Mamiya

SERVICE INSTRUCTIONS

MAMIYA-SEKOR C LENSES

for

Mamiya M645

Mamiya
CAMERA CO., LTD.
TOKYO, JAPAN

S.I.79-3-M645L

MM645LS1

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Preface (Important information)

P-1 This repair manual should be used in conjunction with the M645 lens parts catalog.

P-2 Lens flange back: $63.00\ ^{+0.05}_{-0.03}$
and its tolerance:

P-3 Auto-collimator:
Auto-collimator with its focal length three times to five times longer than focal length of the lens which you desire to check will be better for accurate examination.

P-4 Scale on the SLS-4 lens flange back stand is graduated in equal space. Zero point as shown in Fig. 1 is the flange back 63.00mm. Each one scale means change of 0.01mm from the 63.00mm.

P-5 Checking lens infinity:

1) First set the SLS-4 lens flange back stand to zero.
2) Place the master lens on the SLS-4 l.f.b. stand and set the lens to infinity.
3) Carefully examine the lens and read a tone and contrast of the collimator target.
4) Replace the master lens with the lens which you desire to check and set the lens to infinity.
5) Get same or near tone and contrast on referring the master lens by turning the SLS-4 l.f.b. stand.
6) Read difference between the both lenses on the scale.
7) If out of tolerance, adjust the lens infinity.

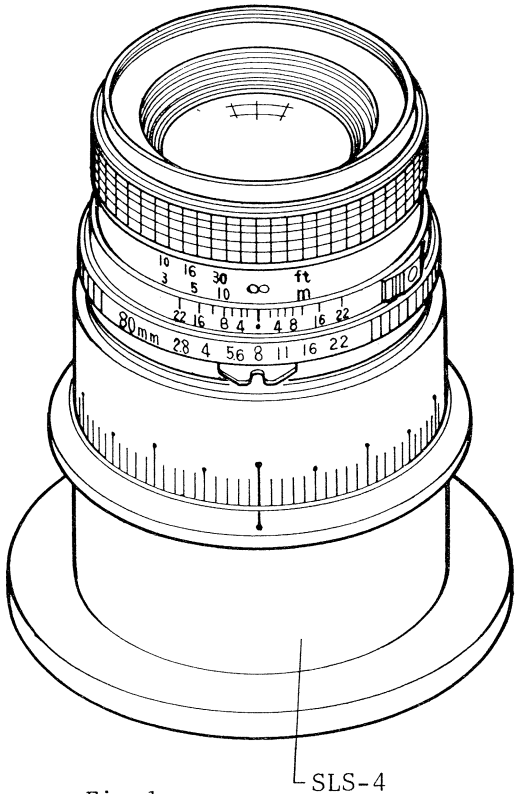
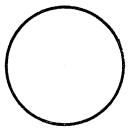
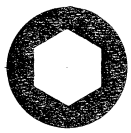
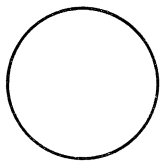
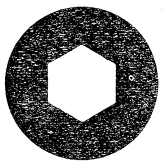
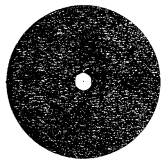
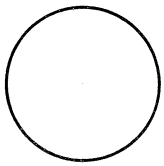
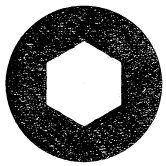
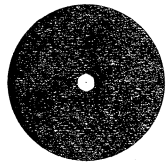
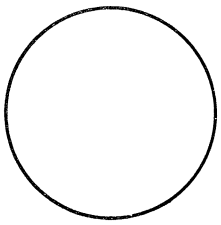
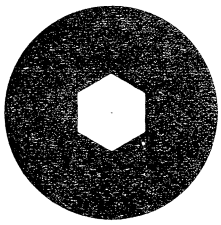
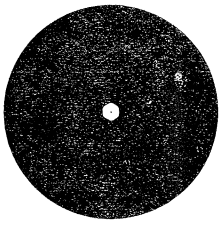
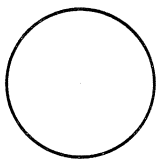
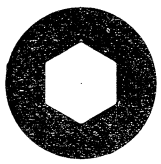
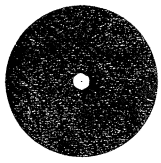


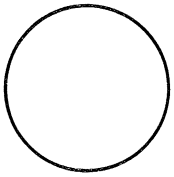
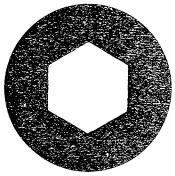
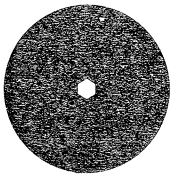
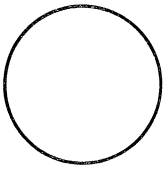
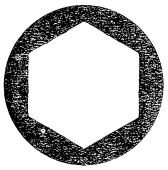
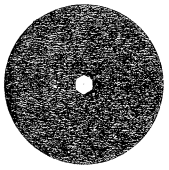
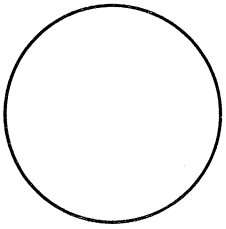
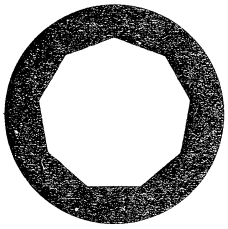
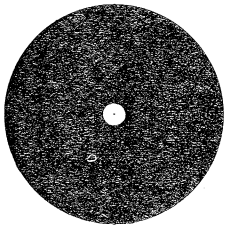
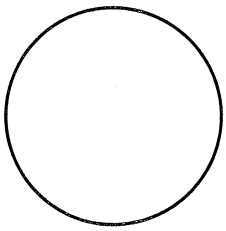
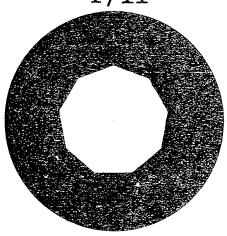
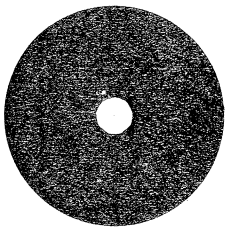
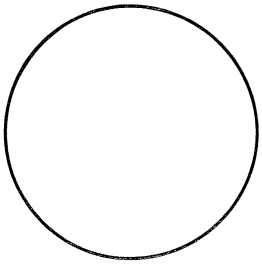
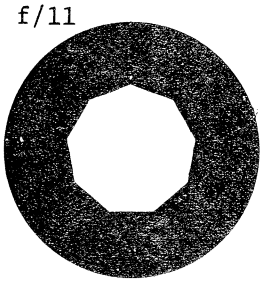
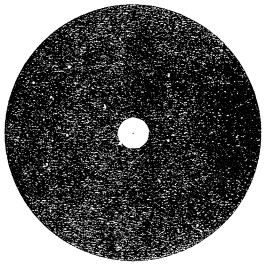
Fig.1

Aperture Size

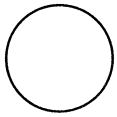
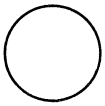
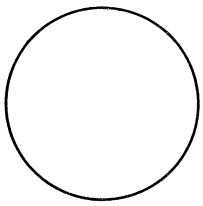
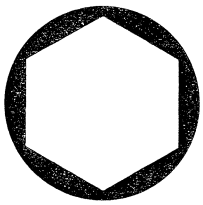
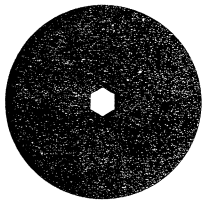
Without lens, Top view

	Maximum Aperture	f/5.6	Minimum Aperture
35mm f/3.5 (LI 151) (LI 152)			
45mm f/2.8 (LI 141) (LI 142)			
55mm f/2.8 (LI 131) (LI 132)			
80mm f/1.9 (LG 311) (LG 341)			
80mm f/2.8 (LF 432) (LF 433)			

Without lens, Top view

	Maximum Aperture	f/5.6	Minimum Aperture
110mm f/2.8 (LE 221) (LE 222)			
150mm f/4 (LE 191) (LE 192)			
210mm f/4 (LE 241) (LE 242)			
300mm f/5.6 (LF 581) (LF 582)		f/11 	
500mm f/5.6 (LF 531)		f/11 	

Without lens, Top view

	Maximum Aperture	f/5.6	Minimum Aperture
80mm f/4 Macro (LF 611)			
24mm f/4 (LJ 51)			
105mm-210mm f/4.5 (LO 11)			

1. C 80mm F2.8 (LF432) lens

1-1 Adjustment of aperture size

1) Remove LF432-4111 name ring, LF432-4121 filter ring and front lens group.

2) Loosen three 3PB1.4x2.8BNi screws as shown in Fig.2.

3) When turning LF432-2141 dividing device:

	Aperture size
Counter clockwise	Larger
Clockwise	Smaller

4) After adjusting, tighten three screws firmly.

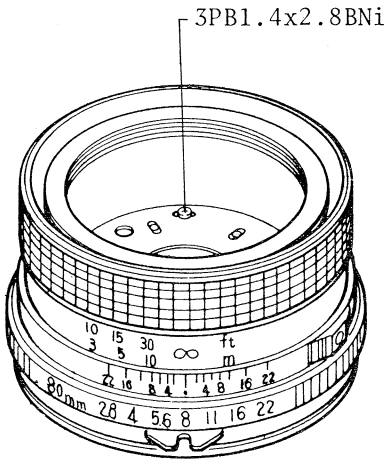


Fig.2

1-2 Adjustment of lens infinity

1) Remove LF432-4111 name ring and LF432-4121 filter ring.

2) After loosen three screws 3PB1.4x4BNi as shown in Fig. 3, set the lens on SLS-4 l.f.b. stand and adjust it by the auto-collimator.

3) Tighten three 3PB1.4x4BNi screws equally and recheck the lens infinity.

Note: When tightening the three screws, check that the helicoid moves smoothly.

4) Apply DB-bond around the screws.

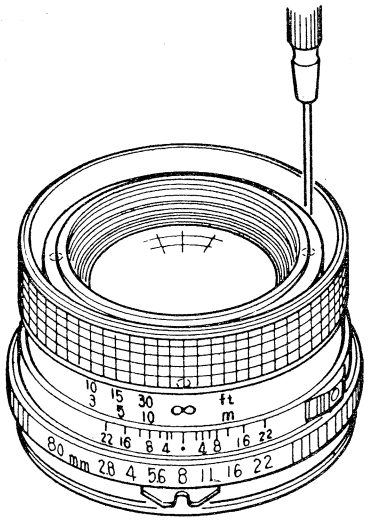


Fig.3

2. C 80mm F1.9 (LG311) lens

2-1 Adjustment of aperture size

1) Remove LG311-4111 name ring, LG311-4121 filter ring and front lens group.

2) Loosen three 3PB1.4x2.5BNi screws as shown in Fig. 4.

3) Adjustment is made by turning LG311-2141 dividing device.

	Aperture size
Counter clockwise	Larger
Clockwise	Smaller

4) Tighten the three screws firmly.

Note: Do not apply DB-bond or any other adhesive around them.

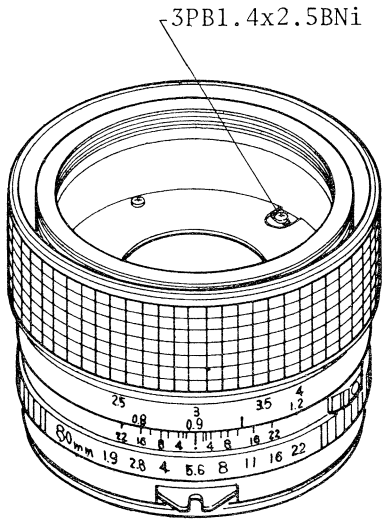


Fig.4

2-2 Adjustment of lens infinity

1) Remove LG311-4111 name ring, LG311-4121 filter ring and LG311-4141 rubber on the focusing ring.

2) After loosening three focus ring set screws A1.7x3 as shown in Fig. 5, set the lens on SLS-4 1.f.b. stand and adjust it by the auto-collimator.

3) Temporarily tighten the three set screws and recheck the lens infinity.

4) Remove one of the set screws and slightly drill its tapped hole with 1.3ø drill by hand and then tighten it again as well as other two screws.

5) Apply DB-bond on head of the screws.

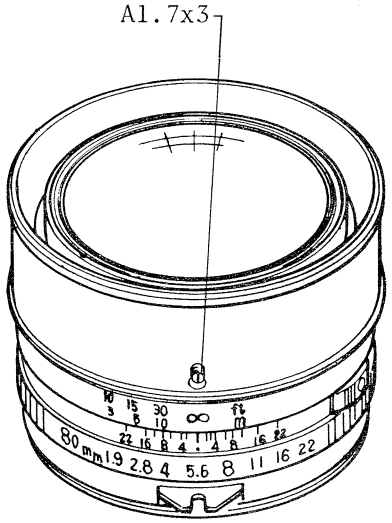


Fig.5

3. C 55mm F2.8 (LI131) lens

3-1 Adjustment of aperture size

1) Remove LI131-4111 name ring and LI131-4141 rubber of the focusing ring.

2) Remove three A1.7x3 set screws from holes of LI131-4131 focusing ring as shown in Fig 5. Then LI131-4121 filter ring can be removed.

3) Remove front lens group.

4) As the adjusting method is quite similar with 80mm F2-8 lens, please refer to its method.

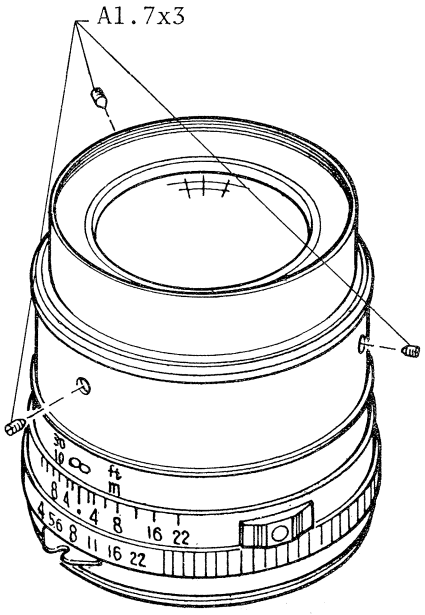


Fig.6

3-2 Adjustment of lens infinity

As the adjusting method is quite similar with 80mm F2.8 lens, please refer to its method.

4. C 110mm F2.8 (LE221) lens

4-1 Adjustment of aperture size

1) Remove LI131-4141 rubber of the focusing ring.

2) Revove three A1.7x3 set screws from holes of LE221-4131 focusing ring like as the 55mm F2.8 lens. Then LE221-4111 filter ring can be removed.

3) Remove front lens group.

4) As the adjusting method is quite similar with 80mm F2.8 lens, please refer to its method.

4-2 Adjustment of lens infinity

As the adjusting method is quite similar with 80mm F2.8 lens, please refer to its method.

5. C 150mm F4 (LE191) lens

5-1 Adjustment of aperture size

1) Remove LE191-4111 name ring and three 3PB1.4x4BNi screws. LE191-4122 filter ring can be removed together with LE191-4142 lens hood.

2) Remove LE191-4131 cover ring by turning it counter clockwise and front lens group too.

3) As the adjusting method is quite similar with 80mm F2.8 lens, please refer to its method.

5-2 Adjustment of lens infinity

As the adjusting method is quite similar with 80mm F2.8 lens, please refer to its method.

6. C 210mm F4 (LE241) lens

6-1 Adjustment of aperture size

1) Remove front lens group by turning it counter clockwise and then LE191-4142 lens hood too.

2) As the adjusting method is quite similar with 80mm F1.9 lens, please refer to its method.

6-2 Adjustment of lens infinity

As the adjusting method is quite similar with 80mm F1.9 lens, please refer to its method.

7. C 300mm F5.6 (LF581) lens

7-1 Adjustment of aperture size

1) Remove front lens group by turning it counter clockwise and then LF581-4141 lens hood too.

2) As the adjusting method is quite similar with 80mm F1.9 lens, please refer to its method.

7-2 Adjustment of lens infinity

As the adjusting method is quite similar with 80mm F1.9 lens, please refer to its method.

8. C 500mm F5.6 (LF531) lens

8-1 Adjustment of aperture size

1) Remove front lens group by turning LF531-119S1 mounting ring counter clockwise as shown in Fig. 7.

   Note: Strike around the mount ring with wooden or plastic hammer slightly for loosening easily.

2) After setting helicoid to infinity, remove LF531-4161 focusing group by taking off three 3PB2x5BNi and PD2x4BNi screws as shown in Fig. 8.

3) As the adjusting method is quite similar with 80mm F1.9 lens, please refer to its method.

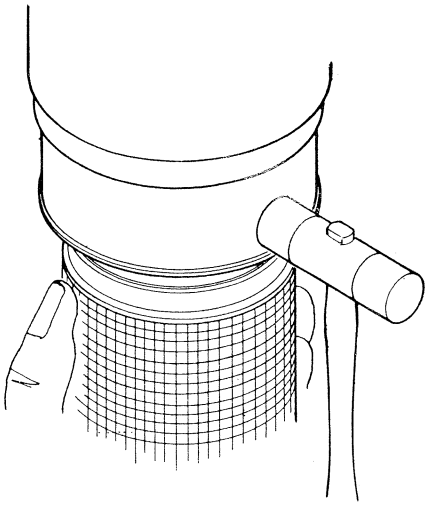


Fig.7

8-2 Adjustment of lens infinity

As the adjusting method is quite similar with 80mm F1.9 lens, please refer to its method.

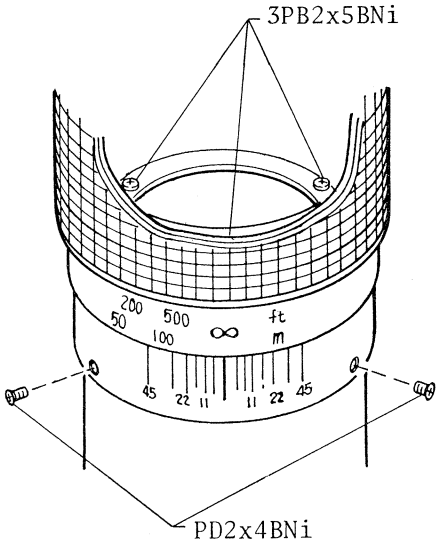


Fig.8

9. C 45mm F2.8 (LI141) lens

9-1 Adjustment of aperture size

1) After removing LI141-4111 name ring, remove LI141-4121 filter ring by taking off three 3PB1.4x3BNi screws.

2) Remove front lens group by turning it counter clockwise.

3) As the adjusting method is quite similar with 80mm F2.8 lens, please refer to its method.

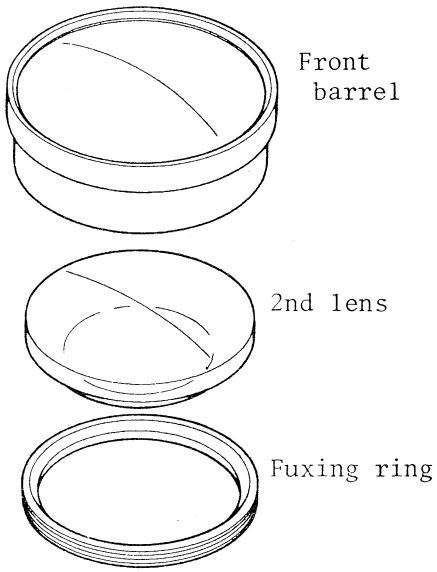


Fig.9

9-2 Adjustment of lens infinity and definition.

A Adjustment of lens infinity

1) Remove NO.2 lens element from front barrel and NO.3 lens element from middle barrel as shown in Fig. 9 and 10 respectively.

Note: Do not scratch on the lens.

2) Screw middle barrel in LI141-1161 inner barrel as shown in Fig. 11.

3) Get the clearance 1mm to 3mm between middle helicoid and outer helicoid by turning the helicoid in direction shown by the arrow as shown in Fig. 12.

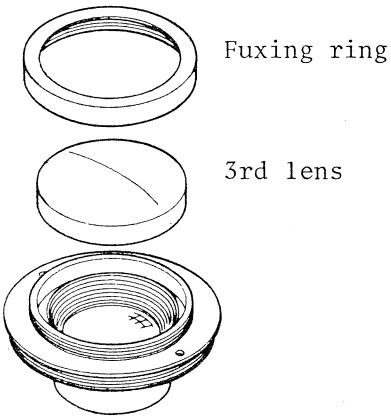


Fig.10

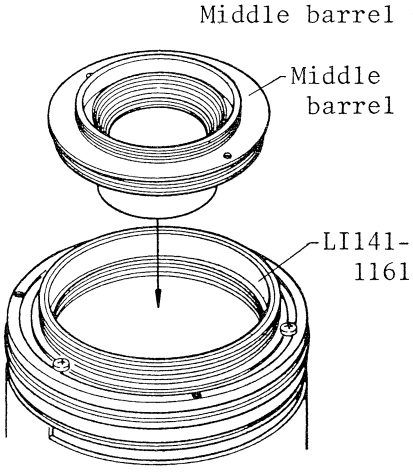


Fig.11

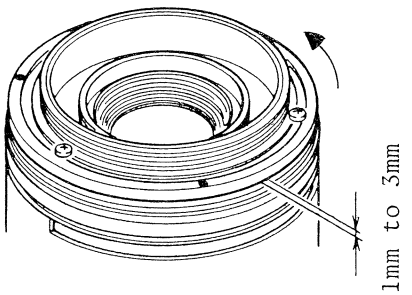


fig.12

4) Put the SLS-37 clearance gauge into the middle barrel as shown in Fig. 13 and install the front barrel temporarily.

5) Turn helicoid counter clockwise until it stops. Screw down three 3PB1.4x5BNi screws into the tapping holes of attaching filter ring as shown in Fig. 14. inner and middle helicoid should be fixed.

6) After removing the front barrel, remove SLS-37 clearance gauge from the middle barrel. Install NO.2 lens in the front barrel and NO.3 lens in middle barrel respectively.

7) Looson three AS1.7x2.5 screws as shown in Fig. 14 and set it on the SLS-4 1.f.b. stand. Adjust its infinity by auto-collimator.

8) After adjusting, tighten three AS1.7x2.5 screws tightly and recheck the infinity.

Note: Tighten the three set screws equally to make turn of helicoid smoothly.

9) Apply DB bond on the screws.

10) Install LI141-4131 focusing ring and apply DB-bond on the set screws of focusing ring.

11) Remove the three 3PB1.4x4BNi screws which has been screwed down into the tapping holes tentatively.

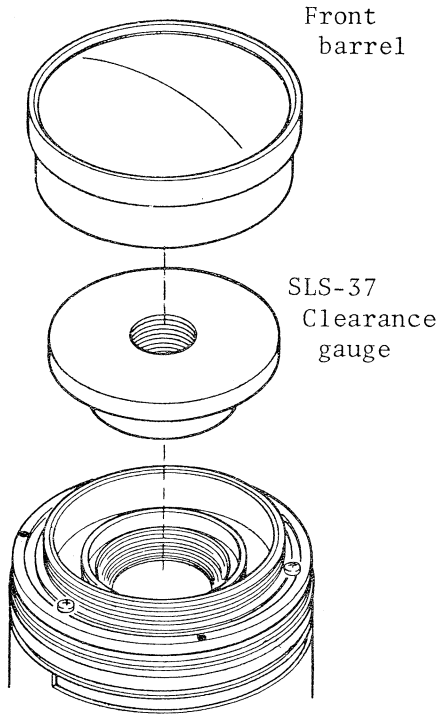


Fig.13

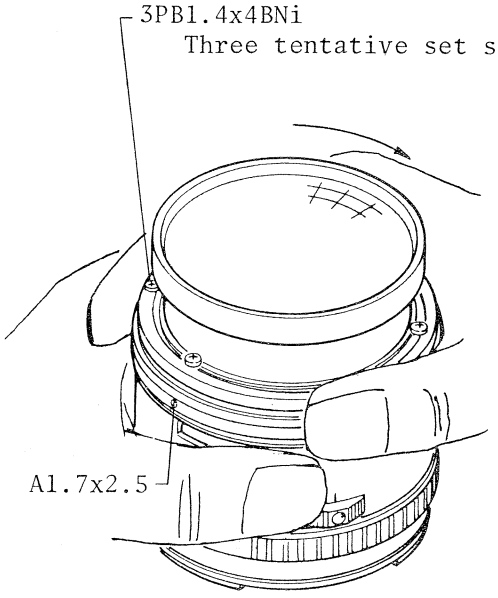


Fig.14

B. Check and adjustment of lens resolution

1) Check

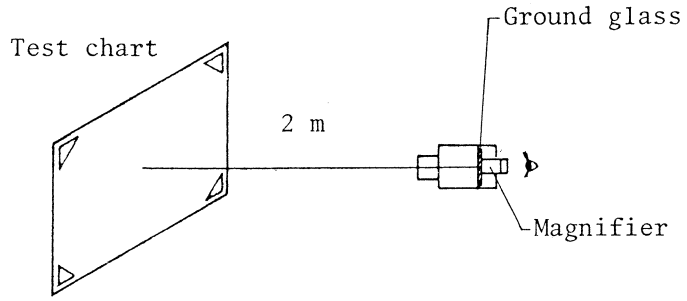


Fig.15

Put the camera with lens you desire to check at a distance 2m from test chart as shown in Fig. 15.

Then check it with a ground glass and a magnifier at open aperture.

Center lines (mm) over 50

Corner (0.45d), over 20

2) Adjustment

a The adjustment is made by increase or decrease of the washer as shown in Fig. 16.
Three different thickness washers are provided.

b After adjusting the resolution with washer, must check lens infinity again.

Note: Before removing the focusing ring for readjusting lens infinity, turn the helicoid to infinity side until it stops. Then screw down three 3PB1.4x4BNi screws into the tapping holes as same as the preceding A-5.

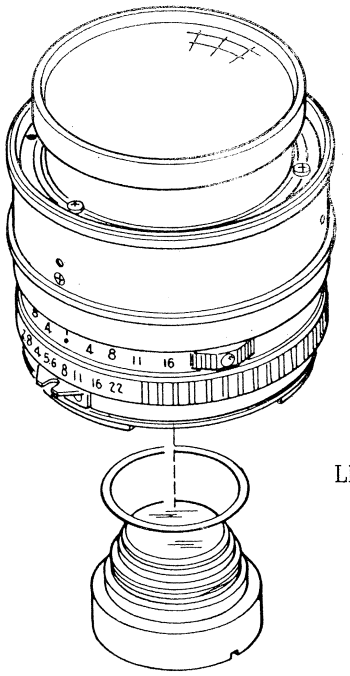


Fig.16

10. C 35mm F3.5 (LI151) lens

10-1 Adjustment of aperture size

1) Remove LI151-4111 name ring and LI151-4121 filter ring by turning them counter clockwise.

2) Remove the front barrel in the front lens group by turning it counter clockwise and then the middle barrel with SLS-23 spanner.

3) Remove LI151-5411 mounting cover by taking off its three screws PD1.7x2BNi.

4) Loosen three 3PB1.4x3.5BNi screws as shown in Fig. 17.
Adjust aperture size by turning LI151-2141 dividing device.

5) After adjusting, apply DB-bond on the screws slightly.

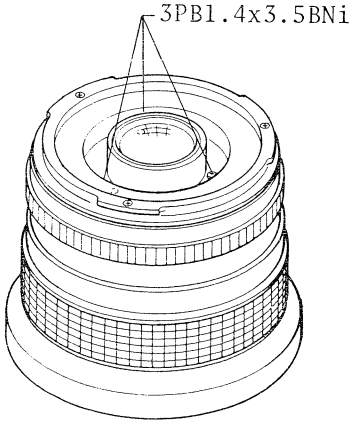


Fig.17

10-2 Adjustment of lens infinity and resolution

A Adjustment of lens infinity:

1) Remove the front barrel and middle barrel.

Note: When removing the middle barrel, use SLS-23 spanner.

2) Loosen three 3PB1.4x3BNi screws for fixing aperture barrel as shown in Fig. 18.

3) Turn the inner helical ring counter clockwise until it stops.

4) Turn the helicoid clockwise until it stops.

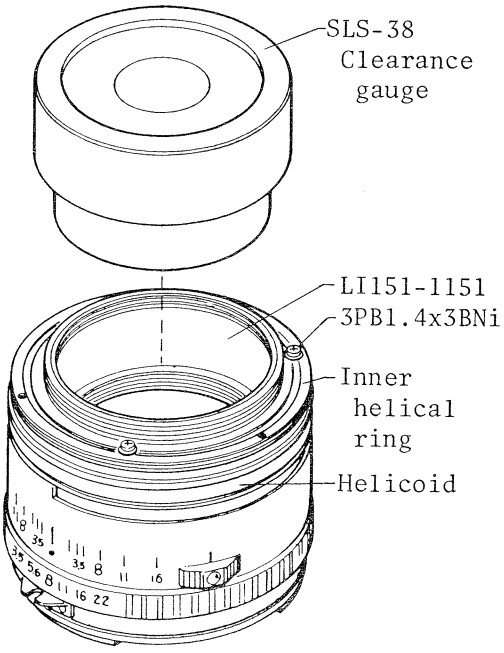


Fig.18

Note: Recheck that the inner helical ring has been turned counter clockwise until it stops.

5) Now turn the helicoid counter clockwise until it stops.

6) Put the SLS-38 clearance gauge into LI151-1151 middle tube as shown in Fig. 18.

7) Hold the SLS-38 clearance gauge with left hand fingers as shown in Fig. 19 and turn only the inner helical ring clockwise until it stops.

8) Tighten three 3PB1.4x3BNi screws for fixing aperture barrel and apply DB-bond around the screws slightly.

9) After removing SLS-38 clearance gauge, install the middle and front barrels.

10) Loosen three set screws A1.7x2.5 for helicoid as shown in Fig. 20. Setting the lens to the SLS-4 1.f.b stand, adjust it by the auto-collimator.

11) Tighten the three screws equally and apply DB-bond on the head of the screws.

Note: The helicoid should be turn smoothly.

12) After finishing infinity adjustment, screw down three tentative A1.4x3 screws into the tapping holes as shown in Fig. 20 at infinity position to prevent helicoid turning.

13) Attach LI151-4131 focusing ring and screw down three A1.7x2.5 set screws. Then apply DB-bond on head of the screws.

SLS-38

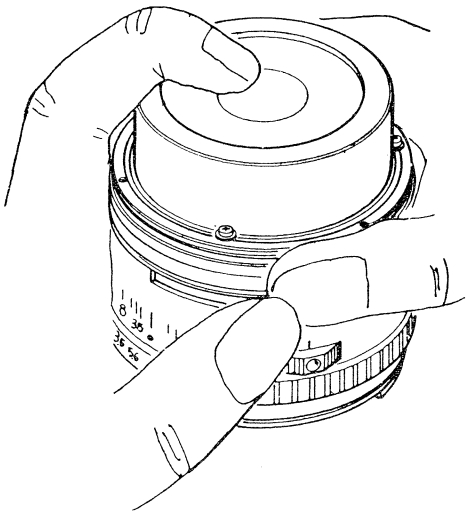


Fig.19

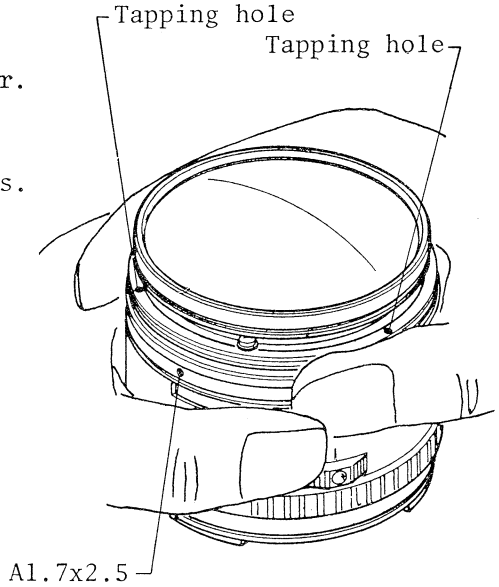


Fig.20

14) Remove the three tentative A1.4x3 set screws and then check lens infinity again.

B Lens resolution:

Checking and adjusting modes of the lens resolution are quite similar with modes of the 45mm F2.8 lens.

Minimum resolution standards at max. aperture:

Center lines (mm)	50
Corner (0.45d)	15

11-1 Disassembily and reassembly of the shutter

A Disassembly:

The arabic numeral in a circle as shown in Fig. 21 indicates the procedure of disassembly.

Note:

1) When removing ⑨ take care not to lose HWPS-514 click ball.

2) When removing ⑫ in advance remove LF571-4211 spring.

3) With their fixing screws loosened ⑬ plugs can be removed.

4) When removing ⑮ and ⑯ , take care not to lose HWPS-514 click ball.

5) When removing ⑰ in advance remove LF571-5332 spring.

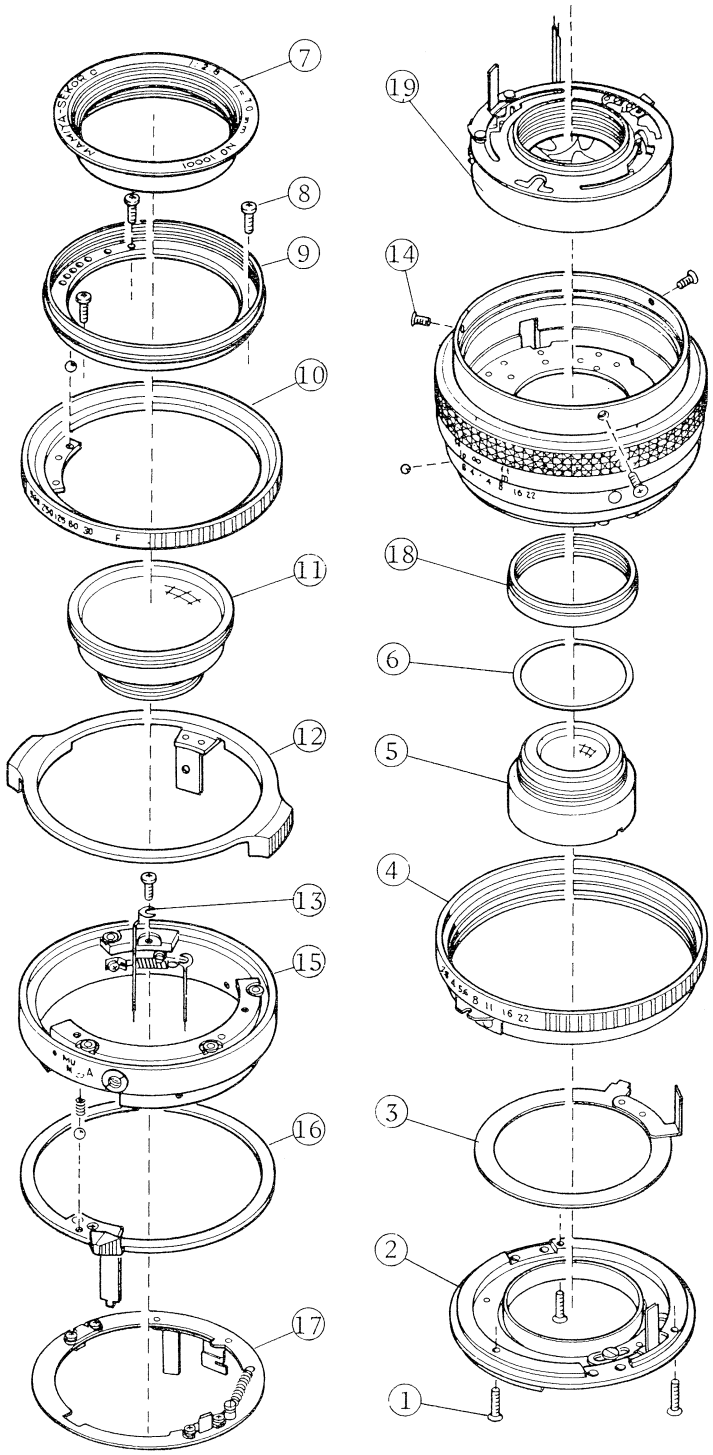


Fig.21

B Reassembly

Reassembly is normally the reverse of disassembly.

Note: 1) After fixing ⑲ shutter into the helicoid, set LF571-2131 spring to aperture pin on the shutter and then couple the pin with LF571-221S1 aperture lever as shown in Fig.22

2) Pass through ⑬ X synch leadwires from outer side of LF571-4381 spring. Connect the black leadwire with X-terminal and the blue leadwire with 4PB1.7x22BNi screw on A-M ring. Arrange the leadwires to prevent the short.

3) Take care not to lose click balls.

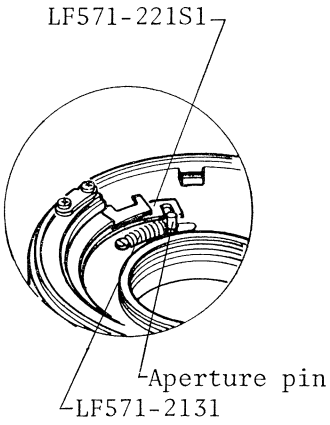


Fig.22

11-2 Position of shutter start latch

A Shutter start latch and cocking ring:

With shutter cocked, Ⓐ tip of 132-1001 shutter cocking ring should be set on LF57-236S1 shutter start latch as much as its thiskness of the Ⓐ as shown in Fig. 23-1.

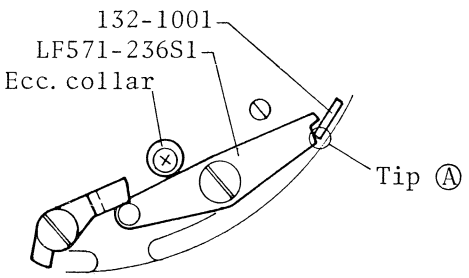


Fig.23-1

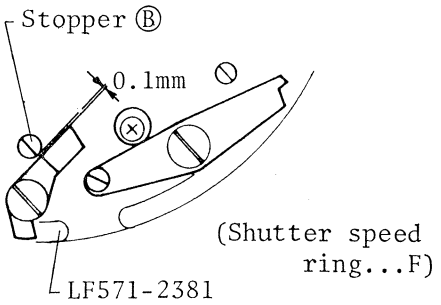


Fig.23-2

B Adjustment

1 Adjustment is made by turning ecc. collar.

2 After adjusting, apply DB-bond on the head of screw slightly.

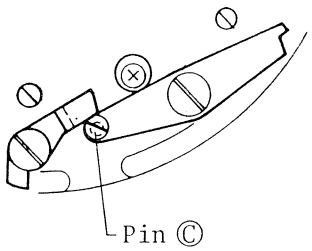


Fig.23-3

11-3 Adjustment of release lever

A Position

1. When setting shutter speed ring to F, clearance between Ⓑ stopper and LF571-2381 release relay lever should be within 0.1mm as shown in Fig.23-2.
2. When shifting the shutter speed ring to $1/30^{sec}$ the release relay lever should touch Ⓒ pin as shown in Fig. 23-3.

B Adjustment

1. Adjustment is made by changing position of LF571-4151 coupling arm on back side of LF571-4131 shutter speed ring as shown in Fig. 24.

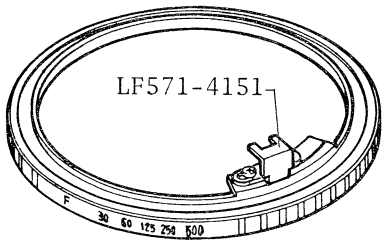


Fig.24

2. Checking position of shutter governor pin:

   When setting the shutter speed ring to 1/125sec the governor pin must be in dent of 1/125sec on 824-0005 speed setting cam as shown in Fig. 25.

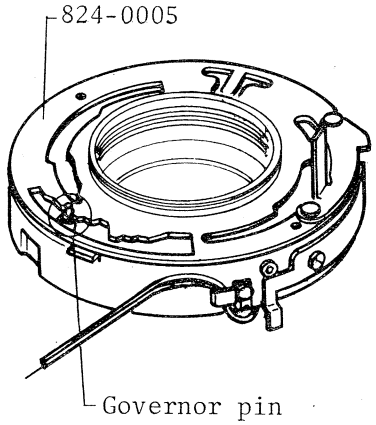


Fig.25

11-4 Adjustment of aperture size

1. Check operation of LF571-221S1 Aperture lever.
2. Set LF571-4251 A-M ring to MU (Mirror up).
3. Adjustment is made by changing position of LF571-5221 aperture operating arm on LF571-5211 control ring as shown in Fig. 26.

   Note: Check F22, F5.6 and F2.8 each aperture size.

4. After adjusting, apply DB-bond around two 3PB1.4x1.6BNi screws slightly.

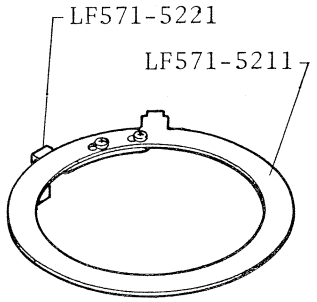


Fig.26

11-5 Adjustment of lens infinity

1. Remove LF571-4441 focusing rubber.
2. Loosen three PD2x3BNi set screws as shown in Fig 27 and tighten one of them again.
3. Set the lens on the SLS-4 l.f.b stand and adjust-its infinity with auto-collimator.
4. After adjusting and tightening the three screws, apply DB-bond on the screws.

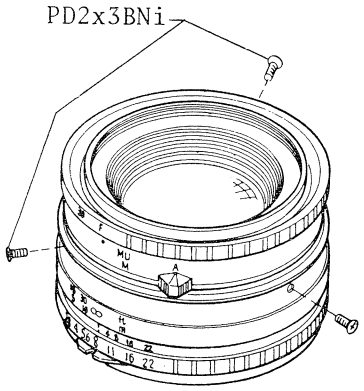


Fig.27

11-6 Synchronizing lens shutter with camera body shutter

A Check

1. Set the shutter speed.dial of camera body to 1/60sec and the shutter speed ring of lens to 1/125sec.
   Also set the A-M ring to A (auto) and the aperture ring to Fig.16.
2. Cock both shutter of lens and camera body.
3. While looking into inside of camera from the back, release the shutter.
   a. Light from the lens must become plainly visible at center area of picture frame.
   b. At upper part of the picture frame, light from the lens should be cut by the focul plane shutter so that should not be visible.
4. When light is cut at the center area:
   a. Shift the shutter speed dial of the camera body to 1/30 and check it again.
   b. Light must become visible plainly at the center area and the upper part.

B Adjustment

Friction arm in Fig. 28 has been modified since 1977 February production cameras. New friction arm LF571-528T2 is shown in Fig. 29.

1) Adjustment of the new and old friction arm:

a. New friction arm:

Make its friction with 138-2169 lever Ⓑ of the shutter stronger or weaker by bending Ⓐ friction arm.

Friction	Lens shutter start
Stronger	Delayed
Weaker	Faster

b. Old friction arm:

Adjustment is made by changing fixing position of LF571-528T1 after loosening 3PB1.4x2BNi screws as shown in Fig. 28.

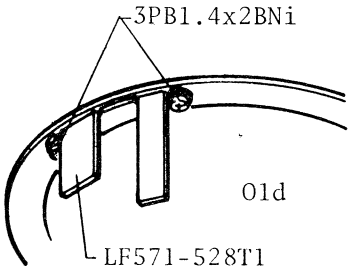


Fig.28

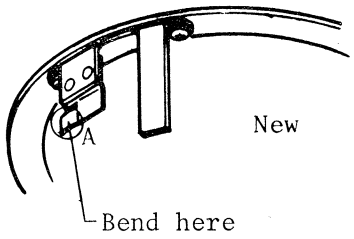


Fig.29

12. Macro C 80mm F4 (LF611) lens

12-1 Dis.- and reassembly of magnification ring and aperture barrel.

A Removal

The arabic numeral in a circle as shown in Fig.30 indicates the procedure of disassembly.

B Reassembly

Reassembly is normally the reverse of disassembly.

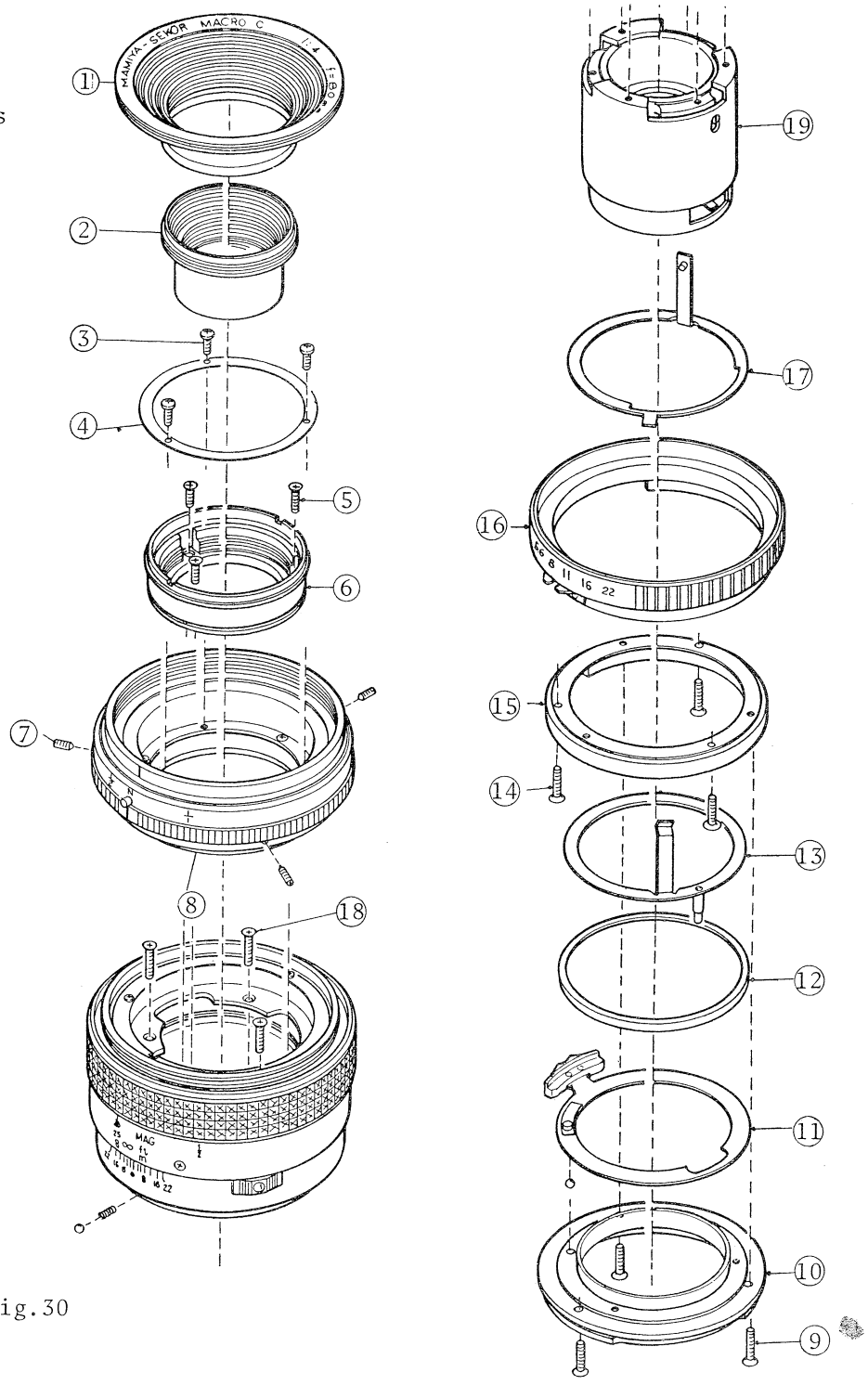


Fig.30

12-2 Installation of LF611-262S1 floating adjust ring

1. First attach ⑧ LF611-4001 magnification ring but not tighten its set screws. Then attach ⑥ LF611-262S1 floating adjust ring and tighten its three 3PD1.4x3.5BNi screws.
2. Remove LF611021 middle lens. Insert the SLS-39 block gauge 19.5mm into the barrel as shown in Fig. 31 and then set helicoid to infinity.
3. Make surface Ⓑ of LF611-262S1 as quite same height as the block gauge by turning the floating adjust ring Ⓐ.
4. Attach LF611-2651 retainer and tighten its three 3PB1.4x3BNi screws then apply DB-bond.
5. Attach LF611201 middle lens and LF61101 front lens group.

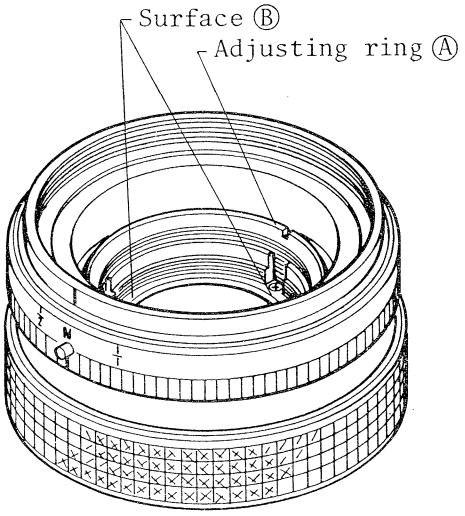


Fig.31

12-3 Adjusting lens infinity

1. Loosen three set screws A1.7x2.5 for LF611-4001 magnification ring as shown in Fig. 32.
2. After rotating the helicoid counter clockwise loosen three screws Ⓐ as shown in Fig. 32.
3. Turn up LF611-4551 focusing ring rubber and loosen three set screws. Then tighten one of them again tentatively.

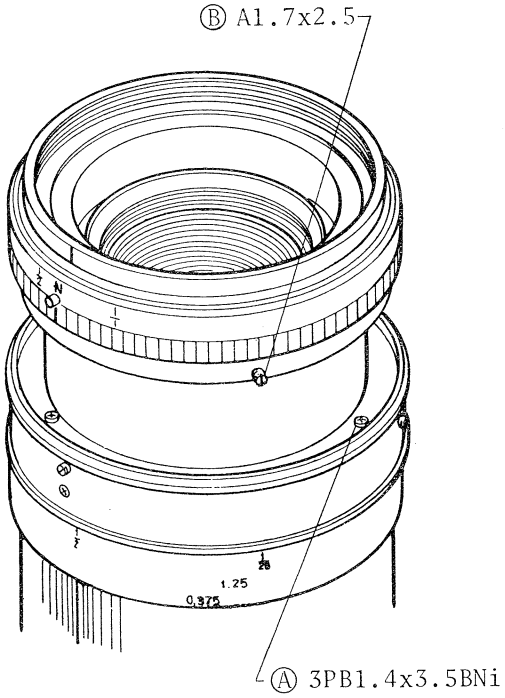


Fig.32

4. Set the lens on the SLS-4 l.f.b stand and adjust its infinity by auto-collimator.

5. Make the focusing ring free by loosening the one set screw. Then rotate the focusing ring counter clockwise until it stops at infinity indication line and tighten the three set screws A1.7x2.5.

6. Check its infinity again.

7. Tighten the three Ⓐ set screws which have been loosened at step-2. Apply DB-bond to head of the three Ⓐ set screws as well as the three focusing ring set screws.

Note: Helicoid should rotate smoothly.

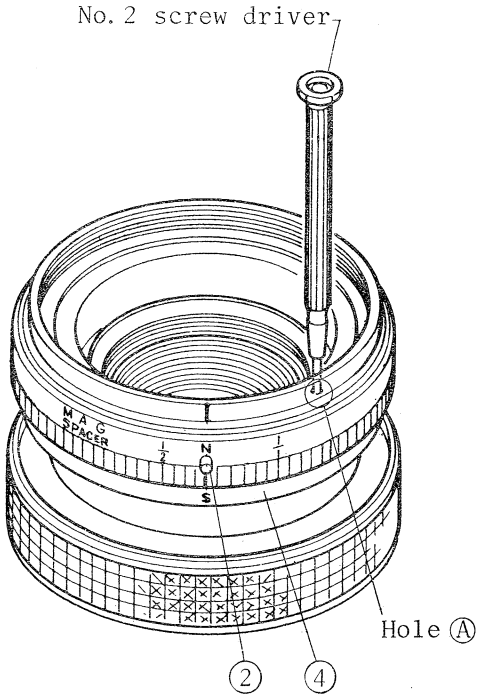


Fig.33

12-4 Installation of LF611-4011 magnification ring

1. After rotate the focusing ring counter clockwise, align the N.S marks with red line on the filter mounting ring as shown in Fig.33.

2. Insert the NO. 2 screw driver (or about 5cm length, 1.4ϕ～1.5ϕ bar) into hole Ⓐ on the filter mounting ring as shown in Fig.33.

3. While pressing down on the ② magnification sector button, rotate the ④ S-ring counter clockwise unitl it stops.

4. The S mark should stop at 10mm distance from the green line as shown in Fig.34.

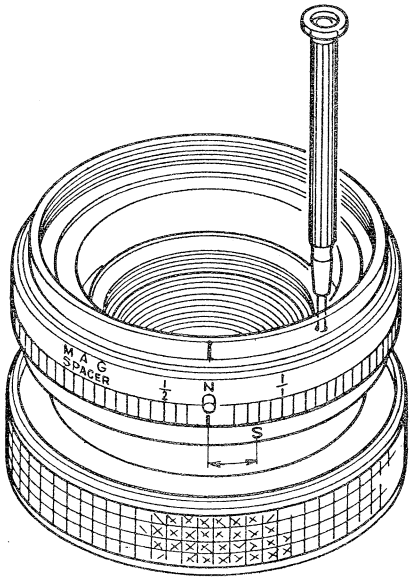


Fig.34

5. Turn the focusing ring to infinity setting.

6. Screw down three setscrews Ⓑ A1.7x2.5 of the magnification ring.

7. Take off the NO.2 screw driver. While pressing down on the magnification sector button, rotate the magnification ring counter clockwise until it stops.

   The N and S marks, the red line and 1/2 must be aligned at infinity position respectiely. as shown in Fig.35.

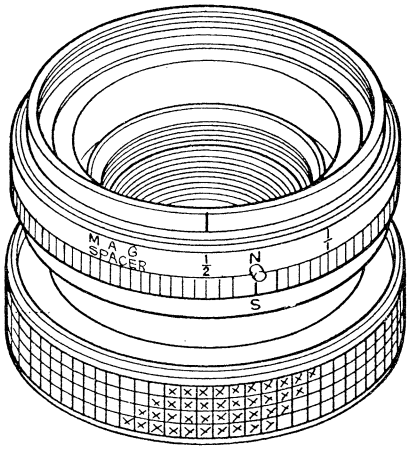


Fig.35

8. Confirming the helicoid to rotate smoothly, apply screw lock tight to the three setscrews Ⓑ A1.7x2.5 one by one.

12-5 Adjustment of aperture size

1. Remove LF611-4111 name ring, LF611011 front lens group and LF611021.

2. Loosen three screws 3PB1.4x2.2BNi as shown in Fig.36.

3. Adjusting method is quite similar with 80mm F2.8 lens so please refer to its method.

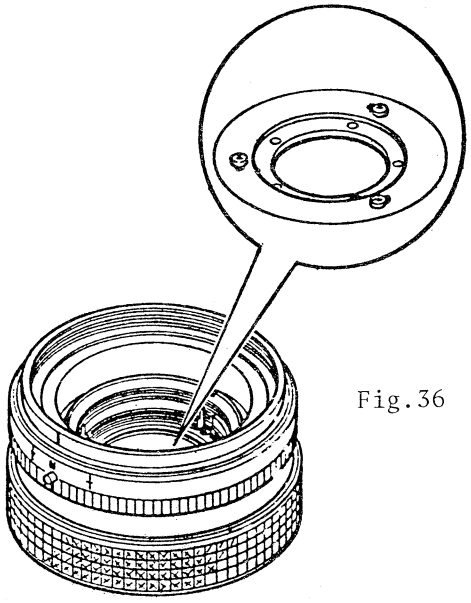


Fig.36

Special tools and measuring instruments

1. SLS-4 Lens flange back stand

   For checking lens finfinity.

2. SLS-37 Clearance gauge

   Use it for infinity adjustment of 45mm F2.8 lens.

3. SLS-38 Clearance gauge

   Use it for infinity adjustment of 35mm F3.5 lens.

4. SLS-23 Lens spanner

   Use for middle lens of 35mm F3.5 lens.

5. SLS-39 19.5mm Block gauge

   Use it for installing the floating ring.

6. U-2A Auto-collimator vertical type.

Mamiya

PARTS CATALOG

MAMIYA-SEKOR C LENSES

for

Mamiya M645

- 35mm F3.5(LI152)
- 45mm F2.8(LI142)
- 55mm F2.8(LI132)
- 80mm F2.8(LF433)
- 110mm F2.8(LE222)
- 150mm F4 (LE192)
- 210mm F4 (LE242)
- 300mm F5.6(LF582)

MM645LENS

Mamiya
CAMERA CO., LTD.
TOKYO, JAPAN

P.C1979-8-SLSL

EXPLODED VIEWS

MAMIYA-SEKOR C LENSES
for
Mamiya M645

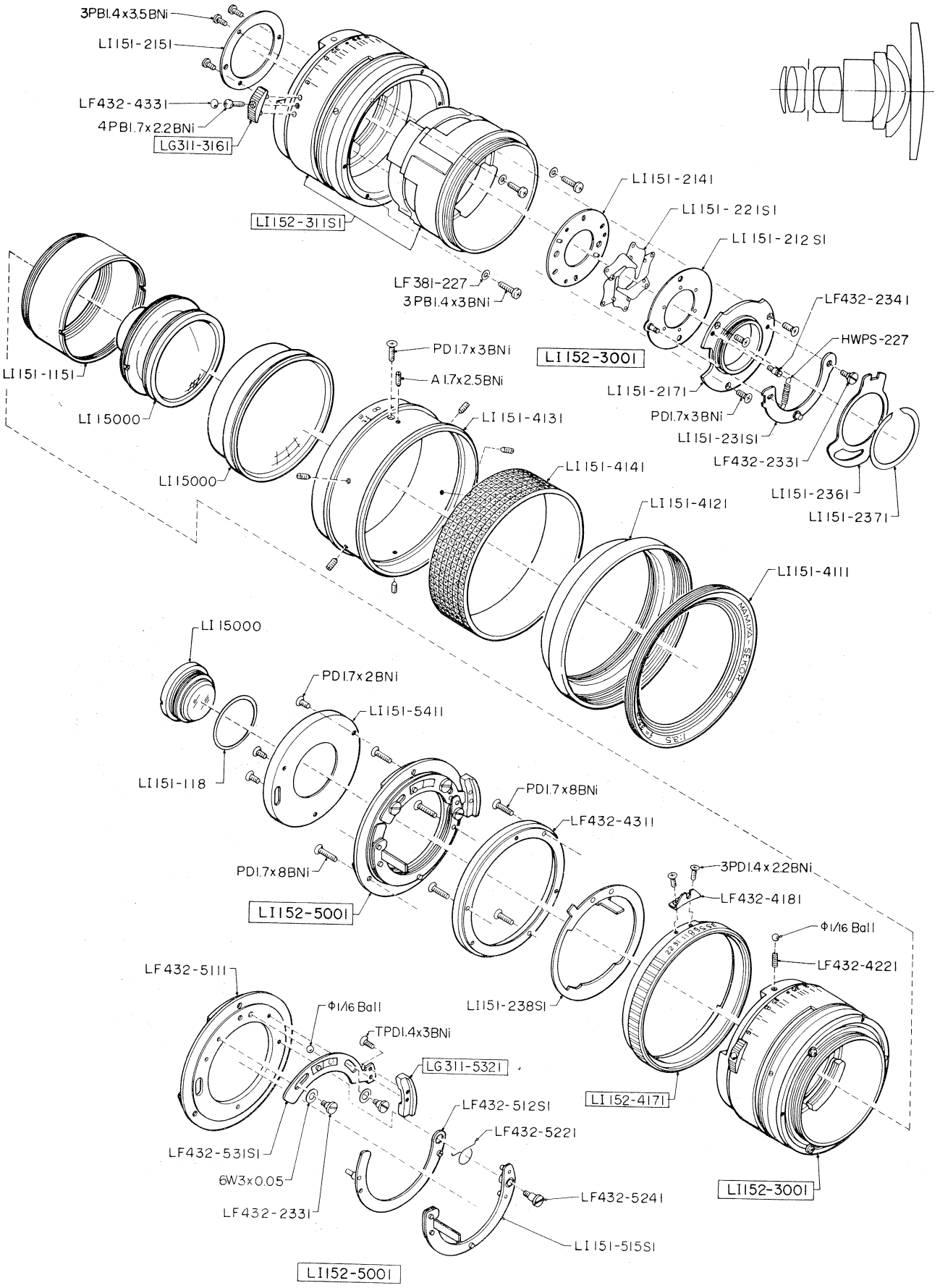
Mamiya

— NOTE —

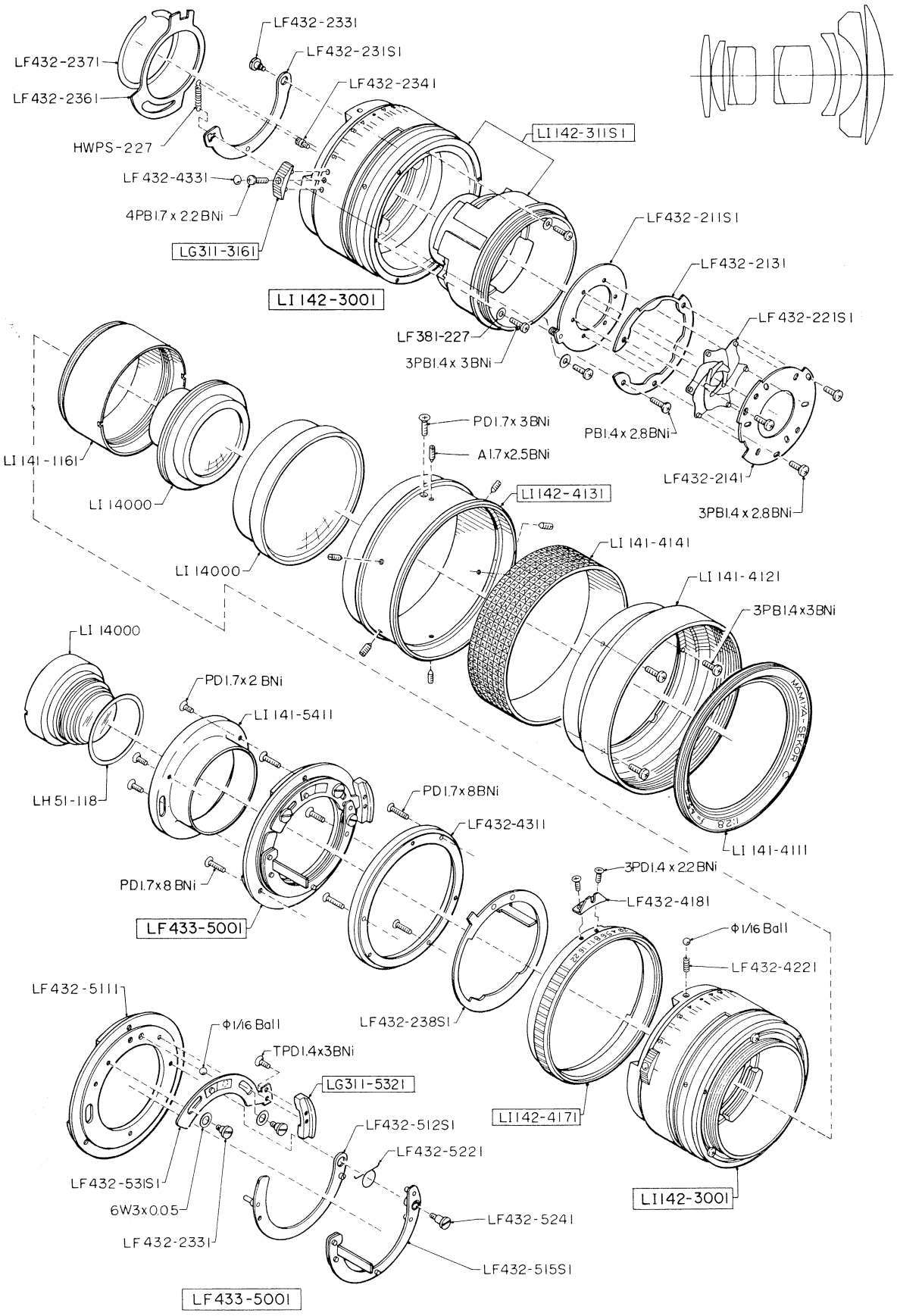
The eight interchangeable lenses have been improved. The parts in rectangle means that the parts have been newly added or modified.

*Example LI 152-3001

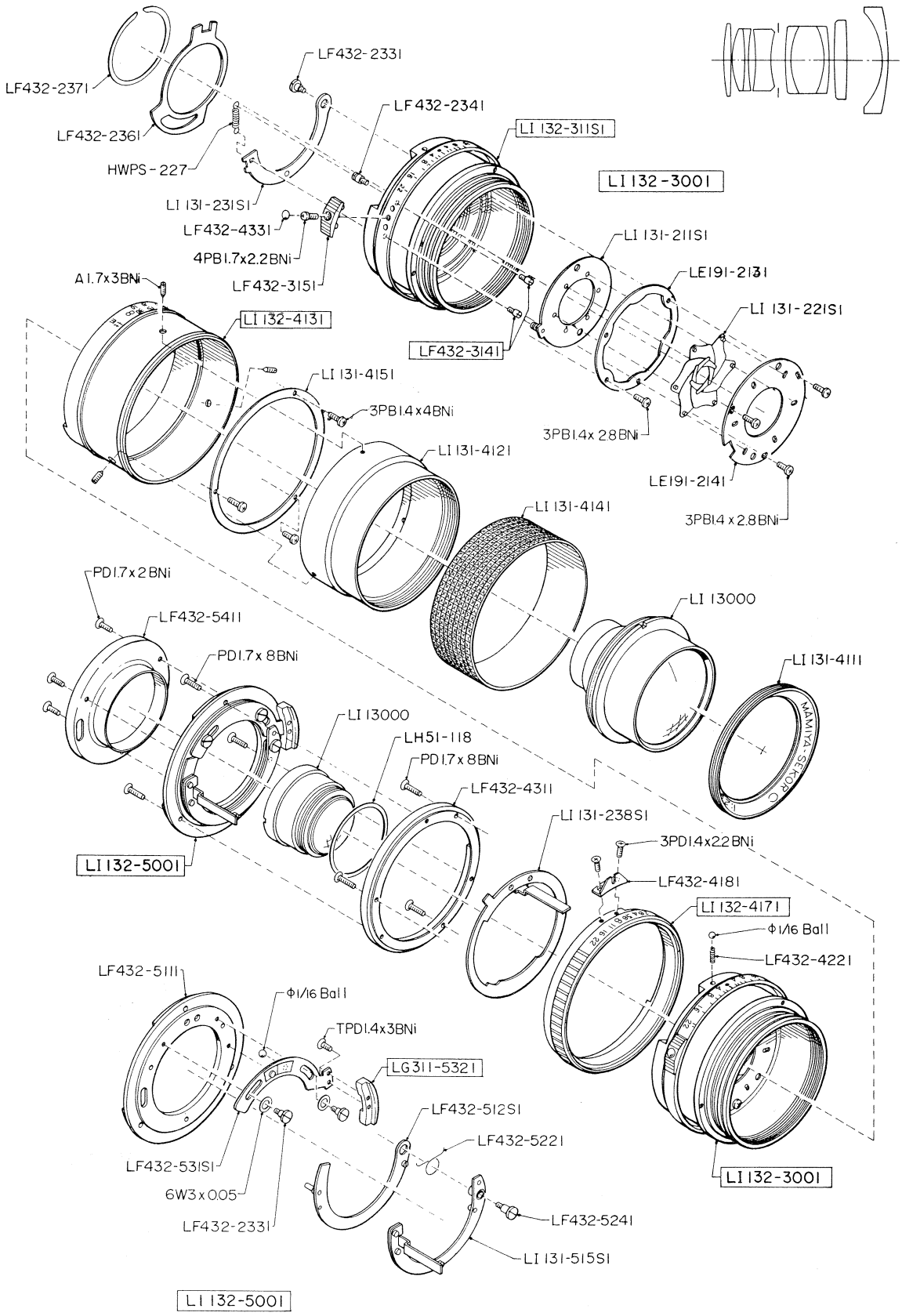
MAMIYA-SEKOR C 35mm F3.5 for M645(LI152)



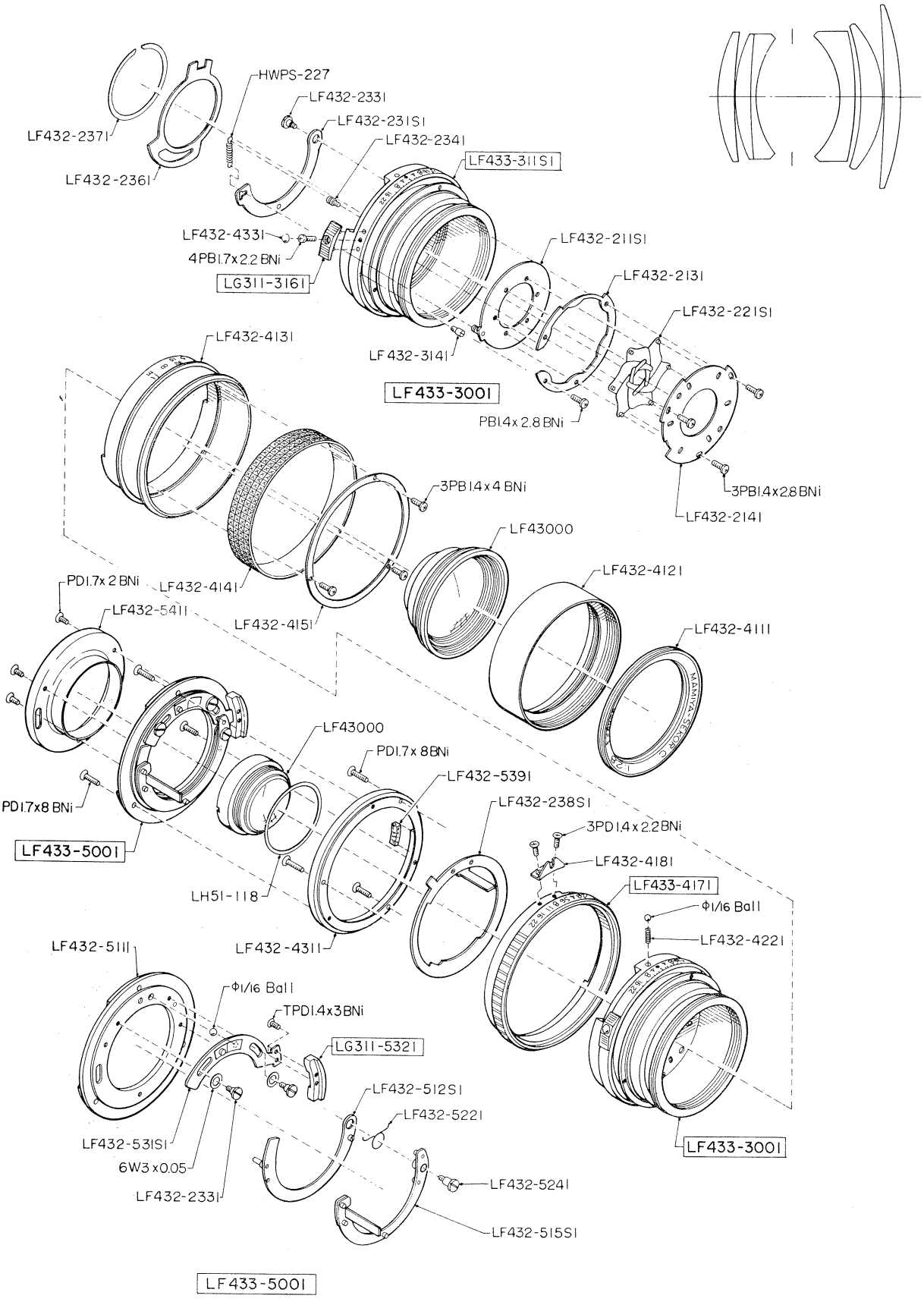
MAMIYA-SEKOR C 45mm F2.8 for M645 (LI 142)



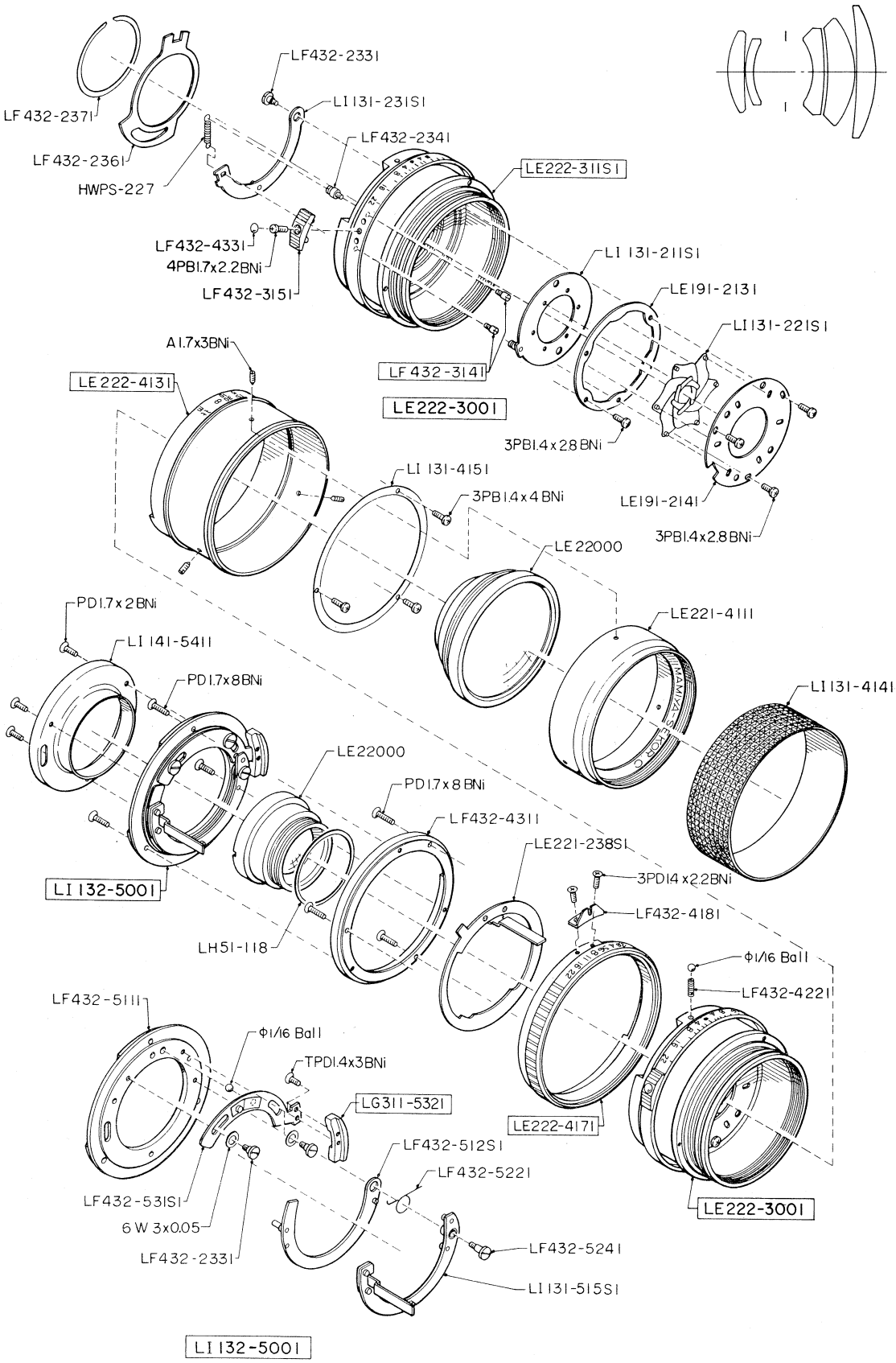
MAMIYA-SEKOR C 55mm F2.8 for M645(LI132)



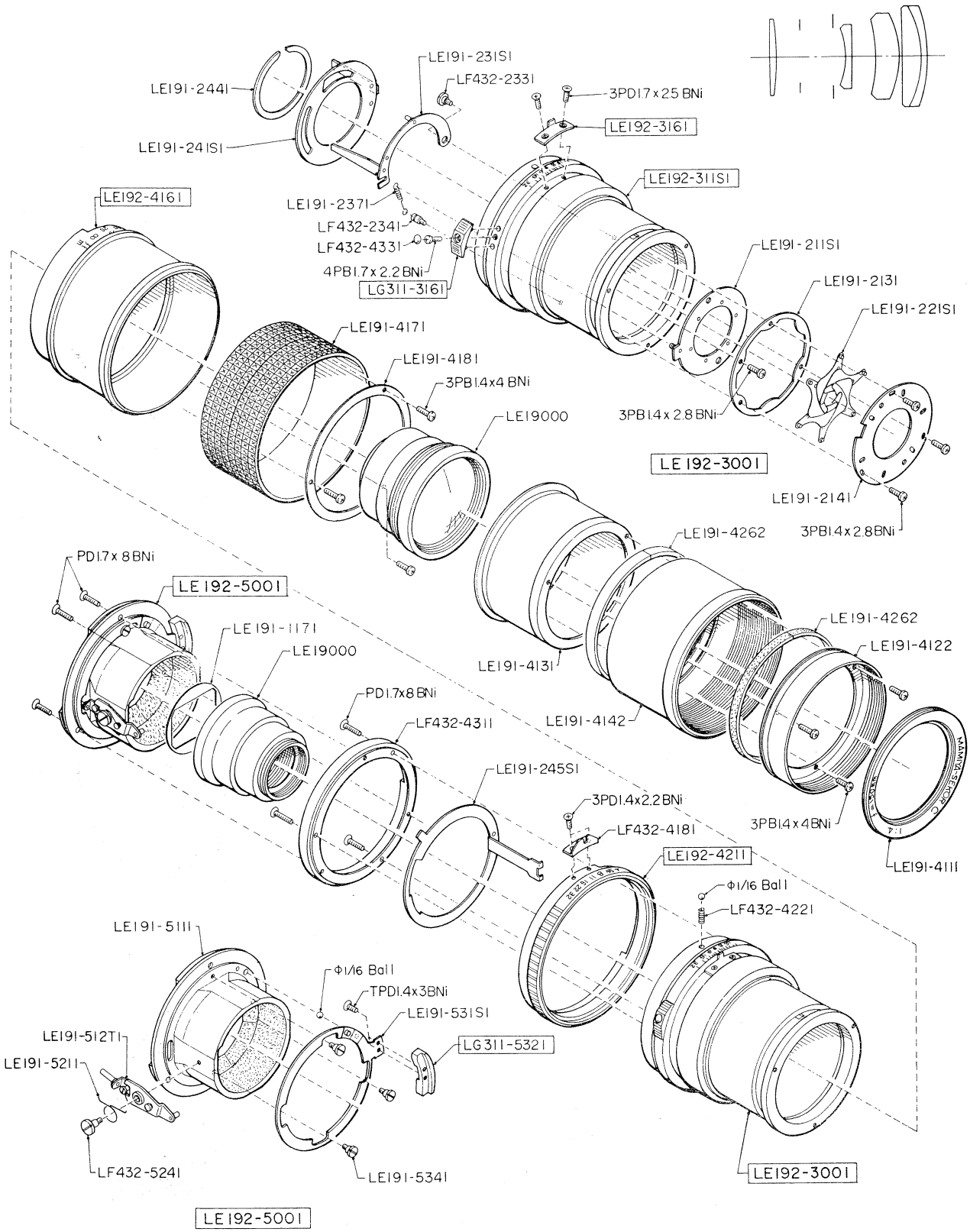
MAMIYA-SEKOR C 80mm F2.8 for M645(LF433)



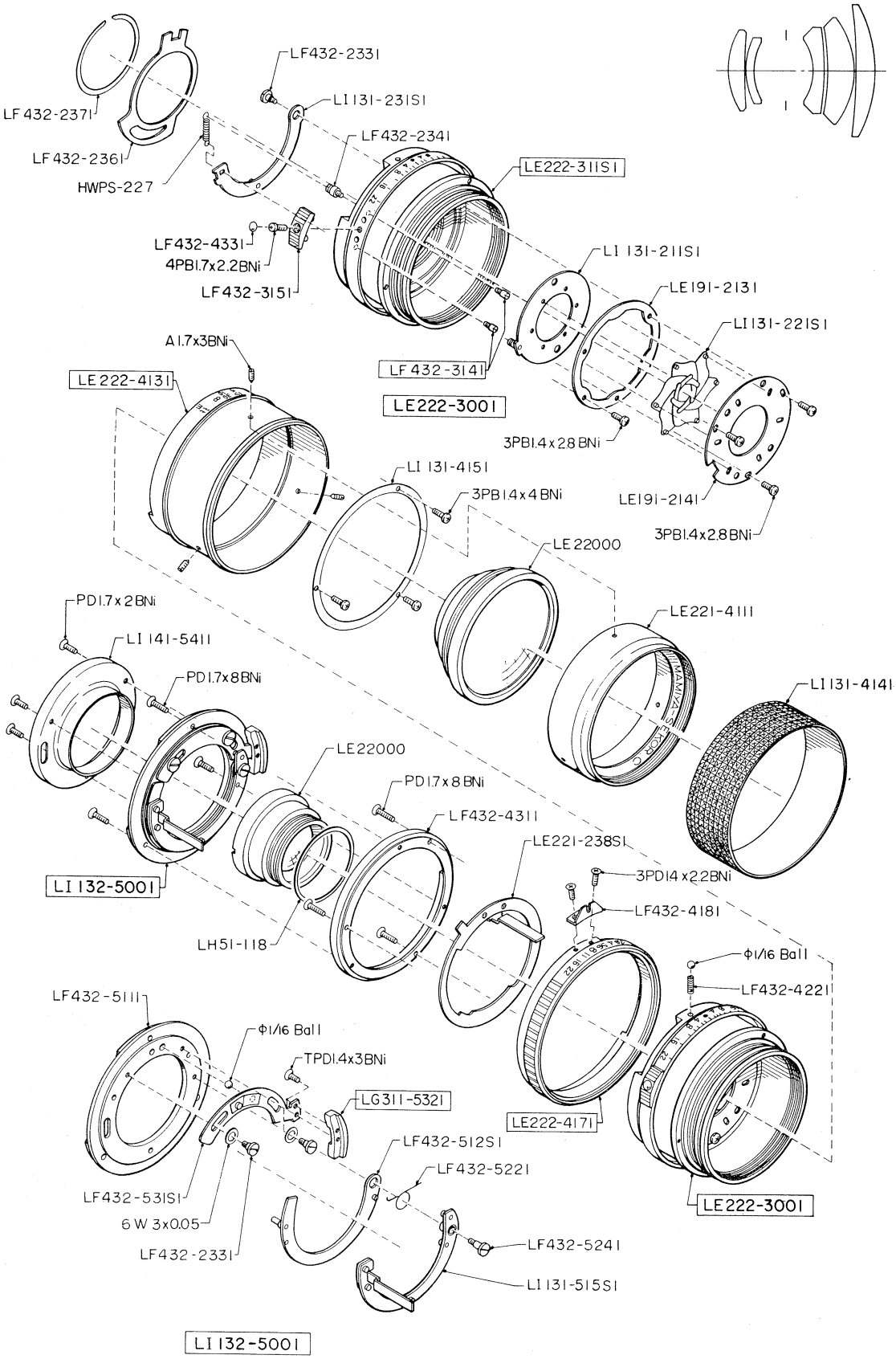
MAMIYA-SEKOR C 110mm F2.8 for M645(LE222)



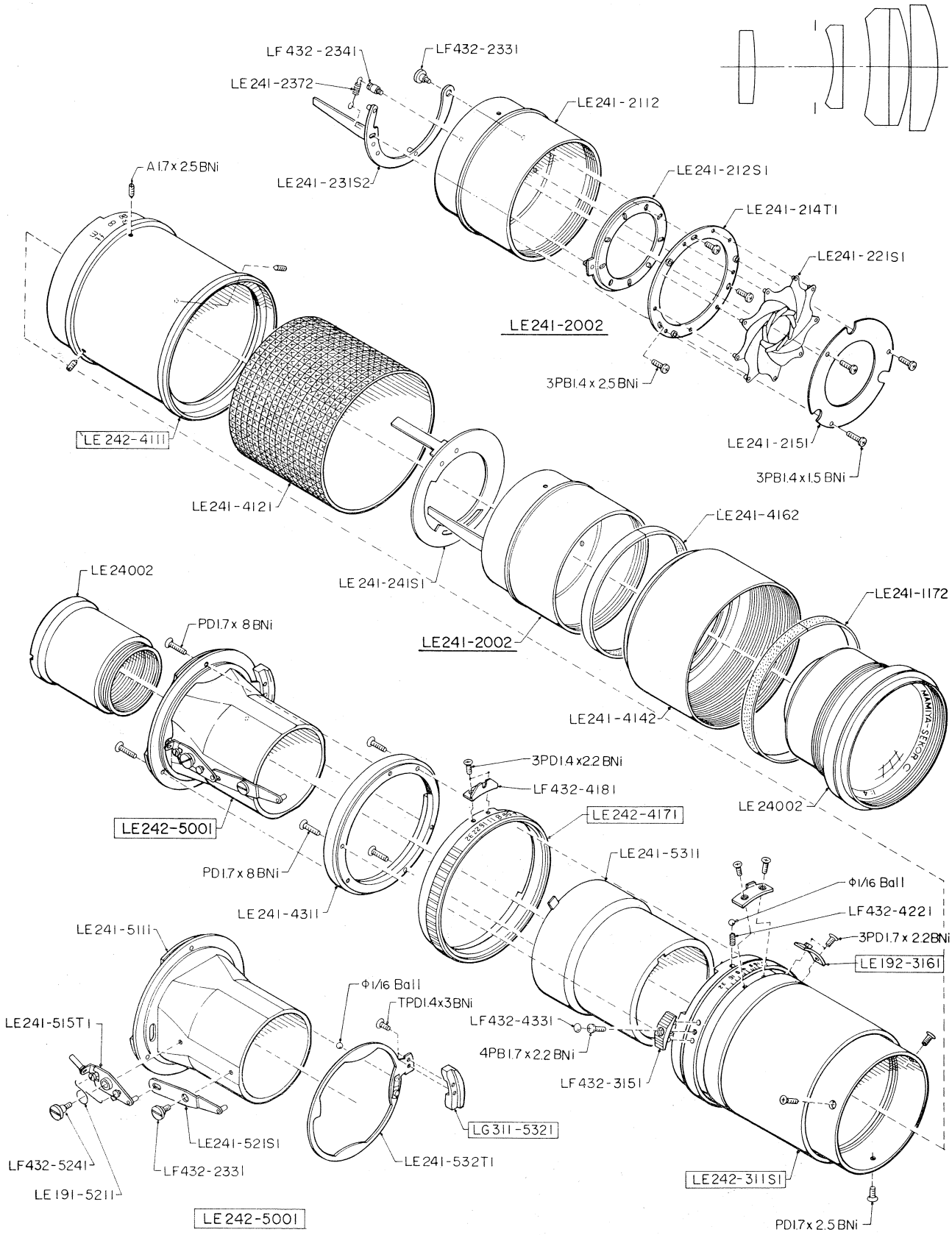
MAMIYA-SEKOR C 150mm F4 for M645(LE192)



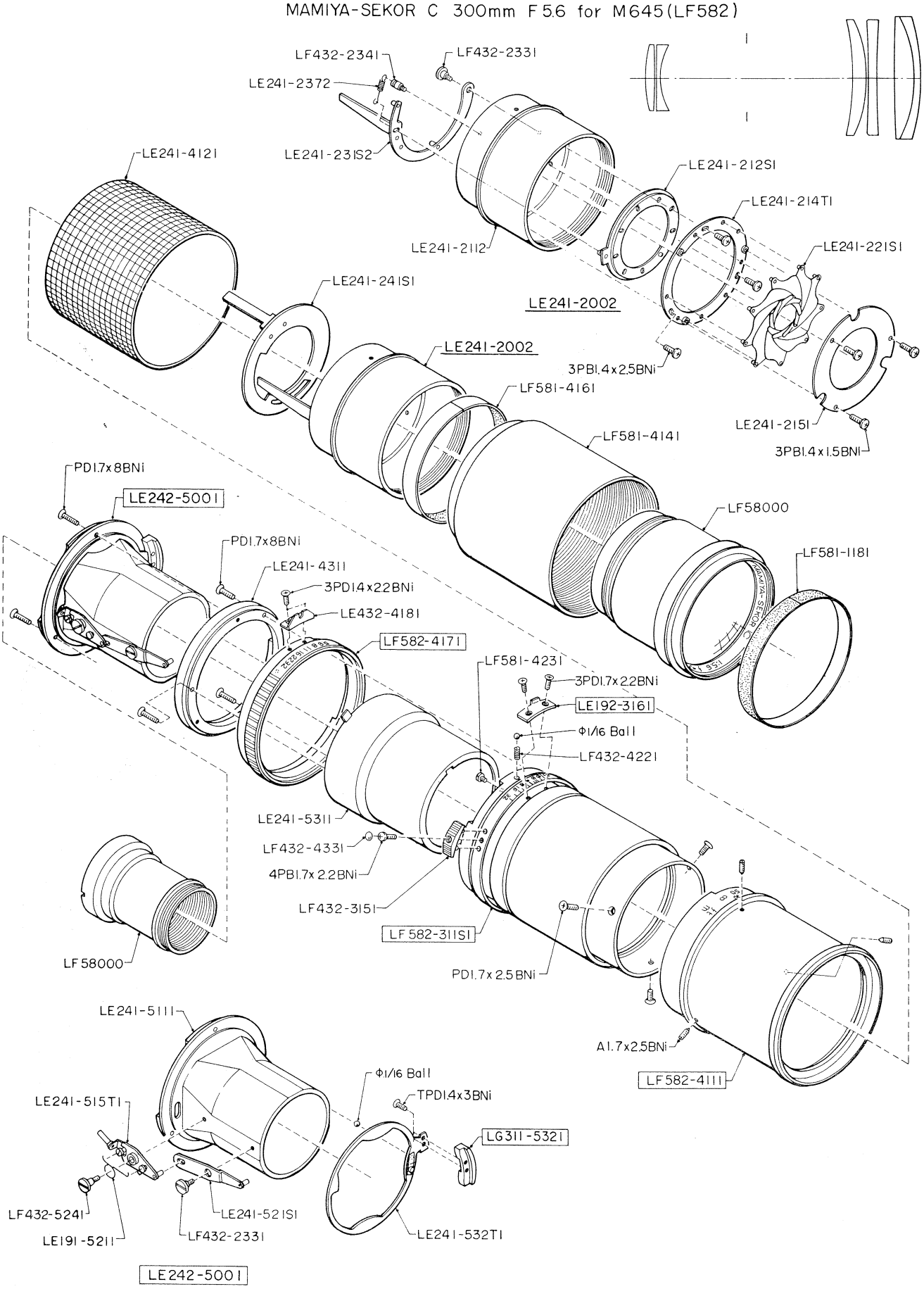
MAMIYA-SEKOR C 110mm F2.8 for M645 (LE222)



MAMIYA-SEKOR C 210mm F4 for M645 (LE242)



MAMIYA-SEKOR C 300mm F5.6 for M645(LF582)



PARTS LIST

MAMIYA-SEKOR C LENSES

for

Mamiya M645

Mamiya

— NOTE —

The eight interchangeable lenses have been improved. The parts in rectangle means that the parts have been newly added or modified.

*Example LI 152-3001

MAMIYA-SEKOR C 35mm F3.5 (LI152) for M645

Parts No.	Description	Pcs.	Ref. Page
LI15000	Lens assy.	1	1
LI151-1151	Inner barrel	1	1
LI151-1181	Adjusting washer t=0.2 (Std.)	1to2	1
	t=0.1		
	t=0.5		
LI151-238S1	Cam ring	1	1
LI152-3001	Helicoid diaphragm mech. assy.	1	1
LI152-311S1	Helicoid assy.	1	1
LI151-212S1	Operating ring	1	1
LI151-2141	Securing ring	1	1
LI151-2151	Dividing device	1	1
LI151-2171	Diaphragm base ring	1	1
LI151-221S1	Diaphragm blade	6	1
LI151-231S1	Control cam	1	1
LI151-2361	Aperture control cam	1	1
LI151-2371	Retainer	1	1
LF381-227	Washer	3	1
LF432-2331	Screw	1	1
LF432-2341	Anchor	1	1
LF432-4331	Red dot	1	1
LG311-3161	Knob	1	1
HWPS-227	Spring	1	1
PD1.7x3BNi	Screw for LI151-2171	3	1
3PB1.4x3BNi	Screw for LI152-311S1	3	1
3PB1.4x3.5BNi	Screw for LI151-2151	3	1
4PB1.7x2.2BNi	Screw for LG311-3161	1	1
LI151-4111	Name ring	1	1
LI151-4121	Filter ring	1	1
LI151-4131	Focusing ring	1	1
LI151-4141	Rubber grip	1	1
LI152-4171	Aperture ring	1	1
LI152-5001	Mounting ring assy.	1	1
LI151-515S1	Coupling lever	1	1
LF432-2331	Screw	2	1
LF432-5111	Mounting ring	1	1

Parts No.	Description	Pcs.	Ref. Page
LF432-512S1	Operating lever	1	1
LF432-5221	Spring	1	1
LF432-5241	Screw	1	1
LF432-531S1	Changing lever	1	1
LG311-5321	AM lever	1	1
ϕ1/16 Ball	Steel ball	1	1
6W3x0.05	Washer	2	1
TPD1.4x3BNi	Screw for LG311-5321	2	1
LI151-5411	Mounting cover	1	1
LF432-4181	Meter coupler	1	1
LF432-4221	Spring	1	1
LF432-4311	Mount base ring	1	1
ϕ1/16 Ball	Steel ball	1	1
A1.7x2.5BNi	Screw for LI151-4131	6	1
PD1.7x2BNi	Screw for LI151-5411	3	1
PD1.7x3BNi	Screw for LI151-4131	1	1
PD1.7x8BNi	Screw for LI151-4311	3	1
	LI152-5001	3	1
3PD1.4x2.2BNi	Screw for LF432-4181	2	1

MAMIYA-SEKOR C 45mm F2.8 (LI142) for M645

Parts No.	Description	Pcs.	Ref. Page
LI14000	Lens assy.	1	2
LI141-1161	Inner barrel	1	2
LI142-3001	Helicoid diahragm mech. assy.	1	2
LI142-311S1	Helicoid assy.	1	2
LF381-227	Washer	3	2
LF432-211S1	Operating ring	1	2
LF432-2131	Securing ring	1	2
LF432-2141	Dividing device	1	2
LF432-221S1	Diaphragm blade	6	2
LF432-231S1	Control cam	1	2
LF432-2331	Screw	1	2
LF432-2341	Anchor	1	2
LF432-2361	Aperture control cam	1	2
LF432-2371	Retainer	1	2
LF432-4331	Red dot	1	2
LG311-3161	Knob	1	2
HWPS-227	Spring	1	2
PB1.4x2.8BNi	Screw for LF432-2131	1	2
3PB1.4x2.8BNi	Screw for LF432-2131	3	2
3PB1.4x3BNi	Screw for LI142-311S1	3	2
4PB1.7x2.2BNi	Screw for LF432-3151	1	2
LI141-4111	Name ring	1	2
LI141-4121	Filter ring	1	2
LI142-4131	Focusing ring	1	2
LI141-4141	Rubber grip	1	2
LI142-4171	Aperture ring	1	2
LI141-5411	Mounting cover	1	2
LF432-238S1	Cam ring	1	2
LF432-4181	Meter coupler	1	2
LF432-4221	Spring	1	2
LF432-4311	Mount base ring	1	2
LF433-5001	Mounting ring assy.	1	2
LF432-2331	Screw	2	2
LF432-5111	Mounting ring	1	2
LF432-512S1	Operating lever	1	2

Parts No.	Description	Pcs.	Ref. Page
LF432-515S1	Coupling lever	1	2
LF432-5221	Spring	1	2
LF432-5241	Screw	1	2
LF432-531S1	Changing lever	1	2
LG311-5321	AM lever	1	2
ø1/16 Ball	Steel ball	1	2
6W3x0.05	Washer	2	2
TPD1.4x3BNi	Screw for LG311-5321	2	2
LH51-118	Adjusting washer t=0.2 (Std.)	1to2	2
	t=0.1		
	t=0.05		
ø1/16 Ball	Steel ball	1	2
A1.7x2.5BNi	Screw for LI142-4131	6	2
3PB1.4x3BNi	Screw for LI141-4121	3	2
PD1.7x2BNi	Screw for LI141-5411	3	2
PD1.7x3BNi	Screw for LI141-4121	1	2
PD1.7x8BNi	Screw for LF432-4311	3	2
	LF433-5001	3	2
3PD1.4x2.2BNi	Screw for LF432-4181	2	2

MAMIYA-SEKOR C 55mm F2.8 (LI132) for M645

Parts No.	Description	Pcs.	Ref. Page
LI13000	Lens assy.	1	3
LI131-238S1	Cam ring	1	3
LI132-3001	Helicoid diaphragm mech. assy.	1	3
LI132-311S1	Helicoid assy.	1	3
LI131-211S1	Operating ring	1	3
LI131-221S1	Diaphragm blade	6	3
LI131-231S1	Control cam	1	3
LE191-2131	Securing ring	1	3
LE191-2141	Dividing device	1	3
LF432-2331	Screw	1	3
LF432-2341	Anchor	1	3
LF432-2361	Aperture control cam	1	3
LF432-2371	Retainer	1	3
LF432-3141	Stopper	2	3
LF432-3151	Knob	1	3
LF432-4331	Red dot	1	3
HWPS-227	Spring	1	3
3PB1.4x2.8BNi	Screw for LE191-2131	3	3
	LE191-2141	1	3
4PB1.7x2.2BNi	Screw for LF432-3151	1	3
LI131-4111	Name ring	1	3
LI131-4121	Filter ring	1	3
LI132-4131	Focusing ring	1	3
LI131-4141	Rubber grip	1	3
LI131-4151	Retaining ring	1	3
LI132-4171	Aperture ring	1	3
LI132-5001	Mounting ring assy.	1	3
LI131-515S1	Coupling lever	1	3
LF432-2331	Screw	2	3
LF432-5111	Mounting ring	1	3
LF432-512S1	Operating lever	1	3
LF432-5221	Spring	1	3
LF432-5241	Screw	1	3
LF432-531S1	Changing lever	1	3
LG311-5321	AM lever	1	3

Parts No.	Description	Pcs.	Ref. Page
ø1/16 Ball	Stell Ball	1	3
6W3x0.05	Washer	2	3
TPD1.4x3BNi	Screw for LG311-5321	2	3
LF432-4181	Meter coupler	1	3
LF432-4221	Spring	1	3
LF432-4311	Mount base ring	1	3
LF432-5411	Mounting cover	1	3
LH51-118	Adjusting washer t=0.2	1to2	3
	t=0.1		
	t=0.05		
ø1/16 Ball	Steel ball	1	3
A1.7x3BNi	Screw for LI131-4131	3	3
3PB1.4x4BNi	Screw for LI131-4151	3	3
PD1.7x2BNi	Screw for LF432-5411	3	3
PD1.7x8BNi	Screw for LF432-4311	3	3
	LI132-5001	3	3
3PD1.4x2.2BNi	Screw for LF432-4181	2	3

MAMIYA-SEKOR C 80mm F2.8 (LF433) for M645

Parts No.	Description	Pcs.	Ref. Page
LF43000	Lens assy.	1	4
LF432-238S1	Cam ring	1	4
LF433-3001	Helicoid diaphragm mech. assy.	1	4
LF433-311S1	Helicoid assy.	1	4
LF432-211S1	Operating ring	1	4
LF432-2131	Securing ring	1	4
LF432-2141	Dividing device	1	4
LF432-221S1	Diaphragm blade	6	4
LF432-231S1	Control cam	1	4
LF432-2331	Screw	1	4
LF432-2341	Anchor	1	4
LF432-2361	Aperture control cam	1	4
LF432-2371	Retainer	1	4
LF432-3141	Stopper	1	4
LF432-4331	Red dot	1	4
LG311-3161	Knob	1	4
HWPS-227	Spring	1	4
PB1.4x2.8BNi	Screw for LF432-2131	1	4
3PB1.4x2.8BNi	Screw for LF432-2141	3	4
4PB1.4x2.2BNi	Screw for LG311-3161	1	4
LF432-4111	Name ring	1	4
LF432-4121	Filter ring	1	4
LF432-4131	Focusing ring	1	4
LF432-4141	Rubber grip	1	4
LF432-4151	Retaining ring	1	4
LF433-4171	Aperture ring	1	4
LF432-4181	Meter coupler	1	4
LF432-4221	Spring	1	4
LF432-4311	Mount base ring	1	4
LF433-5001	Mounting ring assy.	1	4
LF432-2331	Screw	2	4
LF432-5111	Mounting ring	1	4
LF432-512S1	Operating lever	1	4
LF432-515S1	Coupling lever	1	4
LF432-5221	Spring	1	4

Parts No.	Description	Pcs.	Ref. Page
LF432-5241	Screw	1	4
LF432-531S1	Changing lever	1	4
LG311-5321	AM lever	1	4
ø1/16 Ball	Steel ball	1	4
6W3x0.05	Washer	2	4
TPD1.4x3BNi	Screw for LG311-5321	1	4
LF432-5391	Sponge	1	4
LF432-5411	Mounting cover	1	4
LH51-118	Adjusting washer t=0.1 (Std.)	1to2	4
	t=0.05		
ø1/16 Ball	Steel ball	1	4
3PB1.4x4BNi	Screw for LF432-4151	3	4
PD1.7x2BNi	Screw for LF432-5411	3	4
PD1.7x8BNi	Screw for LF432-4311	3	4
	LF433-5001	3	4
3PD1.4x2.2BNi	Screw for LF432-4181	2	4

MAMIYA-SEKOR C 110mm F 2.8 (LE222) for M645

Parts No.	Description	Pcs.	Ref. Page
LE22000	Lens assy.	1	5
LE221-238S1	Cam ring	1	5
LE222-3001	Helicoid diaphragm mech. assy.	1	5
LE222-311S1	Helicoid assy.	1	5
LE191-2131	Securing ring	1	5
LE191-2141	Dividing device	1	5
LF432-2331	Screw	1	5
LF432-2341	Anchor	1	5
LF432-2361	Aperture control cam	1	5
LF432-2371	Retainer	1	5
LF432-3141	Stopper	2	5
LF432-3151	Knob	1	5
LF432-4331	Red dot	1	5
LI131-211S1	Operating ring	1	5
LI131-221S1	Diaphragm blade	6	5
LI131-231S1	Control cam	1	5
HWPS-227	Spring	1	5
3PB1.4x2.8BNi	Screw for LE191-2131	1	5
	LE191-2141	3	5
4PB1.7x2.2BNi	Screw for LF432-3151	1	5
LE221-4111	Filter ring	1	5
LE222-4131	Focusing ring	1	5
LE222-4171	Aperture ring	1	5
LF432-4181	Meter coupler	1	5
LF432-4221	Spring	1	5
LF432-4311	Mount base ring	1	5
LH51-118	Adjusting washer t=0.2 (Std.)	1to2	5
	t=0.1		
	t=0.05		
LI131-4141	Rubber grip	1	5
LI131-4151	Retaining ring	1	5
LI132-5001	Mounting ring assy.	1	5
LI131-515S1	Coupling lever	1	5
LF432-2331	Screw	2	5
LF432-5111	Mounting ring assy.	1	5

Parts No.	Description	Pcs.	Ref. Page
LF432-512S1	Operating ring	1	5
LF432-5221	Spring	1	5
LF432-5241	Screw	1	5
LF432-531S1	Changing lever	1	5
LG311-5321	AM lever	1	5
ϕ1/16 Ball	Steel ball	1	5
6W3x0.05	Washer	2	5
TPD1.4x3BNi	Screw for LG311-5321	2	5
LI141-5411	Mounting cover	1	5
ϕ1/16 Ball	Steel ball	1	5
A1.7x3BNi	Screw for LE222-4131	3	5
3PB1.4x4BNi	Screw for LI131-4151	3	5
PD1.7x2BNi	Screw for LI141-5411	3	5
PD1.7x8BNi	Screw for LF432-4311	3	5
	LI132-5001	3	5
3PD1.4x2.2BNi	Screw for LF432-4181	2	5

MAMIYA-SEKOR C 150mm F4 (LE192) for M645

Parts No.	Description	Pcs.	Ref. Page
LE19000	Lens assy.	1	6
LE191-1171	Light baffle	1	6
LE191-245S1	Cam ring	1	6
LE192-3001	Helicoid diaphragm mech. assy.	1	6
LE192-311S1	Helicoid assy.	1	6
LE191-211S1	Operating ring	1	6
LE191-2131	Securing ring	1	6
LE191-2141	Dividing device	1	6
LE191-221S1	Diaphragm blade	6	6
LE191-231S1	Control cam	1	6
LE191-2371	Spring	1	6
LE191-241S1	Aperture control cam	1	6
LE191-2441	Retainer	1	6
LE192-3161	Stopper	1	6
LF432-2331	Screw	1	6
LF432-2341	Anchor	1	6
LF432-4331	Red dot	1	6
LG311-3161	Knob	1	6
3PB1.4x2.8BNi	Screw for LE191-2131	1	6
	for LE191-2141	3	6
3PD1.7x2.5BNi	Screw for LE192-3161	2	6
4PB1.7x2.2BNi	Screw for LG311-3161	1	6
LE191-4111	Name ring	1	6
LE191-4122	Filter ring	1	6
LE191-4131	Cover ring	1	6
LE191-4142	Hood ring	1	6
LE192-4161	Focusing ring	1	6
LE191-4171	Rubber grip	1	6
LE191-4181	Retaining ring	1	6
LE192-4211	Aperture ring	1	6
LE191-4262	Velveteen	2	6
LE192-5001	Mounting ring assy.	1	6
LE191-5111	Mounting ring	1	6
LE191-512T1	Operating lever	1	6
LE191-5211	Spring	1	6

Parts No.	Description	Pcs.	Ref. Page
LE191-531S1	Changing ring	1	6
LE191-5341	Screw	3	6
LF432-5241	Screw	1	6
LG311-5321	AM lever	1	6
ø1/16 Ball	Steel ball	1	6
TPD1.4x3BNi	Screw for LG311-5321	2	6
LF432-4181	Meter coupler	1	6
LF432-4221	Spring	1	6
LF432-4311	Mount base ring	1	6
ø1/16 Ball	Steel ball	1	6
3PB1.4x4BNi	Screw for LE191-4122	3	6
	LE191-4181	3	6
PD1.7x8BNi	Screw for LF432-4311	3	6
	LE192-5001	3	6
3PD1.4x2.2BNi	Screw for LF432-4181	2	6

MAMIYA-SEKOR C 210mm F4 (LE242) for M645

Parts No.	Description	Pcs.	Ref. Page
LE24002	Lens assy.	1	7
LE241-1172	Velveteen	1	7
LE241-2002	Diaphragm barrel assy.	1	7
LE241-2112	Diaphragm barrel	1	7
LE241-212S1	Operating ring	1	7
LE241-214T1	Securing ring	1	7
LE241-2151	Dividing device	1	7
LE241-221S1	Diaphragm blade	9	7
LE241-231S2	Control cam	1	7
LE241-2372	Spring	1	7
LF432-2331	Screw	1	7
LF432-2341	Anchor	1	7
3PB1.4x1.5BNi	Screw for LE241-2151	3	7
3PB1.4x2.5BNi	Screw for LE241-214T1	3	7
LE241-241S1	Cam ring	1	7
LE242-311S1	Helicoid assy.	1	7
LE242-4111	Focusing ring	1	7
LE241-4121	Rubber grip	1	7
LE241-4142	Hood ring	1	7
LE241-4162	Velveteen	1	7
LE242-4171	Aperture ring	1	7
LE241-4311	Mount base ring	1	7
LE242-5001	Mounting ring assy.	1	7
LE241-5111	Mounting ring	1	7
LE241-515T1	Operating lever	1	7
LE241-521S1	Coupling lever	1	7
LE241-532T1	Changing ring	1	7
LE191-5211	Spring	1	7
LF432-2331	Screw	1	7
LF432-5241	Screw	1	7
LG311-5321	AM lever	1	7
ø1/16 Ball	Steel ball	1	7
TPD1.4x3BNi	Screw for LG311-5321	2	7
LE241-5311	Aperture barrel	1	7
LE192-3161	Stopper	2	7

Parts No.	Description	Pcs.	Ref. Page
LF432-3151	Knob	1	7
LF432-4181	Meter coupler	1	7
LF432-4221	Spring	1	7
LF432-4331	Red dot	1	7
ϕ1/16 Ball	Steel ball	1	7
A1.7x2.5BNi	Screw for LE242-4111	3	7
PD1.7x2.5BNi	Screw for LE242-311S1	3	7
PD1.7x8BNi	Screw for LE241-4311	3	7
	LE242-5001	3	7
3PD1.4x2.2BNi	Screw for LF432-4181	2	7
3PD1.7x2.2BNi	Screw for LE192-3161	4	7
4PB1.7x2.2BNi	Screw for LF432-3151	1	7

MAMIYA-SEKOR C 300mm F5.6 (LF582) for M645

Parts No.	Description	Pcs.	Ref. Page
LF58000	Lens assy.	1	8
LF581-1181	Velveteen	1	8
LF582-311S1	Helicoid assy.	1	8
LF582-4111	Focusing ring	1	8
LF581-4141	Hood	1	8
LF581-4161	Velveteen	1	8
LF582-4171	Aperture ring	1	8
LF581-4231	Stopper pin	1	8
LE192-3161	Stopper	1	8
LE241-2002	Diaphragm barrel assy.	1	8
LE241-2112	Diaphragm barrel	1	8
LE241-212S1	Operating ring	1	8
LE241-214T1	Securing ring	1	8
LE241-2151	Dividing device	1	8
LE241-221S1	Diaphragm blade	9	8
LE241-231S2	Control cam	1	8
LE241-2372	Spring	1	8
LF432-2331	Screw	1	8
LF432-2341	Anchor	1	8
3PB1.4x1.5BNi	Screw for LE241-2151	3	8
3PB1.4x2.5BNi	Screw for LE241-214T1	3	8
LE241-241S1	Cam ring	1	8
LE241-4121	Rubber grip	1	8
LE241-4311	Mount base ring	1	8
LE242-5001	Mounting ring assy.	1	8
LE241-5111	Mounting ring	1	8
LE241-515T1	Operating lever	1	8
LE241-521S1	Coupling lever	1	8
LE241-532T1	Changing ring	1	8
LE191-5211	Spring	1	8
LF432-2331	Screw	1	8
LF432-5241	Screw	1	8
LG311-5321	AM lever	1	8
ø1/16 Ball	Steel ball	1	8
TPD1.4x3BNi	Screw for LG311-5321	2	8

Parts No.	Description	Pcs.	Ref. Page
LE241-5311	Aperture barrel	1	8
LF432-3151	Knob	1	8
LF432-4181	Meter coupler	1	8
LF432-4221	Spring	1	8
LF432-4331	Red dot	1	8
ϕ1/16 Ball	Steel ball	1	8
A1.7x2.5BNi	Screw for LE582-4111	3	8
PD1.7x2.5BNi	Screw for LE241-4311	3	8
PD1.7x8BNi	Screw for LE241-4311	3	8
	LE242-5001	3	8
3PD1.4x2.2BNi	Screw for LF432-4181	2	8
3PD1.7x2.2BNi	Screw for LE192-3161	2	8
4PB1.7x2.2BNi	Screw for LF432-3151	1	8