JAA73801－R.3266.A

AF Zoom Nikkor
75-300mm f/4.5-5.6

200001

Ai-S

REPAIR MANUAL

Nikon | NIKON CORPORATION
Tokyo, Japan

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CONTENTS

1．仕　様

焦点距離：	７５～３００ｍｍ
最大口径比：	１：４．５～５．６
レンズ構成：	１１群１３枚
画　　角：	３１°４０′～８°１０′
焦点距離目盛：	７５，１００，１３５，２００，３００
距離目盛：	∞～３ｍ，１０ｆｔ（併記）
ズーミング：	直進式
フォーカシング：	回転式　（回転角１２６°３１′）
絞り目盛：	4.5，5.6，8，11，16，22，32
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）
大きさ：	φ７２ｍｍ（最大径）×１６６ｍｍ（全長） バヨネット基準面より先端まで約１７４ｍｍ
重　　量：	約８５０ｇ
マクロ方式：	全ズーム領域にてマクロ撮影可能（最大撮影倍率 1:3.8）

1. Specifications

Focal length:	75～300mm
Maximum aperture:	1:4.5 ～ 5.6
Lens construction:	13 elements in 11 gruops
Picture angle:	31° 40′ ～ 8 ° 10′
Focal length scale	75, 100, 135, 200, 300
Distance scale:	∞～3m, 10ft
Zooming:	Pallalel moving
Focusing:	Rotating angle
Aperture scale:	4.5, 5.6, 8, 11, 16, 22, 32
Diaphragm:	Fully automatic Minimum aperture lock is possible
Metering:	Full-aperture measurement
Mount:	Nikon F mount
Attachment size:	62mm(P=0.75)
Dimensions:	φ72mm(dia.) × 166mm(long) Length from lens mount: approx. 174mm
Weight:	Approx. 850g
Macro focus device:	It is possibility macro shooting in every zoom range. (Maximum magnification 1:3.8)

-P1-

展開図 Exploded Drawings

AF 75-300mm f/4.5-5.6

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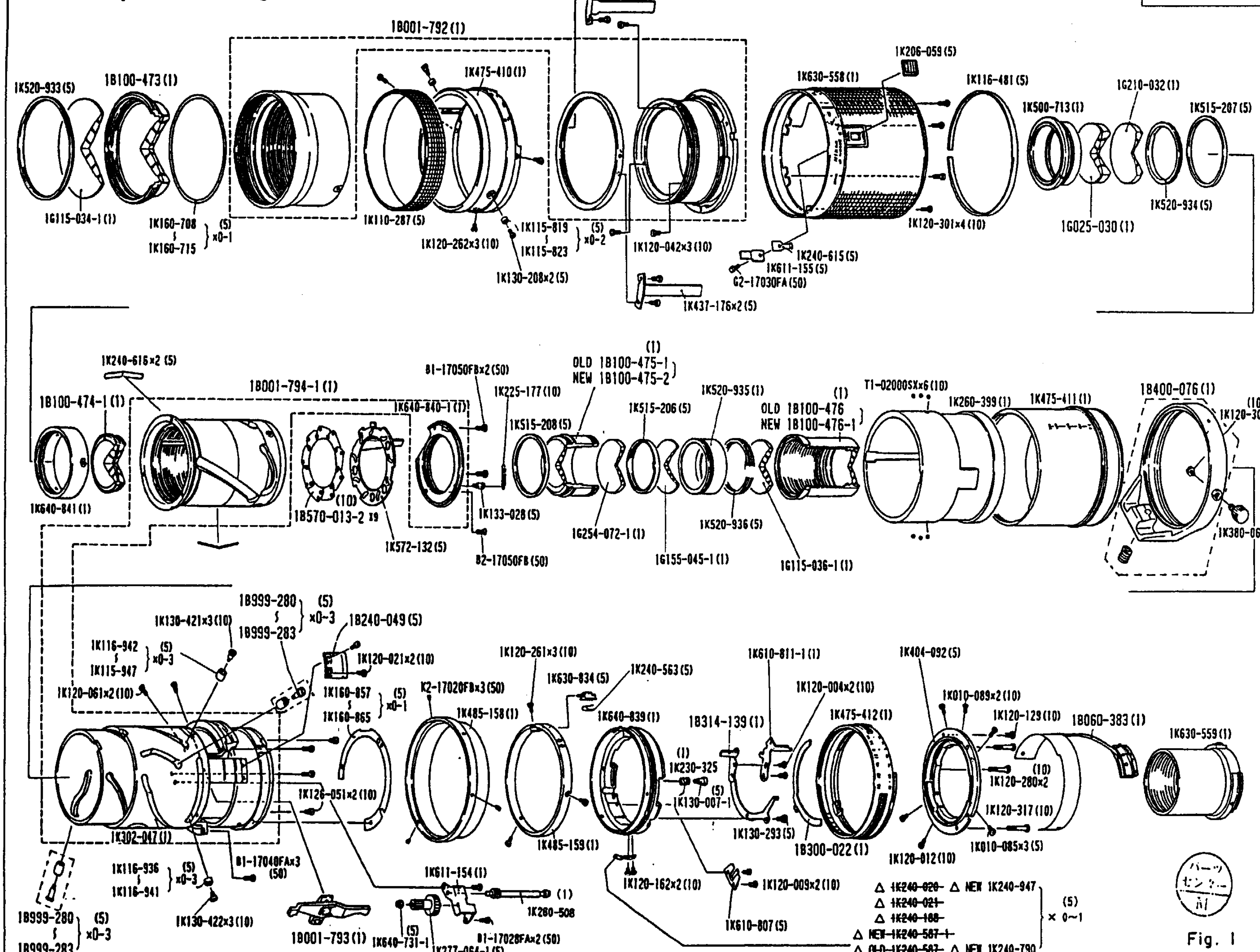

Fig. 1

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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
*1K010-085	127	タッピング小ネジ Screw	3		1. 2	○		5
*1K010-089	128	タッピング小ネジ Screw	2		1. 3	○		10
*1K110-287	84	ゴムリング Rubber ring	1		1. 2	○		5
*1K115-819	92	ガイド環 $\phi 4.01 \pm 0.005$ Guide ring	0〜2		1. 2	○		5
*1K115-820	92	ガイド環 $\phi 4 \pm 0.005$ Guide ring	0〜2		1. 2	○		5
*1K115-821	92	ガイド環 $\phi 3.99 \pm 0.005$ Guide ring	0〜2		1. 2	○		5
*1K115-822	92	ガイド環 $\phi 3.98 \pm 0.005$ Guide ring	0〜2		1. 2	○		5
*1K115-823	92	ガイド環 $\phi 3.97 \pm 0.005$ Guide ring	0〜2		1. 2	○		5
*1K116-266	89	ガイド環 Guide ring $\phi 4.5^{-0.01}_{-0.02}$	0〜6	1B999-280	1. 2	△	NO.9001	5
*1K116-267	89	ガイド環 Guide ring $\phi 4.5^{-0}_{-0.01}$	0〜6	1B999-281	1. 2	△	〃	5
*1K116-268	89	ガイド環 Guide ring $\phi 4.5^{+0.01}_{0}$	0〜6	1B999-282	1. 2	△	〃	5
*1K116-269	89	ガイド環 Guide ring $\phi 4.5^{+0.02}_{-0.01}$	0〜6	1B999-283	1. 2	△	〃	5
*1K116-368	131	テープ Tape	1		1. 2	×	TA-0004	
*1K116-481	83	ファインセーム Flock paper	1		1. 2	○		5
*1K116-507	133	テープ Tape	1		1. 2	×	TA-0004	
*1K116-936	88	ガイド環 Guide ring $\phi 4.5^{+0.02}_{+0.01}$	0〜3		1. 2	○		5

	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
	1K160-857	86	Washer t=0.05	0~1		A1	○		5
	1K160-858	86	Washer t=0.06	0~1		A1	○		5
	1K160-859	86	Washer t=0.07	0~1		A1	○		5
	1K160-860	86	Washer t=0.08	0~1		A1	○		5
	1K160-861	86	Washer t=0.09	0~1		A1	○		5
	1K160-862	86	Washer t=0.1	0~1		A1	○		5
	1K160-863	86	Washer t=0.2	0~1		A1	○		5
	1K160-864	86	Washer t=0.3	0~1		A1	○		5
	1K160-865	86	Washer t=0.5	0~1		A1	○		5
	1K206-059	80	ＡＦ距離制限レバー Lever	1		C1	○		5
	1K225-177	70	引張バネ Spring	1		B2	○		10
	1K230-325	85	ねじり線バネ Spring	1		C3	○		1
△	~~*1K240-020~~	36	クリックバネ t=0.2	0~1		B3	○	RP-9036 RP-9587	5
△	*1K240-947	36	クリックバネ t=0.13	0~1		B3	○	RP-9587	5
△	~~*1K240-021~~	36	クリックバネ Click spring t=0.18	0~1		B3	○	RP-9587	5
△	~~*1K240-188~~	36	クリックバネ Click spring t=0.22	0~1		B3	○	RP-9587	5
△	~~*1K240-587~~	36	クリックバネ Click spring t=0.2	0~1		B3	○	RP-9036 RP-9587	
△	~~1K240-587-1~~	36						RP-9587	5
△	*1K240-790	36	クリックバネ Click spring t=0.15	0~1		B3	○	RP-9587	5
	*1K240-563	68	ＥＥロックバネ EE lock spring	1		C3	○		5
	1K240-615	81	ＡＦ距離制限レバー用クリックバネ Click spring	1		C1	○		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
*1K120-061	116	小ネジ Screw	2		1, 2	○		10
*1K120-129	110	小ネジ Screw	1		1, 3	○		10
*1K120-162	115	小ネジ Screw	2		1, 3	○		10
*1K120-261	106	小ネジ Screw	3		1, 2	○		10
*1K120-262	102	小ネジ Screw	7		1, 2	○		10
1K120-280	109	小ネジ Screw	2		1, 3	○		10
1K120-301	122	小ネジ Screw	4		1, 2	○		10
1K120-302	132	小ネジ Screw	1		1, 2	○		10
1K120-317	108	小ネジ Screw	1		1, 2	○		10
*1K126-051	101	小ネジ Screw	2		1, 3	○		10
*1K130-007-1 (1K130-007)	113	段付小ネジ Screw	1		1, 3	○		5
*1K130-208	103	段付小ネジ Screw	2		1, 2	○		5
*1K130-293	112	段付小ネジ Screw	1		1, 3	○		5
*1K130-296	98	段付小ネジ Screw	6		1, 2	~~○~~ △		5
1K130-421	99	段付小ネジ Screw	3		1, 2	○		10
1K130-422	104	段付小ネジ Screw	3		1, 2	○		10
*1K133-028	118	溝付き小ネジ Screw	1		1, 2	○		5

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
*1K160-708	87	Washer t=0.05	0~1		1, 2	○		5
*1K160-709	87	Washer t=0.06	0~1		1, 2	○		5
*1K160-710	87	Washer t=0.07	0~1		1, 2	○		5
*1K160-711	87	Washer t=0.08	0~1		1, 2	○		5
*1K160-712	87	Washer t=0.09	0~1		1, 2	○		5
*1K160-713	87	Washer t=0.3	0~1		1, 2	○		5
*1K160-714	87	Washer t=0.2	0~1		1, 2	○		5
*1K160-715	87	Washer t=0.1	0~1		1, 2	○		5
1K160-857	86	Washer t=0.05	0~1		1, 2	○		5
1K160-858	86	Washer t=0.06	0~1		1, 2	○		5
1K160-859	86	Washer t=0.07	0~1		1, 2	○		5
1K160-860	86	Washer t=0.08	0~1		1, 2	○		5
1K160-861	86	Washer t=0.09	0~1		1, 2	○		5
1K160-862	86	Washer t=0.1	0~1		1, 2	○		5
1K160-863	86	Washer t=0.2	0~1		1, 2	○		5
1K160-864	86	Washer t=0.3	0~1		1, 2	○		5

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
1K160-865	86	Washer t=0.5	0〜1		1. 2	○		5
1K206-059	80	ＡＦ距離制限レバー Lever	1		1. 2	○		5
1K225-177	70	引張バネ Spring	1		1. 3	○		10
1K230-325	85	ねじり線バネ Spring	1		1. 3	○		1
*1K240-020	36	クリックバネ t=0.2 Click spring	0〜1		1. 3	○		5
*1K240-021	36	クリックバネ t=0.18 Click spring	0〜1		1. 3	○		5
*1K240-188	36	クリックバネ t=0.22 Click spring	0〜1		1. 3	○		5
*1K240-563	68	ＥＥロックバネ EE lock spring	1		1. 2	○		5
*1K240-587	36	クリックバネ t=0.2 Click spring	0〜1		1. 3	○		5
1K240-615	81	ＡＦ距離制限レバー用クリックバネ Click spring	1		1. 2	○		5
1K240-616	71	板バネ Leaf spring	2		1. 2	○		5
1K260-399	57	内歯車筒 Inner gear tube	1		1. 2	○		1
*1K277-064-1 (1K277-064)	77	複合歯車 Gear	1		1. 2	○		5
1K302-047	51	カムリング Cam ring	1		1. 2	○△		1
1K380-066	96	クランプノブ Clamp knob	1		1. 2	○		1
1K400-282	63	三脚座 Tripod attaching mount	1	18400-076	1. 2	○	No. 9001	1
1K404-092	30	バヨネットマウント Bayonet mount	1		1. 2	○		5

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
1K437-176	22	キー Key	2		1, 2	○		5
1K475-410	26	距離環 Focusing ring	1		1, 2	○		1
1K475-411	27	ズーム目盛環 Zoom index ring	1		1, 2	○		1
1K475-412	28	絞り環 Aperture ring	1		1, 2	○		1
1K485-158	55	指標環 Index ring	1		1, 2	○		1
1K485-159	56	ＥＥロック環 EE lock ring	1		1, 2	○		1
1K500-713	42	G4～G6レンズ室 G4～G6 Lens housing	1		1, 2	○		1
1K515-206	46	G10-G11 分離環 G10-G11 separating ring	1		1, 2	○		5
1K515-207	129	G4～G6分離環 G4～G6 separating ring	1		1, 2	○		5
1K515-208	130	G9～G11 分離環 G9～G11 separating ring	1		1, 2	○		5
1K520-933	41	G1押え環 G1 retaining ring	1		1, 2	○		5
1K520-934	43	G6押え環 G6 retaining ring	1		1, 2	○		5
1K520-935	47	G11 押え環 G11 retaining ring	1		1, 2	○		1
1K520-936	49	G12 押え環 G12 retaining ring	1		1, 2	○		5
1K572-132	33	矢車 Blade actuating plate	1		1, 2 3	○		5
*1K610-807	66	曲げ板 Bent plate	1		1, 3	○		5

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
*1K610-811-1 (1K610-811)	23	絞りレバー Aperture lever	1		1, 2 3	○		5
1K611-154	78	軸受板 Bearing plate	1		1, 2	○		1
1K611-155	82	曲げ板 Bent plate	1		1, 2	○		5
1K630-558	37	社銘環 Name ring	1		1, 2	○		1
1K630-559	39	後部保護環 Rear cover ring	1		1, 2	○		1
*1K640-731-1 (1K640-731)	79	ギアワッシャー Gear washer	1		1, 2	○		5
1K640-839	29	丸環 Ring	1		1, 2 3	○		1
1K640-840-1	52	丸環 RING	1		1, 2	○△		1
1K640-841	53	丸環 Ring	1		1, 2	○		1
*1K680-834	67	ＥＥロックレバー EE Lock lever	1		1, 2	○		5
B1-17028FA	121	Screw	2		1, 2	○		50
B1-17040FA	105	Screw	1		1, 3	○		50
B1-17050FB	124	Screw	1		1, 2	○		50
B2-17050FB	126	Screw	2		1, 3	○		50
G2-17030FA	123	Screw	3		1, 2	○		50

部品表 Parts List

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
K2-17020FB	100	Screw	1		1, 2	○		50
T1-02000SX	69	鋼球 Steel ball	3		1, 2	○		10
U2-06310SX	93	ヘリサート Helicert	6	1B400-076	1, 2	○ △	No. 9001	10
1G115-034-1 (1G115-034)	G1	G1レンズ G1 Lens element	1		1, 2	○		1
1G115-036-1 (1G115-036)	G12	G12 レンズ G12 Lens element	1		1, 2	○		1
1G155-045-1 (1G155-045)	G11	G11 レンズ G11 Lens element	1		1, 2	○		1
1G210-032	G6	G6レンズ G6 Lens element	1		1, 2	○		1
1G254-072-1 (1G254-072)	G10	G10 レンズ G10 Lens element	1		1, 2	○		1

部組品表 Assembly 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	大部組品番号 Main Assembly No.	参照図番 Fig. No.	備考 Remarks	要求単位 Q'ty per order
1B001-792	B38	ヘリコイド環組 Helicoid unit	1		1		1
1B001-793	B59	曲げレバー組 Lever unit	1		1		1
1B001-794-1	B50	ズーム環組 Zoom ring unit	1		1		1
1B060-383	B301	ＡＦ接点組品 Unit AF contact	1		1		1
1B100-473	Z40	G2-G3 レンズ室組 G2-G3 Lens housing	1		1		1
1B100-474-1	Z44	G7-G8 レンズ室組 G7-G8 Lens housing	1		1		1
1B100-475-1 1B100-475-2	old Z45	G9レンズ室組 G9 Lens housing	1		1	9014	1
1B100-476 1B100-476-1	old Z48	G13 レンズ室組 G13 Lens housing	1		1	9014	1
*1B240-049	B64	ブラシ組 Brush unit	1		1		5
1B260-075 1B260-308	B76	歯車組 Gear unit	1		1	9000	1
*1B300-022	B21	カム組 Cam unit	1		1		1
*1B314-139	B58	曲げレバー組 Lever unit	1		1		1
*1B570-013-2 (1B570-013)	B31	絞り羽根組 Aperture blade unit	9		1		10
1G025-030	L2	G4-G5 レンズ組 G4-G5 Lens element	1		1		1

部品対照表

(Parts Referenc 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	1G115-034-1	46	1K515-206	86	1K160-864
G2	1G115-035	47	1K520-935	86	1K160-865
G3	1G216-023	48	1K500-716	87	1K160-708
G4	1G150-035	49	1K520-936	87	1K160-709
G5	1G206-017	50	1K630-560	87	1K160-710
G6	1G210-032	51	1K302-047	87	1K160-711
G7	1G107-060	52	1K640-840	87	1K160-712
G8	1G252-029	53	1K640-841	87	1K160-713
G9	1G113-068	54	1K630-561	87	1K160-714
G10	1G254-072-1	55	1K485-158	87	1K160-715
G11	1G155-045-1	56	1K485-159	88	1K116-936
G12	1G115-036-1	57	1K260-399	88	1K116-937
G13	1G253-031	58	1K314-272	88	1K116-938
		59	1K314-346	88	1K116-939
		60	1K680-651-1	88	1K116-940
		61	1K680-643-1	88	1K116-941
		62	1K240-469-1	89	1K116-266
21	1K300-068	63	1K400-282	89	1K116-267
22	1K437-176	65	1K640-842	89	1K116-268
23	1K610-811-1	66	1K610-807	89	1K116-269
24	1K535-334	67	1K680-834	90	1K116-942
		68	1K240-563	90	1K116-943
26	1K475-410	69	T1-02000SX	90	1K116-944
27	1K475-411	70	1K225-177	90	1K116-945
28	1K475-412	71	1K240-616	90	1K116-946
29	1K640-839	72	1K680-756	90	1K116-947
30	1K404-092	73	1K240-459	91	1K371-086
31	1K570-012	75	1K370-988-1	92	1K115-819
32	1K370-004-1	76	1K260-400	92	1K115-820
33	1K572-132	77	1K277-064-1	92	1K115-821
34	1K302-046	78	1K611-154	92	1K115-822
35	1K680-938	79	1K640-731-1	92	1K115-823
36	1K240-587	80	1K206-059	93	U2-06310SX
36	1K240-020	81	1K240-615	94	1K370-003
36	1K240-021	82	1K611-155	95	1K370-972
36	1K240-188	83	1K116-481	96	1K380-066
37	1K630-558	84	1K110-287		
38	1K535-335	85	1K230-325	98	1K130-296
39	1K630-559	86	1K160-857	99	1K130-421
40	1K500-712	86	1K160-858	100	K2-17020FB
41	1K520-933	86	1K160-859	101	1K126-051
42	1K500-713	86	1K160-860	102	1K120-262
43	1K520-934	86	1K160-861	103	1K130-208
44	1K500-714	86	1K160-862	104	1K130-422
45	1K500-715	86	1K160-863	105	B1-17040FA

部品対照表

(Parts Referenc 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
106	1K120-261	Z40	1B100-473		
107	1K120-009	Z44	1B100-474—1		
108	1K120-317	Z45	1B100-475—1		
109	1K120-280	Z48	1B100-476		
110	1K120-129				
111	1K120-012				
112	1K130-293				
113	1K130-007-1				
114	1K120-004	L2	1G025-030		
115	1K120-162				
116	1K120-061				
118	1K133-028				
119	1K120-021				
121	B1-17028FA				
122	1K120-301				
123	G2-17030FA				
124	B1-17050FB				
125	1K120-042				
126	B2-17050FB				
127	1K010-085				
128	1K010-089				
129	1K515-207				
130	1K515-208				
131	1K116-368				
132	1K120-302				
133	1K116-507				
B21	1B300-022				
B31	1B570-013-2				
B38	1B001-792				
B50	1B001-794				
B58	1B314-139				
B59	1B001-793				
B64	1B240-049				
B76	1B260-075				
B301	1B060-383				

JAA73801-R. 3266. A

4. 組立図 Construction of the Lens

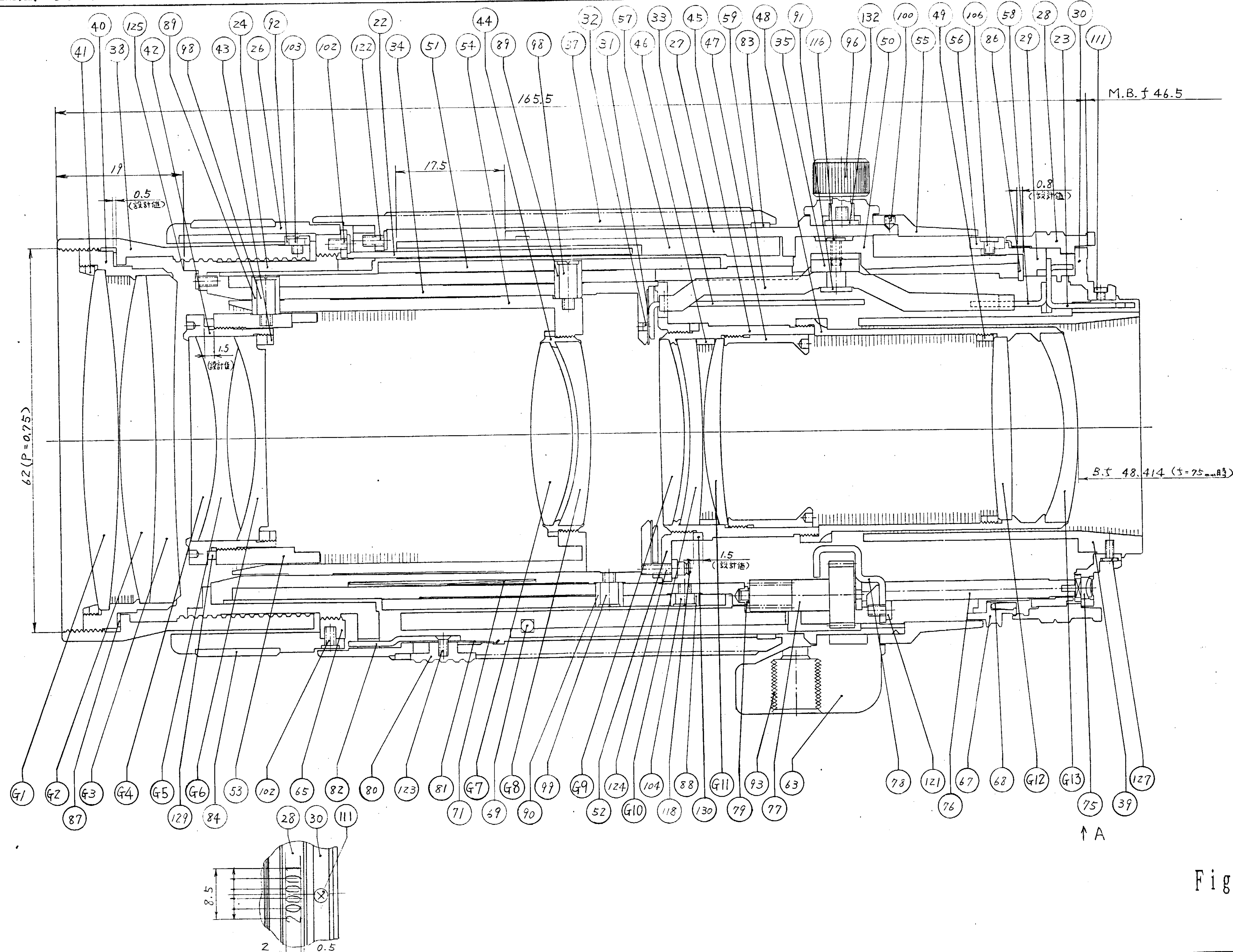


Fig. 2

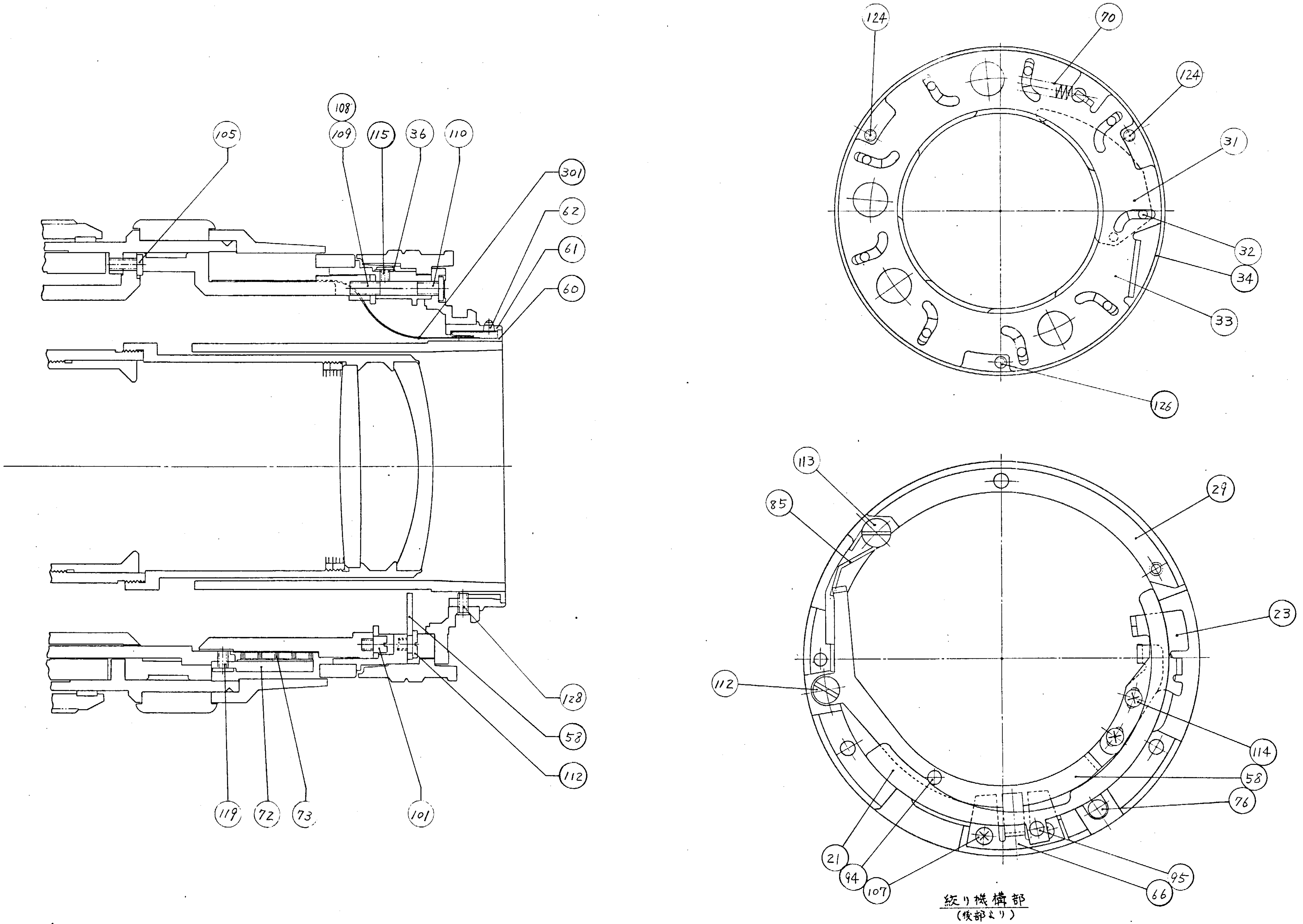
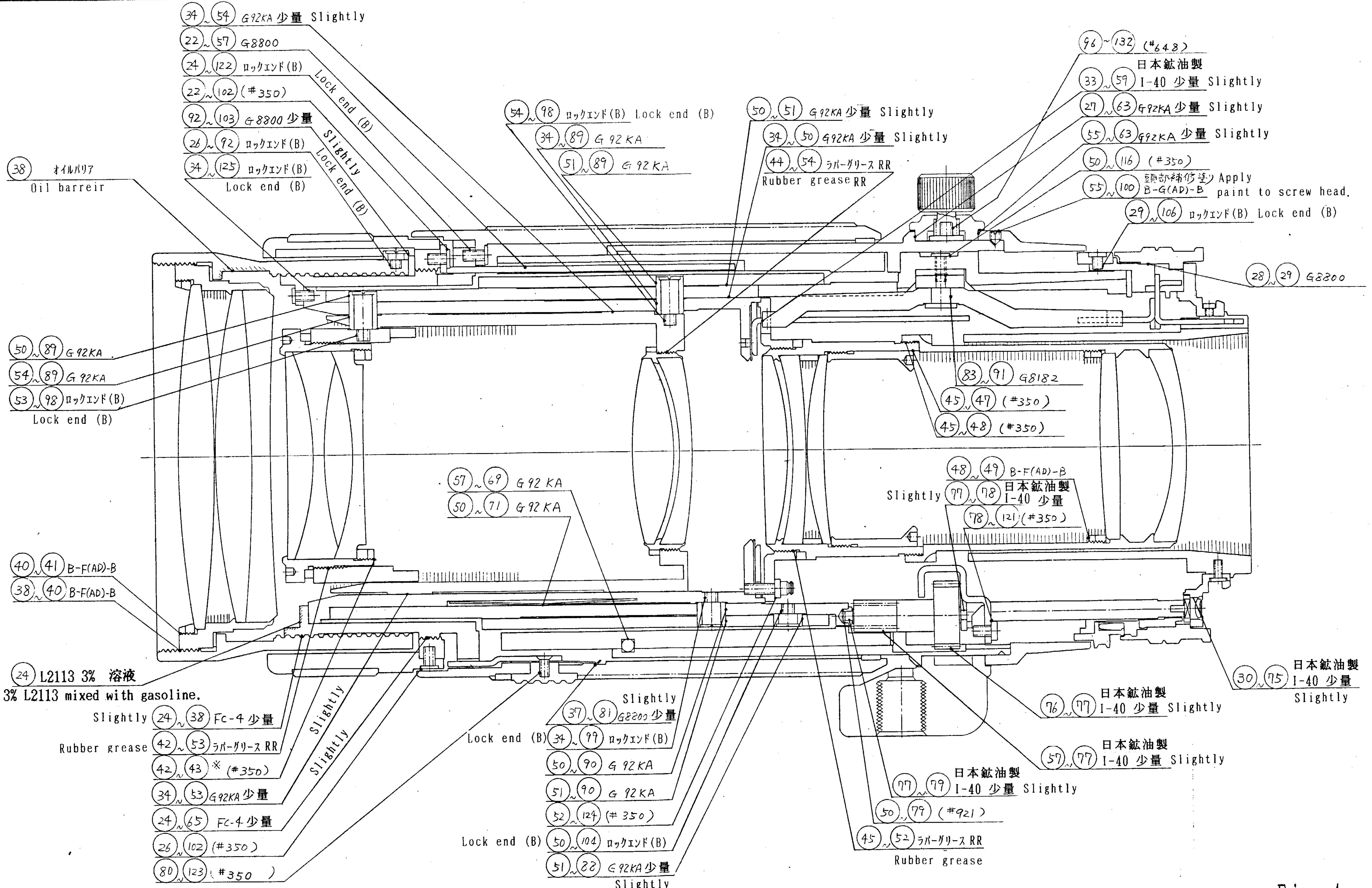

105
108
109
115
36
110
301
62
61
60
128
58
112
119
72
73
101
124
70
124
31
32
34
33
126
113
85
29
23
112
114
58
76
21
94
107
66
95
絞り機構部
(後部より)

Fig. 3

5. 接着給油図 Lubricant and Binding Agent Chart



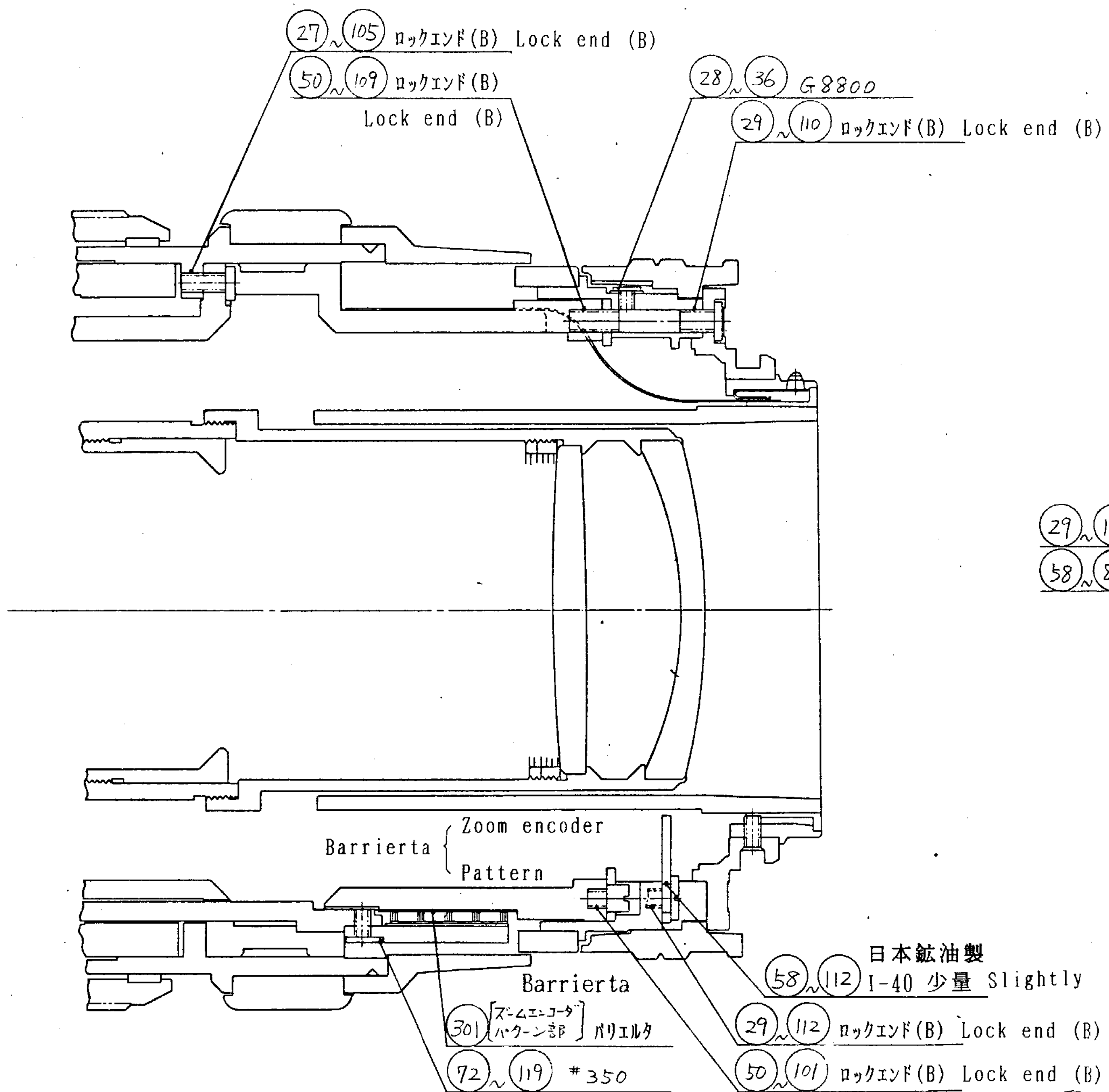
注) ※印 #350 原液とアルコール 2：1の混合液使用のこと

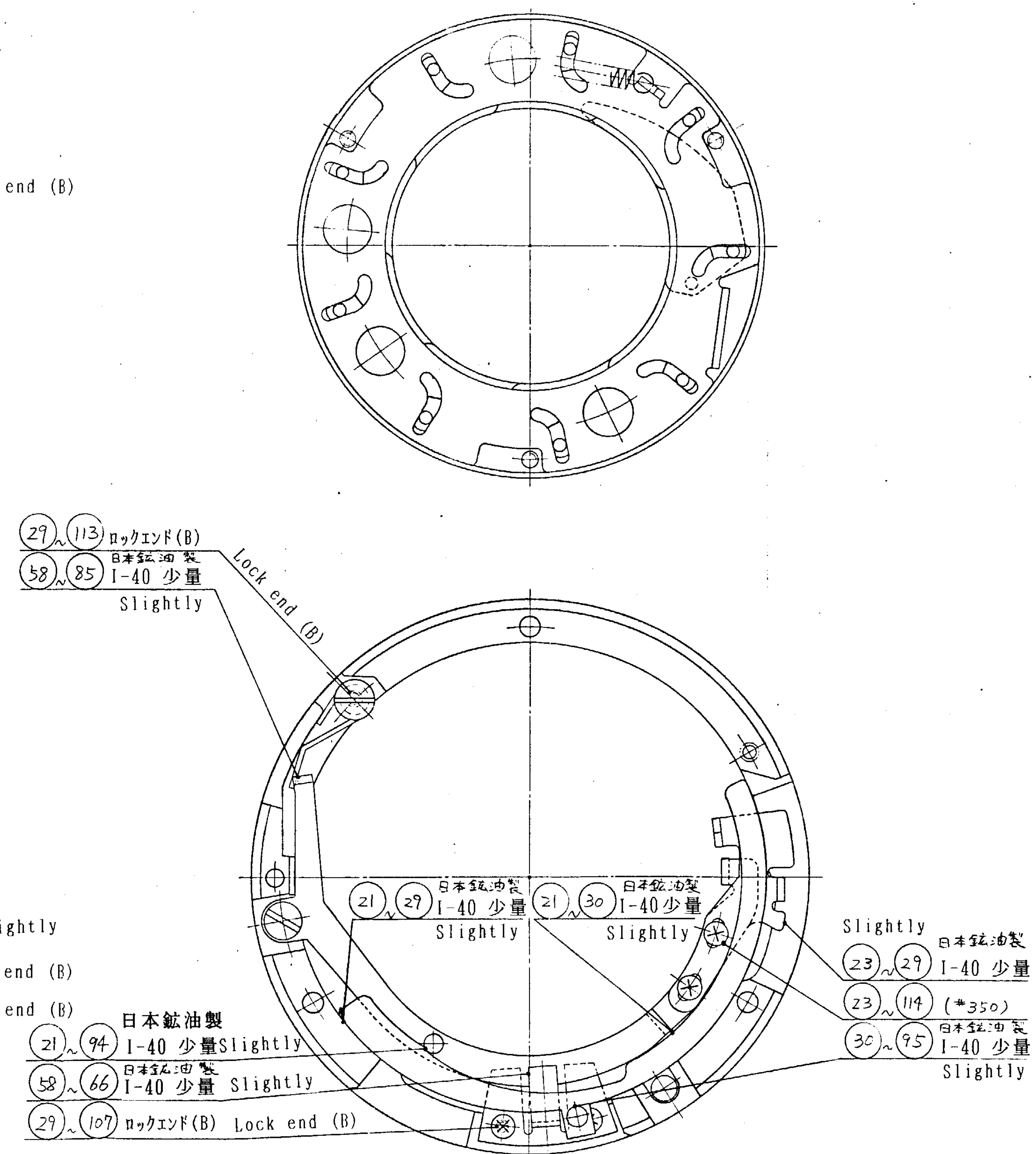
Note) Use a mixture of Adhesive #350 with alcohol in the mixing ratio of two to one.

Fig. 4

接着給油図 Lubricant and Binding Agent Chart

JAA73801-R.3266.A



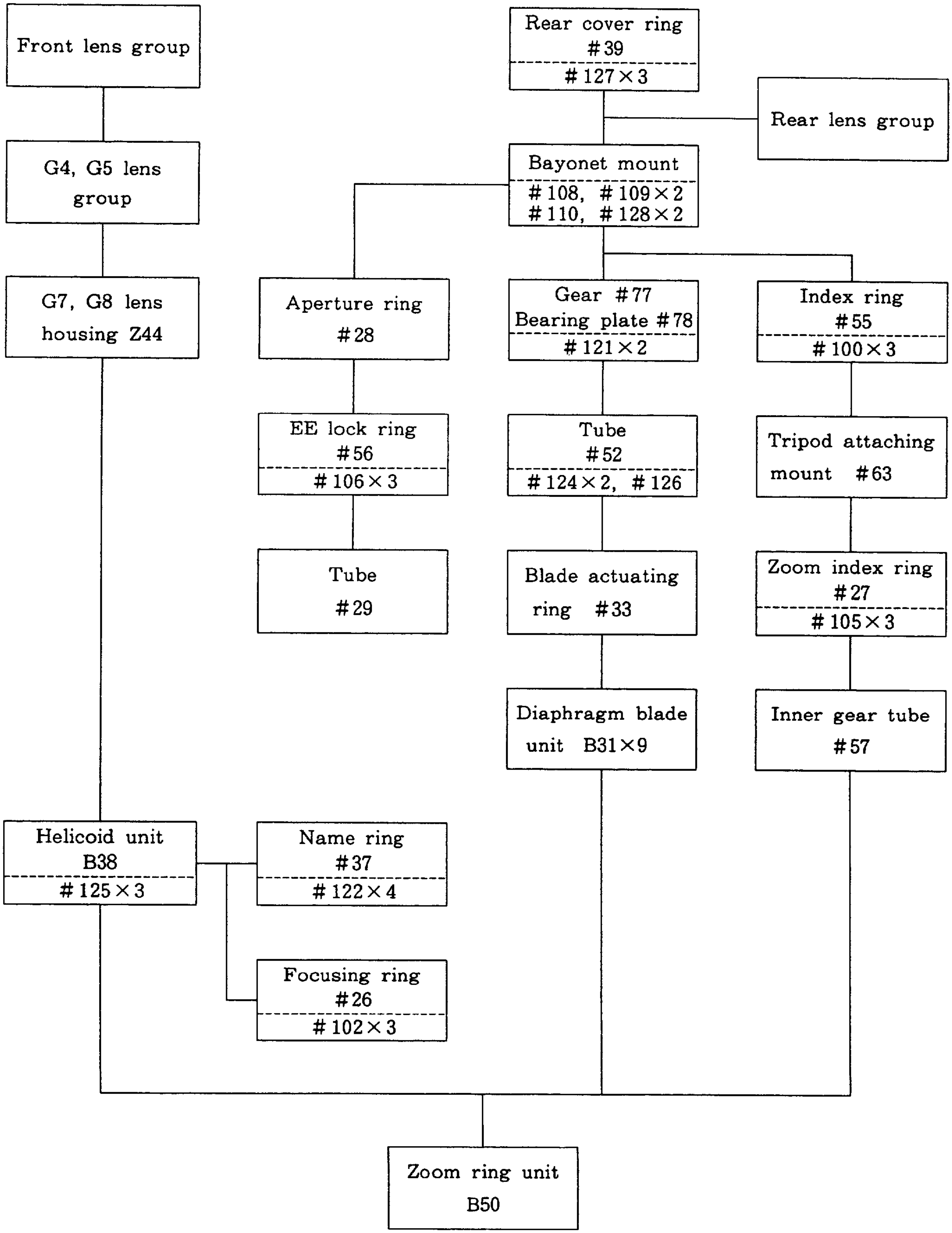


絞り機構部
(後部より)

Fig. 5

7. DISASSEMBLING／ASSEMBLING／ADJUSTMENT

〔1〕DISASSEMBLING PROCEDURE CHART



Note: ① The tone of pictures may be different from actual one. Make sure of the shape of parts when disassembling and reassembling.

② The mark ▽ shows the position of index.

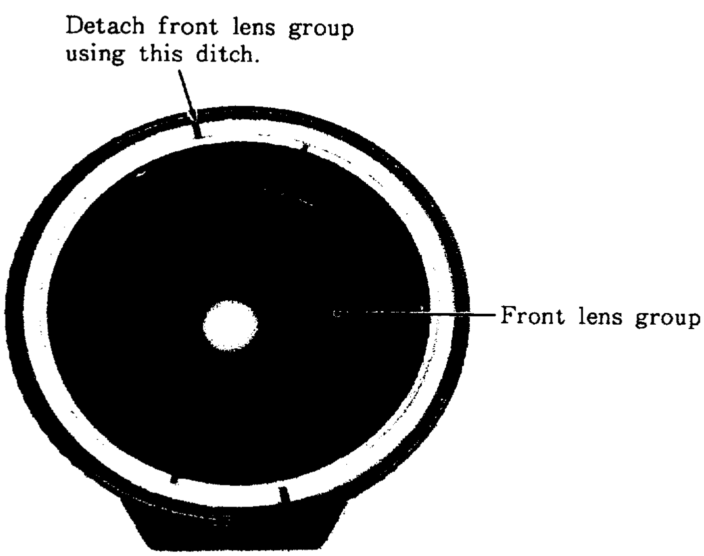
③ [ ] : Disassembling／assembling

[ ] : Adjustment

[ ] : Additional work

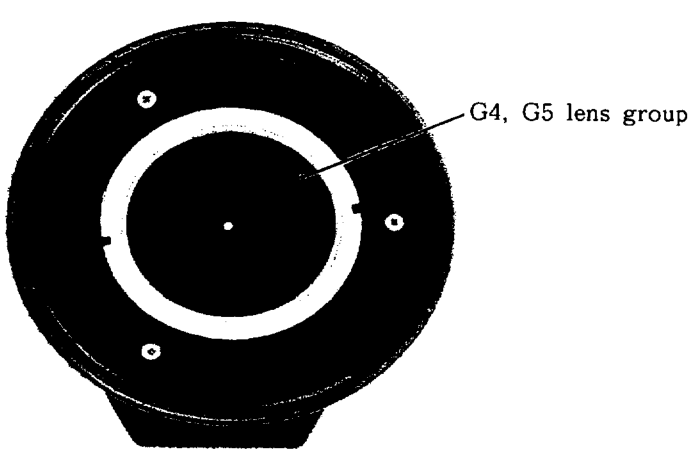
[2] DISASSEMBLING

FRONT LENS GROUP (Z40、G1、#40)



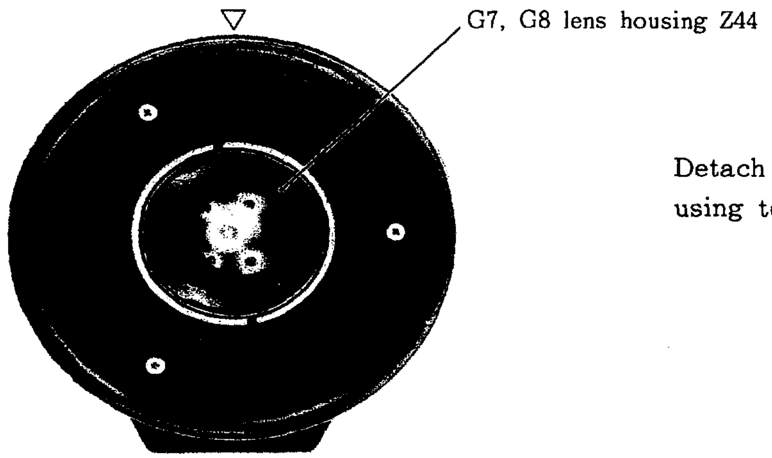
Turn the front lens group and washer #87 counter-clockwise to detach it.

G4, G5 LENS GROUP (L2、#42、G6、#43)



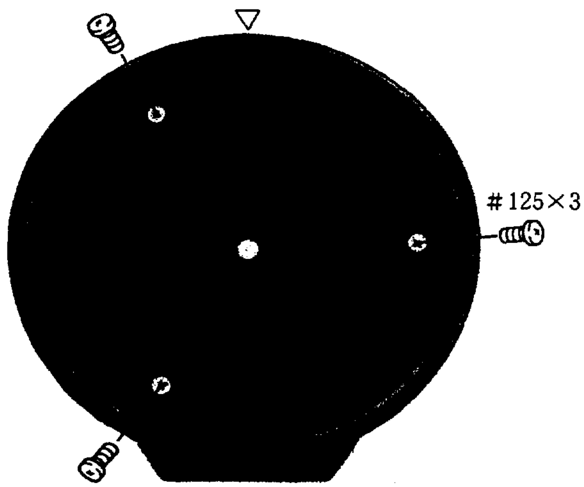
Turn the G4, G5 lens group and washer #129 counter-clockwise to detach it.

G7, G8 LENS HOUSING Z44



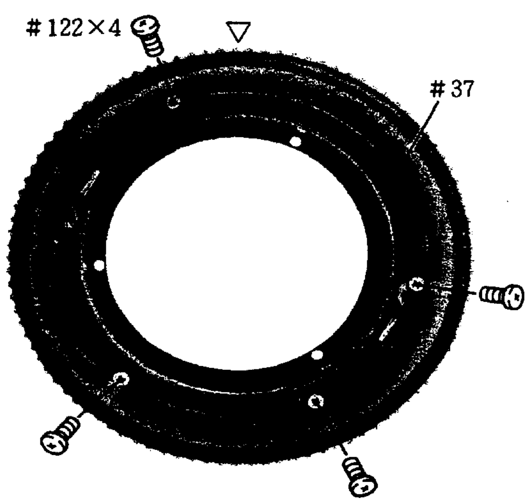
Detach G7, G8 lens housing Z44 using tool (J11203).

HELICOID UNIT B38, NAME RING #37



Helicoid unit B38 and name ring #37 is detached together with screws #125×3.

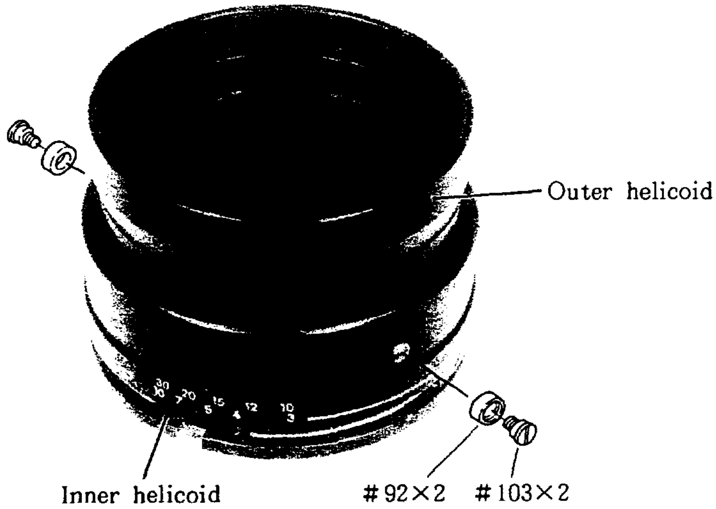
NAME RING #37



Photograph from bayonet side

Remove screws #122×4 to separate helicoid unit B38 and name ring #37.

HELICOID UNIT B38 (OUTER HELICOID)

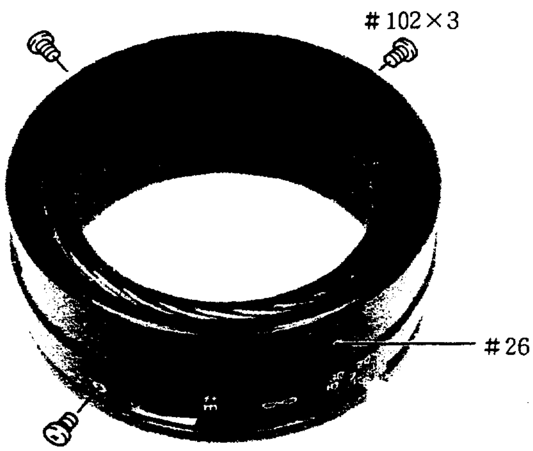


① Remove rubber ring #84 and rotate inner helicoid until guide rings #92×2 appear.

② Remove guide rings #92×2 and screws #103×2 to detach outer helicoid.

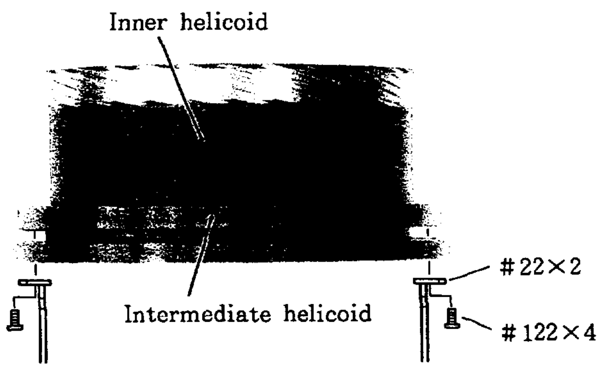
Attention: Leave the mark on outer helicoid when removing it.

FOCUSING RING #26



Detach focusing ring #26 by screws #102×3.

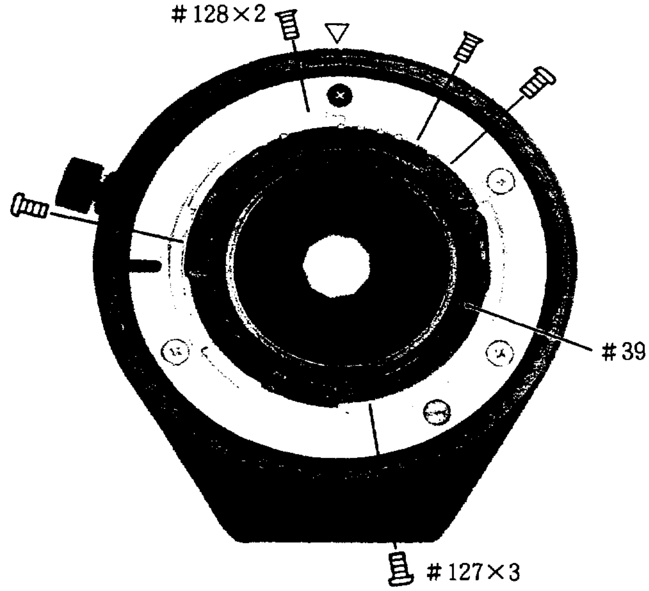
HELICOID UNIT B38 (INNER, INTERMEDIATE HELICOID)



Remove keys #22×2 and screws #122×4 to separate inner helicoid.

* One thread of screw is cut in both inner and intermediate helicoids.

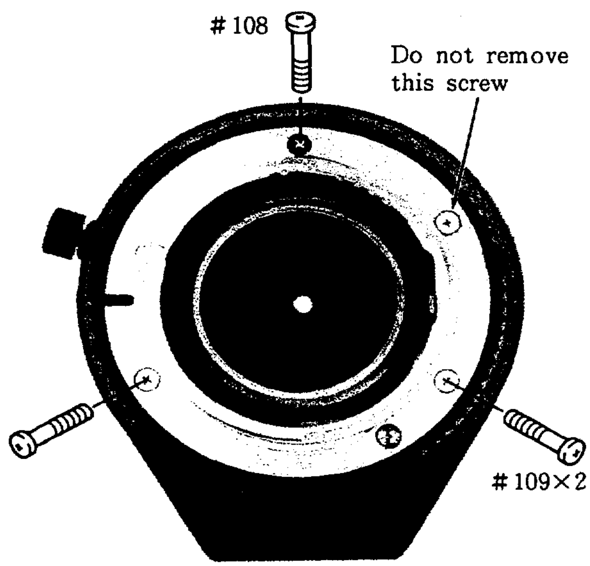
REAR COVER RING #39



Remove screws #128×2 and #127×2 first, then detach rear cover ring #39 without giving damage to FPC.

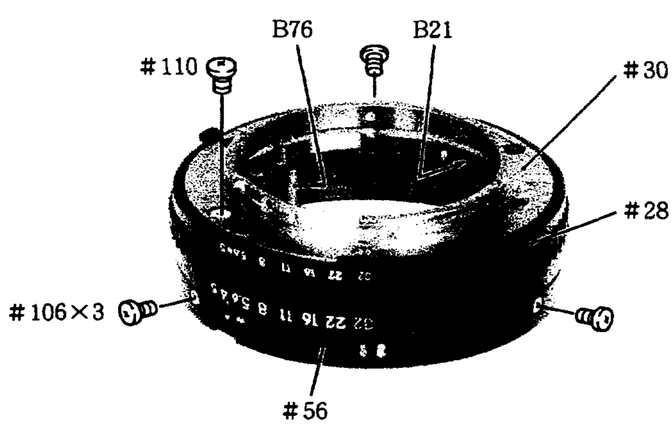
*Screws used here (#127 and #128) are all tap-tight ones.

BAYONET MOUNT, APERTURE RING GROUP

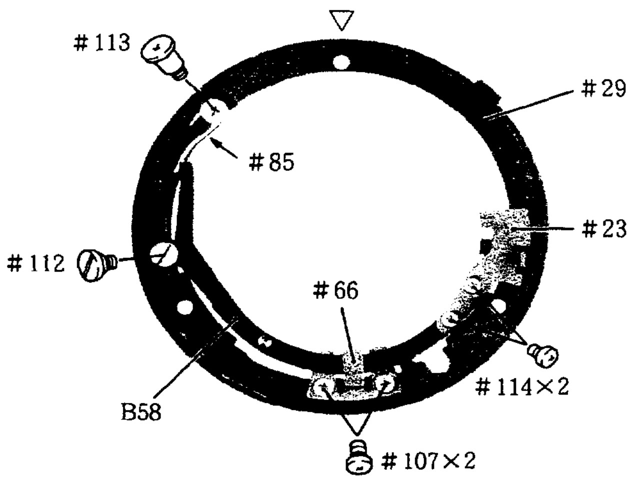


Remove screws #108 and #109×2 first, then detach bayonet and aperture ring group while putting FPC aside.

BAYONET MOUNT #30, APERTURE RING #28, EE LOCK RING #56 COUPLING GEAR UNIT B76, CAM UNIT B21



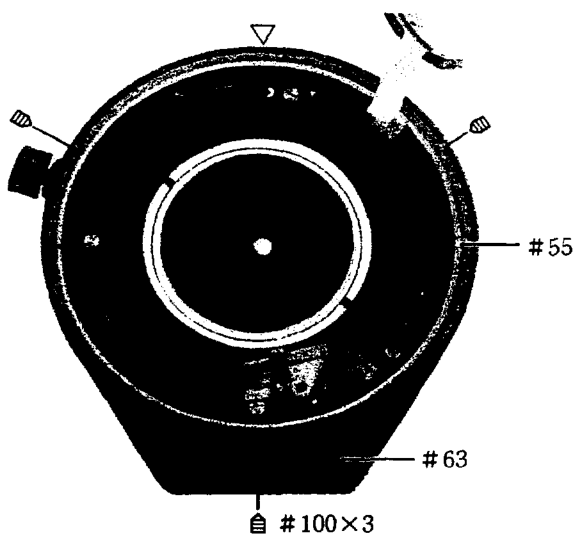
APERTURE LEVER GROUP



Remove screws #113, #112 and #107×2 to detach spring #85, aperture lever unit B58, and #66, respectively.

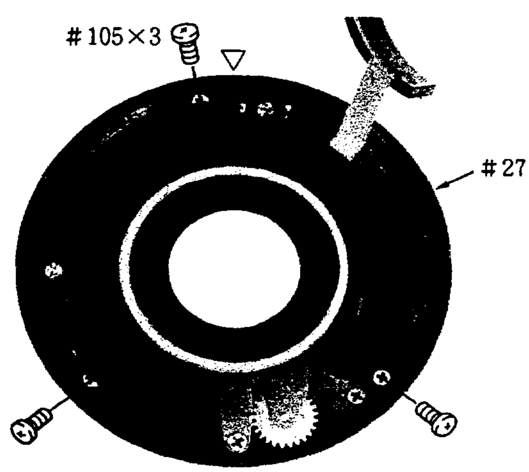
Attention: Do not remove this screws #114×2 (3.1 adjustment screws).

INDEX RING #55, TRIPOD ATTACHING MOUNT #63



Unfasten set screws #100×3, not taking away, and remove index ring #55 to detach tripod attaching mount #63.

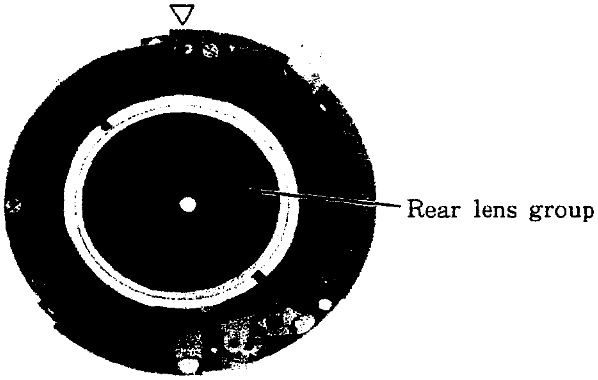
ZOOM INDEX RING #57, INNER GEAR TUBE #57



Remove screws #105×3 and lift zoom index ring 27 slowly, then inner gear tube #57 comes off together.

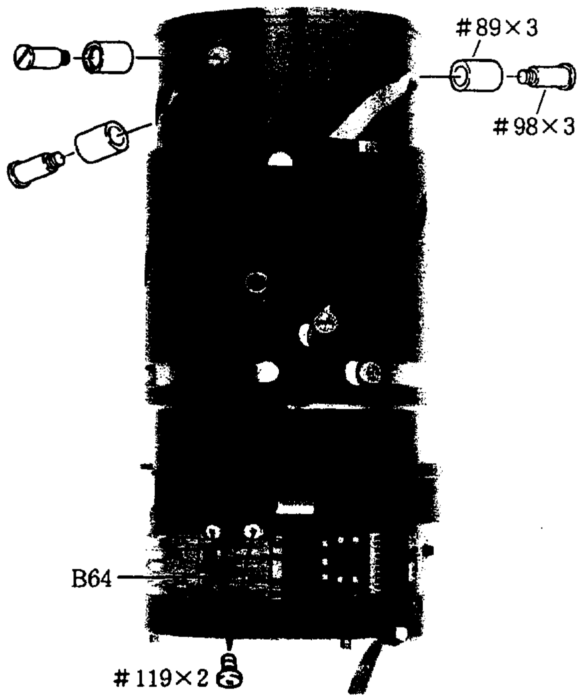
Note: Take care that there are steel balls #69×6 between zoom index ring #27 and inner gear tube #57 when attaching them.

REAR LENS GROUP (G9～G13)



Detach rear lens group and washer #130 using tool (J11203).

G4～G6 LENS GROUP ATTACHMENT RING (#53), ENCODETR BRUSH UNIT B64

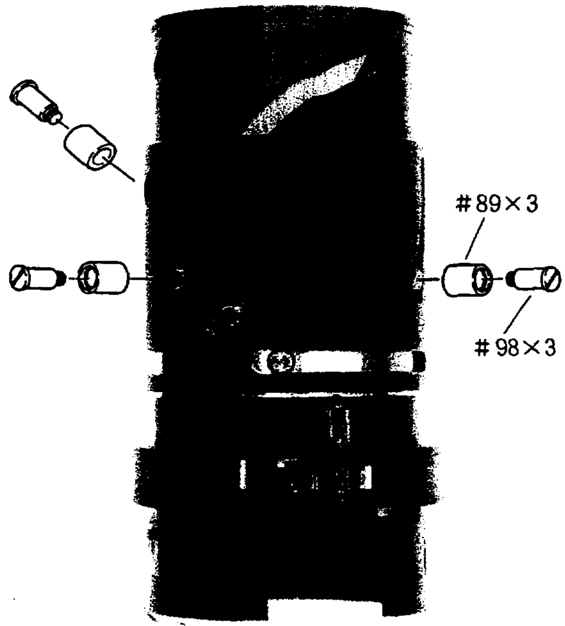


Remove screws #98×3 and guide rings #89×3, then lift G4～G6 lens group attachment ring to detach them.

Attention: The external dimensions of all three guide rings #89 may be different. Leave marks on each ring to identify it when detaching. If a wrong guid ring is attached on the different screw hole as it was, the zoom operation may become rough.

Detach encoder brush unit B64 by screws #119×2.

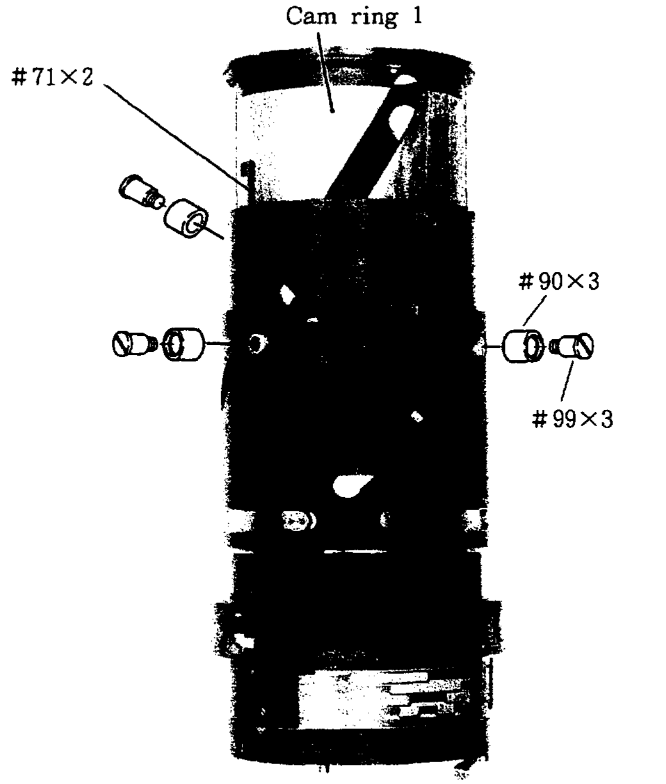
Z44 ATTACHMENT RING (#54)



Remove screws #98×3 and guide rings #89×3, then lift Z44 attachment ring #54 to detach them.

Attention: The external dimensions of all three guide rings #89 may be different. Leave marks on each ring to identify it when detaching. If a wrong guid ring is attached on the different screw hole as it was, the zoom operation may become rough.

CAM RING 1

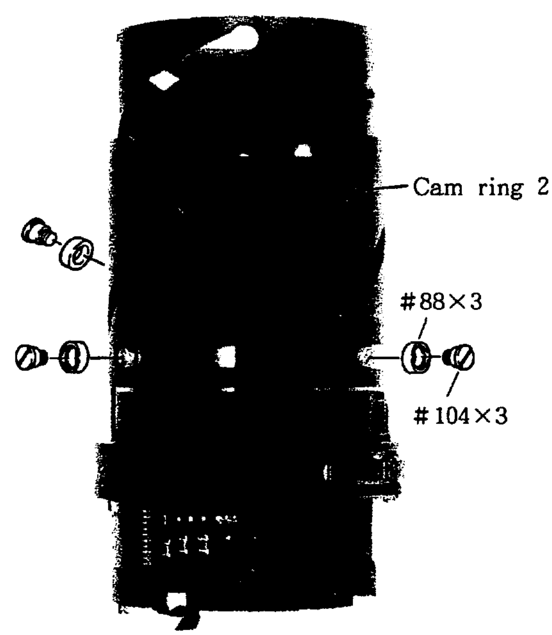


Remove screws #99×3 and guide rings #90×3, then lift cam ring 1 to detach them.

Attention: The external dimensions of all three guide rings #90 may be different. Leave marks on each ring to identify it when detaching. If a wrong guid ring is attached on the different screw hole as it was, the zoom operation may become rough.

Detach leaf spring #71×2.

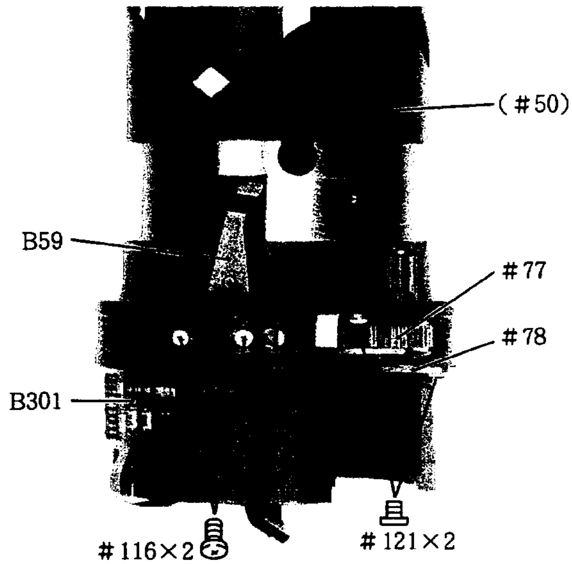
CAM RING 2



Remove screws #104×3 and guide rings #88×3, then lift cam ring 2 to detach them.

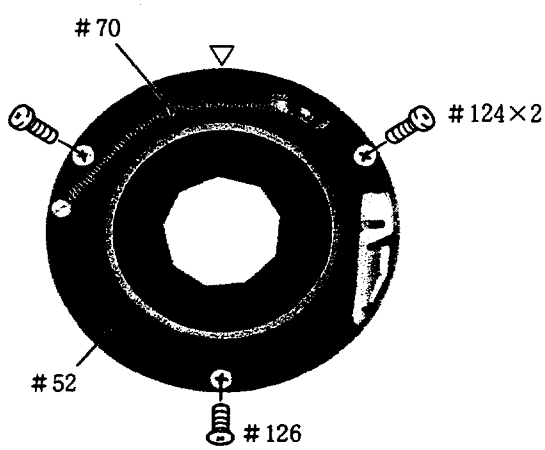
Attention: The external dimensions of all three guide rings #88 may be different. Leave marks on each ring to identify it when detaching. If a wrong guid ring is attached on the different screw hole as it was, the zoom operation may become rough.

APERTURE LEVER UNIT B59, GEAR #77, BEARING PLATE #78, AF CONTACT UNIT B301

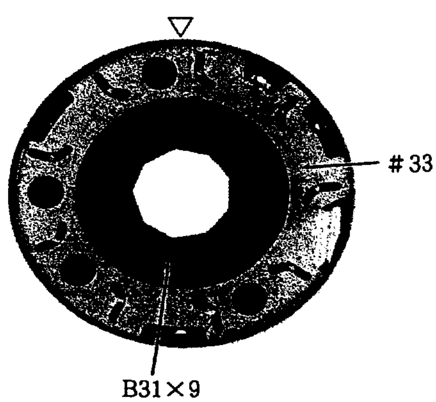


- Remove screws #121×2 to detach gear #77 and bearing plate #78.
- Remove screws #116×2 to detach aperture lever unit B59. Usually do not detach aperture lever unit because the position of 3.1 lever #23 varies.
- If you are required to detach AF contact unit B301, care should be taken not to give damage to FPC since double sided adhesive tape is attached.

DIAPHRAGM BLADE UNIT



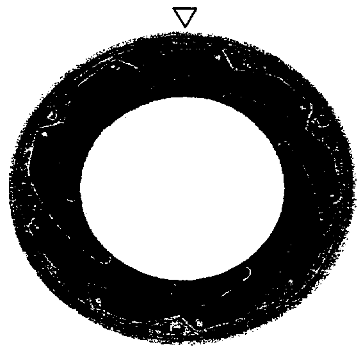
- Detach spring #70.
- Remove screws #124×2, #126 and lift tube #52 to detach.



Lift blade actuating ring #33 slowly and detach diaphragm blade unit B31.

[3] ASSEMBLING/ADJUSTMENT

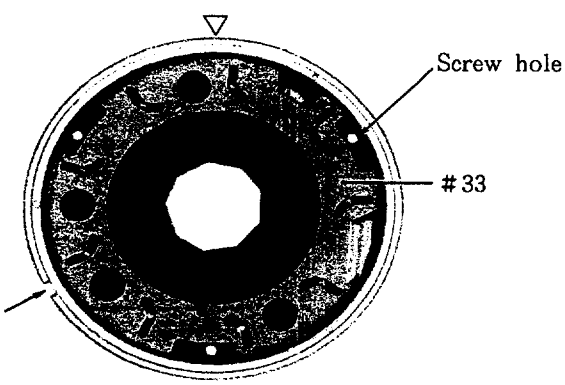
DIAPHRAGM BLADE UNIT B31



Mounting direction of diaphragm blade unit B31×9 is shown in the photo.

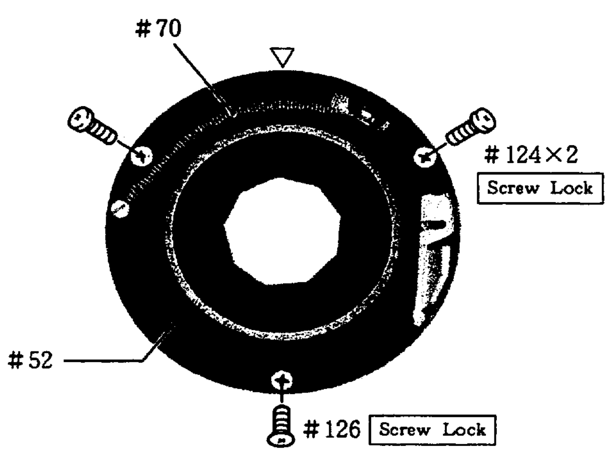
Note: Do not touch your finger or contaminate on diaphragm blades when mounting.

BLADE ACTUATING RING #33



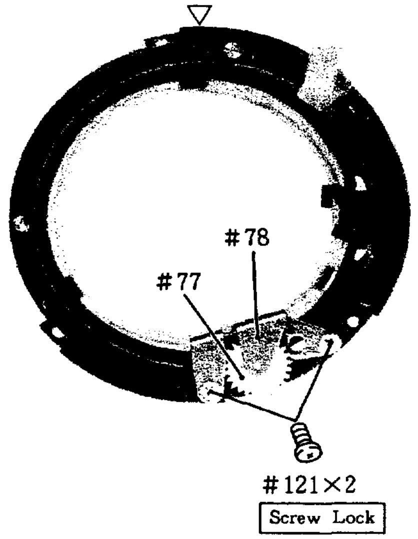
Mount blade actuating ring #33 at the position as shown in the photo.

TUBE #52

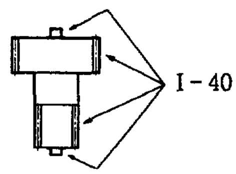


Mount tube #52 at the position where the gap of projection of tube #33 and the screw hole as shown in the above photo comes into coincidence. When fastening tube #52, fasten screw #126 first, then fasten screws #124×2.
After hooking spring #70, check operation of diaphragm blade. If it not operate correctly, mount tube again and check operation once more.

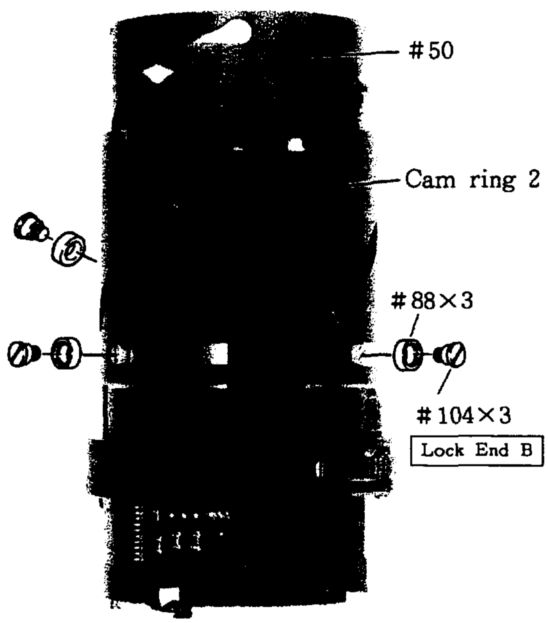
GEAR #77, BEARING PLATE #78



Gear #77 portions to which oil should be applied.



CAM RING 2



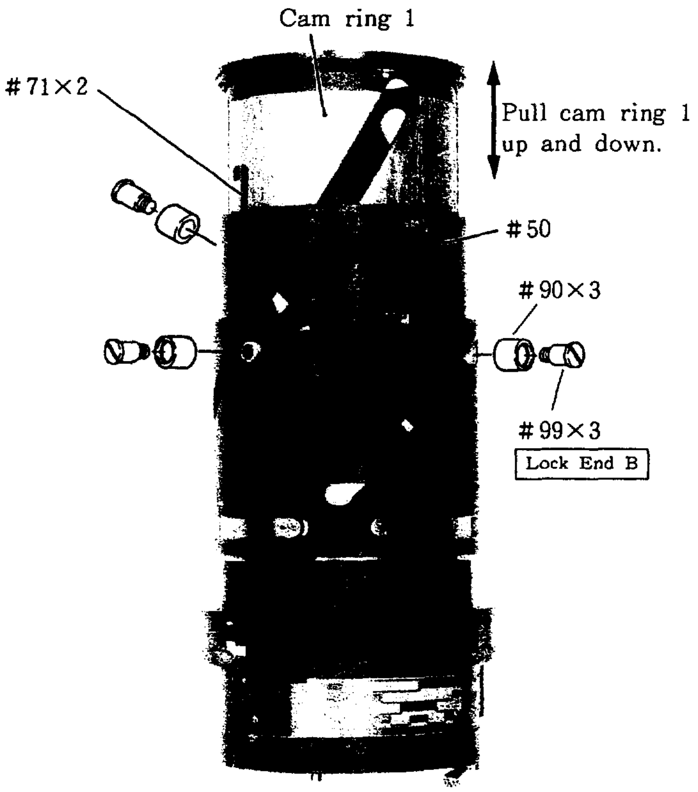
Mount cam ring 2 using screws #104×3 and guide rings #88×3. Screws and guide rings should be inserted in the same positions as they were.

Attention: Mount screws and guide rings at both ends of the groove (or end of Wide or end of Tele posision). Otherwise, zoom operation becomes rough.

Portions to which GE-8 oil should be applied.

① 9 portions on cam groove of #50.
② 9 portions on cam groove of cam ring 2.
③ Slide surface of #50 and cam ring 2.

CAM RING 1



Insert leaf springs #71×2, align aperture lever unit B59 with blade actuating ring #33, then mount cam ring 1. Mount cam ring 1 using screws #99×3 and guide rings #90×3. Be sure to insert screws and guide rings in the same holes as they were originally inserted.

Attention: Mount screws and guide rings at both end of cam groove (Wide or Tele side).

Inspection:

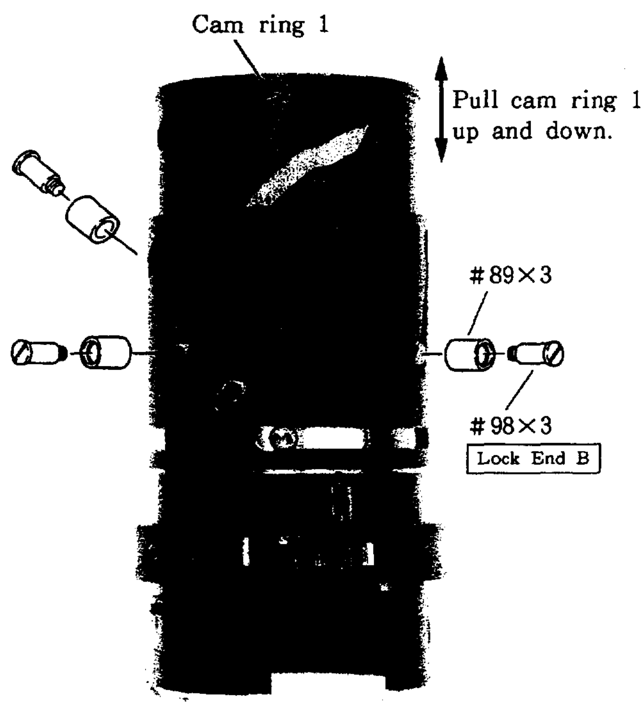
① Check aperture operation by moving aperture lever.

② Check to see if cam ring 1 moves smoothly by pulling it up and down.

Portions to which GE-8 oil should be applied.

① Slide surface of cam ring 1 and #50.

Z44 ATTCHMENT RING (#54)



Mount Z44 attachment ring using screws #98×3 and guide rings #89×3.

Attention: Mount screws and guide rings at both end of cam groove (Wide or Tele side).

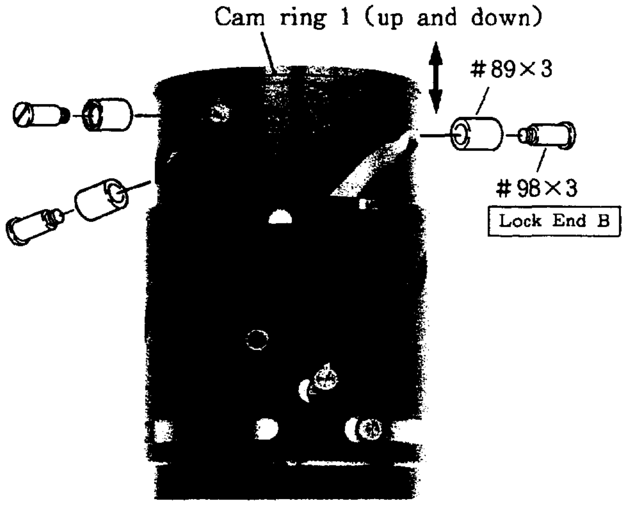
Inspection: Check to see if cam ring 1 moves smoothly by pulling it up and down.

Portions to which GE-8 oil should be applied.

① 3 portions of the groove on Z44 attachment ring.

② Slide surface of Z44 attachment ring and cam ring 1.

G4~G6 LENS GROUP ATTACHMENT RING (#53)

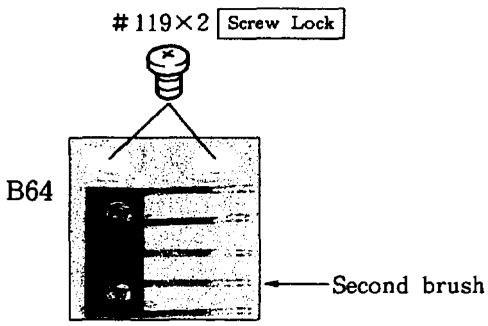


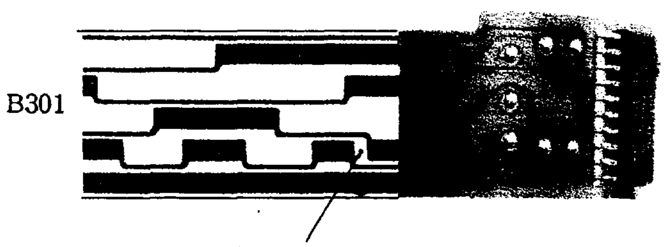
Mount G4~G6 lens group attachment ring using screws #98×3 and guide rings #89×3. Be sure to insert screws and guide rings in the same holes as they were originally inserted otherwise zoom operation becomes rough.

Attention: Mount screws and guide rings at both end of cam groove (Wide or Tele side) (as shown in the photograph).

Inspection: Check to see if cam ring 1 moves smoothly by pulling it up and down.

ADJUSTMENT OF ENCODER BRUSH POSITION



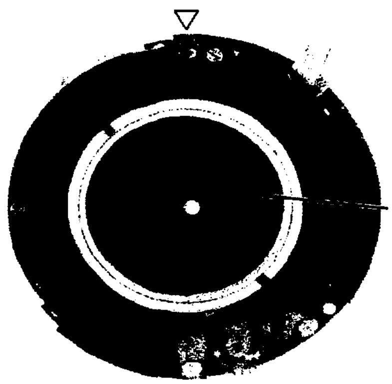


The second brush of the B64 must come to the position where no patterns (as shown here) are present at the Wide sttoper.

① Clean circuit patterns of B301 and encoder brush using solution such as alcohol.
② Move cam ring 2 up to the stopper on Wide side.
③ Temporary fix the encoder brush unit B64 on the cam ring 2 using screws #119×2 so that the second brush come to the position as shown in the photo.
④ The second brush should come to the same position as the first one when moving the encoder brush unit in the directions of Wide and Tele several times. (The position where no circuit patterns are existed.)
⑤ Fasten screws #119×2 fully and on the Screw Lock.

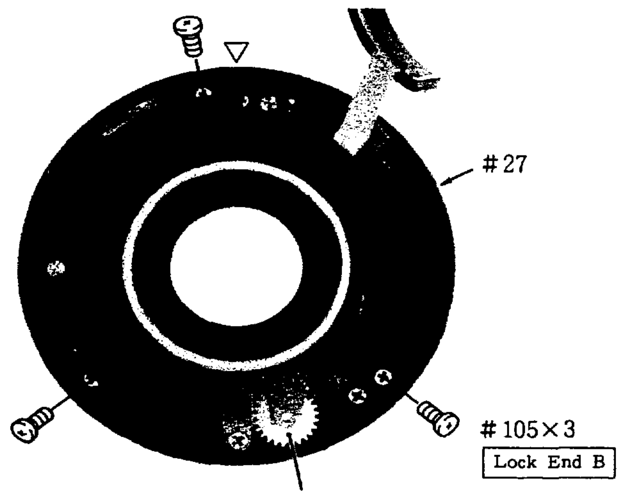
Attention: Be sure to mount encoder brush unit B64 after all guide rings have been finished mounting. (Otherwise the brush does not come to the correct position.)

REAR LENS GROUP (G9～G13)



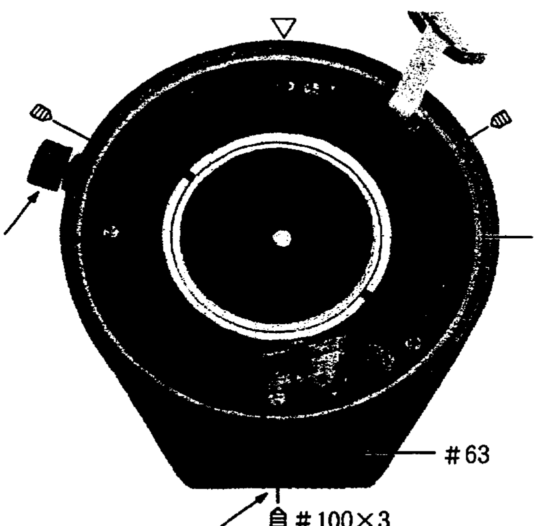
Attach rear lens group with washer #130 using tool (J11203).

ZOOM INDEX RING #27, INNER GEAR TUBE #57



Rotate inner gear tube #57 so that the gear comes to the grinding undercut position of zoom index ring #27. Keeping up above state, attach the zoom index ring #27 so that the grinding undercut to the gear #77 and fasten screws #105×3.

TRIPOD ATTACHING MOUNT #63, INDEX RING #55



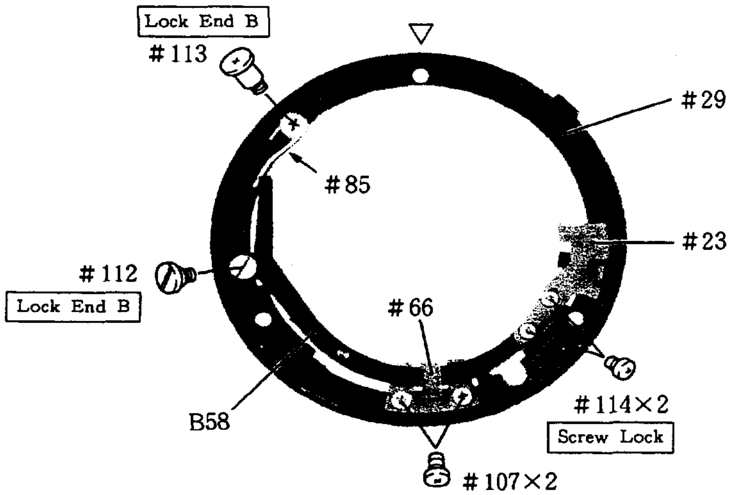
- Attach tripod attaching mount #63 in the direction as shown in the photo. (Clamp knob should come to the upper left when shifting tripod screw down)

  Portions to which G7855 oil should be applied.

  ① Slide sureface of zoom index ring #27 and tripod attaching mount #63.

- Mount index ring #55. Align indicator of zoom index ring #27 with that of tripod attaching mount #63. Then align the indicator of tripod attaching mount #63 with that of index ring #55, and fix the index ring with screws #100×3.

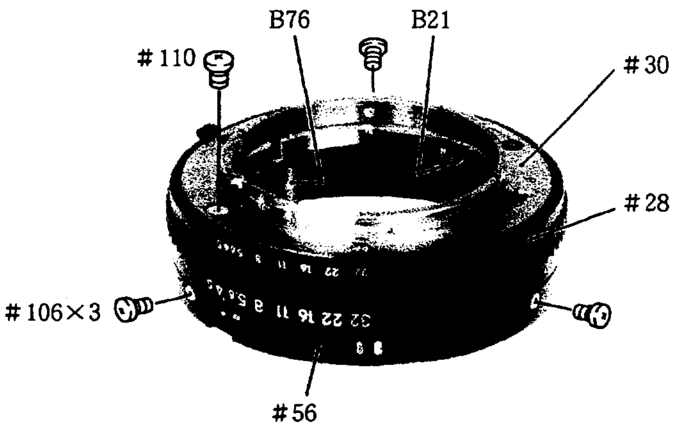
APERTURE LEVER GROUP



Portions to which I-40 oil should be applied.

① Slide surface of B58 and #66.
② Slide surface of B58 and #85.
③ Slide surface of B58 and #112.
④ Slide surface of B58 and aperture lever B59.
⑤ Slide surface of #23 and #29.

BAYONET MOUNT #30, APERTURE RING #28, EE LOCK RING #56, COUPLING GEAR UNIT #B76, CAM UNIT B21



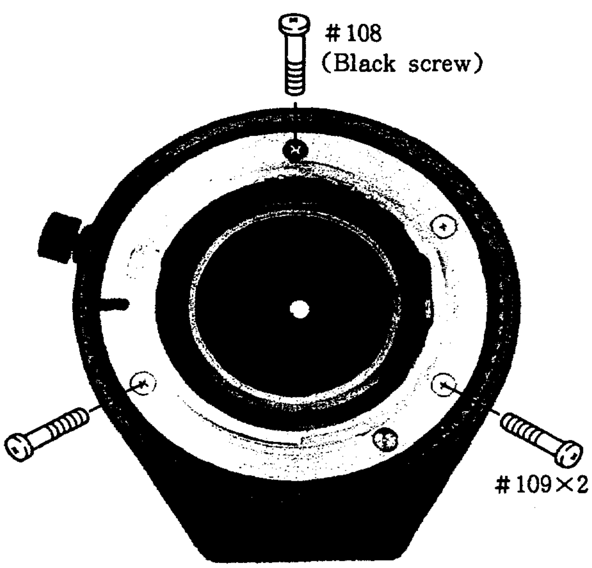
Portions to which I-40 oil should be applied.

① Portion where B76 slides with other parts.
② Slide surface of B21 and #29.
③ Slide surface of B21 and B58.
④ Slide surface of B21 and #30.

Portions to which G8800 oil should be applied.

① Click groove of aperture ring #28.

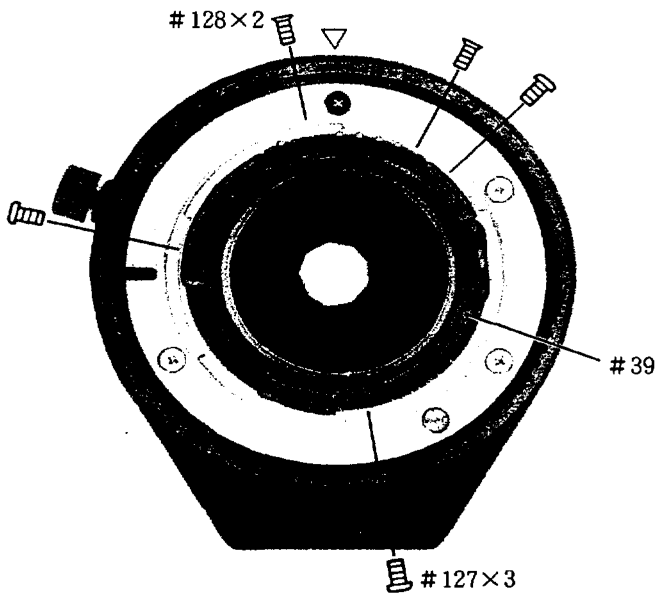
BAYONET MOUNT, APERTURE LEVER GROUP



Attach bayonet mount and aperture ring group using screws #109×2 and #108 with washer #86 while moving FPC aside not to be pinched.

Note: Install screw #108 (black screw) mark on index down. (Refer to photo)

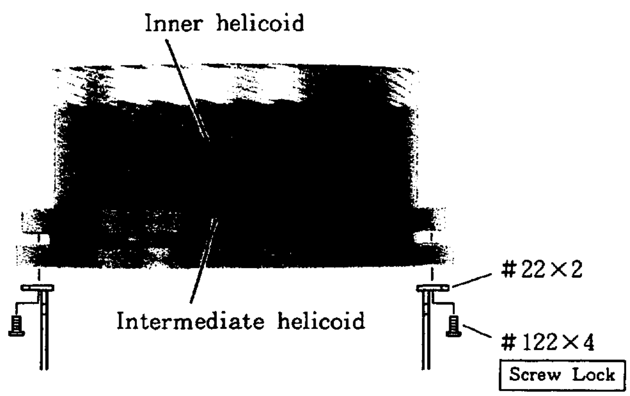
REAR COVER RING #39



Attach rear cover ring #39 using screws #127×3 while moving FPC aside not to be pinched. Attach AF contact of B301 using screws #128×2.

* Screws used here (#127 and #128) are all tap-tight ones.

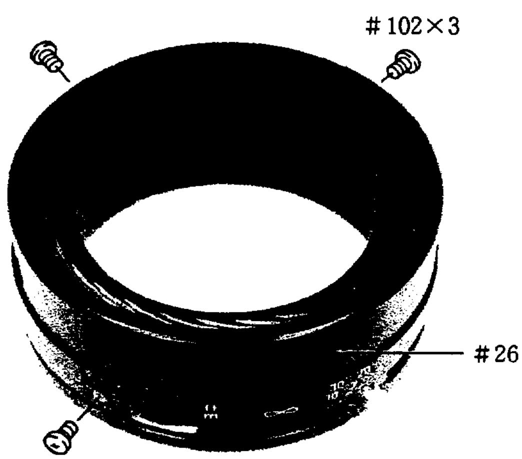
HELICOID UNIT B38 (INNER AND INTERMEDIATE HELICOID)



Screw in intermediate helicoid until it stops, and rotate reversely by 2-2/3 turns (left-handed screw).
At this position, attach keys #22×2 using screws #122×4.

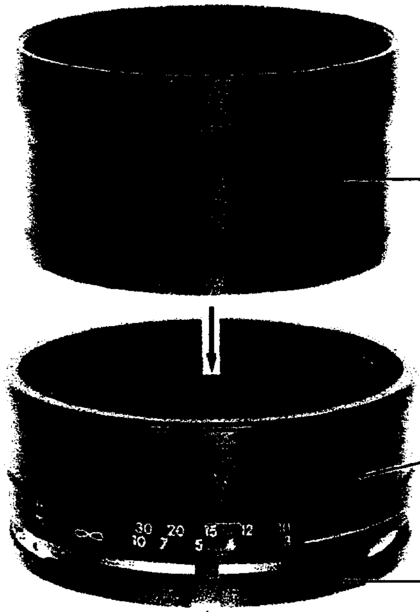
* Apply FC-4 oil to helicoid screw.

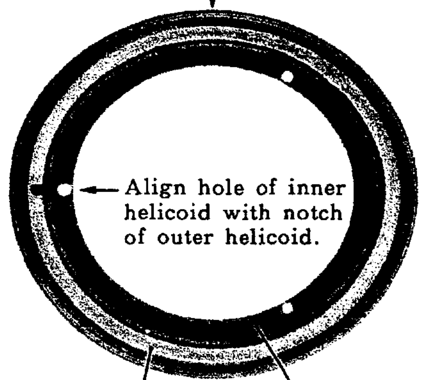
FOCUSING RING #26

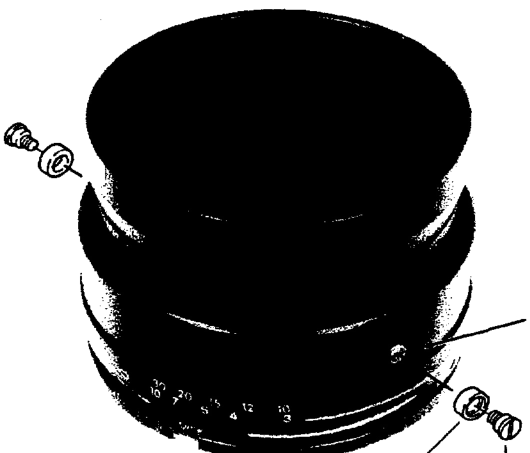


* Apply G8800 oil to two portions of the groove on focusing ring #26 along which guide rings #92×2 moves.

HELICOID UNIT B38 (OUTER HELICOID)







Mounting procedures of outer helicoid

① Align projection of focusing ring #26 with notch of inner helicoid, and fix outer helicoid at this position.

② Mount outer helicoid at the position where hole of inner helicoid aligns with notch of outer helicoid, as shown in the above photo.

③ Rotate outer helicoid screw hole until it can be observed from guide ring attaching window of focusing ring #26. At this moment, the screw holes should be in the center of window in both horizontal and vertical directions. If it is not in the center, repeat the same procedures once again.

④ Attach guide rings #92×2 and screws #103×2.

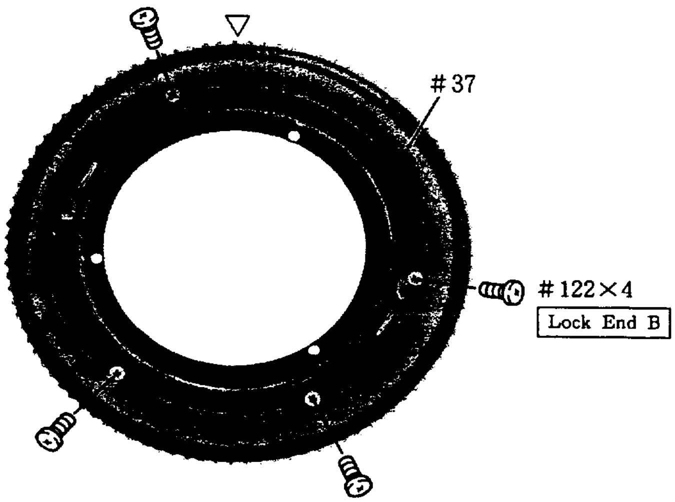
⑤ Attach rubber ring #84 to focusing ring #26.

Portions to which oil should be applied.

① Apply FC-4 oil to helicoid screw.

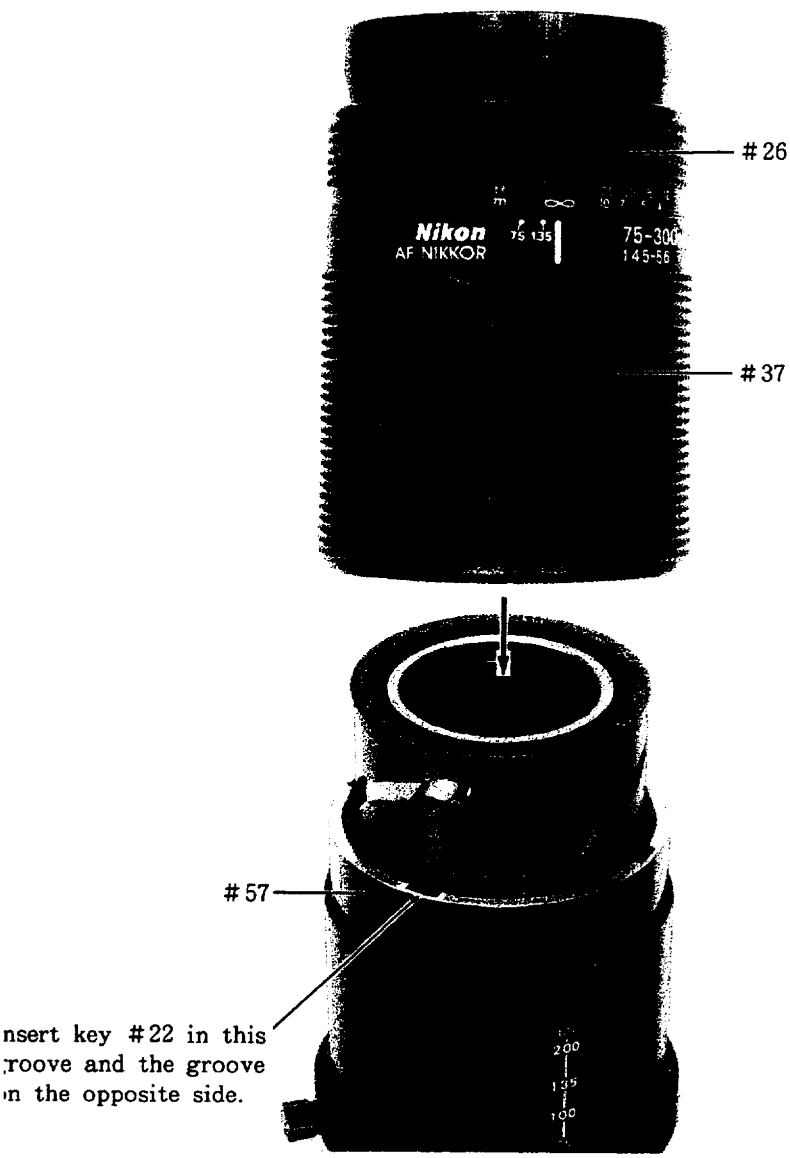
② Apply G8800 oil to the side of straight moving key #22.

NAME RING #37



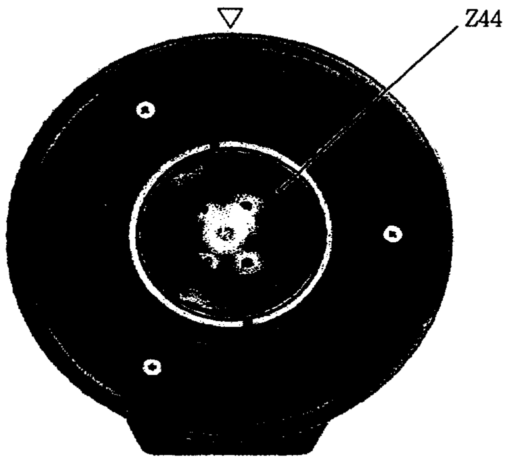
Photograph from byonet side

HELICOID UNIT B38 AND NAME RING GROUP



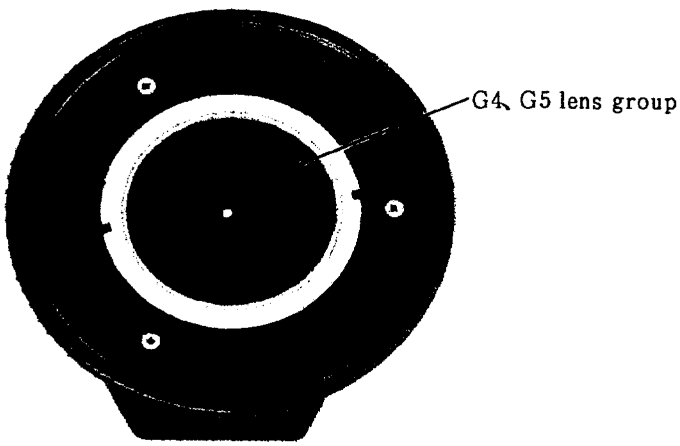
① Rotate "∞" mark on focusing ring #26 up to the indicator. (Refer to the photo.)
② Rotate inner gear tube #57 counter-clockwise until it stops (at the position as shown in the photo.)
③ Keeping up the above stage, mount keys #22×2 in the groove as indicated in the photo.
④ Rotate #37 clockwise slightly to place screws and fix it using screws #125×3. Use adhesive (Lock End B) for screws #125×3.
⑤ After being assembled, check to see if there is rough movement or generation of strange sound when rotating focusing ring or performing zooming operation.

G7, G8 LENS HOUSING Z44



Attach G7, G8 lens housing Z44 using tool (J11203).

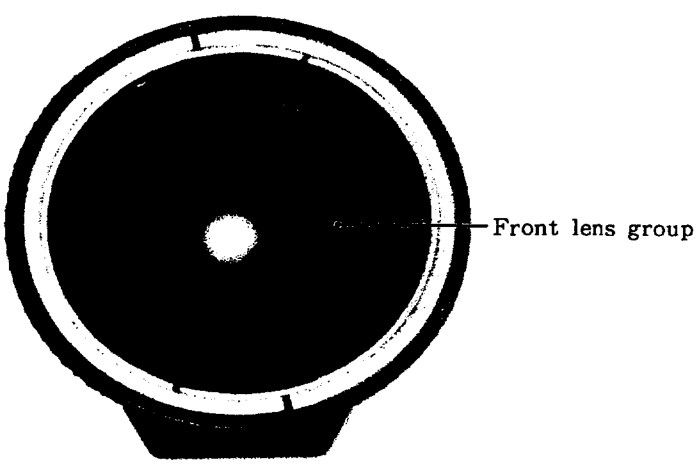
G4, G5 LENS GROUP (L2、#42、G6、#43)



Attach G4, G5 lens group and washer #129 on Tele side.

Note: There may be a malfunction if they are attached on the Wide side because washer protrudes toward outside.

FRONT LENS GROUP (Z40、G1、#40)



Attach washer #87 and front lens group. Take care not to pinch washer because it is very thin.

ADJUSTMENT OF SHIFT FOCUS (TELE AND WIDE)

1. Align "∞" mark of focusing ring with indicator and fix it with adhesive tape. Aperture is at full.
2. Readout values at both Wide and Tele sides.
3. Calculate following equations:

$$\frac{A - B}{4.58} = C$$

Where: A = Value of Tele side (mm)
B = Value of Wide side (mm)
C = Amount (mm) of adjustment of front lens group washer #87

4. Adjust the thickness of washer #87 by the value C calculated from the above equation. If the value C is positive, thicken the washer by the value, and if negative, thin the washer.
5. The difference between Wide and Tele side should be within the range of 0.2mm.

Note: Insert thin washer between thick washers when mounting washer #87.

ADJUSTMENT OF SHIFT FOCUS (INTERMEDIATE)

Make following adjustment if there is shift of focus in the middle when making Zoom operation between Tele and Wide. (Focus more than 0.2mm.)

1. Adjust the thickness of G4, G5 lens group washer #129 by the amount of shift of focus. If the value is positive, thicken the washer, and if negative, thin the washer.
2. Adjustment of shift of focus is necessary if the thickness of washer #129 has been changed, for focus on both Tele and Wide shift. (Particularly shift of focus on Wide side is greater.)

ADJUSTMENT OF BACK FOCUS

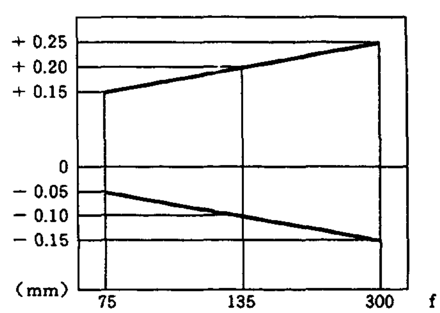
1. Align "∞" mark of focusing ring with indicator and fix it with adhesive tape. Aperture is at full.
2. Readout values at either Wide or Tele side.
3. Calculate following equation:

$$\frac{D - E}{2.735} = F$$

Where: D = Reference value of M. B. f (mm)
E = Measured value (mm)
F = Amount (mm) of adjustment of washer #86

4. Adjust the thickness of washer #86 by the value F calculated from the above equation. If the value F is positive, thicken the washer by the value, and if negative, thin the washer.
5. Check to see if the value is within the range of standard.

f	Standard (mm)
75	− 0.05 ∼ + 0.15
135	− 0.10 ∼ + 0.20
300	− 0.15 ∼ + 0.25



ADJUSTMENT OF MOVEMENT INFINTY

Replace guide rings #89 used in Z44 attachment ring (refer to page 30) the one with a larger diameter if shift of focus is more than 0.2mm when zoom ring is pulled further in the direction of Tele side after haveing moved toward Tele side.

QUICK REFERENCE OF WASHER ADJUSTMENT

Unit: mm

Adjustment of shift focus (Tele and Wide)	
Difference between Wide and Tele	Amount of adjustment of washer #87
0.046	0.01
0.092	0.02
0.14	0.03
0.18	0.04
0.23	0.05
0.27	0.06
0.32	0.07
0.36	0.08
0.41	0.09
0.46	0.10
0.50	0.11
0.55	0.12
0.59	0.13
0.64	0.14
0.69	0.15
0.73	0.16
0.78	0.17
0.82	0.18
0.87	0.19
0.92	0.20
0.96	0.21
1.00	0.22
1.05	0.23
1.10	0.24
1.14	0.25

Unit: mm

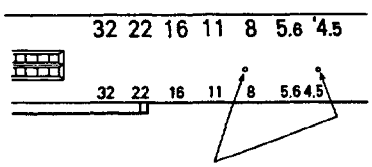
Ajustment of back focus	
Measured difference of M. B. f	Amount of adjustment of washer #86
0.03	0.01
0.05	0.02
0.08	0.03
0.11	0.04
0.14	0.05
0.16	0.06
0.19	0.07
0.22	0.08
0.25	0.09
0.27	0.10
0.30	0.11
0.33	0.12
0.35	0.13
0.38	0.14
0.41	0.15
0.43	0.16
0.46	0.17
0.49	0.18
0.52	0.19
0.55	0.20
0.57	0.21
0.60	0.22
0.63	0.23
0.66	0.24
0.68	0.25

TABLE OF ADJUSTMENT

Unit: mm

Contents of adjustment		Portions adjusted	Reference thickness (thickness of ordinary use.)	Standard
Adjustment of shift focus	Tele and Wide	Front lens group, washer #87	0.5 ~ 0.6	Less than 0.2
	Intermediate	G4, G5 lens group, washer #129	1.5 ± 0.1	– 0.1 ~ + 0.2
Adjustment of back focus		Washer #86	0.5	75: –0.05~+0.15 135: –0.10~+0.20 300: –0.15~+0.25
		Washer #130 (Do not adjust in ordinary use.)	1.5 ± 0.1	
Adjustment of movement infinity		Adjust guide rings #89 in use using Z44 attachment ring.	– – – –	Less than 0.2

ATTACHING METER COUPLING SHOE



Make holes on these two concave portions.

(1) Take out aperture ring #28.

(2) Make to holes ϕ1.1 on the concave portion of aperture ring. (Refer to the figure.)

(3) Attach meter coupling shoe.

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

(4) Reassenbling aperture ring #28 and bayonet mount group in the reverse order.

Note: The meter coupling shoe is to be mounted with a 1.5° difference from the normal position due to the internal mechanism of the lens.
Accordingly, the following problems may arise:

① The aperture scale is shifted in a non AI viewfinder.

② Underexposure by about 1/5EV may occur.

③ The position of the meter coupling shoe is shifted from the f/5.6 mark.

④ The position of the holes in the meter coupling shoe and the numbers on the aperture scale do not correspond.