

AF Zoom Nikkor 28~85mm f/3.5~4.5
(New)



300,001—

REPAIR MANUAL

Nikon | NIKON CORPORATION
Tokyo, Japan

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目 次

〔1〕 仕 様	-----	1
〔2〕 展 開 図	-----	3
〔3〕 部 品 表	-----	4
〔4〕 部品対照表	-----	13
〔5〕 組 立 図	-----	15
〔6〕 接着給油図	-----	18
〔7〕 分解・組立・調整	-----	21

C O N T E N T S

〔1〕 Specifications	-----	2
〔2〕 Exploded Drawings	-----	3
〔3〕 Parts List	-----	4
〔4〕 Parts Number Reference Table	-----	13
〔5〕 Construction of the Lens	-----	15
〔6〕 Lubricant and Binding Agent Chart	-----	18
〔7〕 Disassembling and Assembling/Adjustment Procedure	-----	21

〔 1 〕 仕 様

焦点距離:	28~85mm
最大口径比:	1:3.5~4.5
レンズ構成:	11群15枚
画角:	74° ~ 28° 30'
距離目盛:	∞~0.8m, 3ft
焦点距離目盛:	28, 35, 50, 85
ズーミング:	回転式(回転角 80°)
フォーカシング:	回転式(回転角 93° 48' 0.8m)
絞り目盛:	3.5, 5.6, 8, 11, 16, 22(f/4はクリックストップのみ)
絞り方式:	自動絞り(最小絞りロック可能)
測光方式:	開放測光
マウント:	ニコン F マウント
アタッチメントサイズ:	62mm (P=0.75)
マクロ方式:	ズームリングの回転延長で行なう
大きさ:	φ71mm(最大径)×97.5mm(全長)
重量:	540g

[2] S p e c i f i c a t i o n s

Focal length:	28 ~ 85mm
Maximum aperture:	1 : 3.5 ~ 4.5
Lens construction:	15 elements 11 groups
Picture angle :	74° ~ 28 ° 30 '
Distance scale:	∞ ~ 0.8 mm, 3ft
Focal length scale:	28, 35, 50, 85
Zooming:	Rotating angle
Focusing:	Rotating angle
Aperture scale:	3.5, 5.6, 8, 11, 16, 22
Diaphragm:	Fully automatic Minimum aperture exposure measurement
Metering:	Full-aperture exposure measurement
Mount:	Nikon F mount
Attachment size:	62mm (P=0.75mm)
Macro focus device:	By retaining zooming ring
Dimensions:	φ 71mm (dia.) × 97.5 mm (long)
Weight:	540g

作成承認印

配布許可印



AF Zoom Nikkor 28~85mm f/3.5~4.5
(New)



PARTS LIST (REVISED-1)
修理部品表 (改訂 - 1)

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Sep. 15, 1995

AF 28~85/3.5~4.5 New

A

B

C

D

JAA72902-R. 3285. B

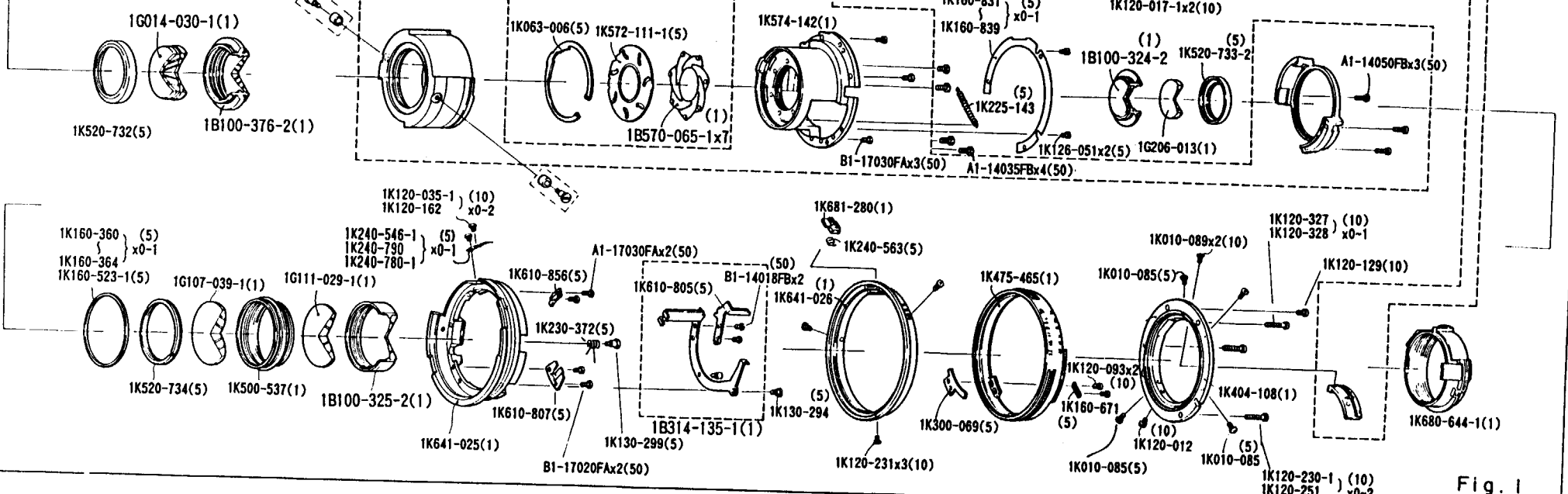
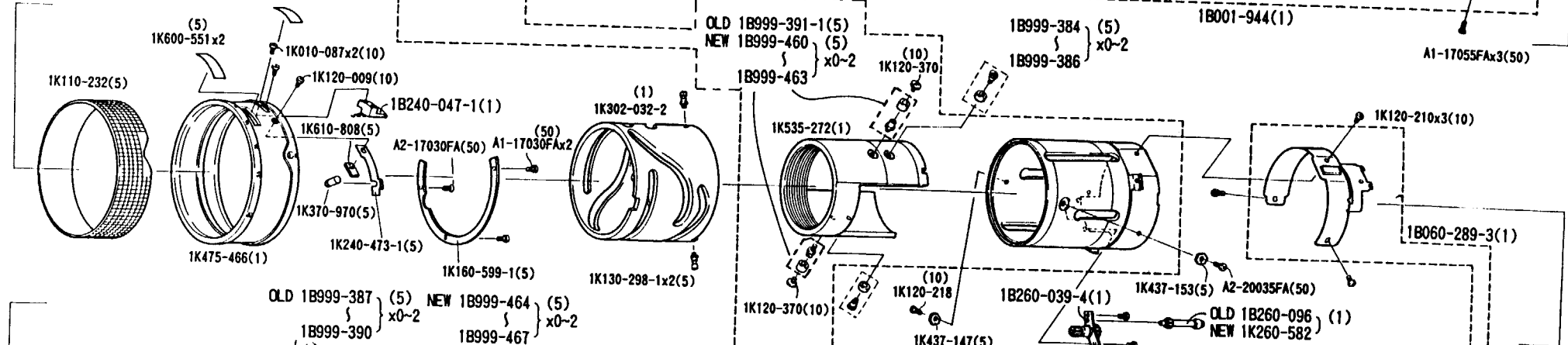
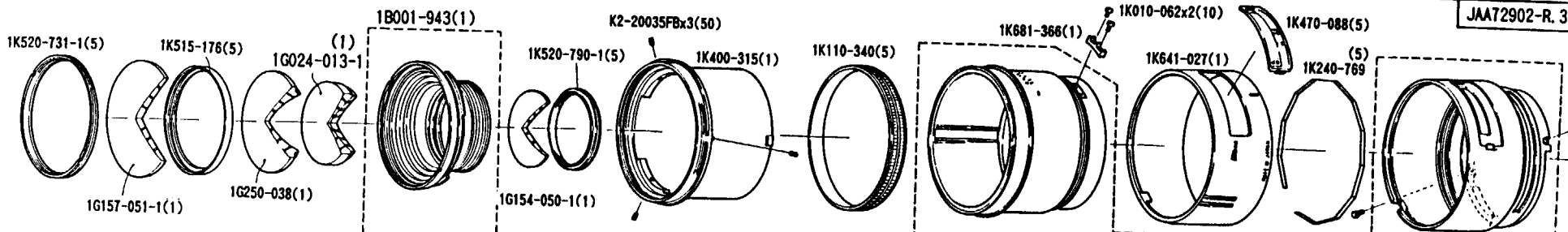


Fig. 1

部品表 Parts List

AF 28~85/3.5~4.5 NEW

JAA72902-R. 3285. B

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
*1K010-062	101	音消しレバーネジ Screw	2		C1	○		10
*1K010-085	121	小ネジ Screw	3		D3 C3	○		5
*1K010-087	108	小ネジ Screw	2		A1	○		10
*1K010-089	96	小ネジ Screw	2		D3	○		10
*1K063-006	93	矢車押え板 Plate Retainer	1		B2	○		5
*1K110-232	37	距離環ゴムリング Focusing Rubber Ring	1		A1	○		5
1K110-340	132	ゴムリング Rubber Ring	1		C1	○		5
*1K120-009	123	小ネジ Screw	1		A1	○		10
*1K120-012	105	小ネジ Screw	1		C3	○		10
*1K120-017-1	128	小ネジ Screw	2		C2	○		10
*1K120-035-1 (1K120-035)	109	小ネジ Screw	0-2		B3	○		10
*1K120-162		小ネジ Screw	0-2		B3	○		10
*1K120-093	111	小ネジ Screw	2		C3	○		10
*1K120-129	114	小ネジ Screw	1		D3	○		10
*1K120-210	124	小ネジ Screw	3		D1	○		10
*1K120-218	120	小ネジ Screw	1		C2	○		10
*1K120-231	107	小ネジ Screw	3		C3	○		10
*1K120-230-1 (1K120-230)	106	バヨネット ネジ Screw	0-2		D3	○		10
*1K120-251		バヨネット ネジ Screw	0-2		D3	○		10

部品表 Parts List

JAA72902-R. 3285. B

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
1K120-327	134	小ネジ Screw	0-1		D3	○		10
1K120-328		小ネジ Screw	0-1		D3	○		10
1K120-370	80	小ネジ Screw	2		C1 C2	○	92F-1009 RP-9234 RP-9536	10
*1K126-051	112	小ネジ Screw	2		C2	○		5
*1K130-294	63	小ネジ Screw	1		B3	○		5
*1K130-298-1 (1K130-298)	61	小ネジ Screw	2		B2	○		5
*1K130-299	65	小ネジ Screw	1		B3	○		5
1K160-360	87	ワッシャー Washer t=0.5 ±0.05	0-1		A3	○	RP-9105	5
1K160-361		ワッシャー Washer t=0.4 ±0.05	0-1		A3	○	RP-9105	5
1K160-362		ワッシャー Washer t=0.3 ±0.05	0-1		A3	○	RP-9105	5
1K160-363		ワッシャー Washer t=0.2 ±0.05	0-1		A3	○	RP-9105	5
1K160-364		ワッシャー Washer t=0.1 ±0.05	0-1		A3	○	RP-9105	5
*1K160-523-1		ワッシャー Washer	1		A3	○		5
*1K160-599-1		72	ワッシャー Washer	1		B2	○	
*1K160-671	119	ワッシャー Washer	1		C3	○		5
1K160-831	91	ワッシャー Washer t=0.05	0-1		C2	○	RP-9041	5
1K160-832		ワッシャー Washer t=0.06	0-1		C2	○	RP-9041	5
1K160-833		ワッシャー Washer t=0.07	0-1		C2	○	RP-9041	5
1K160-834		ワッシャー Washer t=0.08	0-1		C2	○	RP-9041	5

部品表 Parts List

JAA72902-R. 3285. B

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.	販売 区分 Term of Delivery	備考 Remarks	要求 単位 Q'ty per order
1K160-835	91	ワッシャー Washer t=0.09	0-1		C2	○	RP-9041	5
1K160-836		ワッシャー Washer t=0.1	0-1		C2	○	RP-9041	5
1K160-837		ワッシャー Washer t=0.2	0-1		C2	○	RP-9041	5
1K160-838		ワッシャー Washer t=0.3	0-1		C2	○	RP-9041	5
1K160-839		ワッシャー Washer t=0.5	0-1		C2	○	RP-9041	5
*1K225-143	85	絞り作動板バネ Spring	1		C2	○		5
1K230-372	66	ねじり線バネ Spring	1		B3	○		5
*1K240-473-1 (1K240-473)	71	板バネ Leaf spring	1		A2	○		5
*1K240-546-1 (1K240-546)	36	板バネ Leaf spring t=0.2	0-1		B3	○	RP-9105	5
1K240-790		板バネ Leaf spring t=0.15	0-1		B3	○	RP-9105	5
*1K240-780-1		板バネ Leaf spring t=0.18	0-1		B3	○	RP-9105	5
1K240-563	68	EE ロックバネ EE lock spring	1		C3	○		5
1K260-582	75	カップリング軸 Coupling shaft	1		D2	○	RP-9105	1
*1K240-769	133	板バネ Leaf spring	1		D1	○		5
*1K300-069	21	平面カム Cam	1		C3	○		5
*1K302-032-2 (1K302-032)	55	ズームング カム筒 Zooming cam tube	1		B1	○	RP-9234 92F-1009 RP-93B4	1
*1K370-970	70	マクロ釦 Button	1		A2	○		5
1K400-315	38	フィルター取り付け環 Filter Ring	1		B1	○		1
1K404-108	30	バヨネットマウント Bayonet Mount	1		D3	○		1
*1K437-147	81	キー Key	1		C2	○		5

部品表 Parts List

JAA72902-R. 3285. B

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.	販売 区分 Term of Delivery	備考 Remarks	要求 単位 Qty per order
*1K437-153	102	キー Key	1		D2	○		5
1K470-088	56	アクリル板 Acryle Plate	1		D1	○		5
1K475-465	28	絞り環 Aperture Ring	1		C3	○		1
1K475-466	54	距離目盛り環 Focusing Index Ring	1		A2	○		1
*1K500-537	47	G13-14 レンズ室 G13-14 Lens Housing	1		A3	○		1
*1K515-176	42	G1-G2 分離環 G1-G2 sPACER	1		A1	○		5
*1K520-731-1 (1K520-731)	41	G1 押さえ環 G1 Retaining Ring	1		A1	○		5
*1K520-732	44	G6-G8 押さえ環 G6-G8 Retaining Ring	1		A2	○		5
*1K520-733-2 (1K520-733)	46	G12 押さえ環 G12 Retaining Ring	1		D2	○		5
*1K520-734	48	G13 押さえ環 G13 Retaining Ring	1		A3	○		5
*1K520-790-1 (1K520-790)	50	G5 押さえ環 G5 Retaining Ring	1		B1	○		5
*1K535-272	25	ヘリコイド環 Helicoid	1	1B001-943	C2	○△		1
*1K572-111-1 (1K572-111)	33	絞り作動板 Black Actuating Plate	1		B2	○		5
1K574-142	34	羽根基板 Blade Mounting Plate	1	1B001-943	C2	○△		1
*1K600-551	127	穴カバー板 Plate	1		A1	○		5
*1K610-805	23	絞りレバー Aperture Lever	1	1B314-135-1	B3	○△		5
*1K610-807	92	絞り連動板 Plate	1		B3	○		5
*1K610-808	94	マクロ切り換えバネ押さえ Plate	1		A2	○		5

部 品 表 Parts List

JAA72902-R. 3285. B

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.	販 売 区 分 Term of Delivery	備 考 Remarks	要 求 単 位 Qty per order
*1K610-856	129	絞り連動板ガイド Plate	1		B3	○		5
1K641-025	29	丸 筒 Tube	1		B3	○		1
1K641-026-1	53	丸 筒 Tube	1		C3	○	RP-9119	1
1K641-027	88	丸 筒 Tube	1		C1	○		1
*1K680-644-1 (1K680-644)	39	後部保護環 Rear Cover Ring	1		D3	○		1
1K680-280	67	ブロック Block	1		C3	○		1
1K681-366	84	絞りロック板 Aperture rock button	1		C1	○		1

部品表 Parts List

JAA72902-R. 3285. B

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.	販 売 区 分 Term of Delivery	備 考 Remarks	要 求 単 位 Q'ty per order
A1-14035FB	130	Screw	4		C3	○		50
A1-14050FB	125	Screw	3		D2	○		50
A1-17030FB	116	Screw	4		B2 B3	○		50
A1-17055FA	113	Screw	3		D1	○		50
A2-17030FA	126	Screw	1		A2	○		50
A2-20035FA	103	Screw	1		D2	○		50
B1-14018FB	117	Screw	2		B3	○		50
B1-17020FA	122	Screw	2		B3	○		50
B1-17030FA	110	Screw	3		C3	○		50
K2-20035FB	118	Screw	3		B1	○		50
*1G107-039-1 (1G107-039)	G13	G13 レンズ G13 Lens Element	1		A3	○		1
*1G111-029-1 (1G111-029)	G14	G14 レンズ G14 Lens Element	1		A3	○		1
*1G154-050-1	G5	G5 レンズ G5 Lens Element	1		B2	○		1
*1G157-051-1 (1G157-051)	G1	G1 レンズ G1 Lens Element	1		A1	○		1
*1G206-013	G12	G12 レンズ G12 Lens Element	1		C2	○		1
*1G250-038	G2	G2 レンズ G2 Lens Element	1		A1	○		1

部組品表 Assembly List

JAA72902-R. 3285. B

部組品番号 Assembly 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.	備 考 Remarks	要 求 単 位 Q'ty per order
1B001-943	B40	ヘリコイド組 Helicoid Unit	1	1K535-272. 1K535-273-3 1K574-142. 1K630-370 1K630-749 1K680-645	B1		1
1B001-944	B26	距離目盛環組 Focusing Index Ring Unit	1	1K240-769. 1K475-458 1K630-684.	D1		1
1B060-289-3 (1B060-289)	B201	FPC FPC unit	1	1K240-469-1x5 1K680-643-1 1K680-651-1 1S015-008	D2		1
*1B100-324-2 (1B100-324)	Z45	G10-G12 レンズ室組 G10-G12 Lens Housing A'ssy	1	1K500-536-2 1G150-029 1G211-015	C2		1
*1B100-325-2 (1B100-325)	Z49	G15 レンズ室組 G15 Lens Housing A'ssy	1	1K500-538-2 1G247-034	A2		1
*1B100-376-2 (1B100-376-1)	Z43	G9 レンズ室組 G9 Lens Housing A'ssy	1	1K500-590-2 1G110-034-1	A2		1
*1B240-047-1 (1B240-047)	B89	ブラシ組品 Brush Assembly	1	1K240-459 1K680-648-1	B1		1
1B260-039-4 (1B260-039-3)	B76	平歯車 Gear	1	1K260-260-1 1K260-261-2 1B630-035-1	C2		1
1B260-096	B75	カップリング軸 Coupling Shaft	1	1K260-578 1K370-988-1	D2	RP-9105	1
1B314-135-1 (1B314-135)	B62	絞り運動レバー Aperture Actuating Lever	1	1K314-263-1 1K370-003 1K610-805 B1-14018FBx2	B3		1
1B570-065-1 (1B570-065)	B31	絞り羽根 Aperture Blade	7	1K370-004-2x2 1K570-068	B2		1
1B999-384	B82	ガイド軸 φ4.97 Guide Axel	0-2	1K115-954 1K130-238-1	C1		5
1B999-385		ガイド軸 φ4.93 Guide Axel	0-2	1K116-012 1K130-238-1	C1		5
1B999-386		ガイド軸 φ4.99 Guide Axel	0-2	1K116-297 1K130-238-1	C1		5

部組品表 Assembly List

JAA72902-R. 3285. B

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
1B999-387	B60	ガイド軸 Guide Axel	0-2	1K116-103-1 1K130-236	A2 B3	RP-9234 OLD	5
1B999-464		φ4.97	0-2	1K117-451 1K130-503	A2 B3		5
1B999-388		ガイド軸 Guide Axel	0-2	1K116-104-1 1K130-236	A2 B3	RP-9234 OLD	5
1B999-465		φ4.98	0-2	1K117-452 1K130-503	A2 B3		5
1B999-389		ガイド軸 Guide Axel	0-2	1K116-105-1 1K130-236	A2 B3	RP-9234 OLD	5
1B999-466		φ4.99	0-2	1K117-453 1K130-503	A2 B3		5
1B999-390		ガイド軸 Guide Axel	0-2	1K116-106-1 1K130-236	A2 B3	RP-9234 OLD	5
1B999-467		φ5.00	0-2	1K117-454 1K130-503	A2 B3		5
1B999-391-1	B58	ガイド軸 Guide Axel	0-2	1K116-342 1K146-107-1	C1	RP-9234 OLD	5
1B999-460		φ4.97	0-2	1K117-447 1K146-160	C1	92F-1009	5
1B999-461		ガイド軸 Guide Axel	0-2	1K117-448 1K146-160	C1	RP-9234 92F-1009 RP-9536	5
1B999-462		φ4.98	0-2	1K117-449 1K146-160	C1	RP-9234 92F-1009 RP-9505	5
1B999-463		ガイド軸 Guide Axel	0-2	1K117-450 1K146-160	C1	RP-9234 92F-1009 RP-9536	5
*1G014-030-1 (1G014-030)	L2	G6-G8 レンズ G6-G8 Lens Element	1	1G104-035 1G252-021-1 1G254-046	A2		1
*1G024-013-1 (1G024-013)	L1	G3-G4 レンズ G3-G4 Lens Element	1	1G153-031-1 1G207-032-1	A1		1

〔 4 〕 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	1G157-051-1	45	1K500-536-2	81	1K437-147
G2	1G250-038	46	1K520-733-2	82	1K115-954
G3	1G207-032-1	47	1K500-537		1K116-012
G4	1G153-031-1	48	1K520-734		1K116-297
G5	1G154-050-1	49	1K500-538-2	83	1K130-238-1
G6	1G252-021-1	50	1K520-790-1	84	1K681-366
G7	1G104-035	51	1K630-370	85	1K225-143
G8	1G254-046	52	1K680-645	87	1K160-523-1
G9	1G110-034-1	53	1K641-026	88	1K641-027
G10	1G150-029	54	1K475-466	89	1K680-648-1
G11	1G211-015	55	1K302-032-1	90	1K240-459
G12	1G206-013	56	1K470-088	91	1K160-831
G13	1G107-039-1	57	1K116-342		1K160-832
G14	1G111-029-1		1K116-343		1K160-833
G15	1G247-034		1K116-344		1K160-834
			1K116-345		1K160-835
		58	1K146-107-1		1K160-836
		59	1K116-103-1		1K160-837
21	1K300-069		1K116-104-1	1K160-838	
23	1K610-805		1K116-105-1	1K160-839	
24	1K630-749		1K116-106-1	92	1K610-807
25	1K535-272	60	1K130-236	93	1K063-006
26	1K475-458	61	1K130-298-1	94	1K610-808
27	1K630-684	62	1K314-263-1	96	1K010-089
28	1K475-465	63	1K130-294	97	1K680-651-1
29	1K641-025	64	1K370-003	98	1K680-643-1
30	1K404-108	65	1K130-299	100	1K240-469-1
31	1K570-068	66	1K230-372	101	1K010-062
32	1K370-004-2	67	1K681-280	102	1K437-153
33	1K572-111-1	68	1K240-563	103	A2-20035FA
34	1K574-142	70	1K370-970	105	1K120-012
35	1K370-988-1	71	1K240-473-1	106	1K120-230-1
36	1K240-546-1	72	1K160-599-1		1K120-251
37	1K110-232	75	1K260-578	107	1K120-231
38	1K400-315	76	1K260-260-1	108	1K010-087
39	1K680-644-1	77	1K600-548	109	1K120-035-1
40	1K535-273-3	78	1K630-371-1		1K120-162
41	1K520-731-1	79	1K260-261-2	110	B1-17030FA
42	1K515-176	80	1K120-250	111	1K120-093
43	1K500-590-2				

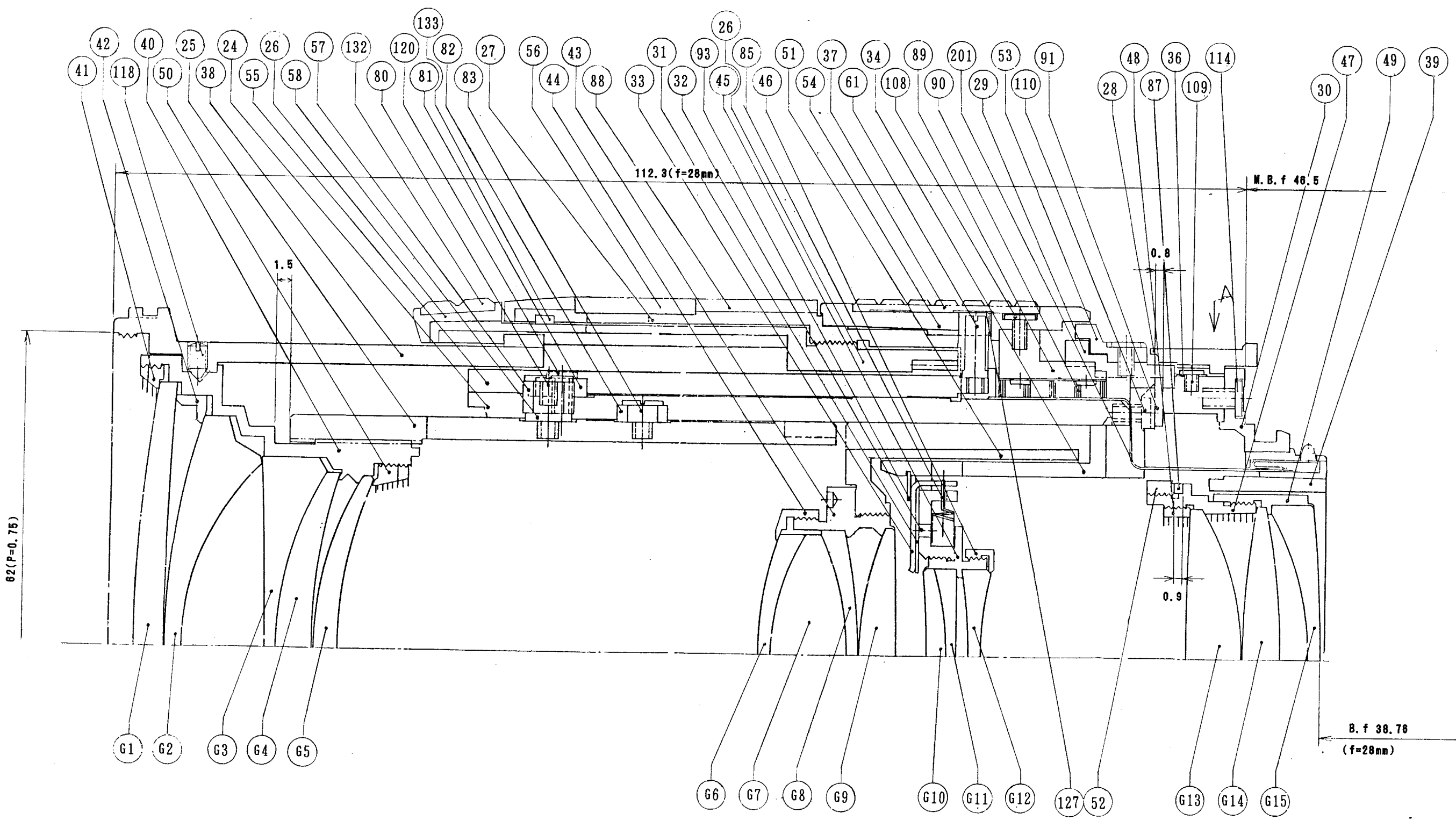
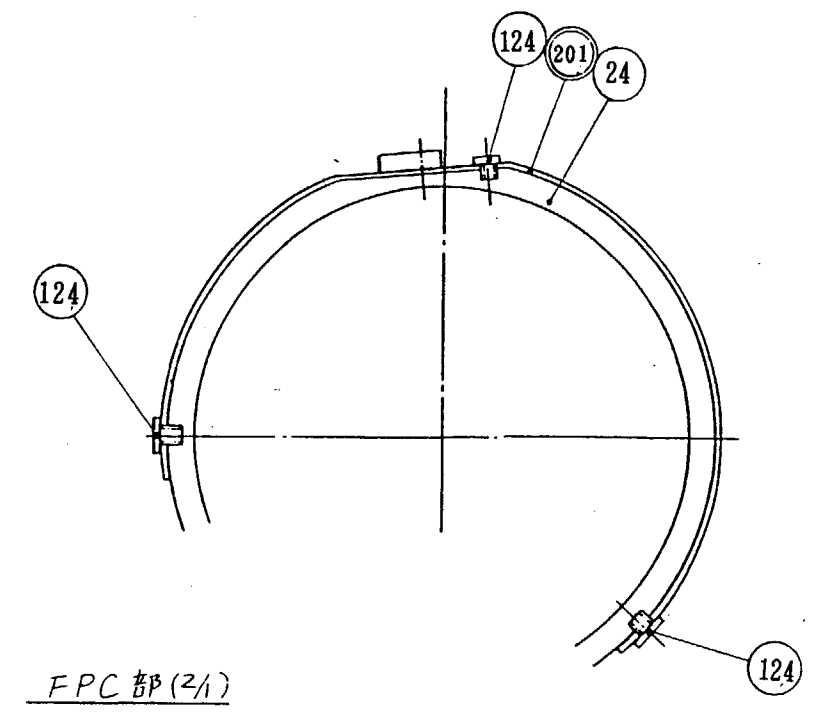
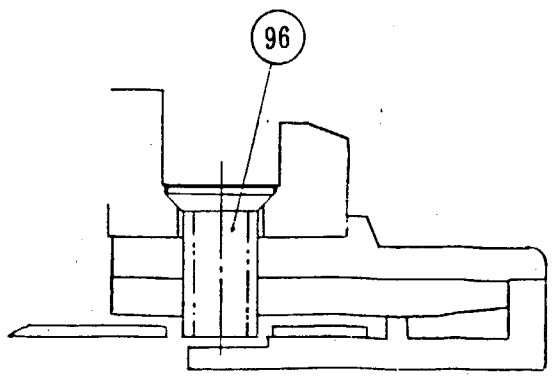
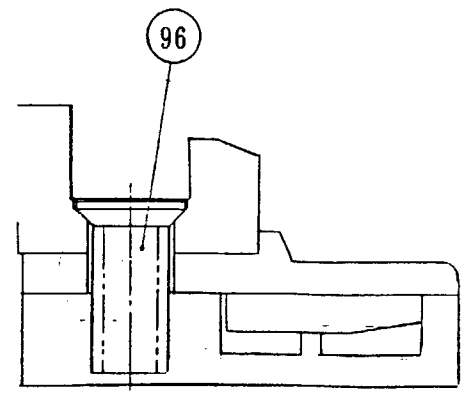
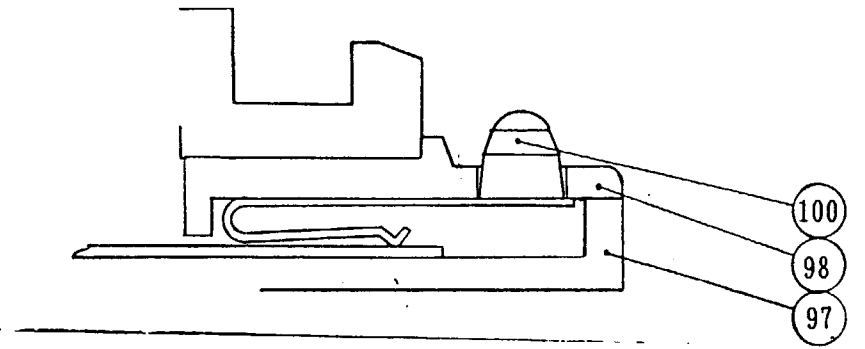
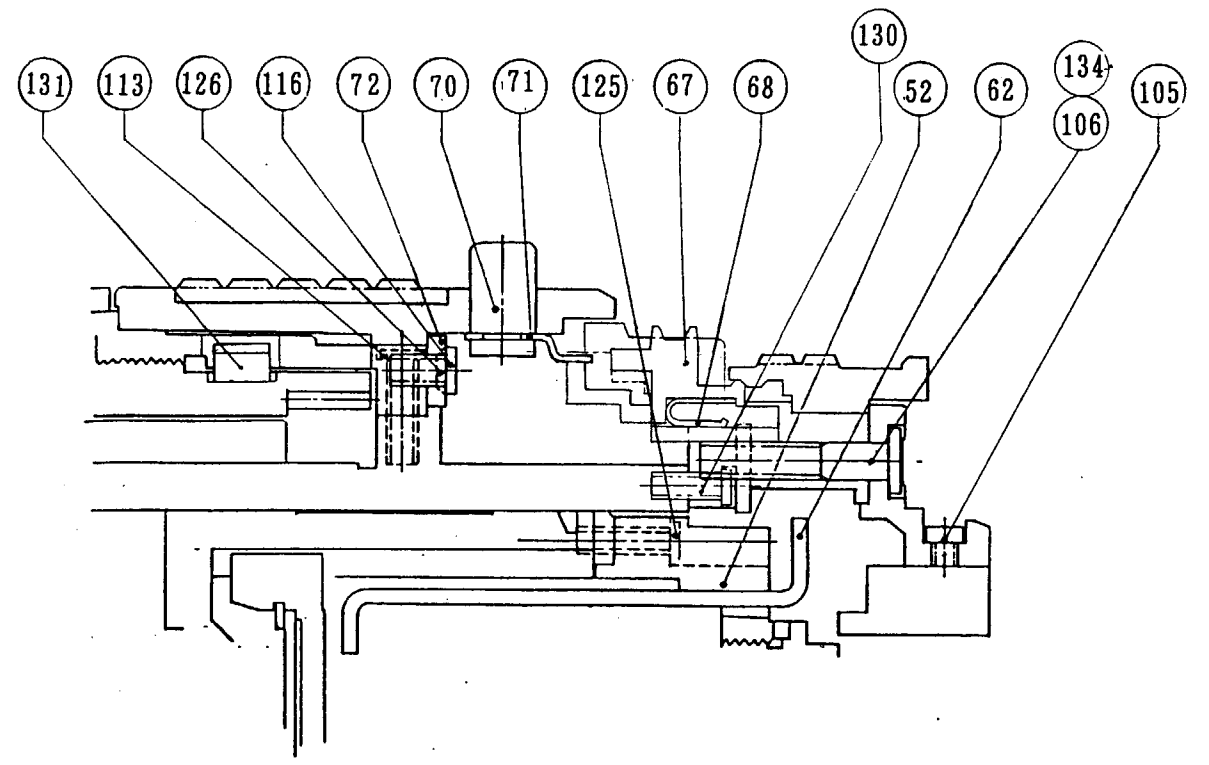
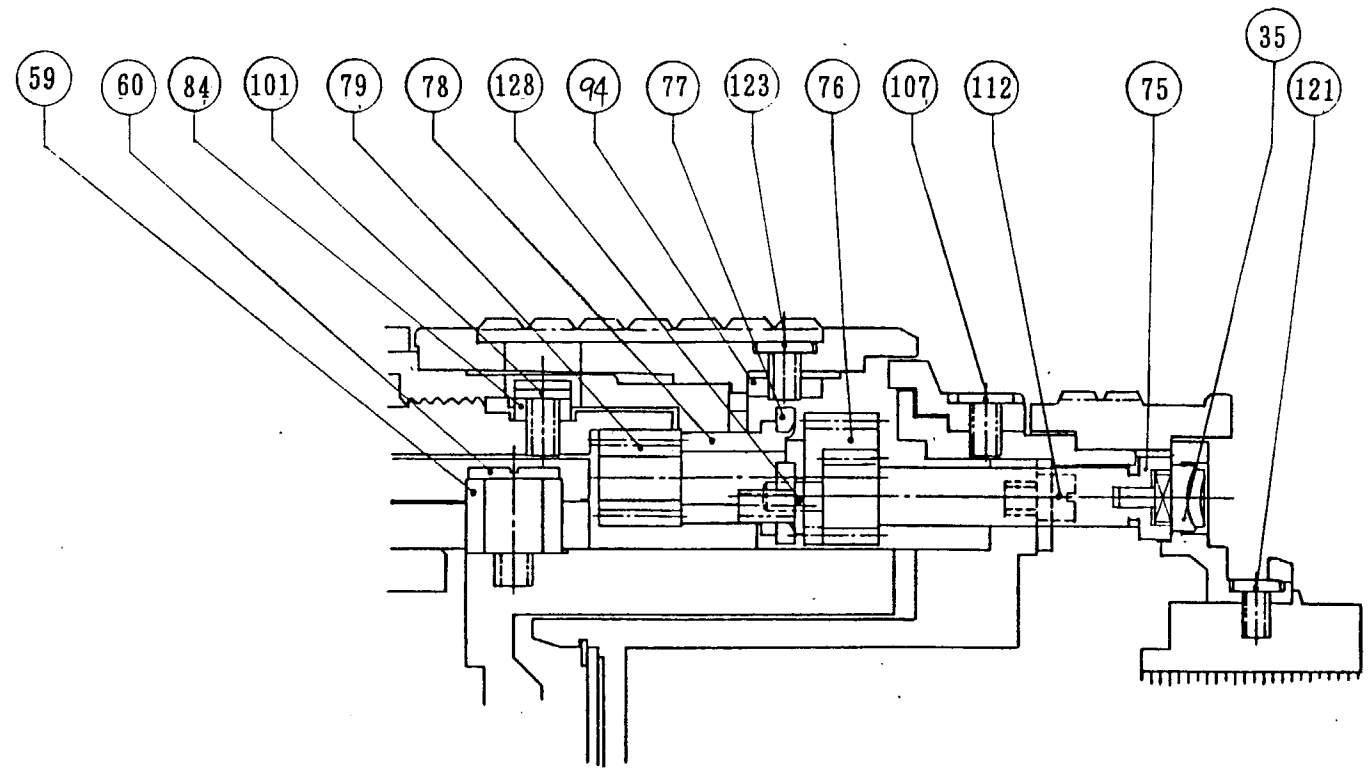


Fig. 2



FPC部(2/1)

マウント接点部詳細(10/1)
Bayonet mount contact

Fig. 3

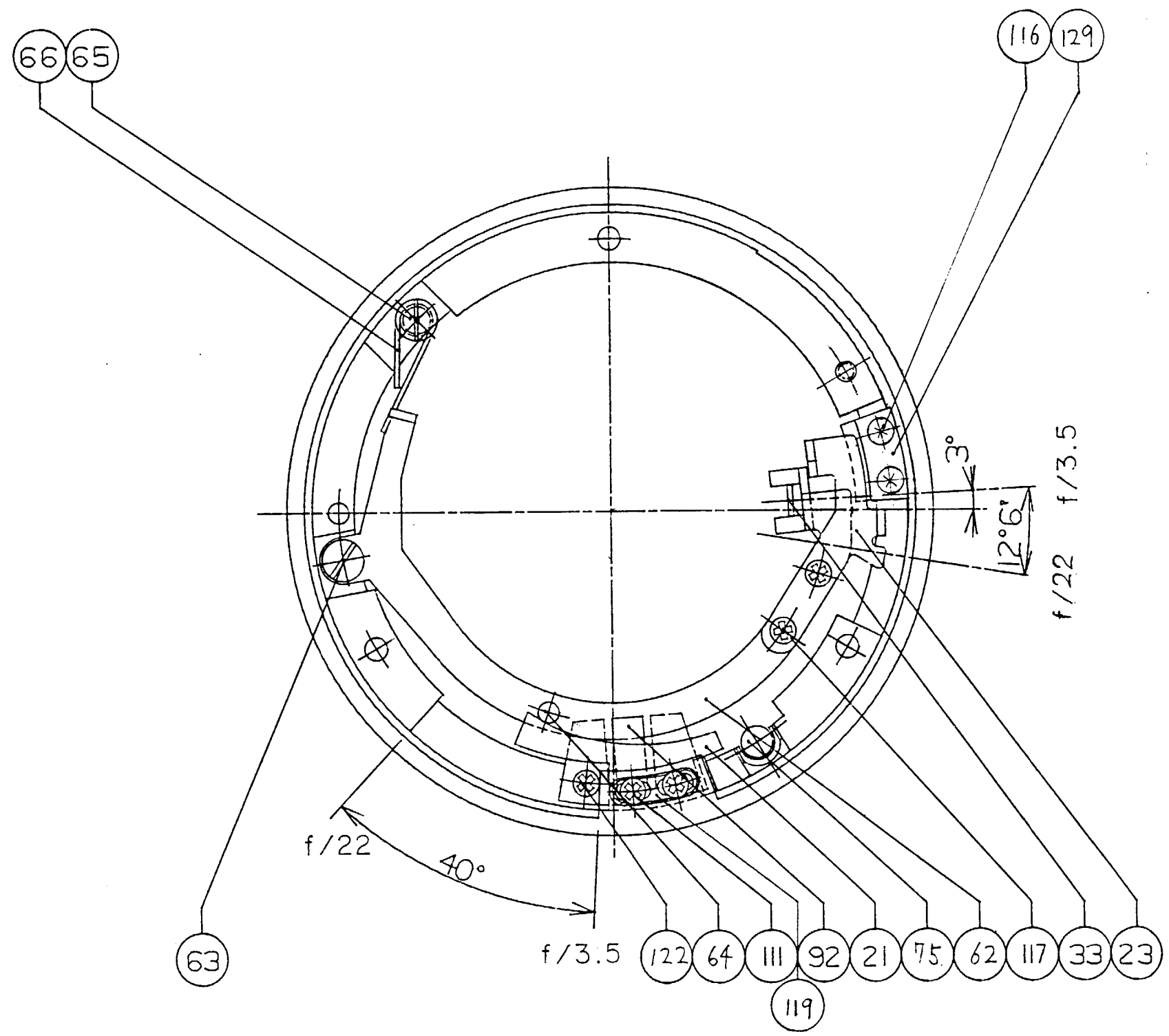
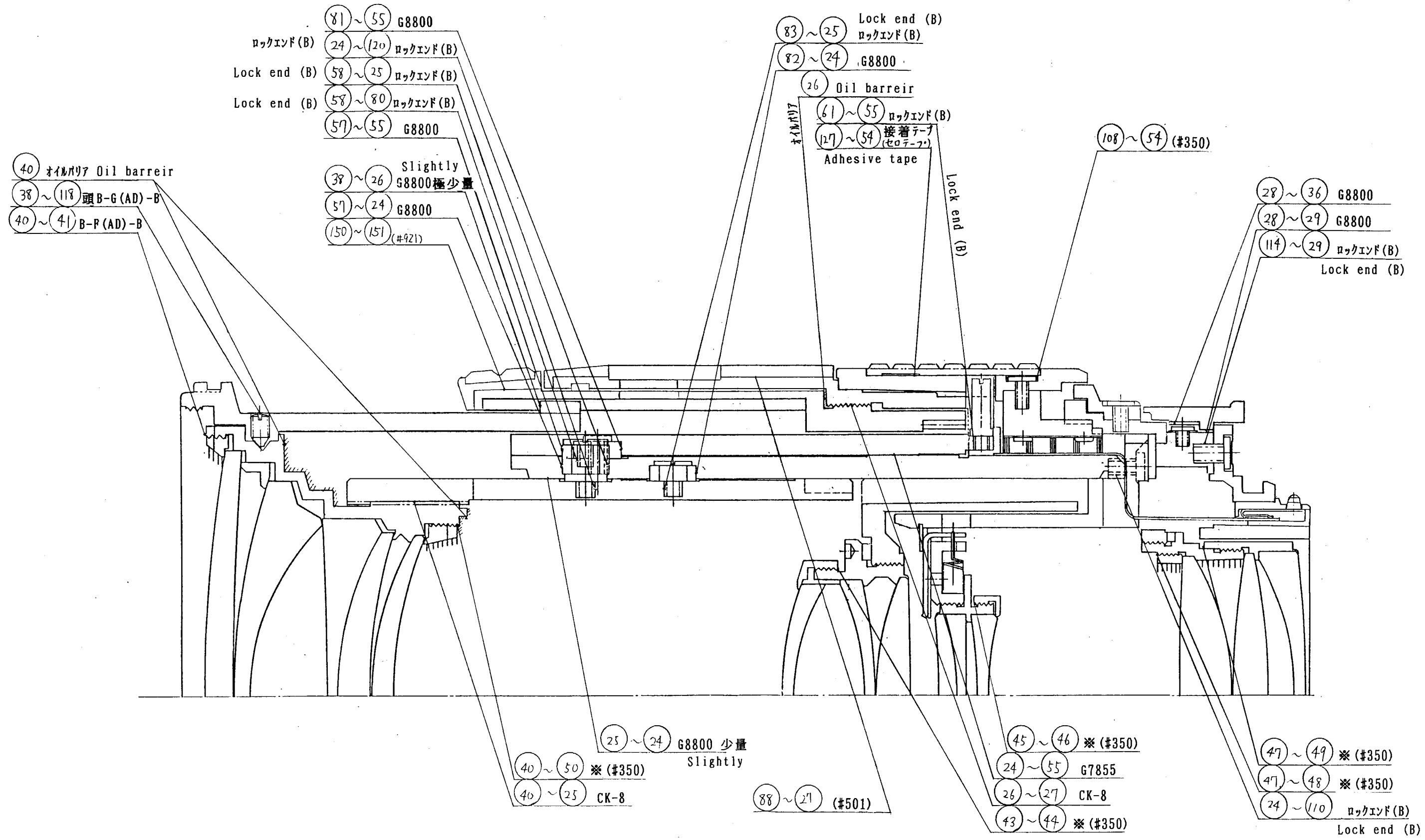


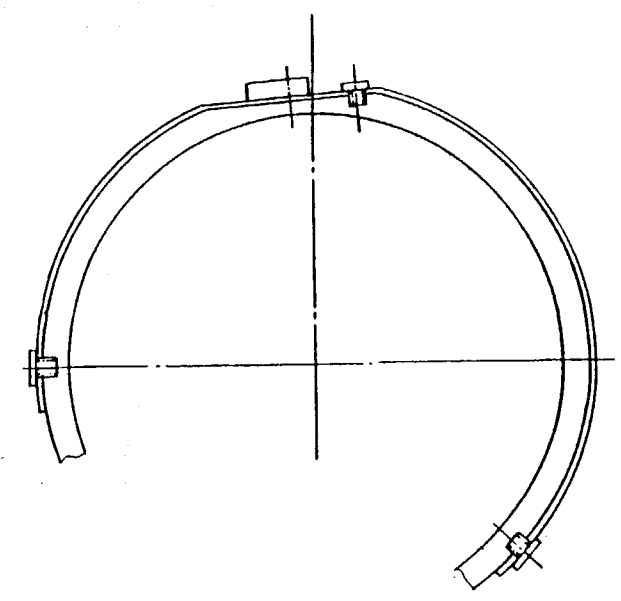
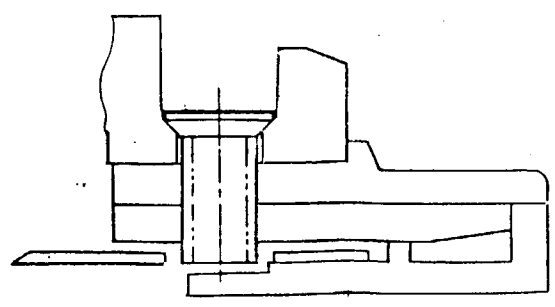
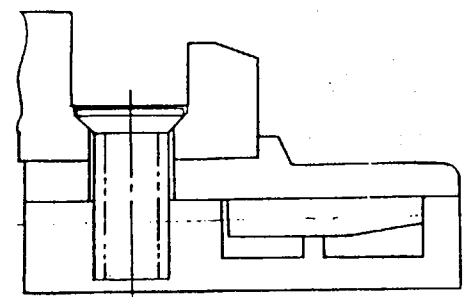
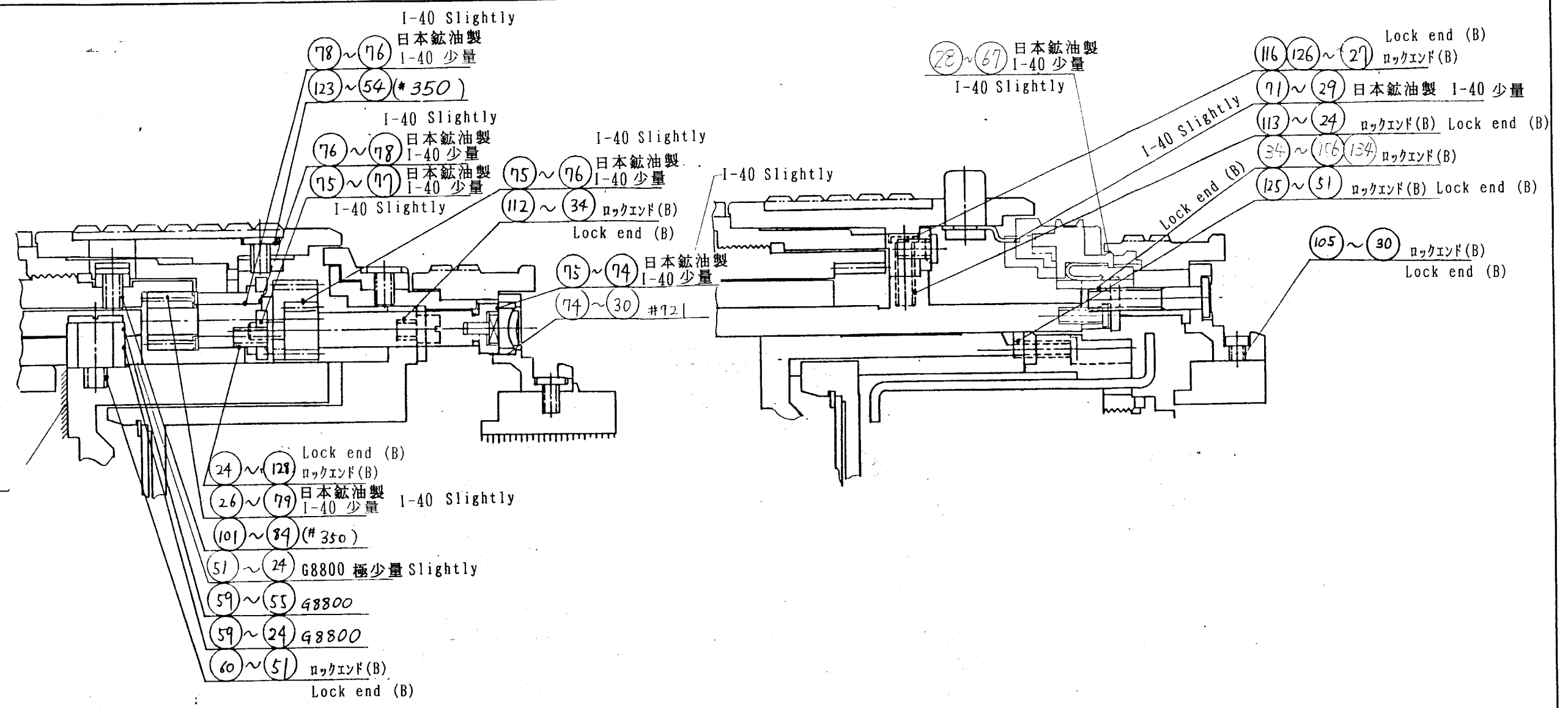
Fig. 4



注) ※印 #350 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 #350 with alcohol in the mixing ratio of two to one.

Fig. 5

51 オイルバリア P
Oil barrier



FPC 部 (2/1)

Fig. 6

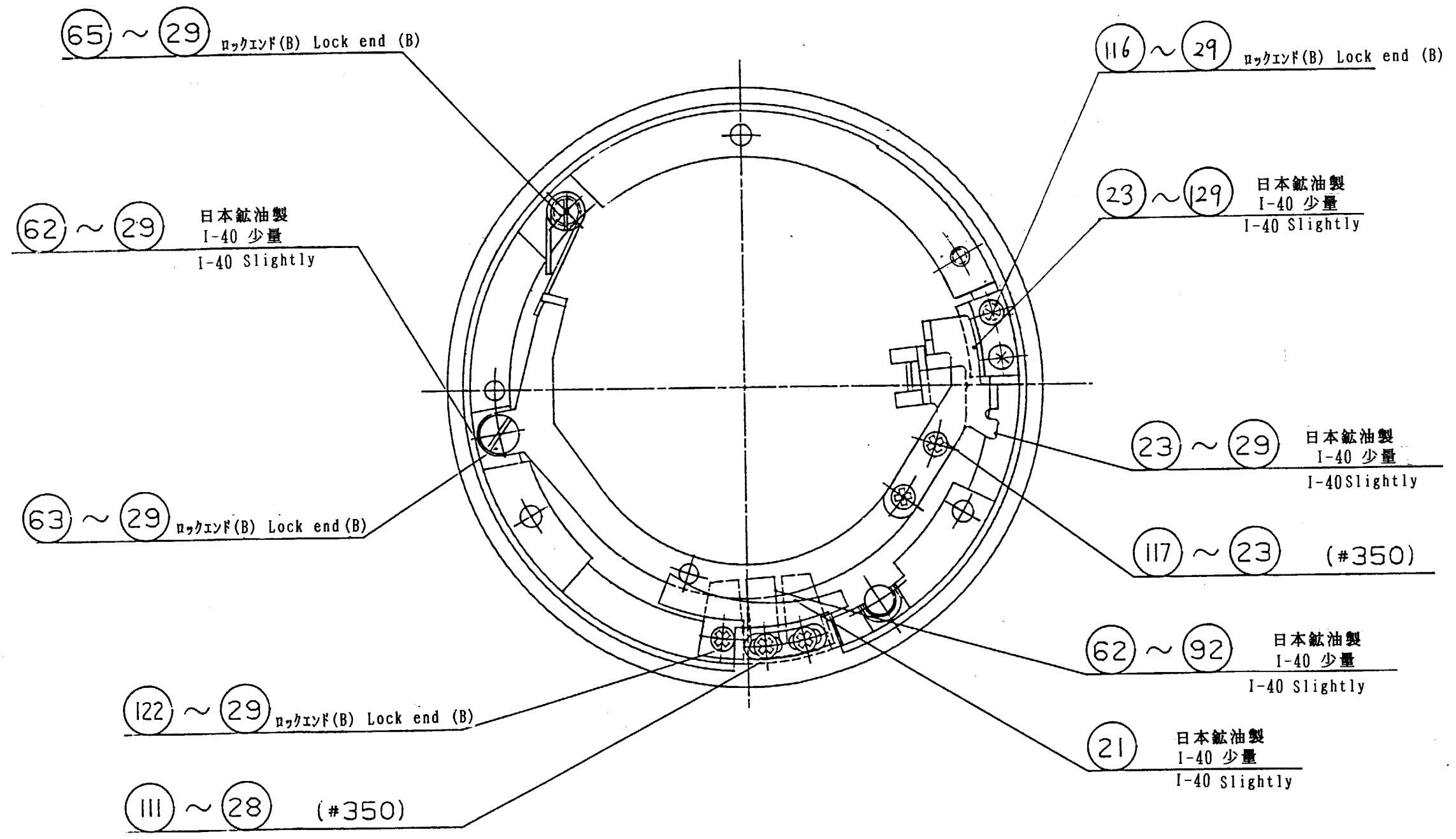
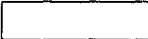


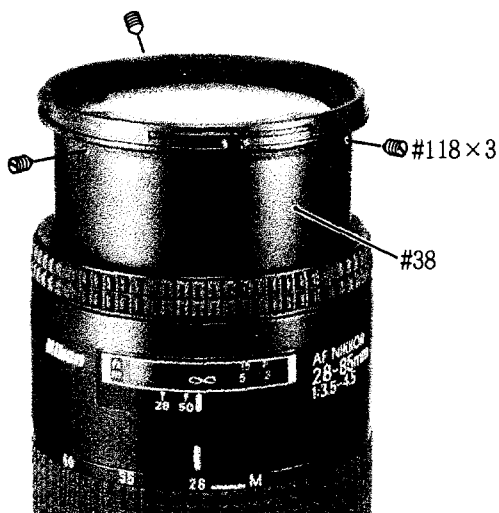


Fig. 7

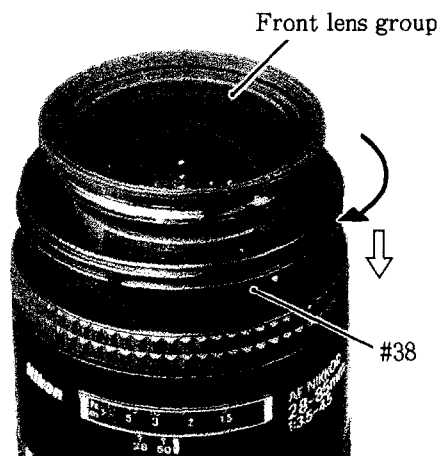
- Note:**
- ① The tone of pictures may be different from actual one. Make sure of the shape of parts when disassembling and assembling.
 - ② The mark ∇ shows the position of index.
 - ③ Screw with a dot are tap-tight screws.
 - ④  : Disassembling / assembling
 : Adjustment
 : Additional work
 - ⑤ All screws mentioned in this publication are right-handed screws unless otherwise mentioned. Rotate screws counter-clockwise to unfasten, and clockwise to fasten.

2. DISASSEMBLING

FRONT LENS GROUP



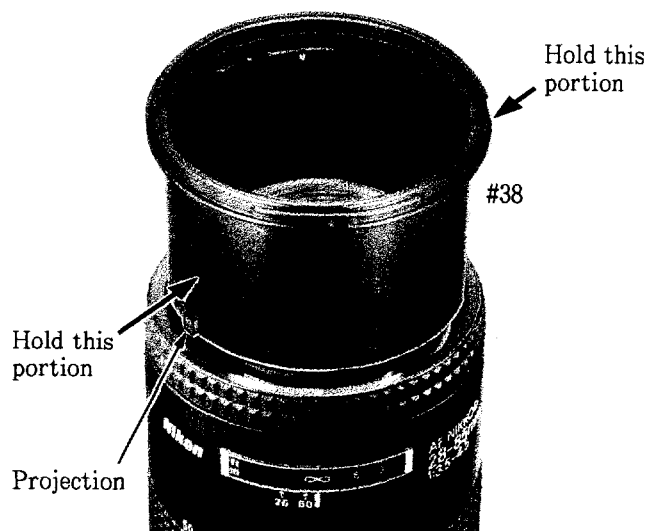
- ① Set the zoom ring to Wide (28mm) and the focus ring to infinity (∞).
- ② Unfasten screws #118x3 securing the front lens group. (Do not remove.)
- ③ Rotate the filter ring #38 clockwise while securing the front lens group (do not allow to rotate). The bayonet type hook will be released at a certain position, then move the filter ring downward.



- ④ Rotate the front lens group clockwise and remove it.

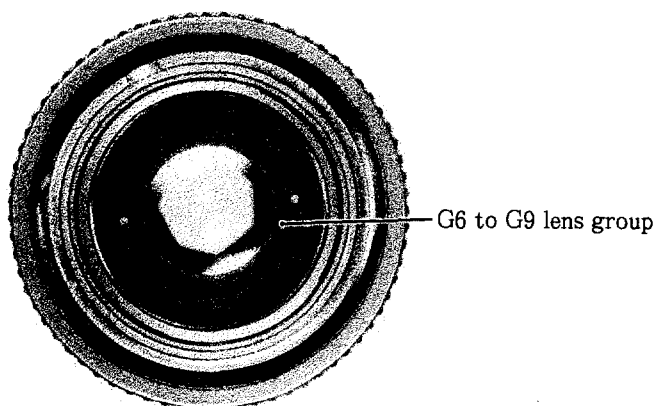
Note: Put identification marks on before removing the front lens group.

FILTER RING #38

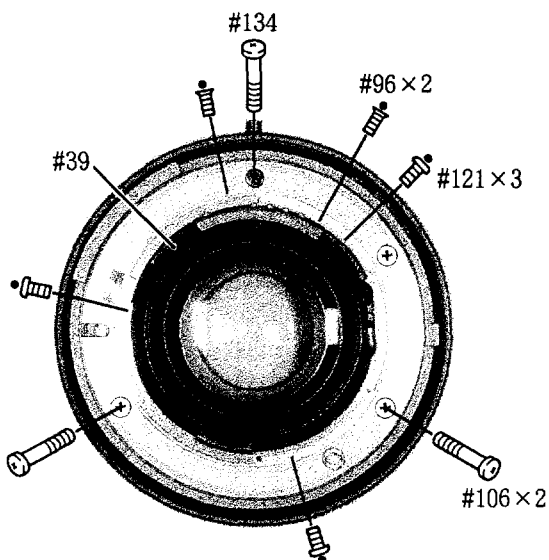


- ① Set the focus ring to infinity (∞).
- ② Hold the two portions (indicated by arrows) with your fingers and twist to move away the projection of the filter ring #38, remove filter ring #38.

G6 TO G9 LENS GROUP

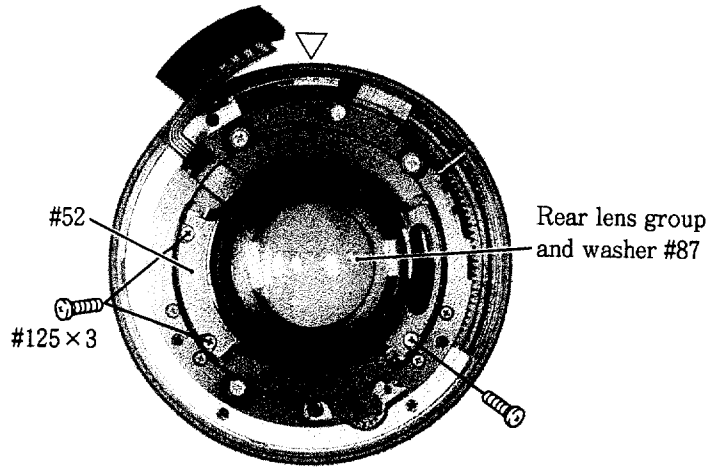


REAR COVER RING #39, BAYONET MOUNT GROUP

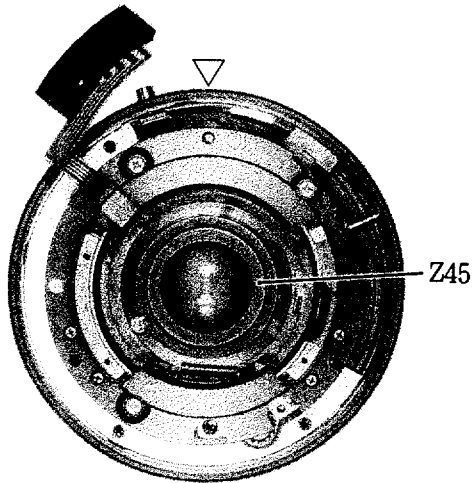


- ① Remove screws #96 x 2 and #121 x 3. Remove the rear cover ring #39 taking care not to damage the FPC.
 - ② Set the zoom ring to Wide (28mm). Remove screws #134 and #106 x 2 and then remove the bayonet mount group and washer #91.
- Note:** Be sure not to bend the aperture actuating lever.

REAR LENS GROUP, REAR LENS GROUP ATTACHMENT RING #52

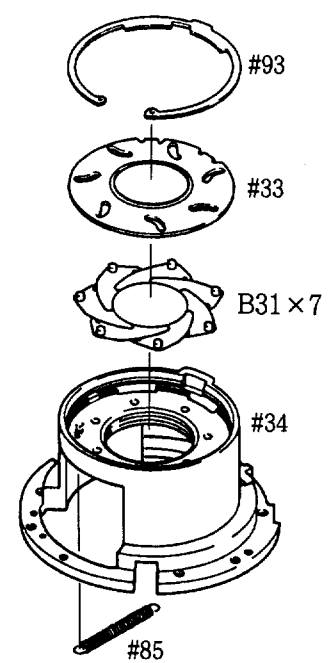
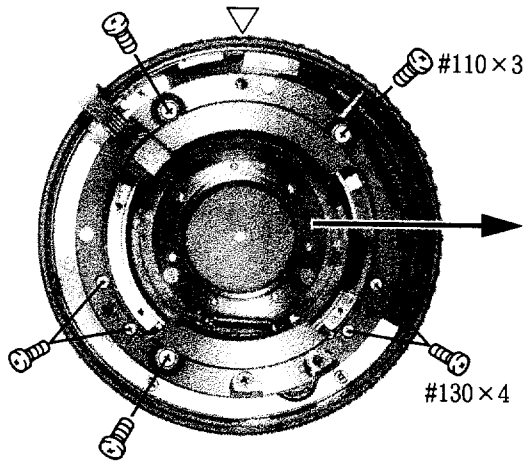


G10 TO G12 LENS HOUSING UNIT Z45

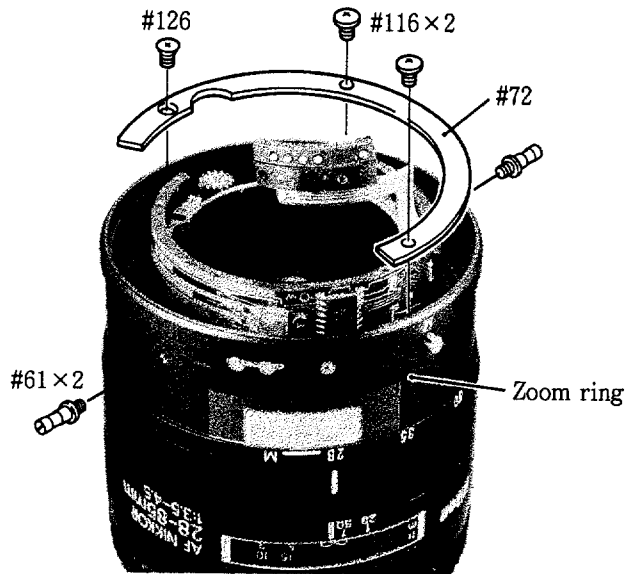


• Remove the Z45 using tool J11194.

APERTURE BLADE GROUP



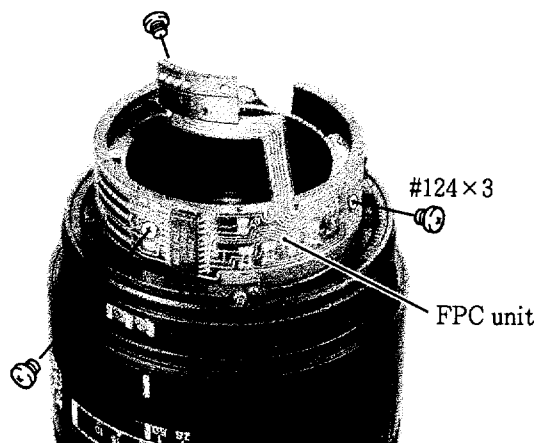
ZOOM RING #54



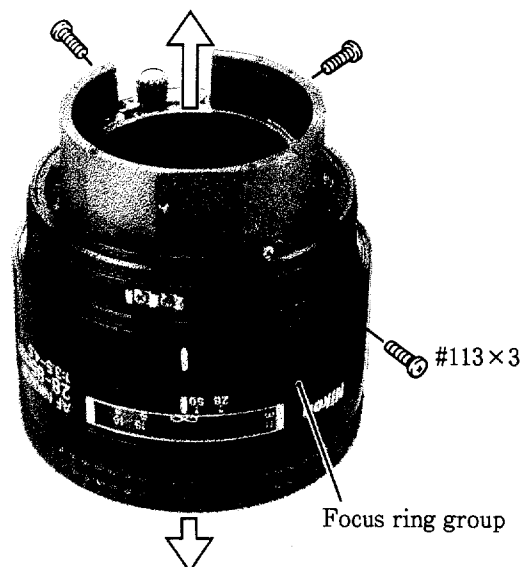
- ① Remove the rubber ring #37 of the zoom ring.
- ② Remove the retaining plate #72 by unfastening screws #116x2 and #126.
- ③ Remove screws #61x2 by raising the zoom ring upwards.
- ④ Remove the zoom ring.

Note: Be sure not to bend the encoder brush.

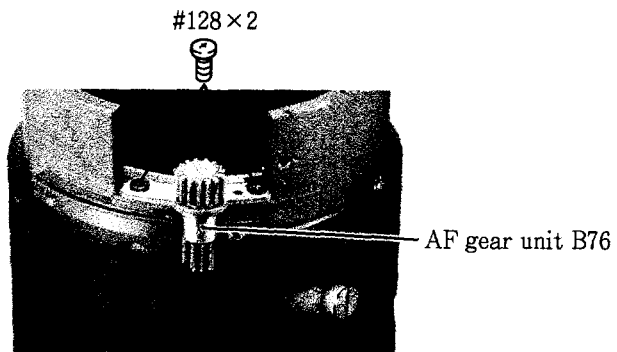
FPC UNIT B201



FOCUS RING GROUP

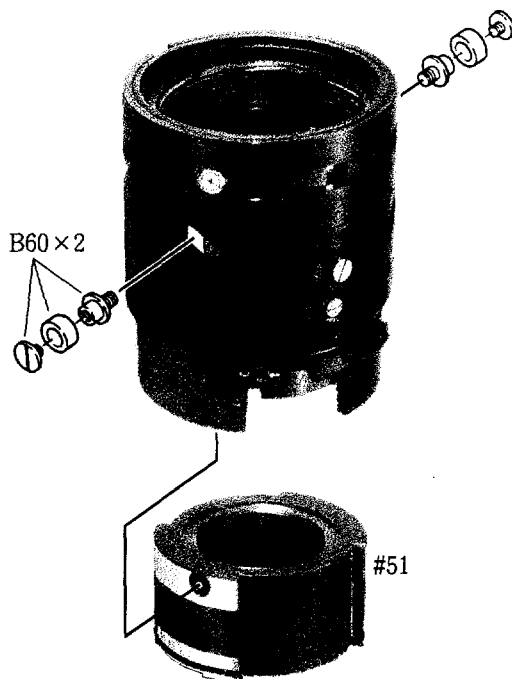


AF GEAR UNIT B76

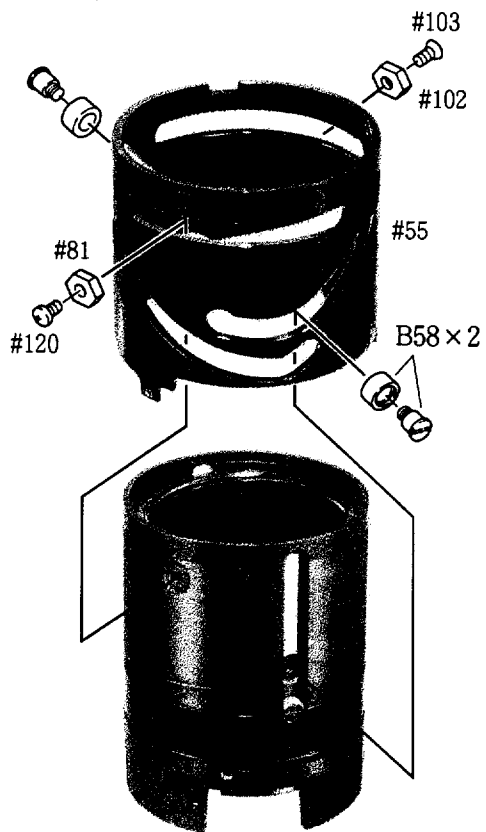


*You are not required to remove B76 unless necessary for replacing parts.

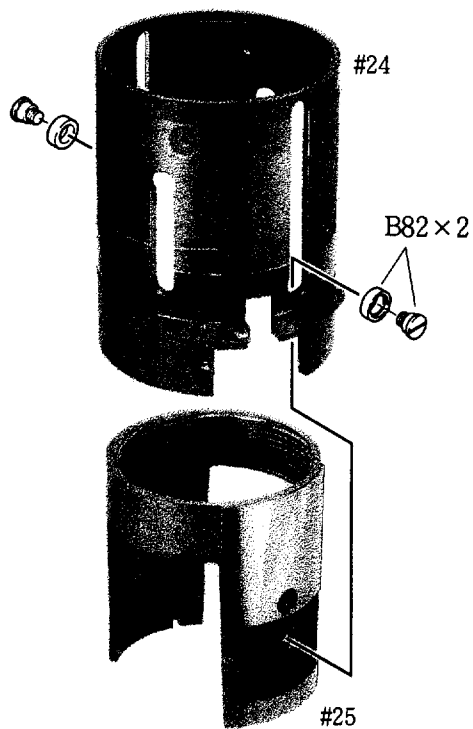
G6 TO G9 DRIVING RING #51



ZOOMING CAM TUBE #55

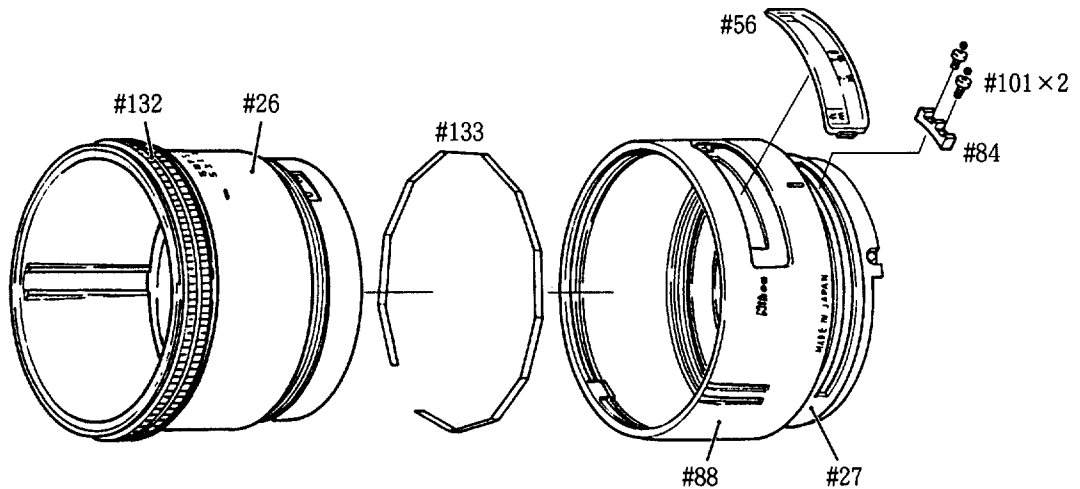


HELICOID RING #25



FOCUS RING #26

- (1) Do not remove these parts unless changing parts or cleaning.
- (2) When removing the focus ring #26, take the block #84 away and rotate #26 clockwise (left-hand thread).
- (3) When removing the acrylic index plate #56, refer to page 23 in the Instruction Manual of AF Micro Nikkor 105mm f/2.8 (JAA62301).
- (4) The name ring #88 cannot be removed since part #27 is attached. Parts #27 and #26 are supplied as a unit part due to their gauging design.

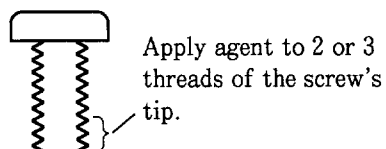


3. ASSEMBLING/ADJUSTMENT

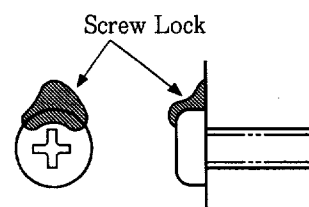
■ Supplement to assembling (common to all lenses currently available)

- Refer to the following figures when applying Lock End B or Screw Lock #350 agent (used to prevent screws from working loose).

Lock End B

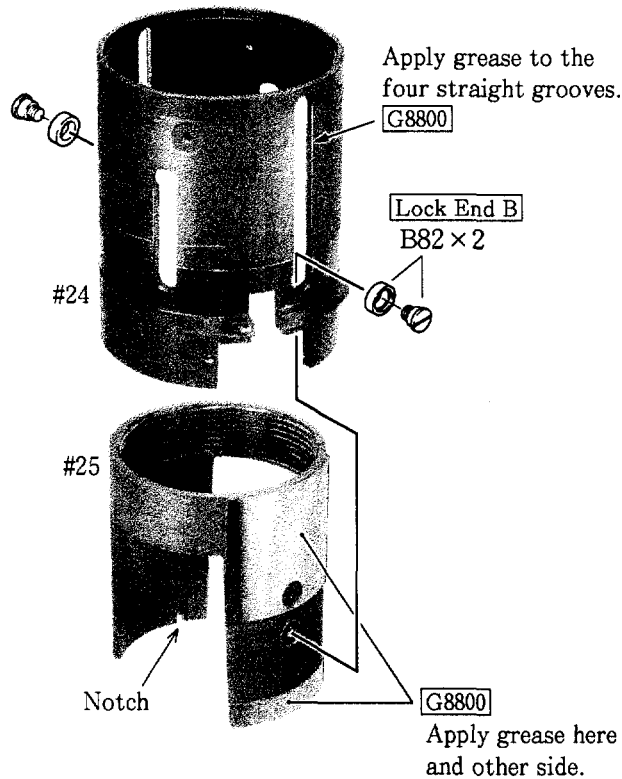


Screw Lock



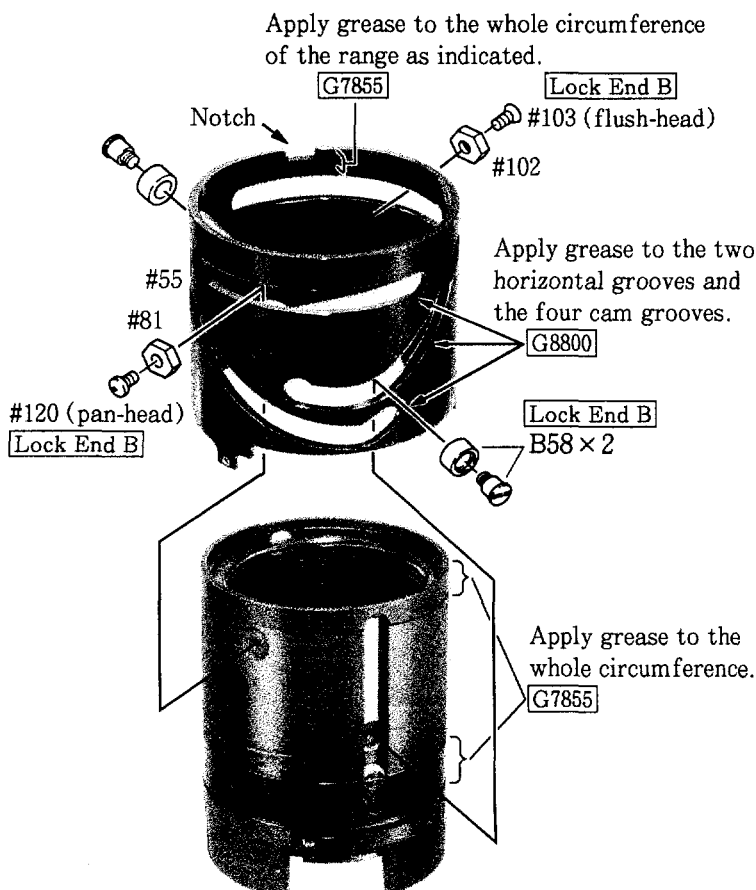
- If it is hard to obtain Lock End B locally, you can use Lock Tight (purple) instead. Make sure not to use the more powerful yellow, red or blue Lock Tight or you will not be able to remove the screw again easily.
- Remove all traces of old Lock End B or Screw Lock agent before reapplying.

HELICOID RING #25



Inspection: After assembly, move the helicoid ring #25 forward to check that it operates properly.

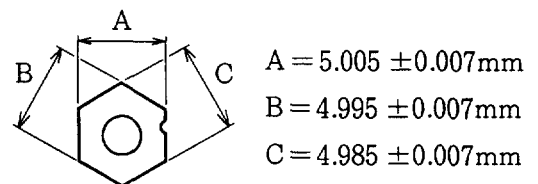
ZOOMING CAM TUBE #55



* Apply grease liberally to the two horizontal grooves of the zooming cam tube #55.

- ① First attach wrench-head key #102 with flush-head screw #103. Then attach wrench-head key #81 with pan-head screw #120.

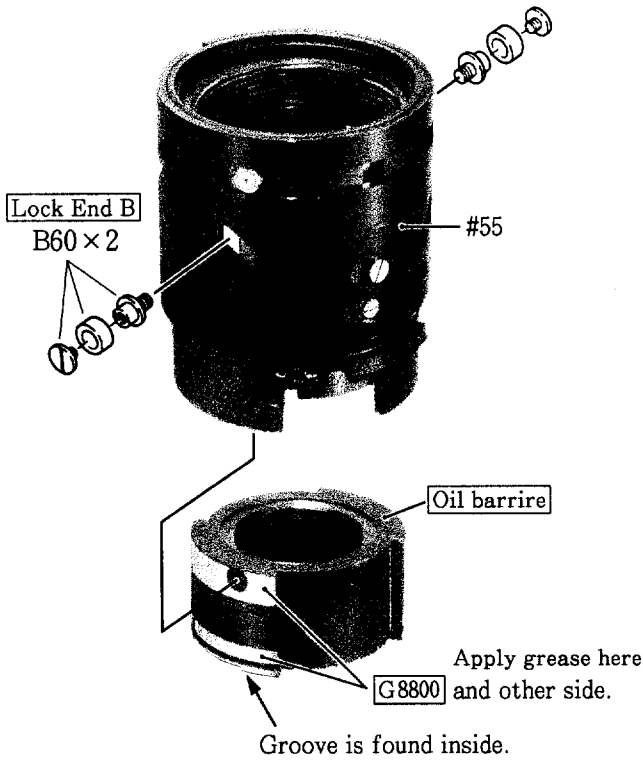
Note: When fastening the screw, the wrench-head key is likely to become offset, and the zooming cam tube will malfunction. Change the sliding surface of the wrench-head key to adjust the gap between the wrench-head key and horizontal groove.



- ② Mount guide rings B58 × 2.

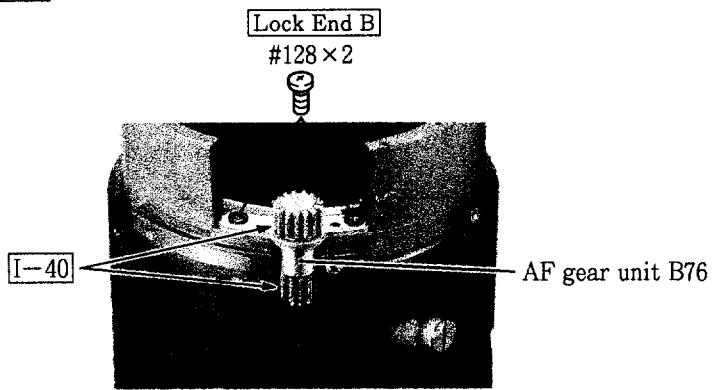
Inspection: After assembly, rotate the zooming cam tube #55 to check if operates correctly.

G6 TO G9 DRIVING RING #51

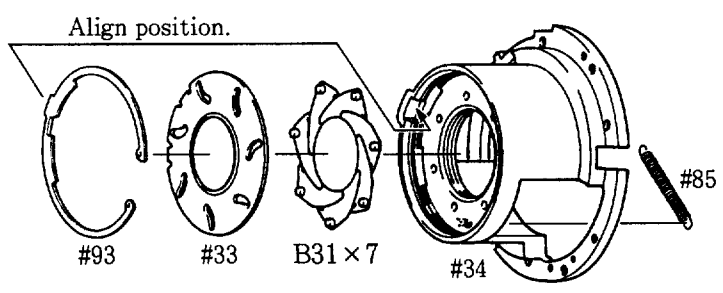


Inspection: After assembly, rotate the zooming cam tube #55 to check if it operates properly.

AF GEAR UNIT B76

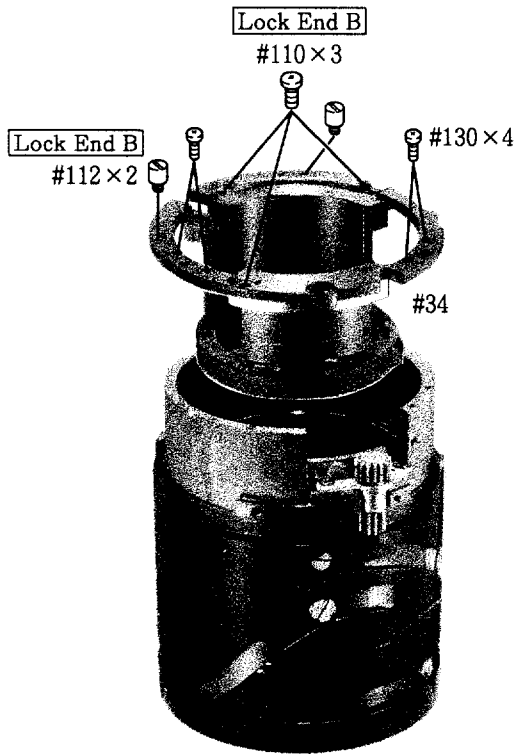


APERTURE BLADE GROUP



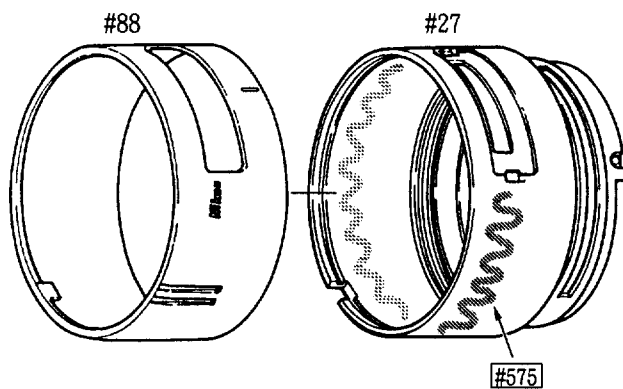
Note: Mount the retaining ring #93 so that the flash of surface faces up.

APERTURE BLADE HOSING #34



- Attach screws #112 x 2 last (to prevent #34 from becoming deformed).

NAME RING #88

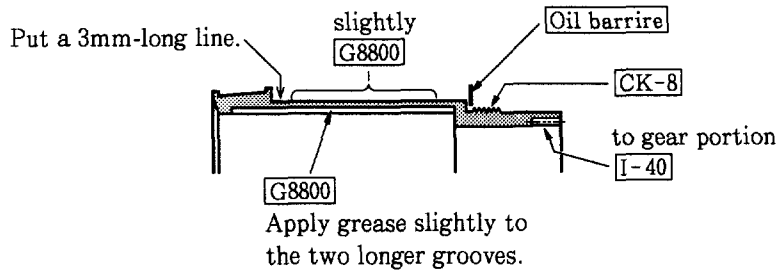


Note: Be sure to wipe off excessive adhesive.

Apply adhesive to the whole circumference except steps.

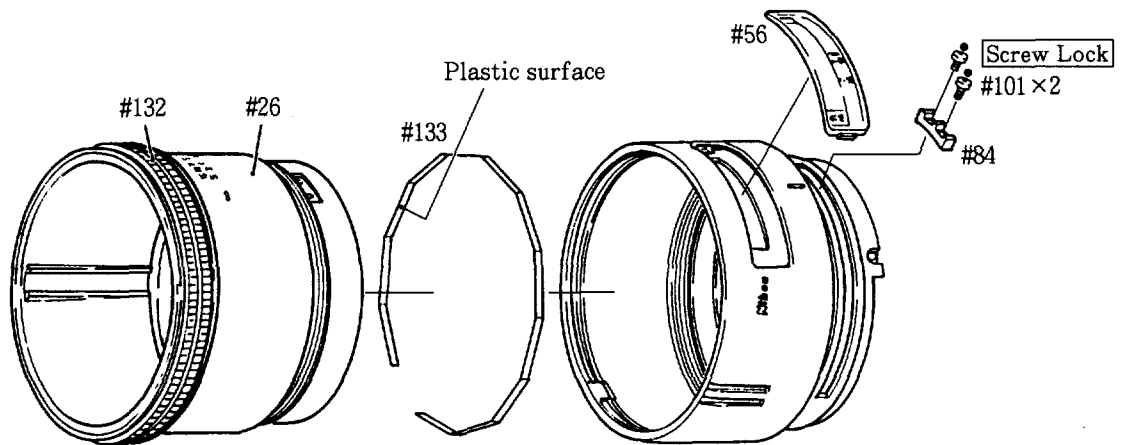
FOCUS RING #26

Portions of the focus ring #26
to which grease should be applied.

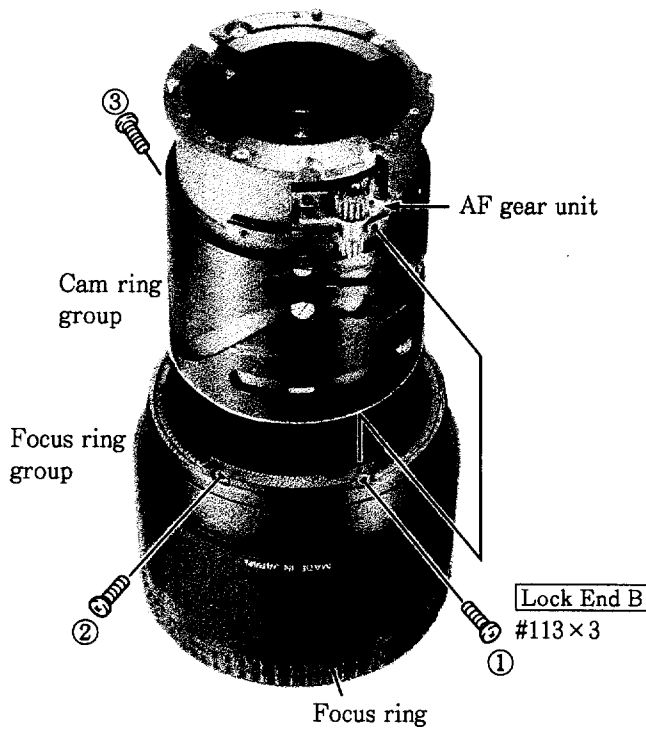


Note: When applying grease to the outside of the focus ring #26, on grease residues or greasy film should be left on the printed distance scale.

- ① Mount the leaf spring #133 so that it faces the plastic surface inside.
- ② Rotate the focus ring #26 counter-clockwise and screw it in as far as it will go.
- ③ Unscrew the focus ring #26 one half or one turn to attach the block #84.
- ④ Attach the rubber ring #132 and acrylic index plate #56.



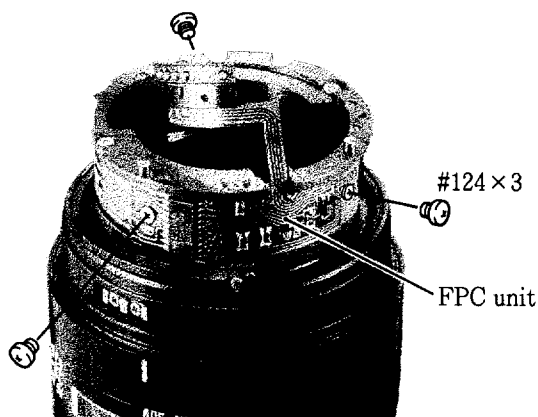
FOCUS RING GROUP



- Fasten screws #113×3, hold the cam ring group by the top so that no space remains at the point of attachment, between the focus ring group and the cam ring group. Fasten screws #113×3 in the order of ①, ②, ③.

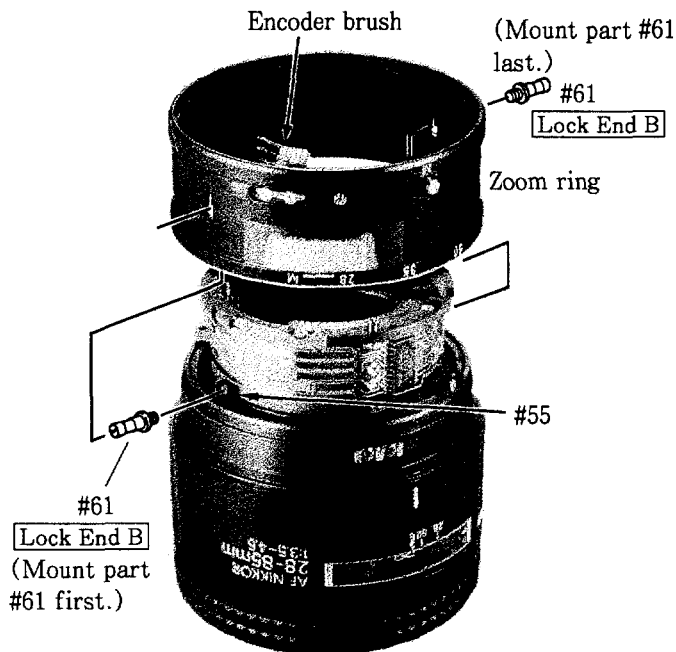
Inspection: After having completed, assembly rotate the focus ring to check the operation of AF gears. If a malfunction occurs, adjust the position of the AF gear unit.

FPC UNIT B201



Note: Make sure that the FPC is not bent or distorted.

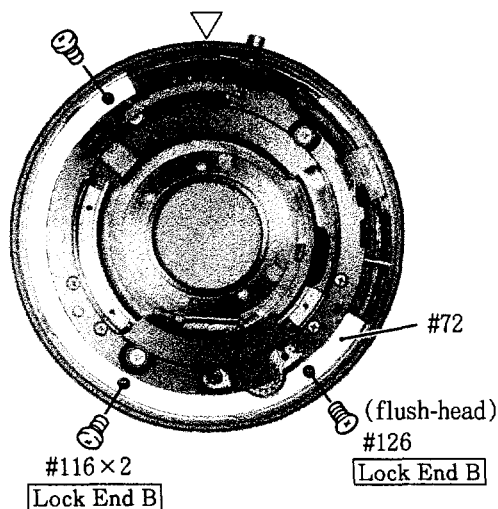
ZOOM RING #54



- ① Clean the FPC patterns and encoder brush using alcohol.
 - ② Mount one of the screws #61 on part #55. (Refer to picture.)
 - ③ Move the attached part #61 and set part #55 at the middle of the range of movement.
 - ④ Mount the zoom ring by aligning part #61 with the hole of the zoom ring.
Note: Do not bend the encoder brush.
- Reference:** If it is hard to mount, remove the encoder brush.
- ⑤ Lift the zoom ring slightly and attach the rest of the screws #61.

Inspection: Check the operation of the zoom ring.

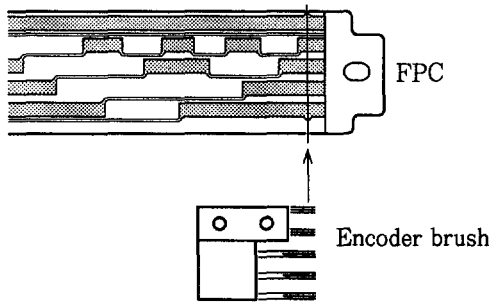
RETAINING PLATE #72



Note: First set the zoom ring to a position between 35mm and 70mm and attach the retaining plate #72.

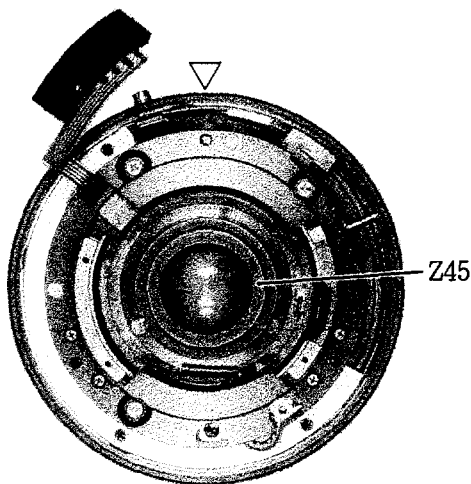
Inspection: Operate the zoom ring to check the operation and feel of the movement when the ring stops at the stopper.

ADJUSTMENT OF ENCODER BRUSH POSITION



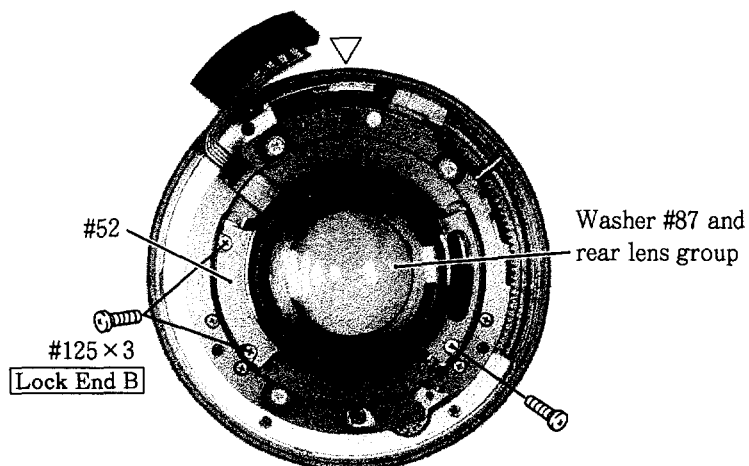
- ① Rotate the zoom ring toward Tele (85mm) side until it stops at the stopper.
- ② Fasten screws #108×2 temporarily when the encoder brush comes into contact with the line as indicated in the figure.
- ③ Rotate the zoom ring from Wide to Tele, and Tele to Wide several times, and check to see if the encoder brush comes into contact at the position indicated at the stopper on the Tele side.
- ④ Fasten screws #108×2 fully, and secure them using Screw Lock.

G10 TO G12 LENS HOUSING UNIT Z45



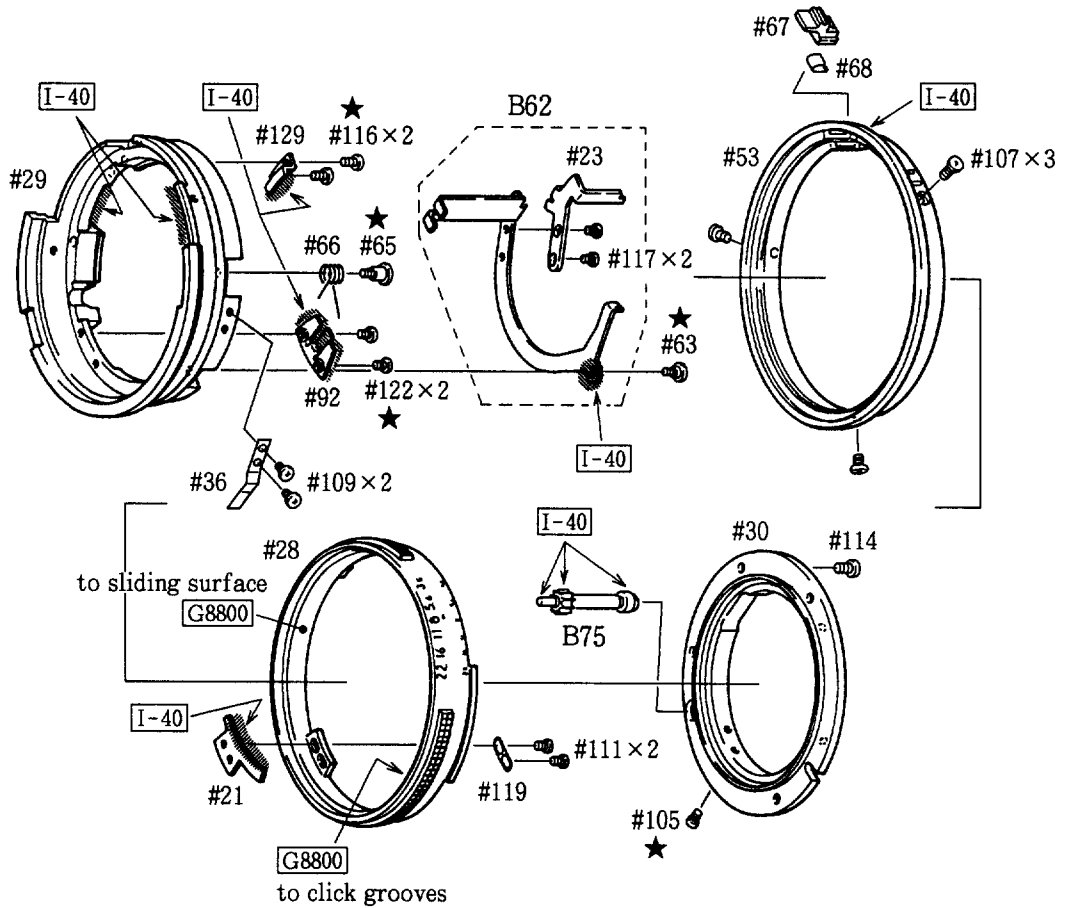
• Attach the Z45 using tool J11194.

REAR LENS GROUP, REAR LENS GROUP ATTACHMENT RING #52



BAYONET MOUNT GROUP

Use Lock End B for the screws marked with ★ as shown below.



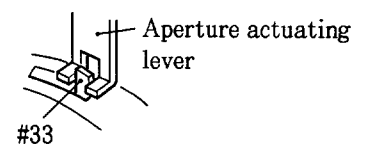
MOUNTING BAYONET MOUNT GROUP

◆Refer to the pictures shown on the following page.

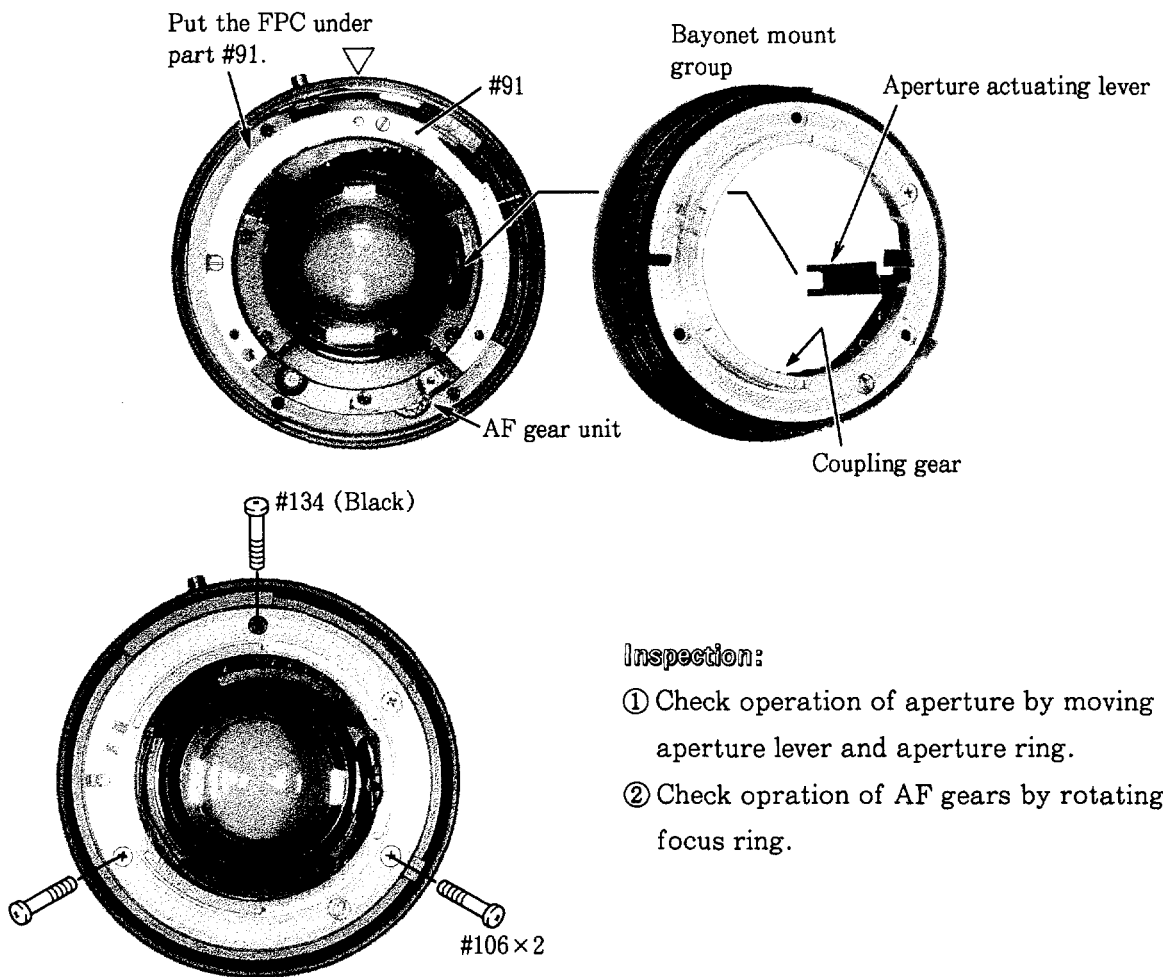
- ① Attach washer #91 for B.f adjustment. Place a thin washer between thick washers when several washers are available.
- ② Set the zoom ring to approx. 30mm, and set the aperture ring to f/22.
- ③ Insert the aperture actuating lever as indicated in the picture on the next page, and mount the bayonet mount group by aligning the coupling gear with the AF gear unit.



Note: As shown in the figure at right, the aperture actuating lever should be inserted into the part #33. If the aperture actuating lever is bent, it cannot easily be inserted. So repair bent lever first.



Reference: If it is hard to mount the bayonet mount group, remove the bayonet mount #30 to make it easier.



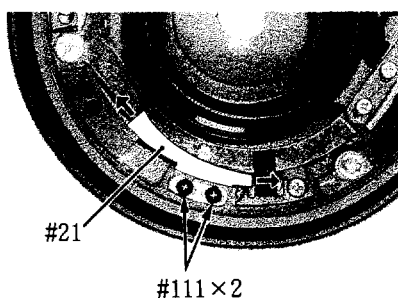
Inspection:

- ① Check operation of aperture by moving aperture lever and aperture ring.
- ② Check operation of AF gears by rotating focus ring.

ADJUSTMENT OF APERTURE OPENING

- ① Remove the bayonet mount #30 only.
- ② Unfasten screws #111 x 2 and move part #21 to adjust the aperture diameter. As a guide to adjustment, the full aperture (f/3.5) should be the same size as the inside diameter of part #33. (The inside diameter of part #33 is 16.7mm, 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 #111 x 2 using Screw Lock.

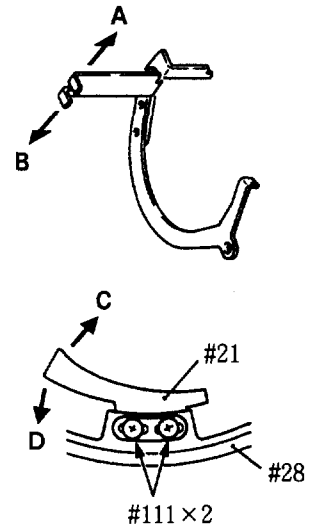
Refer to the next page if the aperture diameter is still out of the permissible range after having adjusted it in the way described above.



Aperture setting	Inscribed circle diameter (mm)	Tolerance (mm)
3.5	16.70	17.70 ~ 15.80
4	14.41	15.57 ~ 13.34
5.6	10.06	11.29 ~ 8.96
8	7.07	7.94 ~ 6.30
11	4.99	5.80 ~ 4.28
16	3.53	4.12 ~ 3.03
22	2.49	2.90 ~ 2.13

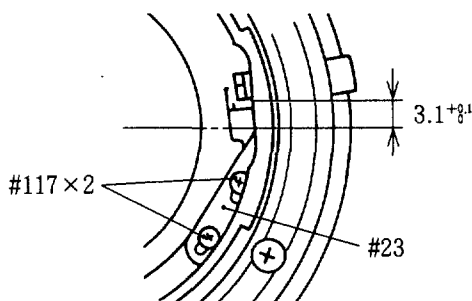
If the aperture diameter is out of the rated value even when part #21 has been moved, it is possible that the aperture actuating lever is bent or the cam plate #21 is mounted in the wrong position. Take the following procedures.

- ① When the aperture diameter is, as a whole, small, bend the aperture actuating lever toward **A**.
- ② When the aperture diameter is, as a whole, large, bend the aperture actuating lever toward **B**.
- ③ When the full aperture is within the rated value and it becomes larger than the rated value as it moves toward minimum aperture, move the cam plate #21 toward **C**.
- ④ When the full aperture is within the rated value and it becomes smaller than the rated value as it moves toward minimum aperture, move the cam plate #21 toward **D**.



Note: When actions ③ and ④ are performed, move part #21 right and left so that all aperture diameters come within rated values. Do not rotate the cam plate #21 when fastening screws #111 x 2 which secure the cam plate #21.

ADJUSTMENT OF APERTURE LEVER #23 POSITION



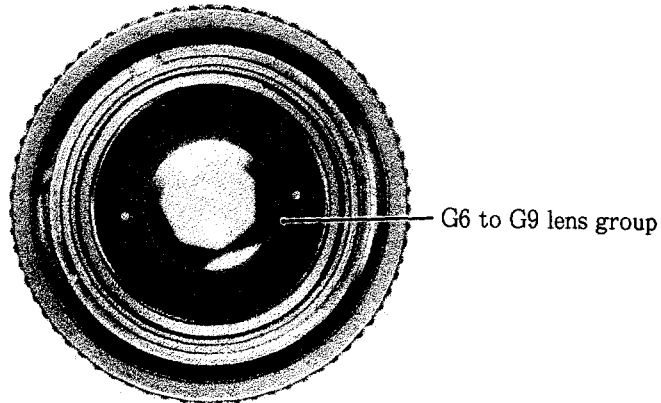
Unfasten screws #117 x 2 to adjust the position of the aperture lever #23 so that it comes into the rated value of $3.1^{+0.1}$ to bring the aperture diameter within rated value at full aperture.

Together with this, adjust the horizontal position so that it does not come in contact with the bayonet mount and rear cover ring.

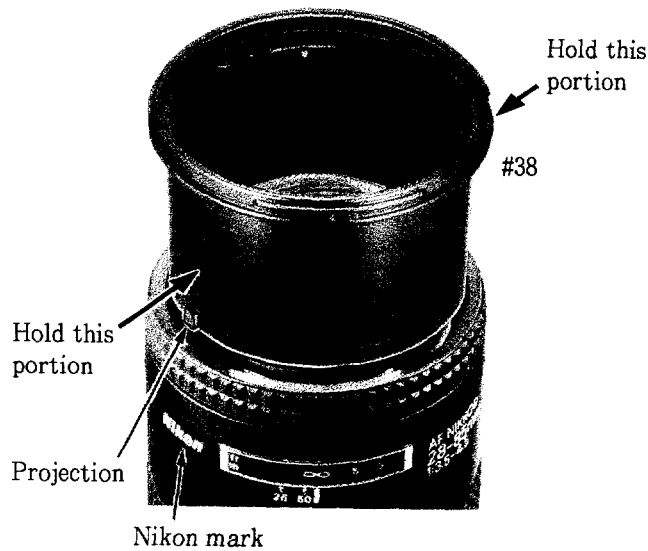
After adjustment, fix screws #117 x 2 using Screw Lock.

Reference: When adjusting the rated value of $3.1^{+0.1}$, set the aperture ring to f/3.5 and mount the tool J18004-1 on the bayonet mount. It becomes much easier to adjust if you mount the aperture lever #23 based on the groove of the tool as a reference.

G6 TO G9 LENS GROUP



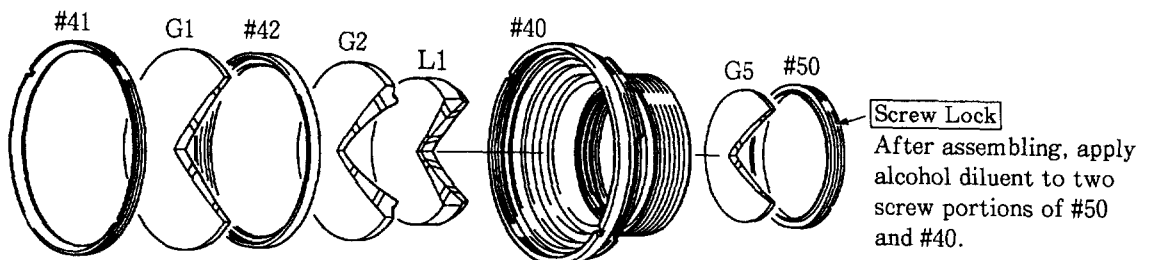
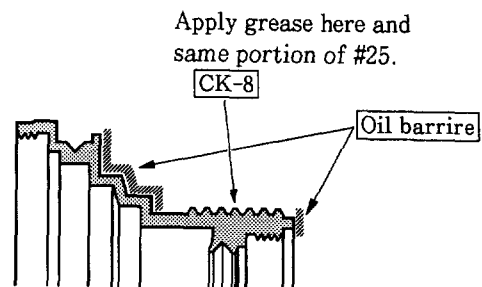
FILTER RING #38



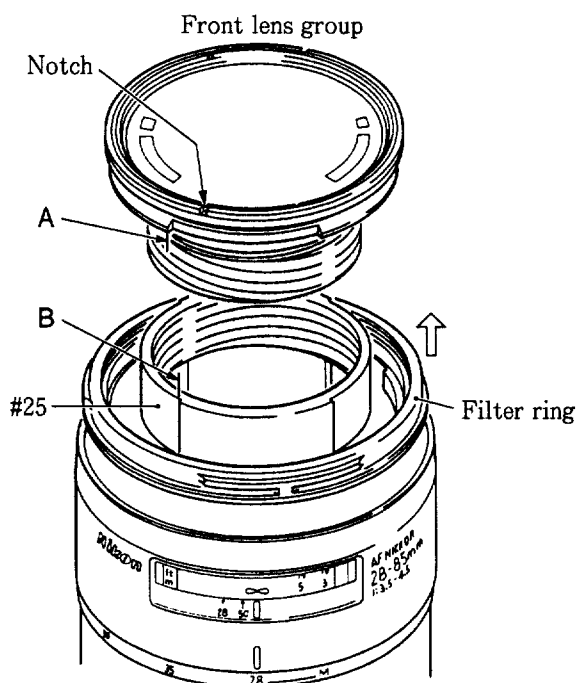
- ① Set the focus ring to infinity (∞).
 - ② In order to move aside the projection of filter ring #38, slightly distort the ring holding the two parts as indicated by arrows.
 - ③ Mount the filter ring #38 so that the projection fits into the groove inside the Nikon mark.
- Note:** The bayonet of the filter ring #38 aligns to the part as shown in the picture.

FRONT LENS GROUP

Parts of the G1-G5 lens chamber #40 to which grease should be applied.



ASSEMBLING FRONT LENS GROUP



- ① Set the zoom ring to Wide (28mm), and set the focus ring to infinity (∞).
- ② Assemble the front lens group checking portion A of the front lens group and portion B of #25. The thread is left-handed.
- ③ Screw in the front lens group as far as it will go and back-off by one-eighth of a turn.
- ④ Carry out the following procedures without rotating the front lens group:
Lift up the filter ring and align it with the front lens group by rotating it clockwise. Then rotate the filter ring counter-clockwise to set the distance scale to infinity (∞).
- ⑤ Temporarily secure the filter ring with fastening set screws #118 \times 3.

Inspection: Check to see that the zoom ring rotates to Tele (85mm) side when the focus ring is set to infinity (∞).

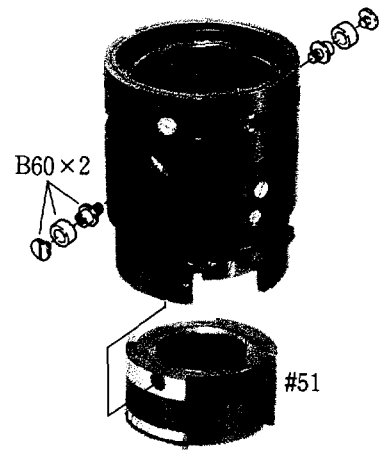
ADJUSTMENT OF SHIFT FOCUS (TELE AND WIDE)

- (1) Secure the focus ring with adhesive tape while aligning the infinity (∞) mark to the index.
- (2) Set the aperture to full aperture (f/3.5).
- (3) Unfasten set screws #118 \times 3 of the filter ring #38, (until the front lens group becomes movable).
- (4) Read the value of Tele (85mm) and Wide (28mm) sides.
- (5) Set to Wide side, rotate the front lens group until it comes to the Tele side.
- (6) Set to Tele side once again, repeat above operation (4) and (5) several times. Finally set the value of the Wide side so that it is greater than the Tele side by +0.1mm.
- (7) Fasten set screws #118 \times 3 of the filter ring #38.
- (8) Check to see that the values are correct.

ADJUSTMENT OF SHIFT FOCUS (INTERMEDIATE)

Make the following adjustment if the focal length fluctuates (more than 0.2mm) in the middle when zooming in and out between Tele and Wide sides.

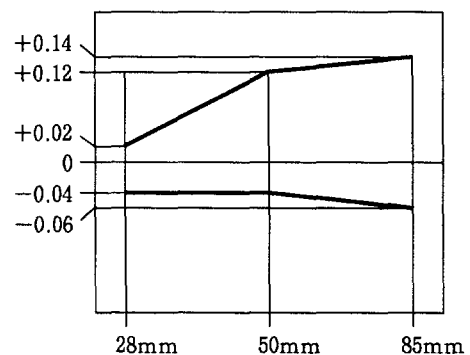
- Replace the guide rings B60 × 2 of the G6-G9 lens driving ring #51 with the one having a larger diameter.



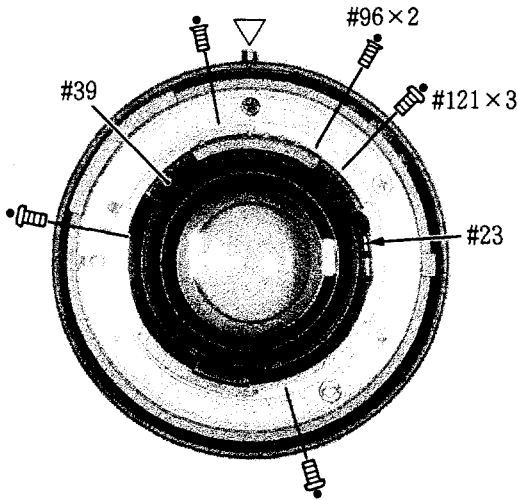
ADJUSTMENT OF BACK FOCUS

- (1) Secure the focus ring with adhesive tape while aligning the infinity (∞) mark to the index.
- (2) Set the aperture to full aperture.
- (3) Set the zoom ring to Tele (85mm), read the M.B.f value.
- (4) If the readout value is greater than the standard value, increase thickness of the washer #91 by the difference, decrease the thickness of the washer #91 by the difference if the readout value is smaller than the standard one.
Remove the bayonet mount to adjust the thickness of the washer #91. (Refer to pages on 23, 36, and 37.)
- (5) Check to see that the value is within the standard value range.

Focal length	Standard (mm)
28mm	-0.04 ~ +0.02
50mm	-0.04 ~ +0.12
85mm	-0.06 ~ +0.14

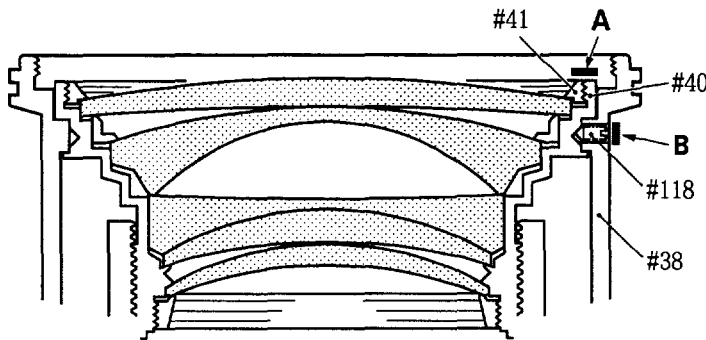


REAR COVER RING #39, RUBBER RING #37



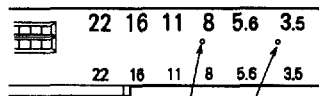
- Mount the rear cover ring #39 so that it becomes the full aperture stopper (the height of the aperture lever is $3.1 \pm \frac{1}{8}$ mm) of the aperture lever #23.
- Attach the rubber ring #37 to zoom ring.

APPLYING BLACK PAINT



- Portion **A**: Apply matt black paint all over the circumference of the front of #40 and #41.
- Portion **B**: Apply luster black paint to the head of set screws #118 x 3.

ATTACHING METER COUPLING SHOE



Make holes on these two concave portions.

- (1) Remove aperture ring #28.
- (2) Make two holes $\phi 1.1$ in the concave portions of aperture ring #28.
- (3) Attach meter coupling shoe.

Meter coupling shoe	1K406-029	× 1
Screw	1K010-002-1	× 2

- (4) Assembling.