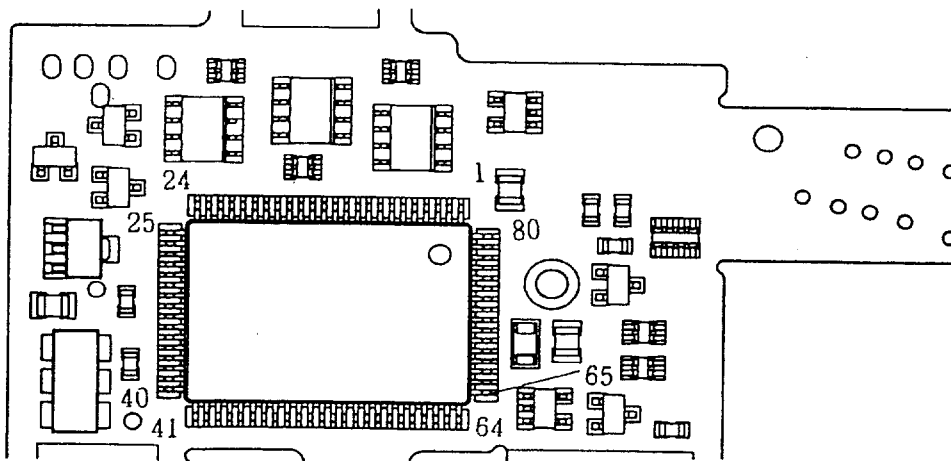


U1 CPU (M37704E2FP)



NO	名称及び内容	NO	名称及び内容
1	P70 レンズ識別 0	41	P23 距離信号 3
2	P67 MF環作動検出	42	P22 距離信号 2
3	P66 N. C.	43	P21 距離信号 1
4	P65 N. C.	44	P20 距離信号 0
5	P64 R/W	45	P17 N. C.
6	F63 インタラプタ出力	46	P16 クラッチスイッチ M
7	P62 Ex OR出力	47	P15 クラッチスイッチ A
8	P61 ガラスエンコーダB相	48	P14 フォーカスレンジ切換 1
9	P60 ガラスエンコーダA相	49	P13 フォーカスレンジ切換 0
10	P57 N. C.	50	P12 モードスイッチ 0 (A)
11	P56 クラッチモーター駆動出力1	51	P11 モードスイッチ 1 (M)
12	P55 クラッチモーター駆動許可	52	P10 フォーカスロックスイッチ
13	P54 クラッチモーター駆動出力2	53	P07 調整端子 1
14	P53 N. C.	54	P06 調整端子 2
15	P52 AFモーターPWM出力1	55	P05 オプション 1
16	P51 AFモーター駆動許可	56	P04 オプション 0
17	P50 AFモーターPWM出力0	57	P03 TC用FF出力
18	P47 N. C.	58	P02 TC用FFリセット
19	P46 N. C.	59	P01 N. C.
20	P45 N. C.	60	P00 R/W
21	P44 H接点コントロール0	61	P87 TC OUT
22	P43 E接点コントロール0	62	P86 TC IN
23	P42 H接点コントロール1	63	P85 TC CLK
24	P41 E接点コントロール1	64	P84 GND
25	P40 DC-DCコントロール	65	P83 シリアルOUT
26	BYTE GND	66	P82 シリアルIN
27	CNVss GND	67	P81 シリアルCLK
28	RESET リセット	68	P80 GND
29	Xin 発振子	69	Vdd V d d
30	Xout 発振子	70	AVcc V d d
31	E N. C.	71	Vref GND
32	Vss GND	72	AVss GND
33	P33 N. C.	73	Vss GND
34	P32 N. C.	74	P77 N. C.
35	P31 距離信号 9	75	P76 N. C.
36	P30 距離信号 8	76	P75 N. C.
37	P27 距離信号 7	77	P74 N. C.
38	P26 距離信号 6	78	P73 N. C.
39	P25 距離信号 5	79	P72 N. C.
40	P24 距離信号 4	80	P71 レンズ識別 1

U1 CPU (M37704E2FP)



NO	Terminals	NO	Terminals
1	P70 Lens Type Signal 0	41	P23 Distance Signal 3
2	P67 MF Ring Moving Detector	42	P22 Distance Signal 2
3	P66 N. C.	43	P21 Distance Signal 1
4	P65 N. C.	44	P20 Distance Signal 0
5	P64 Read/Wright	45	P17 N. C.
6	P63 Interrupter Output	46	P16 Crutch Switch M
7	P62 Exclusive OR OUTPUT	47	P15 Crutch Switch A
8	P61 Glass Encoder Phase "B"	48	P14 Focus Range Change Switch 1
9	P60 Glass Encoder Phase "A"	49	P13 Focus Range Change Switch 0
10	P57 N. C.	50	P12 Mode Switch 0 (A)
11	P56 Crutch Motor Drive Output 1	51	P11 Mode Switch 1 (M)
12	P55 Crutch Motor Drive Enable	52	P10 Focus Lock Switch
13	P54 Crutch Motor Drive Output 2	53	P07 Adjustment Terminal 1
14	P53 N. C.	54	P06 Adjustment Terminal 0
15	P52 AF Motor PWM Output 1	55	P05 Option Terminal 1
16	P51 AF Motor Drive Enable	56	P04 Option Terminal 0
17	P50 AF Motor PWM Output 0	57	P03 FlipFlop Output for TC
18	P47 N. C.	58	P02 FlipFlop Reset for TC
19	P46 N. C.	59	P01 N. C.
20	P45 N. C.	60	P00 Read/Wright
21	P44 HTerminal Control 0	61	P87 TC OUT
22	P43 ETerminal Control 0	62	P86 TC IN
23	P42 HTerminal Control 1	63	P85 TC CLK
24	P41 HTerminal Control 1	64	P84 GND
25	P40 DC-DC Converter Control	65	P83 Serial Output
26	BYTE GND	66	P82 Serial Input
27	CNVss GND	67	P81 Serial Clock
28	RESET	68	P80 GND
29	Xin Oscillator	69	Vdd V d d
30	Xout Oscillator	70	AVcc V d d
31	E N. C.	71	Vref GND
32	Vss GND	72	AVss GND
33	P33 N. C.	73	Vss GND
34	P32 N. C.	74	P77 N. C.
35	P31 Distance Signal 9	75	P76 N. C.
36	P30 Distance Signal 8	76	P75 N. C.
37	P27 Distance Signal 7	77	P74 N. C.
38	P26 Distance Signal 6	78	P73 N. C.
39	P25 Distance Signal 5	79	P72 N. C.
40	P24 Distance Signal 4	80	P71 Lens Type Signal 1

AF-I Nikkor ED 600mm f/4 D IF

PART LIST

Nikon | NIKON CORPORATION
Tokyo, Japan

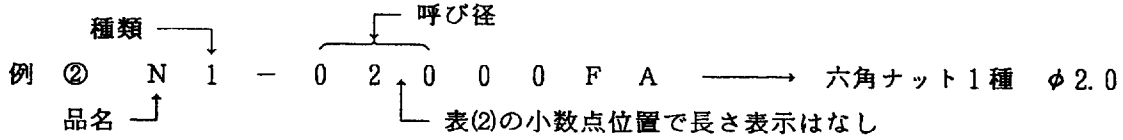
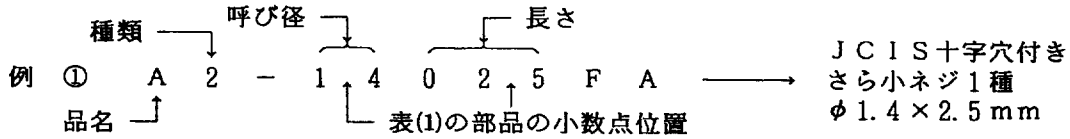
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無断転載を禁ず!!

[6] 部品表編 Parts List

記号説明 MARKS IN THE PARTS LIST

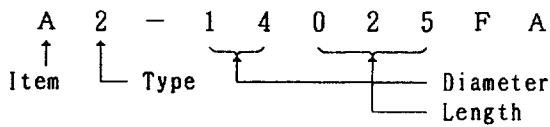
(1) 機械標準品

下の表に示す機械標準品の部品番号は品名、種類、呼び径、長さを示しています。



(1) Standard mechanical parts Reference Number in the Parts List

A. Screw · Pin



B. Nut · Washer · Snap ring

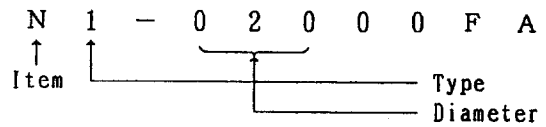


表 1

品名 Item	種類 Type	品名 Item	種類 Type
J C I S 十字穴付き小ねじ 1 種 Cross-point screw 1	A なべ Pan 1 さら Countersunk 2 丸さら Oval 3	すりわり付き止めねじ Splitted set screw	K 丸先 Round point 1 とがり先 Cone point 2 くぼみ先 Half point 3
J C I S 十字穴付き小ねじ 3 種 Cross-point screw 3	B なべ Pan 1 さら Countersunk 2 丸さら Oval 3	六角穴付き止めねじ Hexagon socket head set screw	L とがり先 Cone point 2 くぼみ先 Half point 3 平先 Normal 4
十字穴付き小ねじ Cross-point screw	C なべ Pan 1 さら Countersunk 2 丸さら Oval 3 トラス Trus 4	六角穴付きボルト Hexagon socket head bolt	M M2, M2.6 1 2
十字穴付きタップタイ タイトねじ B 型 Cross-point tapped screw B	F なべ Pan 1 さら Countersunk 2	平行ピン Straight pin	P ステンレス Stainless steel 1 5
十字穴付きタップタイ タイトねじ B 型 1 種 Cross-point tapped screw B1	G なべ Pan 1 さら Countersunk 2 丸さら Oval 3	テーパピン Taper pin	2
十字穴付きタップタイ タイトねじ B 型 3 種 Cross-point tapped screw B3	H なべ Pan 1 さら Countersunk 2 丸さら Oval 3	スプリングピン Spring cotter	一般用 Normal 3 軽荷重用 Light 4
		表 2	
		品名 Item	種類 Type
		六角ナット Hexagon nut	K 1 種 Type 1 1 1 種 Type 3 3
		平座金 Washer	R 小形丸 1 みがき丸 2
		ばね座金 Spring washer	5
		E 型止め環 E-snap ring	S E 型 Type E 1 G 型 Type G 2 GS 型 Type GS 3

(2) 販売区分欄 The term of sale colum

記号 Mark	説明	Explanation
○	Can be Supplied individually	単独部品として販売するもの
△	Not supplied individually but only as subassembly.	部組品でなければ販売しないもの
○△	Supplied either as part or subassembly	単独部品でも部組品でも販売するもの
×	Not considered as repair part	修理部品と考えないもの
*	Should be sent to the factory if the repair needed.	単体では交換できないので、組む場合に工場での加工が必要なもの
☒	Delivered as a product from the sales department (i.e., not supplied as repair part)	商品として販売店で販売しているもの (修理部品扱いはしない)

(3) 備考欄 The remarks colum

P-601M	Part number used in common	共通部品番号
(Blue × 125mm)	Lead wire (color × length)	コードの色と長さ
53F-2013 (FM-780028)	Technical information ref. number (number in parenthesis; English edition)	製品技術資料No ()内は英文
(2.1 × 3.8 × 0.07)	Washer (internal diameter × external diameter × thickness)	ワッシャー (内径 × 外径 × 厚さ)
(Black)	Black-finished parts	黒部品
(d=0.2)	Diameter of wire	線型=0.2
(t= 1)	Thickness	厚さ=1
Rev.	Revision	訂正
Add.	Addition	追加
Dis.	Discontinuation	廃止
OLD	Parts of the intial design	旧部品
◆	Limited part	R P 限定出庫部品
RP-9001	Repair part information No.	R P 情報No.
R1... D1.... W1... C1... Q1.... P1...	Abbreviation for electronic part	電気部品記号
TA-0003	Number (TA-****) are order numbers of adhesive tape. (For the order of adhesive tape, the number 1K***-*** is not use).	接着テープ要求部番 (1K***-*** では部品要求できません。)
W-0056BE	Number (W-0056BE) are order numbers of Lead wire. (For the order of Lead wire, the number 1K***-*** is not use).	リードワイヤ要求部番 (1S***-*** では部品要求できません。)

* VERSATILE PART

* 既出部品

Apart maked with this pentagonal symblo is used commonly in the arcitecture of other products. That is called "VERSATILE PART". Note that every part, bearing new part number of eleven places, will turn into a VERSATILE PART when it is used in the design of future product.

テープ類TA設定部品一覧表

TAPES AND FILMS WITH PREFIX ALPHABETS TA Dec. 17, 1991

部品 No. Part No.	名称 Name of part	色 Color	厚さ Thickness (t=mm)	幅 Widhs (mm)	長さ Length (m)	要求単位 Q'ty for a unit for crdering
TA-0001	ポリエステルフィルム Tape	透明 Transparent	0.025	10	30	1巻 1 roll
TA-0002	ポリエステルフィルム Tape	透明 Transparent	0.025	20	30	1巻 1 roll
TA-0003	両面接着テープ Both sided adhesive tape	白 White	0.16	10	2	1巻 1 roll
TA-0004	両面接着テープ Both sided adhesive tape	黒 Black	0.14	12	50	1巻 1 roll
TA-0005	ポリエステルフィルム Tape	黄 Yellow	0.06	19	66	1巻 1 roll
TA-0006S	アセテートクロス (シート) Tape (200x120/sheet)	黒 Black	0.23	6	200 (mm)	1set (20pcs)
TA-0007	銅箔導電性 Tape, copper foil	銅箔 Copper foil	0.11	4	6	1巻 1 roll
TA-0008	ポリエステルフィルム Tape	透明 Transparent	0.055	30	30	1巻 1 roll
TA-0009	カプトンフィルム Tape	琥珀 Amber	0.07	6	30	1巻 1 roll
TA-0010	両面接着テープ Both sided adhesive tape	乳白色 Opal	0.16	15	36	1巻 1 roll
TA-0011	ポリエステルフィルム Tape	黒 Black	0.06	10	30	1巻 1 roll
TA-0012	ポリエステルフィルム Tape	透明 Transparent	0.025	6	30	1巻 1 roll
TA-0013	アセテートクロス (シート) Tape (200x120/sheet)	黒 Black	0.23	20	200 (mm)	1set (20pcs)

リードワイヤ—一覧表

LEAD WIRE LIST

DEC. 17, 1991

部品 No. Part No.	色 Color	外形 Diameter (outer tube)	導体サイズ Pcs. / Diameter (lead wire)	部品 No. Part No.	色 Color	外形 Diameter (outer tube)	導体サイズ Pcs. / Diameter (lead wire)
W-0045BN	Brown	0.45mm	7×0.05mm	W-0108BK	Black	1.08mm	7×0.16mm
W-0045RE	Red	-ditto-	-ditto-	W-0108BN	Brown	-ditto-	-ditto-
W-0045OR	Orange	-ditto-	-ditto-	W-0108RE	Red	-ditto-	-ditto-
W-0045GN	Green	-ditto-	-ditto-	W-0108OR	Orange	-ditto-	-ditto-
W-0045BE	Blue	-ditto-	-ditto-	W-0108YE	Yellow	-ditto-	-ditto-
W-0045PU	Purple	-ditto-	-ditto-	W-0108GN	Green	-ditto-	-ditto-
				W-0108BE	Blue	-ditto-	-ditto-
W-0056BK	Black	0.56mm	7×0.08mm	W-0108PU	Purple	-ditto-	-ditto-
W-0056BN	Brown	-ditto-	-ditto-	W-0108GY	Gray	-ditto-	-ditto-
W-0056RE	Red	-ditto-	-ditto-	W-0108WH	White	-ditto-	-ditto-
W-0056OR	Orange	-ditto-	-ditto-				
W-0056YE	Yellow	-ditto-	-ditto-	W-0120BK	Black	1.2 mm	7×0.18mm
W-0056GN	Green	-ditto-	-ditto-	W-0120BN	Brown	-ditto-	-ditto-
W-0056BE	Blue	-ditto-	-ditto-	W-0120RE	Red	-ditto-	-ditto-
W-0056PU	Purple	-ditto-	-ditto-	W-0120OR	Orange	-ditto-	-ditto-
W-0056GY	Gray	-ditto-	-ditto-	W-0120YE	Yellow	-ditto-	-ditto-
W-0056WH	White	-ditto-	-ditto-	W-0120GN	Green	-ditto-	-ditto-
W-0056PK	Pink	-ditto-	-ditto-	W-0120BE	Blue	-ditto-	-ditto-
				W-0120PU	Purple	-ditto-	-ditto-
				W-0120GY	Gray	-ditto-	-ditto-
				W-0120WH	White	-ditto-	-ditto-
W-0080BK	Black	0.80mm	7×0.12mm				
W-0080BN	Brown	-ditto-	-ditto-	W-0150BK	Black	1.5 mm	40×0.08mm
W-0080RE	Red	-ditto-	-ditto-	W-0150BN	Brown	-ditto-	-ditto-
W-0080OR	Orange	-ditto-	-ditto-	W-0150RE	Red	-ditto-	-ditto-
W-0080YE	Yellow	-ditto-	-ditto-	W-0150OR	Orange	-ditto-	-ditto-
W-0080GN	Green	-ditto-	-ditto-	W-0150YE	Yellow	-ditto-	-ditto-
W-0080BE	Blue	-ditto-	-ditto-	W-0150GN	Green	-ditto-	-ditto-
W-0080PU	Purple	-ditto-	-ditto-	W-0150BE	Blue	-ditto-	-ditto-
W-0080GY	Gray	-ditto-	-ditto-	W-0150PU	Purple	-ditto-	-ditto-
W-0080WH	White	-ditto-	-ditto-	W-0150GY	Gray	-ditto-	-ditto-
W-0080LB	Light blue	-ditto-	-ditto-	W-0150WH	White	-ditto-	-ditto-
1 roll = 20m							

収縮チューブ一覧表

Thermal construction tube list

Dec. 17, 1991

部 品 № Part No.	名 称 Name of part	直 径 Diameter (φ)	長 さ Length (m)	備 考 Remarks
TU-0001	収縮チューブ Thermal construction tube	1.0 mm	1	RP-8925
TU-0002	収縮チューブ Thermal construction tube	2.0 mm	1	RP-8925
TU-0003	収縮チューブ Thermal construction tube	3.0 mm	1	RP-8925
TU-0004	収縮チューブ Thermal construction tube	4.0 mm	1	RP-8925

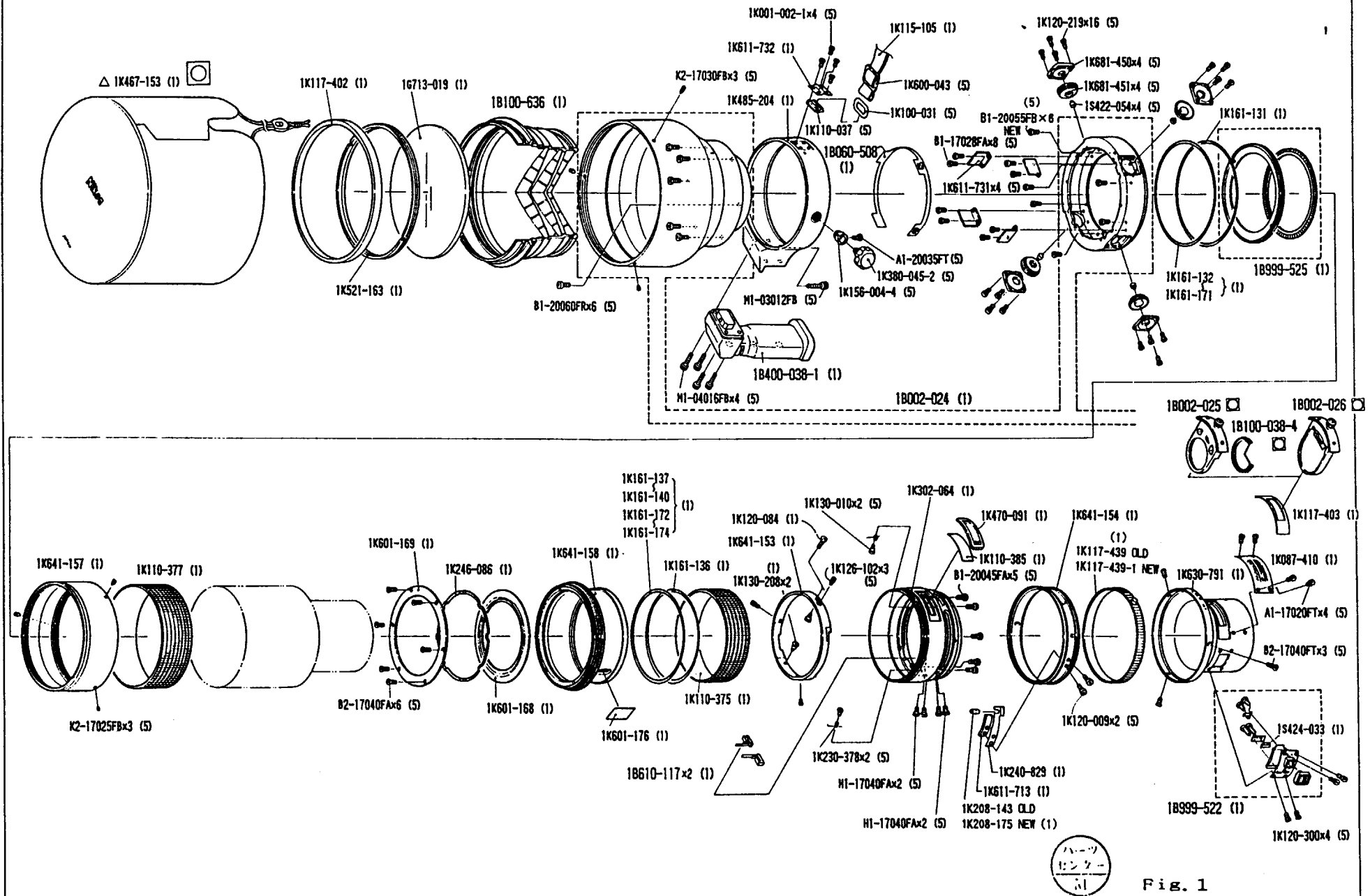
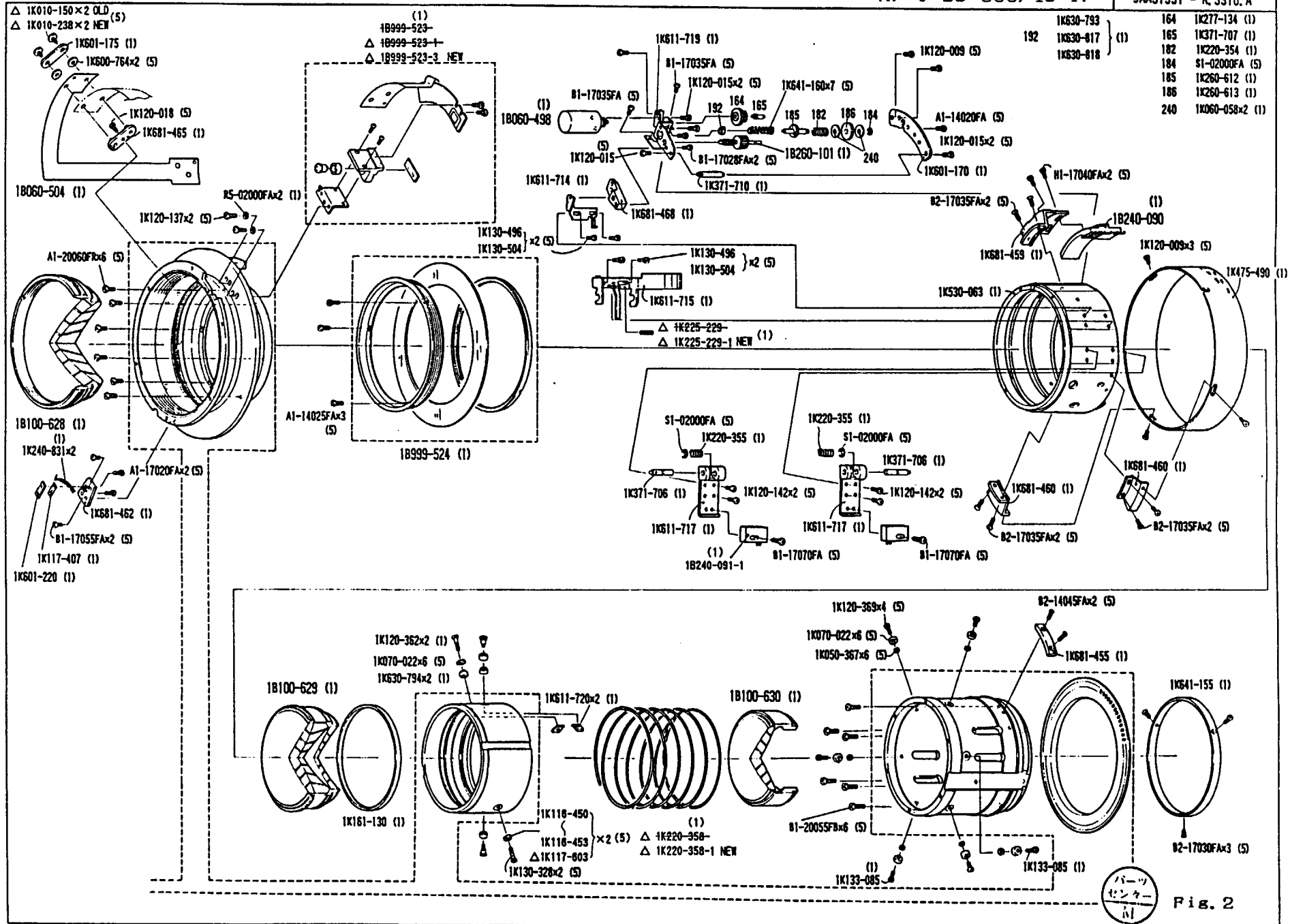


Fig. 1



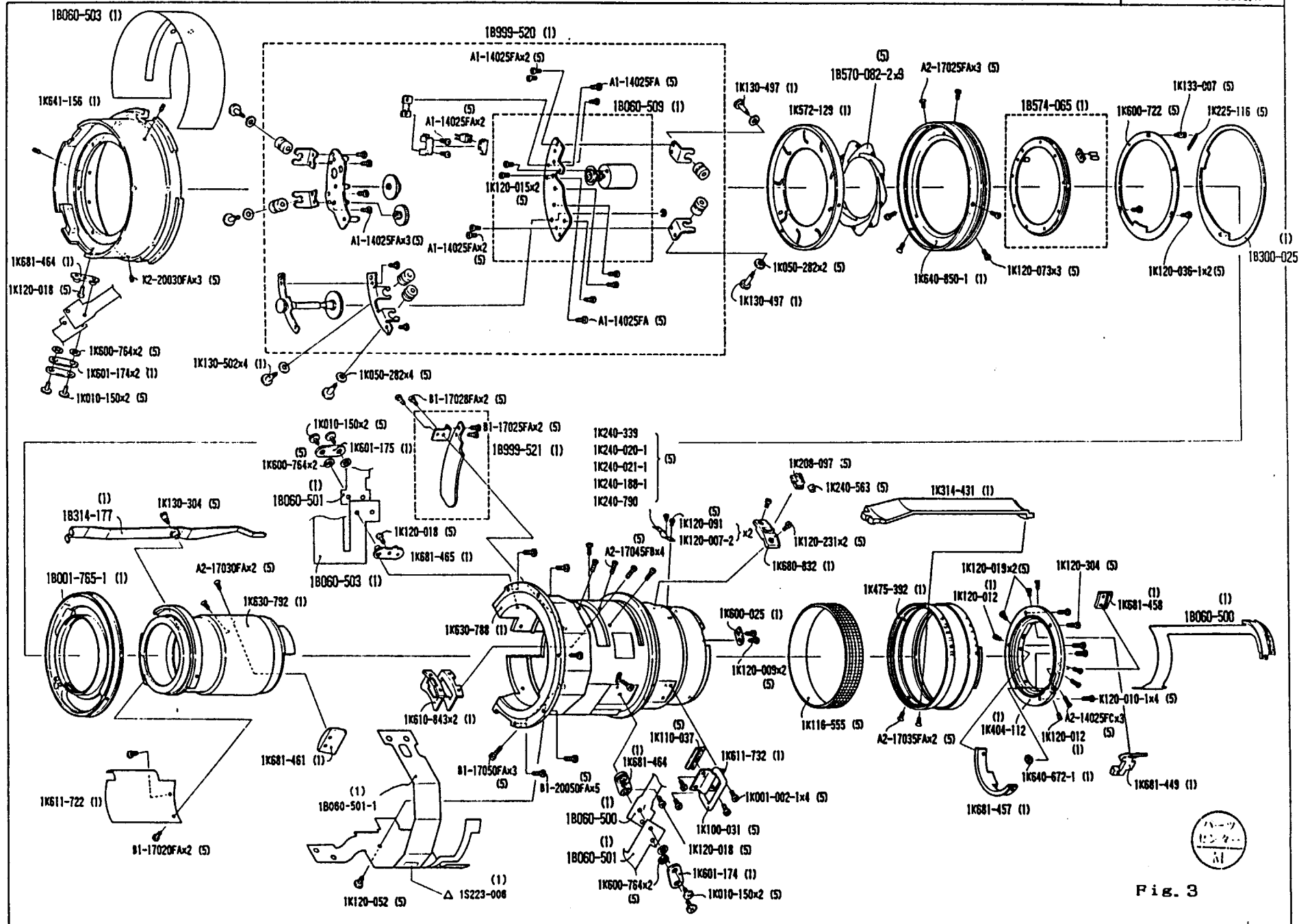


Fig. 3

部品表 Parts List

AF-I ED 600/4D IF

JAA51951-R.3310.A

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
*1K001-002-1 (1K001-002)	139	Screw	8		1. 3 6	○	AI-26040FX	5
△ *1K010-150	289	Screw	8		2. 3	○	JAA32651 93F-1010 RP-9528	5
△ *1K010-238					4			
*1K050-282	321	Washer	6		3. 6	○	JAA32651	5
*1K050-367	242	Washer	6		2. 4	○		5
*1K060-058	240	Washer	2		2. 5	○	JAA32651	1
*1K070-022	74	軸受け Shaft holder	8		2. 4	○		5
1K087-410	269	銘板 Name plate	1		1. 5	○		1
*1K100-031	135	吊り環 Eyelet	2		1. 3 6	○		5
*1K110-037	123	ゴム板 Rubber plate	2		1. 3 6	○		5
1K110-375	37	ゴムリング Rubber ring	1		1. 4	○		1
1K110-377	176	ゴムリング Rubber ring	1		1. 4	○		1
*1K110-385	106	Tape	1		1. 4	○	JAA32651	1
*1K115-105	130	ベルト Belt	1		1. 6	○		1
*1K116-450	243	ガイド環 Guide ring	0-2		2. 4	○		5
*1K116-451	243	ガイド環 Guide ring	0-2		2. 4	○		5
*1K116-452	243	ガイド環 Guide ring	0-2		2. 4	○		5

RP-Inf. NO. 9528

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部品表 Parts List

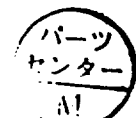
JAA51951-R. 3310. A

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
*IK116-453	243	ガイド環 Guide ring	0-2		2. 4	○		5
*IK116-555	155	ゴムリング Rubber ring	1		3. 4	○		5
*IK117-228	327	Tape	1		4	×	TA-0006S	
IK117-402	54	保護ゴム Rubber	1		1. 4	○		1
*IK117-403	59	Tape	1		1. 4	○	JAA32651	1
*IK117-407	203	マイラーシート Sheet	1		2. 4	○	JAA32651	1
△ IK117-439	310	ゴムリング	1		1. 4	○	94F-1024	1
△ IK117-439-1		Rubber ring						
IK117-527	328	Tape	1		4	○		1
△ IK117-603	243	ガイド環 Guide ring	0-2		2. 4	○	JAA32651 RP-9528	1
*IK120-007-2	125	Screw	0-2		3. 4	○		5
*IK120-009	255	Screw	8		1. 2 3. 5	○		5
*IK120-010-1 (IK120-010)	127	Screw	4		3. 4	○		5
*IK120-012	129	Screw	1		3. 4	○		1
*IK120-015	249	Screw	5	18060-509	2 3. 5	○△		5
*IK120-018	296	Screw	4		3. 4	○		5
*IK120-019	158	Screw	4		3. 4	○		5
*IK120-036-1 (IK120-036)	120	Screw	2		3. 6	○		5

RP-INF. NO. 9528

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部品表 Parts List

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部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
*1K120-052	305	Screw	1		3. 4	○		5
*1K120-073	126	Screw	3		3. 4	○		5
*1K120-075	217	Screw	2	18999-520	3. 6	○△		5
*1K120-084	196	Screw	1		1. 4	○		1
*1K120-091	125	Screw	0-2		3. 4	○		5
*1K120-137	199	Screw	2		2. 4	○		5
*1K120-142	258	Screw	4		2. 5	○		5
*1K120-219	95	Screw	16		1. 4	○		5
*1K120-231	98	Screw	2		3. 4	○		5
*1K120-300	298	Screw	4		1. 5	○		5
*1K120-304	226	Screw	1		3. 4	○		5
1K120-362	25	Screw	2		2. 4	○		1
*1K120-369	308	Screw	4		2. 4	○	JAA32651	5
*1K126-102	77	Screw	3		1. 4	○	JAA32651	5
*1K130-010	248	Screw	2		1. 4	○		5
*1K130-208	195	ガイド軸 Guide axle	2		1. 4	○		1

部品表 Parts List

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部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備考 Remarks	要求単位 Qty per order
*1K130-304	124	Screw	1		3. 4	○		5
*1K130-328	244	Screw	2		2. 4	○		5
*1K130-496	183	Screw	0-4		2. 5	○	JAA32651	5
1K130-497	246	Screw	2		3. 6	○		1
1K130-502	313	Screw	4		3. 6	○		1
*1K130-504	183	Screw	0-4		2. 5	○	JAA32651	5
*1K133-007	99	Screw	1		3. 6	○		5
*1K133-085	239	Screw	2		2. 4	○	JAA32651	1
*1K156-004-4	309	Nut	1		1. 6	○		5
1K161-130	122	Washer	1		2. 4	○		1
1K161-131	179	Washer	1		1. 4	○		1
1K161-132	180	Washer t=0.2	0-1		1. 4	○		1
1K161-133	180	Washer t=0.1	0-1		1. 4	○		1
1K161-134	180	Washer t=0.05	0-1		1. 4	○		1
1K161-135	180	Washer t=0.06	0-1		1. 4	○		1
1K161-136	221	Washer	1		1. 4	○		1

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部品番号 Part No.	補助番号 Ckt Ho.	名称 Name	1台分 個数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
1K161-137	222	Washer t=0.2	0-1		1. 4	○		1
1K161-138	222	Washer t=0.1	0-1		1. 4	○		1
1K161-139	222	Washer t=0.05	0-1		1. 4	○		1
1K161-140	222	Washer t=0.06	0-1		1. 4	○		1
1K161-169	180	Washer t=0.09	0-1		1. 4	○		1
1K161-170	180	Washer t=0.08	0-1		1. 4	○		1
1K161-171	180	Washer t=0.07	0-1		1. 4	○		1
1K161-172	174	Washer t=0.07	0-1		3. 4	○		1
1K161-173	174	Washer t=0.08	0-1		3. 4	○		1
1K161-174	174	Washer t=0.09	0-1		3. 4	○		1
*1K208-097	172	ロック錠 Lock button	1		3. 4	○		5
△ *1K208-143	85	マクロボタン	1		1. 4	○	JAA32651 94F-1024 RP-9528	1
△ *1K208-175		Macro button						
*1K220-354	182	Spring	1		2. 5	○	JAA32651	1
1K220-355	187	Spring	2		2. 5	○		1
△ 1K220-358	319	Spring	1		2. 4	○	93F-2032 RP-9528	1
△ 1K220-358-1								
*1K225-116	96	Spring	1		3. 6	○		5

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部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
△ 1K225-929	188	Spring	1		2.5	○	93F-2032 RP-9528	1
△ 1K225-229-1								
1K230-378	247	Spring	2		2.4	○		5
*1K240-020-1 (1K240-020)	36	クリックバネ Click spring	0-1		3.4	○		5
*1K240-021-1 (1K240-021)	36	クリックバネ Click spring	0-1		3.4	○		5
*1K240-188-1 (1K240-188)	36	クリックバネ Click spring	0-1		3.4	○		5
*1K240-339	36	クリックバネ Click spring	0-1		3.4	○		5
*1K240-563	173	EE ロックバネ EE lock spring	1		3.4	○		5
*1K240-790	36	クリックバネ Click spring	0-1		3.4	○		5
*1K240-829	87	曲げ板 Bent plate	1		1.4	○	JAA32651	1
*1K240-831	201	ブラシ Burush	2		2.4	○	JAA32651	1
1K246-086	119	板バネ Leaf spring	1		1.4	○		1
*1K260-612	185	歯車 Gear	1		5	○	JAA32651	1
*1K260-613	186	歯車 Gear	1		2	○	JAA32651	1
*1K277-134	164	歯車 Gear	1		2.5	○	JAA32651	1
1K302-064	27	外筒 Out tube	1		1.4	○		1
1K314-431	62	Lever	1		3.6	○		1

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部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備考 Remarks	要求単位 Qty per order
*1K371-706	102	軸 Axle	2		2.5	○	JAA32651	1
*1K371-707	165	軸 Axle	1		2.5	○	JAA32651	1
*1K371-710	232	軸 Axle	1		2.5	○	JAA32651	1
*1K380-045-2 (1K380-045-1)	70	クランプネジ Clamp screw	1		1.6	○		5
1K404-112	30	バヨネット Bayonet mount	1		3.4	○		1
△ 1K467-153	273	キャップ Cap	1		1.4	○	RP-9603	1
1K470-091	57	アクリル窓 Acryle plate	1		1.4	○		1
*1K475-392	28	絞り環 Diaphragm ring	1		3.4	○		1
1K475-490	26	距離環 Focus ring	1		2.4	○		1
1K485-204	69	三脚座 固定リング Tripod fixing ring	1		1.6	○		1
1K521-163	47	GI 押さえ環 GI retaining ring	1		1.4	○		1
1K530-063	24	リード 溝環 Inner tube	1		2.5	○		1
*1K572-129	34	羽根基板 Blade mounting plate	1		3.4	○		1
*1K600-025	174	駒 Stopper	1		3.4	○		1
*1K600-043	131	Plate	2		1.6	○		5
*1K600-722	79	Plate	1		3.6	○		5

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部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備考 Remarks	要求単位 Qty per order
*1K600-764	290	圧接ゴム Rubber	8		2. 3 4	○		5
1K601-168	111	溝板 Plate	1		1. 5	○		1
1K601-169	118	丸板 Plate	1		1. 4	○		1
1K601-170	181	Plate	1		2. 5	○		1
*1K601-174	267	Plate	2		3. 4	○	JAA32651	1
*1K601-175	268	Plate	2		2. 4	○	JAA32651	1
*1K601-176	270	Plate	1		1. 4	○	JAA32651	1
*1K601-220	204	Plate	1		2. 4	○	JAA32651	1
*1K610-843	83	曲げ板 Bent plate	2		3. 4	○		1
1K611-713	88	曲げ板 Bent plate	1		1. 4	○		1
*1K611-714	107	Lever	1		2. 5	○	JAA32651	1
1K611-715	108	曲げ板 Bent plate	1		2. 5	○		1
1K611-717	162	曲げ板 Bent plate	2		2. 5	○		1
1K611-719	177	曲げ板 Bent plate	1		2. 5	○		1
*1K611-720	189	曲げ板 Bent plate	1		2. 4	○	JAA32651	1
1K611-722	233	Plate	1		3. 6	○		1

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部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備考 Remarks	要求単位 Qty per order
*1K611-731	51	曲げ板 Bent plate	4		1. 4	○	JAA32651	5
*1K611-732	75	曲げ板 Bent plate	2		1. 3 6	○	JAA32651	1
1K630-788	29	ヘリコイド環 Helicoid ring	1		3. 5 6	○		1
1K630-791	58	外筒 Out tube	1		1. 5	○		1
1K630-792	115	丸筒 Tube	1		3. 4	○		1
*1K630-793	192	Bush	0-1		2. 5	○	JAA32651	1
1K630-794	241	Bush	2		2. 4	○		1
*1K630-817	192	Bush	0-1		2. 5	○	JAA32651	1
*1K630-818	192	Bush	0-1		2. 5	○	JAA32651	1
*1K640-672-1 (1K640-672)	178	丸環 Ring	1		3. 4	○		1
*1K640-850-1 (1K640-850)	78	丸環 Ring	1		3. 4	○		1
1K641-153	66	丸環 Ring	1		1. 4	○		1
1K641-154	67	丸環 Ring	1		1. 4	○		1
1K641-155	84	丸環 Ring	1		2. 4	○		1
1K641-156	117	エンコーダ 取付け環 Ring	1		3. 6	○		1

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部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備考 Remarks	要求単位 Qty per order
1K641-157	167	丸筒 Tube	1		1. 4	○		1
1K641-158	168	丸筒 Tube	1		1. 4	○		1
*1K641-160	198	Bush	8		2. 5	○	JAA32651	5
*1K680-832	105	ロック基板 Base plate	1		3. 4	○		1
1K681-449	39	丸環 Ring	1		3. 4	○		1
*1K681-450	63	Block	4		1. 4	○	JAA32651	5
*1K681-451	64	Block	4		1. 4	○	JAA32651	5
1K681-455	150	フォーカス 回転制限 Focus rimit plate	1		2. 4	○		1
1K681-457	159	曲げ板 Bent plate	1		3. 4	○		1
1K681-458	161	曲げ板 Bent plate	1		3. 4	○		1
1K681-459	190	曲げ板 Bent plate	1		2. 4	○		1
1K681-460	191	曲げ板 Bent plate	2		2. 4	○		1
1K681-461	200	Block	1		2. 4	○		1
*1K681-462	205	Plate	1		2. 4	○	JAA32651	1
*1K681-464 <i>DIS</i> <i>1K681-464-1</i>	262	Block	2		3. 4	○	<i>9364</i> JAA32651	1
*1K681-465 <i>DIS</i> <i>1K681-465-1</i>	263	Block	2		2. 3 4	○	<i>9364</i> JAA32651	1

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部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
*1K681-468	254	Block	1		2 5	○	JAA32651	1
1G713-019	G1	G1 レンズ G1 lens element	1		1. 4	○		1

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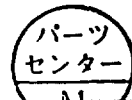
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部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備考 Remarks	要求単位 Q'ty per order
△ 1S223-006	1014	MD-IC	2	1B060-501-1	3	○△	JAA32651 93F-2018 RP-9529	1
*1S422-054	157	フォーカス ロックスイッチ Focus lock swith	4	1B060-509	1. 4	○△	JAA32651	5
1S424-033	156	スライド スイッチ Slide swith	1	1B999-522	1. 5	○△		1
1S811-485	1061	Wire	1		Page E1	×	W-0080BE	
1S811-486	1062	Wire	1		Page E1	×	W-0080OR	
1S811-487	1063	Wire	4		Page E1	×	W-0080OR	
1S811-488	1064	Wire	1		Page E1	×	W-0080BE	
1S811-494	1070	Wire	1		Page E1	×	W-0080OR	
1S811-495	1071	Wire	1		Page E1	×	W-0080BE	
1S811-496	1072	Wire	4		Page E1	×	W-0056BN	
1S811-497	1073	Wire	1		Page E1	×	W-0056PU	
1S811-498	1074	Wire	1		Page E1	×	W-0056BK	
1S811-499	1075	Wire	1		Page E1	×	W-0056BK	
1S811-500	1076	Wire	4		Page E1	×	W-0056GN	
1S811-501	1077	Wire	1		Page E1	×	W-0056YE	
1S811-502	1078	Wire	1		Page E1	×	W-0056BK	
1S811-503	1079	Wire	1		Page E1	×	W-0056PU	

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部品番号 Part No.	補助番号 Ckt No.	名 称 Name	1台分 個 数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備 考 Remarks	要求単位 Q'ty per order
1S811-504	1080	Wire	4		Page E1	×	W-0056MN	
1S811-505	1081	Wire	1		Page E1	×	W-0056YE	
1S811-506	1082	Wire	1		Page E1	×	W-0056GY	
1S811-507	1083	Wire	1		Page E1	×	W-0056YE	
1S811-508	1084	Wire	4		Page E1	×	W-0056BK	
1S811-509	1085	Wire	1		Page E1	×	W-0056PU	
1S811-539	1088	Wire	1		Page E1	×	W-0056BK	
1S811-540	1089	Wire	1		Page E1	×	W-0056BK	

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部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備考 Remarks	要求単位 Qty per order
B1-17055FA	202	Screw	2		2.4	○		5
B1-17070FA	216	Screw	2		2.5	○		5
B1-20045FA	291	Screw	5		1.4	○		5
△ B1-20045FB	152	Screw	6		1.4	○	RP-9528	5
B1-20050FA	257	Screw	5		3.4	○		5
△ B1-20055FB	293	Screw	12		1.2 4	○	RP-9528	5
B1-20060FR	256	Screw	6		1.4	○		5
B2-14045FA	295	Screw	2		2.4	○		5
B2-17030FA	94	Screw	3		2.4	○		5
B2-17035FA	219	Screw	6		3.4	○		5
B2-17040FA	278	Screw	6		1.4	○		5
B2-17040FT	259	Screw	3		1.4	○		5
H1-17040FA	215	Screw	6		2.4	○		5
K2-17025FB	294	Screw	3		1.4	○		5
K2-17030FB	252	Screw	3		1.4	○		5
K2-20030FA	220	Screw	3		3.4	○		5

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部品番号 Part No.	補助番号 Ckt No.	名 称 Name	1台分 個 数 Pcs. Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Term of Delivery	備 考 Remarks	要求単位 Q'ty per order
M1-03012FB	280	Bolt	1		1. 4	○		5
M1-04016FB	281	Bolt	4		1. 4	○		5
R5-02000FA	197	Washer	2		2. 4	○	JAA32651	1
S1-02000FA	184	E-ring	4	1B999-520	2. 5 6	○△		5

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部組番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	構成部品番号 Constituent Parts	参照 図番 Fig. No.	備考 Remarks	要求単位 Q'ty per order
*1B001-765-1 (1B001-765)	B12	カム保持環 組 Cam mount ring unit	1	1K310-062 1K370-115 1K370-697 1K371-135 1K640-849-1	3		1
1B002-024	B4	ヘリコイド 組 Hericoid unit	1	1K260-610 1K540-161 1K630-789 1K630-790 1K641-150 1K641-151	1. 2		1
*1B002-025	B9	フィルター ホルダー Filter holder	1	1B002-027 1K001-003-1x2 1K220-021-1 1K480-001-1 1K680-024 1K681-452 1K681-453 P3-10050SX	1	□ ○	
*1B002-026	B10	ゼラチンフィルター ホルダー Gelatin filter holder	1	1B002-027 1K001-003-1x2 1K117-465 1K220-021-1 1K233-008-2 1K480-001-1 1K611-751 1K625-059 1K680-024 1K681-454 1K681-482 A2-20040FTx2 P3-10050SX	1	□ ○	
1B060-500	B22	接点FPC 組 Connecting FPC unit	1	1K117-485 1K117-525 1K240-469-1x10 1K611-788 1K681-539 1K681-572 1S705-228	3		1
△ *1B060-501	B23	メインFPC 組	1	1K116-526x2 1K117-525x5 1S020-085	3	JAA32651	1
△ *1B060-501-1		Main FPC unit				RP-9513	
1B060-503	B25	エンコーダFPC 組 FPC unit	1	1K117-463 1S705-229	3		1



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部組番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	構成部品番号 Constituent Parts	参照 図番 Fig. No.	備考 Remarks	要求単位 Q'ty per order
1B060-504	B26	中継FPC 組 Relay FPC unit	1	1K117-525x3 1K117-413 1S705-230	2		1
*1B060-508	B27	フォーカスロックFPC 組 Focus lock FPC unit	1	1K117-525x4 1S020-087	1	JAA32651	1
1B060-498	B29	モーター Moter	1		3		1
1B060-509	B28	モーター Moter	1	1B060-498 1K120-015x2 1K601-171 1K641-181	3		1
*1B100-038-4	B30	フィルター Filter	1	1G610-002-1 1K160-056-1 1K500-082-2	1	○	
1B100-628	B1	G5.G6 レンズ室 組 G5.G6 lens housing unit	1	1G154-115 1G254-088 1K500-832	2		1
1B100-629	B2	G7-G9 レンズ室 組 G7-G9 lens housing unit	1	1G135-006 1G213-030 1G215-026 1K510-397	2		1
1B100-630	B3	G10 レンズ室 組 G10 lens housing unit		1G116-039 1K500-831	2		1
1B100-636	B6	G2-G4 レンズ室 組 G2-G4 lens housing unit	1	1G117-047 1G117-048 1G217-019 1K510-396 1K521-161 1K521-162 1K521-164 1S811-484	1	※	1
1B240-090	B8	ブラシ 組 Brush unit	1	1K240-826x2 1K240-827x2 1K240-828 1K681-452	2		1
△ *1B240-091	B20	ブラシ 組	2	1K240-830 1K611-711	2.5	JAA32651	1
△ *1B240-091-1		Brush unit				RP-9517	
*1B260-101	B21	ギア 組 Gear unit	1	1K371-759	2	JAA32651	1
							1

※印は修理にて調整不可の為、工場送りとなる部品を示します。
An item with a mark ※ is not available as repair parts since
the relevant repair involves adjustment at our factory.



部組品表 Assembly List

JAA51951-R. 3310. A

部組番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	構成部品番号 Constituent Parts	参照 図番 Fig. No.	備考 Remarks	要求単位 Qty per order
*1B300-025	B13	平面カム 組 Plate cam	1	1K300-081 1K370-615	3		1
1B314-177	B16	レバー 組 Lever unit	1	1K314-430 1K340-133	3		1
*1B400-038-1 (1B400-038)	7B	三脚座 Tripod attaching	1	1K400-222-1 U2-06315SX X 3	1		1
*1B570-082-2 (1B570-082)	B17	絞り羽根 Diaphragm blade	9	1K370-607-1 X 2 1K570-081-2	3		5
*1B574-065	B15	羽根基板 組 Brade mounting plate unit	1	1K042-001 X 2 1K370-845-1 1K574-125 1K600-723	3		1
1B610-117	B19	曲げ板 組 Bent plate unit	2	1K611-712 1K611-716	1		1
1B999-520	B32	AFギア 組 AF gear unit	1	1B060-509 1B260-100 1B600-066 1K117-410 X 2 1K117-444 X 4 1K120-075 1K130-249 1K277-135 1K277-136 1K601-185 1K611-723 X 2 1K611-743 X 2 1K611-746 1K611-747 1K611-748 1S258-016-1 1S811-543 1S811-544 1S811-545 1S811-546 1S811-547 A1-14025FA X 7 A2-14025FC B1-17025FA R1-02600FA S1-02000FA	3		1

RP-1NF. NO. 9528



部組品表 Assembly List

JAA51951-R. 3310. A

部組番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Pcs. Per Unit	構成部品番号 Constituent Parts	参照 図番 Fig. No.	備考 Remarks	要求単位 Q'ty per order
1B999-521	B33	DC/DC コンバーター 組 DC/DC converter unit	1	1K611-718 1S050-035 1S811-485 1S811-491 1S811-492 1S811-493 B1-17025FA X 2	3		1
1B999-522	B34	フォーカスレンジ スイッチ 組 Swich unit	1	1K117-406 1K206-096 1K240-832 1K681-456 1S424-033 1S700-343 H1-17030FA X 4	1		1
△ 1B999-523 △ 1B999-523-1 △ 1B999-523-3	B35	LED 部 組 LED unit	1	1G767-001 1K117-437 1K611-721 1K681-463 1S020-086 1S260-058 1S811-510 1S811-511 B1-14030FA X 2 B1-17035FA X 2	2	RP-9278 RP-9278 RP-9528 RP-9528	1
1B999-524	B36	ガラスエンコーダ 組 Lens barrel unit	1	1G766-001 1K521-165 1K641-159	2		1
1B999-525	B37	エンコーダリング 組 Barrel unit	1	1K641-152 1S700-342	1		1

RP-INF. NO. 9528

Change page (差し替え) △×2

Mar. 29. 1995



部品对照表 Parts Reference Table

補助番号 Auxiliary No.	部品番号 Part Number	補助番号 Auxiliary No.	部品番号 Part Number	補助番号 Auxiliary No.	部品番号 Part Number
G1	1G713-019	41	1K510-397	84	1K641-155
G2	1G117-047	42	1K521-161	85	1K208-143
G3	1G117-048	44	1K500-831	86	1K681-453
G4	1G217-019	45	1K630-789	87	1K240-829
G5	1G254-088	46	1K521-162	88	1K611-713
G6	1G154-115	47	1K521-163	89	1K204-004-1
G7	1G135-006	48	1K500-832	90	1K130-495
G8	1G213-030	49	1K521-164	91	1K680-024
G9	1G215-026	50	1K630-790	92	1K480-001-1
G10	1G116-039	51	1K611-731	93	1K500-082-2
G11	1G610-002-1	52	1K611-711	94	B2-17030FA
G12	1G766-001	53	1K611-712	95	1K120-219
G13	1G767-001	54	1K117-402	96	1K225-116
		55	1K240-826	97	1K042-001
21	1K300-081	56	1K240-827	98	1K120-231
22	1K641-150	57	1K470-091	99	1K133-007
23	1K314-430	58	1K630-791	100	A2-17045PB
24	1K530-063	59	1K117-403	101	1K340-133
25	1K120-362	61	1K641-152	102	1K371-706
26	1K475-490	62	1K314-431	103	1K220-021-1
27	1K302-064	63	1K681-450	104	1S811-484
28	1K475-392	64	1K681-451	105	1K680-832
29	1K630-788	66	1K641-153	106	1K110-385
30	1K404-112	67	1K641-154	107	1K611-714
31	1K570-081-2	68	1S700-342	108	1K611-715
32	1K370-607-1	69	1K485-204	109	1K240-830
33	1K574-125	70	1K380-045-2	110	1K611-716
34	1K572-129	71	1K681-452	111	1K601-168
35	1K641-151	73	1K240-828	112	1K260-610
36	1K240-339	74	1K070-022	113	U2-06315SX
	1K240-020-1	75	1K611-732	114	1K160-056-1
	1K240-021-1	77	1K126-102	115	1K630-792
	1K240-188-1	78	1K640-850-1	116	A1-20035PT
	1K240-790	79	1K600-722	117	1K641-156
37	1K110-375	80	1K600-723	118	1K601-169
38	1K540-161	81	1K310-062	119	1K246-086
39	1K681-449	82	1K640-849-1	120	1K120-036-1
40	1K510-396	83	1K610-843		

部品对照表 Parts Reference Table

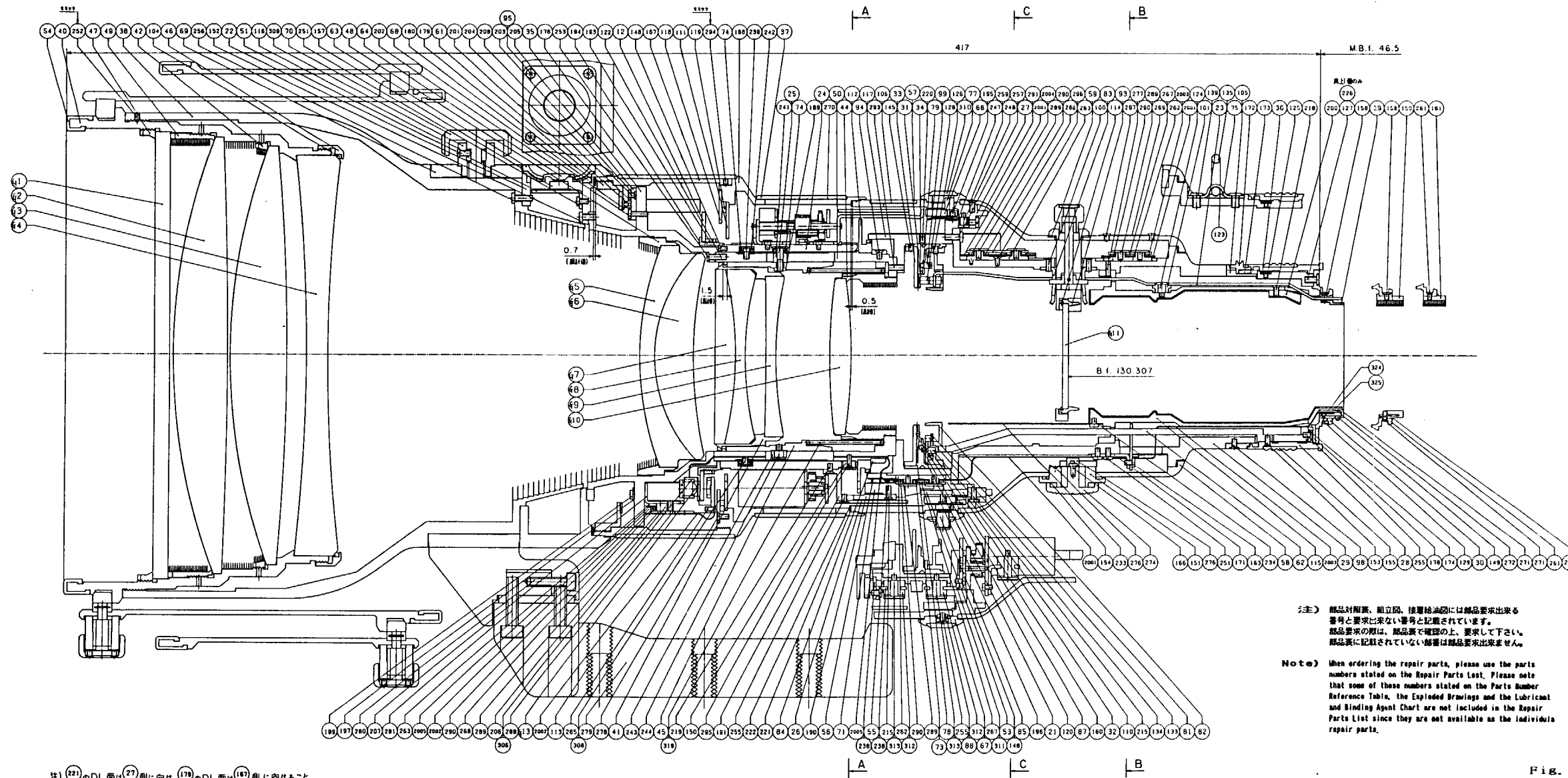
補助番号 Auxiliary No.	部品番号 Part Number	補助番号 Auxiliary No.	部品番号 Part Number	補助番号 Auxiliary No.	部品番号 Part Number
121	1K371-759	163	B1-17025FA	194	1K641-159
122	1K161-130	164	1K277-134	195	1K130-208
123	1K110-037	165	1K371-707	196	1K120-084
124	1K130-304	166	H1-17030FA	197	R5-02000FA
125	1K120-091	167	1K641-157	198	1K641-160
	1K120-007-2	168	1K641-158	199	1K120-137
126	1K120-073	171	1K611-718	200	1K681-461
127	1K120-010-1	172	1K208-097	201	1K240-831
128	1K370-845-1	173	1K240-563	202	B1-17055FA
129	1K120-012	174	1K600-025	203	1K117-407
130	1K115-105	175	A2-20040FT	204	1K601-220
131	1K600-043	176	1K110-377	205	1K681-462
132	1K370-697	177	1K611-719	206	1K681-463
133	1K370-115	178	1K640-672-1	207	1K611-721
134	1K370-615	179	1K161-131	208	A1-17020FA
135	1K100-031	180	1K161-132	209	P3-10050SX
136	1K681-454		1K161-133	210	1B060-498
137	1K611-751		1K161-134	211	1K601-171
138	1K117-465		1K161-135	212	1K601-172
139	1K001-002-1		1K161-169	213	1K371-708
140	1K625-059		1K161-170	215	H1-17040FA
141	1K233-008-2		1K161-171	216	B1-17070FA
145	A2-17025FA		181	1K601-170	217
148	A1-14025FA	182	1K220-354	218	A2-17030PB
149	1K240-469-1	183	1K130-496	219	B2-17035FA
150	1K681-455	183	1K130-504	220	K2-20030FA
151	1K681-456	184	S1-02000FA	221	1K161-136
152	B1-20045PB	185	1K260-612	222	1K161-137
153	A2-17035FA	186	1K260-613		1K161-138
154	1K117-406	187	1K220-355		1K161-139
155	1K116-555	188	1K225-229		1K161-140
156	1S424-033	189	1K611-720		1K161-172
157	1S422-054	190	1K681-459		1K161-173
158	1K120-019	191	1K681-460		1K161-174
159	1K681-457	192	1K630-793		224
160	1K371-135		1K630-817	225	1K277-136
161	1K681-458		1K630-818	226	1K120-304
162	1K611-717	193	1K521-165	227	1K260-614

部品对照表 Parts Reference Table

補助番号 Auxiliary No.	部品番号 Part Number	補助番号 Auxiliary No.	部品番号 Part Number	補助番号 Auxiliary No.	部品番号 Part Number
228	1K260-615	268	1K601-175	314	1K117-463
229	1K371-709	269	1K087-410	315	1K641-181
230	1K601-185	270	1K601-176	316	1K611-746
231	R1-02600FA	271	1K681-572	317	1K611-748
232	1K371-710	272	1K611-788	318	1K611-747
233	1K611-722	273	1K467-153	319	1K220-358
234	B1-17020FA	274	1K206-096	320	A1-14020FA
235	1K611-723	275	1S700-343	321	1K050-282
236	1K130-249	276	1K240-832	324	1K681-539
238	1K611-839	277	B1-17050FA	325	1K117-485
239	1K133-085	278	B2-17040FA	326	1K117-568
240	1K060-058	279	1K400-222-1	327	1K117-228
241	1K630-794	280	M1-03012FB	328	1K117-527
242	1K050-367	281	M1-04016FB		
243	1K116-450	283			
	1K116-451	288	B1-17035FA		
	1K116-452	289	1K010-150		
	1K116-453	290	1K600-764		
244	1K130-328	291	B1-20045FA		
245	1K117-410	293	B1-20055FB		
246	1K130-497	294	K2-17025FB		
247	1K230-378	295	B2-14045FA		
248	1K130-010	296	1K120-018		
249	1K120-015	297	A1-17020FT		
251	B1-17028FA	298	1K120-300		
252	K2-17030FB	301	1K117-525		
253	A1-20060FR	302	1K117-526		
254	1K681-468	303	1K117-413		
255	1K120-009	304	1K681-482		
256	B1-20060FR	305	1K120-052		
257	B1-20050FA	306	1K117-437		
258	1K120-142	307	1K001-003-1		
259	B2-17040FT	308	1K120-369		
261	A2-14025FC	309	1K156-004-4		
262	1K681-464	310	1K117-439		
263	1K681-465	311	1K611-743		
265	B1-14030FA	312	1K117-444		
267	1K601-174	313	1K130-502		

部品对照表 Parts Reference Table

補助番号 Auxiliary No.	部品番号 Part Number	補助番号 Auxiliary No.	部品番号 Part Number	補助番号 Auxiliary No.	部品番号 Part Number
B1	1B100-628				
B2	1B100-629				
B3	1B100-630				
B4	1B002-024				
B6	1B100-636				
B7	1B400-038-1				
B8	1B240-090				
B9	1B002-025				
B10	1B002-026				
B12	1B001-765-1				
B13	1B300-025				
B14	1B310-046				
B15	1B574-065				
B16	1B314-177				
B17	1B570-082-2				
B18	1B260-100				
B19	1B610-117				
B20	1B240-091				
B21	1B260-101				
B22	1B060-500				
B23	1B060-501				
B24	1B060-502				
B25	1B060-503				
B26	1B060-504				
B27	1B060-508				
B28	1B060-509				
B29	1B060-498				
B30	1B100-038-4				
B32	1B999-520				
B33	1B999-521				
B34	1B999-522				
B35	1B999-523				
B36	1B999-524				
B37	1B999-525				

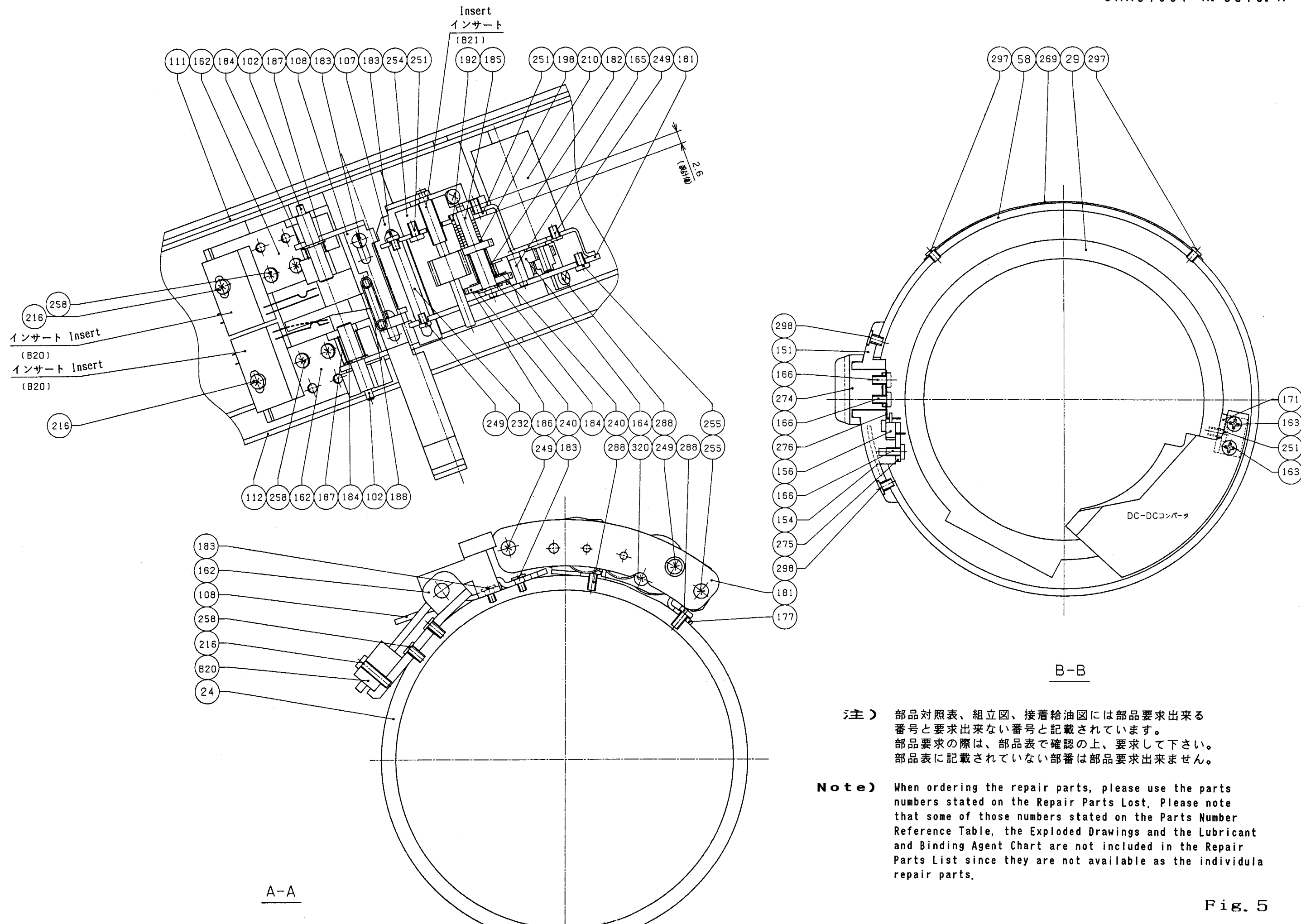


注) 部品対照表、組立図、接着粘油剤には部品要求出来る番号と要求出来ない番号と記載されています。部品要求の際は、部品表で確認の上、要求して下さい。部品表に記載されていない番号は部品要求出来ません。

Note) When ordering the repair parts, please use the parts numbers stated on the Repair Parts List. Please note that some of these numbers stated on the Parts Number Reference Table, the Exploded Drawings and the Lubricant and Binding Agent Chart are not included in the Repair Parts List since they are not available as the individual repair parts.

注) 221のDL面は27側に向け179のDL面は187側に向けること

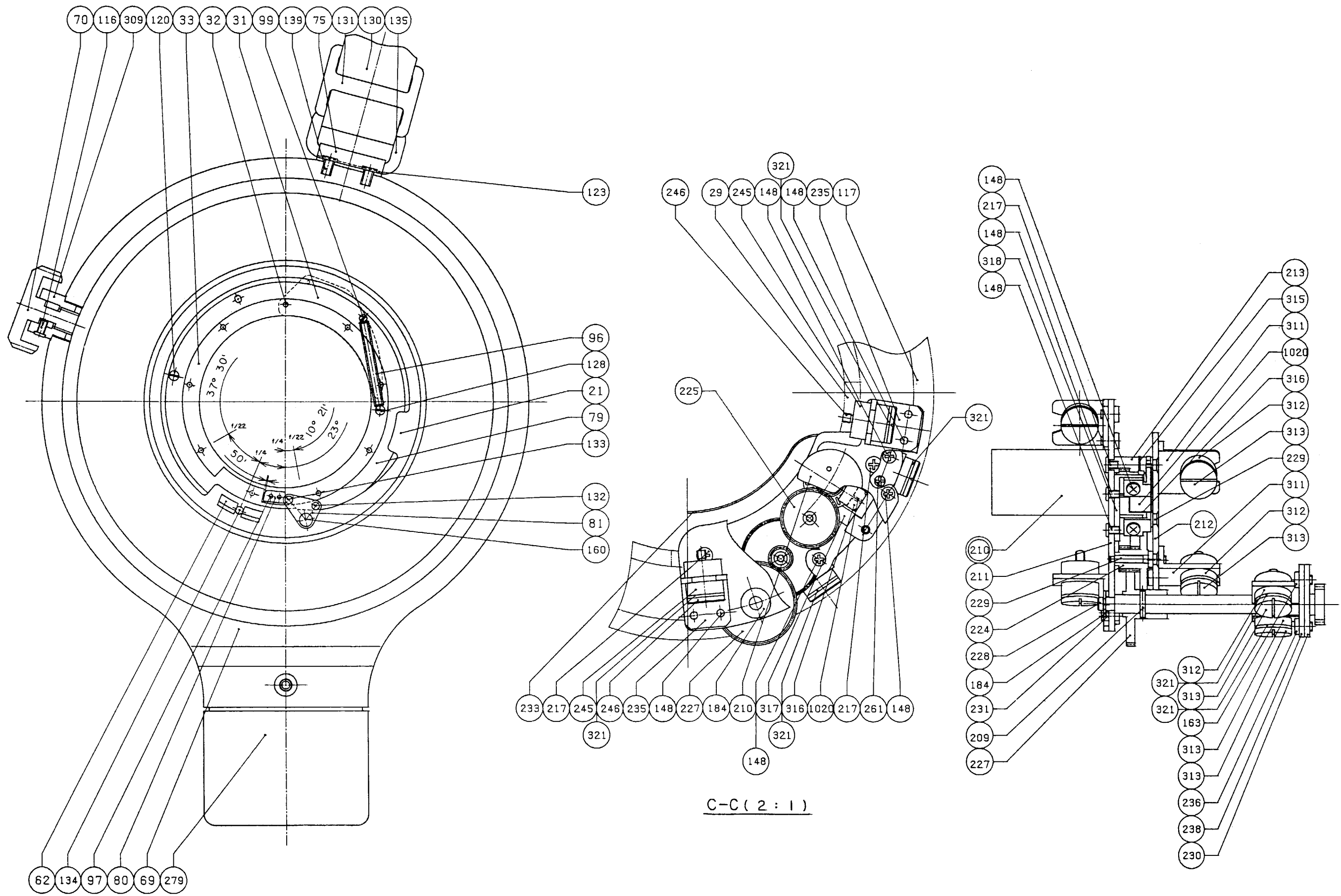
Fig. 4



注) 部品対照表、組立図、接着給油図には部品要求出来る番号と要求出来ない番号と記載されています。部品要求の際は、部品表で確認の上、要求して下さい。部品表に記載されていない部番は部品要求出来ません。

Note) When ordering the repair parts, please use the parts numbers stated on the Repair Parts List. Please note that some of those numbers stated on the Parts Number Reference Table, the Exploded Drawings and the Lubricant and Binding Agent Chart are not included in the Repair Parts List since they are not available as the individual repair parts.

Fig. 5



絞り部及び三脚座部(後方より)

Fig. 6

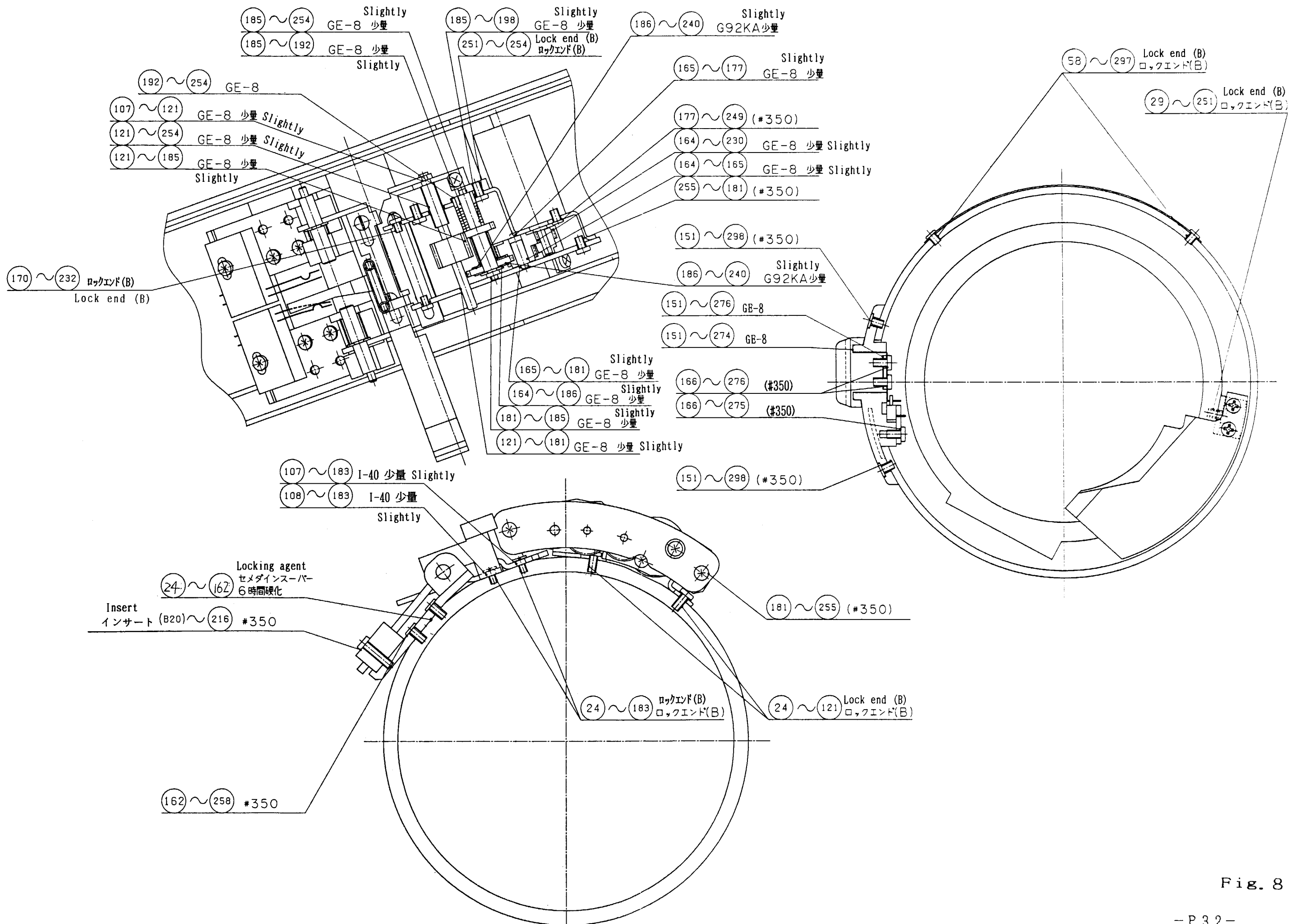


Fig. 8

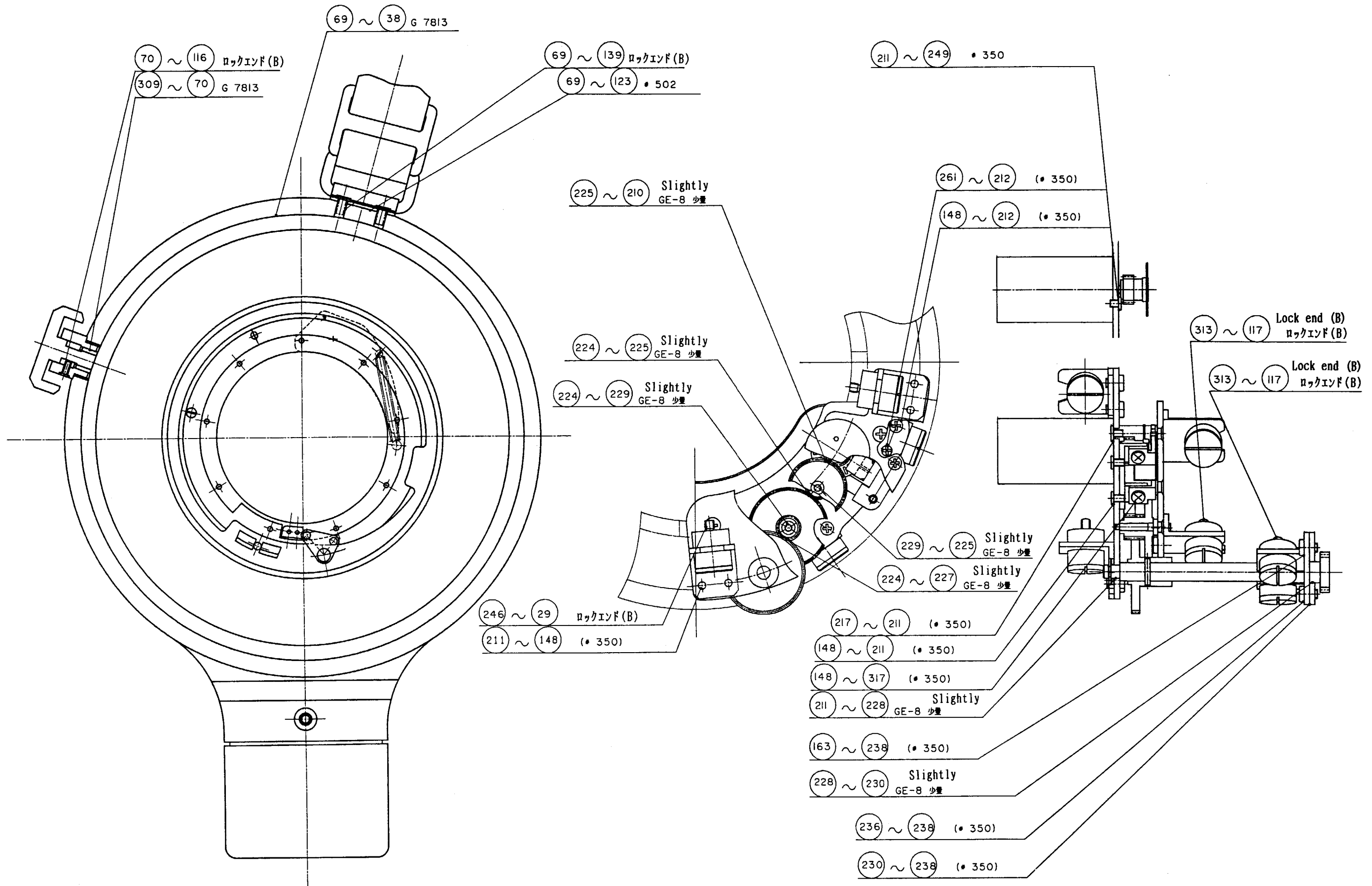
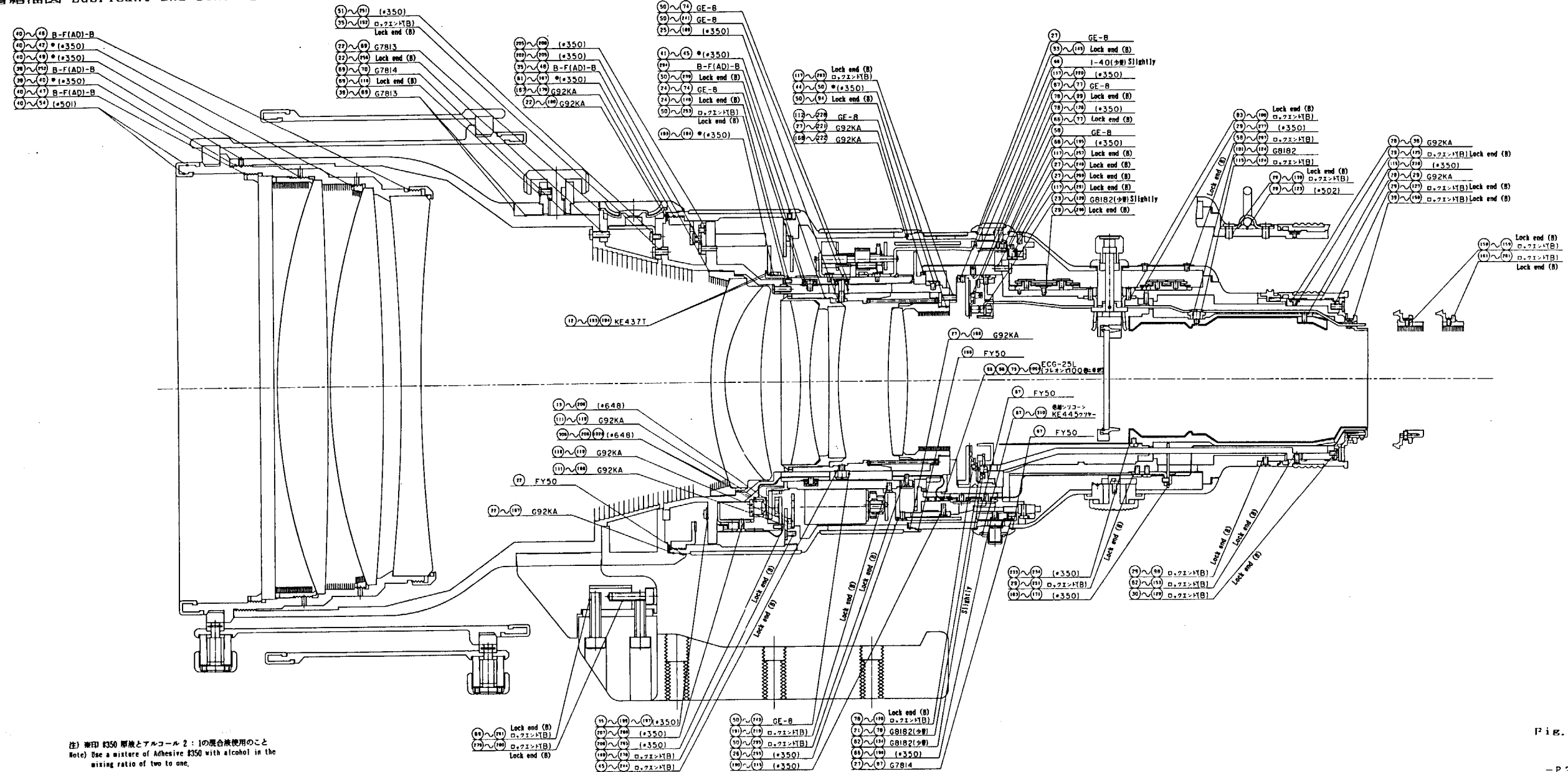


Fig. 9

接着給油図 Lubricant and Binding Agent Chart



注) 糊印 8350 原液とアルコール 2:1 の混合液使用のこと
Note) Use a mixture of Adhesive 8350 with alcohol in the mixing ratio of two to one.

Fig. 7