Ⅱ DISASSEMBLY

1. Front cover

1.1 Remove name plate (1-38) carefully so that the name plate is not bent after applying ketone to the plate.

1.2 Remove two screws (2-32) and screw (2-33). The front cover (2-31) can then be removed.

2. Lever Assembly

2.1 Loosen two screws (1-44), and remove window glass (1-45) and dial plate (1-46) after removing window frame (1-43).

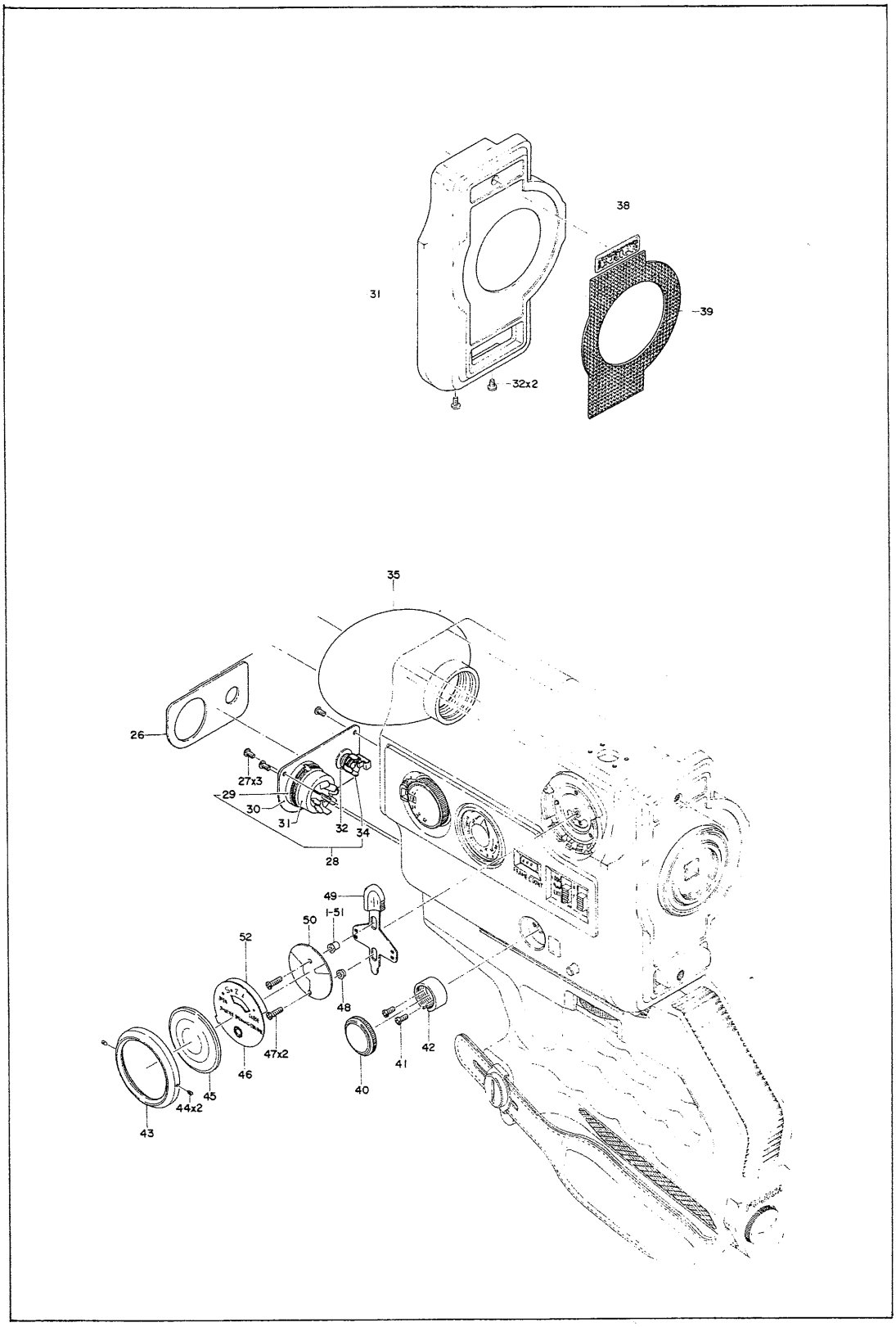
2.2 Remove two screws (1-47), and remove disc (1-50), bushing (1-48) and bushing (1-51). The lever assembly (1-49) can then be removed.

3. Connector assembly

3.1 Remove leather (1-26).

3.2 Remove three screws (1-27). The connector (1-28) can then be removed.

Fig. 1


38
31
39
32x2
35
26
27x3
29
30
31
32
34
28
49
1-51
50
52
48
47x2
46
45
44x2
43
40
41
42

4. Side cover assembly

4.1 Remove the connector assembly as described in II-3 above.

4.2 Remove two screws (2-39). The side cover assembly (3-38) can then be removed.

5. Plate

Remove three screws (2-37). The plate (2-36) can then be removed.

6. Body case assembly

6.1 Remove front cover, lever assembly, connector assembly, side cover assembly and plate as described in II-1 through 5 above.

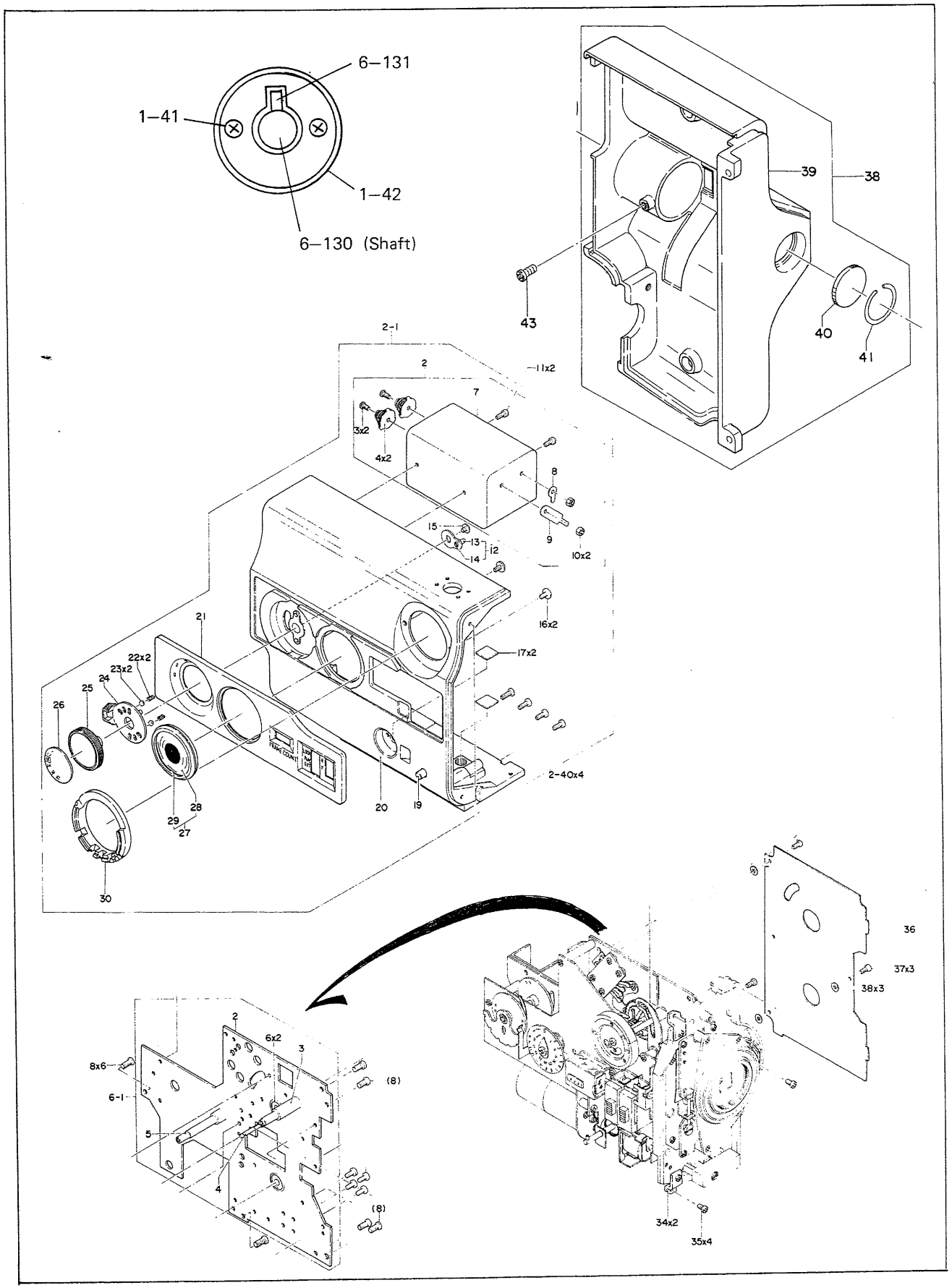
6.2 Remove four screws (2-35) and remove two auxiliary plates (2-34).

6.3 Unsolder and disconnect red lead wire (8-1) and black lead wire (8-2) from outer battery case (2-7).

6.4 Remove four screws (6-8). The body case assembly (2-1) can then be removed.

NOTE: When removing the main body, match the pin (6-131) on the shaft (6-130) with the groove on the synchro-coupler (1-42).

Fig. 2


6–131
1–41
1–42
6–130 (Shaft)
39
38
43
40
41
2-1
2
11x2
7
3x2
4x2
8
15
13
12
14
9
10x2
16x2
17x2
21
22x2
23x2
24
25
26
2-40x4
20
19
28
29
27
30
36
37x3
38x3
2
6x2
3
8x6
(8)
6-1
5
4
(8)
34x2
35x4

7. Upper printed circuit board assembly

7.1 Remove the body case assembly (2-1) as described in II-6 above.

7.2 Loosen two screws (5-24), and remove click plate assembly (5-21) and rotary plate assembly (5-19).

7.3 Remove screw (6-155), and remove pointer (6-154).

7.4 Loosen screw (6-149) and remove dial plate assembly (6-145). (Be careful not to expand the zero resetting spring.)

7.5 Remove screw (6-41) and plate (6-40), and remove rotary shaft assembly (6-30).

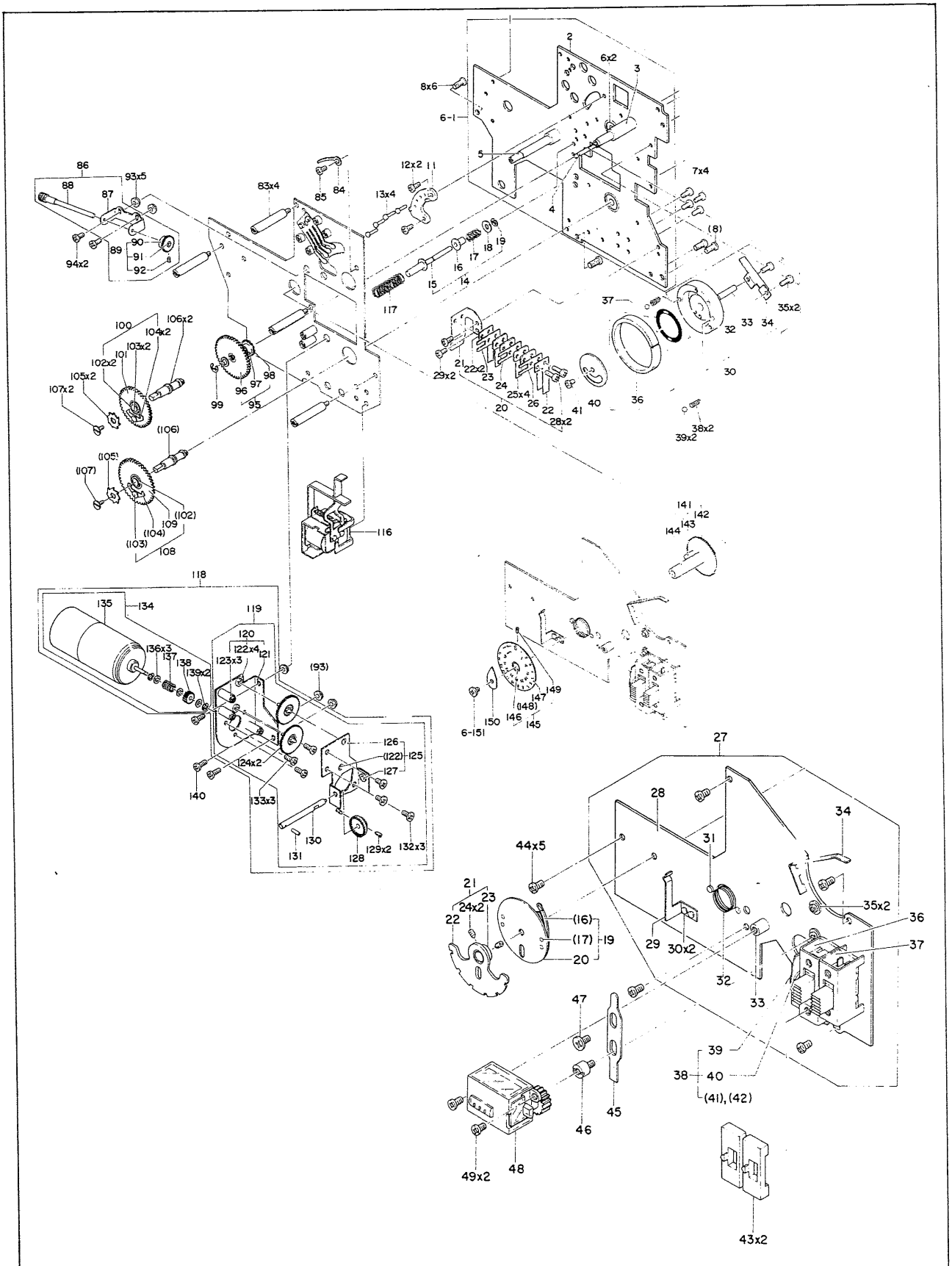
7.6 Unsolder and disconnect various lead wires from the upper printed circuit board assembly (5-27).

NOTE: When connecting or disconnecting the lead wires, refer to the attached wiring diagram.

7.7 Remove five screws (5-44), and remove the upper printed circuit board assembly (5-27).

NOTE: When removing the upper printed circuit board assembly, remove spring (6-117), zero-reset bar assembly (6-14) and gear assembly (6-141) together with the upper printed circuit board assembly.

Fig. 3


2
6x2
3
8x6
6-1
5
4
7x4
(8)
86
88
87
93x5
94x2
89
90
91
92
83x4
85
84
13x4
12x2
11
18
19
17
16
15
14
117
37
35x2
32
33
34
30
100
106x2
104x2
103x2
101
102x2
105x2
107x2
98
97
96
99
95
29x2
21
22x2
23
24
25x4
26
22
41
40
20
28x2
36
39x2
38x2
(106)
(105)
(107)
(102)
109
(104)
(103)
108
116
141
142
143
144
118
135
134
119
120
122x4
121
136x3
137
138
139x2
123x3
(93)
126
(122)
125
127
124x2
140
133x3
130
131
129x2
128
132x3
147
149
(148)
146
145
150
6-151
27
28
34
31
44x5
21
24x2
23
22
(16)
(17)
19
20
29
30x2
35x2
36
37
32
33
47
39
38
40
(41),(42)
45
46
49x2
48
43x2

8. Motor gear train assembly

8.1 Remove the upper printed circuit board assembly (5-27) as described in II-7 above.

8.2 Remove three screws (6-140). The motor gear train assembly (6-118) can then be removed.

NOTE: Be careful not to lose three collars (6-93)

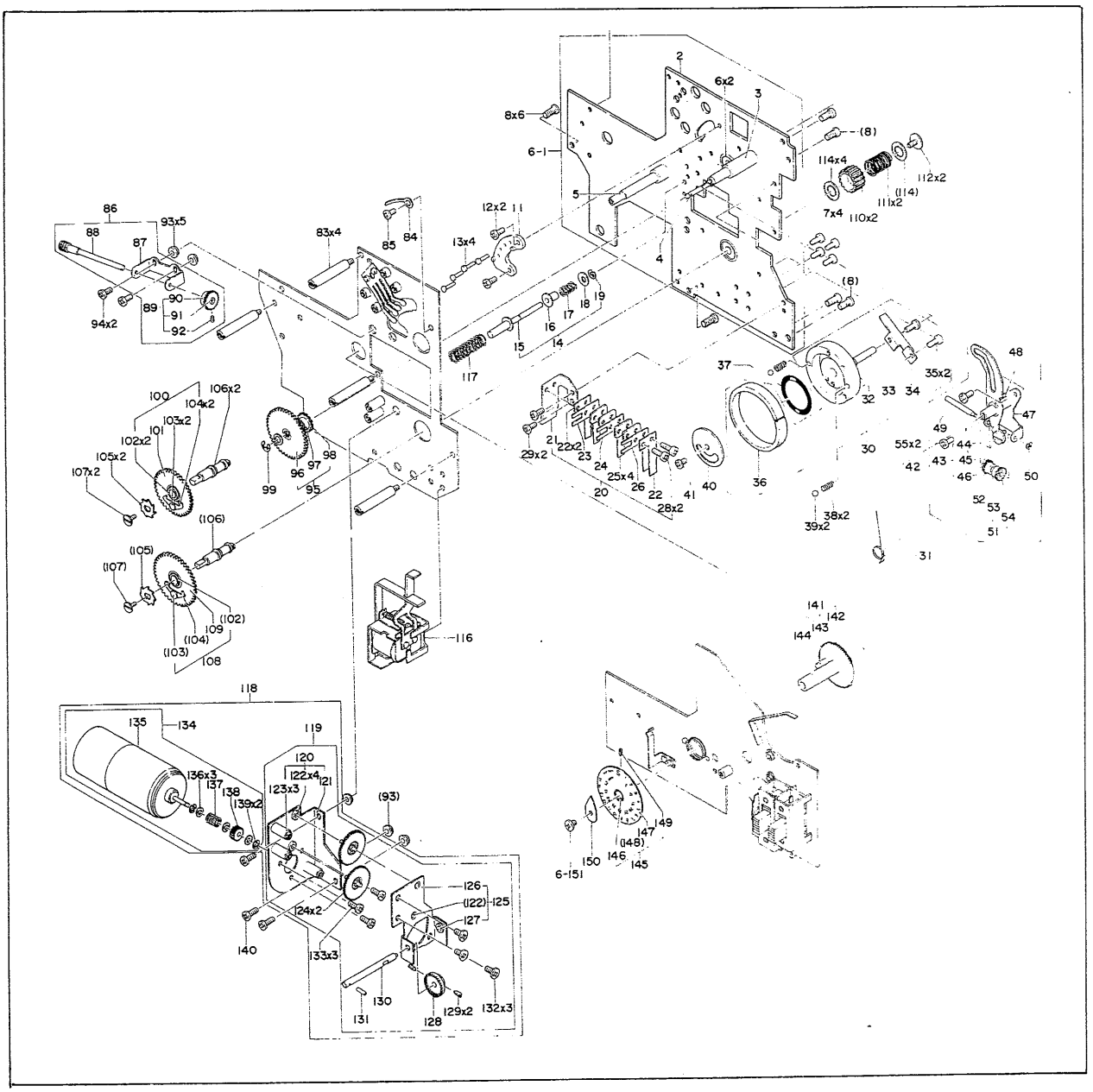
9. Solenoid assembly

9.1 Remove the upper printed circuit board assembly (5-27) as described in II-7 above.

9.2 Unsolder and disconnect lead wires from solenoid assembly (6-116).

9.3 Remove four screws (6-7). The solenoid assembly (6-116) can then be removed.

Fig. 4


2
6x2
3
8x6
6-1
(8)
114x4
112x2
(114)
111x2
7x4
110x2
5
4
(8)
12x2
11
13x4
83x4
85
84
86
88
93x5
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94x2
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35x2
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39x2
38x2
36
40
41
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22
28x2
21
22x2
23
24
25x4
26
29x2
100
106x2
104x2
103x2
101
102x2
105x2
107x2
99
96
97
98
95
(106)
(105)
(107)
(102)
109
(104)
(103)
108
116
141
142
143
144
118
135
134
119
120
122x4
121
136x3
137
138
139x2
123x3
(93)
126
(122)
125
127
124x2
140
133x3
130
131
128
129x2
132x3
147
149
(148)
150
146
145
6-151

10. Cam assembly

10.1 Remove the upper printed circuit board assembly (5-27) as described in II-7 above.

10.2 Remove two screws (6-55). The cam assembly (6-42) can then be removed.

NOTE: When removing the cam assembly, be careful not to lose spring (6-31).

11. Frame assembly

11.1 Remove the side cover assembly (3-38) as described in II-4 above.

11.2 Unsolder and disconnect lead wires from printed circuit board (6-81), and remove two screws (6-82). The frame assembly (6-59) can then be removed.

NOTE: When connecting or disconnecting the lead wires, refer to the attached wiring diagram.

12. Meter

12.1 Remove the frame assembly (6-59) as described in II-11 above.

12.2 Unsolder and disconnect red and black lead wires from the meter (6-151), and remove two screws (6-153). The meter (6-151) can then be removed.

13. Lens mount assembly

13.1 Remove the front cover (2-31) as described in II-1 above.

13.2 Unsolder and disconnect lead wire from the lens mount assembly, and remove four screws (4-148). The lens mount assembly (4-142) can then be removed.

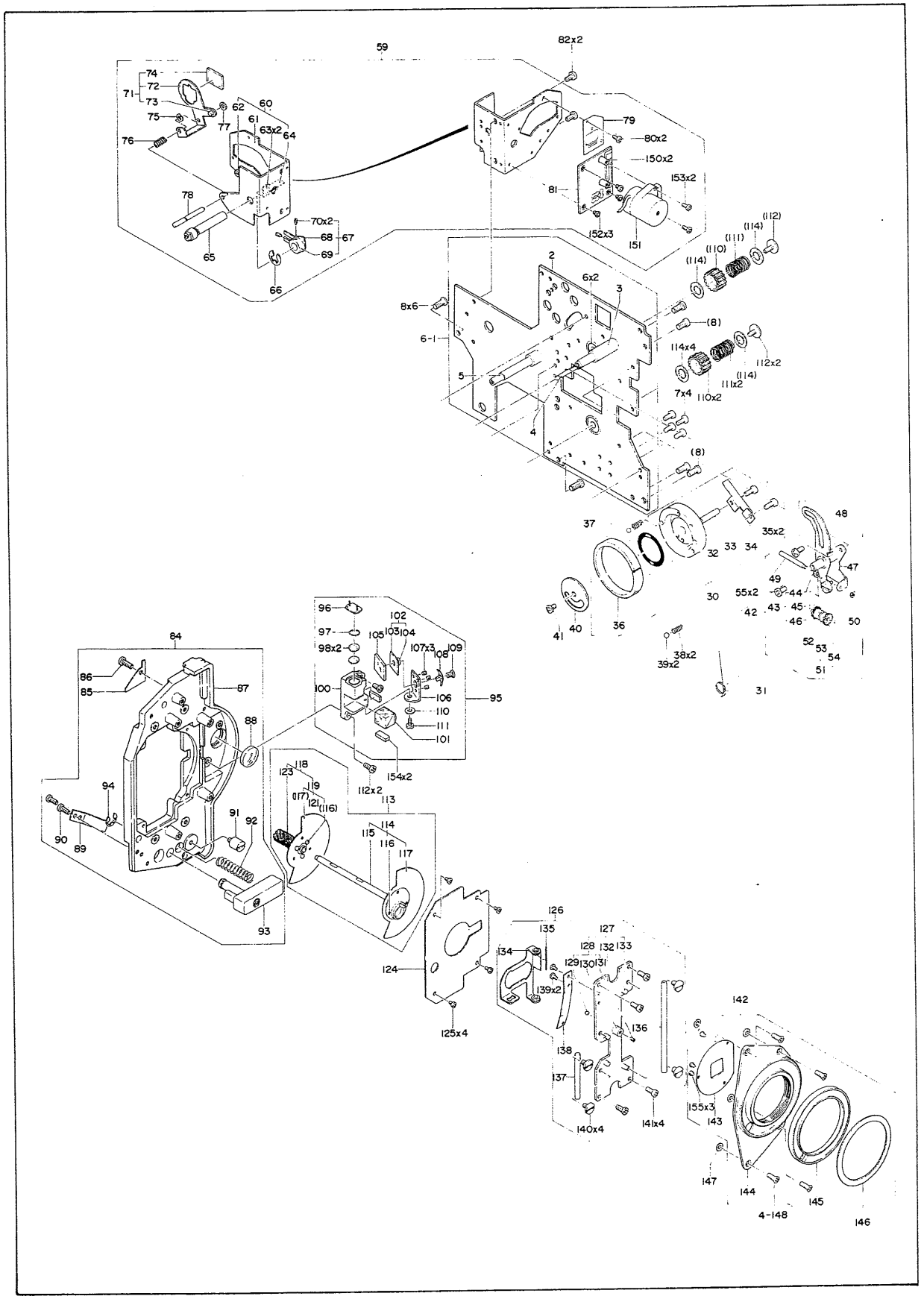
NOTE: Be careful not lose the washers (4-147) (for adjustment of flangeback) used in the lower portion of the lens mount assembly.

14. Reciprocating mirror assembly

14.1 Remove the front cover (2-31) and lens mount assembly (4-142) as respectively described in II-1 and II-13 above.

14.2 Remove four screws (4-141). The reciprocating mirror assembly (4-126) can then be removed.

Fig. 5


59
82x2
74
72
71
73
62
60
75
61
63x2
64
77
76
79
80x2
150x2
153x2
81
78
70x2
68
67
69
65
66
152x3
151
(112)
(114)
(111)
(110)
(114)
2
6x2
3
8x6
(8)
6-1
114x4
112x2
(114)
111x2
5
7x4
110x2
4
(8)
37
48
35x2
32
33
34
47
49
55x2
44
30
43
45
42
46
50
52
53
54
51
41
40
36
39x2
38x2
31
96
102
97
105
103
104
107x3
108
109
98x2
100
106
95
110
111
101
154x2
112x2
113
84
86
85
87
88
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123
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121
116
91
92
90
89
93
114
115
116
117
126
135
127
134
128
132
133
129
130
131
124
139x2
125x4
136
138
137
140x4
141x4
142
155x3
143
147
144
145
4-148
146

15. Front frame assembly

15.1 Remove the body case assembly, upper printed circuit board assembly, motor gear train assembly, solenoid assembly, cam assembly, lens mount assembly, and reciprocating mirror assembly as described in II-6, 7, 8, 9, 10, 13 and 14 above.

15.2 Remove four screws (4-125), and remove light shielding plate (4-124).

15.3 Remove two screws (6-94), and remove shaft holder assembly (6-86).

NOTE: Be careful not to lose two collars (6-93) used in the bottom of the shaft holder.

15.4 Remove E-clip (6-99), and remove worm gear assembly (6-95). (Be careful not to lose the washer.)

15.5 Loosen two screws (4-71), and make worm gear assembly (4-72) free from the shaft.

15.6 Remove two screws (4-149), and remove shaft holder assembly (4-78) from the base plate.

15.7 Loosen screw (4-71), and make bushing assembly (4-81) free from the shaft.

15.8 Unsolder and disconnect lead wires from photocell (4-96), and remove two screws (6-8). The front frame assembly (4-84) can then be removed.

NOTE: Be careful not to lose the release bar used in the shutter release button (4-93). Moreover, when reassembling, do not forget to install the release bar.

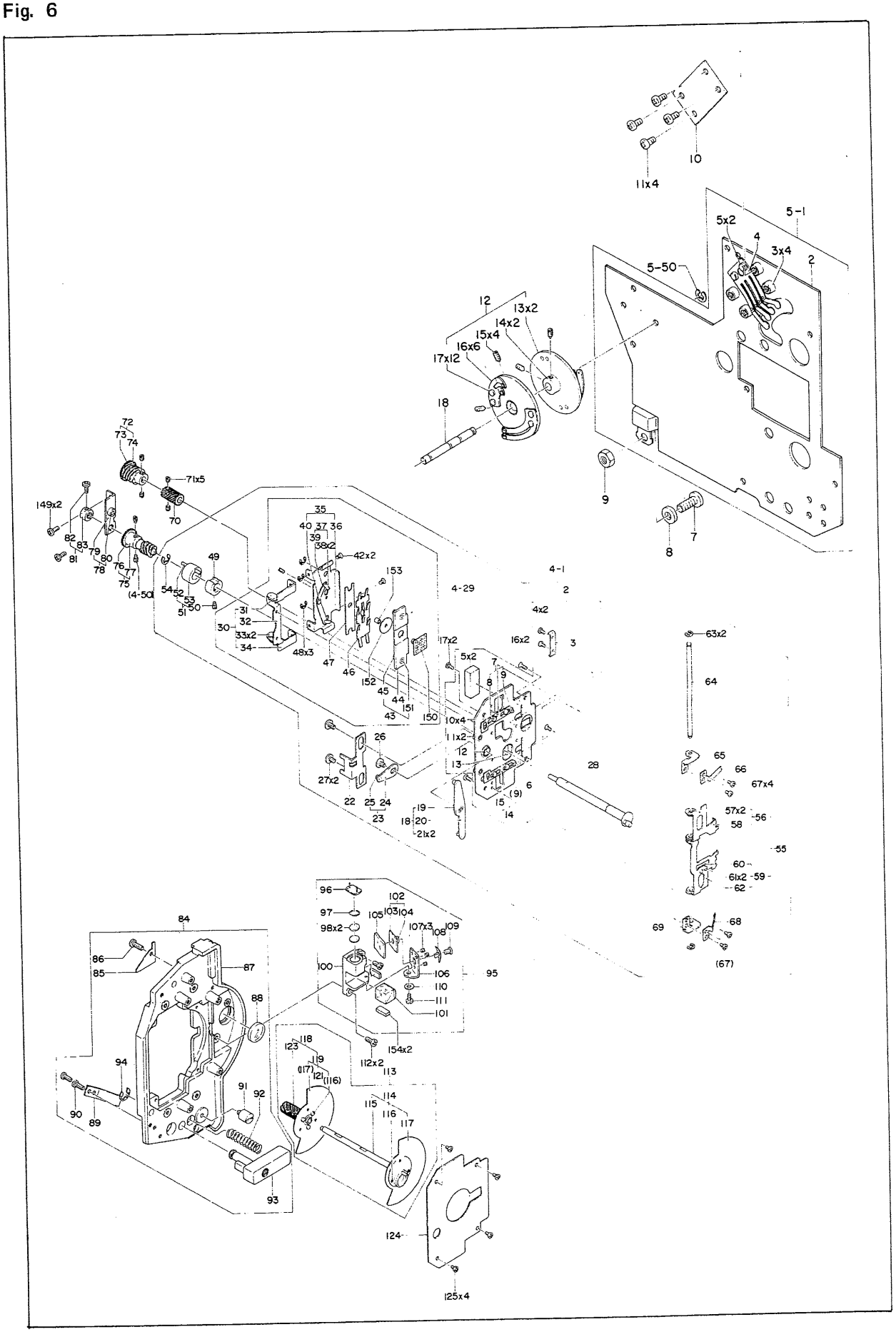
15.9 Remove the bushing assembly (4-81), shaft holder assembly (4-78), and worm gear assembly (4-72).

16. Film gate assembly

16.1 Remove the front frame assembly (4-84).

16.2 Remove two screws (4-16) and two screws (4-17). The film gate assembly can then be removed.

Fig. 6


10
11x4
5-1
5x2
4
3x4
2
5-50
12
13x2
14x2
15x4
16x6
17x12
18
9
8
7
72
73
74
71x5
70
149x2
82
83
81
79
80
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76
77
75
(4-50)
54
52
53
50
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49
35
40
37
36
39
38
42x2
153
4-29
4-1
2
4x2
31
32
30
33x2
34
48x3
47
46
152
45
44
151
43
150
17x2
16x2
3
5x2
7
9
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10x4
11x2
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27x2
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18
20
21x2
6
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67x4
57x2
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60
61x2
59
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69
68
(67)
96
97
98x2
102
105
103
104
107x3
108
109
100
106
95
110
111
101
154x2
112x2
113
84
86
85
87
88
94
90
89
91
92
93
123
118
119
(117)
121
(116)
114
115
116
117
124
125x4

17. Film chamber door assembly

Remove four screws (2-40). The film chamber door assembly (3-1) can then be removed from the body case assembly.

18. Base plate assembly

Remove four screws (3-37). The base plate assembly (3-19) can then be removed from the film chamber door.

19. Viewfinder assembly

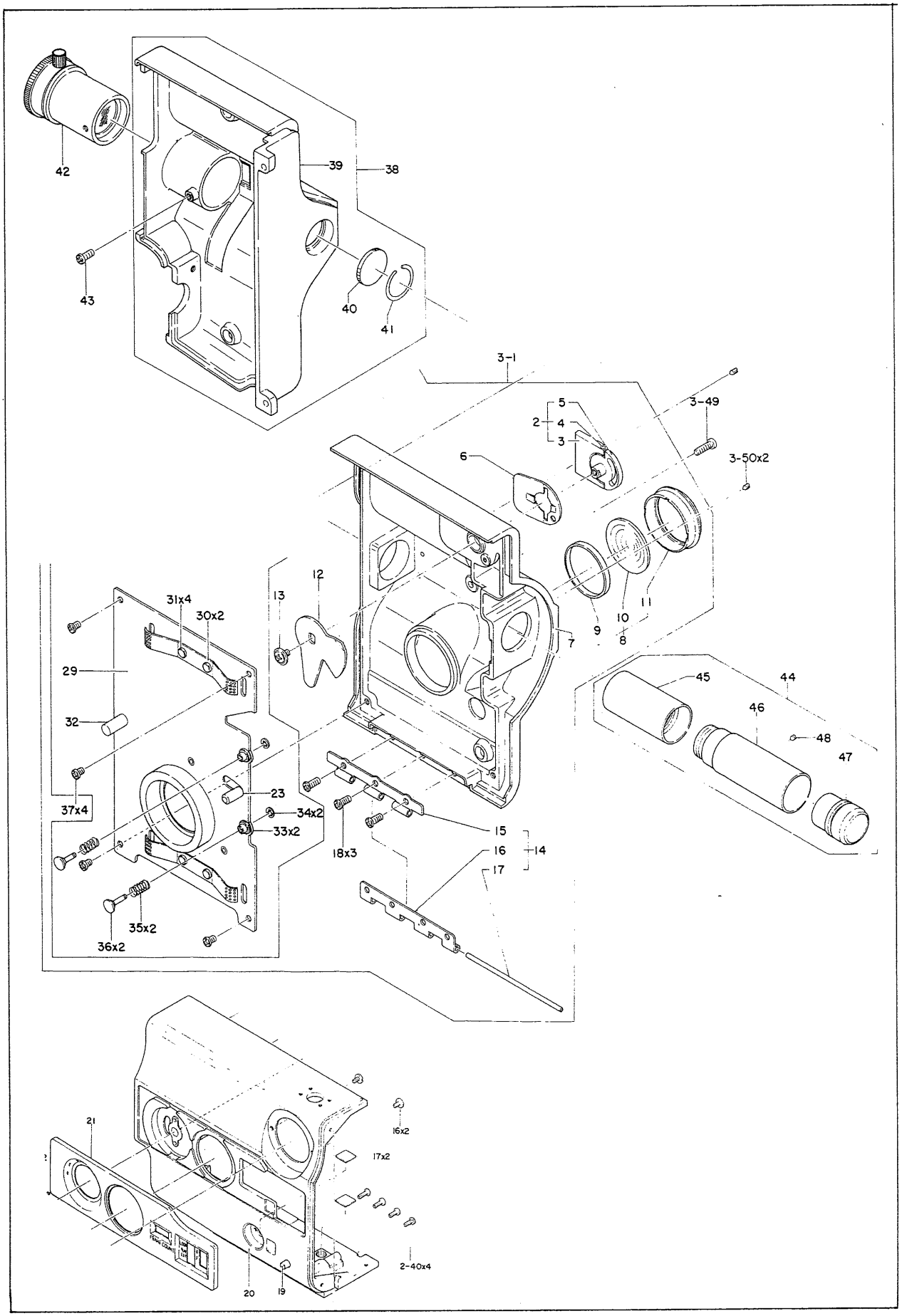
19.1 Loosen two screws (3-50).

19.2 Remove screw (3-49). The viewfinder assembly (3-44) can then be removed from the film chamber door.

20. Eyepiece assembly

Remove screw (3-43). The eyepiece assembly (3-42) can then be removed from the side cover assembly.

Fig. 7


42
39
38
43
40
41
3-1
5
2
4
3
3-49
6
3-50x2
12
13
31x4
30x2
29
32
37x4
23
34x2
33x2
18x3
15
16
17
14
35x2
36x2
9
10
11
8
7
45
44
46
48
47
21
16x2
17x2
2-40x4
20
19

Ⅲ REPAIR AND ADJUSTMENT

1. Body case assembly

1.1 Lever assembly (1-49) and cam assembly (6-42)

A. When the lever assembly (1-49) does not move smoothly or lightly, replace the cam assembly (6-42) or sector assembly (4-113) with a new one.

B. When the lever assembly (1-49) does not click effectively or when it drags, clean the click holes, two steel balls (6-39) and two springs (6-38), and apply grease to them.
When the click is too weak, replace the steel balls (6-39) and springs (6-38) with new ones.

C. When the lever assembly (1-49) is moved and variable shutter does not operate correctly, check the gear (6-51) of the cam assembly (6-42) and helical gears (4-70 and 4-123) of the sector assembly (4-113) for their intermeshings. When they do not intermesh correctly, loosen two screws (6-55) and properly move the cam assembly installed position so that they intermesh correctly.
When gears (6-51, 4-70 and 4-123) are worn, replace them with new ones.

1.2 Films-per-second speed control (2-25) and frational exposure control (2-24)

Check the films-per-second speed control to see if it changes over to 1, 12, 18, 24, 36 and 72 smoothly.

A. When surface along which the two steel balls (2-23) of the fractional exposure control (2-24) slide or holes where the steel balls click are worn, replace the fractional exposure control (2-24) with a new one.

B. When click of the fractional exposure control (2-24) is too weak, replace two springs (2-22) with new ones.

C. When sliding part is not lubricated well or dust exists on the sliding part, thoroughly clean and reassemble correctly.
When sliding part is worn excessively, replace it with a new one.

D. When click of the films-per-second speed control (2-25) is too weak, properly bend the leaf spring (5-29) to adjust the click.

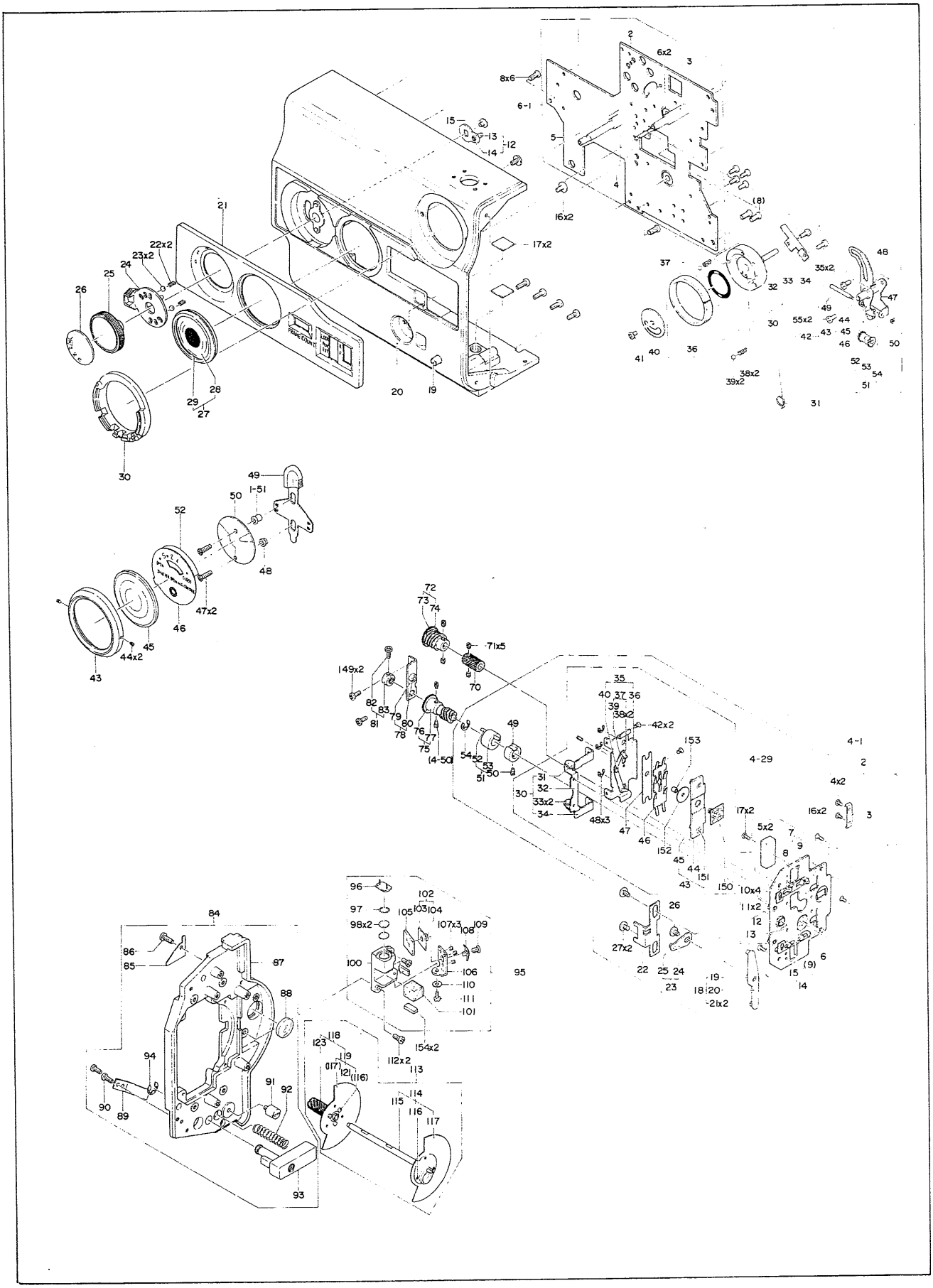
E. When removing the films-per-second speed control (2-25), the following instructions apply:

(a) Remove the body case assembly (2-1).

(b) Remove the screw (2-15) and rotary plate assembly (2-12).

(c) Remove the films-per-second speed control (2-25) carefully so as not to lose the two steel balls (2-23) and springs (2-22).

Fig. 8



2. Film chamber door assembly

2.1 Film chamber lock assembly (3-2)

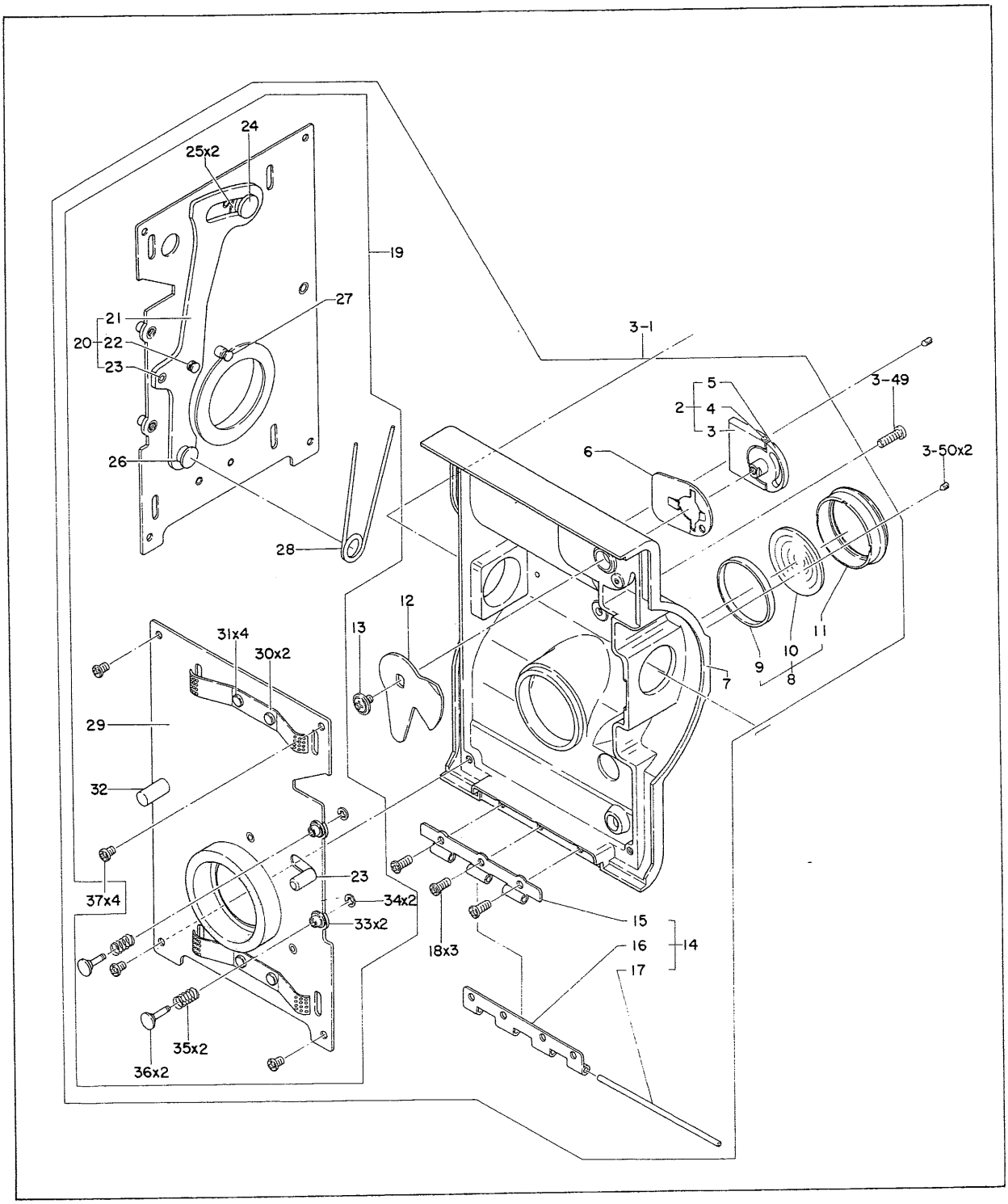
A. When the film chamber lock assembly (3-2) is too loose or it does not click correctly, repair or replace the leaf spring (3-6).

B. When the film chamber lock assembly (3-2) turns freely and does not stop at the proper position, retighten the screw (3-7) after applying screw locking agent to the screw.

2.2 When three screws (3-18) are loose, retighten them after applying screw locking agent. When the hinge assembly (3-14) is deformed due to an external force, replace the hinge with a new one.

2.3 When the lever assembly (3-20) is not caulked correctly causing the lever assembly not to operate smoothly, replace the base plate assembly (3-19) with a new one. When the spring (3-28) is unhooked, hook it correctly.

Fig. 9


24
25x2
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3-49
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3-50x2
12
13
31x4
30x2
29
32
37x4
23
34x2
33x2
18x3
15
16
14
17
35x2
36x2
9
10
11
8
7

3. Digital frame counter assembly

A. Set the lever (1-49) of the variable shutter dial to "OPEN", and make sure that the digital frame counter (5-48) does not operate.

B. Set the lever (1-49) of the variable shutter dial to "START", causing the motor to operate, and see if the digital frame counter operates correctly. Return the lever to "OPEN", and see if the frame counter zero-resets.

C. When the lever (1-49) is returned to "OPEN" and the digital frame counter (5-48) does not reset to zero, check the leaf spring (6-34) for weakness and correct spring force if weakened, or when the moving stroke is incorrect, adjust it with washers. When the digital frame counter is defective, replace it with a new one.

D. When the lever (1-49) is within range from "START" and "CLOSE", and the digital frame counter (5-48) does not operate, check the gear of the digital frame counter and worm gear assembly (6-95) for intermeshing, and adjust it properly if necessary. When adjusting the intermeshing, position the gears so that current consumption is minimum.

4. Dial plate assembly

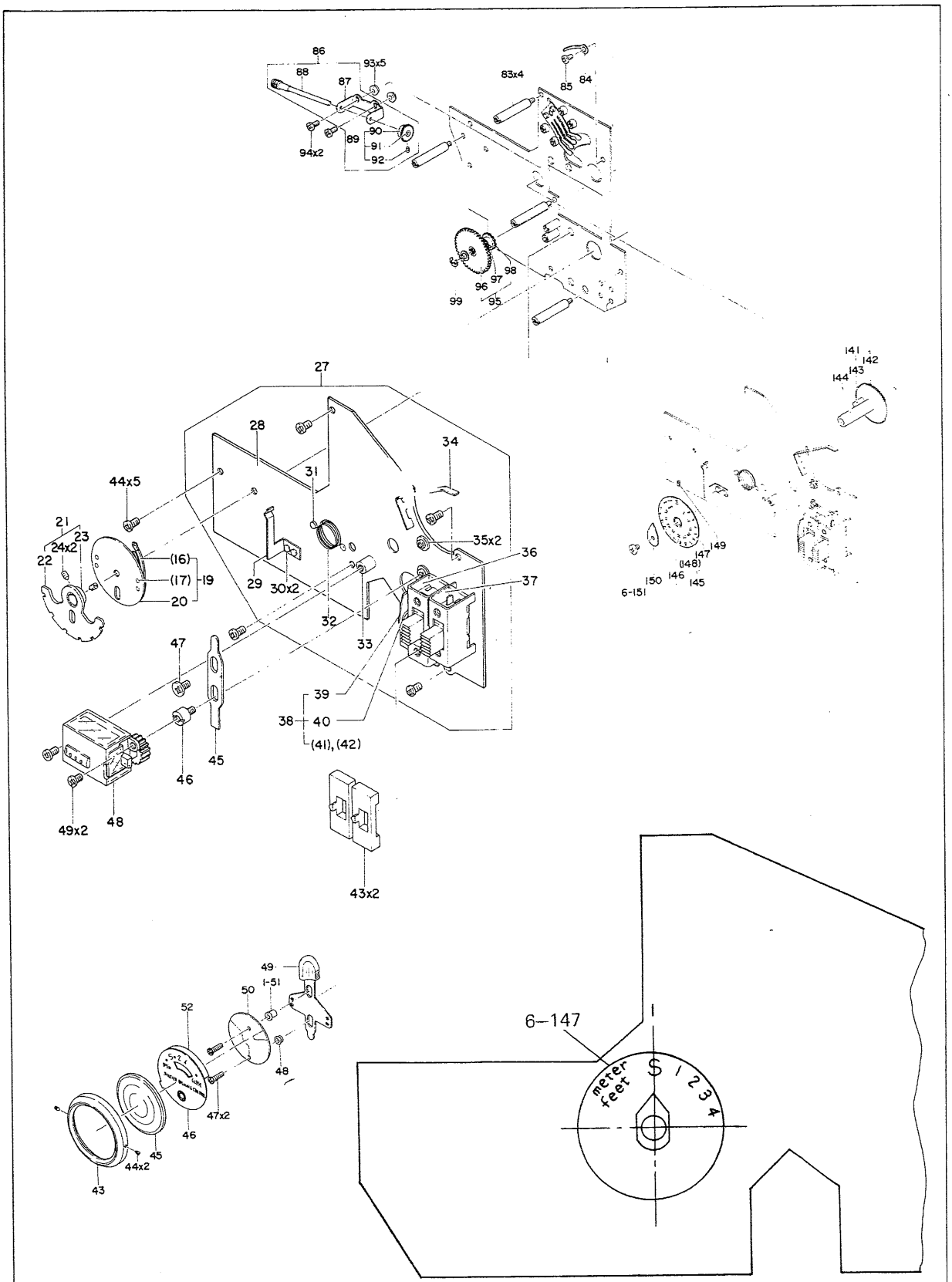
A. Check two screws (6-94) which are used to set the shaft holder assembly (6-86) for slackness. If these screws are loose, the gear of the shaft holder assembly (6-86) does not engage with the gear assembly (6-141).

B. When the spring (5-32) is twisted or unhooked, the dial plate does not advance or zero-reset correctly.

C. When installing the dial plate assembly (6-145), position the dial plate correctly so that its "S" position is positioned against the printed circuit board (5-28) as shown in Fig. 10 , and turn the spring (5-32) 3/4 of one complete turn.

D. Next, match the pointer (6-154) with the "S" position of the dial plate, and secure the pointer with the screw (6-155).

Fig. 10



Relationship between the printed circuit board and dial of footage counter

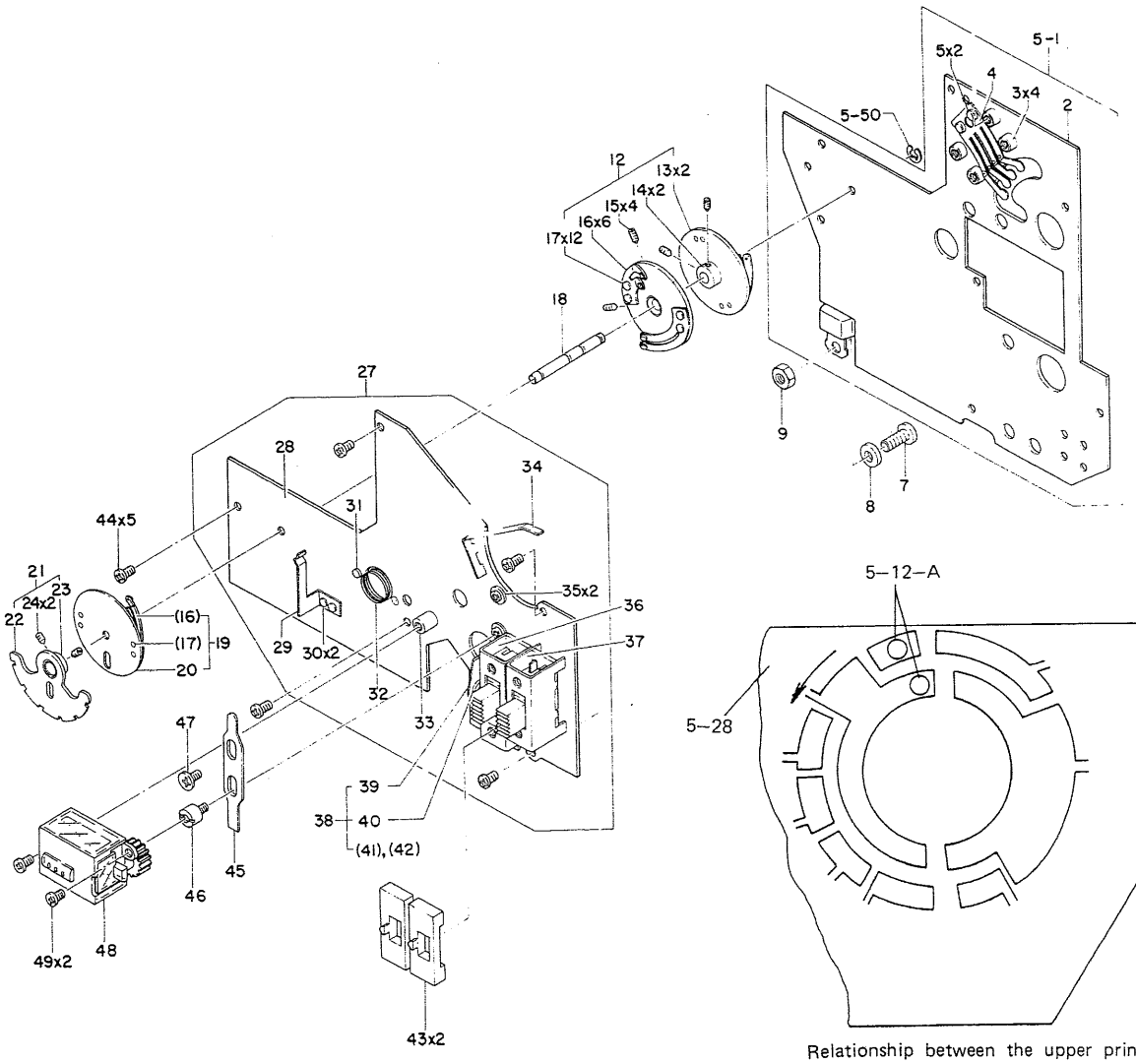
5. Rotary plate assembly and click plate assembly

When installing the click plate assembly (5-21) and two rotary plate assemblies (5-12), align positions of contacts of rotary plate (5-12-A) against the upper printed circuit board (5-28), positions of contacts of rotary plate (5-12-B) against the lower printed circuit board (5-2) and position of the click plate assembly (5-21) against the leaf spring (5-29) as shown in Fig.11 , and then, secure them with four screws (5-14) and two screws (5-24).

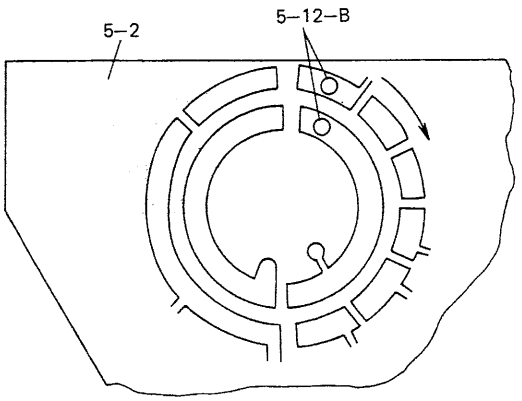
NOTE: The Fig.11 shows the films-per-second speed control being set to "1".

In addition, when installing the click plate assembly and rotary plate assemblies on the body case assembly (2-1), correctly apply the pin of rotary plate assembly (2-12) into the long groove of click plate (5-22) and the pin of fractional exposure control (2-24) into the long groove of rotary plate (5-20).

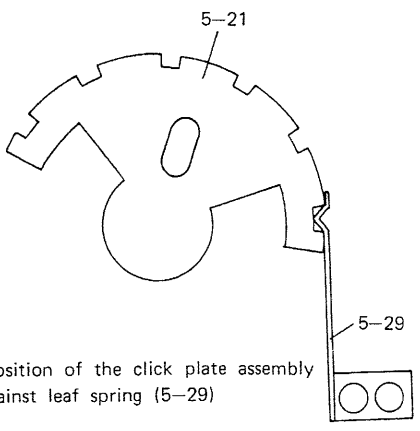
Fig. 11



Relationship between the upper printed circuit board (5–28) and contact piece (5–12–A)



Relative position of the lower printed circuit board against contact piece (5–12–B)



Relative position of the click plate assembly (5–21) against leaf spring (5–29)

6. Driving system

6.1 Excessive current consumption

A. Check all gears related to the driving system for existence of foreign matter and for proper intermeshing. Check support assembly (6-119), worm gear assembly (4-72) and worm gear assembly (4-75) especially carefully.

B. Check the motor by itself for current consumption. The rated current is 80 mA or less at 4V.

6.2 Abnormal operating sound

A. Check all screws related to the driving system for tightness and check all turning parts to insure that they are not in contact with other parts.

B. Check all turning parts for lubrication.

C. Check each gear for smoothness of the intermeshing. When intermeshing is improper, loosen the appropriate screw and adjust the intermeshing.

6.3 Adjustment after replacing solenoid assembly

A. With the solenoid assembly (6-116) moved toward the corrector ring assembly (4-51), tighten four screws (6-7) to secure it.

B. Adjust gap between the stopper pin (4-53) of the corrector ring assembly (4-51) and lever of the solenoid assembly and gap between the lever and leaf spring after installing the solenoid assembly as shown in Fig.12 .

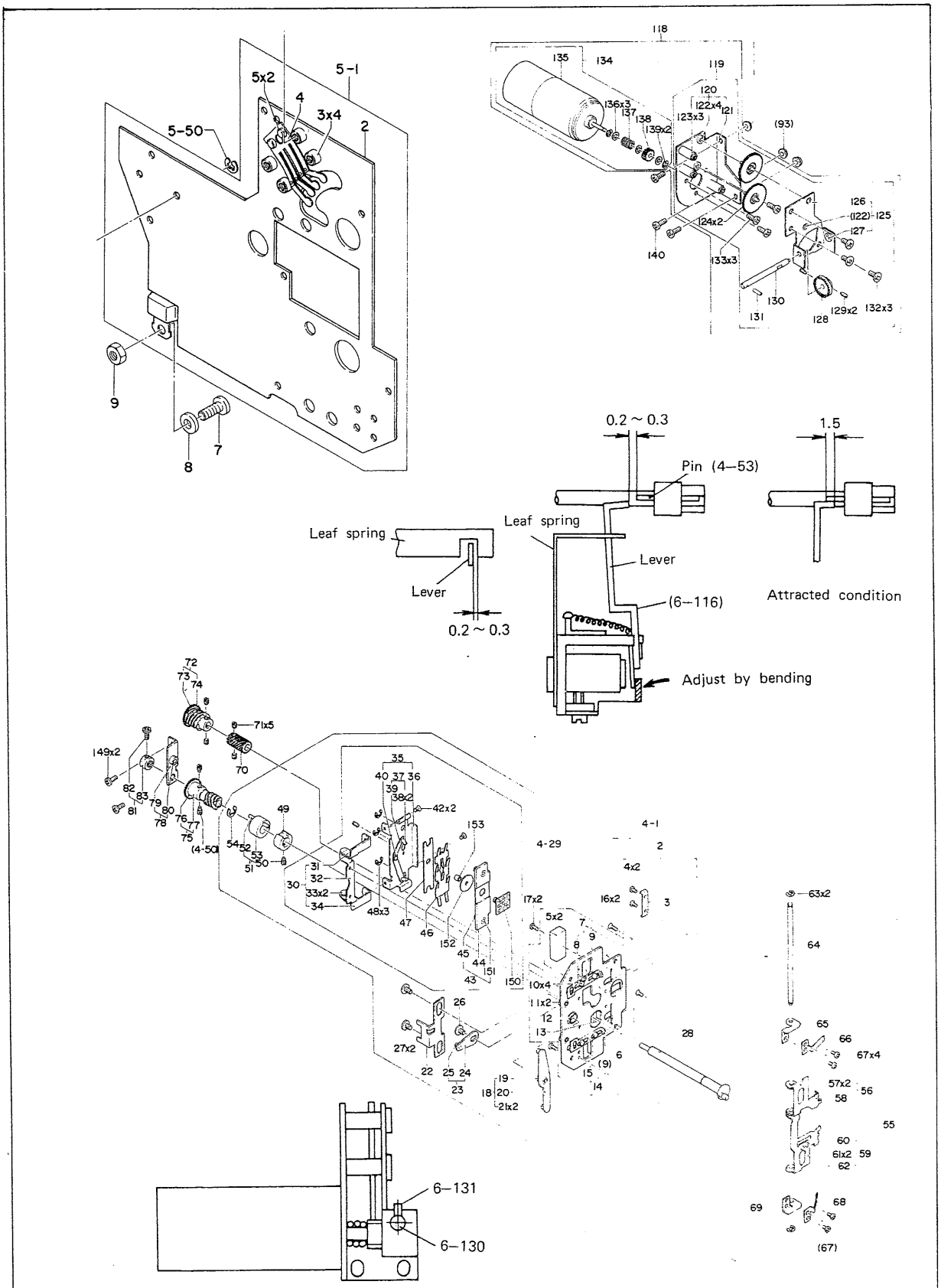
6.4 Positioning and adjustment after replacing motor gear train assembly or a gear of the driving system

A. Install the bushing assembly (4-81) on the shaft with the screw (4-82). Adjust position of the bushing toward the thrust direction.

B. With the motor stopped mechanically, turn the sector shaft to lower the reciprocating mirror assembly (4-126) to the lowest level (The aperture will be covered completely.), intermesh the worm gear assemblies (4-72 and 4-75), and secure them on the sector with two screws (4-71).

C. With the above condition kept, install the motor gear train assembly (6-118). At this time, position of the pin (6-131) of the shaft (6-130) should be as indicated in Fig.12

Fig. 12



Position of pin (6–131) when the motor gear train is installed.

6.5 Adjustment of filming speed

Rated voltages applied to the camera are 5.5V and 11V respectively for low and high speeds.

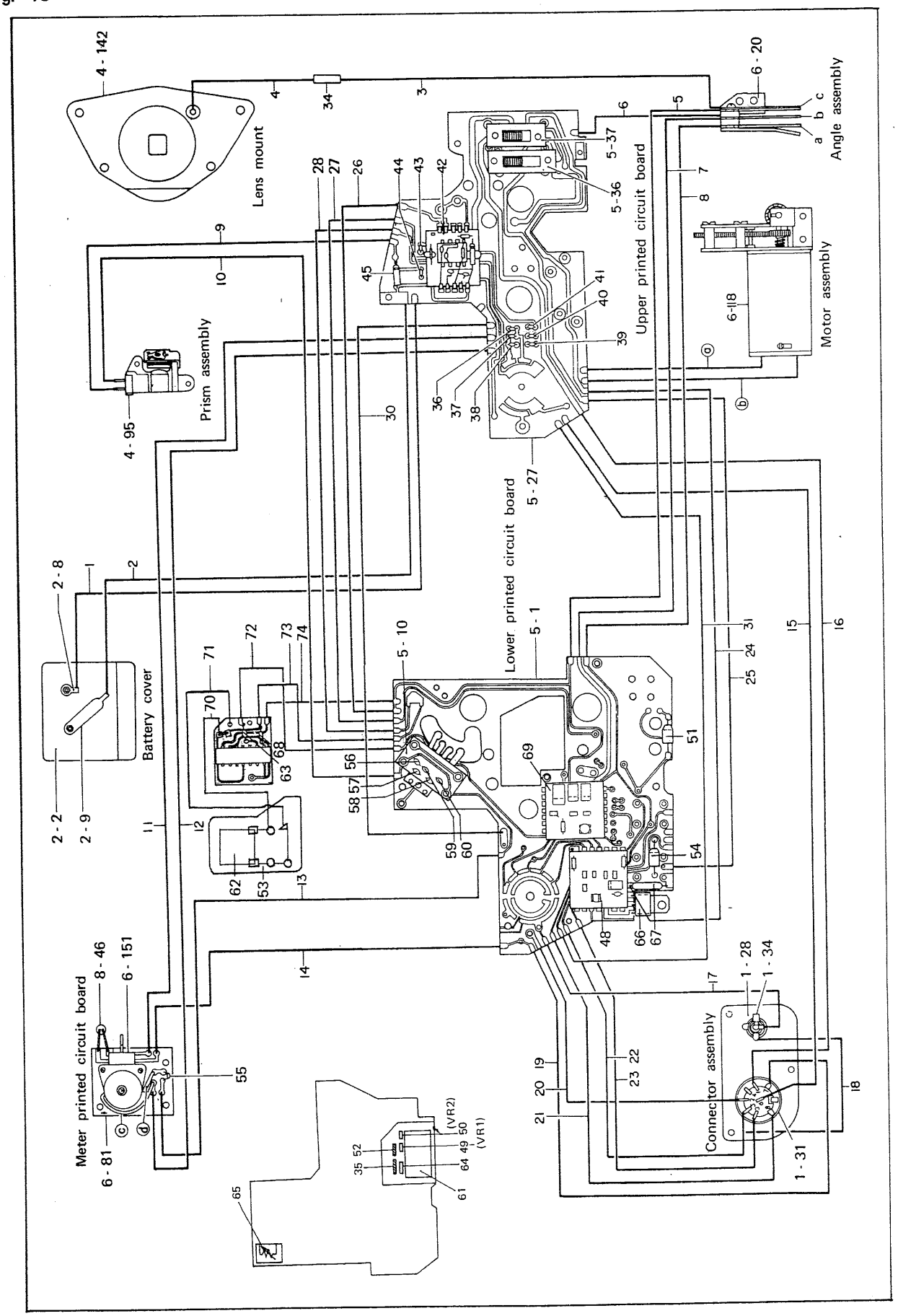
A. Adjustment for low speed
Load film in the camera, set the frames-per-second speed control to "12", and adjust resistor (7-65) properly so that filming speed is within 12 ± 1.5 F/S.

B. Adjustment for high speed
Load film in the camera, set the frames-per-second speed control to "72", and adjust resistor (7-63) properly so that filming speed is within 72 ± 6.0 F/S.

C. Incorrect filming speed
When rated filming speeds cannot be obtained correctly, check:

- Source voltages ..... See if 5.5V and 11V are applied to the camera respectively for low and high speeds.
- Current ..... The rated current at 18 F/S is 180 mA or less without load. When an R-50 film is fed forward, the rated current is 350 mA or less.
- Motor by itself for operation
- Motor operating circuit (circuit-E)
- Motor gear train (Condition of the motor gear train can also be identified by measuring current.)

Fig. 13


4 - 142
Lens mount
6 - 20
Angle assembly
a b c
5-37
5-36
Upper printed circuit board
Motor assembly
6-118
4 - 95
Prism assembly
5 - 27
Lower printed circuit board
5 - 1
5 - 10
2 - 8
2 - 2
2 - 9
Battery cover
8 - 46
6 - 151
Meter printed circuit board
6 - 81
(VR2)
(VR1)
1 - 28
1 - 34
1 - 31
Connector assembly

6.6 Motor does not operate

For this trouble, check the related parts in the following sequence.

A. For low speed
Source voltage (5.5V) → Switch (5-36) → Shutter release button switch → F-circuit → Relay → E-circuit → Motor

B. For high speed
Source voltage (11V) → Switch (5-36) → Shutter release button switch → F-circuit → Relay → E-circuit → Motor

6.7 Motor does not stop (Switch does not turn off)

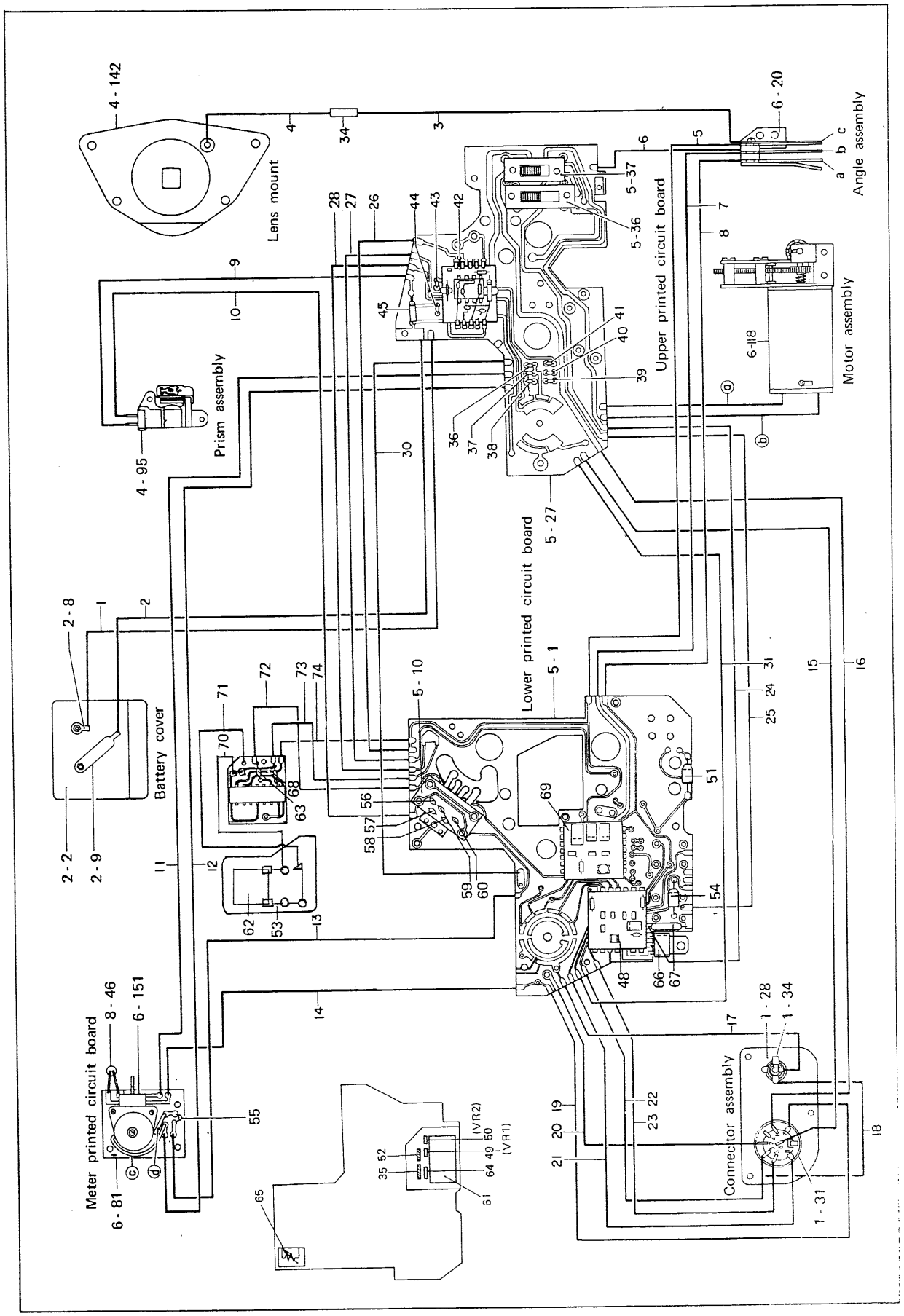
For this trouble, check the related parts in the following sequence.
Shutter release button switch (6-20) → Relay(8-91) → Bushing assembly (4-81) → Solenoid (6-116)

6.8 Motor cannot be turned reversely

For this trouble, check switch (5-37).

6.9 When film is advanced two frames or a half frame at single frame motion, check the F-circuit and then check the solenoid assembly (6-116).

Fig. 14


4 - 142
Lens mount
6 - 20
Angle assembly
Upper printed circuit board
5-37
5-36
Motor assembly
6-118
Prism assembly
4 - 95
Lower printed circuit board
5 - 27
5 - 1
5 - 10
Battery cover
2 - 8
2 - 2
2 - 9
Meter printed circuit board
8 - 46
6 - 151
6 - 81
Connector assembly
1 - 28
1 - 34
1 - 31
(VR2)
(VR1)

6.10 Checking circuits and parts

A. F-circuit (7-69)

a. Normal ..... When the F-circuit is normal, the relay operates as the shutter release button is depressed deeply (contact pieces 7-74, 75 and 76 are in contact each other).

F-block terminal voltages

Between \ F/S	12, 18, 24, 36 or 72	Single frame
F-1 and camera body	Voltage equivalent to the source voltage (5.5V)	Same as left
F-3 and camera body	Approx. 1.5V	Approx. 1.3V At single frame motion only
F-4 and camera body	0V	0V
F-5 and camera body	Approx. 0.8V	0V
F-6 and camera body	3.5 or more	3.5V or more
F-7 and camera body	0V	0V

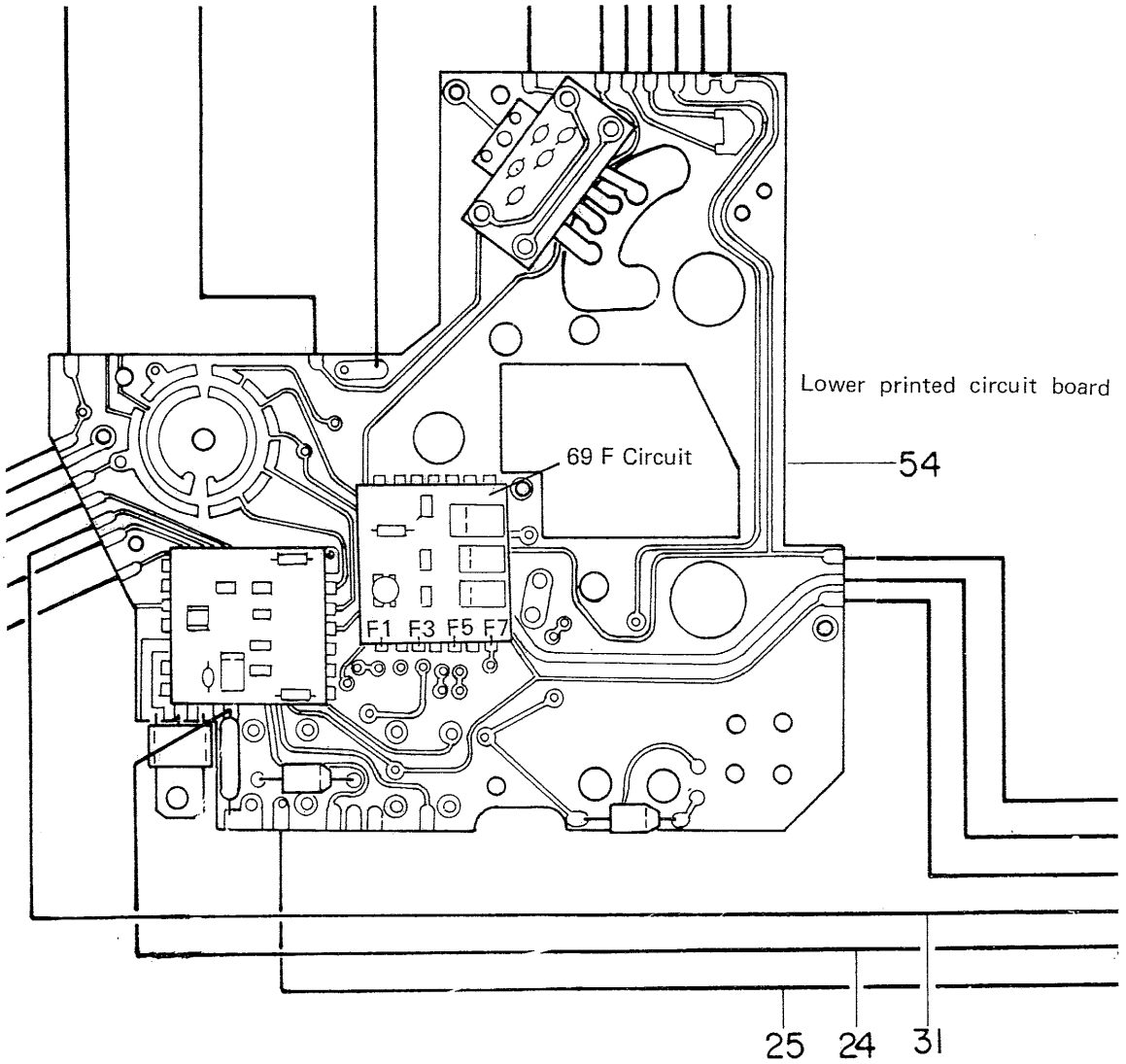
Voltage is generated across the F-6 and camera body only when the solenoid operates.

b. Abnormal ..... When the F-circuit is abnormal, the relay does not operate even if the shutter release button is depressed deeply. In this case, check voltages of the F-block terminals as indicated above, and check the F-circuit for its operation. Connect terminal F-3 to terminal F-7, and see if the relay operates or not. If the relay oprates, the F-block may be judged defective.

Causes for defective F-block (69)

Defective soldering ..... Replace the defective F-block with a new one as it is unrepairable.

Fig. 15



Terminal No.	
F–2	+ terminal of power supply
F–3	Relay control output terminal
F–4	12 to 72 F/S–Single frame switch terminal
F–5, 6	Solenoid control terminal
F–7	– terminal of power supply

B. Relay (7-61)

a. Normal ..... When the relay is normal, it operates as the shutter release button is depressed deeply. The rated voltage at which the relay operates is 4.0V. (Apply 4V to R5 and R6.)

b. Abnormal
Causes for defective relay
- Defective relay or improper soldering ..... Relay does not operate when voltage between relay terminals is 4.0V.
- Defective relay contact or improperly soldered relay terminal ..... The relay operates, but when the shutter release button is depressed deeply, voltage between terminal E-7 and camera body is not zero volt.

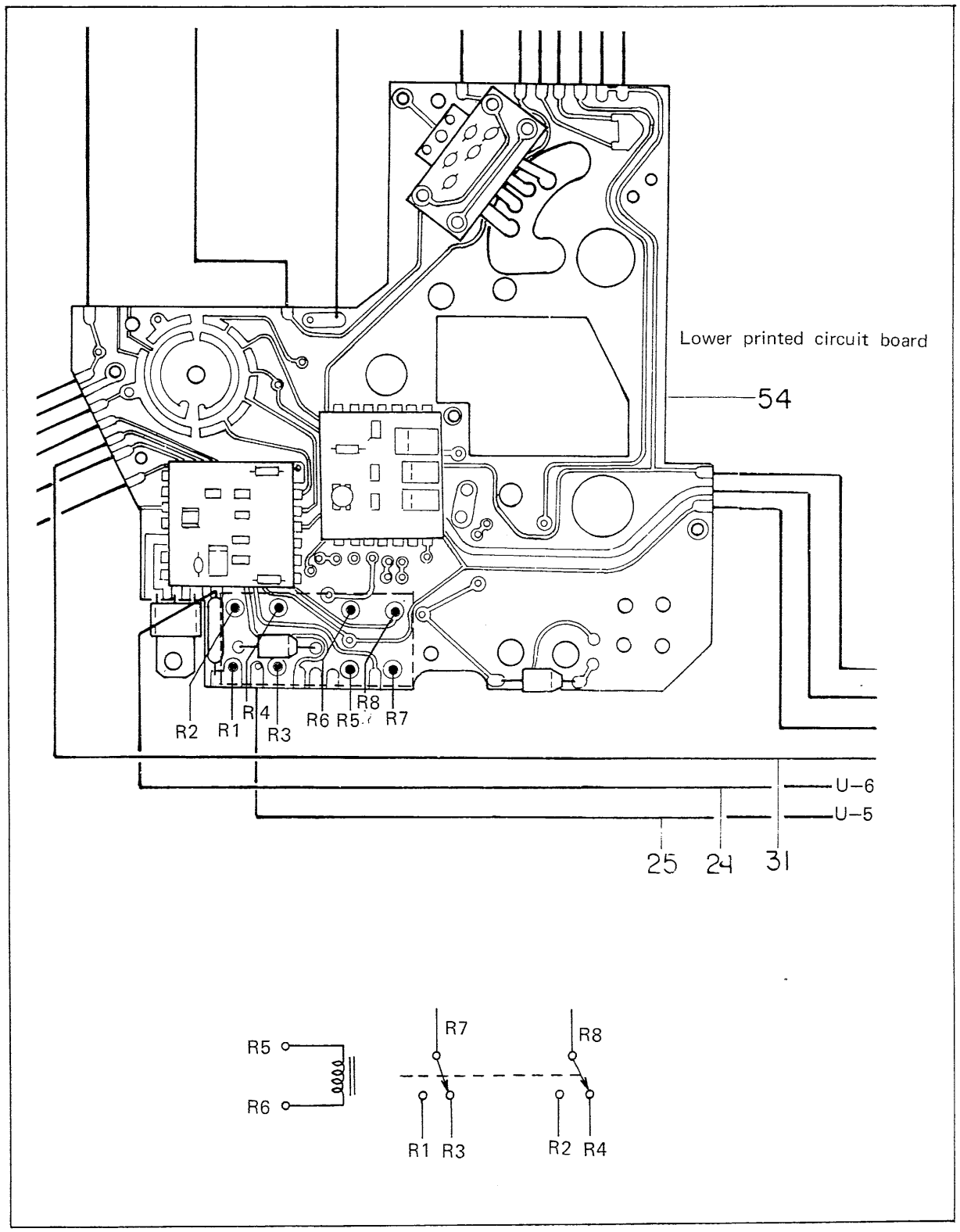
C. E-circuit (7-62)

a. Normal ..... When 5.5V (for low filming speed) or 11.0V (for high filming speed) is applied to the camera and output voltage between terminals U5 and U6 of the upper printed circuit board (35),1.2V at 12 F/S, 1.8V at 1.8 F/S, 24V at 24 F/S, 3.6V at 36 F/S or 7.2V at 72 F/S, the E-circuit is normal.

E-block terminal voltages for low filming speeds (12, 18 and 24 F/S)

Between	Without depressing shutter release button	With shutter release button depressed deeply
E-3 and camera body	5.5V	5.5V
E5 and E6	0V	Approx. 0.1V output per frame
E-7 and camera body	5.5V	0V

Fig. 16


Lower printed circuit board
54
R2
R1
R4
R3
R6
R5
R8
R7
U-6
U-5
25
24
31
R5
R6
R7
R8
R1
R3
R2
R4

E-block terminal voltages for high filming speeds (36 and 72 F/S)

Between	Without depressing shutter release button	With shutter release button depressed deeply
E-3 and camera body	11V	11V
E-5 and E-6	0V	Approx. 0.10V output per frame
E-7 and camera body	11V	0V

E-block terminal connection at each filming speed

F/S	Connected terminals
72	E-14 and E-13
36	E-14 and E-12
24	E-14 and E-11
18	E-14 and E-10
12	E-14 and E-9
1	E-14 and E-8

b. Abnormal ..... (1) Voltage between terminal E-3 and camera body is incorrect, or not generated:
Causes for abnormal E-circuit

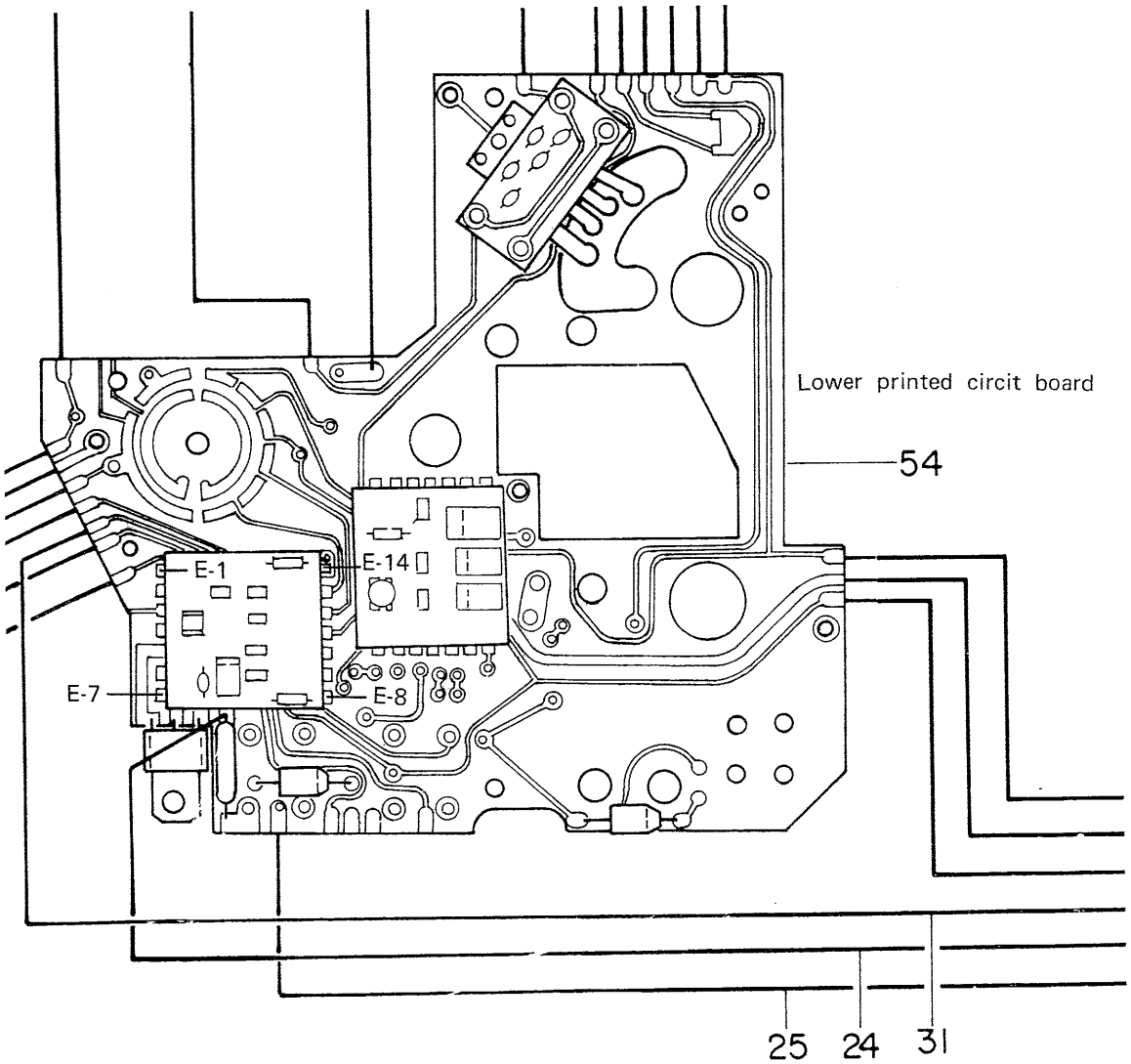
- Defective contact of switch (5-36)
- Broken wires on upper and lower printed circuit boards (5-1 and 5-27)
- Improper contact between the lower printed circuit board (5-27) and contact piece of rotary plate assembly (5-12).
- Defective grip
- Defective DIN 8P plug (7-60) or improperly soldered lead wire

(2) Voltage between terminal E-3 and camera body is correct.
Causes for abnormal E-circuit

- Defective E-block (7-62) or improper soldering. When the
- E-block is defective, replace it with a new one because it is unrepairable.
- Defective power transistor (7-66) or improper soldering
- Defective resistor (7-67) or improper soldering
- Defective diode (7-83) or improper soldering

Refer to the wiring diagram.

Fig. 17



Terminal No.	
E3	+ terminal of power supply
E5	Output terminal
E6	Output terminal
E7	— termianl of power supply
E8 ~ E14	Terminals for switching filming speed

D. Motor assembly (6-134)
When voltage between terminals U-7 and U-8 of the upper printed circuit board (5-1) is approximately 1.8V at 18 F/S but the motor does not turn, disconnect the lead wires of the motor and measure resistance.

- The motor is defective or lead wires (a) and (b) are not soldered correctly when resistance is infinite.
- The motor is normal when resistance is approximately 50 Ω. Check the mechanical parts related to the motor.

E. Power transistor (7-66)
When voltage between output terminals U-5 and U-6 of the E-circuit is not approximately 0.1V per frame, check the power transistor.

a. Normal ..... In the following cases, the power transistor is normal.

- Continuity exists when positive (+) and negative (-) probes of the ohmmeter are connected respectively to emitter (1) and collector (2) of the power transistor.
- Resistance is infinite when positive (+) and negative (-) probes of the ohmmeter are connected respectively to collector (2) and emitter (1) of the power transistor.

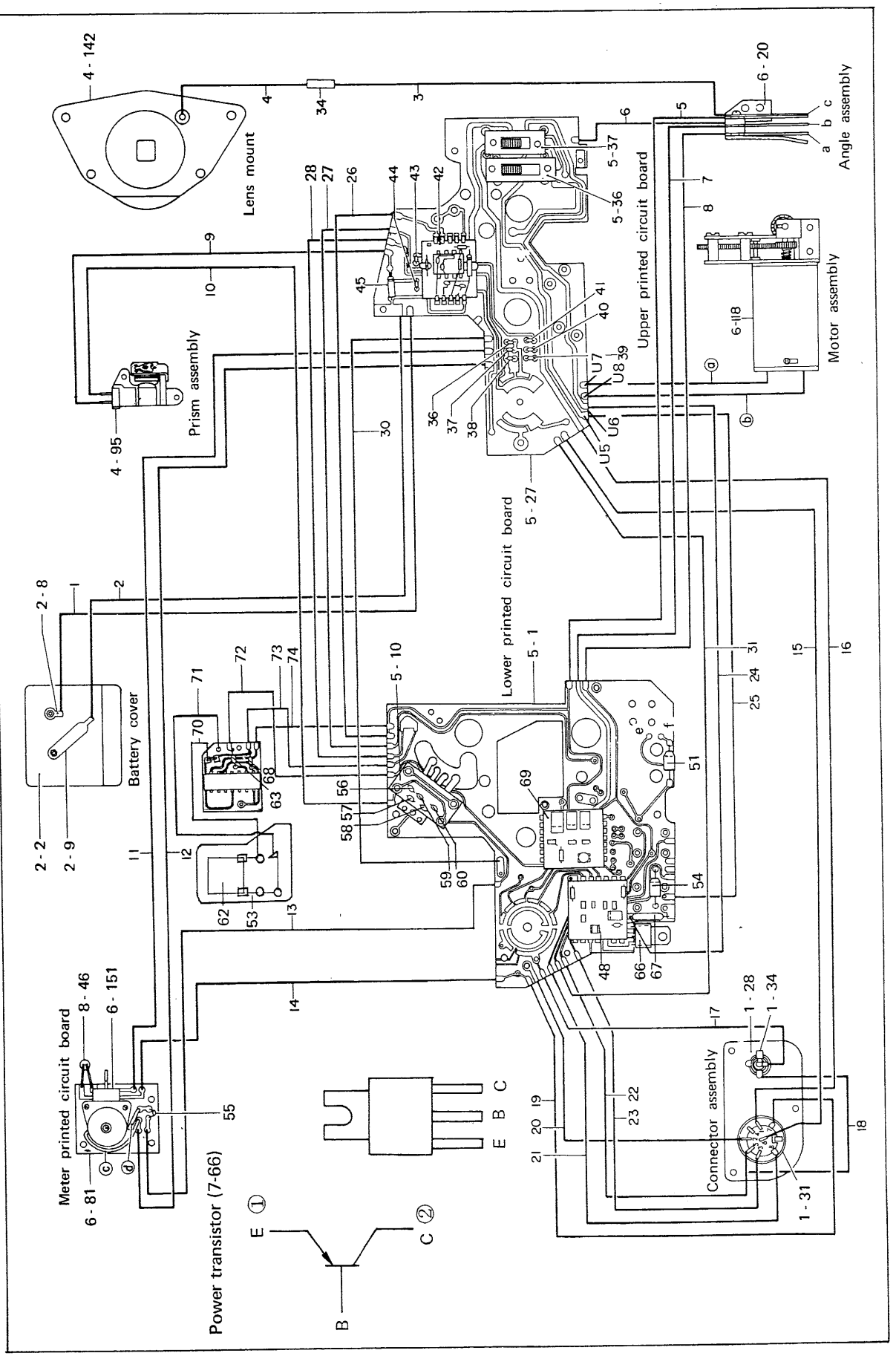
b. Abnormal
When the power transistor is abnormal, replace it with a new one.

F. Solenoid (6-116)

a. Normal ..... As soon as the contact pieces (74) and (75) brake. the solenoid attracts.
Disconnect lead wires (e) and (f) of the solenoid, and apply 2V to the terminals. The solenoid is normal if it operates.

b. Abnormal ..... Check it for broken wire or improper soldering.

Fig. 18


4 - 142
Lens mount
Angle assembly
6 - 20
Upper printed circuit board
5 - 37
5 - 36
Motor assembly
6 - 118
Prism assembly
4 - 95
Lower printed circuit board
5 - 27
5 - 1
5 - 10
Battery cover
2 - 8
2 - 2
2 - 9
Meter printed circuit board
8 - 46
6 - 151
6 - 81
Connector assembly
1 - 28
1 - 34
1 - 31
Power transistor (7-66)
E
B
C

7. Film gate assembly

7.1 Adjustment of projection of claw

A. When the pressure plate is opened, claw head must completely sunk below the film gate plane.

B. When the claw is projected above the film gate plane, with the pressure plate closed properly bend the leaf spring (4-39) to adjust projection of the claw.
(Permissible claw projection range is $0.4^{+0}_{-0.1}$ mm)

7.2 Adjustment of position of claw

Loosen two screws (4-67), and adjust the claw position so that it is in the center of a perforation when the film is in contact with the film guide pin. (Adjust claws for both forward and backward filmings.)

7.3 Vertical flicker of film or duplicate images

Replace the film gate assembly (4-1) with a new assembly since adjustment is so difficult.

7.4 Contaminated film gate plane

Clean the gate plane and aperture plane.

7.5 Adjustment of pressure of claw

The rated claw pressure is 20 ± 2 gr. When adjustment is needed, loosen four screws (4-67), and change strength of two leaf springs (4-66) properly. Be sure to adjust pressures for both 1st and 2nd claws.

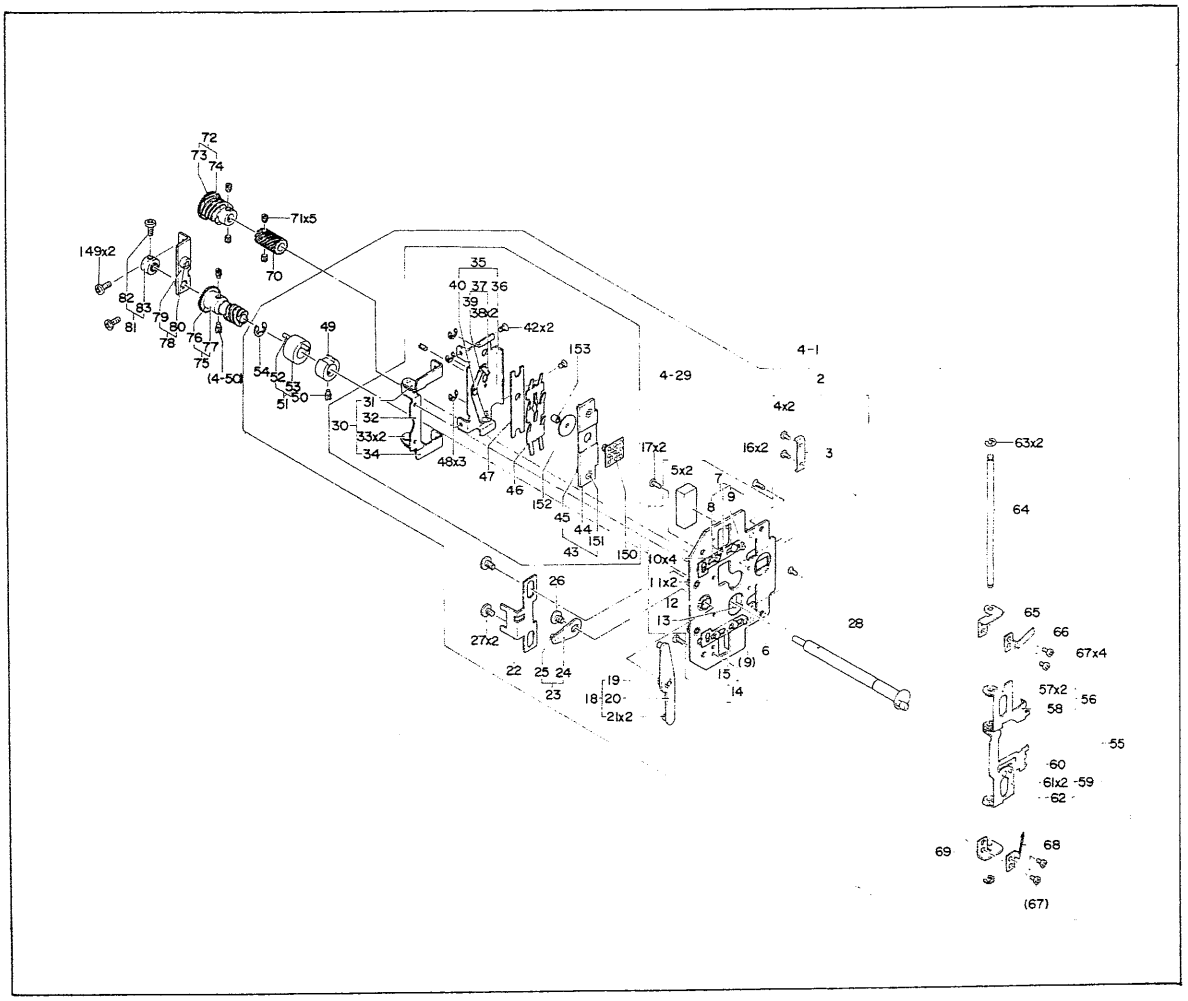
7.6 Adjustment of pressure of pressure plate

The rated pressure of the pressure plate is 80 ± 5 gr. To adjust pressure of the pressure plate, use adjust screw (4-41). When pressure of the pressure plate cannot be adjusted with the adjust screw (4-41), replace the leaf spring (4-46) with a new one.

7.7 Defective meshing of claw

When the claw does not mesh with perforation of film, check the claw for projection, position, pressure, pressure plate for pressure and film take-up torque as described above. When stroke of the claw is incorrect, replace the film gate assembly (4-1) with a new assembly.

Fig. 19


72
73
74
71x5
70
149x2
82
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79
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78
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14-50
49
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52
53
51
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31
32
33x2
34
30
35
40 37 36
39
38
42x2
153
48x3
47
46
152
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151
43
150
4-29
4-1
2
4x2
17x2
16x2
3
5x2
7
9
8
10x4
11x2
12
13
26
27x2
22
25
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23
19
18
20
21x2
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(9)
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14
28
63x2
64
65
66
67x4
57x2
58
56
55
60
61x2
59
62
69
68
(67)

8. Lens mount assembly

When the lens mount assembly (4-142) is removed for adjustment of flangeback or for other purpose, align center of the lens mount against center of the film gate assembly (4-1). To align center of the lens mount, loosen four screws (4-148), use a lens mount center aligning tool, and position the lens mount assembly correctly so that double-circle chart on the tool is in contact with the end surface of the aperture.

9. Adjustment of flangeback

Flangeback is adjusted with washer (s) (4-147) located in the lower portion of the lens mount assembly (4-142). With the lens mount faced downward, place the camera on a surface plate, and measure heights of film running surface of the film gate from the lens mount (surface on which a lens is installed) by the use of a dial gauge at four points. The rated height from lens installing plane of the lens mount to the film gate plane is $17.49\ ^{+0.02}_{-0}$ mm.

10. Reciprocating mirror assembly

10.1 Mirror base assembly (4-134) does not operate correctly.

The mirror base assembly (4-134) goes up and down by its own weight as the reciprocating mirror assembly (4-126) is tilted.
When the shaft and shaft holder are contaminated with dust or other foreign matter, reassemble them after cleaning. Apply Squalol oil to the shaft and shaft holder.

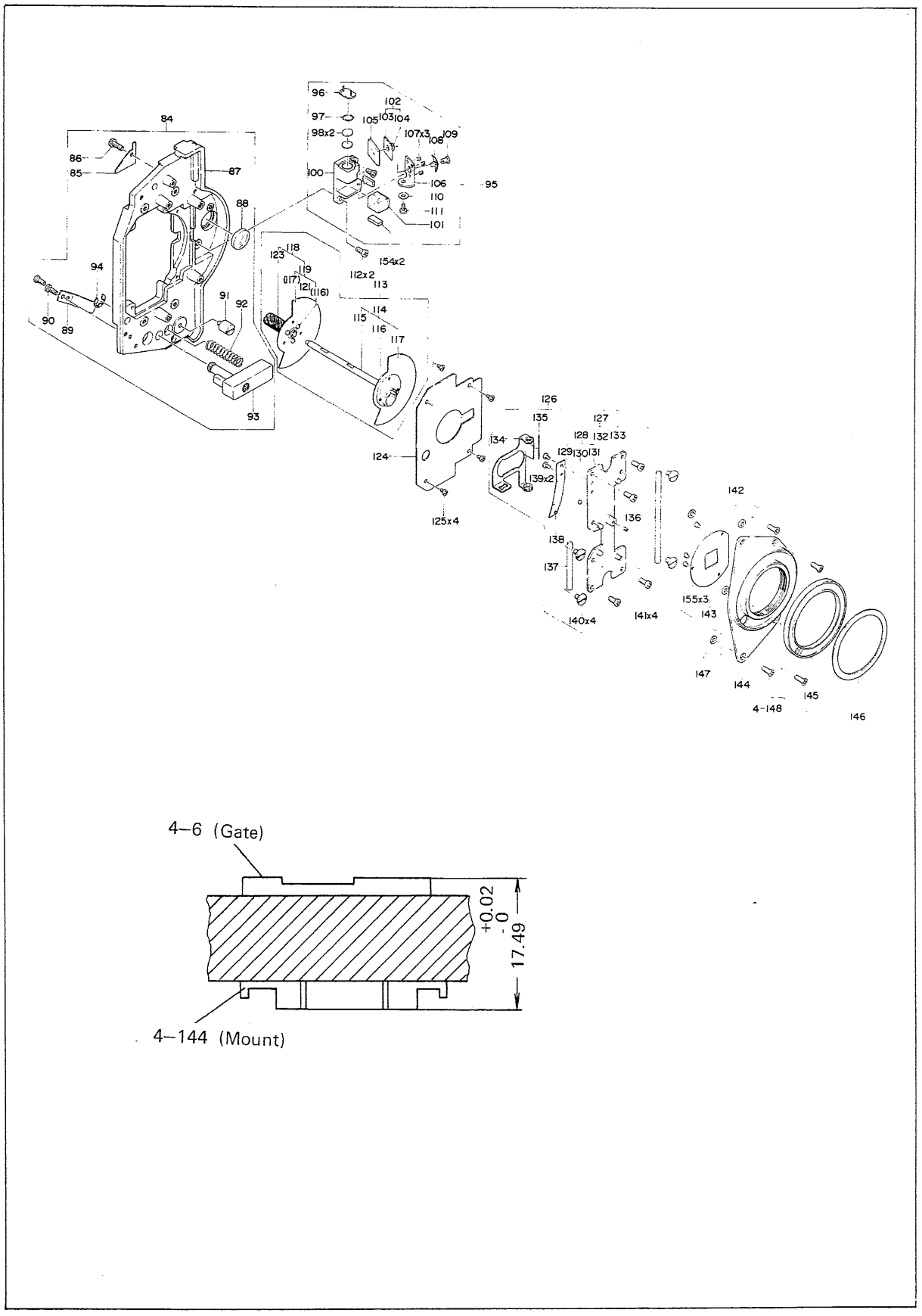
10.2 Surface of the mirror is scarred or cracked.
When surface of the mirror is scarred or cracked, replace the reciprocating mirror assembly (4-126) with a new assembly.

11. Shutter release button assembly

11.1 When the shutter release button (4-93) is in contact with the front cover (2-31), causing the shutter release button to operate incorrectly, repair the front cover.

11.2 When bur or scratch exists in the opening of the front frame or on the shutter release button, causing the shutter release button (4-93) to drag, repair or replace the appropriate parts.

Fig. 20



12. Adjustment of optical system

12.1 Reciprocating mirror assembly (4-126)

Install an adjust jig on the surface of boss (on which the lens mount is installed) of the front frame assembly (4-84), loosen four screws (4-141), and spply proper number of washers (4-147) to the lower portion of the base plate (4-132) so that cross hairs of the alignment scope is in the circle of the chart of the adjust jig. (When the adjustment cannot be done unless a 0.2 mm or thicker washer is used, replace the reciprocating mirror assembly with a new one.
In the most cases, the parts of the reciprocating mirror assembly is not adhered correctly.

12.2 Field frame (6-79)

A. When the field frame is tilted, remove the prism assembly (4-95) from the front frame assembly (4-84).

B. Install an adjust jig on the surface of boss (on which the lens mount is installed) of the front frame assembly (4-84), observe the end surface of the aperture and field frame, and adjust posture of the field frame after loosening two screws (6-80).

12.3 Optical axis

Mount a lens on the camera, and adjust optical axis by moving three adjust screws (4-107) of the prism assembly (4-95) and by turning the angle plate (4-106) so that the lens aperture is in agreement with optical axis of the viewfinder system when observed from the front surface of the lens.

12.4 Adjustment of parallax

A. Load a dummy film cartridge (for adjustment of parallax) in the film chamber of the camera, mount a lens (Recommend a 50 to 55 mm lens be used), mount the camera on a parallax adjuster, and operate the motor.

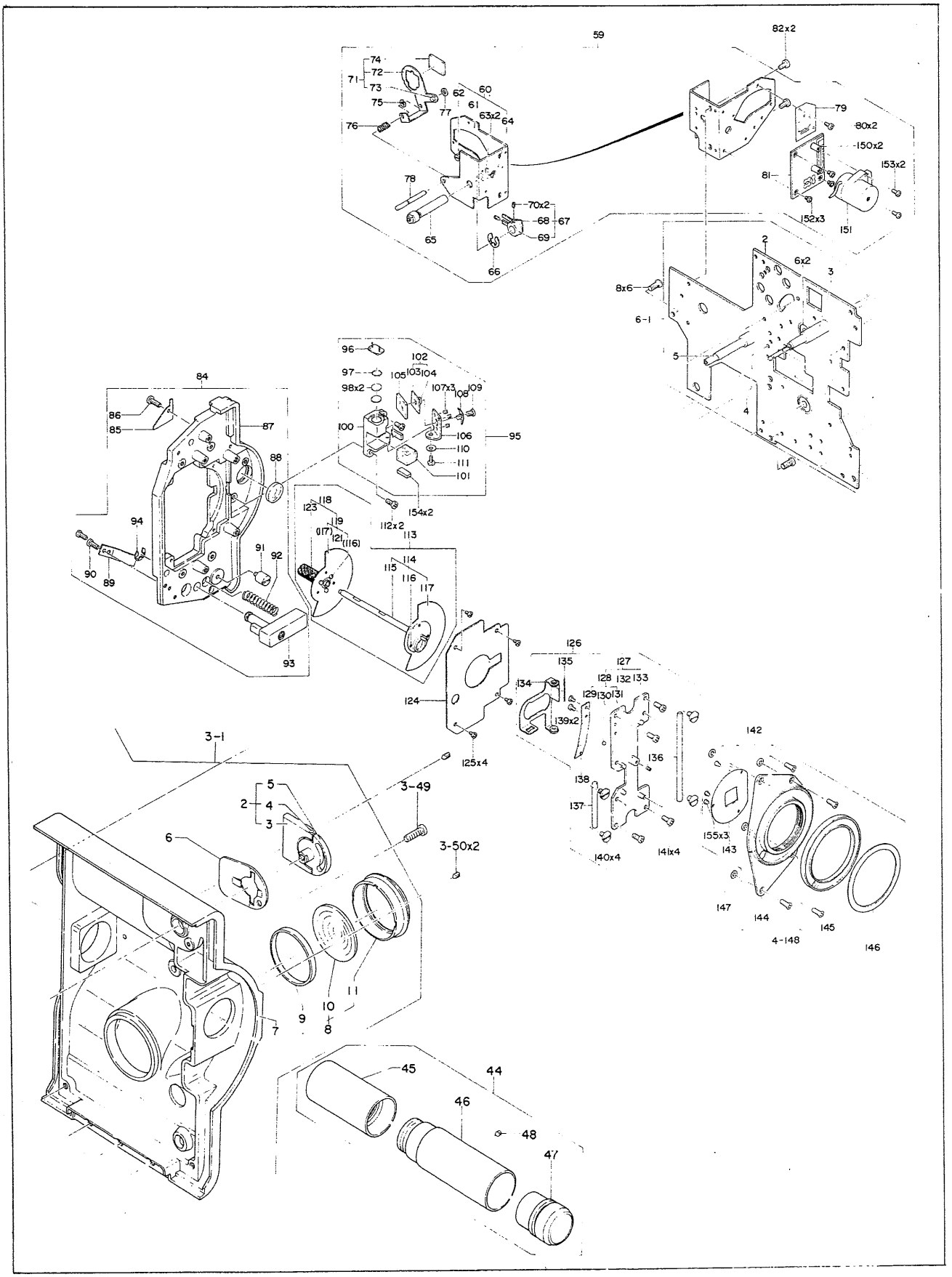
B. For vertical deviation, loosen screw (6-82) and properly move the frame assembly (6-59).

C. For horizontal deviation, loosen screw (3-49) and adjust the viewfinder assembly (3-44) built in the film chamber door assembly (3-1).

D. When position of the frame aseembly (6-59) or viewfinder assembly (3-44) is adjusted completely, mount a zoom lens (10X), and with aperture set to F:22, insure that no vignetting exists in the field of view.

E. If any vignetting exists, repeat adjustments as described in 12.1 through 12.3 above.

Fig. 21


59
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153x2
81
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70x2
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67
152x3
151
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6x2
3
8x6
6-1
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102
97
105
103
104
98x2
107x3
108
109
100
106
95
110
111
101
84
86
85
87
88
154x2
112x2
113
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130
131
139x2
124
125x4
142
3-1
136
138
137
155x3
143
140x4
141x4
147
144
145
4-148
146
5
2
4
3
3-49
6
3-50x2
11
10
9
8
7
45
44
46
48
47

12.5 Adjustment of viewfinder

A. Mount a lens (a 10X zoom lens) on the camera, look into the viewfinder, and match visibility with the focusing glass (6-74).

B. Set the focusing ring to ∞ (infinity) and zooming ring to "TELE", watch an object located in infinite distance, and after loosening screw (3-48), adjust the adjust lens assembly (3-47) of the viewfinder assembly built in the film chamber door assembly (3-1) properly so that the object can be seen clearly.

C. When the adjust lens assembly is positioned correctly, watch an object in a limited distance (for example, two meters), and with the focusing ring set to 2m, insure that the object can be seen clearly.

13. Adjustment of film take–up torque and feed torque

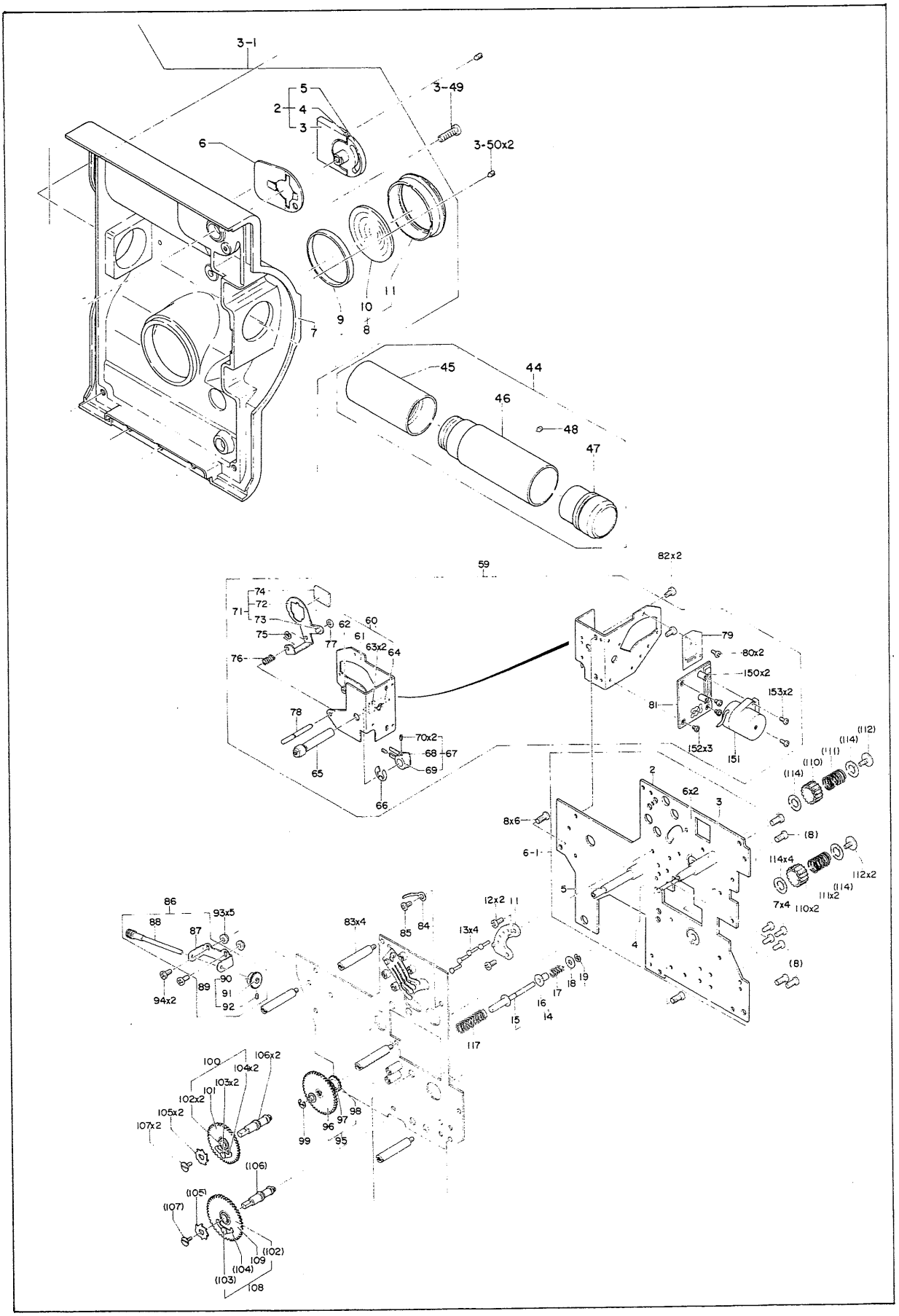
A. Adjust spring forces of the springs (6-111) and (6-113) and thus, adjust film take-up torque and feed torque to the rated values shown below:

A. Take-up torque: 30 to 45 gr.

B. Feed torque: 10 to 20 gr.

B. When removing the springs, insert a thin shaft into the small openings on the shaft holder (6-6) and shaft (6-106) to lock them, and remove them after loosening two screws (6-112).

Fig. 22


3-1
3-49
3-50x2
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3
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7
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10
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11
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44
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47
59
82x2
74
72
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63x2
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70x2
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80x2
150x2
153x2
81
152x3
151
(112)
(114)
(111)
(110)
(114)
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6x2
3
8x6
6-1
5
4
(8)
114x4
112x2
(114)
111x2
7x4
110x2
(8)
86
88
87
93x5
94x2
89
90
91
92
83x4
85
84
12x2
11
13x4
19
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17
16
14
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117
100
106x2
104x2
101
103x2
102x2
105x2
107x2
99
96
97
98
95
(106)
(105)
(107)
(102)
109
(104)
(103)
108

14. Exposure control system

14.1 Adjustment of brightness at film plane

When brightness at film plane cannot be obtained correctly in accordance with film speed, frames-per-second speed control, fractional exposure control or variable shutter lever, load the camera with 5.0 to 6.0V batteries, and adjust medium and high brightness' as described below:

A. Adjustment of medium brightness

(a) Mount a lens (a 10X zoom lens) on the camera.

(b) Set the controls of the camera as follows:

ASA: 25 (Load an R25 cartridge.)

Frames-per-second speed control: 18

Variable shutter lever: OPEN

Fractional exposure control: 0

(c) Face the camera to 1746 rlx light source.

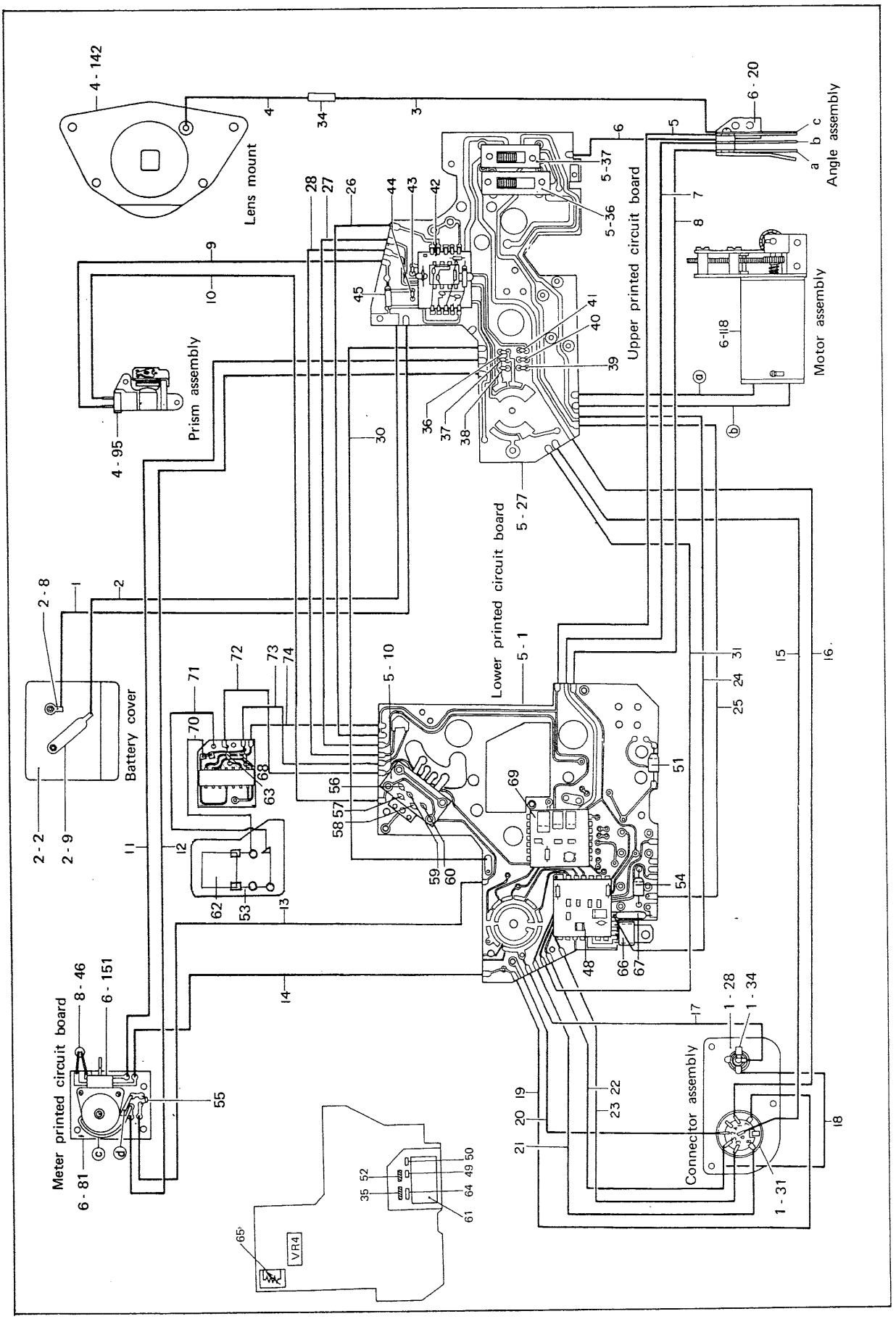
(d) Select an aperture of the lens so that brightness at film plane is 5.42 lx.

(e) Adjust resistor (7-65) so that the needle of the exposure meter is in the center of the viewfinder (between + and - symbols) when the shutter release button is depressed in a half way.

(f) Adjust resistor (7-62) so that indication by the needle of the exposure meter does not differ from that of (e) above when the shutter release button is depressed deeply (with the motor operated).

(g) Repeat adjustments (e) and (f) above so that indication of the exposure meter with the motor operated does not differ from that with the motor stopped.

Fig. 23


4 - 142
Lens mount
6 - 20
Angle assembly
Upper printed circuit board
5 - 37
5 - 36
Motor assembly
6 - 118
Prism assembly
4 - 95
Lower printed circuit board
5 - 27
5 - 1
5 - 10
Battery cover
2 - 8
2 - 2
2 - 9
Meter printed circuit board
8 - 46
6 - 151
6 - 81
Connector assembly
1 - 28
1 - 34
1 - 31
VR4

B. Checking medium brightness

(a) Mount a 10X zoom lens on the camera.

(b) Change film speed from ASA25 to ASA50, from ASA50 to ASA100, from ASA100 to ASA200 and from ASA200 to ASA400 at 18 frames-per-second filming speed; change aperture of the lens at each film speed so that the needle of the exposure meter is always in the center, and measure brightness at film plane at each film speed.

(c) Thus, insure that brightness at each film speed is within the ranges shown below:

ASA 25:	5.42 1x ± 2/3 EV
ASA 50:	2.71 1x ± 2/3 EV
ASA 100:	1.36 1x ± 2/3 EV
ASA 200:	0.68 1x ± 2/3 EV
ASA 400:	0.34 1x ± 2/3 EV

C. Checking high brightness

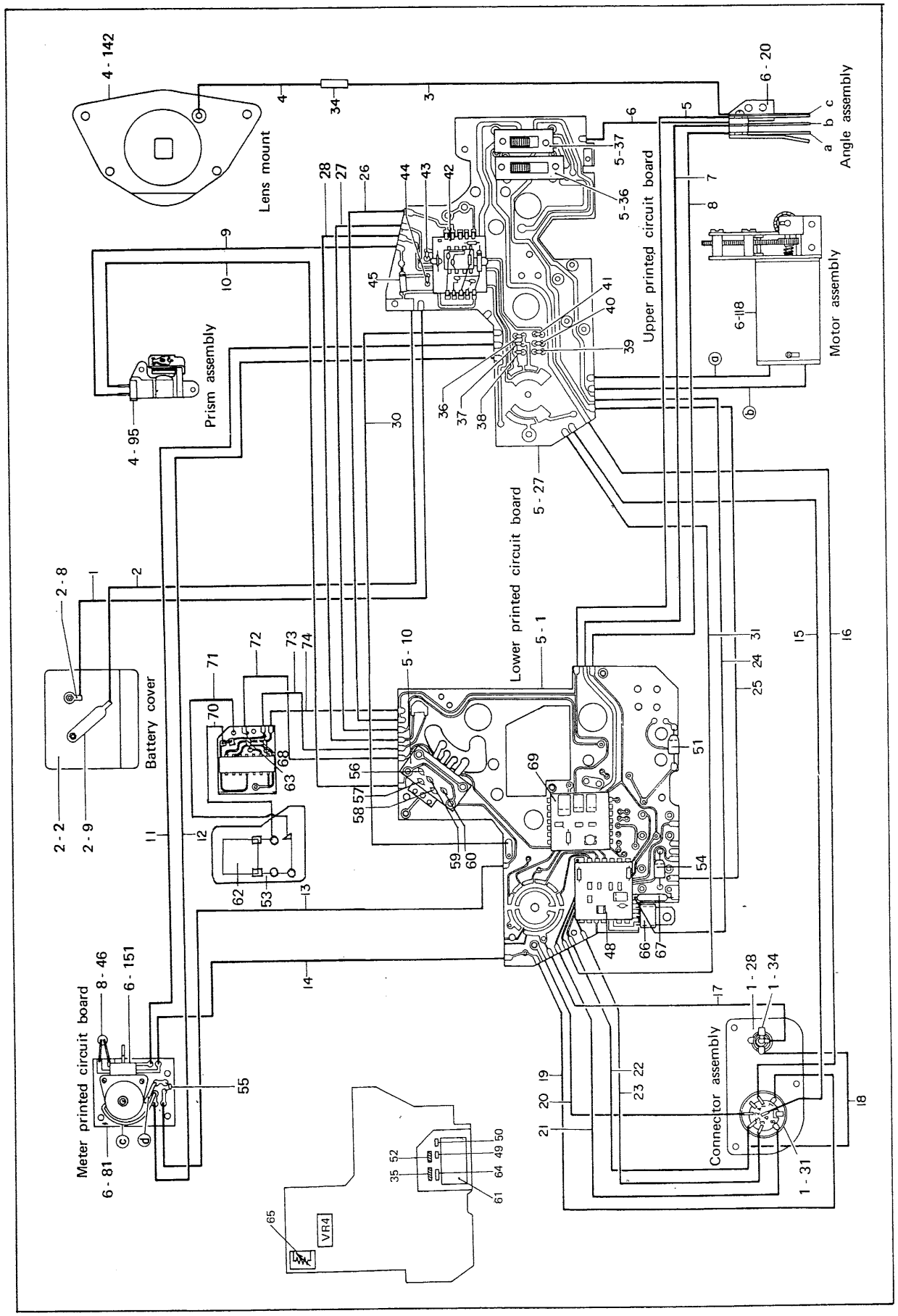
(a) Mount a 10X zoom lens on the camera.

(b) Change filming speed from 12 F/S to 18 F/S, from 18 F/S to 24 F/S, from 24 F/S to 36 F/S, and from 36 F/S to 72 F/S at film speed ASA 25; change aperture of the lens at each filming speed so that the needle of the exposure meter is always in the center between + and - marks, and measure brightness at film plane at each filming speed.

(c) Thus, insure that brightness at each filming speed is within the ranges shown below:

12 F/S:	3.61 1x ± 2/3 EV
18 F/S:	5.42 1x ± 2/3 EV
24 F/S:	7.22 1x ± 2/3 EV
36 F/S:	10.84 1x ± 2/3 EV
72 F/S:	21.68 1x ± 2/3 EV

Fig. 24


4 - 142
Lens mount
6 - 20
Angle assembly
Upper printed circuit board
Motor assembly
Prism assembly
4 - 95
Lower printed circuit board
5 - 27
5 - 1
5 - 10
Battery cover
2 - 8
2 - 2
2 - 9
Meter printed circuit board
8 - 46
6 - 151
6 - 81
Connector assembly
1 - 28
1 - 34
1 - 31
VR4

(d) Set film speed and filming speed respectively to ASA 25 and 18 F/S, and insure that brightness at film plane is 5.42 lx ± 1EV when variable shutter angle is reduced to 1/2 (1EV correction) or to 1/4 (2EV correction).

(e) When brightness at film plane is not within the above described ratings, check the circuit (wiring, ASA changeover resistor and over exposure compensating resistor), meter, CdS and variable shutter angle changeover system for their conditions.

NOTE: When a 10X zoom lens is used, the aperture scale should be within ± 1 F against the standard scale.

Rated luminosity at film plane

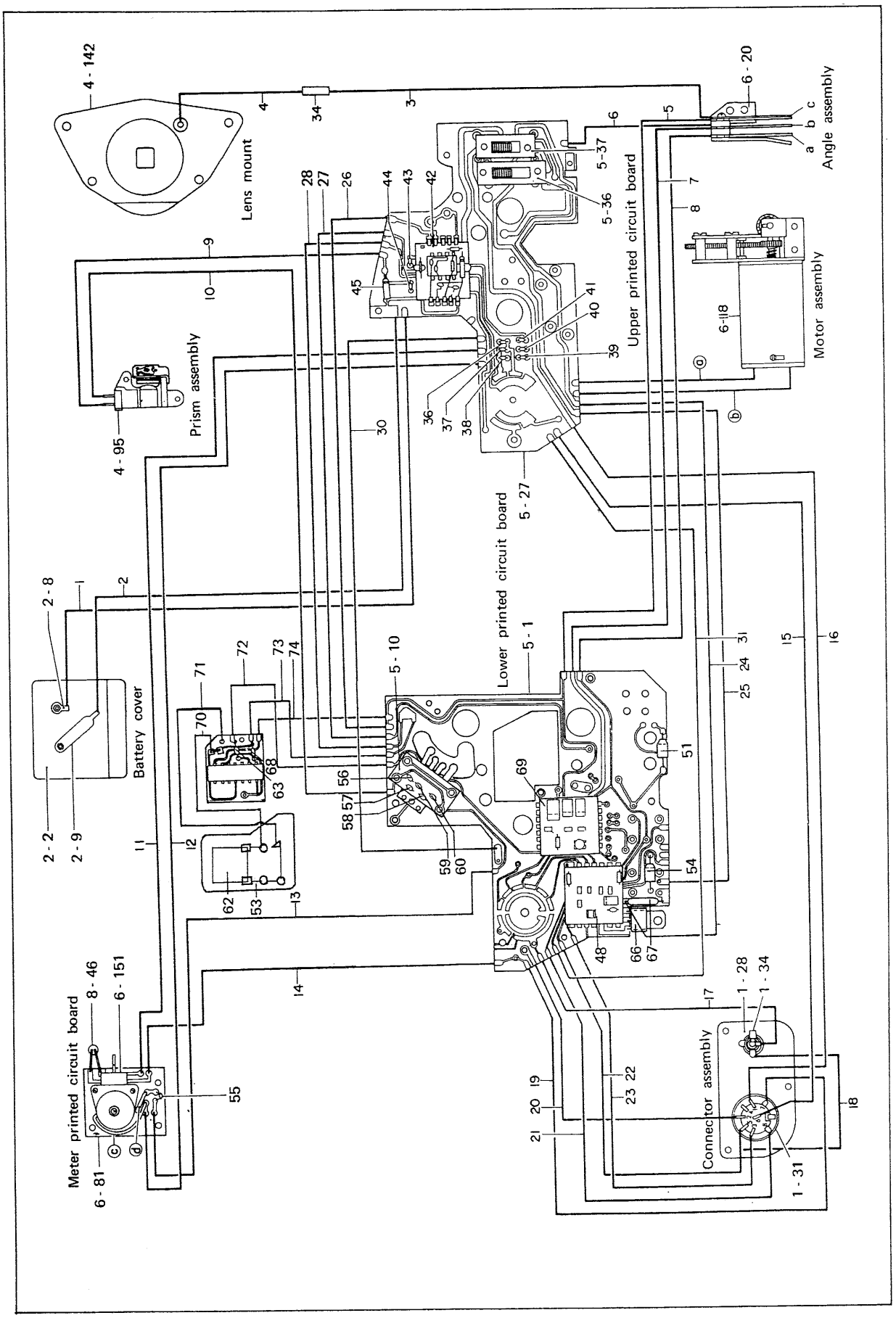
ASA		25	50	100	200	400
At 18F/S	+1.0EV	(+0.66) 10.84 lx	(−0.33) 5.42 lx	(−1.83) 2.72 lx	(−2.36) 1.36 lx	(−3.3) 0.68 lx
	+2/3EV	(+0.33) 8.60	(−0.66) 4.30	(−1.66) 2.15	(−2.66) 1.08	(−3.67) 0.54
	0 EV	(−0.33) 5.42	(−1.83) 2.71	(−2.36) 1.36	(−3.3) 0.68	(−4.3) 0.34
	−2/3EV	(−1.0) 3.41	(−2.0) 1.71	(−3.0) 0.85	(−4.0) 0.43	(−5.0) 0.21
	−1.0EV	(−1.83) 2.71	(−2.36) 1.36	(−3.3) 0.68	(−4.3) 0.34	(−5.3) 0.17

Filming speed		12	18	24	36	72
At 25 F/S	+1.0EV	(+0.07) 7.22 lx	(+0.66) 10.84 lx	(+1.10) 14.44 lx	(+1.66) 21.68 lx	(+2.66) 43.36 lx
	+2/3EV	(−0.25) 5.73	(+0.33) 8.60	(+0.75) 11.46	(+1.33) 17.20	(+2.33) 34.41
	0 EV	(−0.78) 3.61	(−0.33) 5.42	(+0.07) 7.22	(+0.66) 10.84	(+1.67) 21.68
	−2/3EV	(−1.57) 2.28	(−1.0) 3.41	(−0.62) 4.55	(0) 6.83	(+1.0) 13.66
	−1.0EV	(−1.93) 1.81	(−1.83) 2.71	(−0.92) 3.61	(−0.33) 5.42	(+0.66) 10.27

The figures enclosed in parenthesis ( ) are converted EVs.

Standard value: 5.42 lx (The standard exposure value of the ZC1000 is -0.33 EV of the 0 EV of other Fuji model 8mm cameras.)

Fig. 25


4 - 142
Lens mount
6 - 20
Angle assembly
Upper printed circuit board
Motor assembly
Prism assembly
4 - 95
Lower printed circuit board
5 - 27
5 - 1
5 - 10
Battery cover
2 - 8
2 - 2
2 - 9
Meter printed circuit board
8 - 46
6 - 151
6 - 81
Connector assembly
1 - 28
1 - 34
1 - 31

14.2 Inspection of exposure control system

When the exposure control system does not operate correctly:

A. Inspect the system in the following sequence:

(a) Check and see if the rated voltage is applied to the exposure meter circuit.

(b) Photocell (CdS)

(c) Exposure meter (operating condition)

(d) Circuit resistance (film speed changeover circuit, filming speed changeover circuit and over exposure compensating circuit) and switch contact

(e) Drive compensating circuit

B. Details of inspection

(a) With the shutter release button depressed in a half way (with the contacts b and c of (6-20), see if the rated voltage is applied to the exposure meter circuit.

(i) Normal
When the condition is normal, voltage (5.5V) equivalent to the source voltage will be measured across U1 and U3 and approximately 3V will be measured across U1 and U4.

(ii) Abnormal

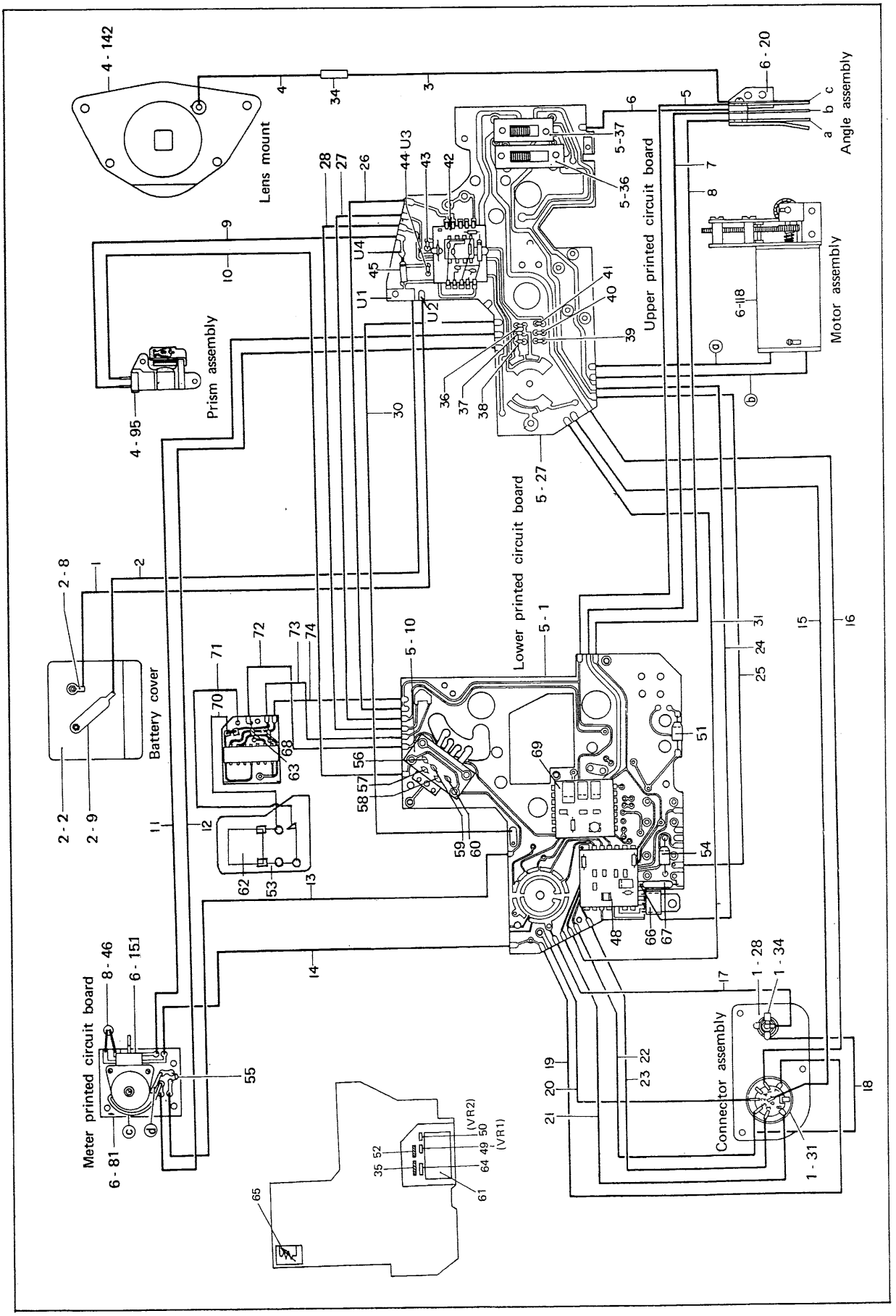
a. When no voltage is measured across U1 and U3 (when OV), check:

- Lead wires (1, 2, 5, 6, and 26) for improper soldering or breaking.
- Contacts (b and c of 6-20) for defective contact
- Copper foil patterns on the upper and lower printed circuit boards (5-1 and 5-27) for breaking
- Switch (5-36) for defectiveness or improper soldering

b. When approximately 3V is not applied across U1 and U4, check:

- Resistor (7-44) for breaking
- Zener diode (7-45) for damaging or improper soldering
- Photocell (CdS) (4-96) for short-circuiting with camera body
- Film speed changeover circuit, filming speed changeover circuit and over exposure compensating circuit for short-circuiting with camera body.

Fig. 26


4 - 142
Lens mount
6 - 20
Angle assembly
Upper printed circuit board
5-36
5-37
Motor assembly
6-118
Prism assembly
4 - 95
Lower printed circuit board
5 - 27
5 - 1
5 - 10
Battery cover
2 - 8
2 - 2
2 - 9
Meter printed circuit board
8 - 46
6 - 151
6 - 81
Connector assembly
1 - 28
1 - 34
1 - 31
(VR2)
(VR1)

(b) Photocell (CdS) (4-96)
Without applying voltage to the camera, disconnect lead wires (7-9 and 7-10) from the upper and lower printed circuit boards (5-1 and 5-27), and measure resistance across the lead wires or across the lead wire and camera body.

(i) Normal
When an ohmmeter is connected to the lead wires and light applied to the lens is changed, resistance displayed by the ohmmeter will change about 5 to 50 KΩ , and resistance across the lead wire and camera body will be zero.

(ii) Abnormal

Check:

- CdS for broken wire or short-circuited CdS terminals
- Lead wires (7-9 and 7-10) for improper soldering or breaking
- CdS terminal for short-circuiting with camera body.

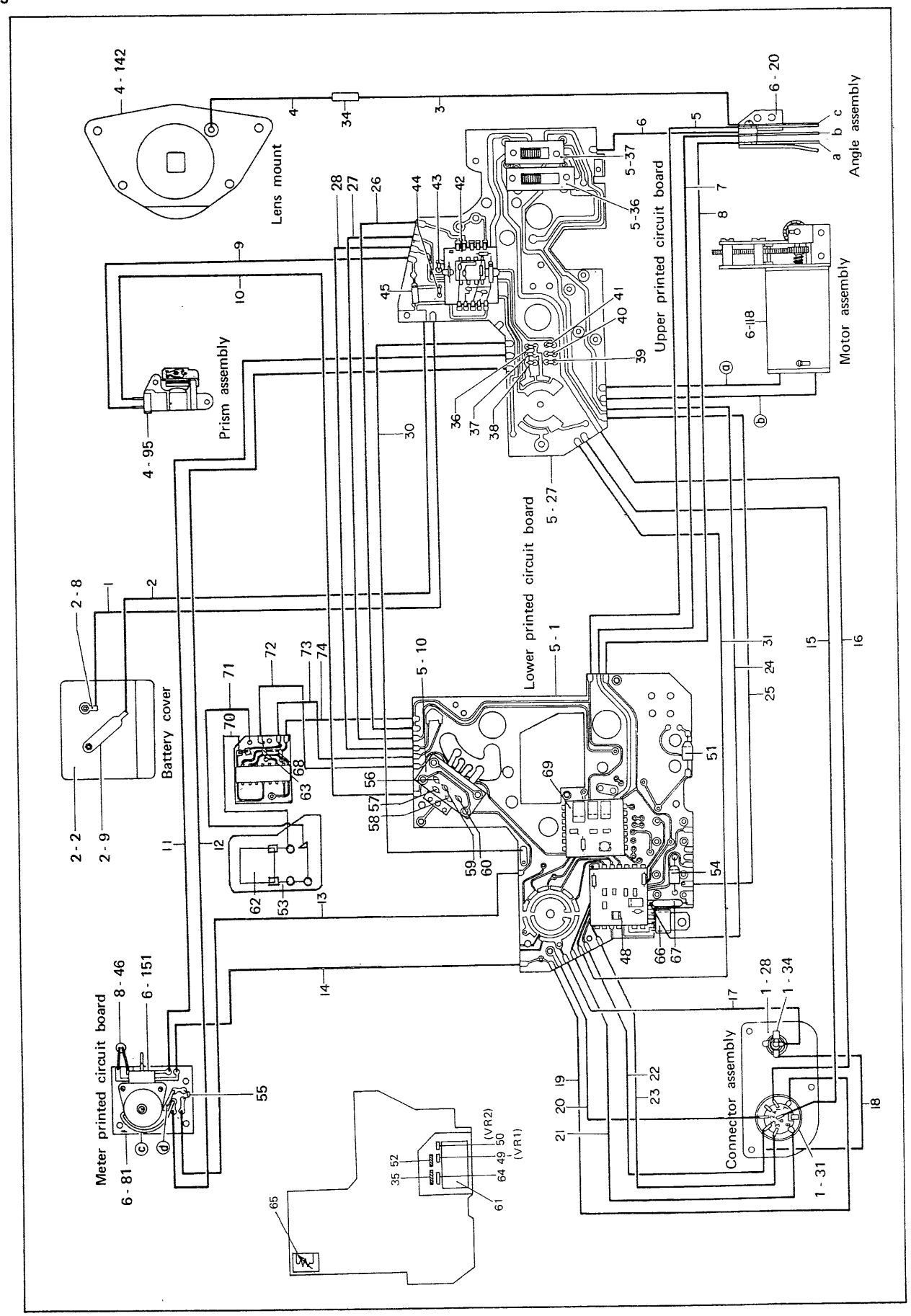
(c) Exposure meter (6-151)
Without applying voltage to the camera, disconnect lead wires (7-12 and 7-13) from the upper and lower printed circuit boards (5-1 and 5-27), and apply 0 to $\pm 8 \mu$A across the lead wires.

(i) Normal
When the exposure meter is normal, it will operate in proportion to current change.

(ii) Abnormal
Check:

- Leads wires (7-12 and 7-13) for breaking or improper soldering
- Resistor (7-55) for broken wire or improper soldering
- Exposure meter (6-151) for broken wire, dragging or intrusion of foreign matter

Fig. 27


4 - 142
Lens mount
6 - 20
Angle assembly
a b c
Upper printed circuit board
5 - 37
5 - 36
Motor assembly
6 - 118
Prism assembly
4 - 95
5 - 27
Lower printed circuit board
5 - 1
5 - 10
Battery cover
2 - 8
2 - 2
2 - 9
Meter printed circuit board
8 - 46
6 - 151
6 - 81
Connector assembly
1 - 28
1 - 34
1 - 31
(VR2)
(VR1)

(d) Circuit resistance
Without applying voltage to the camera, check circuit resistance as described below:

a. Film speed changeover circuit
Disconnect lead wire (7-10 and 7-13) from the lower printed circuit board (5-1), and measure resistance across terminal D-2 and camera body.

(i) Normal
When this circuit is normal, resistance will be as indicated below:

ASA 400 (No automatic ASA set pin is depressed): 57.7 KΩ

ASA 200 (Automatic ASA set pin (1) is depressed): 37.2 KΩ

ASA 100 (Automatic ASA set pins (1) and (2) are depressed): 24KΩ

ASA 50 (Automatic ASA set pins (1) through (3) are depressed):
15.5 KΩ

ASA 25 (Automatic ASA set pins (1) through (4) are depressed):
10 KΩ

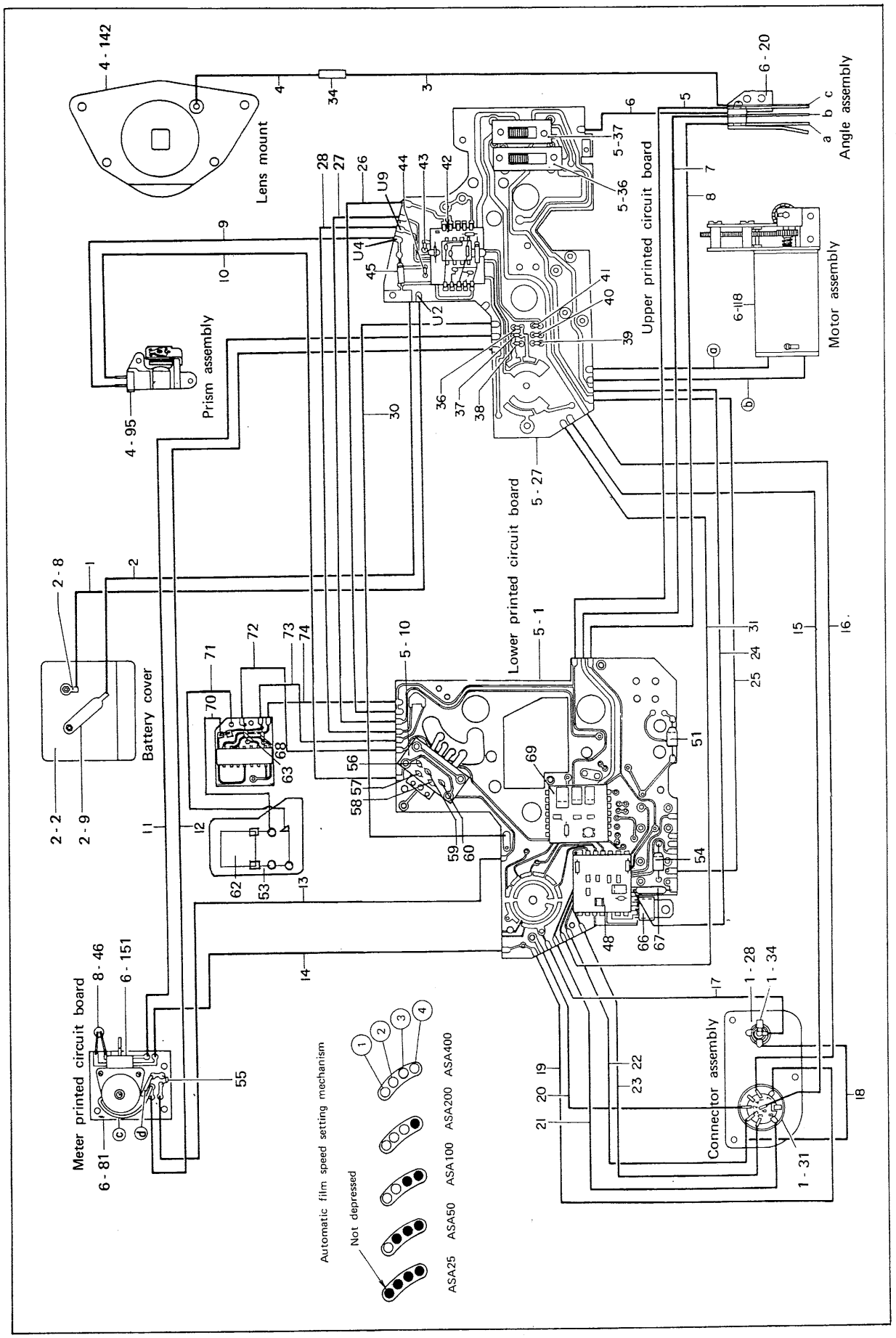
(ii) Abnormal
Check:

Resistor for damaging, improper installation or improper soldering

Copper foil pattern of printed circuit board (5-10) for breaking

Contact sliding surface of the printed circuit board (5-10) for contact condition with contact piece (5-4).

Fig. 28


4 - 142
Lens mount
6 - 20
Angle assembly
Upper printed circuit board
5 - 37
5 - 36
Motor assembly
6 - 118
Prism assembly
4 - 95
Lower printed circuit board
5 - 27
5 - 1
5 - 10
Battery cover
2 - 8
2 - 2
2 - 9
Meter printed circuit board
8 - 46
6 - 151
6 - 81
Connector assembly
1 - 28
1 - 34
1 - 31
Automatic film speed setting mechanism
Not depressed
ASA25
ASA50
ASA100
ASA200
ASA400

b. Filming speed changeover circuit and over exposure compensating circuit
Disconnect lead wire (7-13) from the lower printed circuit board (5-1), disconnect lead wires (7-9 and 7-12), diode (7-45) and resistor (7-44) from the upper printed circuit board (5-27), and measure resistance across terminals U4 and U9.

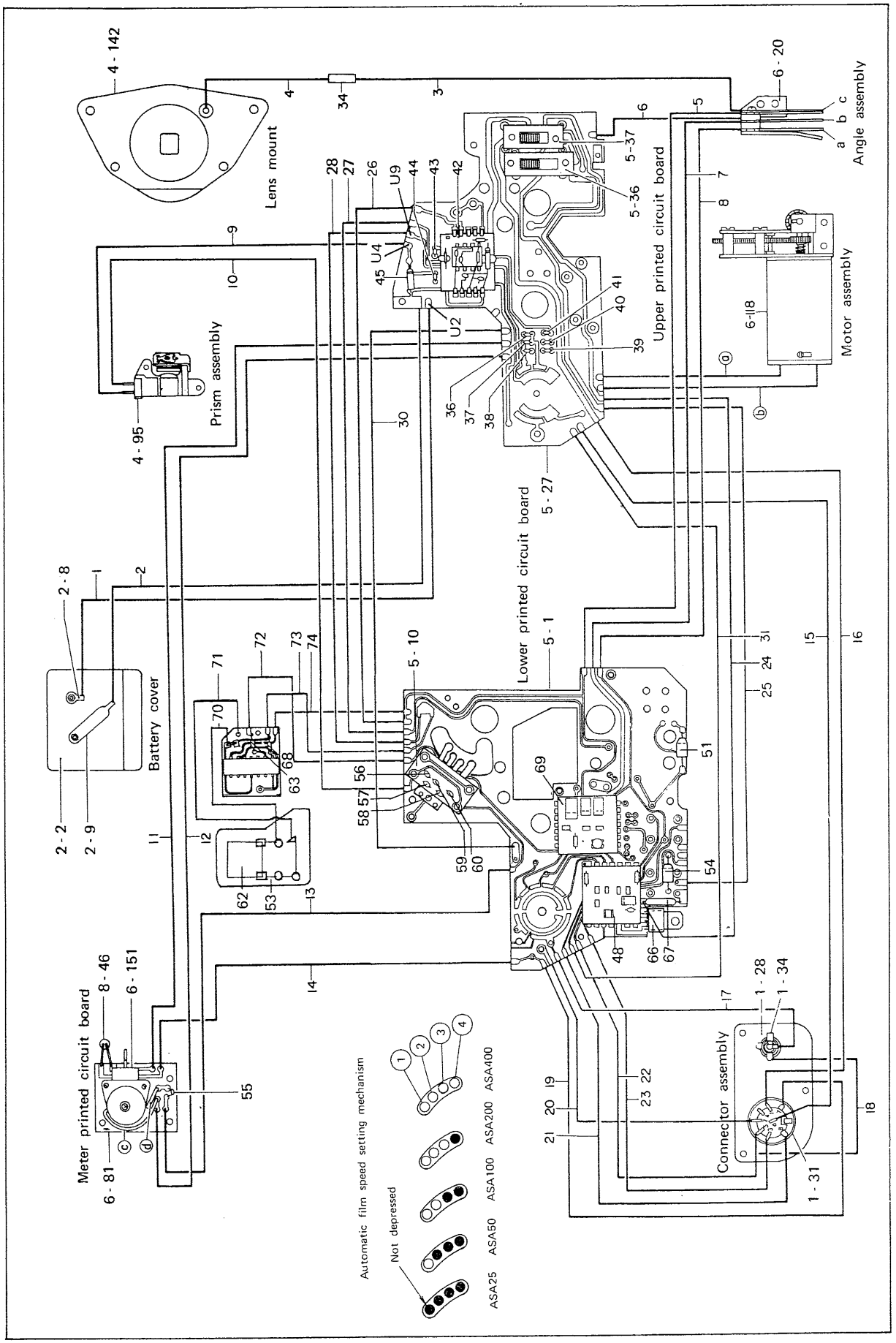
(i) Normal
When these circuits are normal, resistances at individual fractional exposure lever positions and filming speeds will be as indicated below:

Fractional exposure lever position	Filming speed (F/S)	Resistance (K Ω)
0	72	10
0	36	15.5
0	24	20
0	18	24
0	12	31.2
0	1	24
2	1	34
4	1	51.5

(ii) Abnormal
Check:

- Resistor for defectiveness, damaging or improper soldering
- Contact sliding surface of the upper printed circuit board (5-27) for contact condition with contact piece (7-54)
- Lead wire (7-28) for breaking or improper soldering.

Fig. 29


4 - 142
Lens mount
6 - 20
Angle assembly
Upper printed circuit board
Motor assembly
6-118
Prism assembly
4 - 95
Battery cover
2 - 8
2 - 2
2 - 9
Lower printed circuit board
5 - 27
5 - 1
5 - 10
Meter printed circuit board
8 - 46
6 - 151
6 - 81
Connector assembly
1 - 28
1 - 34
1 - 31
Automatic film speed setting mechanism
Not depressed
ASA25
ASA50
ASA100
ASA200
ASA400

(e) Drive compensating circuit
Light value applied to the photocell with the motor stopped differs from that with the motor operated. The drive compensating circuit is used to equalize indication by the exposure meter regardless of with or without motor operated.
Measure voltage across terminal C4 of C-circuit and camera body.

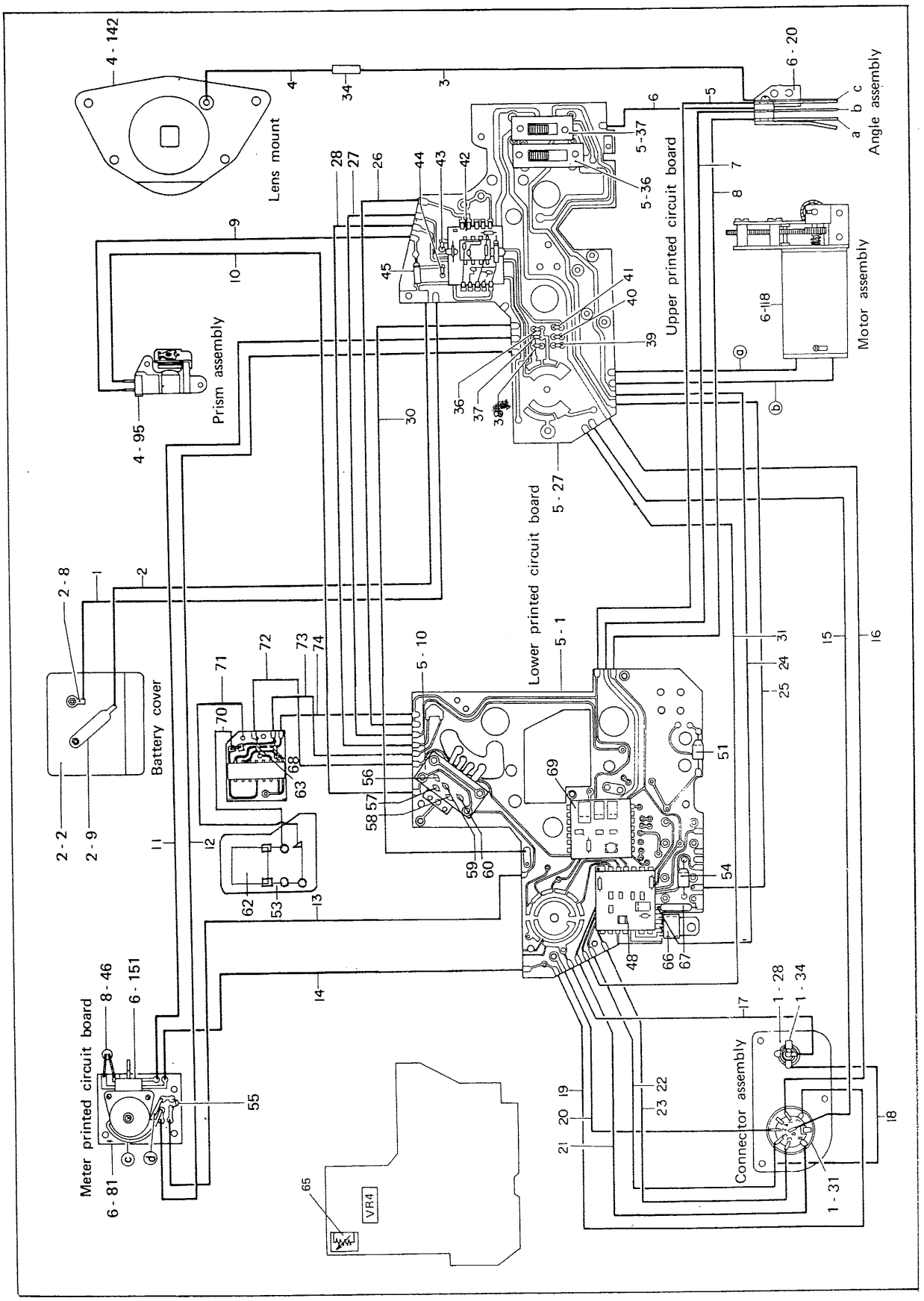
(i) Normal

- With the shutter release button depressed in a half way same voltage as source voltage (5.5V) will be measured.
- With the shutter release button depressed fully (Motor is operating (Points a, b and c of contact piece (6-20) are in contact)), zero volt will be measured.

(ii) Abnormal
Check:

- C-block (7-47) for defectiveness or improper soldering
- Lead wires (7-70, 7-71 and 7-72) for breaking or improper soldering
- Resistors (7-65) and (7-62) for broken wire or improper soldering
- Resistor (7-68) for incorrect resistance or improper soldering

Fig. 30


4 - 142
Lens mount
6 - 20
Angle assembly
Upper printed circuit board
5-37
5-36
Motor assembly
6-118
Prism assembly
4 - 95
Lower printed circuit board
5 - 27
5 - 1
5 - 10
Battery cover
2 - 8
2 - 2
2 - 9
Meter printed circuit board
8 - 46
6 - 151
6 - 81
VR4
Connector assembly
1 - 28
1 - 34
1 - 31

14.3 Battery checker/warning signal (A-circuit)

Battery can be checked by applying voltage (5.5V to 11V) and by depressing the shutter release button in a half way. Note that battery cannot be checked when the shutter release button is depressed deeply.

A. Operation (at 22 ± 2 ° C)

° Battery checker
At low filming speed (1, 12, 18 or 24 F/S): LED (7-46) lights when voltage is 4.2V or less.
At high filming speed (36 or 72 F/S): LED (7-46) lights when voltage is 8.4V or less.

° Warning signal
LED (7-46) flashes in the following cases:

Forward-reverse selector is set to "R"
Variable shutter lever is in the range from the dot (between "S" and "2" (half stop down) to "CLOSE".
Over exposure is being copensated (Fractional exposure lever is not set to "O".)
The footage counter is approaching 15m.

B. Inspection
When the battery checker/warning signal is abnormal, check A-block (7-42) to see if the rated voltage is applied to it first, and then check LED (7-46) for condition as described below:

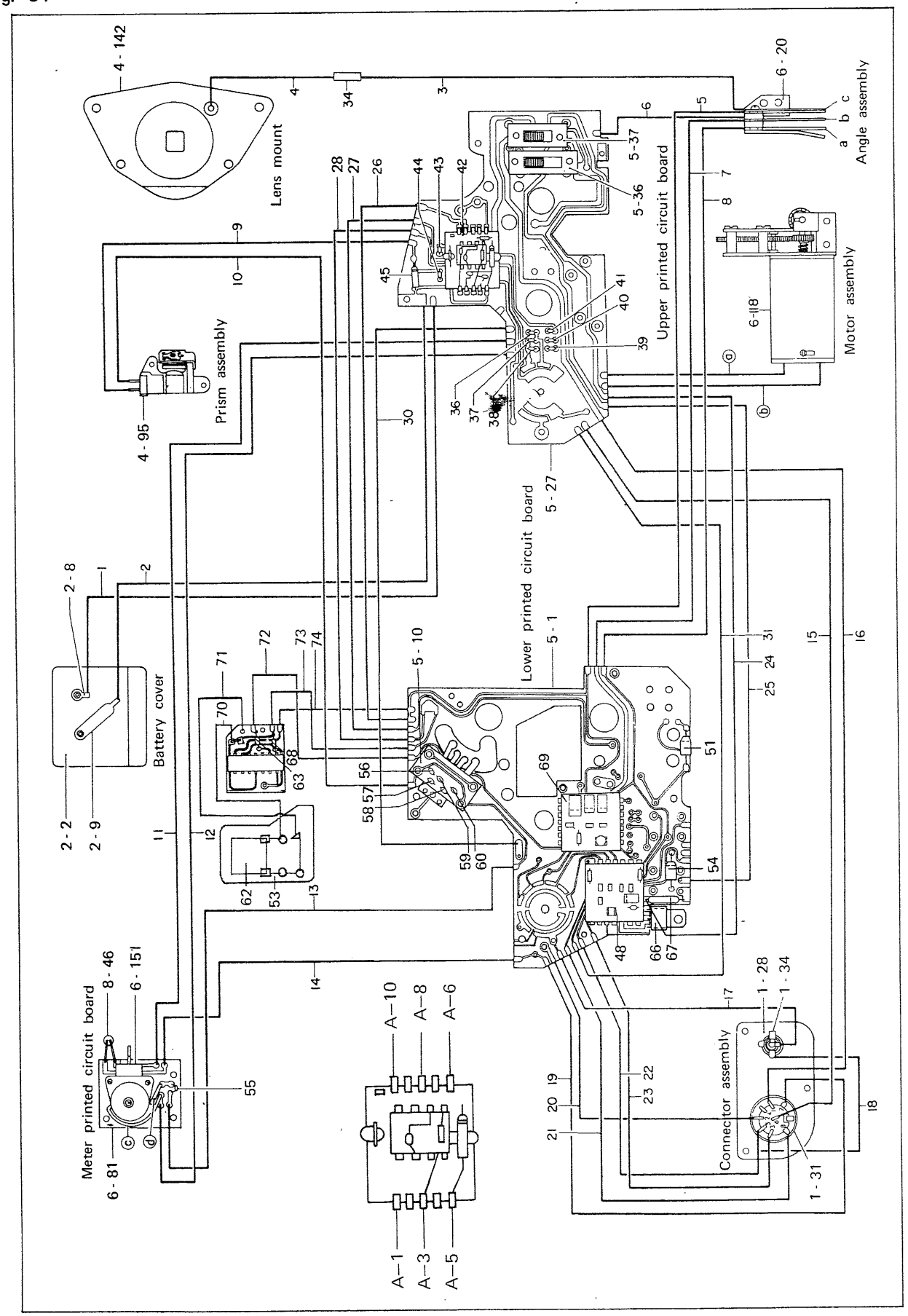
(1) A-block (7-42)

(i) Normal
When A-circuit operates normally, voltages across the camera body and individual terminals will be as follows:

(a) At low filming speed (1, 12, 18 or 24 F/S)

Between	Shutter release button depressed in a half way	Shutter release button fully depressed	Checking LED for flashing with shutter release button depressed in a half way	Checking battery checker with shutter release button depressed in a half way
Terminal A-1 and camera body	Same as source voltage (5.5V)	5.5V	5.5V	Same as source voltage
Terminal A-3 and camera body	5.5V	5.5V	5.5V	Same as source voltage
Terminal A-5 and camera body	0V	0V	0V	0V
Terminal A-8 and camera body	5.5V	5.5V	Changes in range from 1.5V to 4.2V	1.8V or less when LED lights
Terminal A-10 and camera body	5.5V	5.5V	5.5V	Same as source voltage

Fig. 31


4 - 142
Lens mount
6 - 20
Angle assembly
a b c
5 - 37
5 - 36
Upper printed circuit board
6 - 118
Motor assembly
4 - 95
Prism assembly
5 - 27
Lower printed circuit board
5 - 1
5 - 10
2 - 8
2 - 2
2 - 9
Battery cover
8 - 46
6 - 151
Meter printed circuit board
6 - 81
A—10
A—8
A—6
A—1
A—3
A—5
1 - 28
1 - 34
1 - 31
Connector assembly

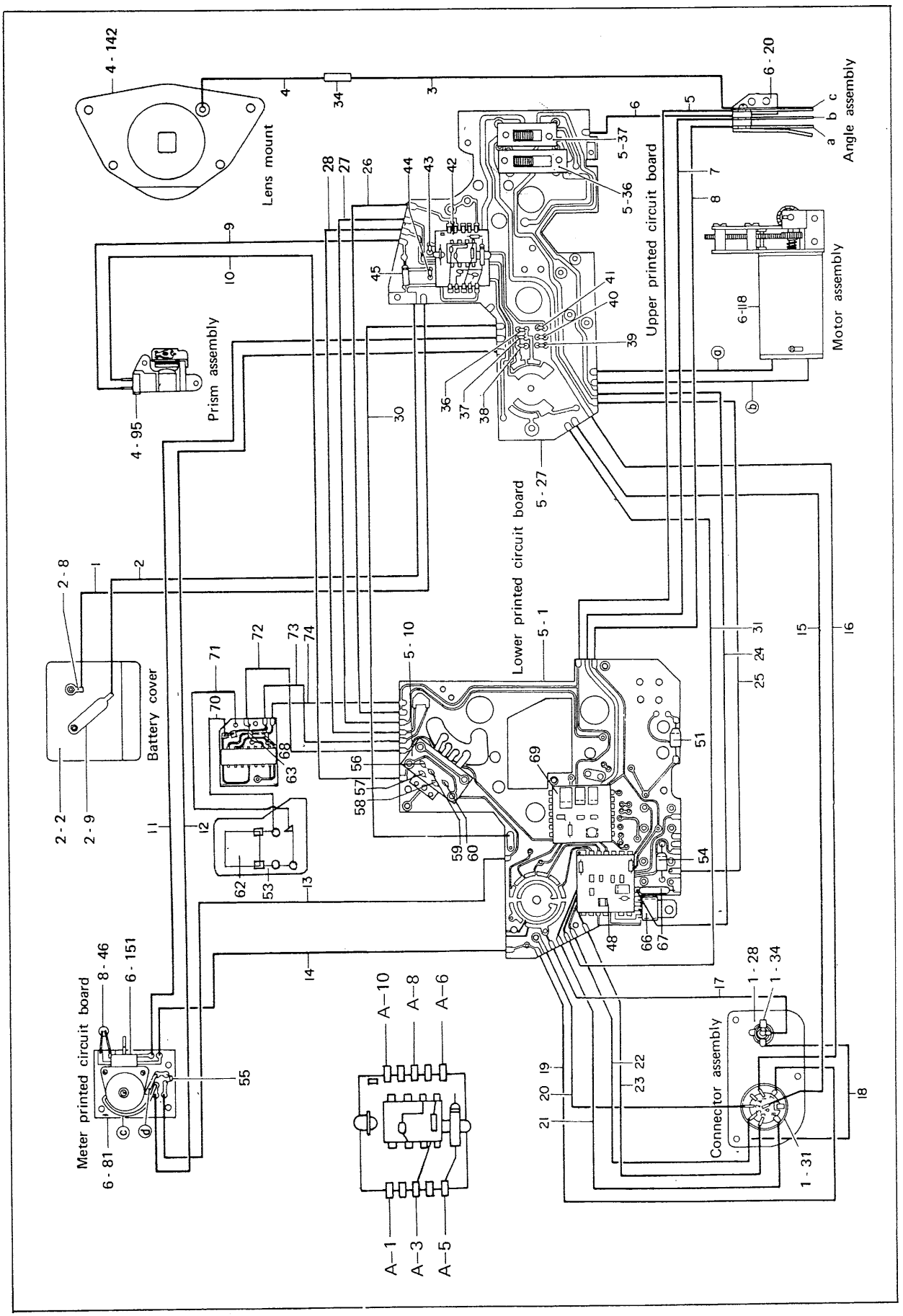
- Method to check battery checker voltage
  Cange source voltage, and measure voltage at the time when LED (7-46) lights. When the LED lights, voltage across terminal A-8 and camera body will be approximately 1.8V.
- Method to check LED for flashing
  With source voltage maintained constantly at 5.5V, short-circuit terminal A-6 of the A-circuit against the camera body (or terminal A-5). As the LED flashes, voltage across terminal A-8 and camera body changes in range from 1.5V to 4.2V.

(b) At high filming speed (36 or 72 F/S)

Between	Shutter release button depressed in a half way	Shutter release button fully depressed	Checking LED for flashing with shutter release button depressed in a half way	Checking battery checker with shutter release button depressed in a half way
Terminal A-1 and camera body	Same as source voltage (5.5V)	5.5V	5.5V	5.5V
Terminal A-2 and camera body	Approx. 3V	Approx. 4.1V		
Terminal A-3 and camera body	11V	11V	11V	Same as source voltage
Terminal A-4 and camera body	0V	0V	0V	0V
Terminal A-5 and camera body	0V	0V	0V	0V
Terminal A-8 and camera body	5.5V	5.5V	Changes in range from 1.5V to 4.2V	1.8V or less when LED lights
Terminal A-10 and camera body	5.5V	5.5V	5.5V	5.5V

- Method to check battery checker voltage
  Change high voltage side source voltage, and measure voltage at the time when LED (7-46) lights. When the LED lights, voltage across terminal A-8 and camera body will be approximately 1.8V.
- Method to check LED for flashing
  With source voltage maintained constantly at 5.5V to 11.0V, short-circuit terminals A-6 and A-4 of A-circuit against the camera body or terminal A-5. Then, voltage across terminal A-8 and camera body changes in range from 1.5V to 4.2V. Moreover, voltage across terminal D-1 of the LED and camera body is 5.5V.

Fig. 32


4 - 142
Lens mount
6 - 20
Angle assembly
Upper printed circuit board
5-37
5-36
Motor assembly
6-118
Prism assembly
4 - 95
5 - 27
Lower printed circuit board
5 - 1
5 - 10
2 - 8
Battery cover
2 - 2
2 - 9
Meter printed circuit board
8 - 46
6 - 151
6 - 81
Connector assembly
1 - 28
1 - 34
1 - 31
A-1
A-3
A-5
A-6
A-8
A-10

(ii) Abnormal

When the shutter release button is depressed in a half way and the battery checker/warning signal do not operate normally, check:

- A-block (7-42) for defectibeness or improper spldering
- Copper foil patterns on upper and lower printed circuit boards (5-1 and 5-27)
- Lead wires (7-11 and 7-13) for breaking or improper soldering
- LED (7-46) for condition

When the shutter release button is depressed fully and LED does not go out, check:

- C-block (7-47) for defectiveness
- Relay (7-61) for faulty contact
- Resistor (7-63) for defectiveness or improper soldering
- Diode (7-46) for defectiveness or improper soldering
- Lead wire for breaking or improper soldering

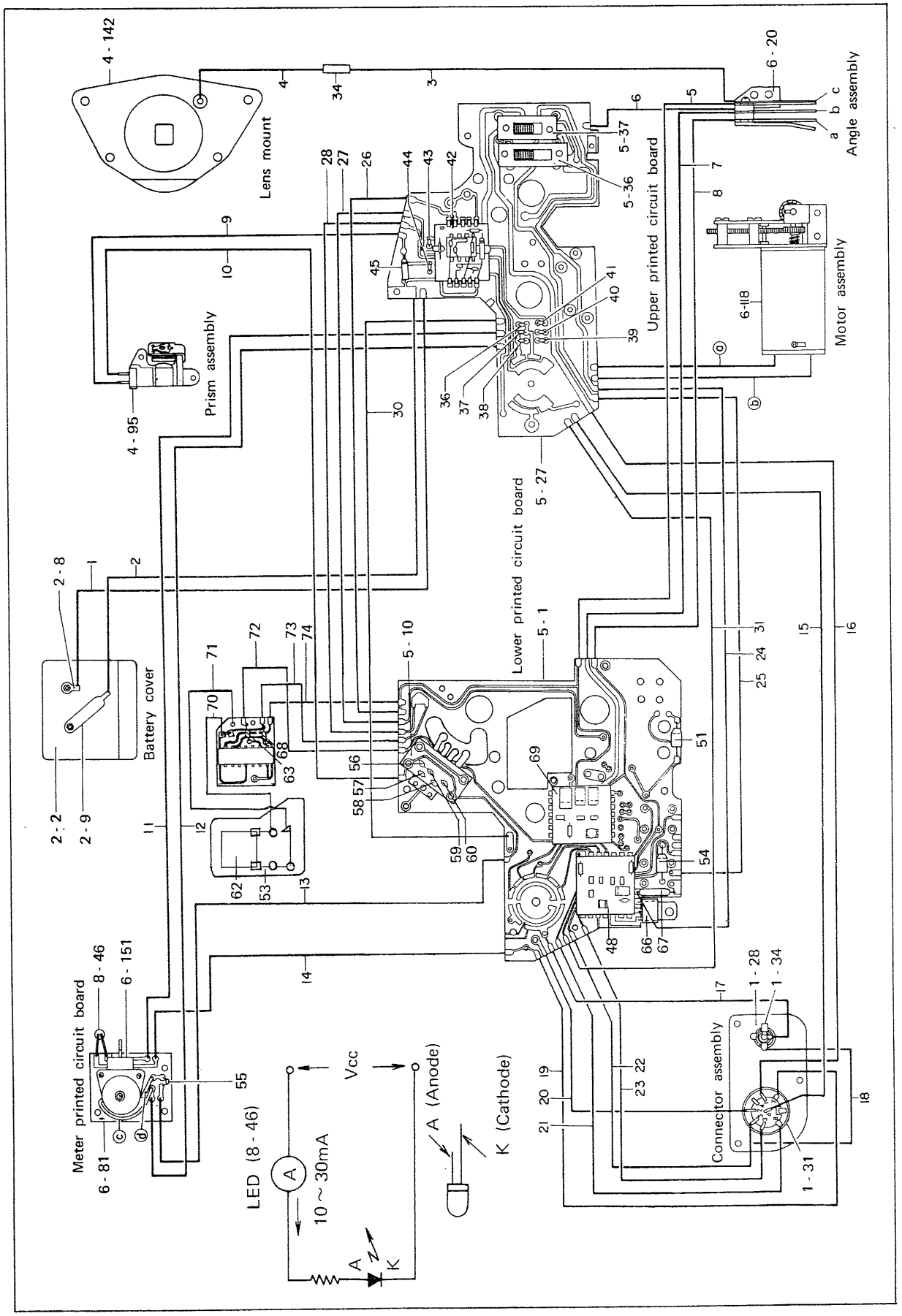
When the shutter release button is depressed in a half way, voltage across terminal A-2 and camera body should be approximately 3V.
When the shutter release button is depressed fully and this voltage changes to approximately 4.1V, the C-circuit and thereafter are all normal.
In this checking, if the battery checker does not stop, A-circuit is defective.

(2) LED (7-46)

a. Connect a protecting resistor to the LED in series.

b. Apply 10 to 30 mA to the LED. If the LED lights, it is normal.

Fig. 33


4 - 142
Lens mount
6 - 20
Angle assembly
Upper printed circuit board
5 - 37
5 - 36
Motor assembly
6 - 118
Prism assembly
4 - 95
Lower printed circuit board
5 - 27
5 - 10
5 - 1
2 - 8
2 - 2
2 - 9
Battery cover
Meter printed circuit board
8 - 46
6 - 151
6 - 81
LED (8 - 46)
10 ~ 30mA
Vcc
A (Anode)
K (Cathode)
Connector assembly
1 - 28
1 - 34
1 - 31

14.4 C-block (7-47) (Drive compensating circuit)

The C-block is used to generate voltage from its terminal to compensate driving of the exposure meter as soon as the motor starts.

(i) Normal (When voltage applied to the camera is 5.5V)
When this circuit is normal, voltages shown in the following table will be measured at the individual terminals of C-circuit at low filming speed:

Between	With shutter release button depressed in a half way	With shutter release button fully depressed
Terminal C-1 and camera body	Approx. 5.5V	OV
Terminal C-2 and camera body	Approx. 5.5V	5.5
Terminal C-3 and camera body	OV	OV
Terminal C-4 and camera body	5.3V	0.2V

(ii) Abnormal
When this circuit is abnormal, check:

- C-block - IC (7-47) for defectiveness or C-block for imporper soldering
- Relay (7-61) for operating condition or improper soldering
- Resistor (7-63) for defectiveness or improper soldering

14.5 Stay-open preventing circuit ..... Refer to the wiring diagram.
This electronic circuit operates in the following sequence to prevent the sector to open in a half way and to stop the pulse shaft in the rated position.

1. Shutter release button switch SW2 is turned off.
2. Relay operates. Voltage across E-7 and camera body changes from zero volt to 5.5V (Voltage of battery).
3. Tr1 and F-circuit start to operate, causing Trs to operate, and thus, the solenoid is attracted for a preset time.
4. With the solenoid lever, the turning stopper pin is caused to stop.

Fig. 34

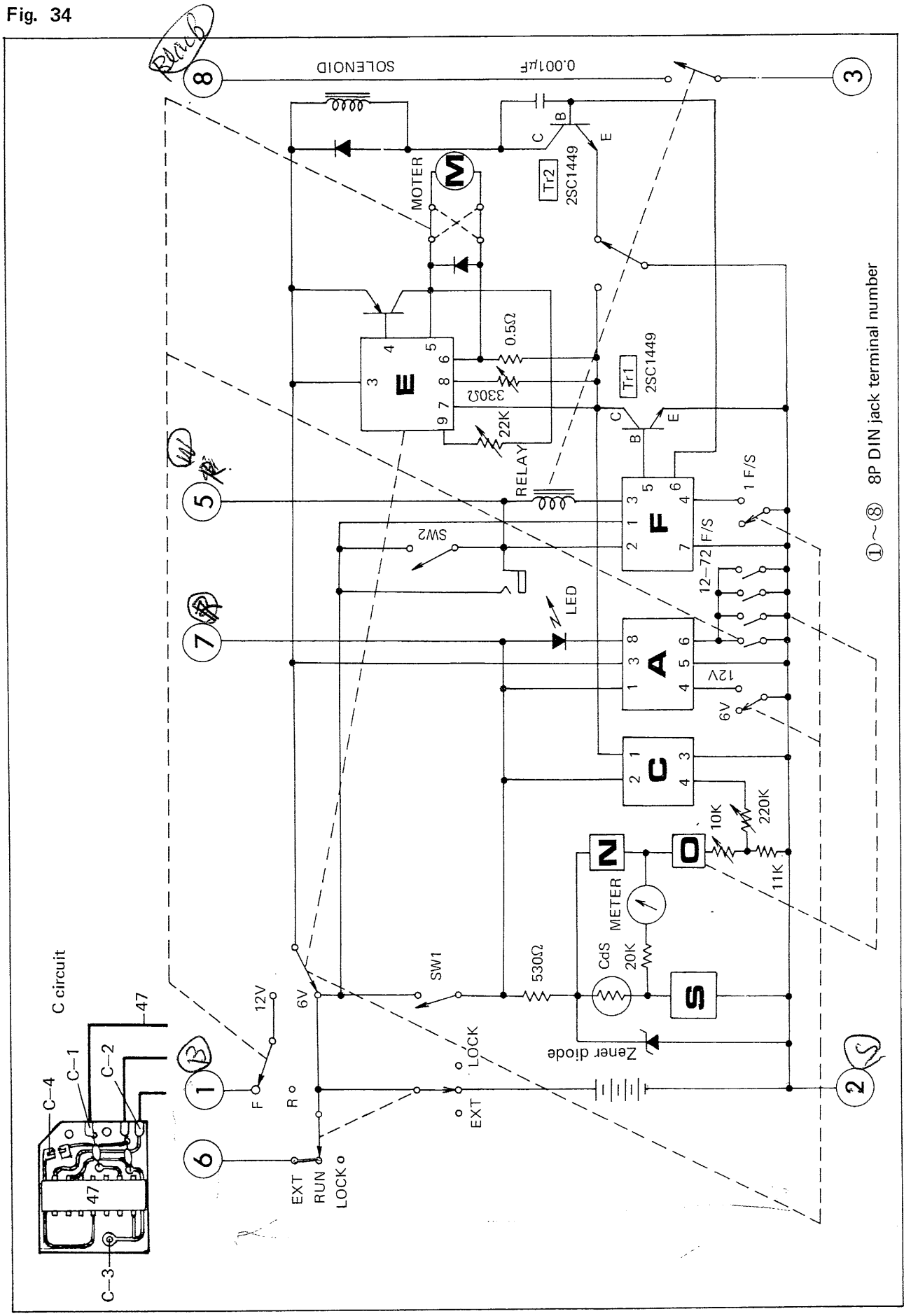

SOLENOID
0.001μF
MOTER
Tr2
2SC1449
Tr1
2SC1449
0.5Ω
330Ω
22K
RELAY
SW2
LED
1 F/S
F/S
12–72
12V
6V
10K
220K
11K
METER
CdS
20K
530Ω
SW1
Zener diode
LOCK
EXT
F
R
EXT
RUN
LOCK
C circuit
C–1
C–2
C–3
C–4
47
①~⑧ 8P DIN jack terminal number

Fig. 35

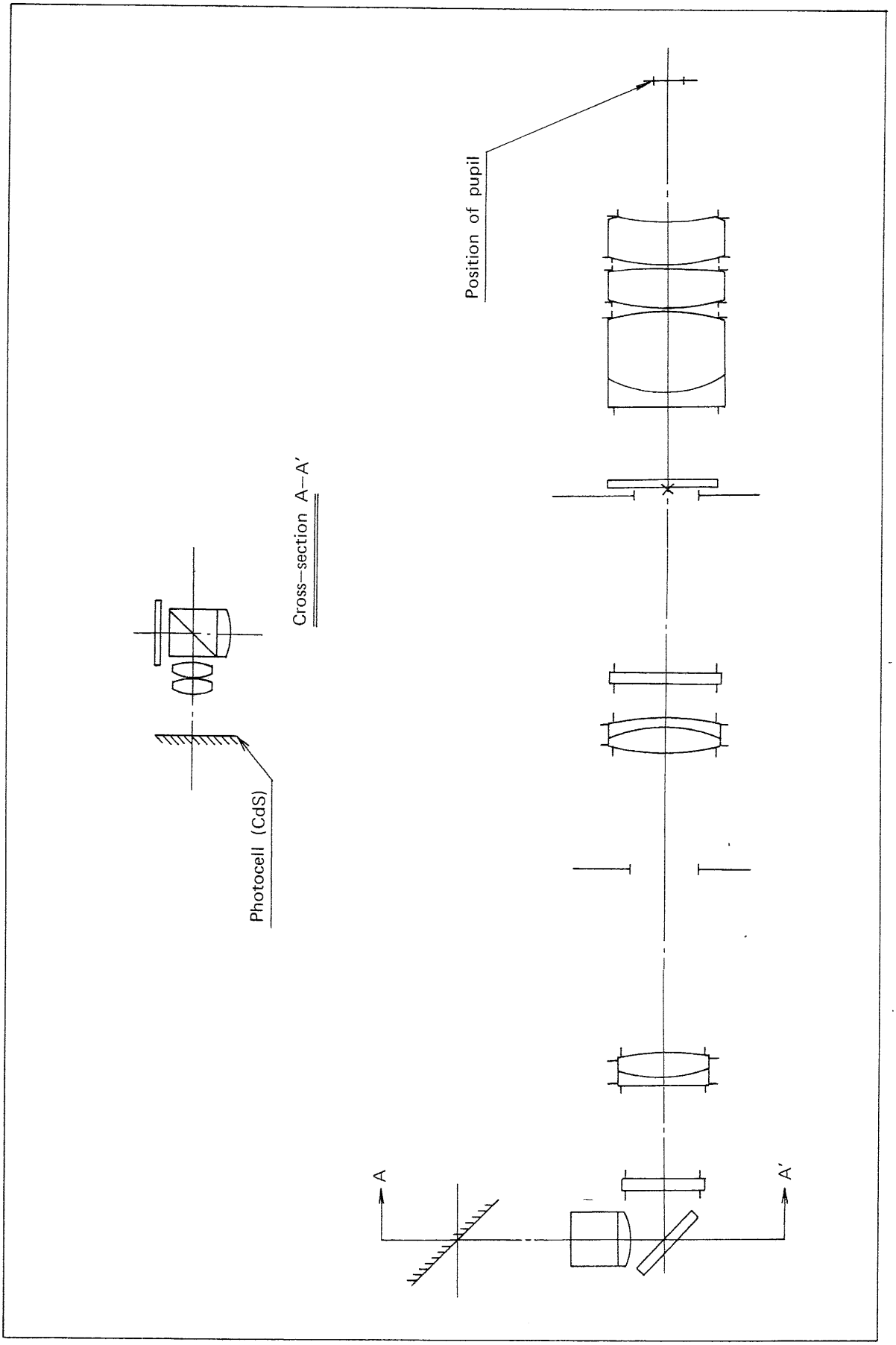


Fig. 36

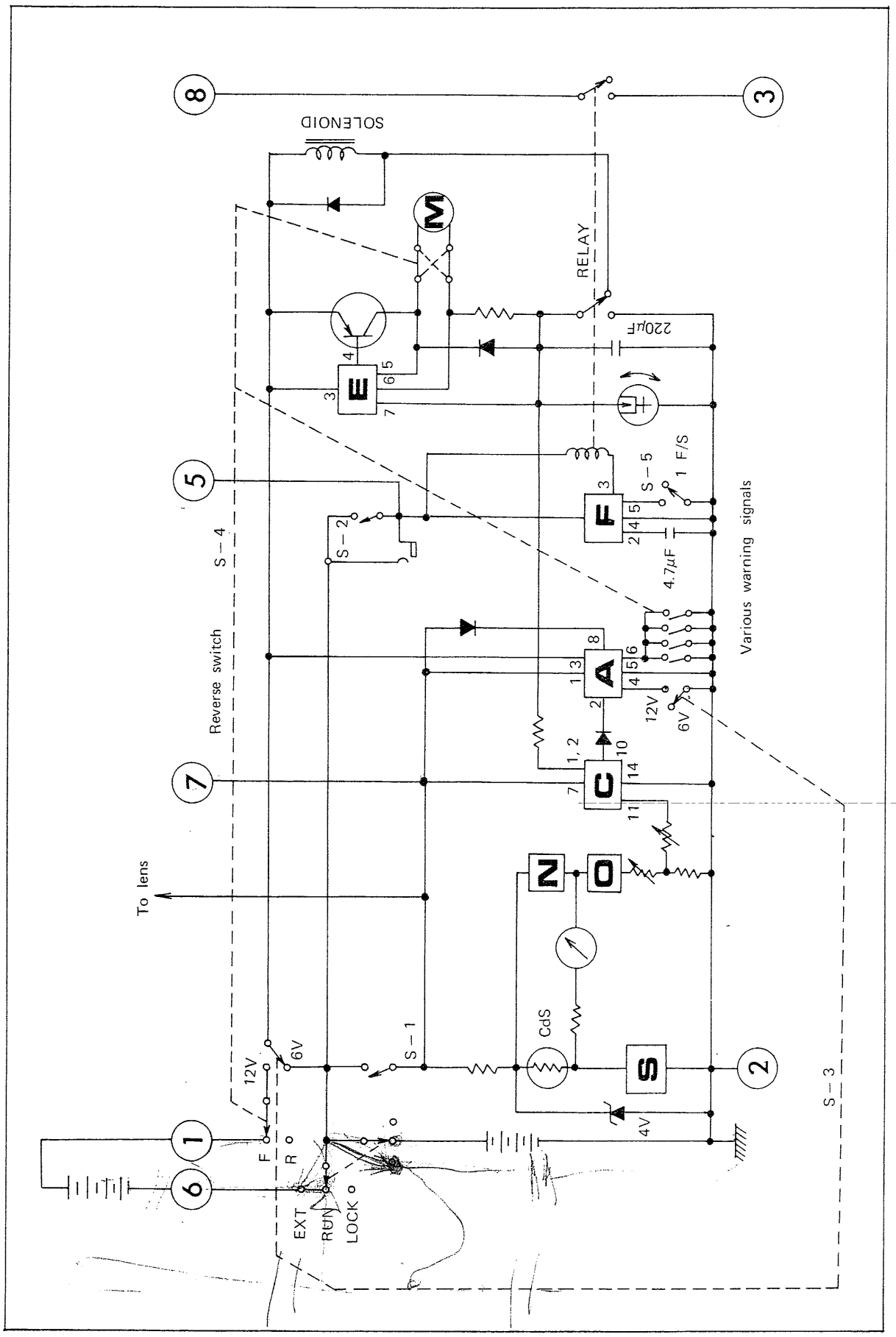
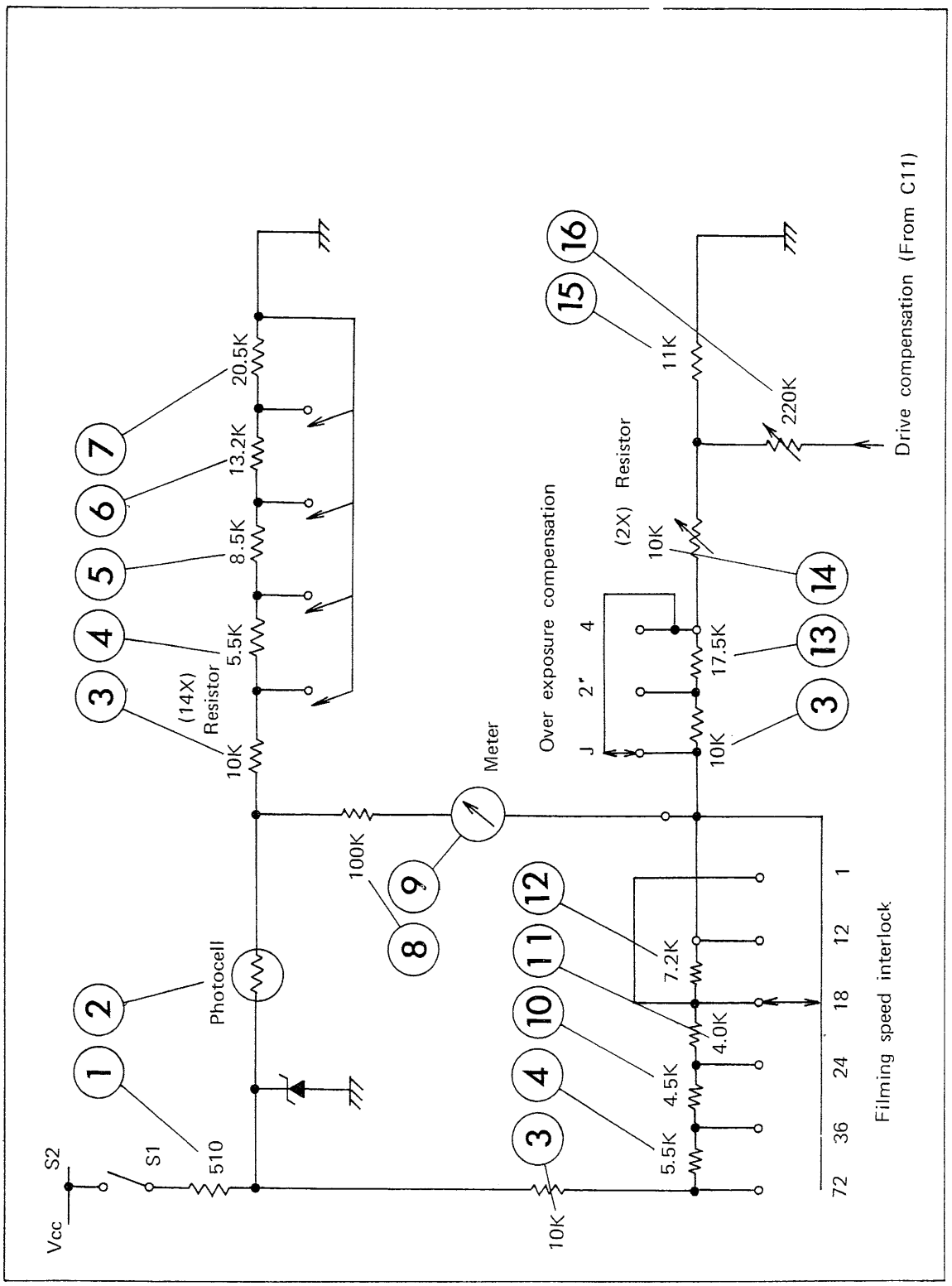

SOLENOID
RELAY
220μF
4.7μF
1 F/S
S – 5
S – 2
S – 4
Reverse switch
Various warning signals
12V
6V
To lens
CdS
S – 1
S – 3
4V
F
R
EXT
RUN
LOCK

Fig. 37


Vcc
S2
S1
510
1
2
Photocell
10K
(14X) Resistor
5.5K
8.5K
13.2K
20.5K
3
4
5
6
7
100K
8
9
Meter
10K
3
4
10
11
12
5.5K
4.5K
4.0K
7.2K
72
36
24
18
12
1
Filming speed interlock
Over exposure compensation
J
2'
4
(2X) Resistor
10K
17.5K
10K
3
13
14
15
16
11K
220K
Drive compensation (From C11)

Ⅳ INSPECTION

INSPECTION POINT	METHOD OF INSPECTION	REMARKS
1. EE SYSTEM	Before inspecting the camera, check batteries for rated voltage.	
1.1 Meter needle movement	Set the LOCK-RUN selector to "RUN", face the camera to a bright object and dark object alternately while depressing the shutter release button, and see if the meter needle moves accordingly and smoothly.	
1.2 Meter needle indication	(1) Load the camera with a cartridge (ASA 25), set the LOCK-RUN selector to "RUN", and depress the shutter release button. (2) Face the camera to a constant light source, and see if indication by the meter needle is within ±1 stop. NOTE: Constant light source should be f/4 or f/5.6.	
1.3 Meter needle operation for each filming speed	Under the condition described in 1.2 above, switch over filming speed from 18 F/S to 24 F/S or to 12 F/S, and see if deflection of the needle is within about 1/2 stop. Next, switch over filming speed from 18 F/S to 36 and from 36 F/S to 72 F/S and see if deflection of the needle is within about 1 stop. NOTE: Constant light source should be f/4 or f/5.6.	
2. FILM ADVANCING		
2.1 Operation of motor	(1) Depress the shutter release button, and see if the motor operates smoothly. (In this inspection, insure that the meter needle operates before the motor does.) Insure that motor operating sound is normal.	

INSPECTION POINT	METHOD OF INSPECTION	REMARKS
	(2) Set the F-R selector to "R", and insure that the motor operates normally at filming speed 1 F/S, 12 F/S, 18 F/S or 24 F/S but does not operate at 36 F/S or 72 F/S. (3) Install the grip loaded with four 1.5V penlight batteries on the camera, depress the shutter release button, and see if the motor operates correctly at each filming speed. (4) Load a cartridge, depress the shutter release button, and see if the film is advanced through film chamber window. (For this inspection, the film may be advanced approximately one meter.) Be sure to check both forward and reverse film feedings.	
2.2 Remote control	Set the LOCK-RUN selector to "RUN", connect a remote control switch to the camera, and see if the camera operates correctly.	
3. FOOTAGE/FRAME COUNTER 3.1 Footage counter	(1) Without loading cartridge, operate the camera and watch the footage counter. (A) The footage counter should operate smoothly up to 3 m (10 ft). (B) The footage counter should return to "S" smoothly when the film chamber lock is turned to "O". (2) Operate the footage counter up to 15 m (50 ft) and check if for correct return.	
3.2 Digital frame counter	Operate the variable shutter lever from OPEN to CLOSE side, and see if the digital frame counter counts "1". Return the variable shutter lever to OPEN side, and see if the digital frame counter returns to "O".	

INSECTION POINT	METHOD OF INSPECTION	REMARKS
4. GENERAL OPERATIONS		
4.1 Adjustment of visibility	See if the visibility adjust ring turns smoothly and is locked securely by the lock knob.	
4.2 LOCK-RUN selector	Set the LOCK-RUN selector to "LOCK", depress the shutter release button and insure that the motor does not operate.	
4.3 Variable shutter lever	Release click stop of the variable shutter lever, move the lever from OPEN to CLOSE, and see if it moves smoothly.	
4.4 Warning signal	(A) Insure that the warning signal (LED) which can be seen in the viewfinder flashes in the following cases: (a) Forward-reverse selector is set to "R". (b) Variable shutter lever is in a position other than "OPEN". (c) Fractional exposure lever is not set to "O". (d) The footage counter is approaching 15 m. (B) Insure that the warning signal (LED) lights when voltage of battery drops below the rated level.	
5. APPEARANCE	Check the camera body and name plates and insure that no scratch or dirt on them. Look into the viewfinder and insure that no dust or contamination is seen.	
6. SETTING PARTS OF CAMERA AFTER COMPLETING INSPECTION	(1) Frames-per-second speed control: 18 (2) Fractional exposure lever: O (3) Forward-reverse selector: F (4) LOCK-RUN selector: LOCK	

INSPECTION POINT	METHOD OF INSPECTION	REMARKS
	(5) Variable shutter lever: OPEN (6) Footage counter: S (7) Digital frame counter: O (8) Eyepiece ring: To camera side.	