FUJI FILM
REPAIR MANUAL & PARTS LIST

FUJICA G690
B L

FUJI FILM

FUJI PHOTO FILM CO., LTD.

FUJICA G690 REPAIR MANUAL

CONTENTS

I. DISASSEMBLY

1. Top Cover (E1A)

   Loosen the shutter release button ring (D35A), and remove the film advance lever unit (D38, D39, and D40). Remove the screws (E20, 4 screws), and remove the top cover (E1A). (Fig. 1)

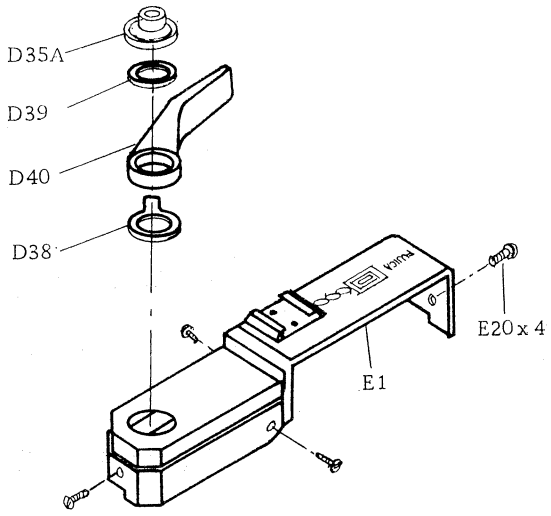


Fig. 1

2. Bottom Cover (E3)

   Loosen the set screw (B82) with the tool (E82-TA1), and remove the knob (B77A). (Fig. 2)

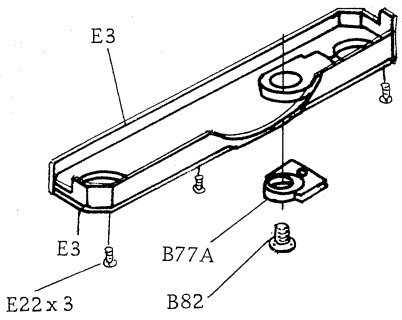


Fig. 2

3. Lense Barrel Installation Seat (C1A)

   A. Peel off the leather covers (B94 and B95). Remove the screws (B102, 6 each), and remove the lens barrel installation seat (C1A) forward.

   B. Peel off the leather cover (C47) from the tripod socket unit. Remove the screws (C53, 4 each), and remove the tripod socket (C46). (Fig. 3)

C. Remove the screws (C33, 2 each), and remove the release lever (C24A). (Fig. 3)

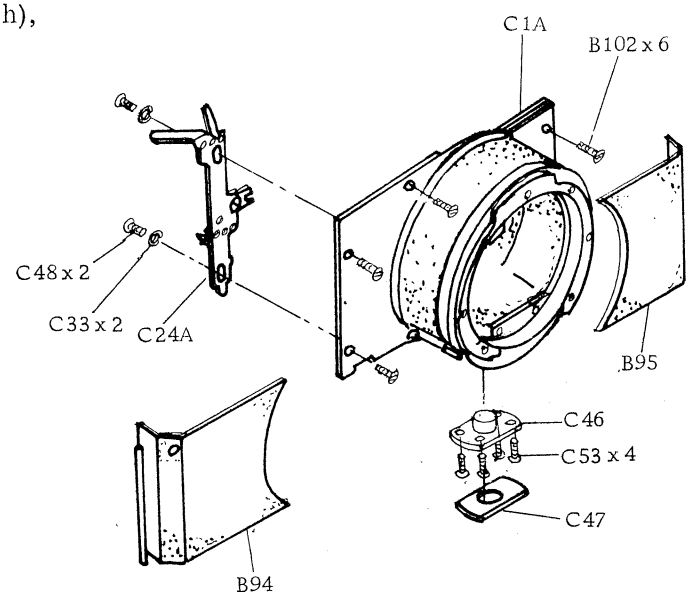


Fig. 3

D. Remove the screws (C53, 6 each), and remove the bayonet ring (C16A). (Fig. 4)

E. Remove the set screws (C49, 4 each), and remove the set ring (C3A). (Fig. 4)

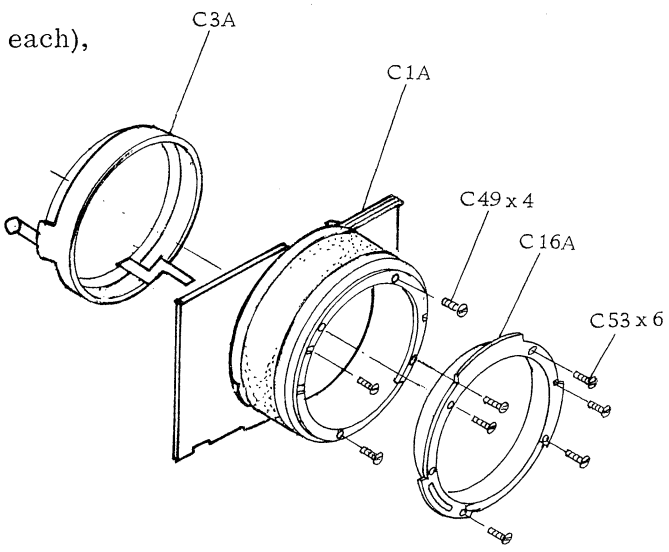


Fig. 4

4. Film Advance Mechanism (D1A)

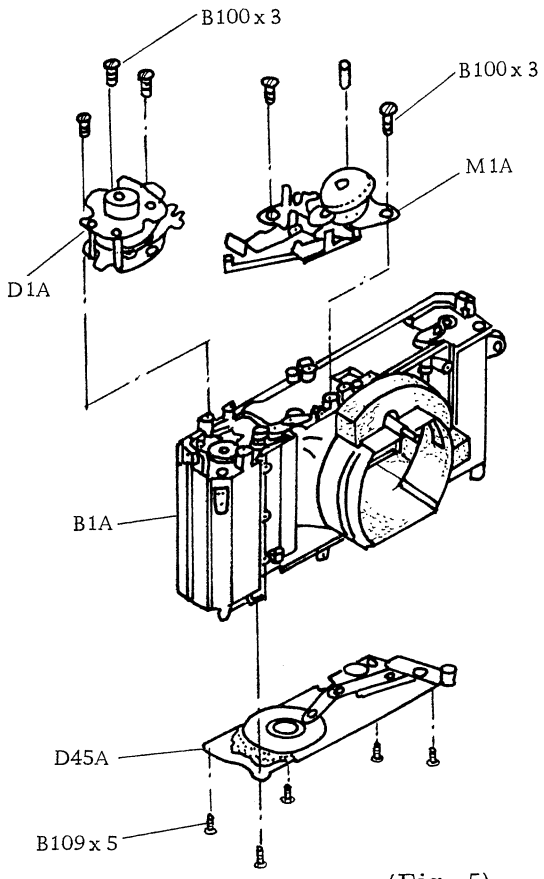
   Remove the installation screws (B100, 3 each), and remove the film advance mechanism unit (D1A). (Fig. 5)

5. Shutter Set Mechanism Unit (D45A)

   Remove the installation screws (B109, 5 each), and remove the shutter set mechanism unit (D45A). (Fig. 5)

6. Film Indicator (M1A)

   Remove the installation screws (B100, 3 each), and remove the film indicator (M1A). (Fig. 5)



(Fig. 5)

7. Range/Viewfinder Unit (S0)

   Remove the installation screws (B101, 3 each), and remove the range/viewfinder unit. (Fig. 6)

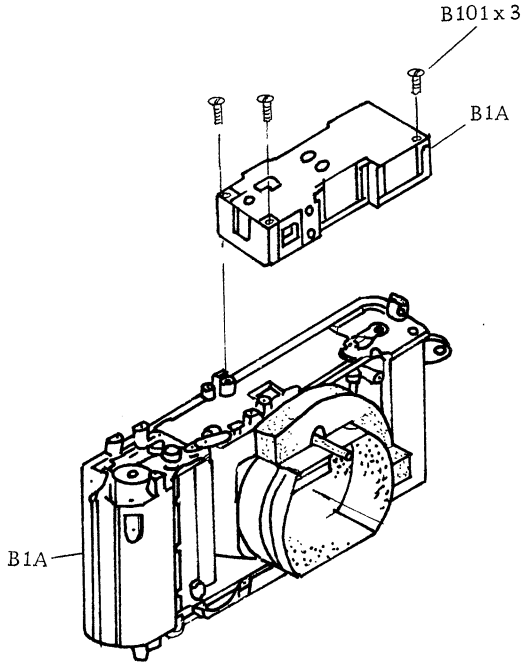


Fig. 6

8. Light Shielding Curtain (B48A)

A. Peel off a part of the Moltplene (B110) at the upper side, and remove the light shielding hood installation screws (B99, 4 each). Remove the edge installation screws (B12, 2 each), and set free the edge (B11). (Fig. 7)

B. E-clips (B113, 2 each) are installed on the range finder interlock rod (B111A). Remove the rear E-clip (B113), withdraw the range finder interlock rod (B111A) forward, with attention paid on the spring (B114), and remove the light shielding hood. (Fig. 7)

C. Remove the set screw (B100), and holding down the control lever (B45), turn the lever slowly to the left to release the spring from the tension. (Fig. 7)

D. Remove the set screw (B62) and signal lever (B59A), and loosen the shielding curtain installation collar (B53) set screws (B55, 2 each). Next, remove the shaft (B54) downward and remove the guide rollers (B35 and B36) from the openings on the body top. (Fig. 7 and 8)

E. Remove the set screws (B106, 2 each), and remove the light shielding curtain (B48A) and the light shielding curtain shaft holder (B44). (Fig. 7)

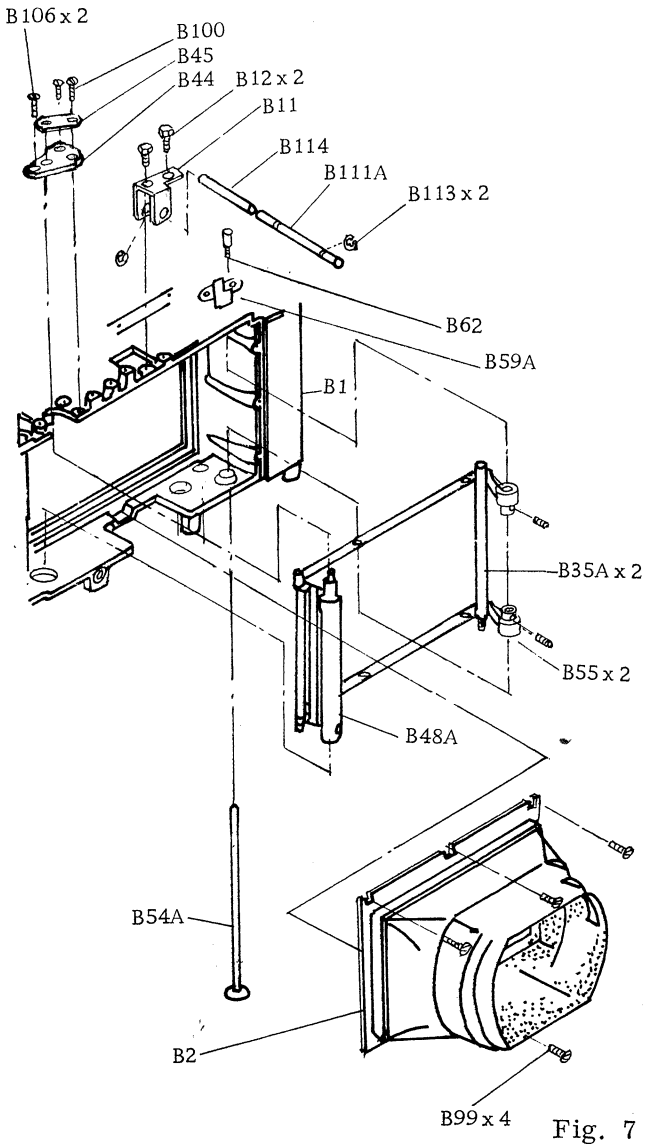


Fig. 7

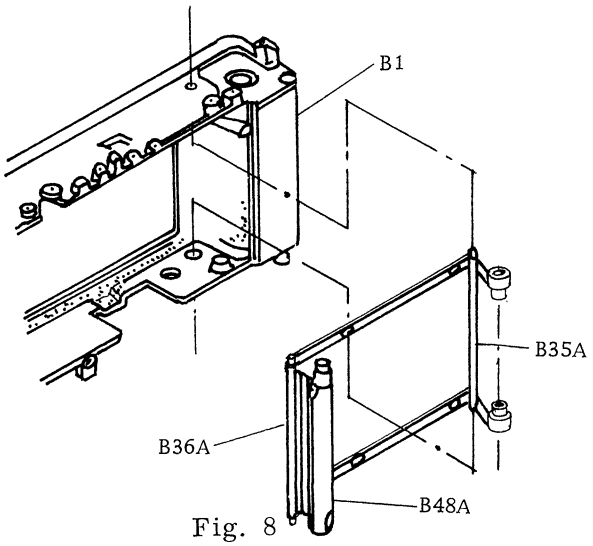


Fig. 8

9. Rear Cover (F1A)

Peel off the leather cover (B95). Remove the hinge set screws (B104, 4 each), and remove the rear cover (F1A). (Fig. 9)

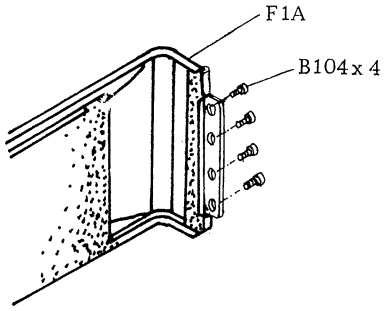


Fig. 9

10. Rear Cover Lock Key (B83)

Peel off the leather cover (B94) and remove the screws (B105, 2 each). Remove the collars (B85, 2 each), lock key (B83), and spring (B84). (Fig. 10)

11. Knobs (B27A and B28A)

Peel off the leather covers (B33, 2 covers), and remove the screws (B32, 2 each). Remove the spool shaft holder (B24), spring (B26), and knobs (27A and B28A). (Fig. 10)

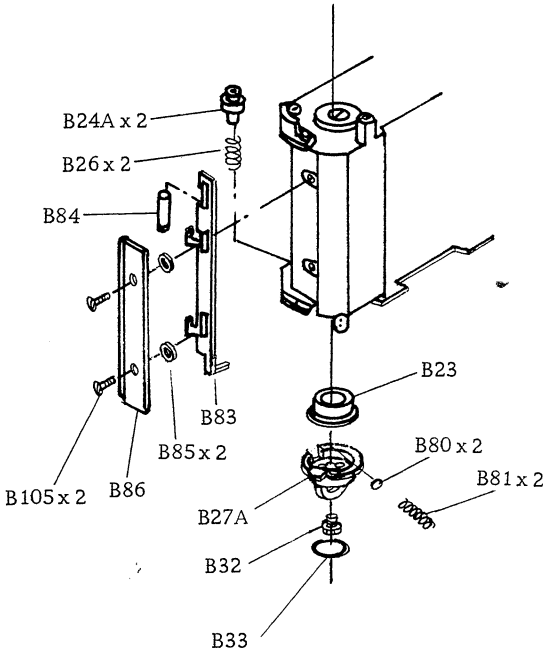


Fig. 10

II. REASSEMBLY, REPAIR AND ADJUSTMENT

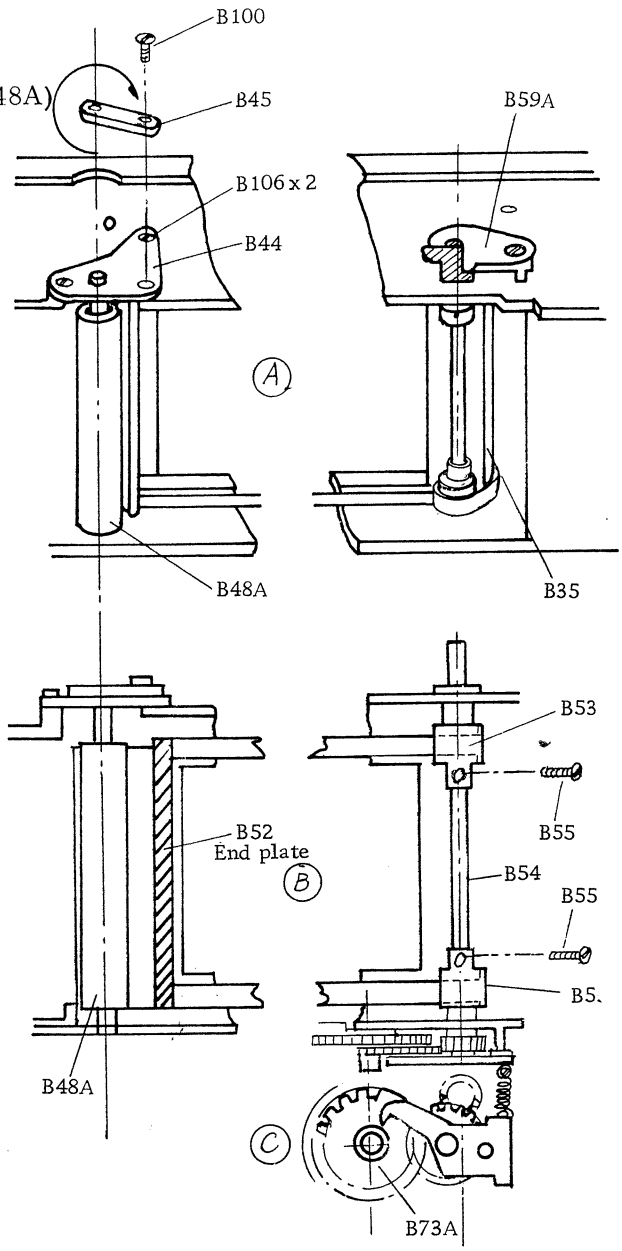
1. Reassembling the Light Shielding Curtain (B48A)

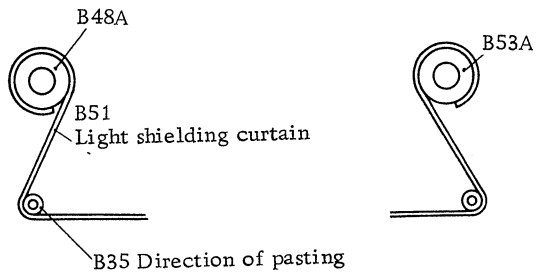
   Reassemble and adjust those parts which have been disassembled based on the instructions described in the para. I-8A and 8B above, in accordance with the following instructions:

   A. First, supporting the light shielding curtain (B48A) shaft with the shaft hole on the bottom plate and the shaft holding plate (B44), secure the shaft with screws (B106, 2 each). (Fig. 11 (A))

   B. Next, install the light shielding curtain wind shaft (B54) on the main body together with the curtain installation rings (B53, 2 each), and secure the rings on the shaft (B54) with the screws (B55, 2 each). (Fig. 11 (B))

   C. Apply adhesive to both ends of the curtain (overlaps for adhesive in both ends of the curtain), covering 270° of the curtain installation ring circumference, at the position where the gear (B73A) stops during turning toward the arrow mark direction shown in the Fig. 11 (C), and paste up both ends of the curtain on the curtain installation rings (B53). With the light shielding curtain faced inward, install the guide rollers (B35, 2 each) on the main body.





Apply adhesive to 3/4 (270°) of the circumference.

Fig. 11

1.1 Adjusting Light Shielding Curtain Overlaps

Fit the shaft holder stopper (B45) to the shaft (B48A), and turning it to the right, provide 2.5 to 3 turn overlaps. Tighten the shaft holder stopper (B45) with the screw (B100), and make sure that the curtain is wound and rewound smoothly. (Fig. 11 (A))

1.2 Adjusting Light Shielding Curtain Position

a. When the light shielding curtain is positioned correctly and the light shielding curtain is set to the open position, the end plate stops at a position 0.5 mm from the film picture frame as shown in Fig. 12.

When the position is deviated, holding down the gear shaft (B54A) by hand, loosen the screw (B69). In addition, disengage the gear (B64A) from the gear (B57A), and turning the gear shaft (B57A) slowly, decide the stop position of the end plate. Re-engage the gear (B64A) with the gear (B57), and tighten the screw (B69) securely. Next, set the light shielding curtain to the close position, and make sure that the film picture frame is shielded with the curtain completely. (Fig. 12 and 13)

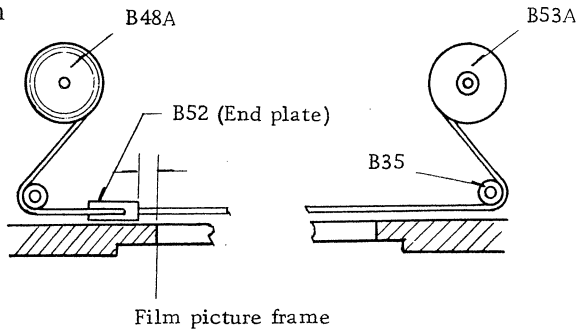


Fig. 12

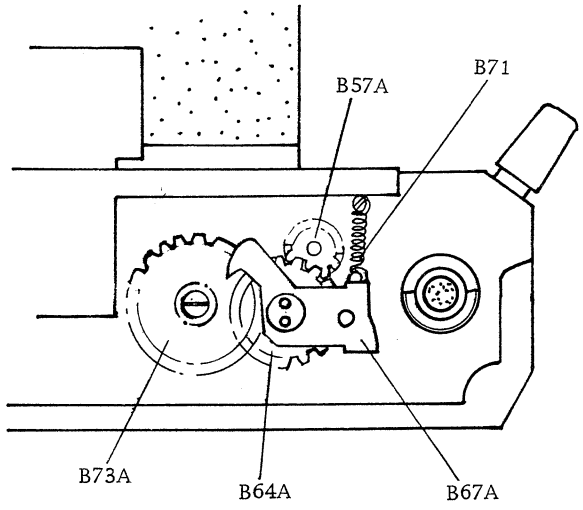


Fig. 13

b. Screw the signal lever (B59A) into the threaded hole on the shaft (B54) end. Secure the screw (B62) at a position where the threaded hole end is aligned flush with the signal lever surface. (Fig. 14)

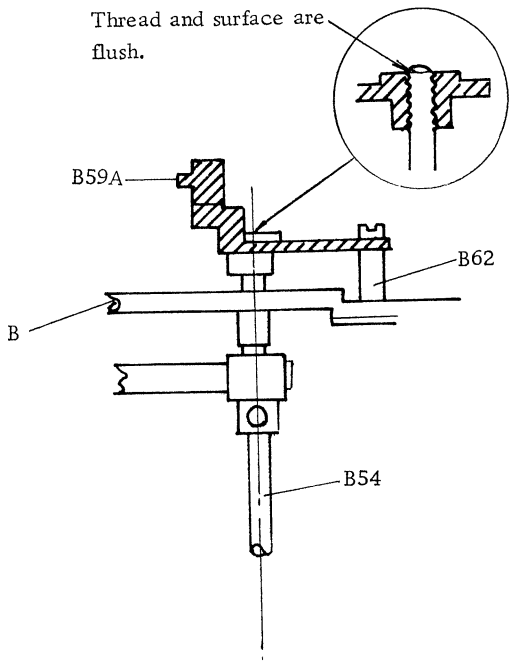


Fig. 14

1.3 Installing Light Shielding Hood (B2)

Fit the edge (B11) and range finder interlock rod (B111) to the main body top, and secure them with the E-clips. Carefully insert the range finder interlock rod (B111) into the light shielding hood so that the light shielding curtain is not damaged, and install the light shielding hood (B2) on the main body.

Securely tighten the screws (B99, 4 each), and secure the edge (B11) of the range finder interlock rod (B111A) with screws (B12, 2 each). Now, make sure that the light shielding curtain operates smoothly. (Fig. 15)

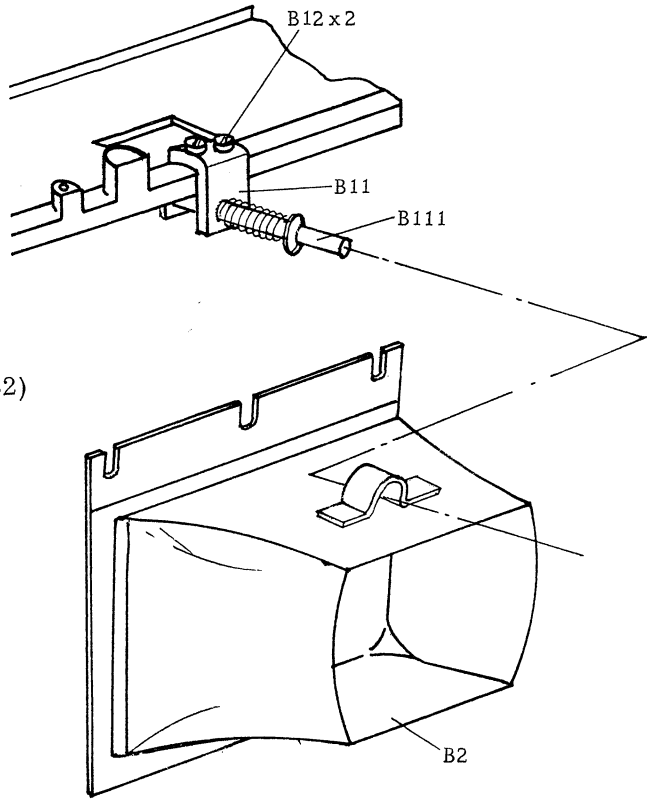


Fig. 15

1.4 Adjusting lock release button

a. When the lock release button is defective or when the lock cannot be released with the light shielding curtain closed, inspect and adjust the lock release button in accordance with the following instructions:

b. Peel off leather from front right side of the body, and make sure that the guide pin (C70) is in the groove of lock ratchet (B131). (Fig. 1)
When it cannot be assured that the guide pin is in the groove or when the guide pin is not in the groove correctly, detach the lens installation plate (C1A), and make sure that the lock ratchet is in the correct position. (Fig. 3)

c. When the lock ratchet (B131) is not in the correct position, reposition correctly and reinstall the lens installation plate (C1A). When installing the lens installation plate (C1A), be careful to apply end of the guide pin (C70) correctly into the groove on the lock ratchet (B131).
It should be noted that the lock ratchet and light shielding curtain do not operate smoothly if the

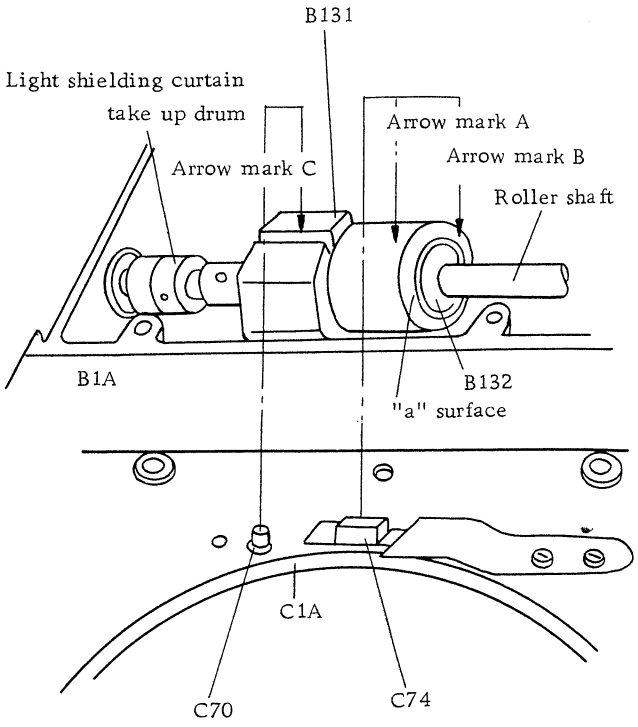


Fig. 3

When the lock ratchet (B131) is in the correct position, "a" surface of the lock ratchet and "a" surface of B132 are in the same position with the light shielding curtain closed.
The arrow mark A indicates that when the light shielding curtain is closed and the release button (C67) is depressed, the C74 comes into contact with the B131, and lock cannot be released.
The arrow mark B indicates that when the light shielding curtain is closed and the C67 is depressed, the C74 disengages the B131, the C74 lowers, and the lens is released from locking.

lock ratchet (B131) is screwed excessively or the guide pin (C70) is not applied into the groove smoothly.

1.5 Adjusting light shielding curtain take-up and release

a. When the light shielding curtain take-up knob (B79) is turned (approximately 180°) and it does not click (stop), inspect and repair in accordance with the following instructions:

b. Detach the bottom plate (E3), and make sure that the hook on the stopper plate (B67) correctly hooks the pin (B76). When hooking is insufficient, properly bend the hook with a pair of pliers so that it hooks the pin securely. (Fig. 5)

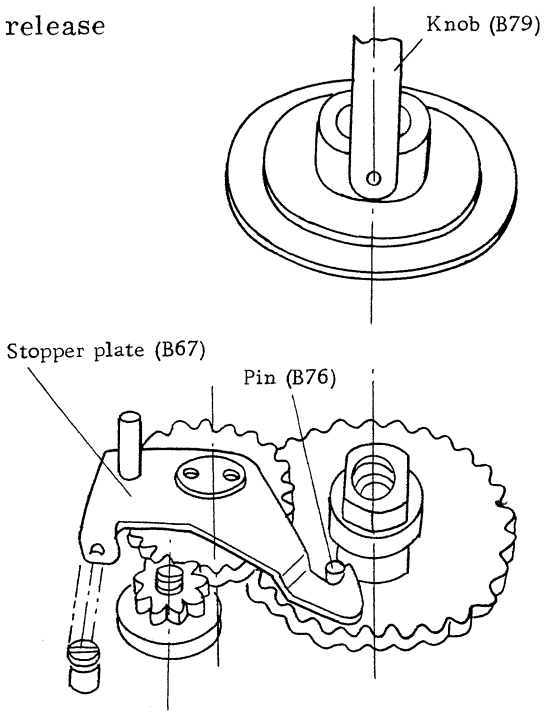


Fig. 5

c. When the light shielding curtain release lever (E43) does not operate lightly, inspect and repair in accordance with the following instructions. Remove the bottom plate (E3) and two C-washers (E44), and check the light shielding curtain release lever for flatness. Replace, if defective. (Fig. 6)

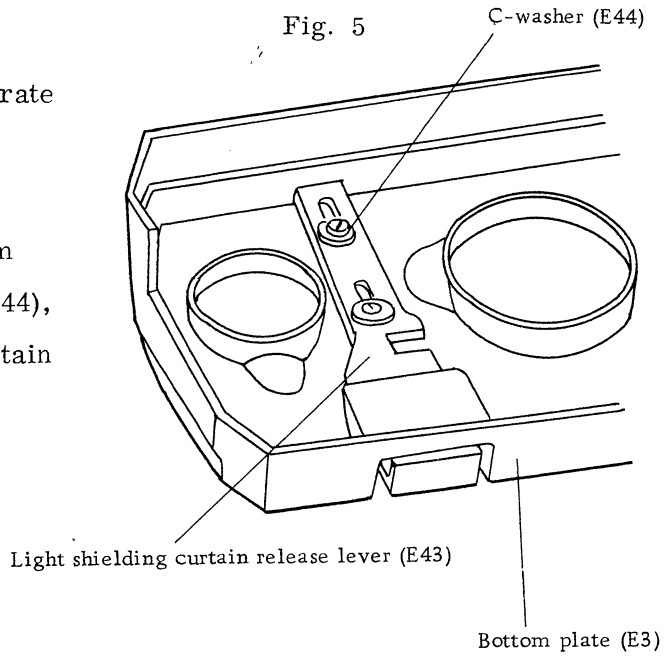


Fig. 6

2. Repairing and Adjusting the Light Shielding Curtain (B48A)

2.1 When the light shielding curtain is set to close, the system does not click. Check the system for faulty stop lever (B67A) operation, unhooked and/or weakened spring (B71). When the parts are defective, repair or replace. (Fig. 16)

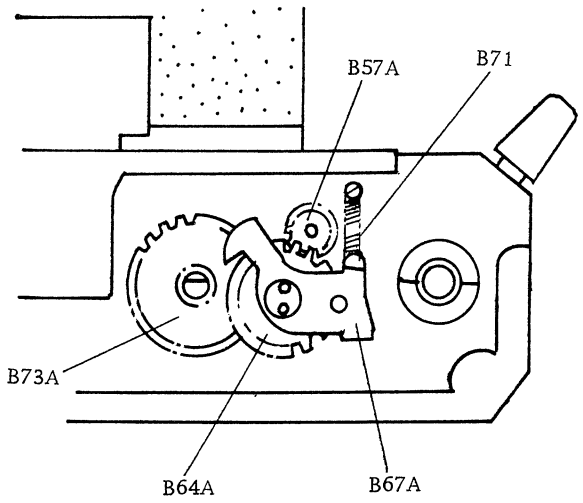


Fig. 16

2.2 Deviated light shielding curtain position

When the light shielding curtain (B51A) is set to open or close and the end plate (B52) is deviated from the correct position (projected out to the film picture frame), refer to the instructions described in the para. II-1.2 above, and readjust the position.

2.3 Faulty light shielding curtain operation

When the light shielding curtain return spring is not wound sufficiently (when the spring tension is not sufficient), turn the shaft holder stopper (B45) approximately one half turn and wind the spring sufficiently (increase the spring tension). See the para. II-1.1 above. Moreover, when dust and/or other foreign matters are present in the space between the light shielding hood (B2A) and body (B1), clean and make sure that the light shielding curtain operates correctly. (Fig. 17)

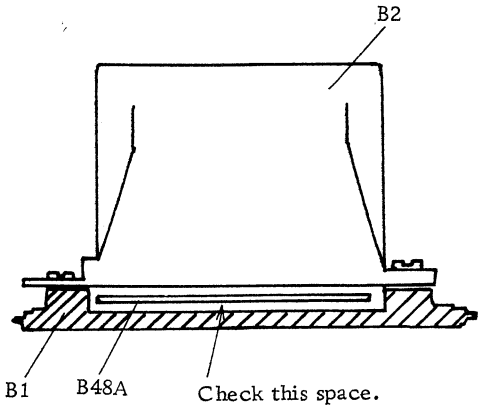


Fig. 17

2.4 Faulty light shielding curtain return

When the light shielding curtain return spring (B49) is weakened or unhooked, replace the light shielding curtain (B48A). (Fig. 18)

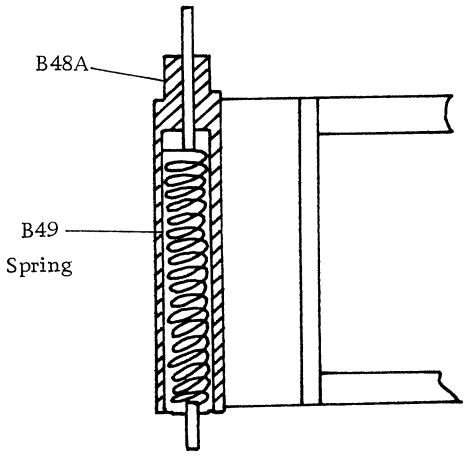


Fig. 18

2.5 Faulty light shielding curtain and signal lever interlock operation

Correct the position or repair the peeled off signal plate (B61) on the signal lever (B59A).

Set the light shielding curtain to close, and make sure that the red spot is seen in the finder. Set the light shielding curtain to open and make sure that the red spot goes out completely. (Fig. 19)

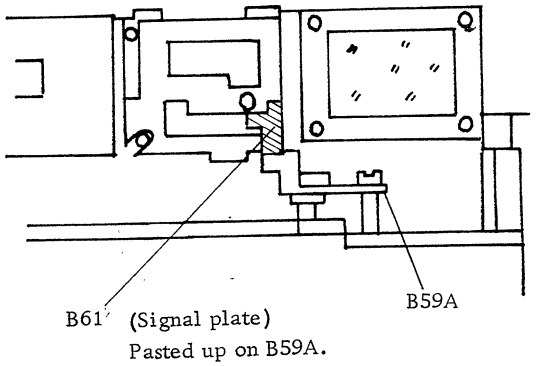


Fig. 19

2.6 With the light shielding curtain set to close, the release button can be depressed.

The stop lever (B118) does not operate correctly or the spring (B122) is unhooked. Rehook the spring (B122), or check the operation. Take corrective action, and adjust the operation.

In addition, make sure that the shutter operates correctly and timely. (Fig. 20)

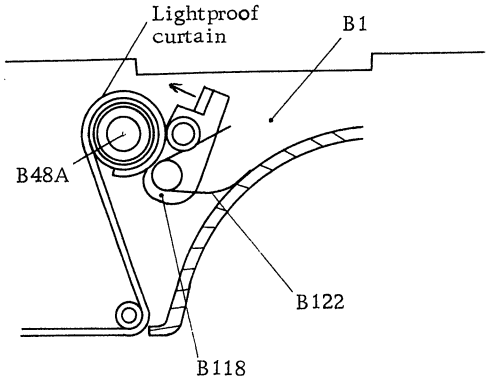


Fig. 20

3. Repairing and Adjusting Rear Cover

3.1 Defective rear cover (F1A) locking

When the lock key (B83) is deformed or does not engage correctly, check the key (B83) and repair or replace. At the same time, make sure that the spring (B84) is not weakened or unhooked. (Fig. 21)

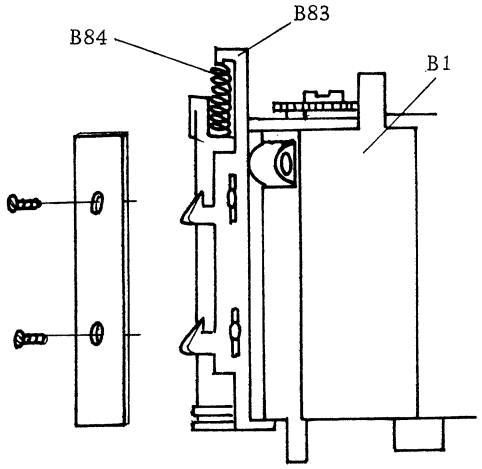


Fig. 21

3.2 Light leakage on the rear cover

When Moltplene (F21) covers (2 sheets) are peeled off, completely paste up with adhesive. When the rear cover is too loose, lightly tap the curved portion of the rear cover (F1) with a wooden mallet and adjust the tightness. In addition, retighten the screws (B104, 4 each). (Fig. 22)

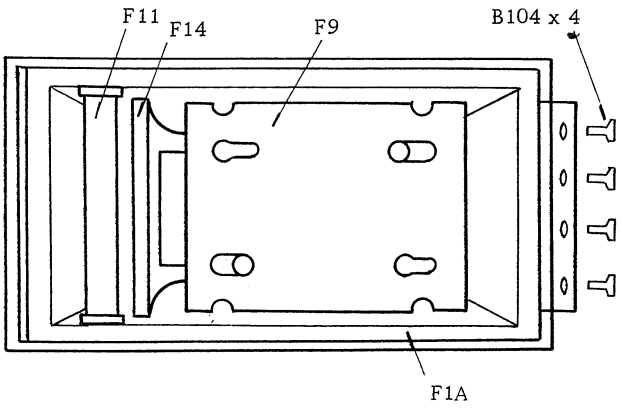


Fig. 22

3.3 Scarred film

Check the pressure plate (F9) for scar and/or bur. When the pressure plate is scarred or scratched, replace the pressure plate (F9) with new one.

Check the pressure plate for flatness with a linear scale. When bent, correct the bending to 0.05 mm or less.

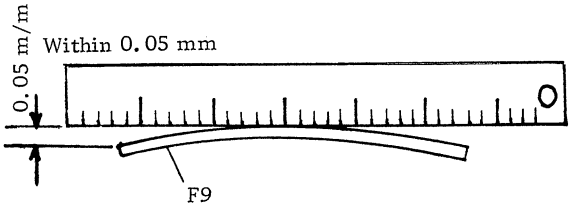


Fig. 23

Next, check the rollers (F11 and F14) for scars and/or bur. When the rollers do not rotate lightly and smoothly, take corrective action on the holders.

Moreover, check the camera interior and exterior for possible dust accumulation. Clean, if dusts are accumulated. Accumulated dusts may scratch film. (Fig. 22 and 23)

3.4 Poor rear cover (F1A) operation

When the rear cover (F1A) is bent or warped, tap the rear cover lightly with a wooden mallet and adjust. Moreover, retighten the screws (B104).

4. Reassembling and Adjusting Film Indicator (M1A)

Reassemble and adjust those parts relative to the film indicator (M1A) which have been disassembled based on the instructions described in the para. I-7 above, in accordance with the following instructions. First, open the rear cover, and inserting the reset lever (M38A) end into the groove on the main body, install the film (M1A) on the main body. Now, secure the counter with screws (B100, 3 each). (Fig. 24)

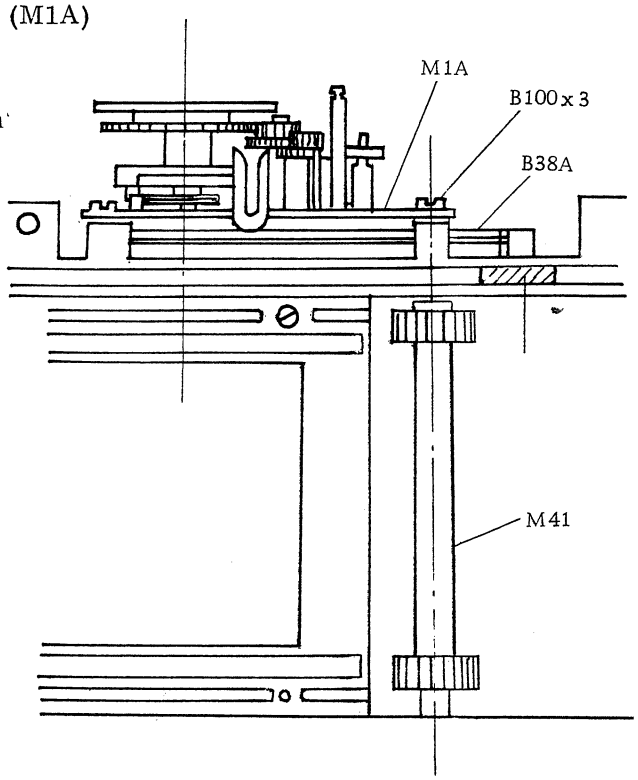


Fig. 24

5. Repairing and Adjusting Film Indicator (M1A)

5.1 Faulty indicator advancing

The hook lever (M29A) end bending or operation is defective. Correct the bending, and when the operation is still defective, replace the film indicator (M1A) with new one.

Next, when the toothed wheel (M15) does not return correctly, check the

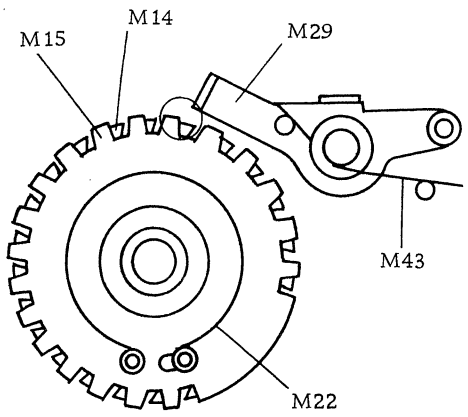


Fig. 25

spring (M22). Moreover, check the toothed wheels (M14) and (M15) for the lapping. If the lapping is improper, take corrective action by menas of lapping. (Fig. 25)

5.2 Faulty film indicator resetting

a. Unhooked reset spring (M23)

When the reset spring (M23) is unhooked, hook it correctly. When the reset spring is warped, weakened, or broken, replace. When replacing the spring with new one, remove the spring carefully. The gear (M5) adopts a left hand screw. When the spring (M12) is removed, simultaneously remove the lever (M7A) and toothed wheel (M14A) upward, and replace the spring (M23) with new one. (Fig. 26)

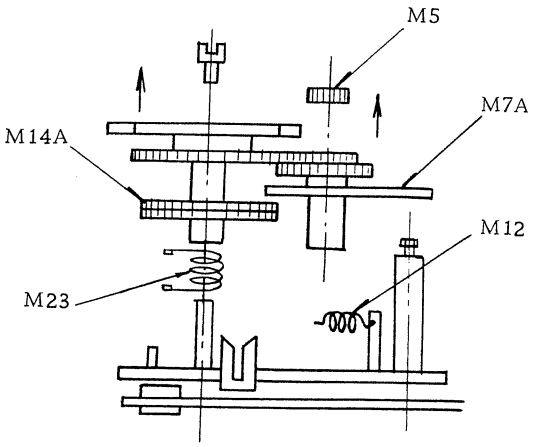


Fig. 26

b. Faulty reset lever (M38A) or lever (M7A)

Check the reset lever (M38A) or lever (M7A) for proper operation and the springs (M41), (M12), and (M57) for unhooking or weakness.

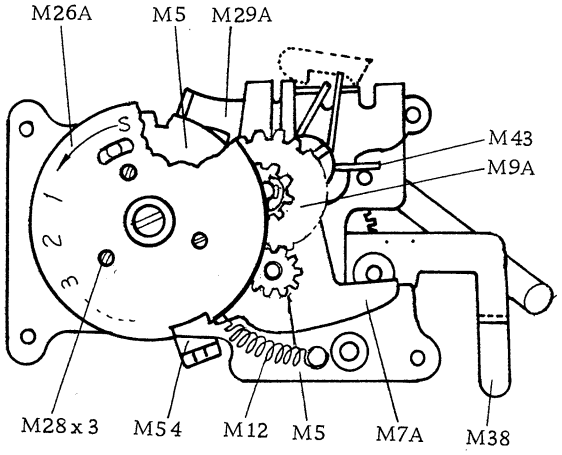


Fig. 27

5.3 Deviated film indicator panel (M26A) position

Loosen the set screws (M28, 3 each), turn the film indicator panel (M26A) either to the right or left, and correctly adjust the "S" position. (Fig. 27)

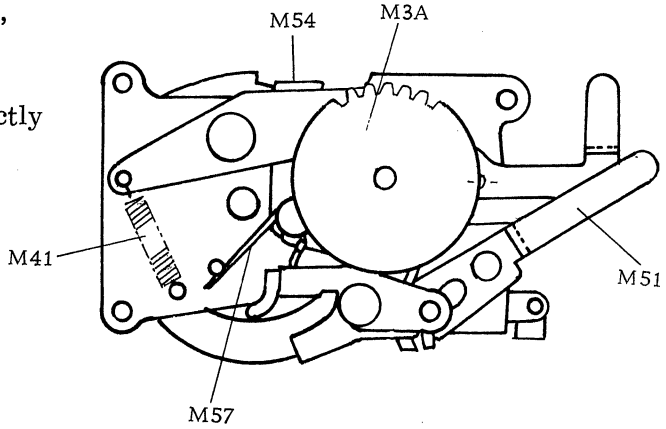


Fig. 28

5.4 Faulty R ⟷ S changeover (Roll/Sheet Film Selector)

When the spring (M57) is unhooked or weakened, hook the spring or replace the spring with new one. Moreover, make sure that the changeover pin (E33) is correctly fitted to the groove on the lever (M54). (Fig. 29)

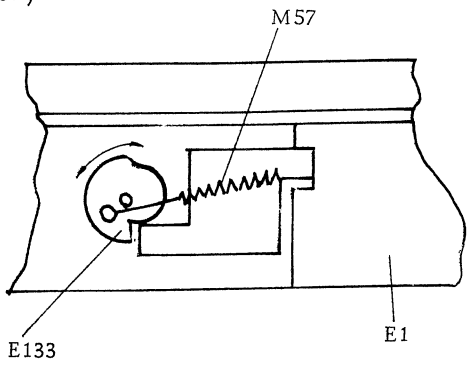


Fig. 29

5.5 Improper film advancing

Particularly when "Brownie" size (6 × 9 cm (2-1/2 × 3-1/2 in.)) film (J120) is used and the film is insufficiently advanced, bend the lever (E7) to the left.

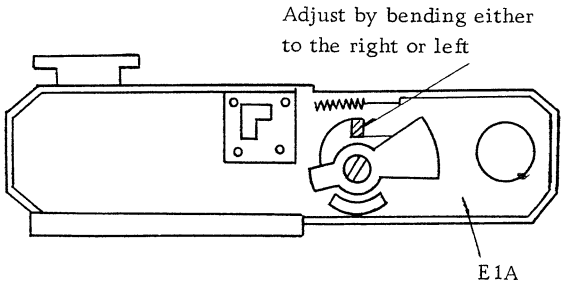


Fig. 30

Load the camera with a roll of test film, and make sure that the film is correctly advanced at each frame up to the counter number "8" and is free when the film counter counts the number "8". When the film is not free and stops at the number "9" position, bend the lever to the right and adjust the film advancing correctly. (Fig. 30)

5.6 Poor film drum (B41) rotation

When the film drum (B41) does not rotate lightly and smoothly, repair the shaft (B39) and shaft holer (B38) by means of lapping so that the drum rotates lightly. (Fig. 24)

6. Reassembling and Adjusting Film Advance Mechanism Unit (D1A) and Shutter Set Mechanism Unit (D45A)

Reassemble and adjust those parts which have been disassembled based on the instructions described in the para. I-4 and 5 above, in accordance with the following instructions:

A. First, fitting the eccentric pin of the film indicator unit (M1A) into the stop claw (D1) groove on the film advance mechanism unit (D1A), secure the film advance mechanism unit (D1A) on the main body with screws (D100, 3 each).

Tighten the film advancing lever (D40A) temporarily, and turn the film advance limiting ring (D29) to the left until it stops. With the film advance limiting ring stopped, turn over the main body. Correctly position the shutter set mechanism unit (D45A) as shown in Fig. 32, turn the shutter set ring (C6A) to the right (direction indicated by the arrow mark), securely install the shutter set mechanism unit (D45A) with screws (B109, 5 each) at a position where the shutter set ring stops, and hook the spring (D34) to the spring hook pin (M46). (Fig. 31, 32, and 33)

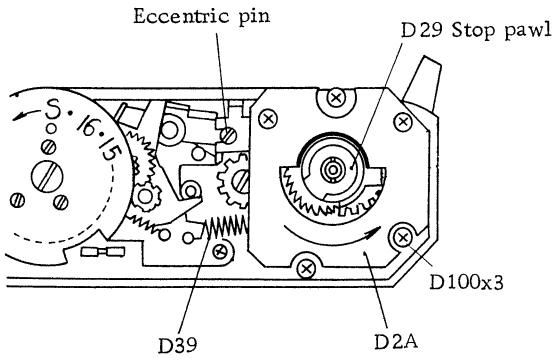
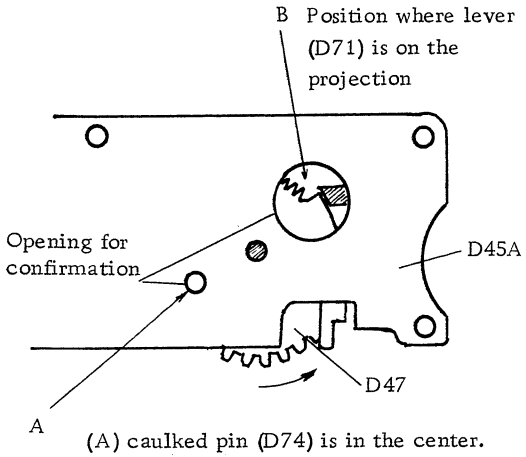


Fig. 31



(A) caulked pin (D74) is in the center. (Turn the D47, and confirming through the openings (A) and (B), correctly position.)

Fig. 32

B. Shutter set mechanism unit (D45A)
When the shutter set mechanism is installed completely, install the lens barrel on the body. Set the roll/sheet film selector to "S" (sheet) position, turn the film advance lever completely, and return the lever slowly.
(The lever does not return during the initial one turn, unless the lever is turned completely.) Next, depress the shutter release button, and make sure that the shutter operates correctly.

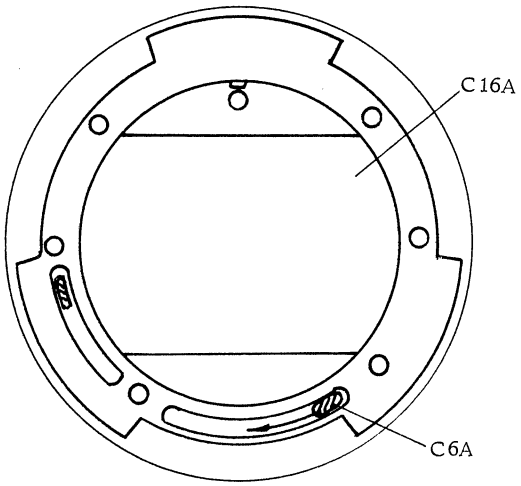


Fig. 33

7. Repairing and Adjusting Film Advance Mechanism Unit (D1A) and Shutter Set Mechanism Unit (D45A)

7.1 Improper film advancing

When the film advance lever is turned and film is not advanced, the springs (D27, 2 each) are unhooked or the ratchet pawl does not operate correctly. Correctly hook the springs or replace the ratchet wheel (D21A) with new one. (Fig. 34)

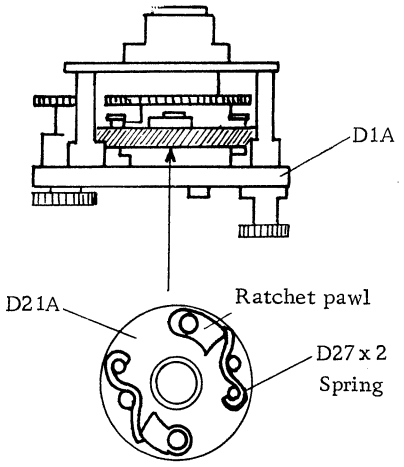
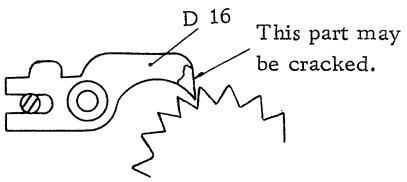


Fig. 34

7.2 Poor film advance lever return

The film advance lever return spring (D34) is unhooked or defective. Correctly hook the spring or replace the spring with new one. (Fig. 35)



7.3 Defective film advance lever stop

The film advance lever stop pawl (D16) does not operate correctly, end of the pawl (D16) is cracked, the spring (M43) in the film counter unit is unhooked and/or the stop pawl (D16) does not operate correctly.

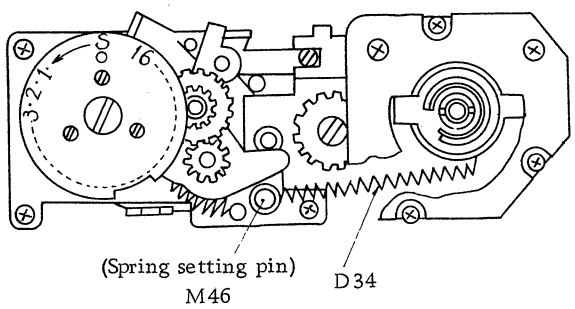


Fig. 35

Repair the spring, or replace the film advance mechanism unit (D1A) and/or film indicator unit (M1A) with new one. (Fig. 35)

7.4 The film advance lever returns during the initial one turn before the lever is turned completely.

Remove the shutter set mechanism (D45A) and check the spring and lever for the correct operations. When the spring (D65) is defective or the lever (D71) does not operate correctly, replace the shutter set mechanism (D45A) with new one. (Fig. 36)

For the shutter set mechanism (D45A) reassembly, see the para. 6-A and 6-B above.

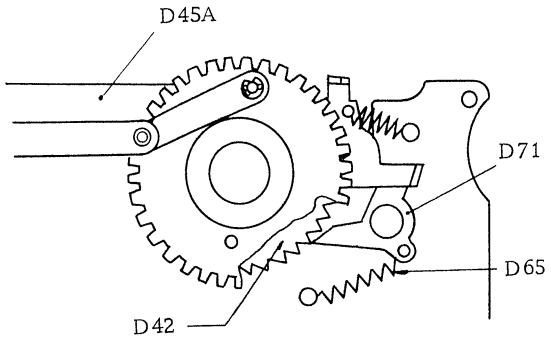


Fig. 36

7.5 The film advance lever cannot be turned smoothly.

Set screw (D6) is too loose, or dusts or metal particles are meshed between gears of the film advance mechanism (D1A) and shutter set mechanism (D45A). Retighten the set screw and remove dusts or metal particles from the gears.

8. Reassembling and Adjusting the Lens Barrel Installation Seat (C1A)

Reassemble and adjust those parts which have been disassembled based on the instructions described in the para. I-3A above, in accordance with the following instructions:

8.1 Reassembling the lens barrel installation seat (C1A)

Turn the lens barrel installation seat (C1A) set lever toward the direction indicated by the arrow mark in Fig. 37, and securely install the lens barrel installation seat (C1A) on the main body with screws (B102, 6 each) at a position where the set lever stops. (Fig. 37)

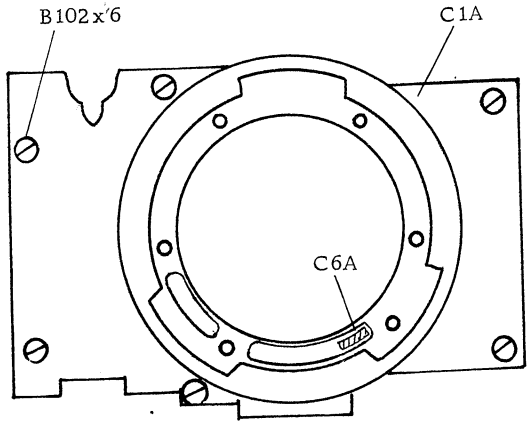


Fig. 37

8.2 Adjusting the flange focus

Set a zero-point gauge (A0-GA1) as shown in Fig. 38, and check parallelism of the bayonet ring (C16A) flange focus from the film rail surface. The standard flange focus is 64.5 ± 0.02 mm. When the measurement exceeds the standard value, dusts must have been accumulated between the main body (B1) and the lens barrel installation seat (C1A) or between the lens barrel installation seat (C1A) and bayonet ring (C16A).

Thoroughly clean, and reassemble. When the measurement is insufficient to the standard value, apply tin foil to the sections between the main body and the lens barrel installation seat and/or between the lens barrel installation seat and bayonet ring, and adjust the distance and parallelism. (Fig. 38 and 39)

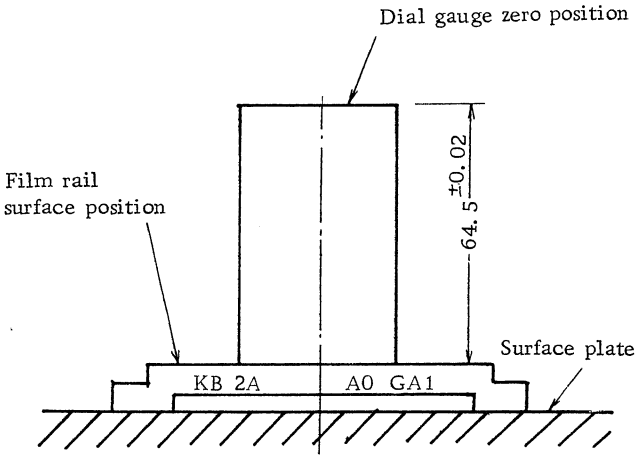


Fig. 38

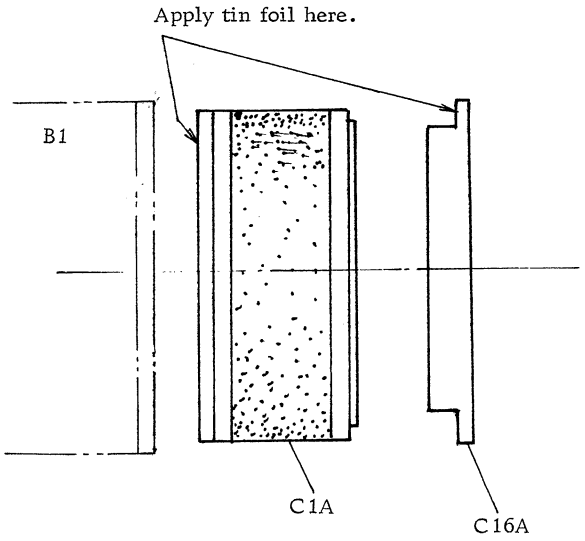


Fig. 39

8.3 Adjusting shutter set position

Install a shutter release position inspecting tool (A0-GA3) on the lens barrel installation seat (C1A). Next, turn the film advance lever, and make sure that the edge part of the shutter set lever (C7) is in between the "A" and "B" lines at the position where the film advance lever stops.

When the edge part is not in the "A" and "B" lines, remove the lens barrel installation seat (C1A), and retighten the shutter set lever installation screw (C50). (Fig. 40)

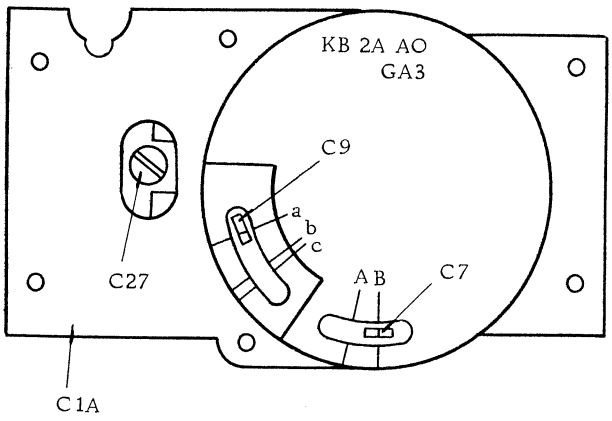


Fig. 40

8.4 Adjusting shutter release position

Install the shutter release position inspecting tool (A0-GA3) in the manner identical to the above. Adjust the adjust screw (C27) properly so that the release lever (C9) edge starts from the "a" line when the release button is depressed. Next, depress the shutter release button, and make sure that the ratchet pawl (C54) is released from the stopped condition when the release lever (C9) edge reaches the "b" line. When the ratchet pawl does not disengage, bend the ratchet lever (C54) and adjust the timing. Depress the shutter release button further, and make sure that the release lever (C9) edge reaches the line "c" completely. (Fig. 40)

8.5 When the lens lock is defective with the light shielding curtain open, inspect and repair in accordance with the following instructions:

a. Remove the cover (C68), two screws, and button (C67). Lightly depress the lock lever (C75) and release lever (C74) with head of a screw driver, and make sure that the levers are smoothly operated by spring force. (Fig. 1)

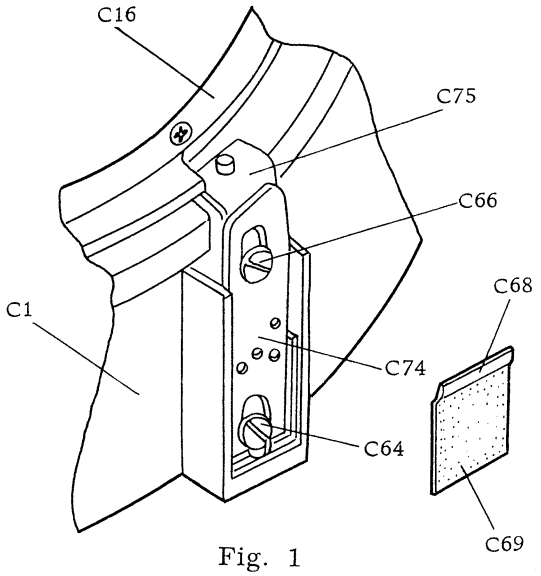


Fig. 1

b. When they do not operate smoothly, remove screws (C64 and C66), remove the release lever (C74A), thoroughly clean it, and correct if bent. When the lock lever (C75) does not operate smoothly, check it for bending and weakened spring (C62) and correct.

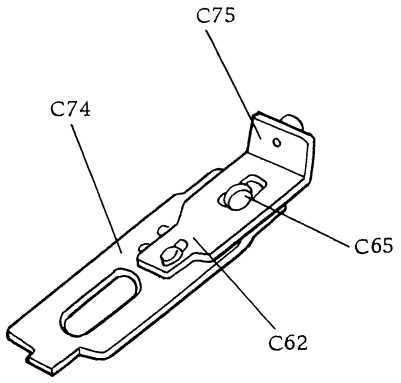


Fig. 2

9. Repairing the Lens Barrel Installation Seat (C1A)

9.1 Shutter setting is too heavy. - Faulty shutter set ring (C3A) operation. Replace the set ring (C3A) with new one. (Fig. 41)

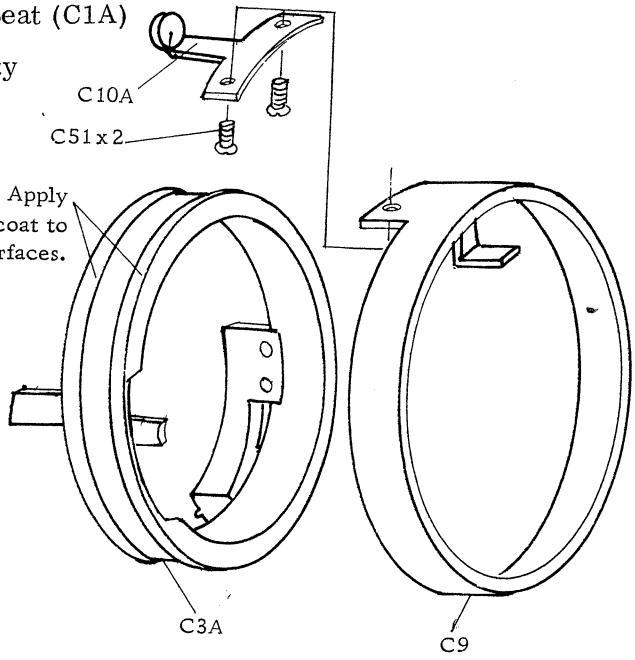


Fig. 41

9.2 Shutter release button does not operate lightly. - Faulty release lever ring (C9) operation. Apply Molicoat and smooth the operation. In addition, smooth the release guide lever (C24A) and screw (C33) slidings, and lubricate the sliding parts with grease (Keeston). (Fig. 41 and 42)

9.3 Poor shutter release button return Check the shutter release guide lever (C24) return spring (C35) for unhooking or damage. When unhooked, rehook, or when damaged, replace. (Fig. 42)

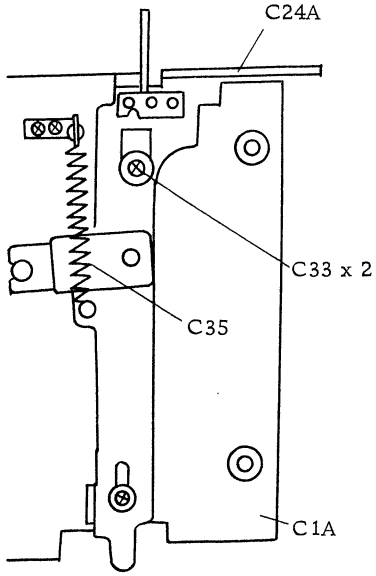


Fig. 42

10. Adjusting the Range /Viewfinder (S0)

10.1 Adjusting the direction and elevation

Disassemble the top cover (E1A) in accordance with the instructions described in the para. I-1 above. Remove the lens barrel from the main body, and install a depth meter (A0-GA15) on the main body. Next, set the micrometer of the depth meter (A0-GA15) to " ∞ " (Standard position marked on the depth meter). (Fig 43) Further, install them on a collimater, and see the image in the range/ view-finder (S0) with an eyepiece. (Fig. 44) When the direction is deviated, adjust the adjust screw (S9) correctly. When the elevation is deviated, adjust the adjust screw (S8), and coincide the image in the range/viewfinder. (Fig. 45) For all adjustments, the tolerance is zero.

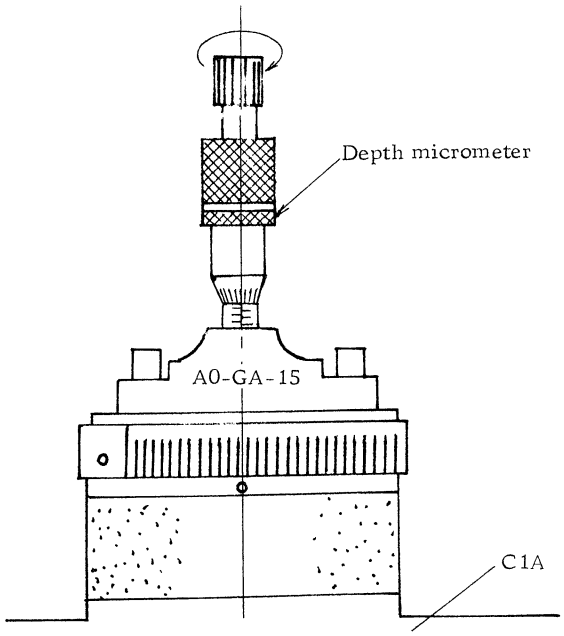


Fig. 43

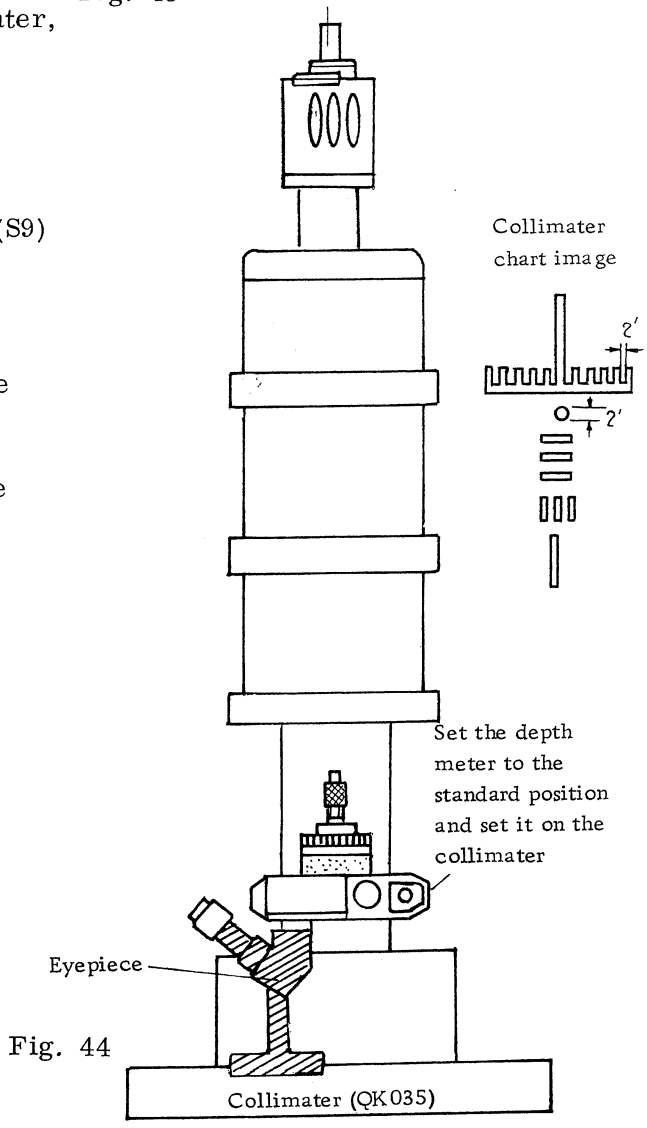


Fig. 44

10.2 2-meter adjustment

Draw out the depth meter $2.228^{+0.02}_{-0.05}$ mm from the standard position. Next, install the test chart accurately in a point distanced 2 meters from the film surface of the main body. (Fig. 46) When the image in the range/viewfinder is deviated, loosen the screw (S25), turn the adjust screw (S20), and coincide the images in the range/viewfinder. Upon completion of the adjustment, be sure to retighten the screw (S25).

Return the depth meter (A0-GA15) to the standard position, and make sure that the collimater range finder is set to " ∞ ". In this adjustment, the tolerance against the standard position should be within $^{+0.05}_{-0.02}$ mm. (Fig. 45)

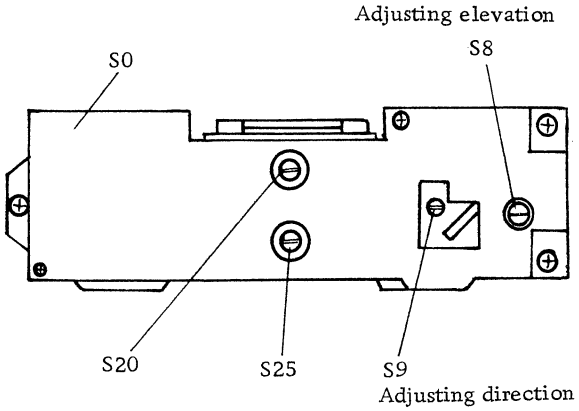


Fig. 45

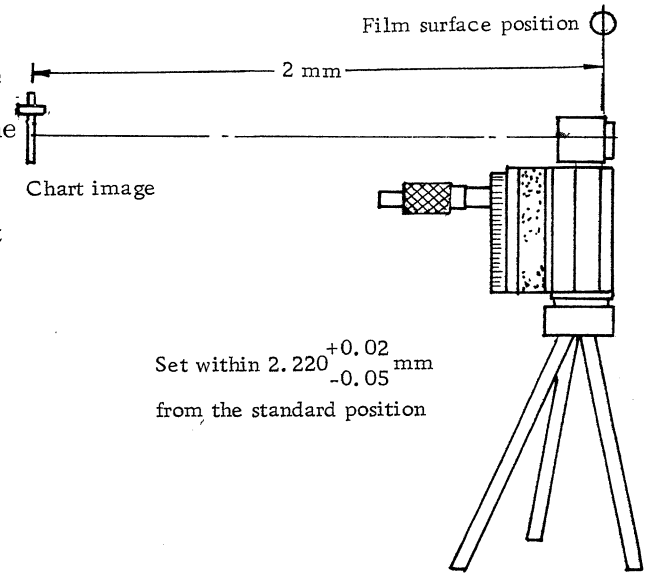


Fig. 46

10.3 Faulty range/viewfinder (S0) operation

Check the springs (S37 and 58) for weakness or unhooking, and repair or replace as required. When the field frame does not operate, check the spring (S47) for correct installation and operation. (Fig. 47)

Note 1) When adjusting the direction and elevation, the top cover is removed. When adjusting " ∞ " only, however, the adjustment may be carried out after removing the accessory shoe (E17).

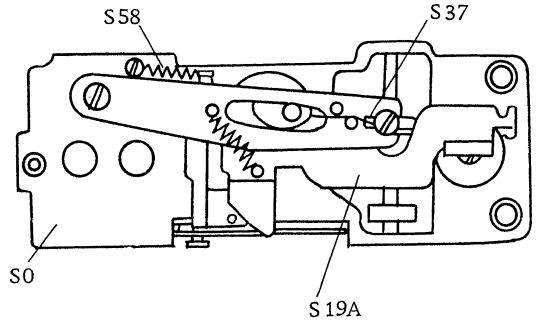


Fig. 47

Moreover, when the accessory shoe is removed once, readjust the parallax in accordance with the instructions described in the para. II-12.2 below without fail.

2) When adjusting the infinite distance (∞) without using collimater, select a liner item distanced 1000 meters or longer, and correctly adjust the range finder.

11. Reparing and Adjusting Knobs (B27A) and (B28A)

When the knobs (B27A) and (B28A) do not operate correctly, check the spring (B26) for weakness, and check the knob (B28A) also.

When the knobs do not click correctly, replace the knobs (B27A) and (B28A) with new ones. The click ball (B80) must have been disengaged from the caulked position.

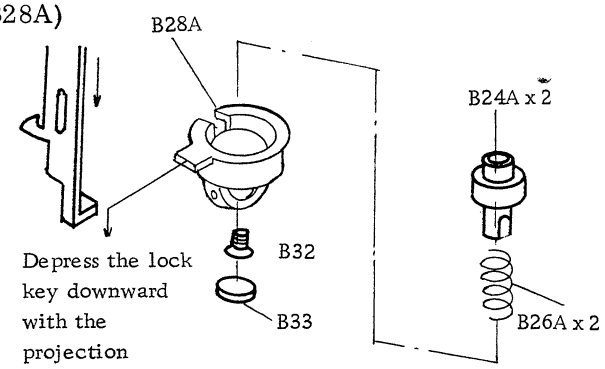


Fig. 48

12. Reassembling the Bottom Plate (E3)

Install the bottom plate (E3) on the main body with screws (E22, 3 each). Next, secure the light shielding curtain knob (B77A) with screw (B82), and make sure that the mark of the knob (B77A) is aligned correctly. The red " x " mark indicates that the light shielding curtain is open and green "O" mark indicates close. (Fig. 49)

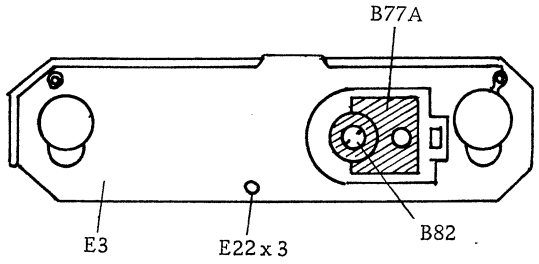


Fig. 49

13. Reassembling, Reparing, and Adjusting the Top Cover (E1A)

13.1 Assembling the top cover (E1A)

Fitting the pin of the R ⟷ S changeover unit (E33) to the lever groove (M54), install the top cover (E1A) together with the finder frame (E2A) and secure them with screws (E20, 4 each). (Fig. 50)

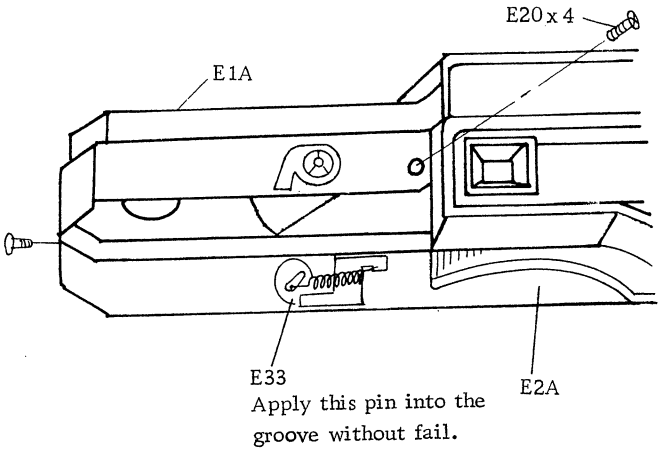


Fig. 50

13.2 Adjusting accessory shoe (E17)

Whenever the top cover (E1A) or accessory shoe (E17) is removed from the main body, be sure to adjust the accessory shoe position in accordance with the following instructions. First, install a standard lens barrel on the camera, place the camera in a point 3 meters from a test chart having a cross mark on it (to be more specifically, place the camera so that the film rail surface is distanced 3 meters from the chart), and set the shutter to open with a cable shutter release. Next, tightly attach a pint glass having a cross mark to the film rail surface, and coincide the cross mark on the pint glass to the cross mark on the chart.

New, install the depth meter on the

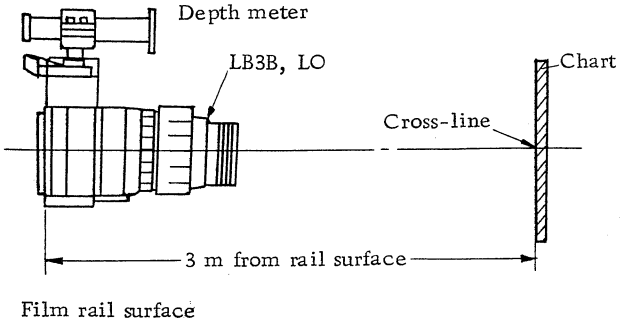


Fig. 51

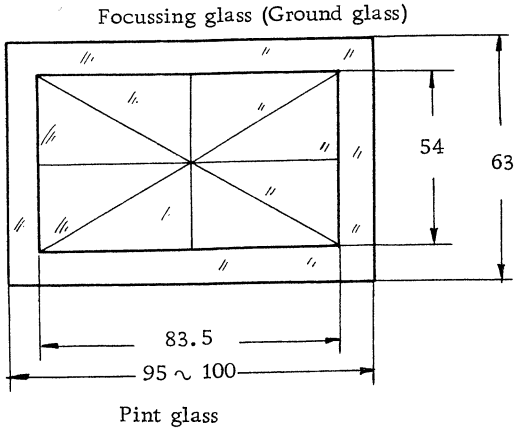


Fig. 52

accessory shoe carefully so that the camera is not moved from the above position. Looking through the depth meter, make sure that the cross mark in the field of view is correctly coincided with the cross mark on the chart. When the cross mark seen in the view of field is deviated from the corss mark on the chart, apply a washer beneath the accessory shoe (E17), and adjust the accessory shoe position correctly.

I. INSTRUCTIONS FOR DISASSEMBLY OF LENS BARREL (100 mm)

1. Disassembling lens front group (L1A), rear group (L4A), and shutter.

   A. Remove the lens plate (L3) with the Tool (L3-TA1).

   B. Remove the front lens group (L1A) with the Tool (L1-TA1) and rear lens group (L4A) with jig (L4-TA1).

   C. The black color lead wire connected to the synchronizer is provided with vinyl tube insulator. Move it to one side, and unsolder. Unsolder and disconnect the red color lead wire from the lag plate (L79). Next, disconnect the diaphragm lever (L17) and M-X changeover lever (L18) from the connecting pins (L58) and (L52).

   D. Remove the shutter fastening ring (L-11) with the Tool (L11-TA1), and remove the shutter from the lens barrel carefully so that the shutter speed lever (L20) is not damaged.

2. Disassembling shutter installation seat (L6A)

   A. Remove the ring installation screws (L87, 3 screws), and remove the ring (L86), adjust washer (L71), and shutter installation seat (L6A) from the lens barrel.

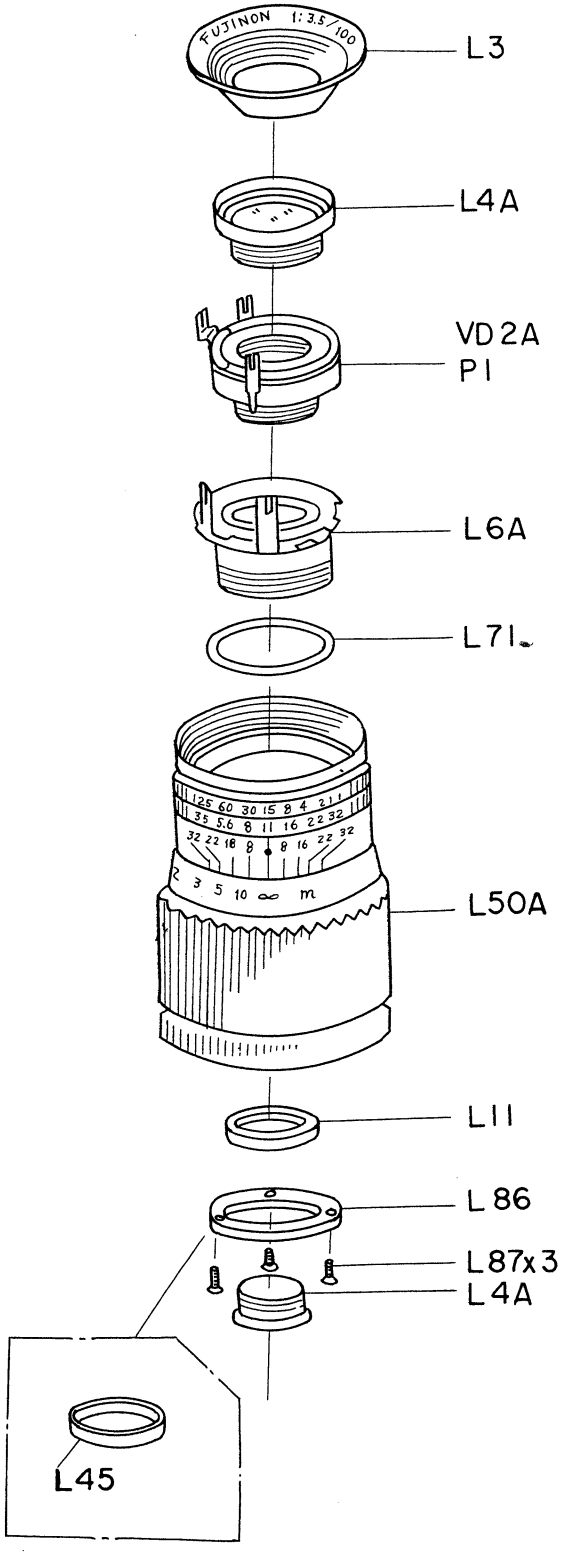


Fig. 1

B. Remove the tightening ring (L10) with the jig (L10-TA1), and remove the shutter set ring (L9), ring washer (L8), and release ring (L7).

II. INSTRUCTIONS FOR REPAIR, REASSEMBLY, AND ADJUSTMENT OF LENS BARREL UNIT

1. Reassembly, repair, and adjustment of the shutter installation seat (L6A).

   A. Install the set ring (L9), washer (L8), and release ring (L7) on the shutter installation seat (L6A), and tighten the tightening ring (L10) with the Tool (L10-TA1).

   B. When the shutter installation seat (L6A) does not operate effectively, check and correct each ring for warping, or apply Molicoat grease and smooth the operation.

2. Reassembly, repair, and adjustment of lens barrel and shutter installation seat (L6A)

   A. Install the shutter installation seat (L6A) on the lens barrel with washer (L71), and secure it with the tightening ring (L45).

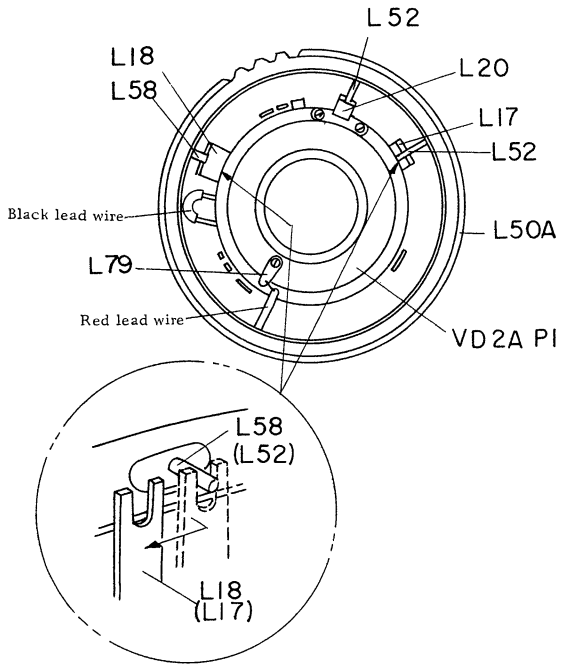


Fig. 2

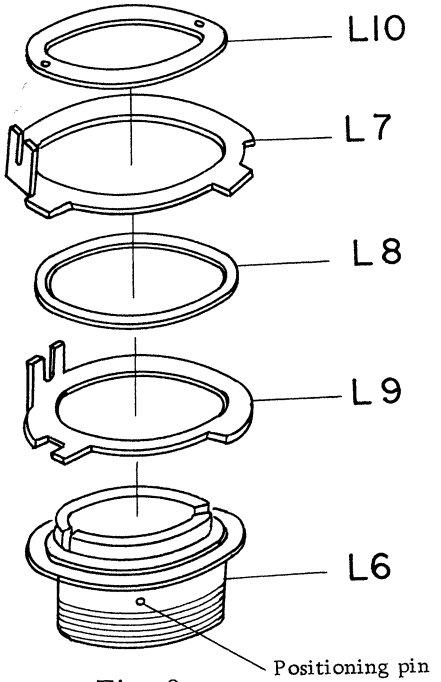


Fig. 3

B. For the focus adjustment, select proper washer from washers (L71) having various thicknesses. When the focus is unbalanced at one side, adjust the parallelism by using tin foil in lieu of the washer (L71).

Types of Washers

Part No.	Thickness
S-1	0.7 mm
S-2	0.5 mm
S-3	0.3 mm
S-4	0.1 mm
S-5	0.05 mm
S-6	0.03 mm

Note: Instructions for focus inspection are described in the forthcoming paragraph. When adjusting focus actually, adjust the washer thickness with the shutter (VD2A-P1) installed on the shutter installation seat (L6A).

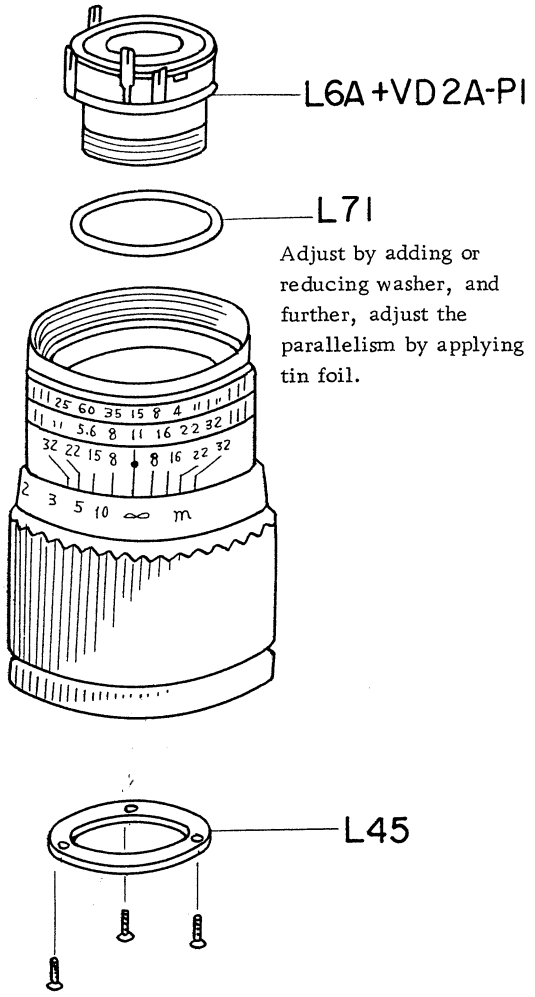


Fig. 4

3. Installation, repair, and adjustment of shutter (VD2A-P1)

3-1 Installing the shutter (VD2A-P1)

Fit the connecting pin (L52) into the groove on the shutter speed lever (L20) and install the shutter (VD2A-P1) on the lens barrel. Further, tightly fit the tightening ring (L11) to the shutter (VD2A-P1) with the Tool (L1-TA1).

3-2 Adjusting shutter set and release

Install the lens barrel on which the shutter has been installed on the inspection jig (A0-GA6) by coinciding the position with the positioning pin. Set the shutter speed to "B" (Bulb), and set it with the set lever of the inspection jig (A0-GA6). Further, release the shutter with the release lever, and adjust the release ring (L7) and set ring (L9) gaps (spread or contract) properly so that the shutter operates correctly. Set the shutter speed to 1/500 sec., release the shutter, and make sure that the shutter operates correctly.

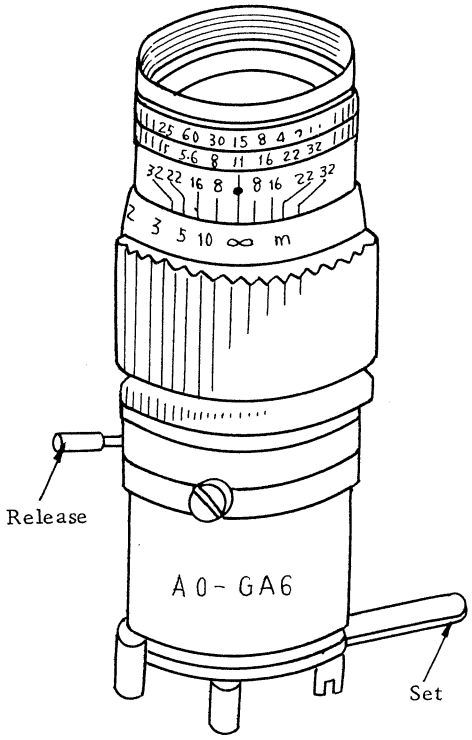


Fig. 5

3-3 Connection with the synchronizer and checking

Connect the synchronizer lead wire (Black) by means of solder and cover it with vinyl tube insulator. Connect the red lead wire to the lag plate (L79) also by means of solder. Next, connect a tester to the synchronizer terminal to check the synchronizer. Check the synchronizer for insulation at range of Rx1000 of the tester. Operate the synchronizer at shutter speed of 1/15 sec. or less, and check the M-X contact for the continuity. Now, reconnect the diaphragm lever (L17) and M-X changeover lver (L18) to the individual connecting pins (L52) and (L58).

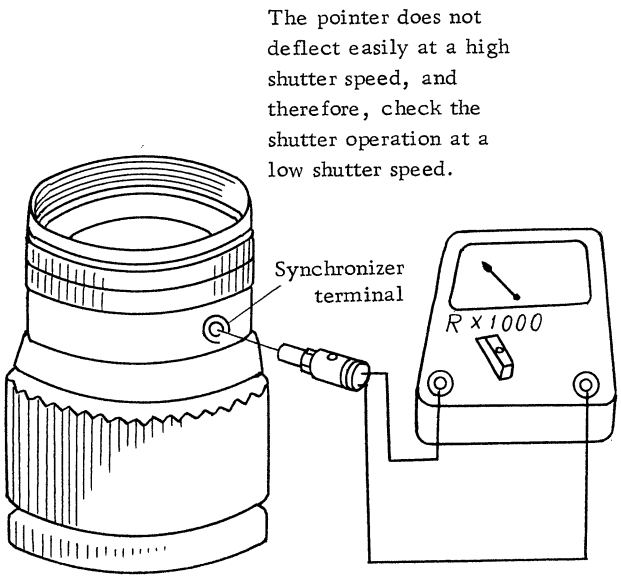


Fig. 6

3-4 Installing the front and rear lens groups (L1A) and (L4A)

Clean both front and rear surfaces of the front lens group (L1A), and securely tighten it with the Tool (L1-TA1). Further, tighten the rear lens group with the jig (L4-TA1) in the same manner. Next, set the shutter to "B" (Bulb) to keep it open, and make sure that no dust is sticked thereto. Tighten the lens plate (L3) with the Tool (L3-TA1).

4. Inspecting focus

4-1 Testing focus by means of chart image and collimater

Install the lens barrel on the main body, and set the test chart and camera (film surface) in two positions accurately distanced 2.5 meters Apply a focus glass to the film rail surface, check sharpness of the chart image with a magnifying glass, and check the infinitude (∞) with the collimater. When the chart image is blurred at the center or circumference, or focus is unbalanced, readjust the lens position in accordance with the instructions described in the para. "II-2-A and B" above.

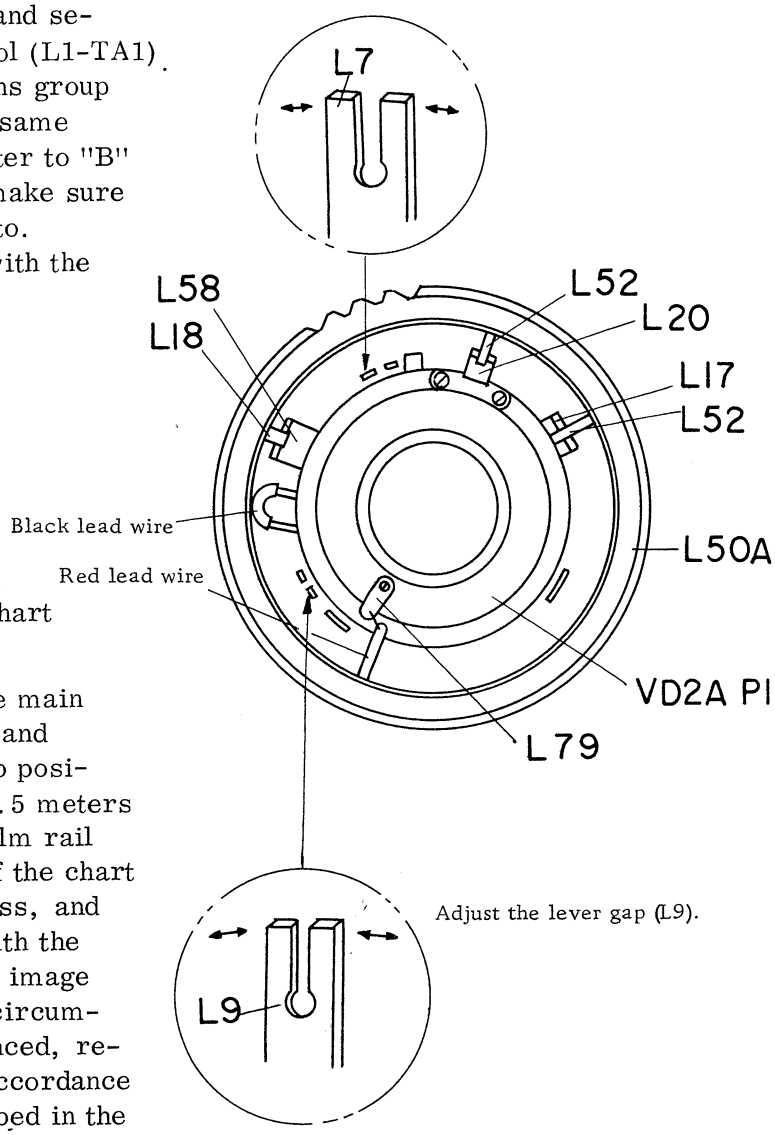


Fig. 7

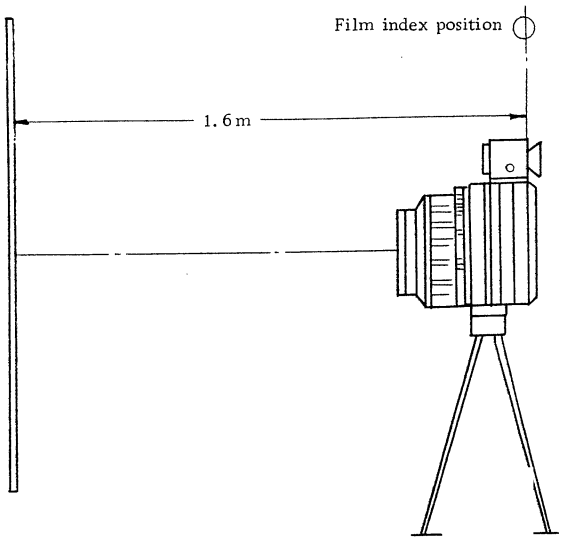
4-2 Close distance photographing test

Position the camera (film surface) in a position accurately distance 2.5 meters from the test chart, and take picture for trial. First, operate the helicoid from "1M" side and take two pictures at a distance where the interlocking range finder is coincided. Further, operate the helicoid from the infinite distance side (∞), and take two pictures (total four pictures are taken) at a distance where the interlocking range finder is coincided.

4-3 Long distance photographing test

Select a linear item distanced 1000 meters or longer from the camera, and take three picturers.

Long distance photographing test judgement standard: - All three pictures must be clearly appeared.



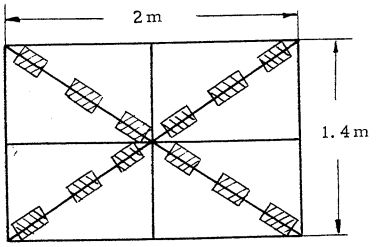


Fig. 8

I. INSTRUCTIONS FOR DISASSEMBLY OF LENS BARREL (65 mm)

1. Disassembly of lens front group (L1A), rear group (L4A), and shutter (VD2A P1).

   A. Remove lens plate (L3) with the Tool (L3-TA1) Fig. 1

   B. Remove four screws (L47) and remove the lens barrel (L48). Next, remove the front lens group (L1A) with the Tool (L1-TA1) and rear lens group (L4A) with Tool (L4-TA1). Fig. 1

   C. The back color lead wire connected to the synchronizer is provided with vinyl tube insulator. Move it to one side, and unsolder. Unsolder and disconnect the red color lead wire from the lag plate (L80). Next, disconnect the diaphragm lever (L15) and M-X changeover lever (L16) from the connecting pins (L55) and (L63). Fig. 2

   D. Remove the shutter fastening ring (L11) with the Tool (L11-TA1), and remove the shutter from the lens barrel carefully so that the shutter speed lever (L18) is not damaged. Fig. 1

2. Disassembling shutter installation seat (L6A)

   A. Remove the ring installation screws (L89, 4 each), and remove the ring (L91), adjust washer (L12), and shutter installation seat (L7A) from the lens barrel. Fig. 1

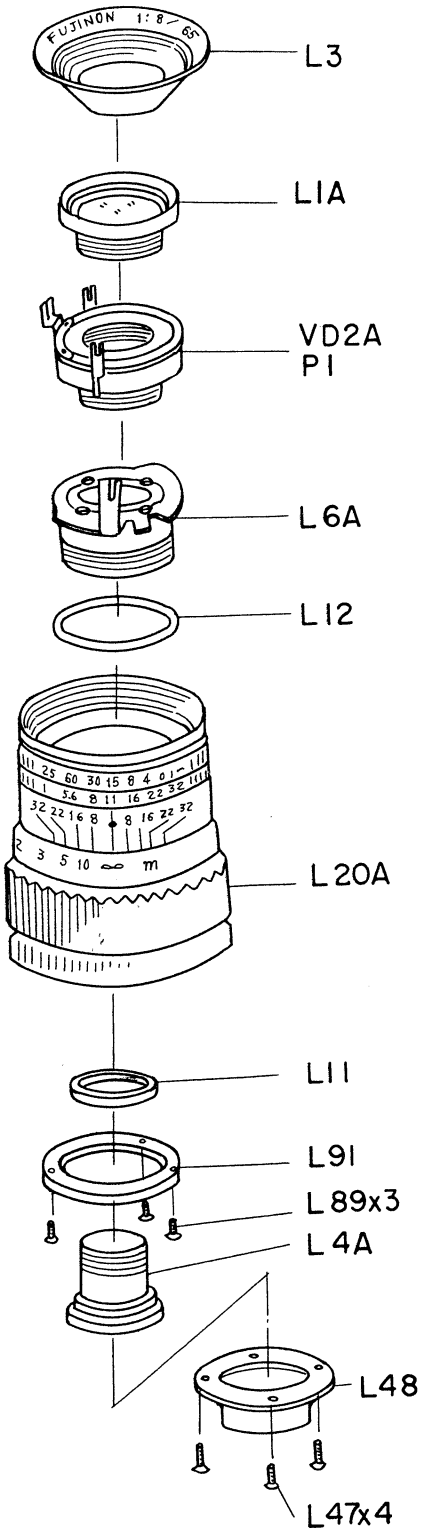


Fig. 1

B. Remove the screw (L10, 4 each), and remove the release ring (L9).

Fig. 3

II. INSTRUCTIONS FOR REPAIR, REASSEMBLY, AND ADJUSTMENT OF LENS BARREL UNIT

1. Reassembly, repair, and adjustment of the shutter installation seat (L7A).

A. Install the release ring (L9) on the shutter installation seat (L7A), and tighten the screw (L10, 4 each).

Fig. 3

B. When the shutter installation seat (L7A) does not operate effectively, check and correct the release ring (L9) for warping, or apply Molicoat grease and smooth the operation.

Fig. 3

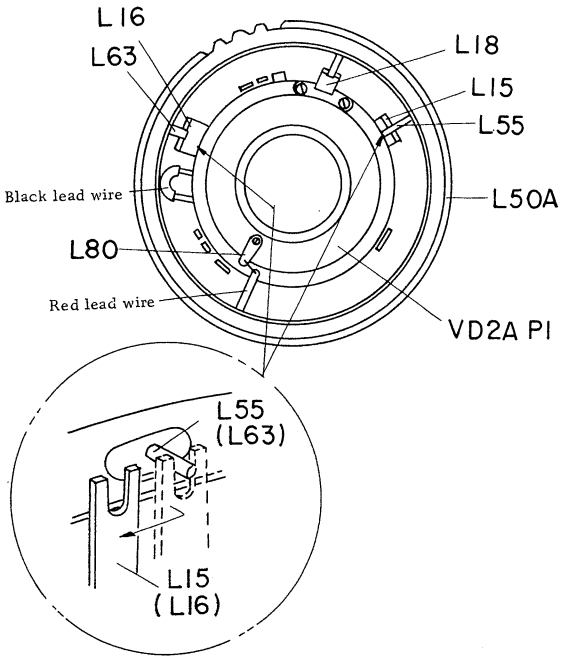


Fig. 2

2. Reassembly, repair, and adjustment of lens barrel and shutter installation seat (L7A)

A. Install the shutter installation seat (L7A) on the lens barrel with washer (L12), and secure it with ring (L91) and screws (L47, 4 each).

Fig. 4

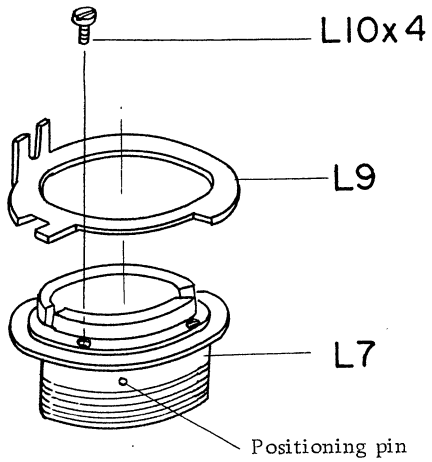


Fig. 3

B. For the focus adjustment, select proper washer from washer (L12) having various thicknesses. When the focus is unbalanced at one side, adjust the parallelism by using tin foil in lieu of the washer (L12).

Fig. 4

Types of Washers

Part No.	Thickness
S-1	0.5 mm
S-2	0.1 mm
S-3	0.05 mm
S-4	0.04 mm
S-5	0.3 mm

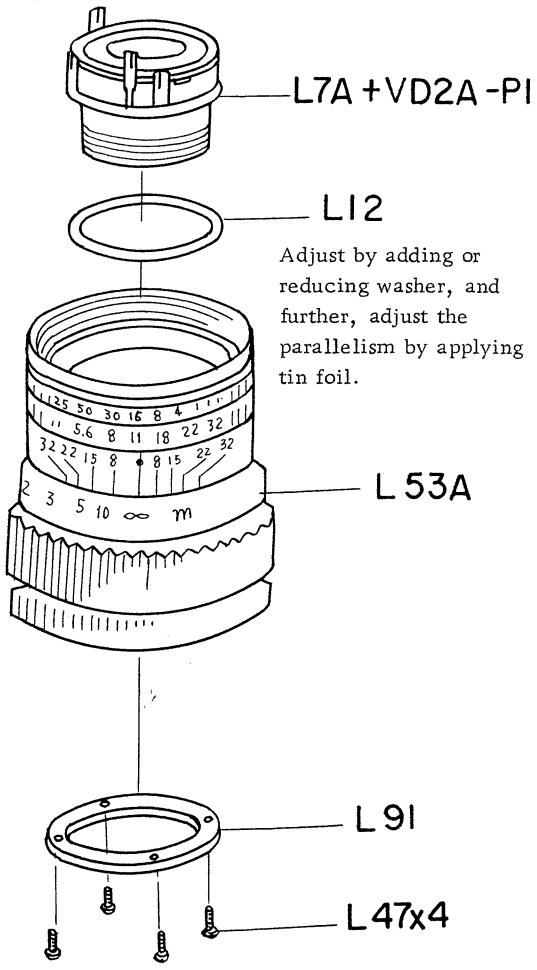


Fig. 4

Note: Instructions for focus inspection are described in the forthcoming paragraph. When adjusting focus actually, adjust the washer thickness with the shutter (VD2A-P1) installed on the shutter installation seat (L7A).

3. Installation, repair, and adjustment of shutter (VD2A-P1)

3-1 Installing the shutter (VD2A-P1)

Fit the connecting pin (L55) into the groove on the shutter speed lever (L18) and install the shutter (VD2A-P1) on the lens barrel. Further, tightly fit the tightening ring (L11) to the shutter (VD2A-P1) with Tool (L11-TA1).

Fig. 1

3-2 Adjusting shutter set and release

Install the lens barrel on which the shutter has been installed on the inspection Tool (A0-GA6) by coinciding the position with the positioning pin. Set the shutter speed to "B" (Bulb), and set it with the set lever of the inspection Tool (A0-GA6). Further, release the shutter with the release lever, and adjust the release ring (L9) and set ring (L35) gaps (spread or contract) properly so that the shutter operates correctly. Set the shutter speed to 1/500 sec., release the shutter, and make sure that the shutter operates correctly.

Fig. 5 and 7

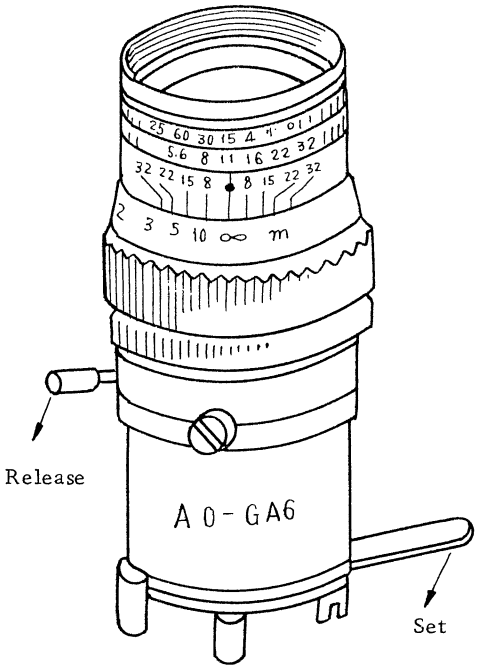


Fig. 5

3-3 Connection with the synchronizer and checking

Connect the synchronizer lead wire (black) by means of solder and cover it with vinyl tube insulator. Connect the red lead wire to the lag plate (L80) also by means of solder. Next, connect a tester to the synchronizer terminal to check the synchronizer. Check the synchronizer for insulation at range of Rx1000 of the tester. Operate the synchronizer at shutter speed of 1/15 sec. or less, and check the M-X contact for the continuity. Now, reconnect the diaphragm lever (L15) and M-X changeover lever (L16) to the individual connecting pins (L55) and (L63).

Fig. 6

The pointer does not deflect easily at a high shutter speed, and therefore, check the shutter operation at a low shutter speed.

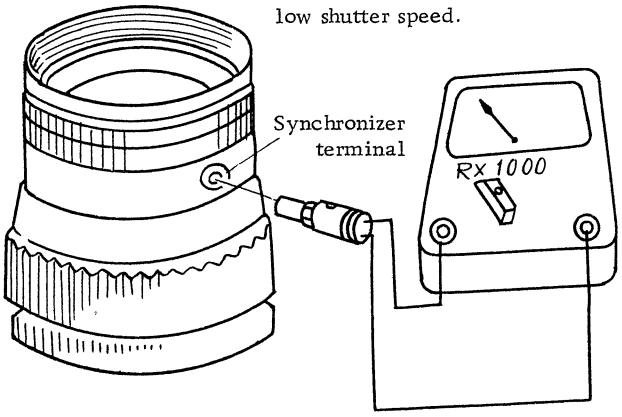


Fig. 6

3-4 Installing the front and rear lens groups (L1A) and (L4A)

Clean both front and rear surfaces of the front lens group (L1A), and securely tighten it with the Tool (L1-TA1). Further, tighten the rear lens group with the Tool (L4-TA1) securely in the same manner. Next, set the shutter to "B" (Bulb) to keep it open, and make sure that no dust is sticked thereto. Now, securely tighten the cover ring (L48) with four screws (L47) after tightening the lens plate (L3) with Tool (L3-TA1).

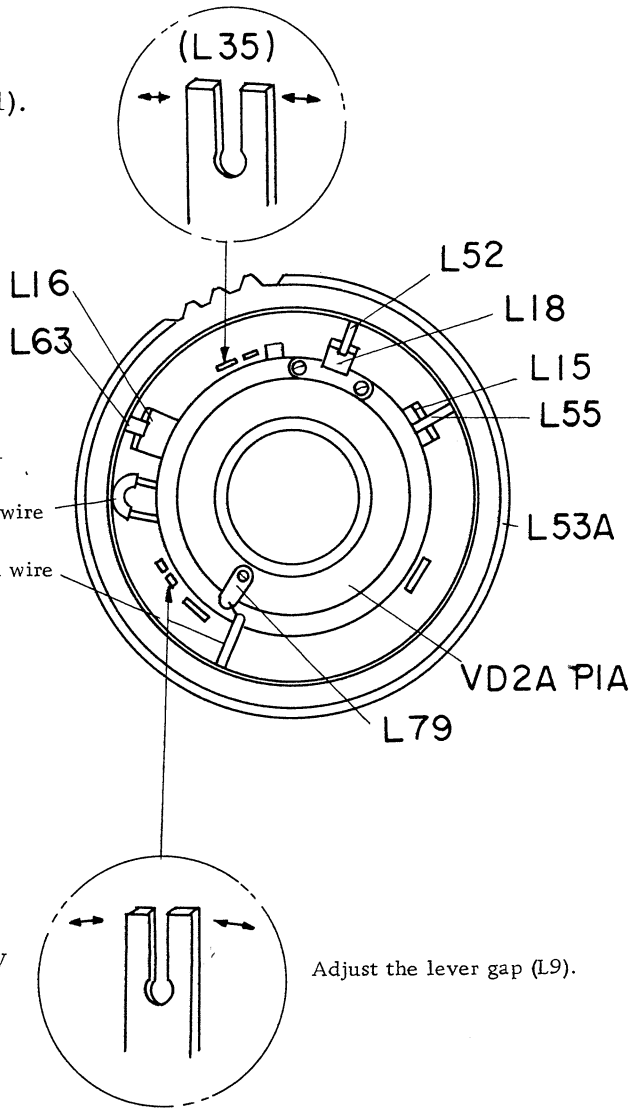


Fig. 1

4. Inspecting focus

4-1 Testing focus by means of chart image and collimater

Install the lens barrel on the main body, and set the test chart and camera (film surface) in two positions accurately distanced 1.6 meters. Apply a focus glass to the film rail surface, check sharpness of the chart image with a magnifying glass, and check the infinitude (∞) with the collimater. When the chart image is blurred at the center or circumference, or focus is unbalanced, readjust the lens position in accordance with the instructions described in the para. "II-2-A and B" above.

Fig. 7

Fig. 8

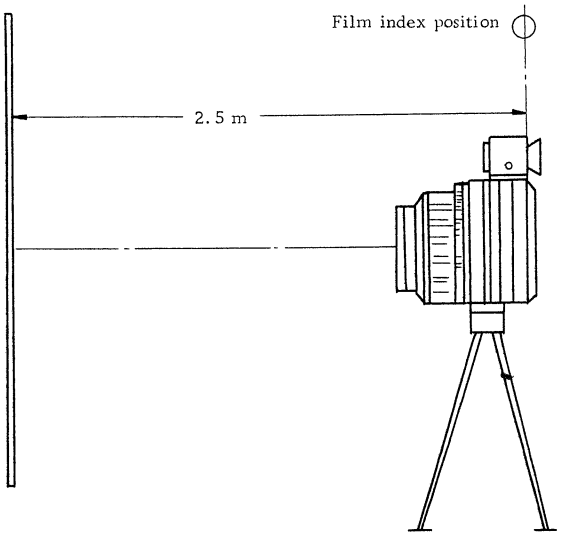
4-2 Close distance photographing test

Position the camera (film surface) in a position accurately distanced 1.6 meters from the test chart, and take picture for trial. First, operate the helicoid from "1M" side and take two pictures at a distance where the interlocking range finder is coincided. Further, operate the helicoid from the infinite (∞) side, and take two pictures (total four pictures are taken) at a distance where the interlocking range finder is coincided.

4-3 Long Distance Photographing Test

Select a liner item distanced 1000 meters or longer, and take three pictures.

Long Distance Photographing Test Judgement Standard: - All three pictures must be clearly appeared.



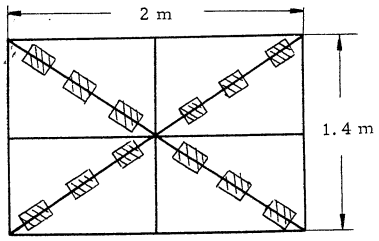


Fig. 8

I. INSTRUCTIONS FOR DISASSEMBLY OF LENS BARREL (150 mm)

1. Disassembling lens front group (L1A), rear group (L4A), and shutter

   A. Remove the lens plate (L8) with the Tool (L3-TA1). Fig. 1

   B. Remove the front lens group (L1A) with the Tool (L1-TA1) and rear lens group (L4A) with Tool (L4-TA1). Fig. 1

   C. The black color lead wire connected to the synchronizer is provided with vinyl tube insulator. Move it to one side, and unsolder. Unsolder and disconnect the red color lead wire from the lag plate (L71). Next, disconnect the diaphragm lever (L16) and M-X changeover lever (L17) from the connecting pins (L51) and (L57). Fig. 2

   D. Remove the shutter fastening ring (L-15) with the Tool (L11-TA1), and remove the shutter from the lens barrel carefully so that the shutter speed lever (L19) is not damaged. Fig. 1

2. Disassembling shutter installation seat (L9A)

   A. Remove the ring installation screws (L81, 3 each), and remove the ring (L80), adjust washer (L74), and shutter installation seat (L6A) from the lens barrel. Fig. 1

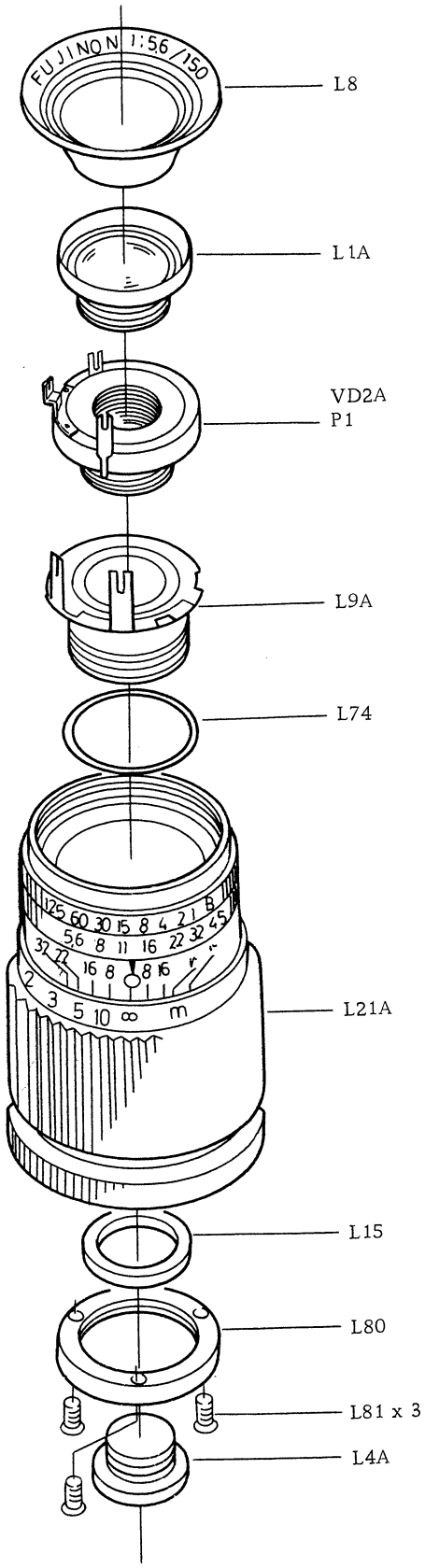


Fig. 1

B. Remove the tightening ring (L14) with the Tool (L10-TA1), and remove the shutter set ring (L13), ring washer (L12), and release ring (L11).

Fig. 3

II. INSTRUCTIONS FOR REASSEMBLY, REPAIR, AND ADJUSTMENT OF LENS BARREL UNIT

1. Reassembly, repair, and adjustment of the shutter installation seat (L9A).

   A. Install the set ring (L13), washer (L12), and release ring (L11) on the shutter installation seat (L9A), and tighten the tightening ring (L14) with the Tool (L10-TA1). Fig. 3

   B. When the shutter installation seat (L6A) does not operate effectively, check and correct each ring for warping, or apply Molicoat grease and smooth the operation. Fig. 3

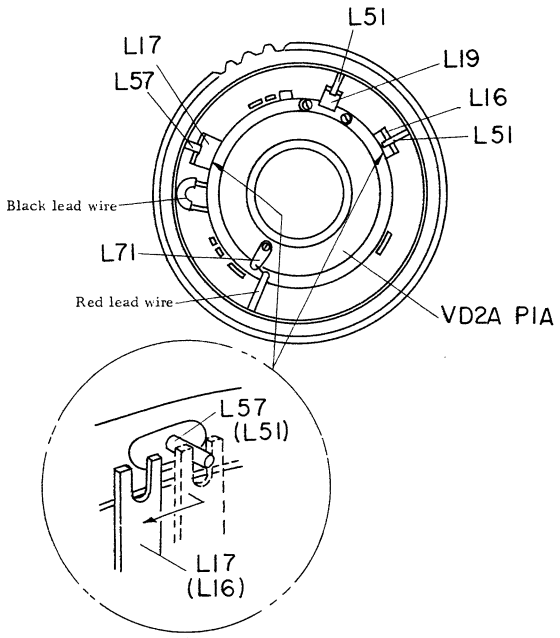


Fig. 2

2. Reassembly, repair, and adjustment of the lens barrel and shutter installation seat (L9A)

   A. Install the shutter installation seat (L9A) on the lens barrel with washer (L74), and tighten the ring (L79) with screws (L80, 3 each). Fig. 4

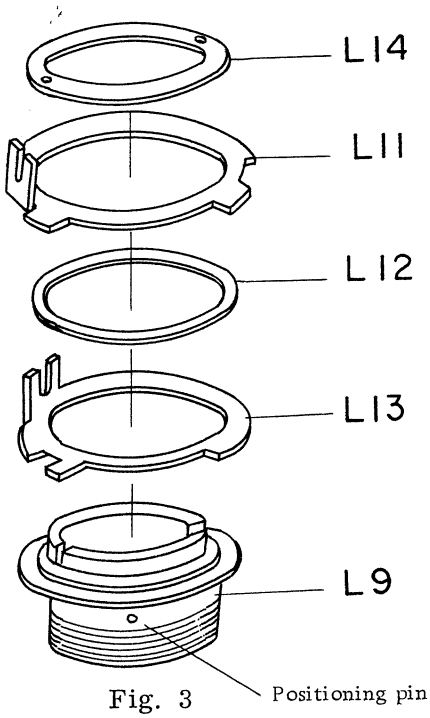


Fig. 3

A. Install the shutter installation seat (L9A) on the lens barrel with washer (L71), and tighten the ring (L80) with screws (81, 3 each). Fig. 4

B. For the focus adjustment, select proper washer from washers (L74) having various thicknesses. When the focus is unbalanced at one side, adjust the parallelism by using tin foil in lieu of the washer (L74). Fig. 4

Types of Washers

Part No.	Thickness
S-1	0.7 mm
S-2	0.5 mm
S-3	0.3 mm
S-4	0.1mm
S-5	0.05 mm
S-6	0.03 mm

Note: Instructions for focus inspection are described in the forthcoming paragraph. When adjusting focus actually, adjust the washer thickness with the shutter (VD2A-P1) installed on the shutter installation seat (L9A).

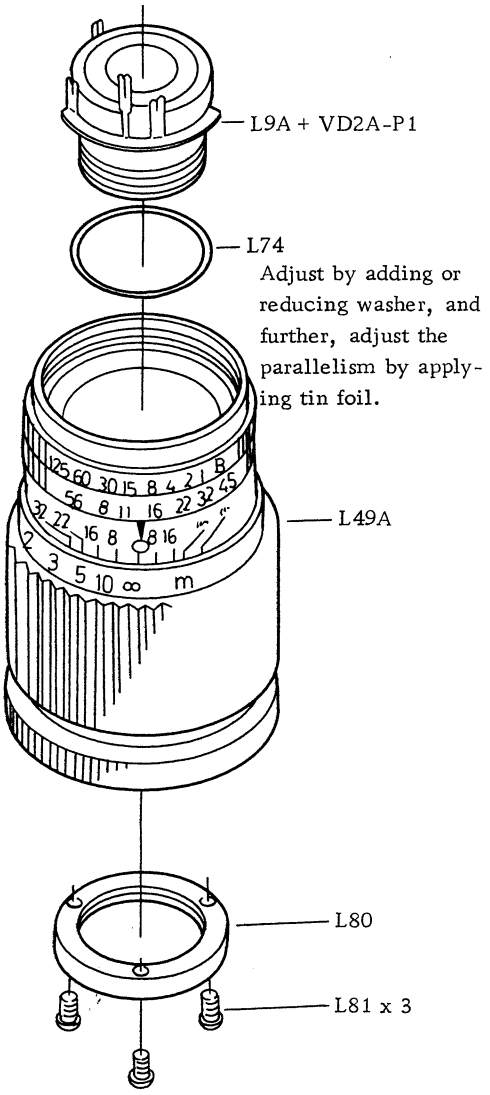


Fig. 4

3. Installation, repair, and adjustment of shutter (VD2A-P1)

3.1 Installing the shutter (VD2A-P1)

Fit the connecting pin (L51) into the groove on the shutter speed lever (L19) and install the shutter (VD2A-P1)

on the lens barrel. Further, tightly fit the tightening ring (L11) to the shutter (VD2A-P1) with the tool (L11-TA1). Fig. 2.3.

3.2 Adjusting shutter set and release

Install the lens barrel on which the shutter has been installed on the inspection tool (A0-GA6) by coinciding the position with the positioning pin. Set the shutter speed to "B" (Bulb), and set it with the set lever of the inspection tool (A0-GA6). Further, release the shutter with the release lever, and adjust the release ring (L13) and set ring (L11) gaps (open or close) properly so that the shutter operates correctly. Set the shutter speed to 1/500 sec., release the shutter, and make sure that the shutter operates correctly. Fig. 5 and 7.

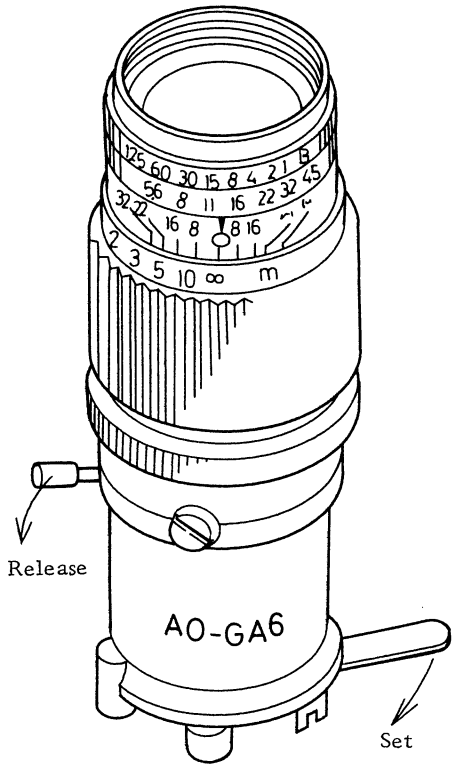


Fig. 5

3.3 Connection with the synchronizer and checking

Connect the synchronizer lead wire (black) by means of solder and cover it with vinyl tube insulator. Connect the red lead wire to the lag plate (L71) also by means of solder. Next, connect a tester to the synchronizer terminal to check the synchronizer. Check the synchronizer for insulation at range of RX1000 of the tester. Operate the synchronizer at shutter speed of 1/15 sec. or less, and check the M-X contact for the continuity.
Now, reconnect the diaphragm lever (L16) and M-X changeover lever (L17)

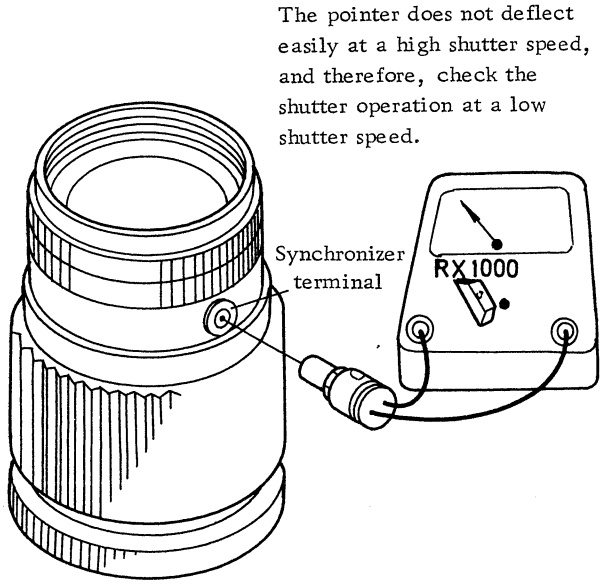
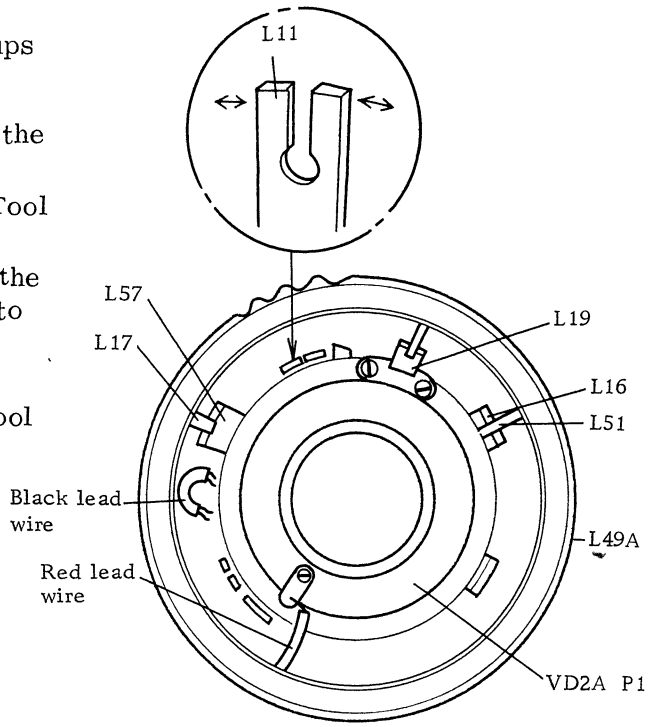


Fig. 6

to the individual connecting pins (L51) and (L57). Fig. 6

3.4 Installing the front and rear lens groups (L1A) and (L4A)

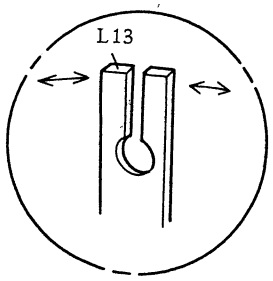
Clean both front and rear surfaces of the front lens group (L1A), and securely tighten the front lens group with the Tool (L1-TA1). Further, tighten the rear lens group with the Tool (L4-TA1) in the same manner. Next, set the shutter to "B" (Bulb) to keep it open, and make sure that no dust is sticked thereto. Tighten the lens plate (L8) with the Tool (L3-TA1). Fig. 1



4. Inspecting focus

4-1 Testing focus by means of chart image and collimater

Install the lens barrel on the main body, and set the test chart and camera (film surface) in two positions accurately distanced 3.5 meters. Apply a focus glass to the film rail surface, check sharpness of the chart image with a magnifying glass, and check the infinitude (∞) with the collimater.
When the chart image is blurred at the center or circumference, or focus is unbalanced, readjust the lens position in accordance with the instructions described in the paragraph "II-2-A and B" above. Fig. 8

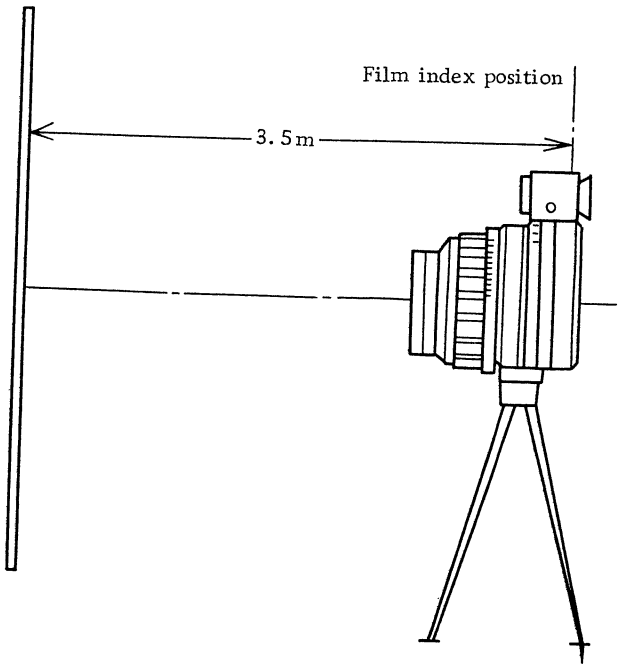


Adjust the lever gap (L13).

Fig. 7

4.2 Close distance photographing test

Position the camera (film surface) in a position accurately distanced 3.5 meters from the test chart, and take picture for trial. First, operate the helicoid from "1M" side and take two pictures at a distance where the interlocking range finder is coincided. Further, operate the helicoid from the infinite distance side (∞), and take two pictures (total four pictures are taken) at a distance where the interlocking range finder is coincided.



4.3 Long distance photographing test

Select a linear item distanced 1000 meters or longer from the camera, and take three pictures.

Long distance photographing test judgement standard: All three pictures should be clearly appeared.

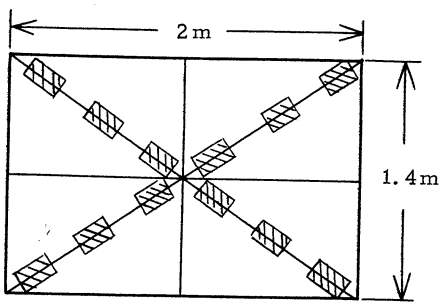


Fig. 8

I. INSTRUCTIONS FOR DISASSEMBLY OF LENS BARREL (180 mm)

1. Disassembling lens front group (L1A), rear group (L5A), and shutter.

   A. Remove the lens plate (L3) with the Tool (L3-TA1). Fig. 1

   B. Remove the front lens group (L1A) with the Tool (L1-TA1) and rear lens group (L5A) with Tool (L5-TA1). Fig. 1

   C. The back color lead wire connected to the synchronizer is provided with vinyl tube insulator. Move it to one side, and unsolder. Unsolder and disconnect the red color lead wire from the lag plate (L71). Next, disconnect the diaphragm lever (L16) and M-X changeover lever (L17) from the connecting pins (L51) and (L57). Fig. 2

   D. Remove the shutter fastening ring (L-15) with the Tool (L11-TA1), and remove the shutter from the lens barrel carefully so that the shutter speed lever (L19) is not damaged. Fig. 2

2. Disassembling shutter installation seat (L6A)

   A. Remove the ring installation screws (L87, 3 each), and remove the ring (L86), adjust washer (L74) and shutter installation seat (L9A) from the lens barrel (L21A) Fig. 1

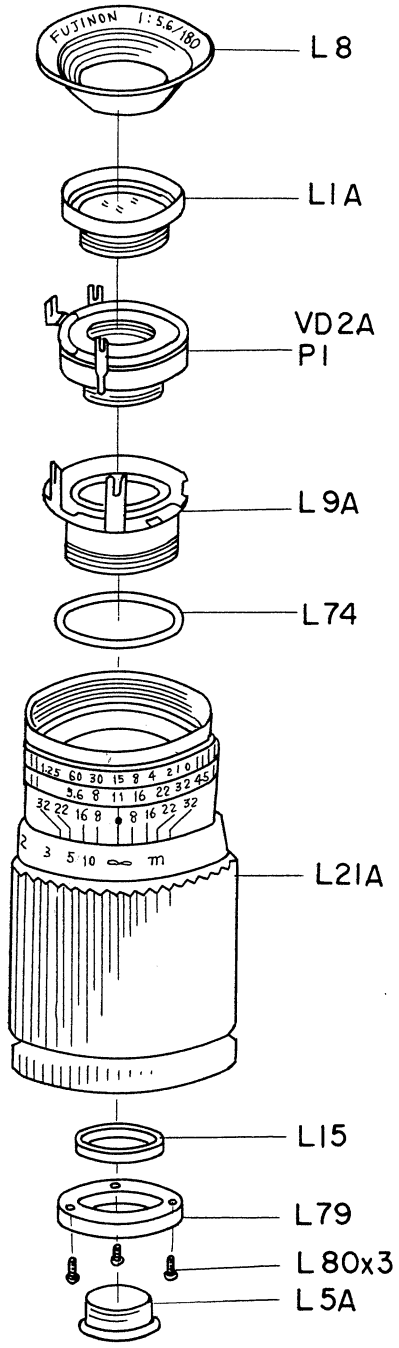


Fig. 1

B. Remove the tightening ring (L14) with the Tool (L10-TA1), and remove the shutter set ring (L11), ring washer (L12), and release ring (L13). Fig. 3

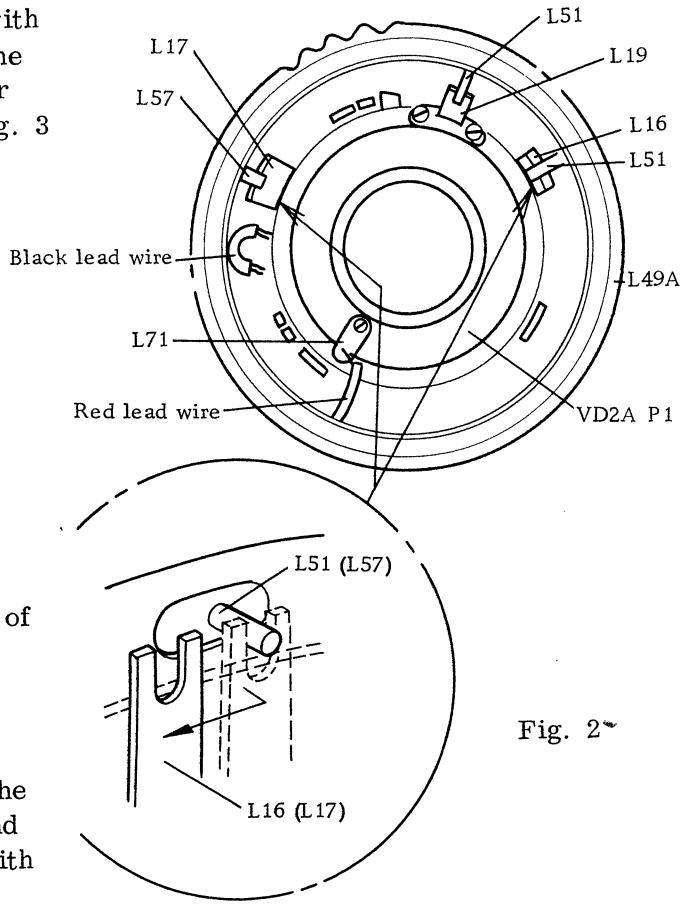


Fig. 2

II. INSTRUCTIONS FOR REASSEMBLY, REPAIR, AND ADJUSTMENT OF LENS BARREL UNIT

1. Reassembly, repair, and adjustment of the shutter installation seat (L9A)

   A. Install the set ring (L11), washer (L12), and release ring (L13) on the shutter installation seat (L9A), and tighten the tightening ring (L14) with the Tool (L10-TA1). Fig. 3

   B. When the shutter installation seat (L9A) does not operate effectively, check and correct each ring for warping, or apply Molicoat grease and smooth the operation. Fig. 3

2. Reassembly, repair, and adjustment of the lens barrel and shutter installation seat (L6A)

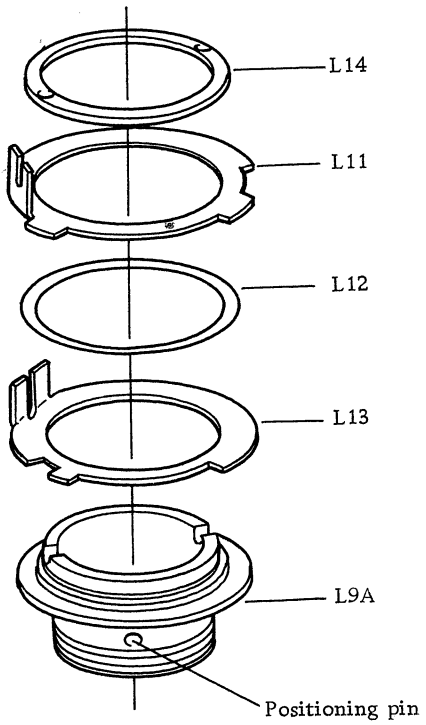


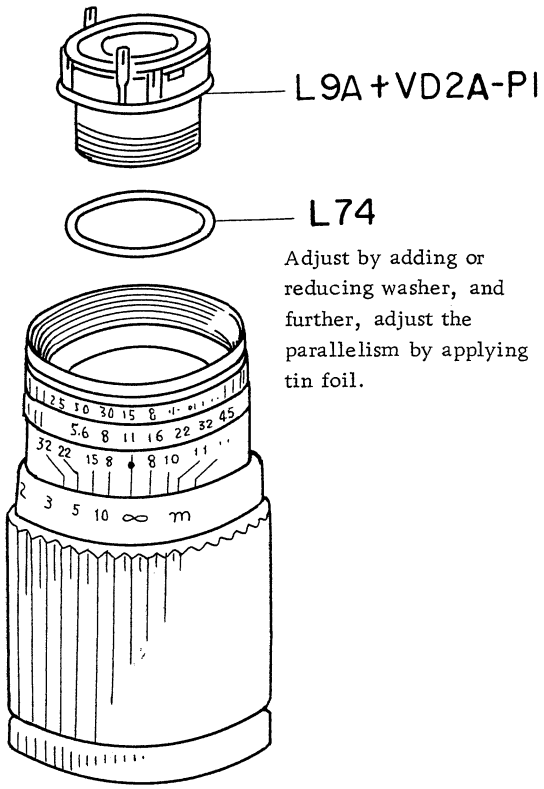
Fig. 3

B. For the focus adjustment, select proper washer from washers (L74) having various thicknesses. When the focus is unbalanced at one side, adjust the parallelism by using tin foil in lieu of the washer (L74).

Fig. 4

Types of Washers

Part No.	Thickness
S-1	0.7 mm
S-2	0.5 mm
S-3	0.3 mm
S-2	0.1 mm
S-1	0.05 mm
S-6	0.03 mm



Note: Instructions for focus inspection are described in the forthcoming paragraph. When adjusting focus actually, adjust the washer thickness with the shutter (VD2A-P1) installed on the shutter installation seat (L6A).

3. Installation, repair, and adjustment of shutter (VD2A-P1)

3-1 Installing the shutter (VD2A-P1)

Fit the connecting pin (L51) into the groove on the shutter speed lever (L19) and install the shutter (VD2A-P1) on the lens barrel. Further, tightly fit the tightening ring (L15) to the shutter (VD2A-P1) with the Tool (L11-TA1).

Fig. 1

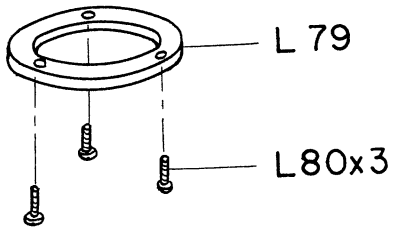


Fig. 4

3-2 Adjusting shutter set and release

Install the lens barrel on which the shutter has been installed on the inspection Tool (A0-GA6) by coinciding the position with the positioning pin. Set the shutter speed to "B" (Bulb), and set it with the set lever of the inspection Tool (A0-GA6). Further, release the shutter with the release lever, and adjust the release ring (L11) and set ring (L13) gaps (open or close) properly so that the shutter operates correctly. Set the shutter speed to 1/500 sec., release the shutter, and make sure that the shutter operates correctly.

Fig. 5 and 7

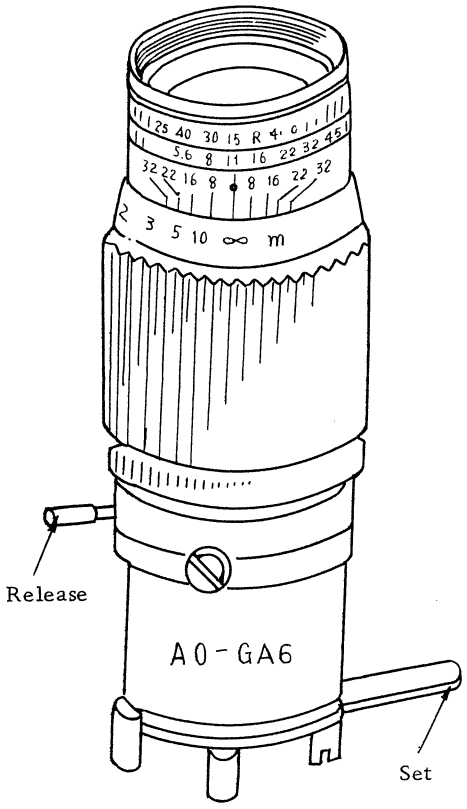


Fig. 5

3-3 Connection with the synchronizer and checking

Connect the synchronizer lead wire (black) by means of solder and cover it with vinyl tube insulator. Connect the red lead wire to the lag plate (L79) also by means of solder. Next, connect a tester to the synchronizer termminal to check the synchronizer. Check the synchronizer for insulation at range of RX1000 of the tester. Operate the synchronizer at shutter speed of 1/15 second or faster, and check the M-X contact for the continuity. Now, reconnect the diaphragm lever (L16) and M-X changeover lever (L17) to the individual connecting pins (L52) and (L58).

Fig. 6

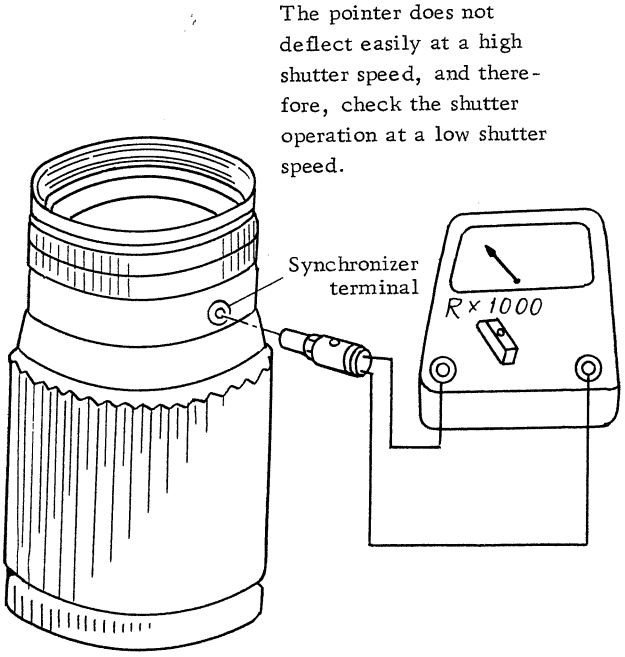


Fig. 6

3-4 Installing the front and rear lens groups (L1A) and (L4A)

Clean both front and rear surfaces of the front lens group (L1A), and securely tighten the front lens group with the Tool (L1-TA1). Further, tighten the rear lens group with the Tool (L4-TA1) in the same manner. Next, set the shutter to "B" (Bulb) to keep it open, and make sure that no dust is sticked thereto. Tighten the lens plate (L8) with the Tool (L3-TA1).

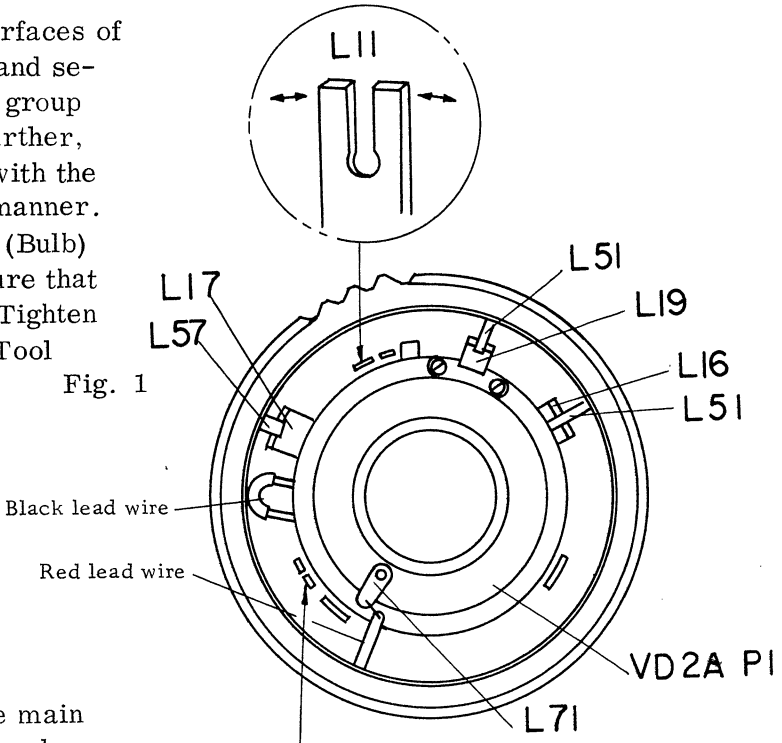


Fig. 1

4. Inspecting focus

4-1 Install the lens barrel on the main body, and set the test chart and camera (film surface) in two positions accurately distanced 4. 4 meters. Apply a focus glass to the film rail surface, check sharpness of the chart image with a magnifying glass, and check the infinitude (∞) with the collimater. When the chart image is blurred at the center or circumference, or focus is unbalanced, readjust the lens position in accordance with the instructions described in the para. "II-2-A and B" above.

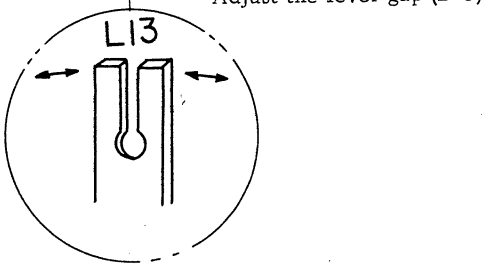


Fig. 8

Fig. 7

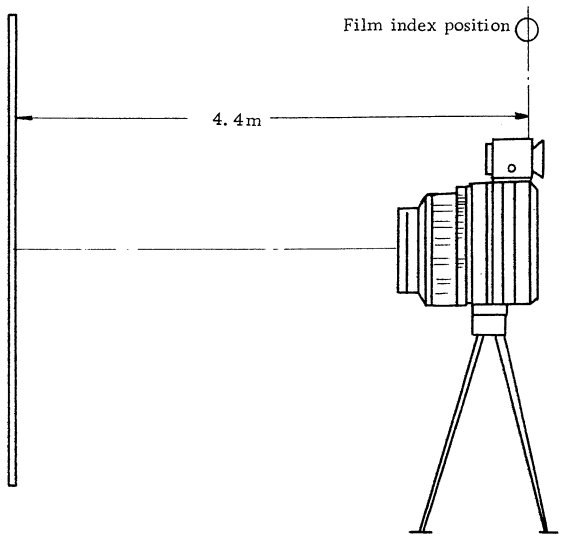
4-2 Close distance photographing test

Position the camera (film surface) in a position accurately distanced 4.4 meters from the test chart, and take picture for trial. First, operate the helicoid from "1M" side and take two pictures at a distance where the interlocking range finder is coincided. Further, operate the helicoid from the infinite distance side (∞), and take two pictures (total four pictures are taken) at a distance where the interlocking range finder is coincided.

4-3 Long distance photographing test

Select a linear item distanced 1000 meters or longer from the camera, and take three pictures.

Long Distance Photographing Test Judgement Standard: All three pictures should be clearly appeared.



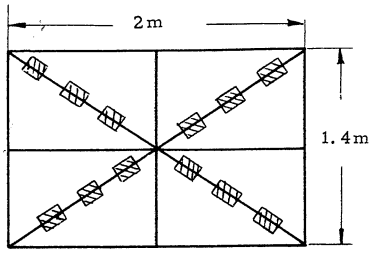
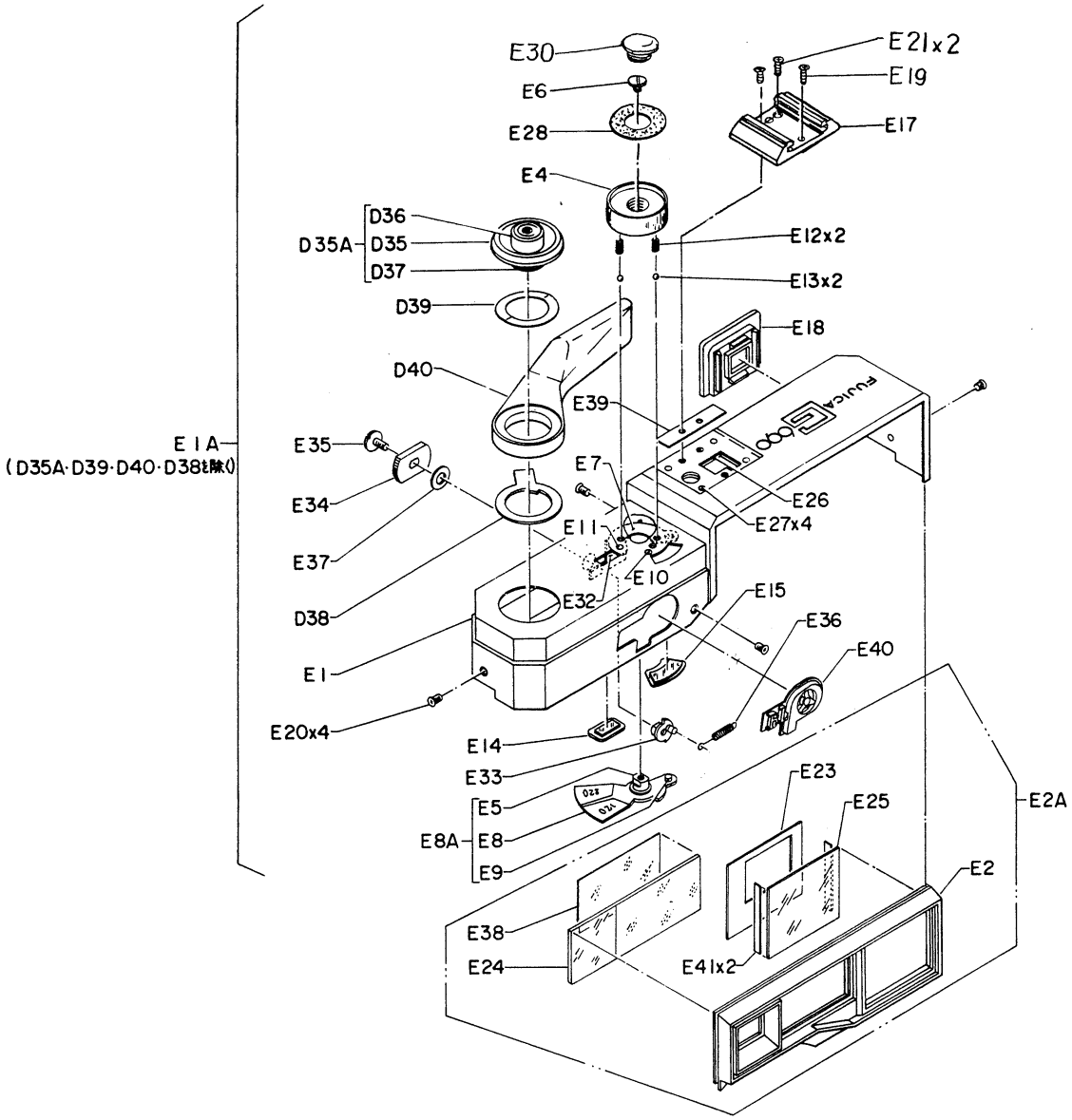
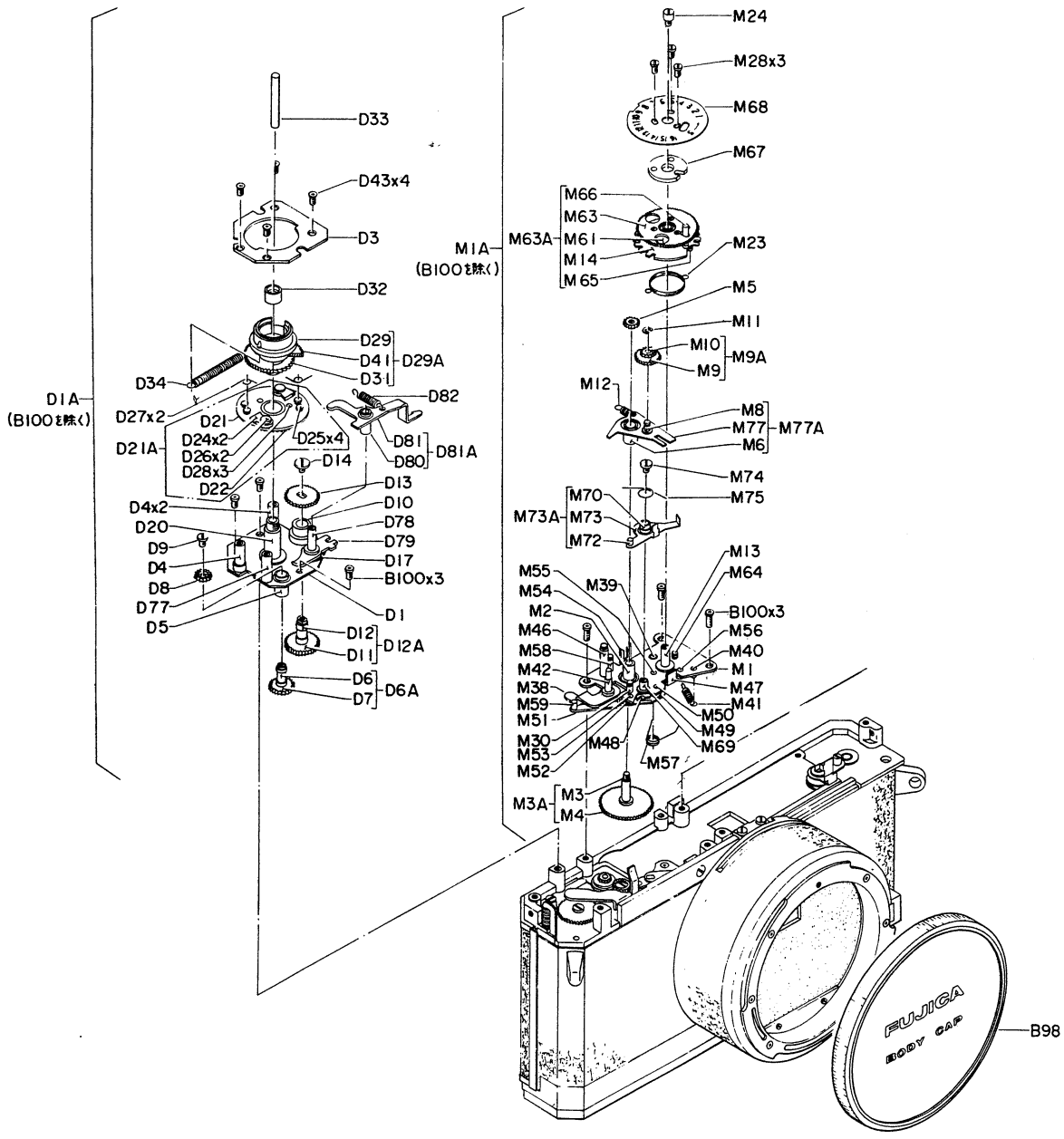


Fig. 8

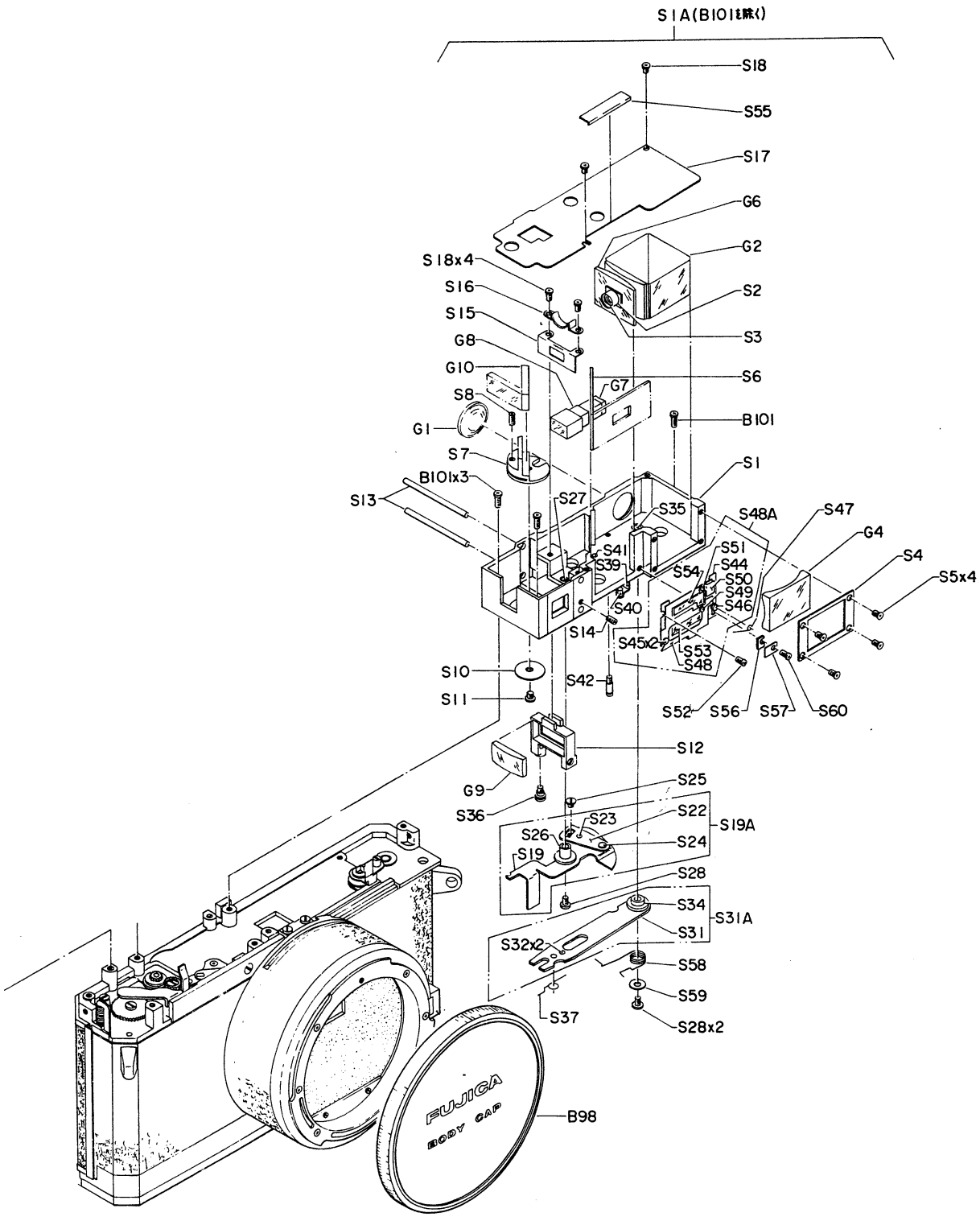
TOP COVER, FILM ADVANCE



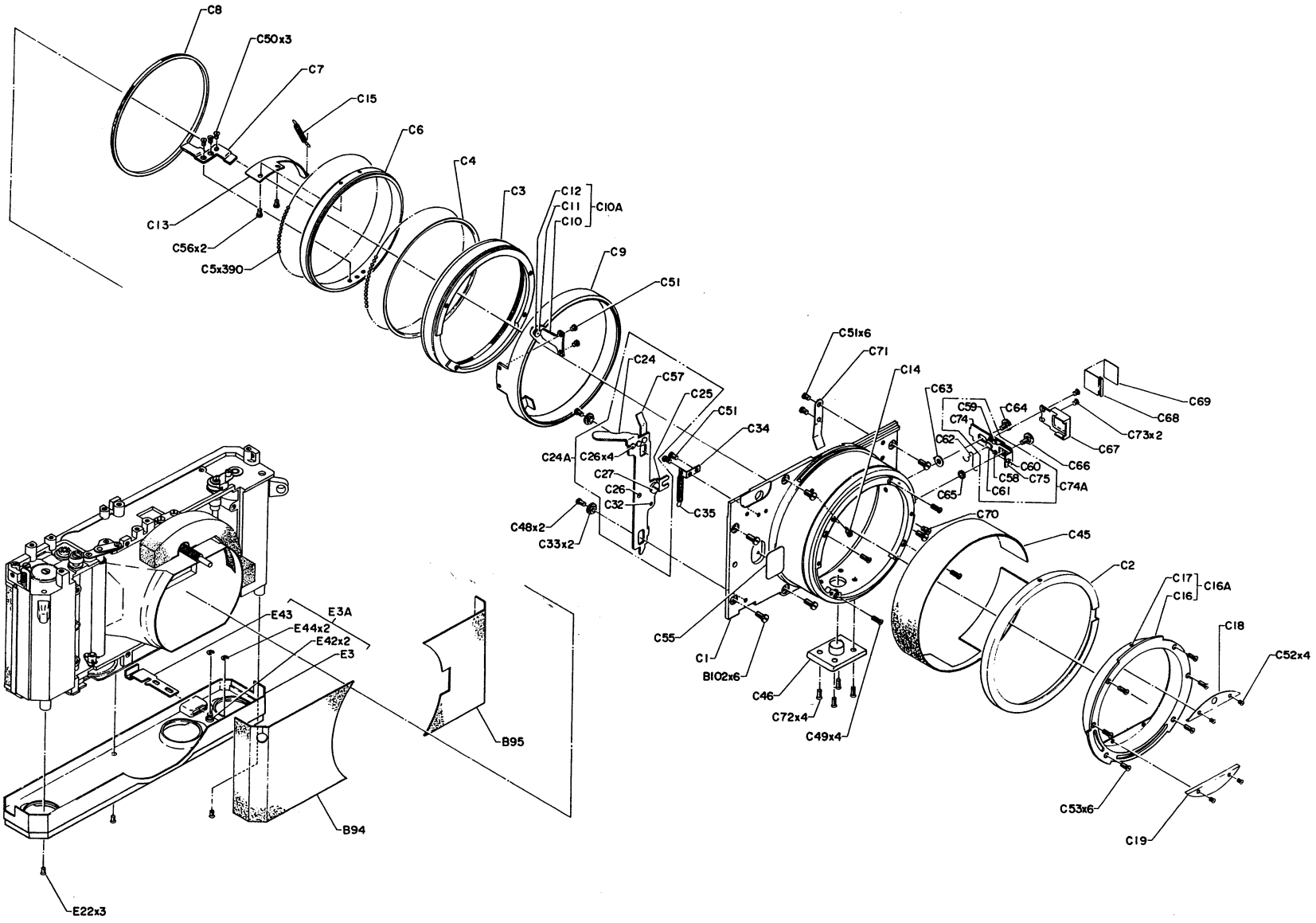
COUNTER, FILM ADVANCE MECHANISM



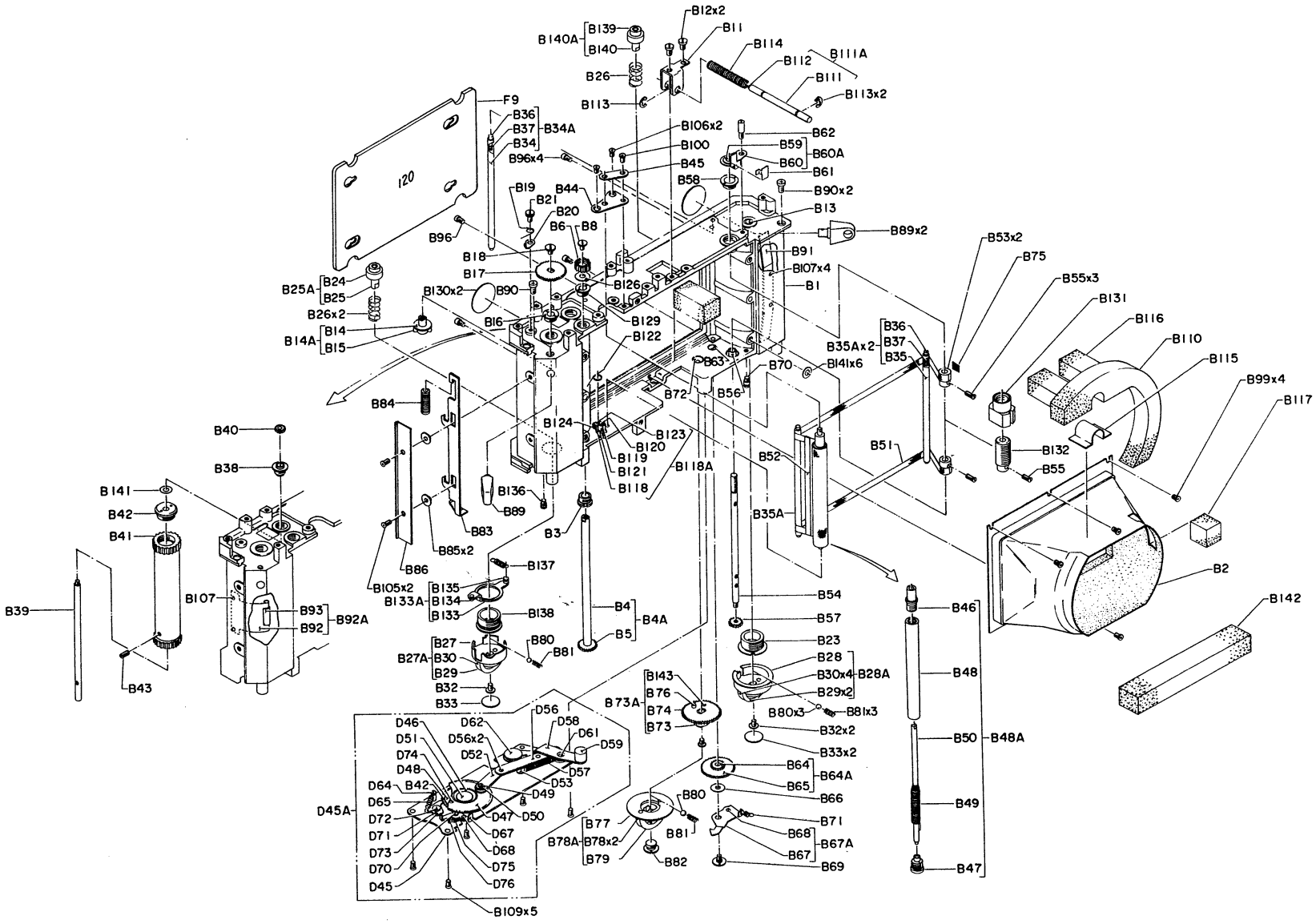
RANGE FINDER



BOTTOM COVER, LENS MOUNT



BACK COVER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B139
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B111
B26
B113
B113x2
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B37
B34A
B34
B96x4
B106x2
B100
B45
B62
B59
B60A
B60
B61
B58
B90x2
B19
B21
B44
B20
B13
B96
B6
B8
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B18
B91
B17
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B25A
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B130x2
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B26x2
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B129
B14A
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D48
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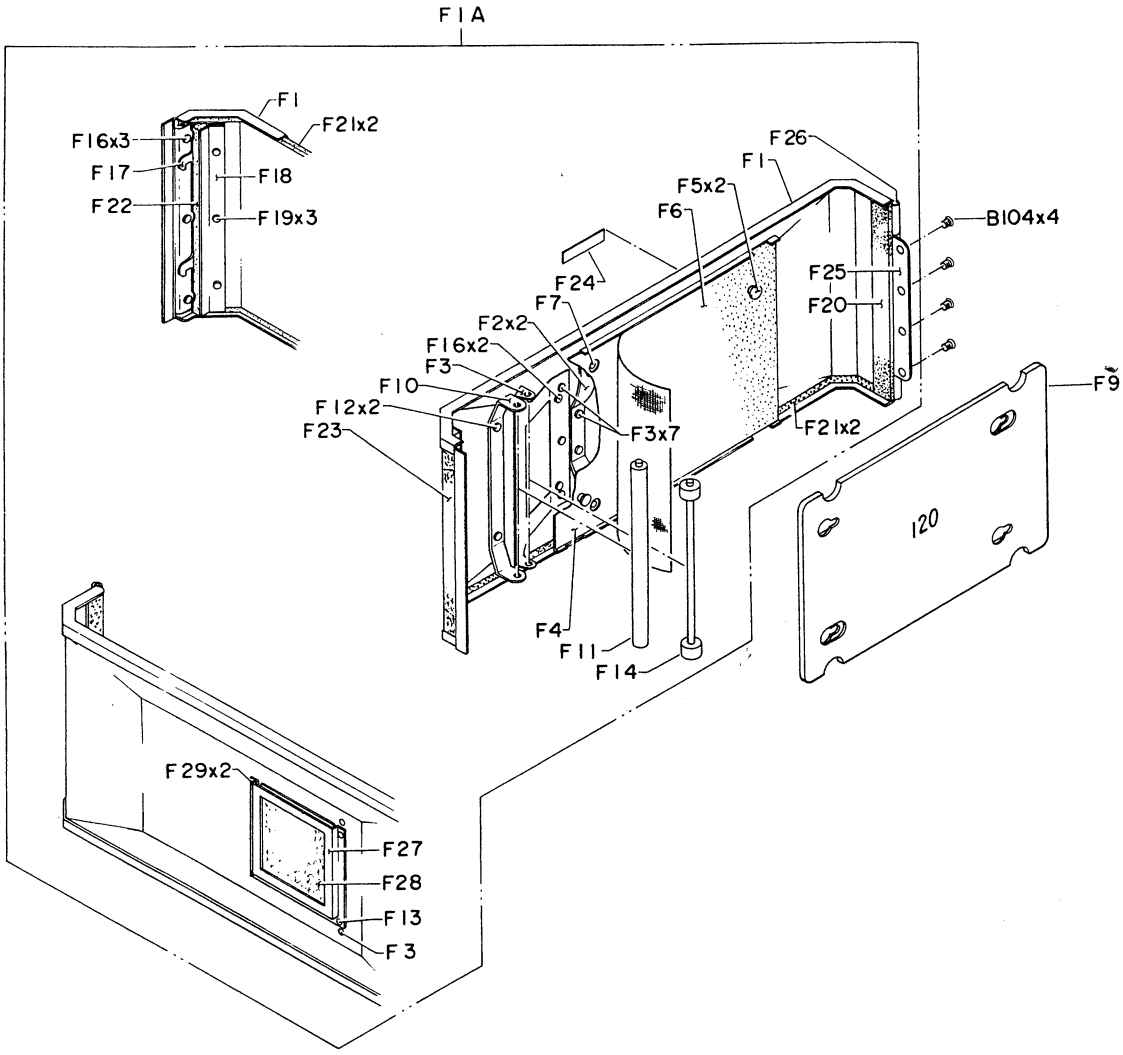
D70
D75
D45
D76
B109x5

BODY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F25
F20
F24
F7
F2x2
F16x2
F3
F10
F12x2
F23
F3x7
F21x2
F9
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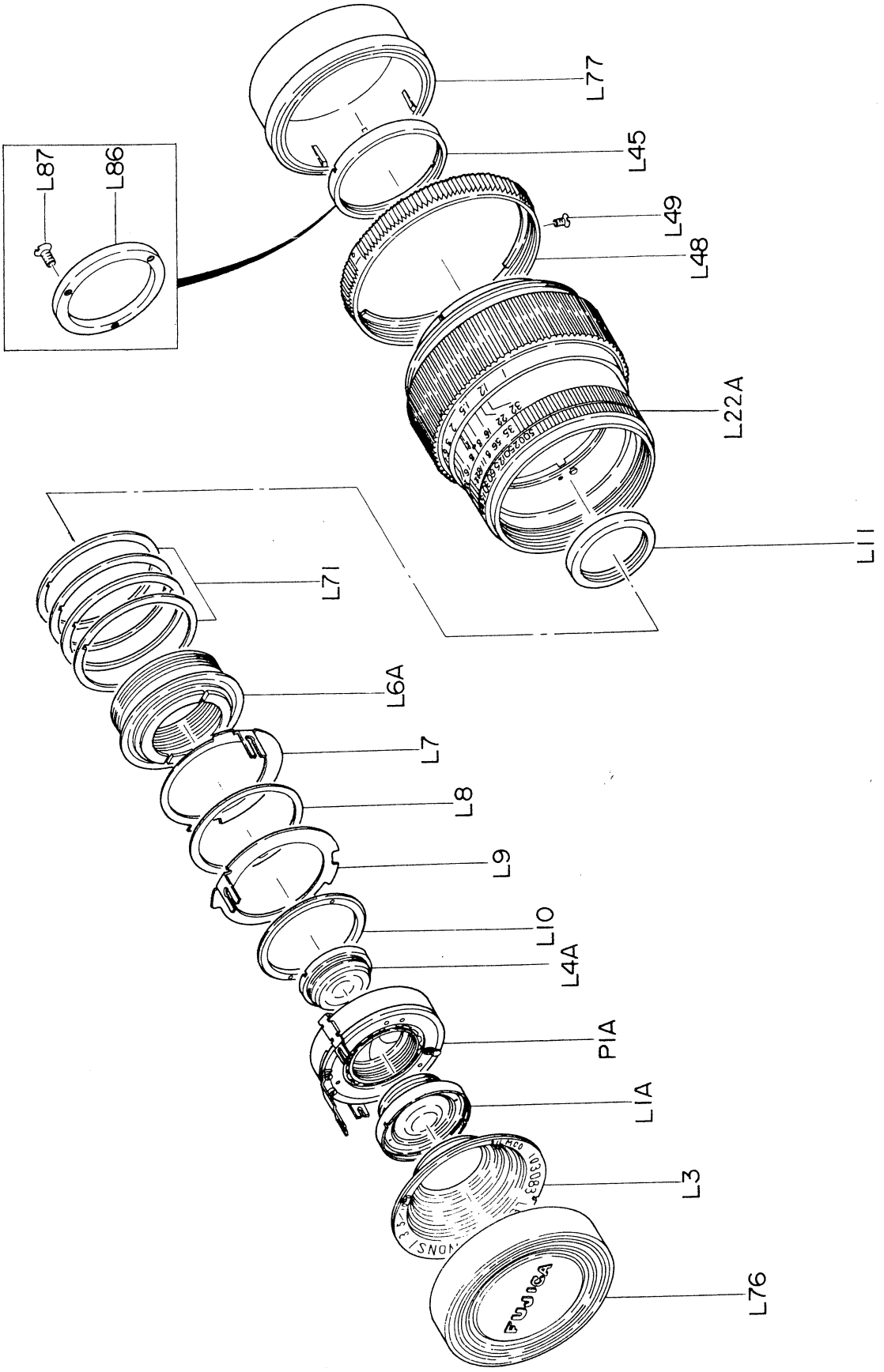
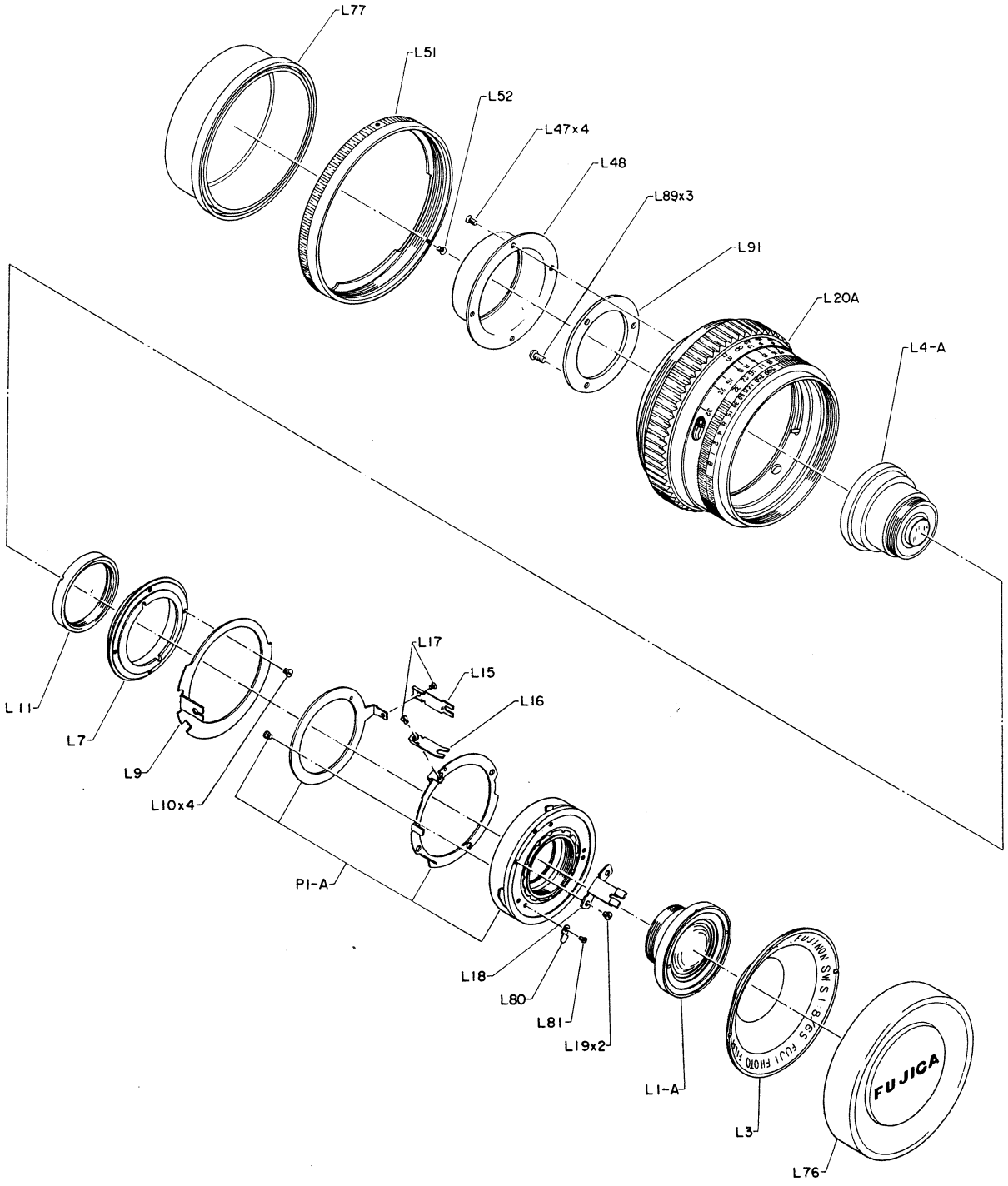
F4
F11
F14
F29x2
F27
F28
F13
F3

3.5/100 mm LENS



8/65 mm LENS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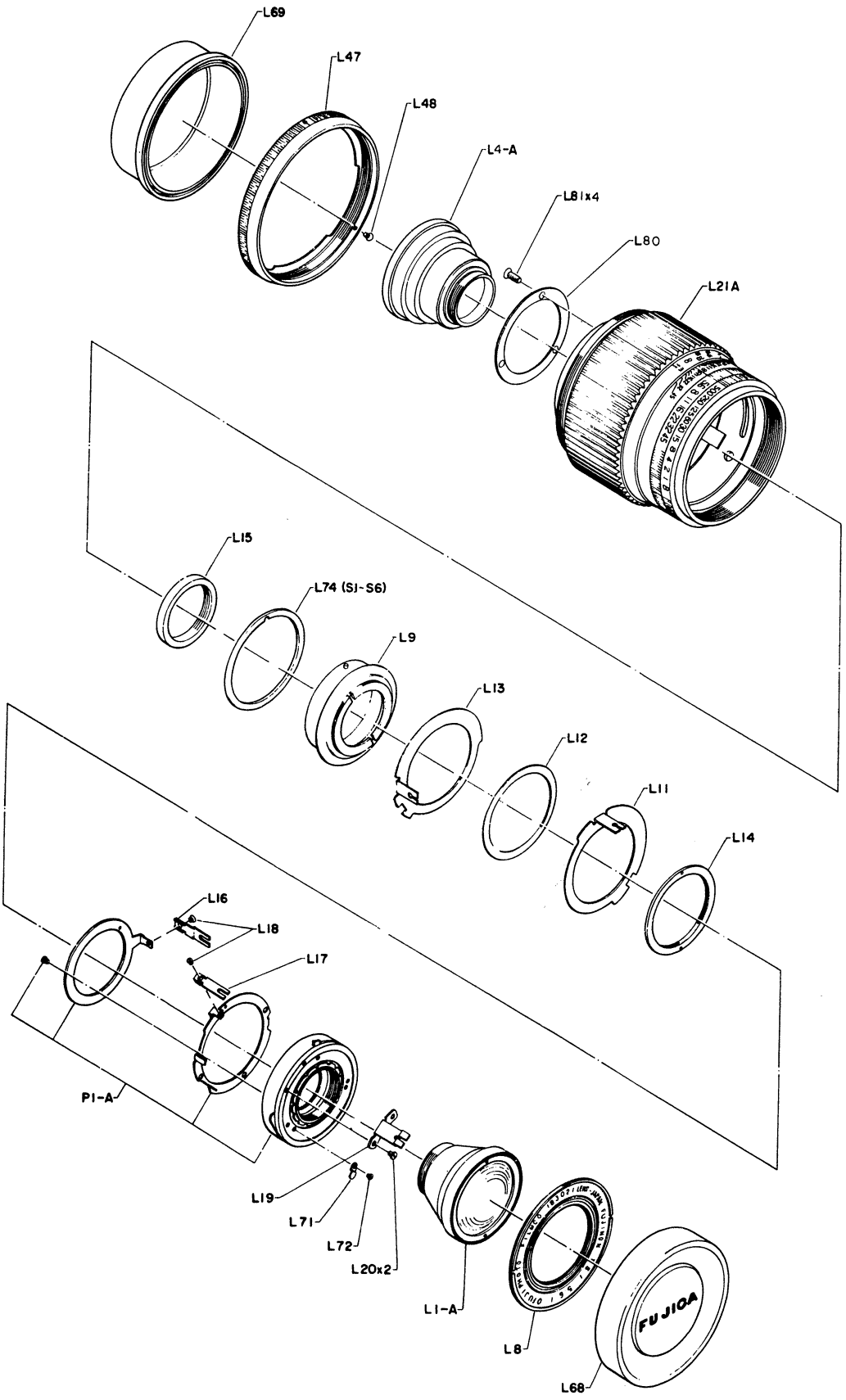
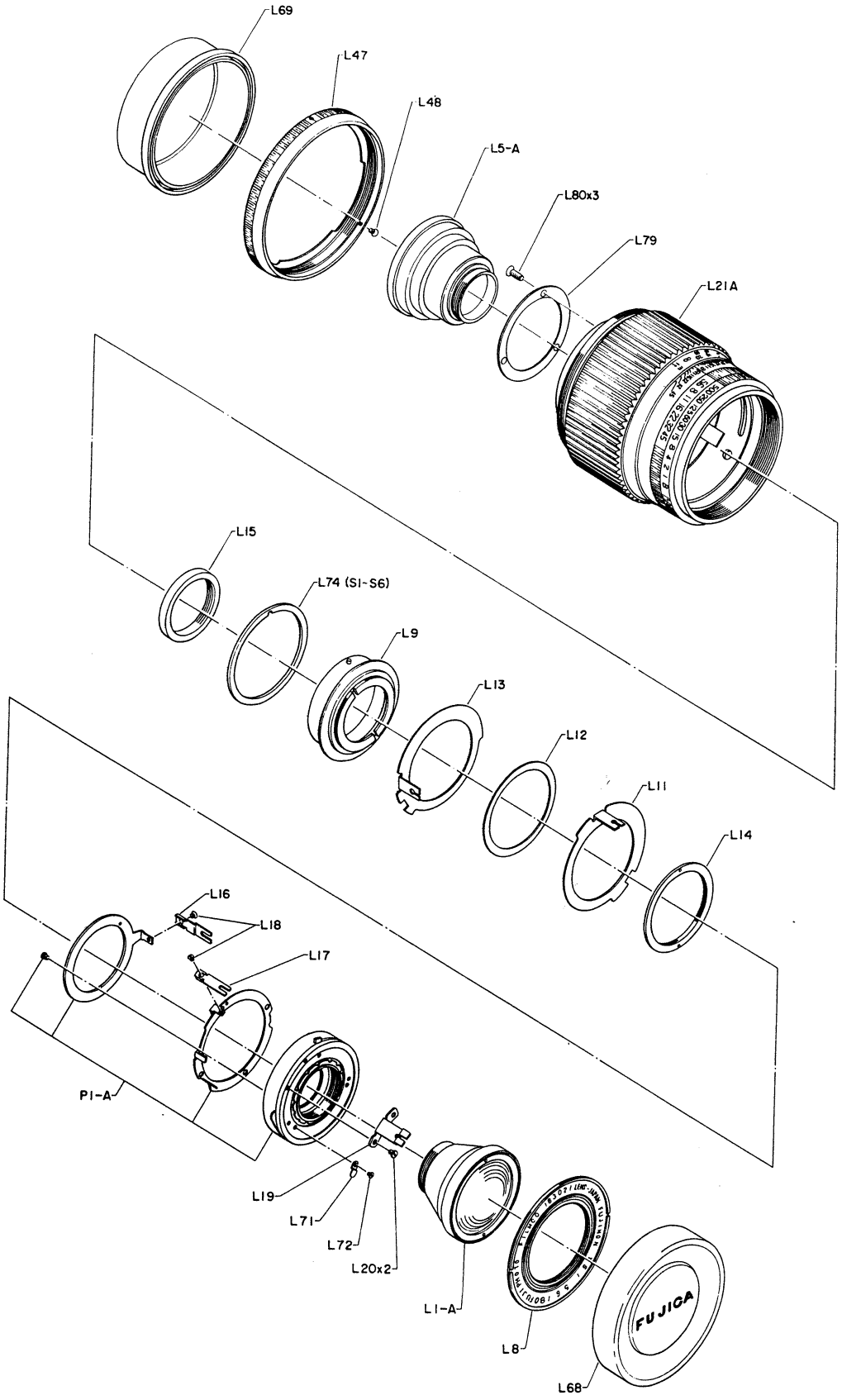
L17
L15
L16
P1-A
L18
L80
L81
L19x2
L1-A
L3
L76
FUJICA

5.6/150 mm LENS



5.6/180 mm LENS



Parts List G690 BL

Parts No.	Nomenclature	Parts No.	Nomenclature
B1A	Body unit	B45	Adjusting plate
B2	Lens barrel	B48A	Light shielding curtain
B3	Spindle holder	B50A	Shaft
B4A	Gear spindle	B51	Curtain
B6	Gear	B52	End plate
B8	Screw	B53	Take up spool
B11	Spindle holder	B53A	Take up spool
B12	Screw	B54	Spindle
B14A	Film take up spindle	B55	Screw
B16	Spindle hoder	B57	Gear
B17	Gear	B58	Spindle holder
B18	Screw	B60A	Signal lever
B19	Spring	B62	Guide pin
B20	Pawl	B64A	Gear
B21	Spindle	B66	Washer
B23	Guide ring	B67A	Stopper plate
B25A	Spindle holder	B69	Screw
B26	Spring	B70	Screw
B27A	Film take up lever base	B73A	Gear spindle
B28A	Feed lever base	B75	Adjust curtain
B32	Screw	B77A	Rotary plate
B33	Leather	B80	Ball (2 mm. dia.)
B34	Film guide roller	B81	Spring
B35A	Curtain guide roller	B83	Pawl
B38	Spindle holder	B84	Spring
B39	Spindle	B85	Guide roller
B40	Gear	B86	Leather base plate
B41A	Counter drum	B89	Neck strap eyelet
B43	Screw	B90	Set screw
B44	Spindle holder	B92A	Spring

Parts No.	Nomenclature	Parts No.	Nomenclature
B94	Body left side leather	B136	Spring hook screw
B95	Body right side leather	B137	Spring
B96	Film positioning pin	B138	Guide ring
B98	Body cap	B139A	Spool shaft nolder
B99	Screw	B141	Washer
B100	Screw	B142	Mortplene
B101	Screw	C1A	Lens installation plate
B102	Screw	C2	Ring
B104	Screw	C3A	Set ring
B105	Screw	C4	Washer
B106	Screw	C5	Ball 1.2 mm. dia.
B107	Rivet	C6	Set ring
B108	Screw	C7	Set lever
B109	Screw	C8	Holder ring
B110	Mortplene	C9	Release ring
B111A	Range counter interlcok rod	C10A	Release lever
B113	Washer	C13	Spring plate
B114	Spring	C14	Screw
B115	Holding plate	C15	Spring
B116	Mortplene	C16A	Bayonet ring
B117	Mortplene	C18	Light shielding plate
B118A	Lock lever	C24A	Release guide lever
B122	Spring	C34	Spring hook plate
B123	Shaft	C35	Spring
B124	Washer	C45	Leather
B126	Washer	C46	Tripod socket
B127	Blind plate	C48	Screw
B129	Spindle holder	C49	Screw
B130	Plate	C50	Screw
B131	Screw	C51	Screw
B132	Guide screw	C52	Screw
B133A	Disc	C53	Screw

Parts No.	Nomenclature	Parts No.	Nomenclature
C55	Plate	D39	Spring washer
C56	Screw	D40	Take up lever
C61	Collar	D43	Screw
C62	Spring	D45A	Shutter set mechanism unit
C63	Seat plate	D57	Spring
C64	Guide pin	D65	Spring
C65	Guide seat plate	D66	Spring
C66	Guide pin	D75	Spring
C67	Button	D79	Stop pawl
C68	Plate	D81A	Hook
C69	Vinyl leather	D82	Spring
C70	Guide pin	E1A	Top cover
C71	Leaf spring	E2A	Finder frame
C72	Screw	E3A	Bottom cover
C73	Screw	E4	Knob
C74A	Slice plate	E6	Screw
D1A	Film take up mechanism unit	E8A	Film changeover plate
D3	Plate	E12	Spring
D6A	Spindle	E13	Ball 1.6 mm. dia.
D8	Gear	E14	Window
D9	Screw	E15	Window
D11A	Gear	E17	Accessory shoe
D13	Gear	E18	Eye piece
D14	Screw	E19	Stop pin
D21A	Stop ratchet wheel	E20	Screw
D27	Spring	E21	Screw
D29A	Sleeve	E22	Screw
D32	Nut	E23	Frame
D33	Release spindle	E24	Glass
D34	Spring	E25	Glass
D35A	Release button	E28	Leather
D38	Clutch plate	E30	Screw

Parts No.	Nomenclature	Parts No.	Nomenclature
E33	R. S. selector spindle	M57	Spring
E34	Knob	M63A	Wheel
E35	Screw	M67	Spacer
E36	Spring	M68	Dial plate
E37	Washer	M73A	Lever
E38	Filter	M74	Screw
E39	Washer	M75	Spring
E40	Symbol mark	M77A	Disc
E41	Glass holder	S1A	Range finder
E43	Curtain release lever	S4	Frame
E44	Washer	S5	Screw
F1A	Back cover	S8	Screw
F9	Pressure plate	S11	Screw
F11	Roller	S12	Frame
F14	Roller	S13	Guide rail
F20	Mortplene	S14	Screw
F21	Mortplene	S15	Mask
F22	Mortplene	S16	Holding plate
F23	Leather	S17	Cover
F25	Hinge	S18	Screw
F26	Hinge shaft	S19A	Cam lever
F28	Leather	S25	Screw
M1A	Exposure counter	S28	Screw
M4A	Gear	S31A	Interlock lever
M5	Gear	S36	Pin
M9A	Gear	S37	Spring
M11	Washer	S42	Spring
M12	Spring	S47	Spring
M23	Spring	S48A	Viewfinder frame
M24	Screw	S52	Screw
M28	Screw	S56	Stand plate
M41	Spring	S57	Plate

Parts No.	Nomenclature	Parts No.	Nomenclature
S58	Spring		
S59	Washer		
S60	Screw		

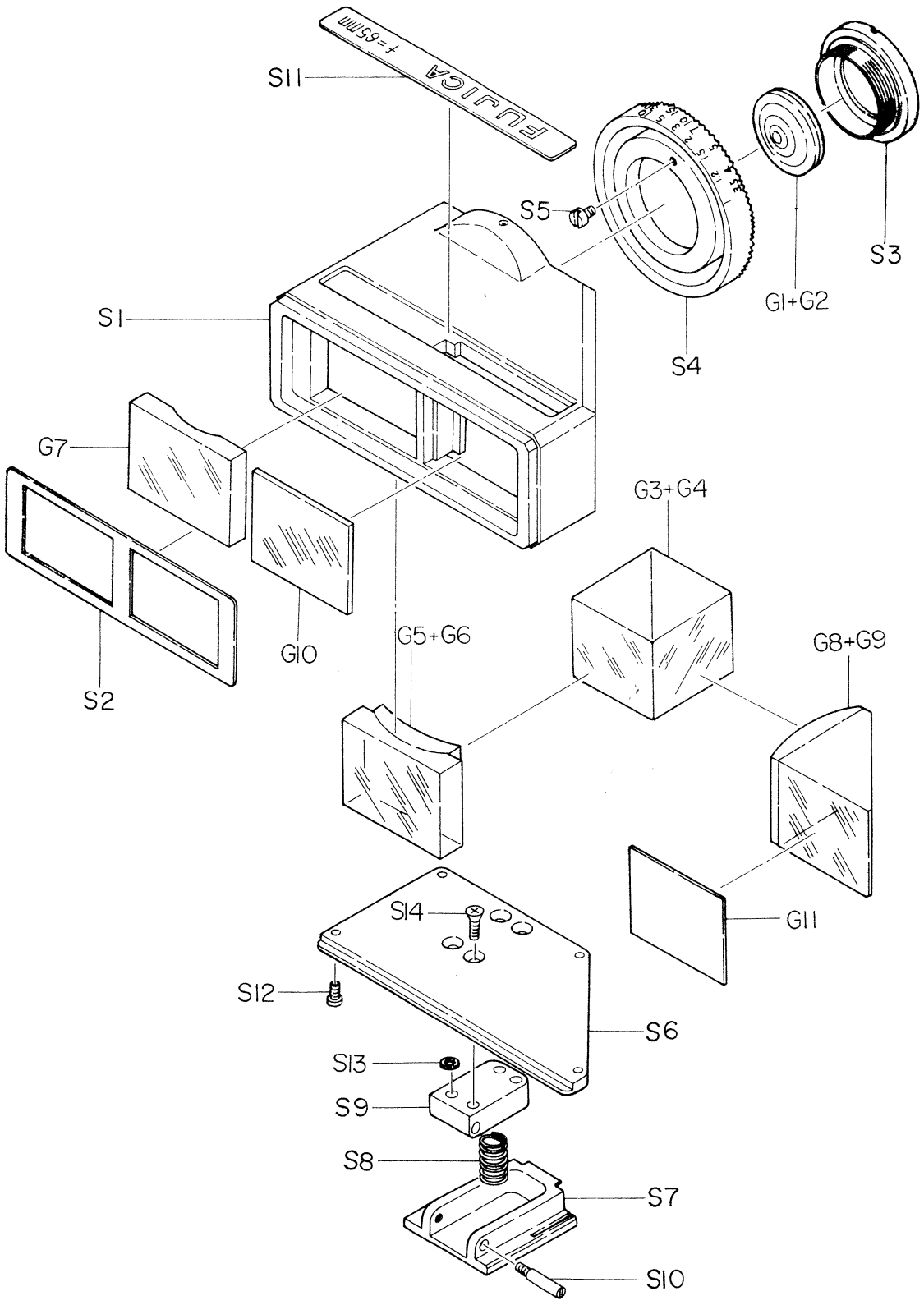
STANDARD REPAIR PARTS FOR INTERCHANGEABLE LENSES

Parts No.	Parts Name	Parts No.	Parts Name
	3.5/100 mm Lens		8/65 mm Lens
L1A	Front lens	L1A	Front lens
L3	Ring	L3	Ring
L4A	Rear lens	L4A	Rear lens
L6A	Shutter frame	L7A	Shutter frame
L7	Release ring	L9	Release ring
L8	Washer	L10	Screw
L9	Set ring	L11	Ring
L10	Ring	L12	Washer, S1
L11	Ring		Washer, S2
L22A	Hellicoid		Washer, S3
L48	Tightening ring		Washer, S4
L49	Stopper screw		Washer, S5
L71	Washer, S1	L20A	Hellicoid
	Washer, S2	L47	Screw
	Washer, S3	L48	Barrel
	Washer, S4	L51	Tightening ring
	Washer, S5	L52	Stopper screw
	Washer, S6	L76	Front cap
L76	Front cap	L77	Rear cap
L77	Rear cap	L89	Screw
L86	Ring	L91	Ring
L87	Screw	P1A	Shutter
P1A	Shutter		

Parts No.	Parts Name	Parts No.	Parts Name
	5.6/150 mm Lens		5.6/180 mm Lens
L1A	Front lens	L1A	Front lens
L4A	Rear lens	L5A	Rear lens
L8	Ring	L8	Ring
L9A	Shutter frame	L9A	Shutter frame
L11	Release ring	L11	Release ring
L12	Washer	L12	Washer
L13	Set ring	L13	Set ring
L14	Ring	L14	Ring
L15	Ring	L15	Ring
L47	Tightening ring	L21A	Hellicoid
L48	Stopper screw	L47	Tightening ring
L68	Front cap	L48	Stopper screw
L69	Rear cap	L68	Front cap
L74	Washer, S1	L69	Rear cap
	Washer, S2	L74	Washer, S1
	Washer, S3		Washer, S2
	Washer, S4		Washer, S3
	Washer, S5		Washer, S4
	Washer, S6		Washer, S5
L80	Ring		Washer, S6
L81	Screw	L79	Ring
L21A	Hellicoid	L80	Screw
P1A	Shutter	P1A	Shutter

PARTS LIST FOR VIEWFINDER
OF
FUJICA G690 BL F8/65mm LENS

PARTS LIST FOR VIEWFINDER OF FUJICA G690 BL F8/65mm LENS

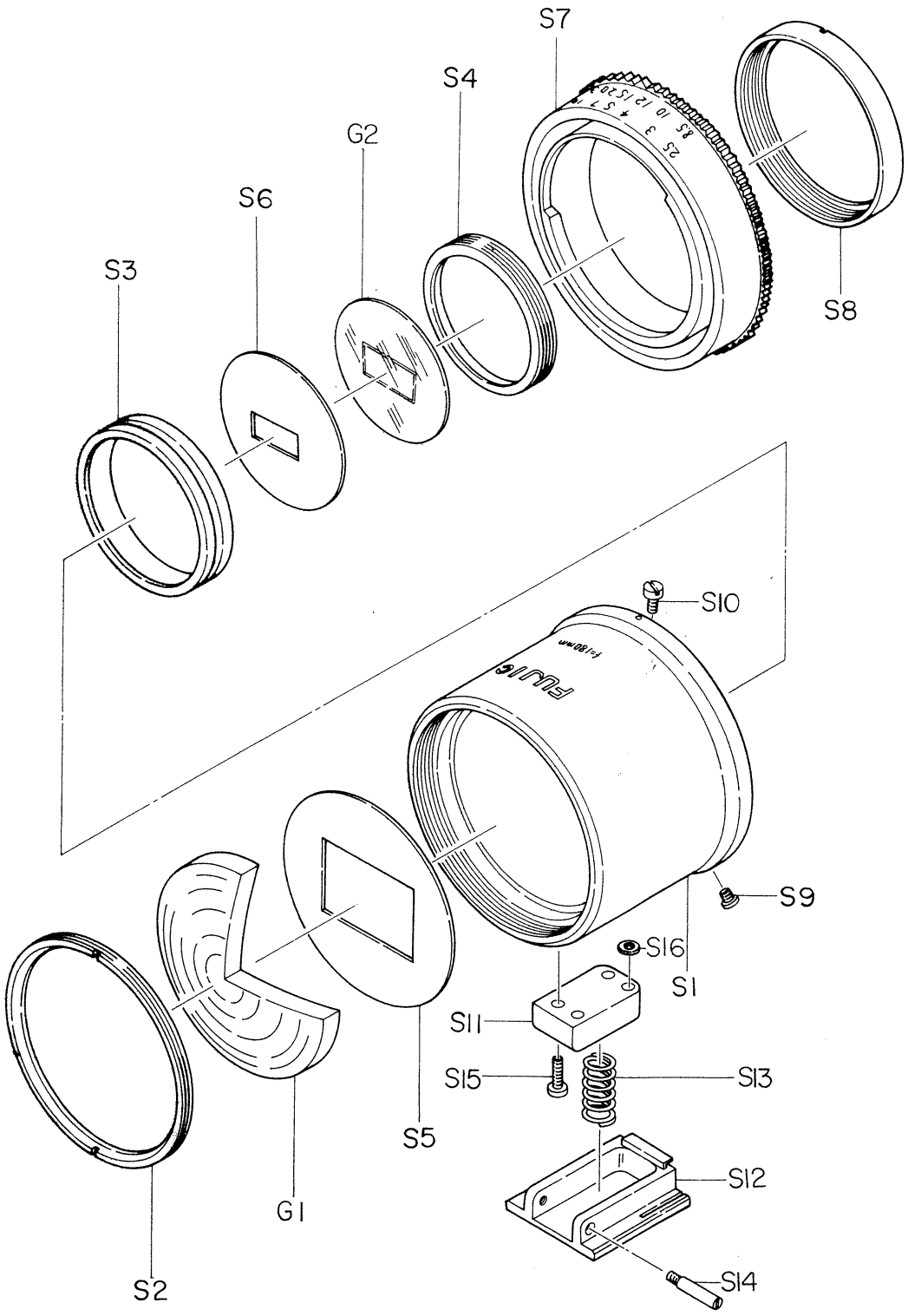


PARTS LIST FOR VIEWFINDER OF FUJICA G690 BL F8/65mm LENS

Part No.	Part Name	Q'ty	Remarks
S 1	本　　体 Finder body	1	
S 2	前 飾 り 板 Front frame	1	
S 3	接 眼 枠 Eyepiece	1	
S 4	距 離 目 盛 環 Distance scale	1	
S 5	ストッパビス Screw	1	
S 6	底　　板 Bottom cover	1	
S 7	シュースライド板 Foot	1	
S 8	バ　ネ Spring	1	
S 9	固定座 Seat	1	
S10	軸 Shaft	1	
S11	ネームプレート Name plate	1	
G5+G6	両凸レンズ Lens	1	
G8+G9	プリズム Prism	1	
G1+G2	凸凹レンズ Lens	1	
G3+G4	プリズム Prism	1	
G 7	対 物 レ ン ズ Objective lens	1	
G10	ファインダガラス Finder glass	1	
G11	視　野　枠 Field frame	1	
S12	ビ　ス Screw	4	
S14	ビ　ス Screw	4	
S13 (S1, S2)	ワッシャ Washer	2~4	

PARTS LIST FOR VIEWFINDER
OF
FUJICA G690 BL F5.6/180mm LENS

PARTS LIST FOR VIEWFINDER OF FUJICA G690 BL F5.6/180mm LENS



PARTS LIST FOR VIEWFIMDER OF FUJICA G690 BL F5.6/180mm LENS

Part No.	Part Name	Q'ty	Remarks
S 1	鏡　　筒 Finder body	1	
S 2	レンズ押え環 Retaining ring	1	
G 1	半透幕レンズ Objective lens	1	
S 5	前　絞　り Front frame	1	
S 3	後 枠 Ring	1	
S 4	視野枠押え Ring	1	
S 6	後　絞　り Rear frame	1	
G 2	視　野　枠 Field frame	1	
S 7	距離目盛環 Distance scale	1	
S 8	距離目盛環押え Retaining ring	1	
S 9	ビ　ス Screw	2	
S10	ストッパネジ Screw	1	
S12	シュースライド板 Foot	1	
S11	固定座 Seat	1	
S13	圧縮バネ Spring	1	
S14	軸 Shaft	1	
S15	ビ　ス Screw	4	
S16 (S1, S2, S3)	ワッシャ Washer	2~4	

FUJICA G690

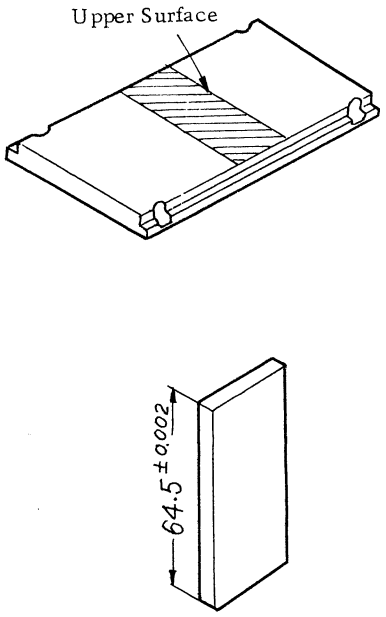
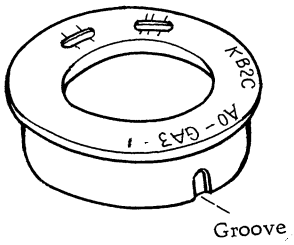
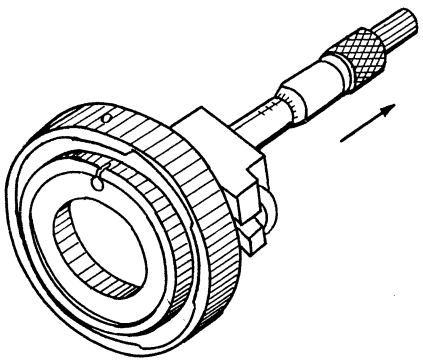
POINTS OF INSPECTION

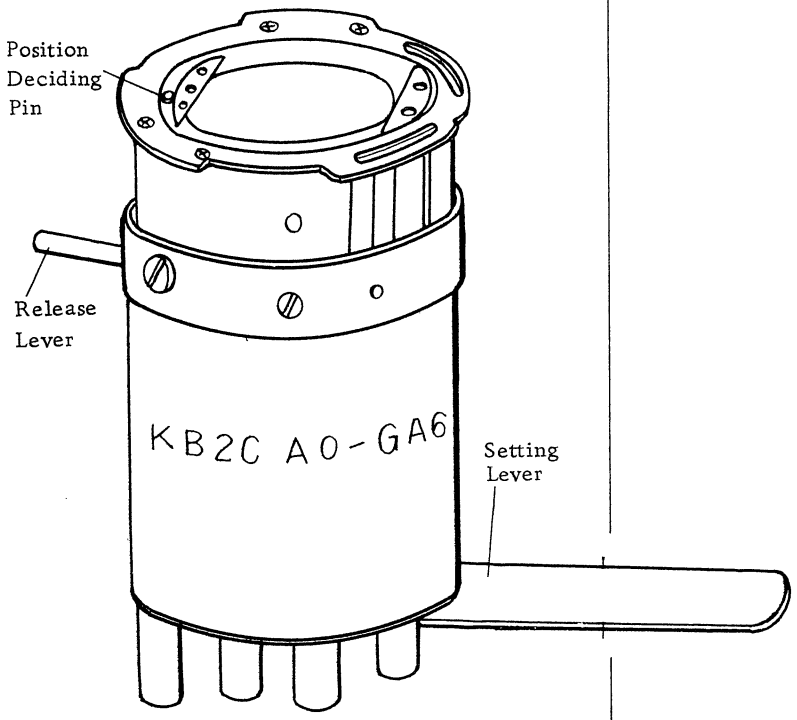
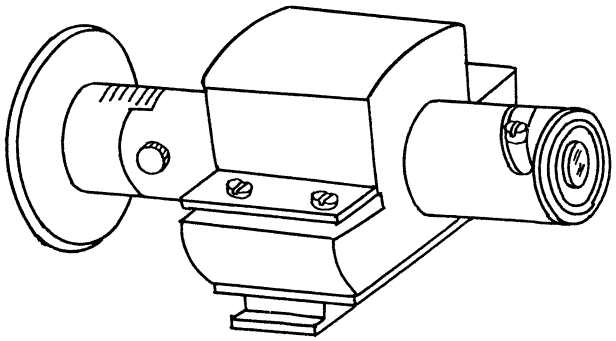
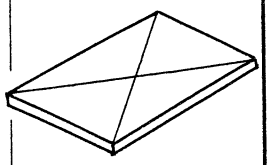
INSPECTION POINTS	INSPECTION METHODS
1. Film Feeding	(1) Use test film and repeat the winding operations several times. Check that two windings advance one frame of film. At the first winding, see that taking off the finger while halfway through does not make the lever return, also at whichever winding if the lever is wound fully it should always return smoothly by itself. During the winding, the finger should feel conspicuous grating.
2. Counter Advance	(1) Load test film, wind lever twice and check that counter indicates "1". Next, if film is Size 120, match film indicator to "120". Check that every two windings of lever advances one frame number of counter and that it counts up to 8 frames and goes no further. (2) Next, if film is Size 220, set film indicator of counter to "220" and check in the same way that it counts up to 16 frames. In either case, open back cover gently and check that this action makes counter return to "S" (start) position.
3. Rangefinder Coupling	(1) Attach standard lens to camera. While viewing an infinity subject, gently turn distance ring and check that at its infinity position the two images coincide. (2) Turn distance ring and check that viewfinder's field of view frame works smoothly from close distance to infinity.
4. Shutter Release	(1) Mount standard lens on camera, load film and set sheet-roll switch-lever to "R". Wind film advance lever and press shutter button. In this case shutter button should work smoothly and require pressure of under 1 kg.

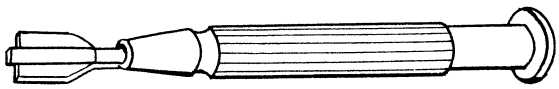
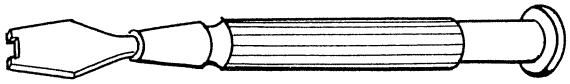
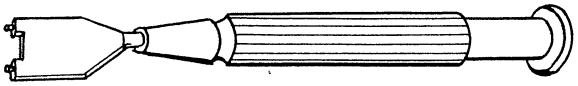
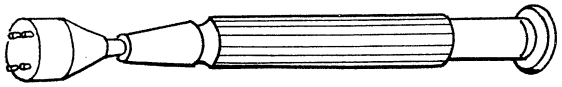
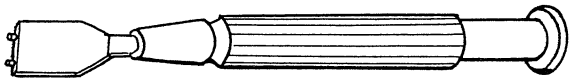
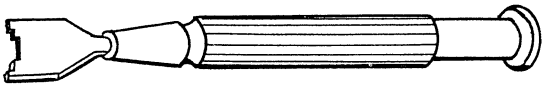
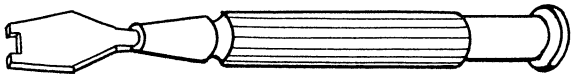
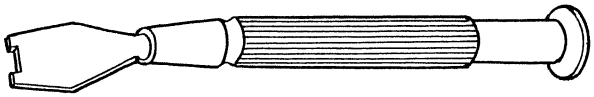
INSPECTION POINTS	INSPECTION METHODS
	(2) Check that during the winding the shutter button becomes locked and unworkable. (3) When pressing the shutter button, if the hand leaves the button before the shutter is released, it should make the next lever winding impossible. (4) When sheet-roll lever is set to "S". the shutter should be workable all the time. (5) When the lightproof curtain for lens interchanging is closed, the shutter button should become locked and the shutter unworkable.
5. Lightproof Curtain Operation	(1) Check that when the winding knob is wound up and held by hook the lightproof curtain completely covers the film mask surface. (2) When rewind button is pushed in the direction of arrow, the curatin should open out by itself and completely leave the film mask surface.
6. Back Cover	(1) Pull down knob and open back cover, Next close it and check that it locks firmly.
7. Sheet-Roll Switching Check	(1) When set to "R", the shutter should be workable only by regular operation. When set to "S" the shutter should be workable all the time.
8. Excessive and Insufficient Number of Parts	Not to be permitted.
9. Outward Appearance	It should have no conspicuous scratches, dust or stains and no unsightly dust or dirt on the inside of taking lens and viewfinder.
10. Condition of various parts of camera after checking.	(1) Film selector: "120" position (2) Shutter speed: "B" position (3) Diaphragm: "3. 5" position (4) R-S changeover knob "R" position (5) Synchro-contact changeover knob: "X" position

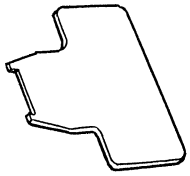
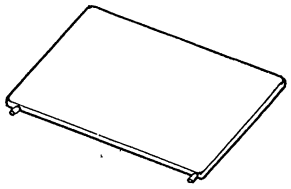
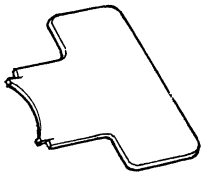
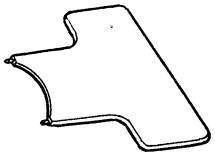
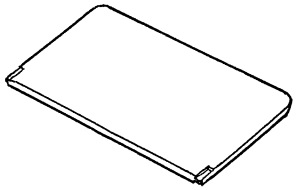
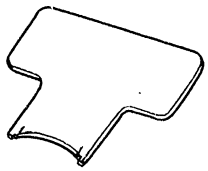
INSPECTION POINTS	INSPECTION METHODS
	(6) Helicoid: " ∞ " position (7) Light shielding curtain: "Open" position (8) Pressure plate: "120" side (9) Film spool "Winding" side

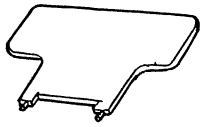
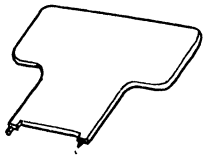
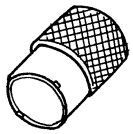
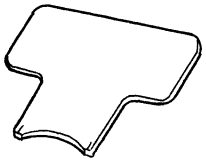
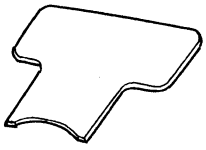
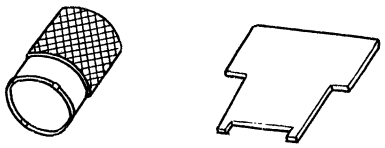
REPAIR TOOLS FOR FUJICA G690

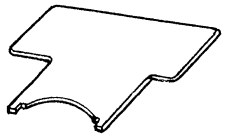
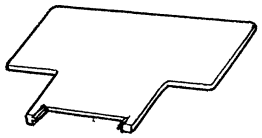
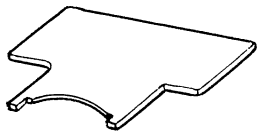
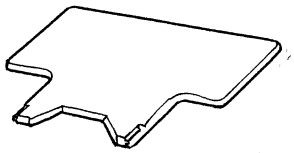
NAME (NUMBER)	SKETCH	REMARKS
1. Zero Position Gauge (KB2C AO-GA1)		
2. Shutter Release Position Cecker (KB2C AO-GA3-1)		
3. Infinity-2 meters Adjusting Tool for Rangefinder (KB2C AO-GA15)		

NAME (NUMBER)	SKETCH	REMARKS
4. Lens Barrel Side Shutter Release Position Checker (KB2C AO-GA6)		
5. Accessory Shoe Adjuster (KB2C AO-GA4)		 KB2C AO-GA4'
6. Pin-Face Screw-Driver (a) (KB2C-B3-TA1)		

NAME (NUMBER)	SKETCH	REMARKS
(b) (KB2C B16-TA1)		
(c) (KB2C B38-TA1)		
(d) (KB2C B40-TA1)		
(e) (KB2C B57-TA1)		
(f) (KB2C B69-TA1)		
(g) (KB2C B82-TA1)		
(h) (KB2C D32-TA1)		
(i) (KB2C E35-TA1)		
(j) (KB2C B58-TA1)		

NAME (NUMBER)	SKETCH	REMARKS
7. Pin-Face Spanner (a) (KB2C B23-TA1)		
(b) (KB2C C8-TA1)		
8. 3.5/100 mm lens Pin-Face Spanner (a) (LB3A L1-TA1)		
(b) (LB3A L2-TA1)		
(c) (LB3A L3-TA1)		
(d) (LB3A L4-TA1)		

NAME (NUMBER)	SKETCH	REMARKS
(e) (LB3A L10-TA1)		
(f) (LB3A L11-TA1)		
(g) (LB3A L45-TA1)		
9. 8/65 mm lens Pin-Face Spanner (a) (LB4A L1-TA1)		
(c) (LB4A L4-TA1)		
(d) (LB4A L78-TA1)		

NAME (NUMBER)	SKETCH	REMARKS
10. 5.6/150 mm lens Pin-Face Spanner (a) (LB5A L1-TA1)		
(b) (LB5A L4-TA1)		
11. 5.6/180 mm lens Pin-Face Spanner (a) (LB6A L1-TA1)		
(b) (LB6A L5-TA1)		

FUJICA G690 REPAIR TOOLS

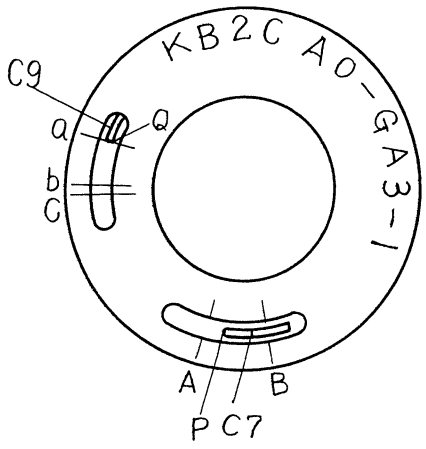
Directions for Use

1. Zero Position Gauge (AO-GA1)

Attach the upper surface of (1) tightly onto rail surface for film on the body side and place on the measurement plane of dial gauge, or standard board. Place (2) on top of (1) and with dial gauge compare the measurement to the top surface of camera's bayonet ring with the 64.5 mm of (2). Specification is 64.5± 0.04 mm.

2. Shutter Release Position Checker (AO-GA3-1)

Engage the groove of tool with the position deciding pin (C17) of camera and set correctly. First, wind film advance lever fully and check that tip P of setting lever (C7) has come between the ruled lines A and B.
Next, check that before pressing the shutter button, tip Q of release lever (C9) is at position a and after pressing a full stroke, it is at position c.



3. Infinity-2 meters Adjusting Tool for Rangefinder (AO-GA15)

The standard point has been decided with a depth-micrometer at the time of manufacture. But in case it has become disarranged, correct the readings of the micrometer so that the plane where the spindle coincides with plane A of diagram becomes the standard point. To adjust the 2 meter position, turn the spindle in the direction of arrow mark to $2.228\ ^{+0.02}_{-0.05}$ meters from the standard point and to adjust the infinity position within a range of 0± 0.5 and 0.02.

4. Accessory Shoe Adjuster (AO-GA4)

Insert part A of tool into camera's accessory shoe. Check that cross-line of chart coincides with cross-line within the field of view of the visibility telescope.
For details refer to Repair Manual pages 4--5 under Caution.

5. Lens Barrel Side Shutter Release Position Checker (AO-GA6)

Engage the position deciding pin of tool with the position deciding groove on lens barrel, set correctly and tighten with tightening ring (L48). Check that when the tool's setting lever is worked a full stroke it sets the shutter and that when release lever is worked a full stroke it releases the shutter.
In either case, a full stroke should be the basis.