作成承認印	配布許可印
ニコンカスタマーCS推進部 GM	

Lite•Touch Zoom 140 ED

FCA50001
FCA50021
FCA50201
(QD)

REPAIR MANUAL

Nikon | NIKON CORPORATION
Tokyo, Japan

Recycled paper
再生紙を使用しています

Printed in Japan June 2001

CONTENT

1. Specifications

Type of camera

35mm autofocus lens-shutter camera with Nikon zoom lens

Usable film

DX-coded 35mm film in film cartridge

Picture format Normal: 24x36mm / Panorama (Lite Touch Zoom 140ED QD only): 13.3x36mm

Lens

38mm f/5.3 ~ 140mm f/10.5, 8 elements in 10 groups (ED lens and aspheric lens are used)

Shutter

Programmed electronic type; also serves as diaphragm blades; Shutter speed: 2 to 1/500 seconds

Viewfinder

Real-image viewfinder; frame coverage: approx. over 80 % in regular-size frame; approx. 0.44 x magnification at 38mm, approx. 1.29 x at 140mm; Diopter adjustment: $-2\ m^{-1} \sim +1\ m^{-1}$, Antifog viewfinder

Viewfinder information

Image size frame with parallax compensation marks; Panorama-format frame marks (Lite Touch Zoom 140ED QD only); Autofocus frame marks: Green LED (in-focus indicator) – Lights up: subject focused, Blinks slowly (at 2 Hz): subject is too close to achieve correct focus, Blinks quickly (at 8 Hz): subject is difficult to focus; Orange LED (flash-ready light) – Lights up: flash ready, Blinks slowly (at 4 Hz): flash being charged, Blinks quickly (at 8 Hz): the popped-up flash unit is being pressed down

Focusing

Wide-Area Passive Autofocus system; Activeated by lightly pressing Shutter Release button; Distance range from approx. 0.74m (2.4 ft.) to infinity

Focus lock

Focus is locked as long as the Shutter Release button lightly pressed

Exposure control

Electronically controlled program AE: auto exposure range (ISO100): EV 4 – 16 at 38mm or EV 6 – 16 at 140mm, (ISO 400): EV 6 – 17 at 38mm, EV 6 – 18 at 140mm; Flash fires automatically if the available light is low

Film speed setting

ISO50, 100, 200, 400, 800, 1600, and 3200 film automatically set

Film loading

Film automatically advances to the first frame upon completion of film loading; With a film cartridge confirmation window

Frame counter

Shown in the LCD panel; Additive type; Counts back during film rewind

Self-timer

Electronically controlled; Activated by depressing the Shutter Release button; Self-timer lamp blinks and lights up to show when ready; Timer duration 10 seconds; Cancellable

Film advance

Film automatically advances by one frame after each shot; Auto rewind at the end of film roll; Mid-roll rewind function available

Remote control (optional)

Infrared wireless remote control; 2 sec. delay shutter release; Effective range is within approx. 5m (16.4 ft.) straight in front of the camera; One 3 V lithium (CR2025) battery. Battery will last for approx. 5 years; Dimensions (W x H x D): approx. 60 x 28 x 7mm (2.4 x 1.1 x 0.3 in.); Weight (including battery): approx. 10 g (0.35 oz.)

Built-in flash

Four flash modes available: Auto Flash, Flash Cancel, Anytime Flash, and Slow Sync Flash; Flash automatically fires when there is not enough light or subject is backlit; Flash shooting range (ISO 100): approx. 0.74 - 4.4m (2.4 - 14.4 ft.) at 38mm, approx. 0.74 - 2.5m (2.4 - 8.2 ft.) at 140mm, (ISO 400): approx. 0.74 - 8.8m (2.4 - 28.9 ft.) at 38mm, approx. 0.74 - 5.0m (2.4 - 16.4 ft.) at 140mm; Shutter release button is locked during flash charging; Recycling time approx. 6 sec.

Red-eye Reduction mode

Red-eye Reduction lamp lights up for approx. 1 sec. before flash fires.

Battery life

Approx. 10 rolls of 24-exposure film when flash is used for half the exposures

LCD panel (Power is on)

Frame counter, Flash mode, Red-eye Reduction, Self-timer/Remote Control, Infinity Focus mode, Low battery power, Date recording (Lite Touch Zoom 140ED QD only), Time/Date (Lite Touch Zoom 140ED QD only)

Power source

One 3 V lithium battery (CR123A type or DL123A)

Date imprint function (Lite Touch Zoom 140ED QD only)

Imprint uses 7-dot LED; Functions with panorama-format pictures; Auto film speed setting with DX codes (ISO 50 - 3200); Printed date include year, month, day, hour, (24-hour cycle with no AM/PM) and minute with five choices; Year/Month/Day, Month/Day/Year, Day/Month/Year, Day/Hour/Minute, and no-imprint; Leap year adjustment until 2040; Power source is the same as the camera body; Built-in clock with timing accuracy within ± 90 seconds a month

Dimensions (W x H x D)

Approx. 114 x 62.5 x 43mm (4.5 x 2.5 x 1.7 in.)

Weight (without battery)

Lite Touch Zoom 140ED: Approx. 220 g (7.7 oz.)
Lite Touch Zoom 140ED QD: Approx. 225 g (7.9 oz.)

- Specifications apply when a fresh battery is used at normal temperature (20 °C or 68 °F).
- Specifications and design are subject to change without notice.

2 .Disassembly

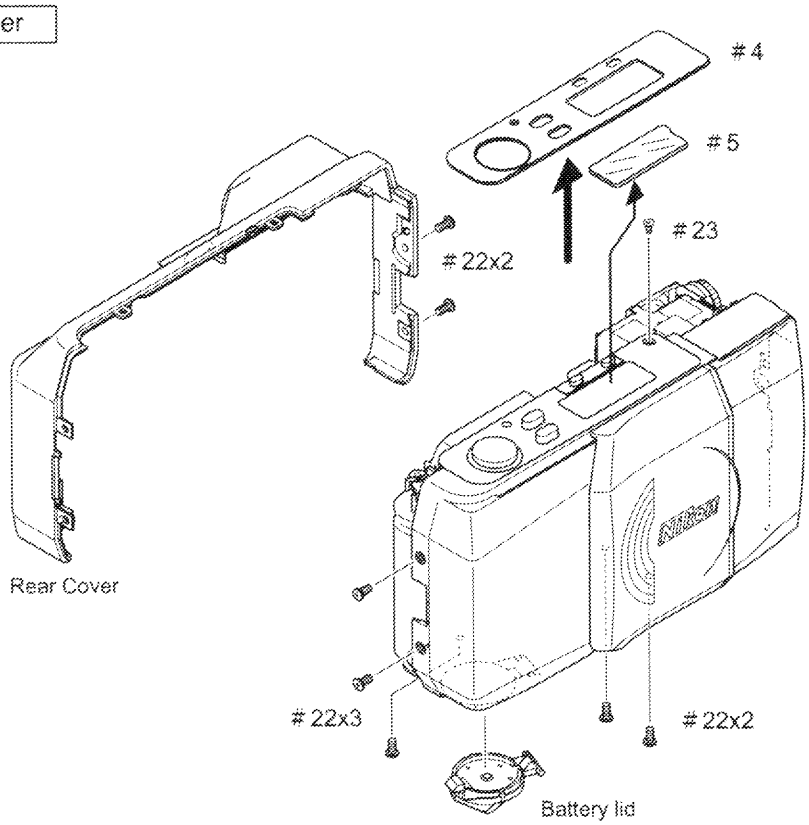
⚠ WARNING

- There are high voltege parts inside. Be careful of this electric shock, when you remove the cover.
- You must discharge the main condenser according to the instruction of this repair manual after you remove the frontcover.

Note

① Remove the batteries before beginning disassembly.
② When disassembling the camera, be certain to remember how wires are attached, which types of screws go where, etc.
③ Electronic components are vulnerable to damage from static electricity. Always be certain to ground yourself when handling such components.
④ Make sure which side is back or forth when taking off the gear.
⑤ Special processing (blur-resistant processing) is applied to the eyepiece unit of this camera. The eyepieceunit is liable to damage. Don't damage it during cleaning.
⑥ Do not wipe the external cover, etc. with the mixed liquid of ether.

Rear Cover

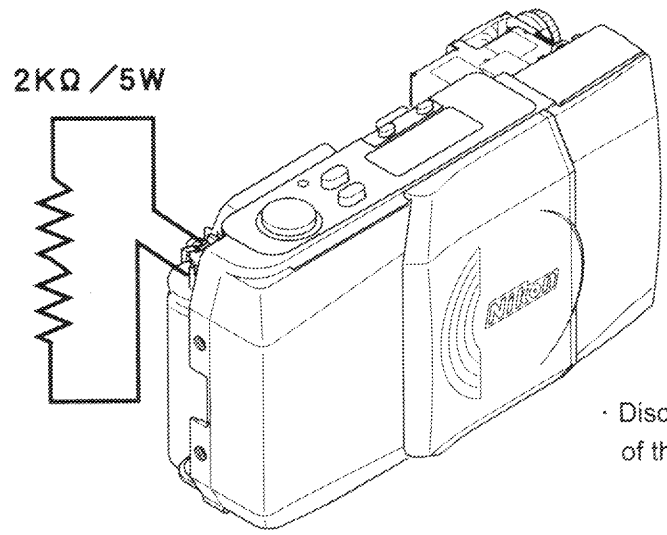


Caution: Don't touch the eyepiece unit directly.
Use a special cloth for cleaning.
Refer to TECHNICAL INFORMATION Ref.No.999086.

Discharge from Main Capacitor

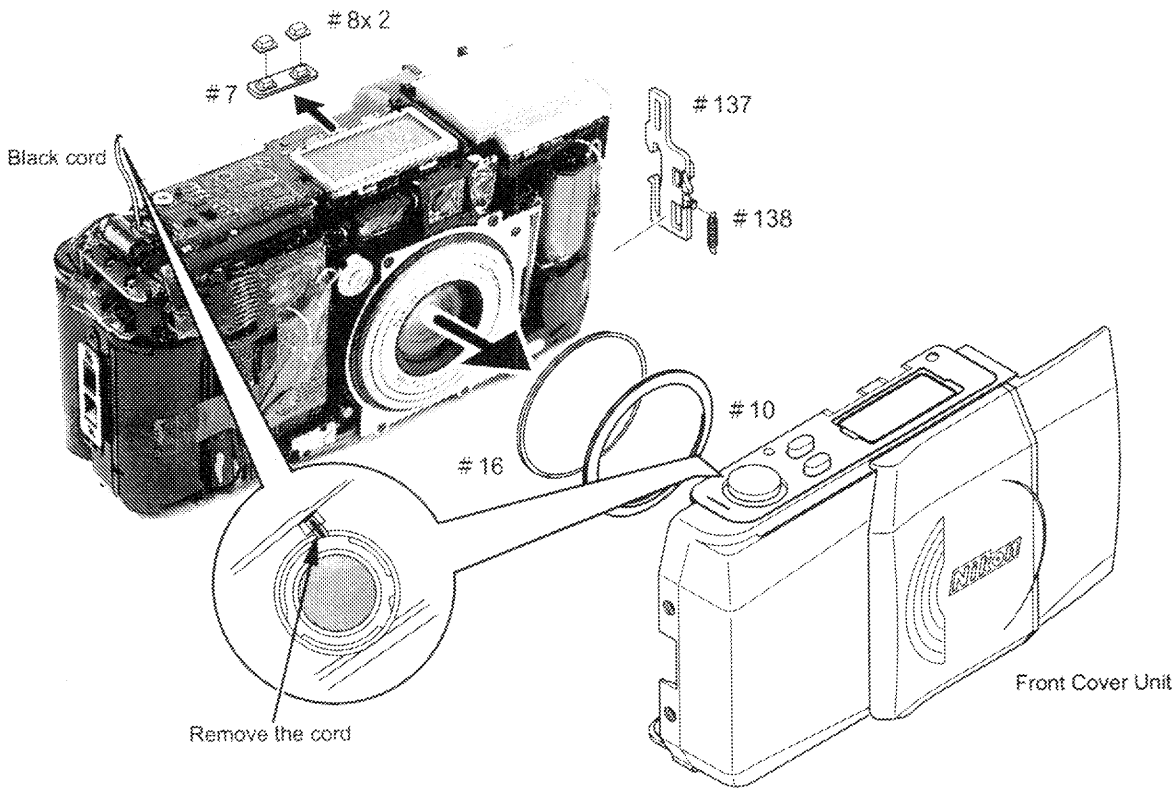
⚠ WARNING

- There are high voltege parts inside. Be careful of this electric shock, when you remove the cover.
- You must discharge the main condenser according to the instruction of this repair manual after you remove the frontcover.



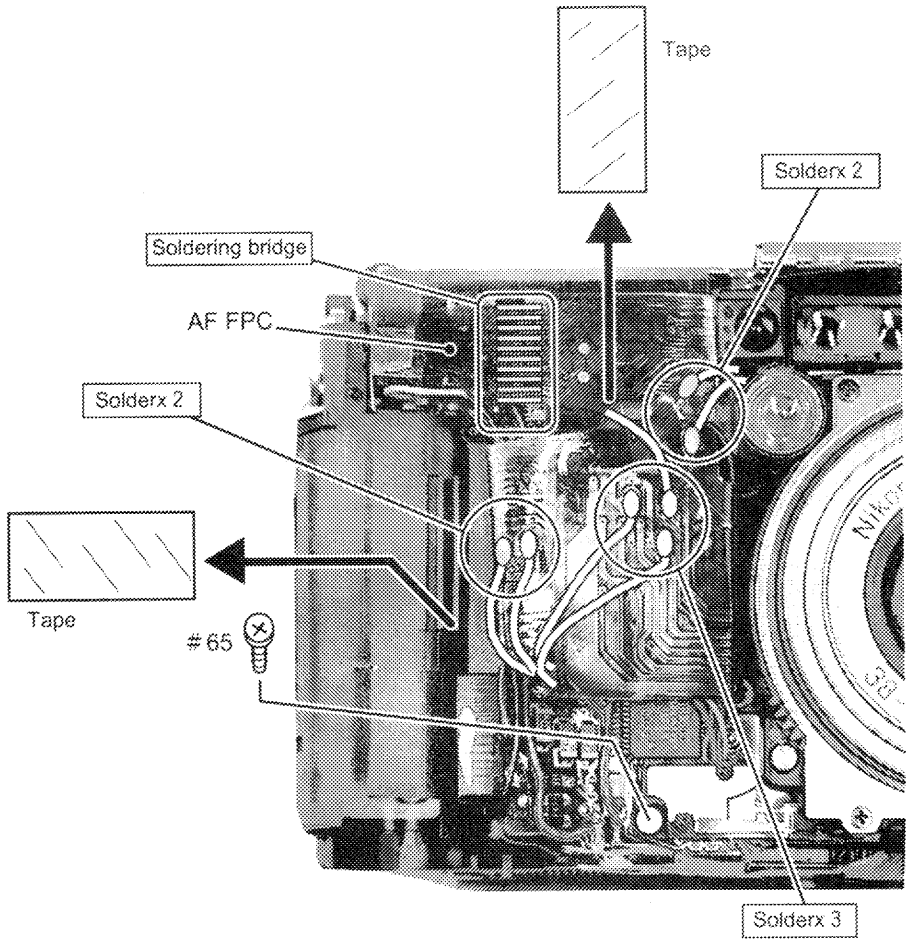
・Discharge the electricity between the both terminals of the main capacitor.

Front Cover Unit

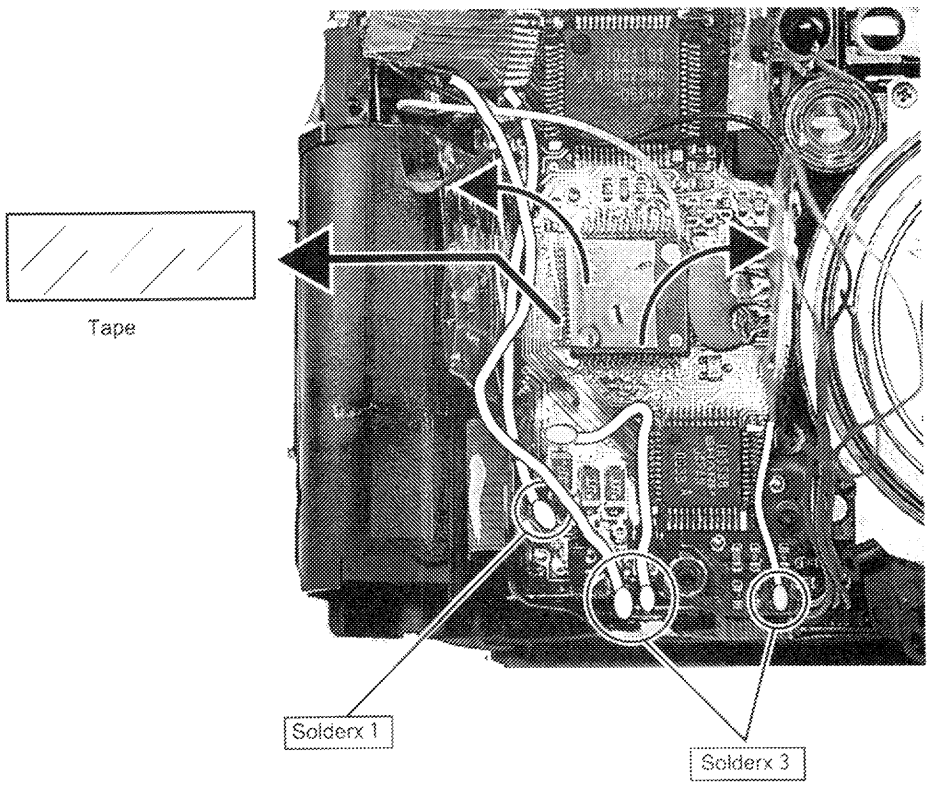


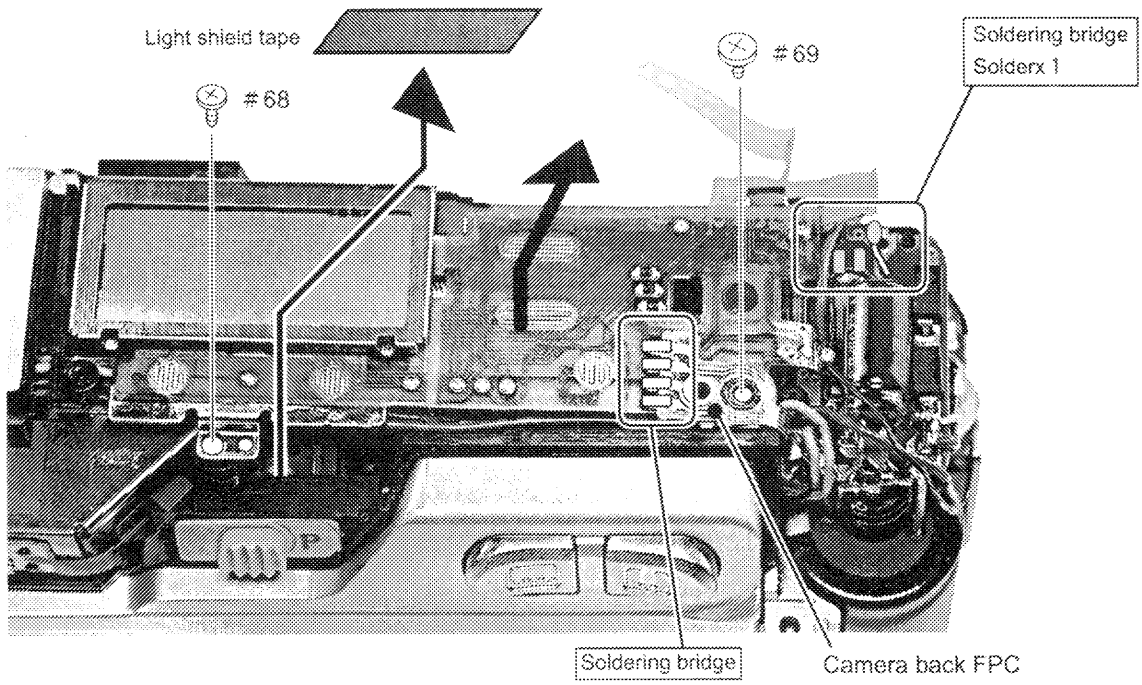
Main FPC

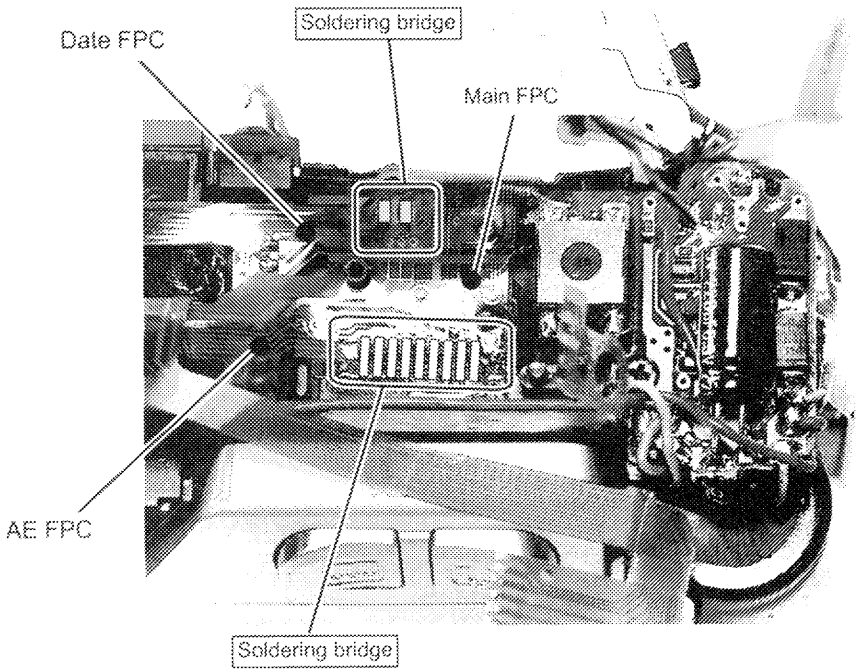
・Remove the solder of the soldering bridges and cords.

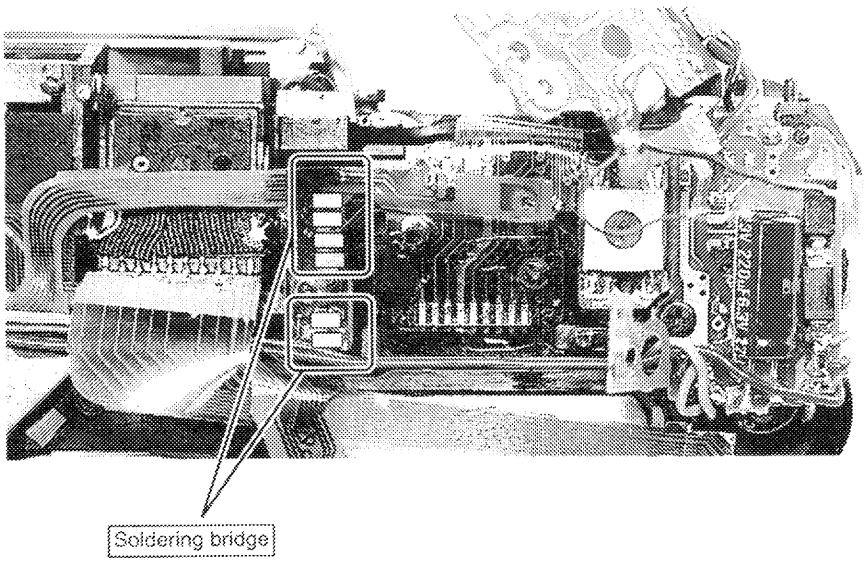


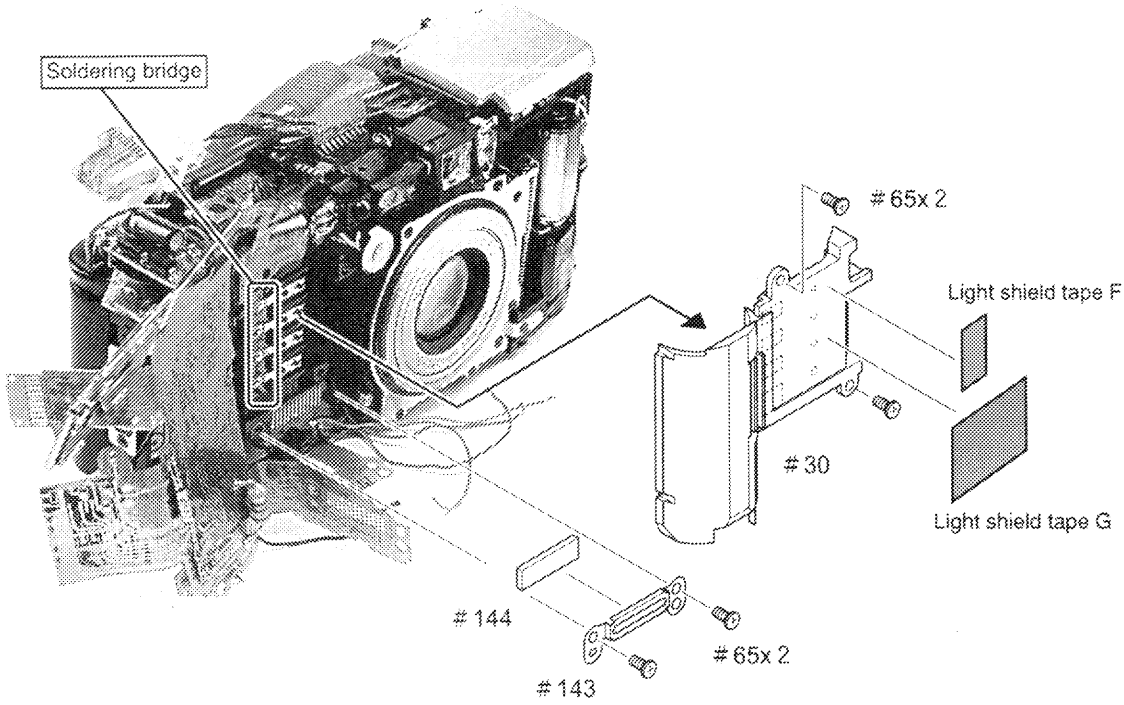
・Open the main FPC to both sides after removing the solder of the soldering bridges and cords.

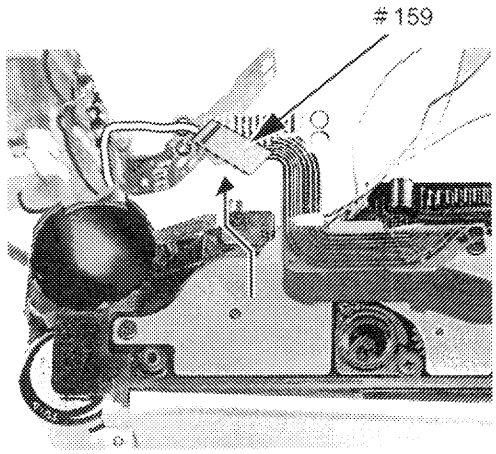


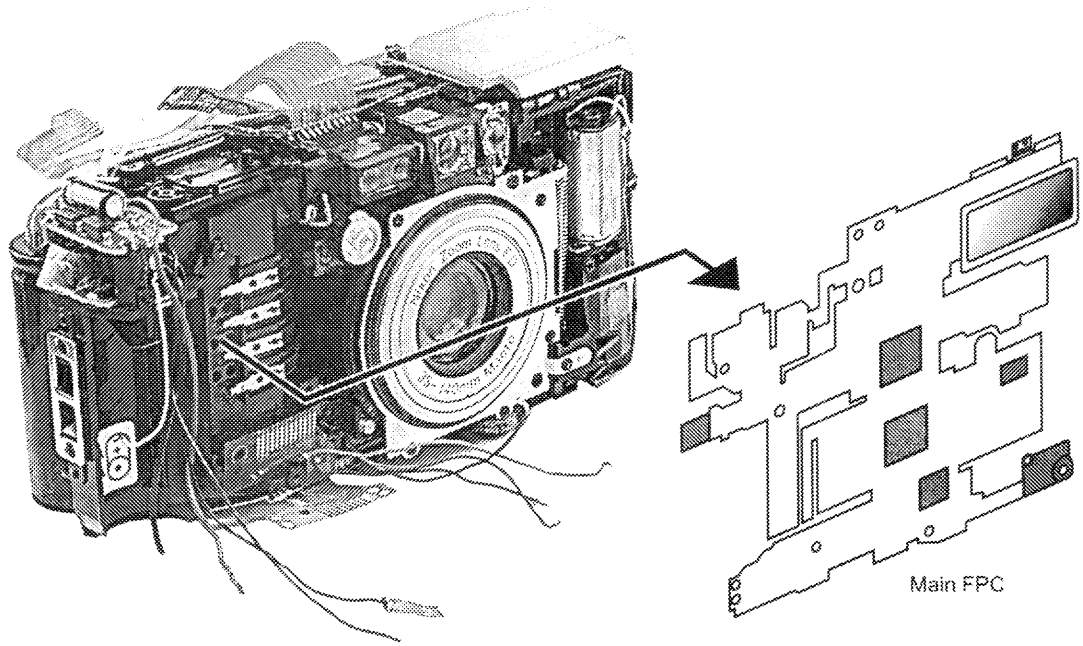

Light shield tape
#68
#69
Soldering bridge
Solderx 1
Soldering bridge
Camera back FPC


Date FPC
Soldering bridge
Main FPC
AE FPC
Soldering bridge

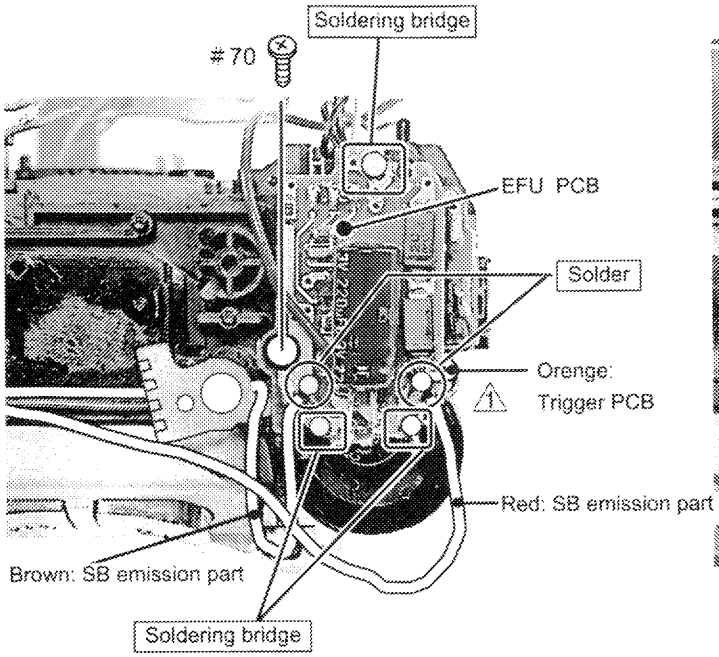

Soldering bridge

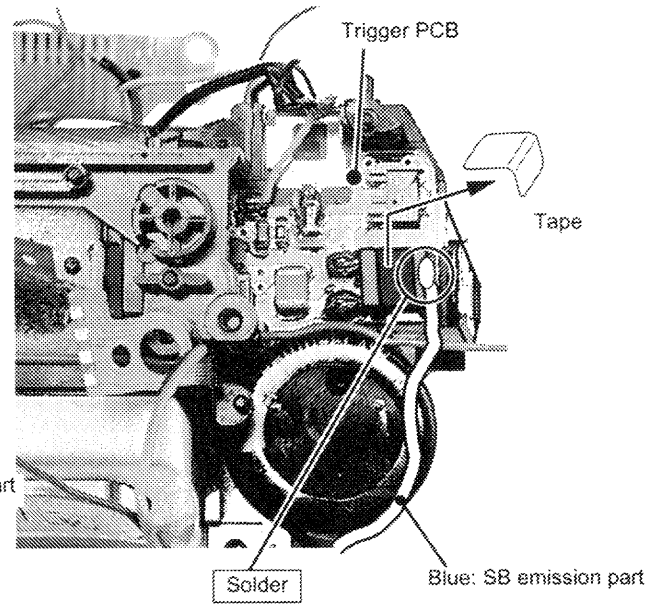

Soldering bridge
65x 2
Light shield tape F
30
Light shield tape G
144
65x 2
143


159


Main FPC

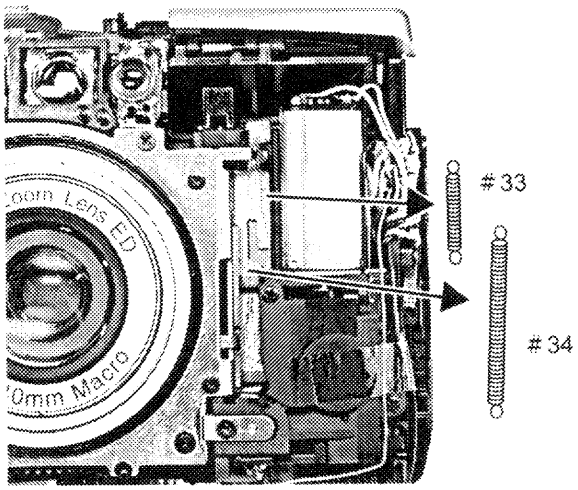
EFU PCB

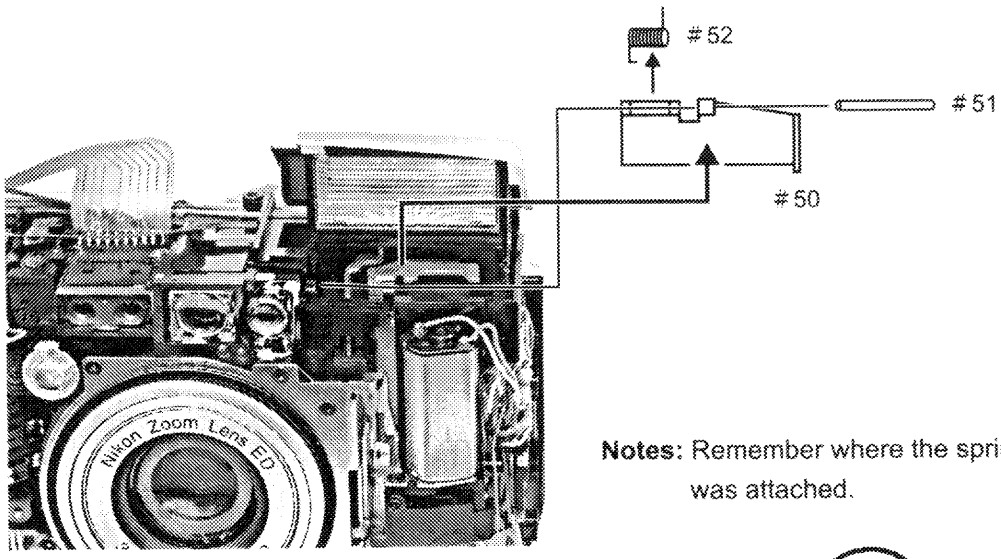




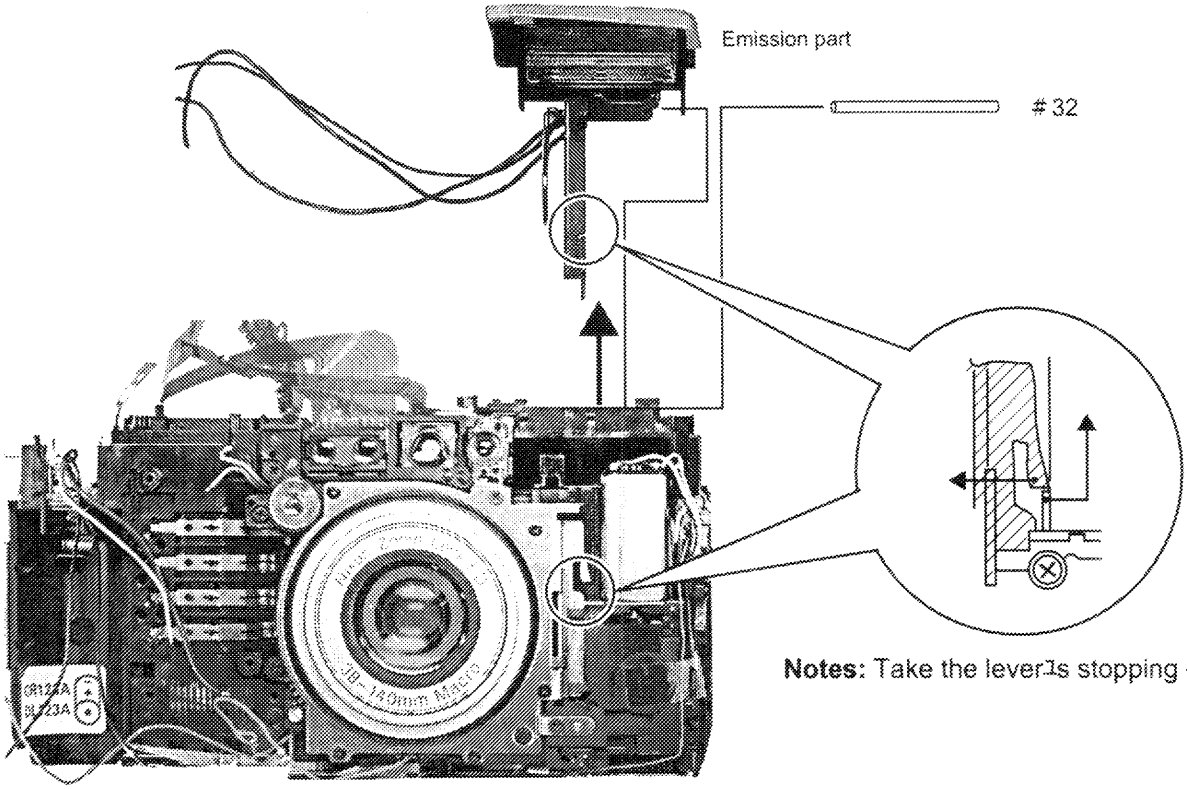
・Remove the EFU PCB.

SB Emission Part

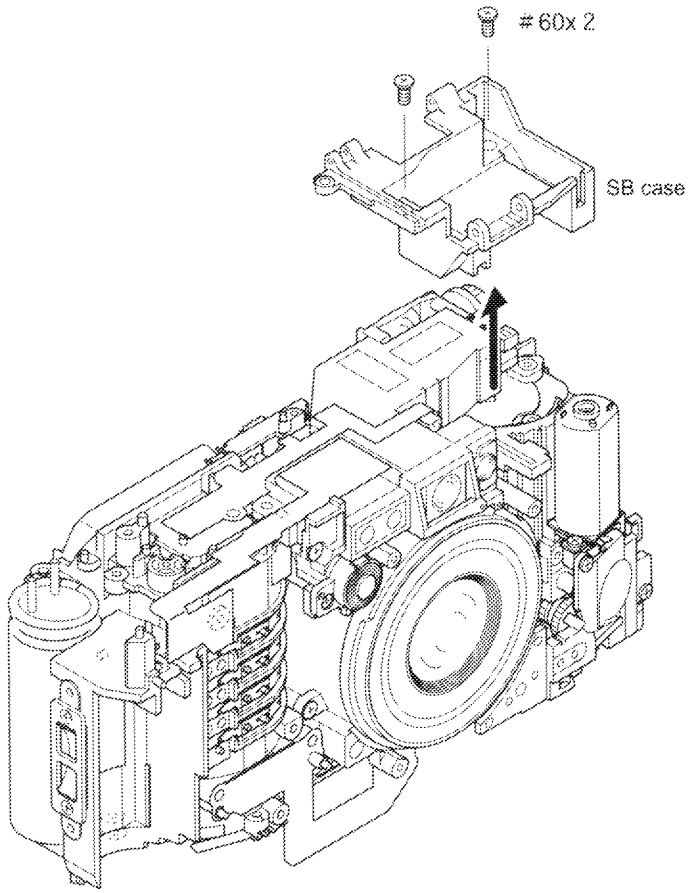




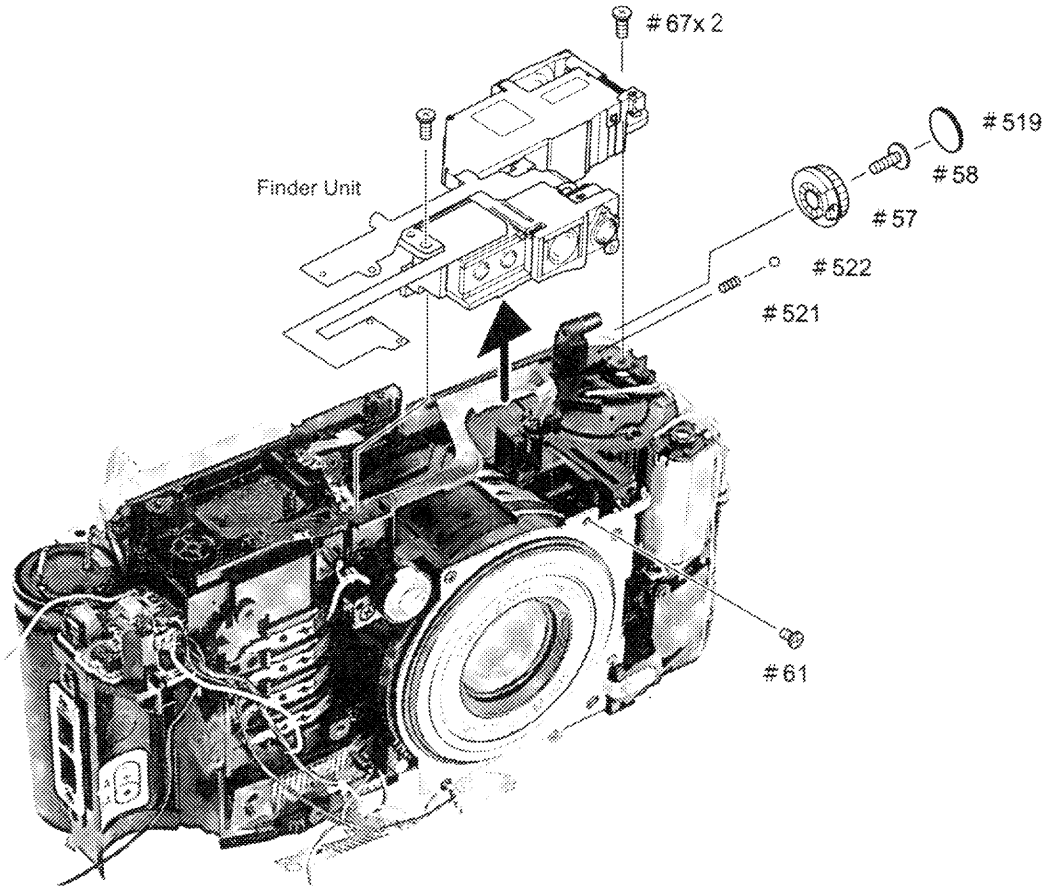
Notes: Remember where the spring (#52) was attached.



Notes: Take the lever 1s stopping off.

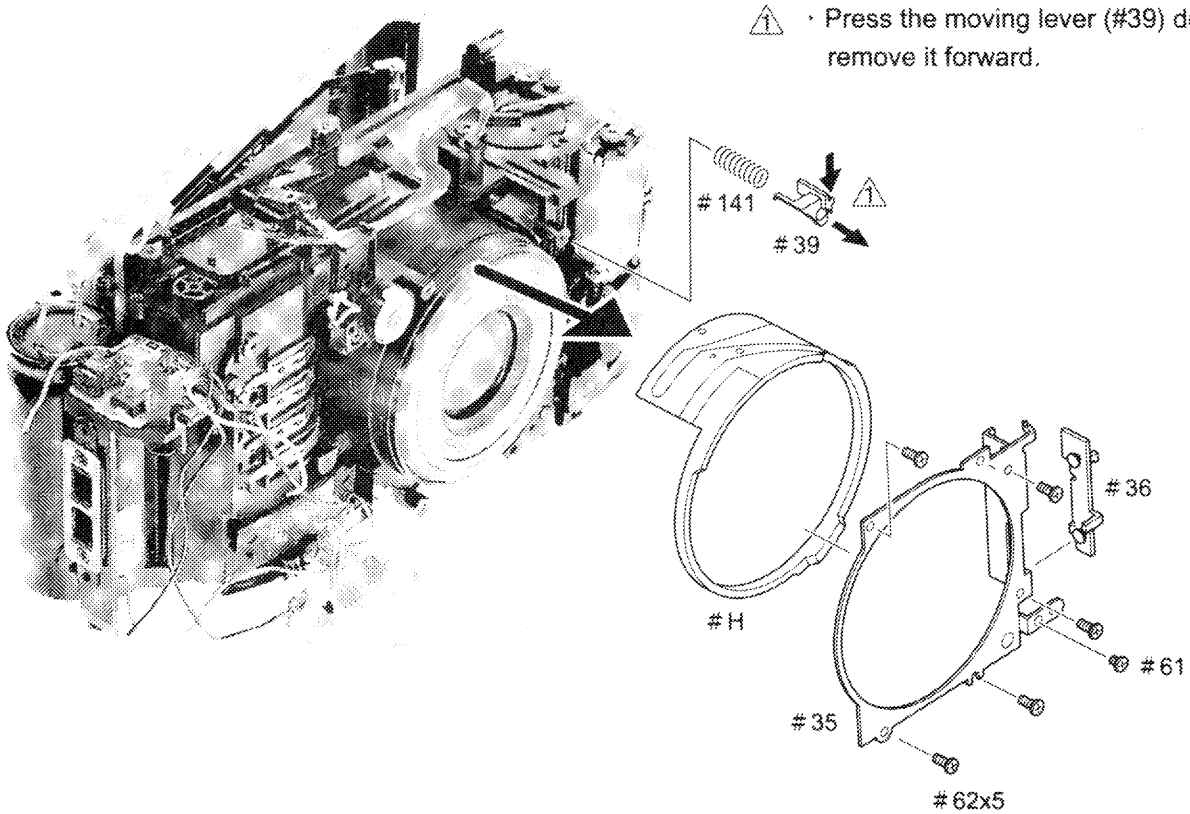


Finder Unit



Finder Cam

⚠ · Press the moving lever (#39) downward and remove it forward.



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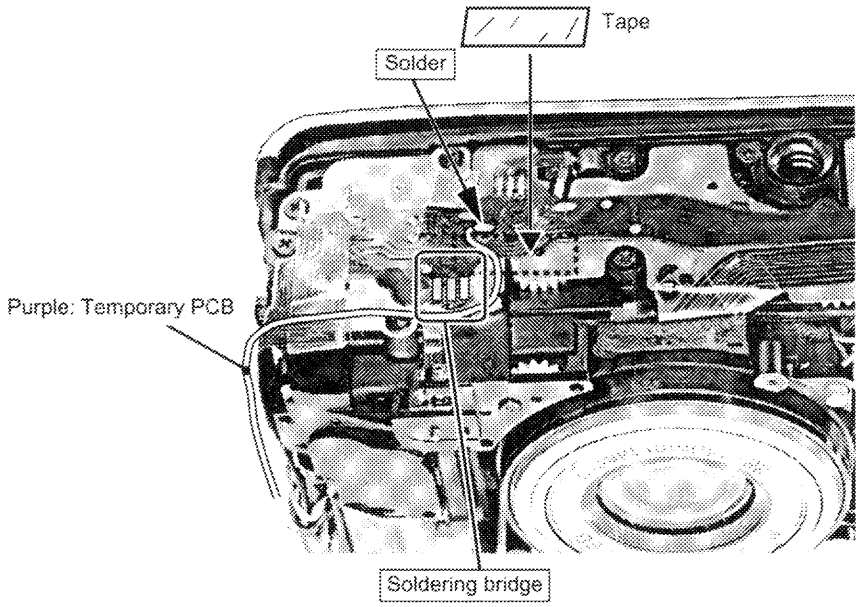
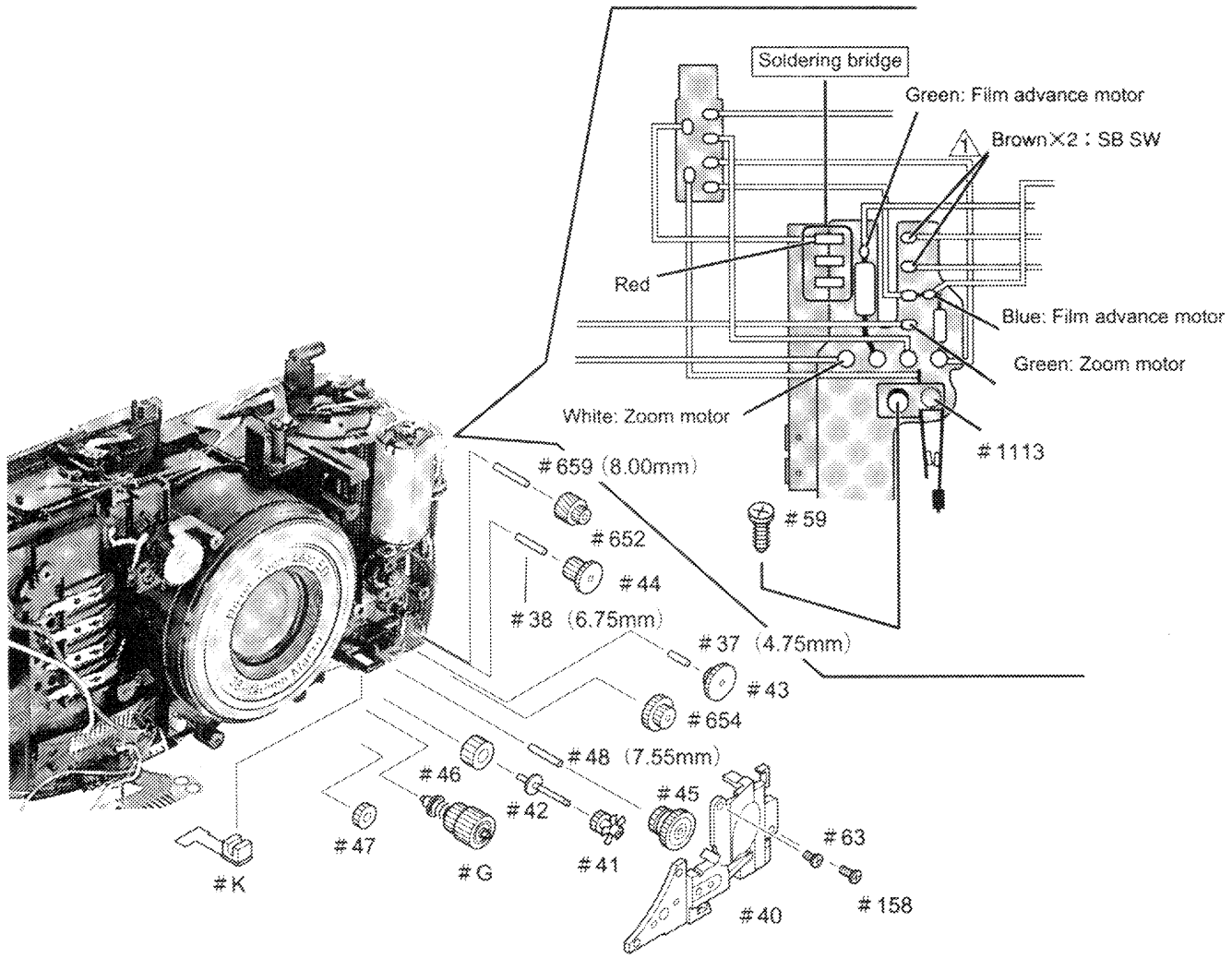
Zoom Gear





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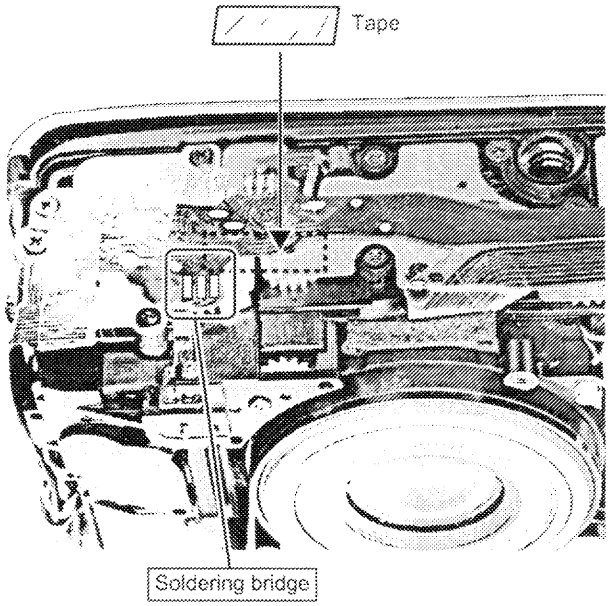
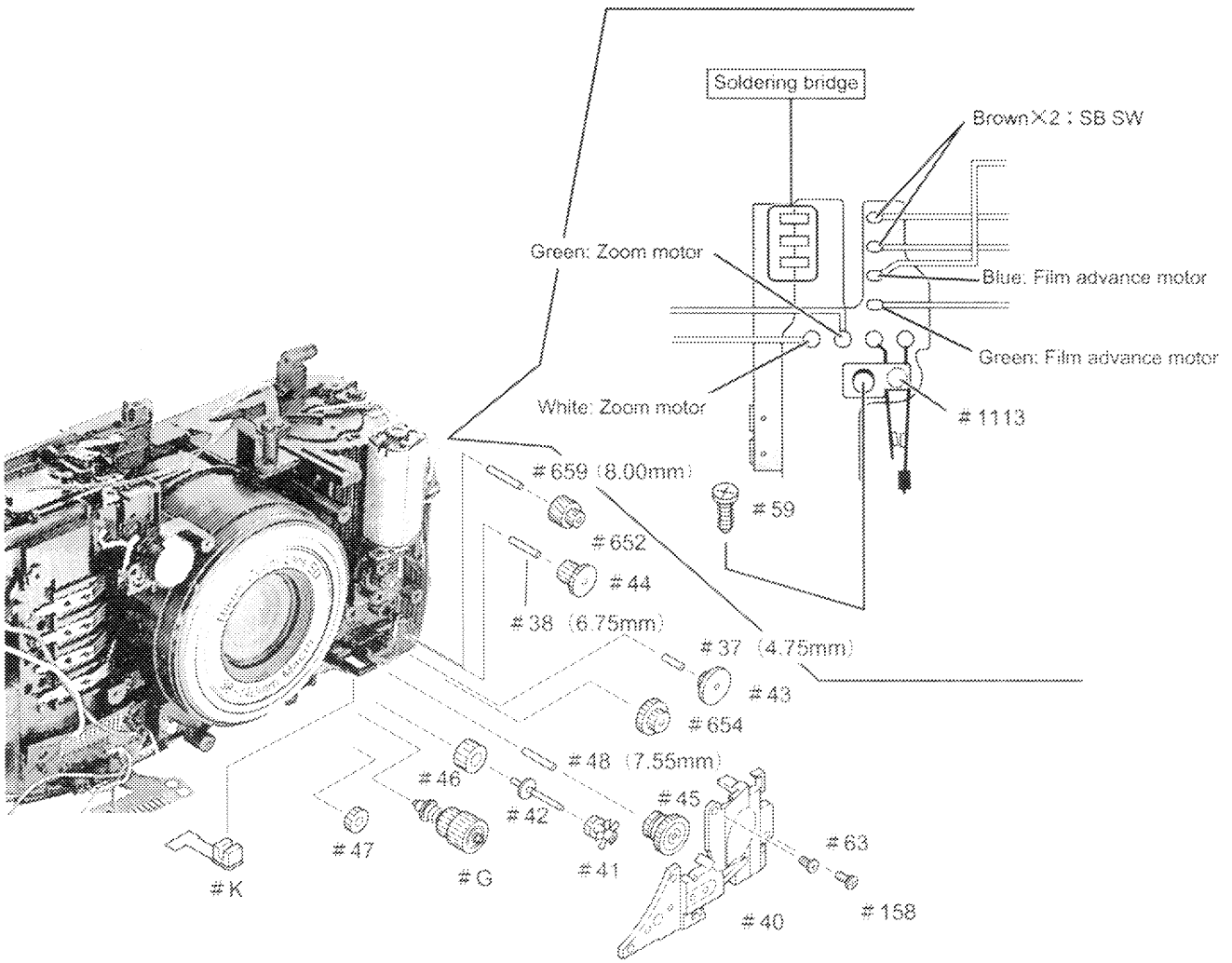
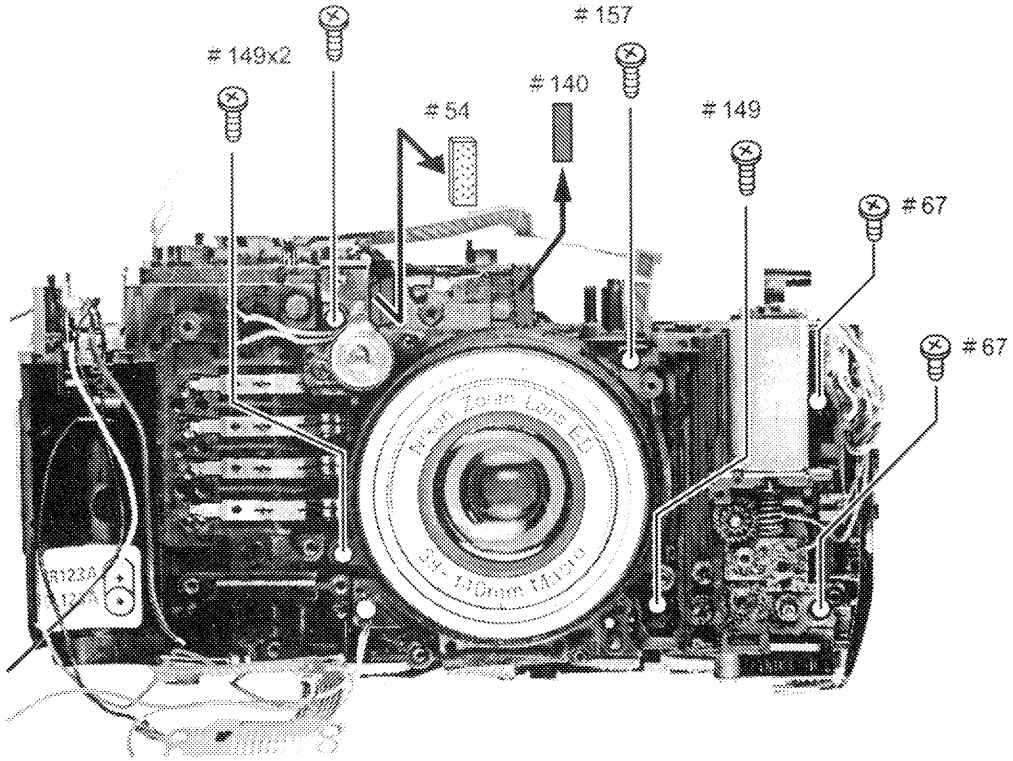
Zoom Gear

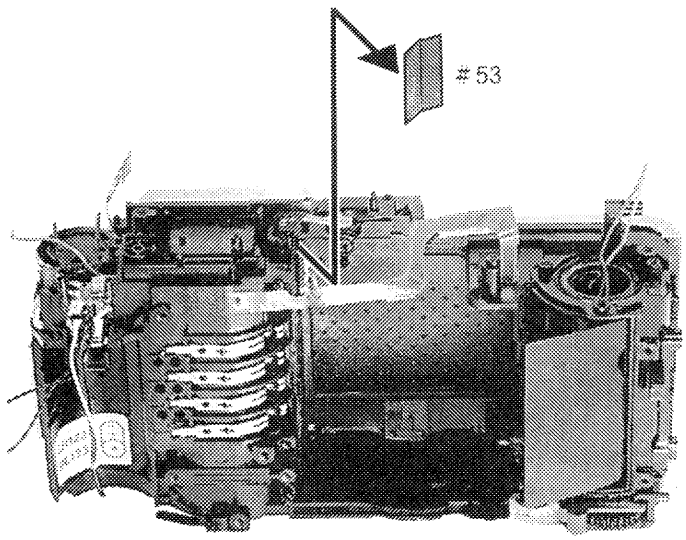
After type D



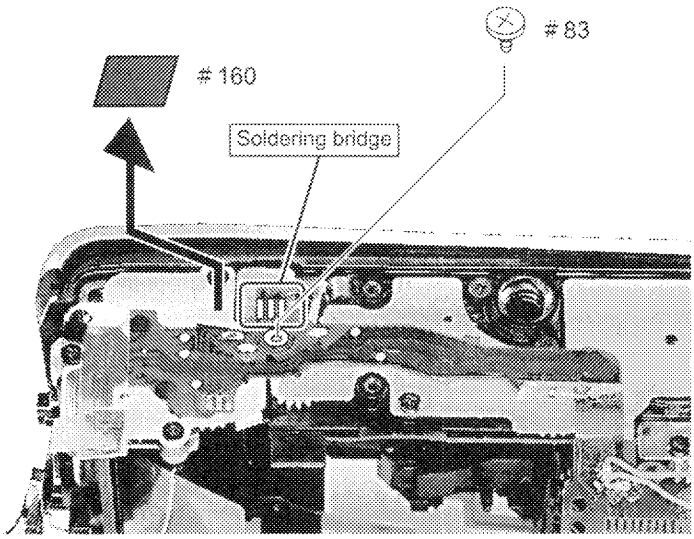


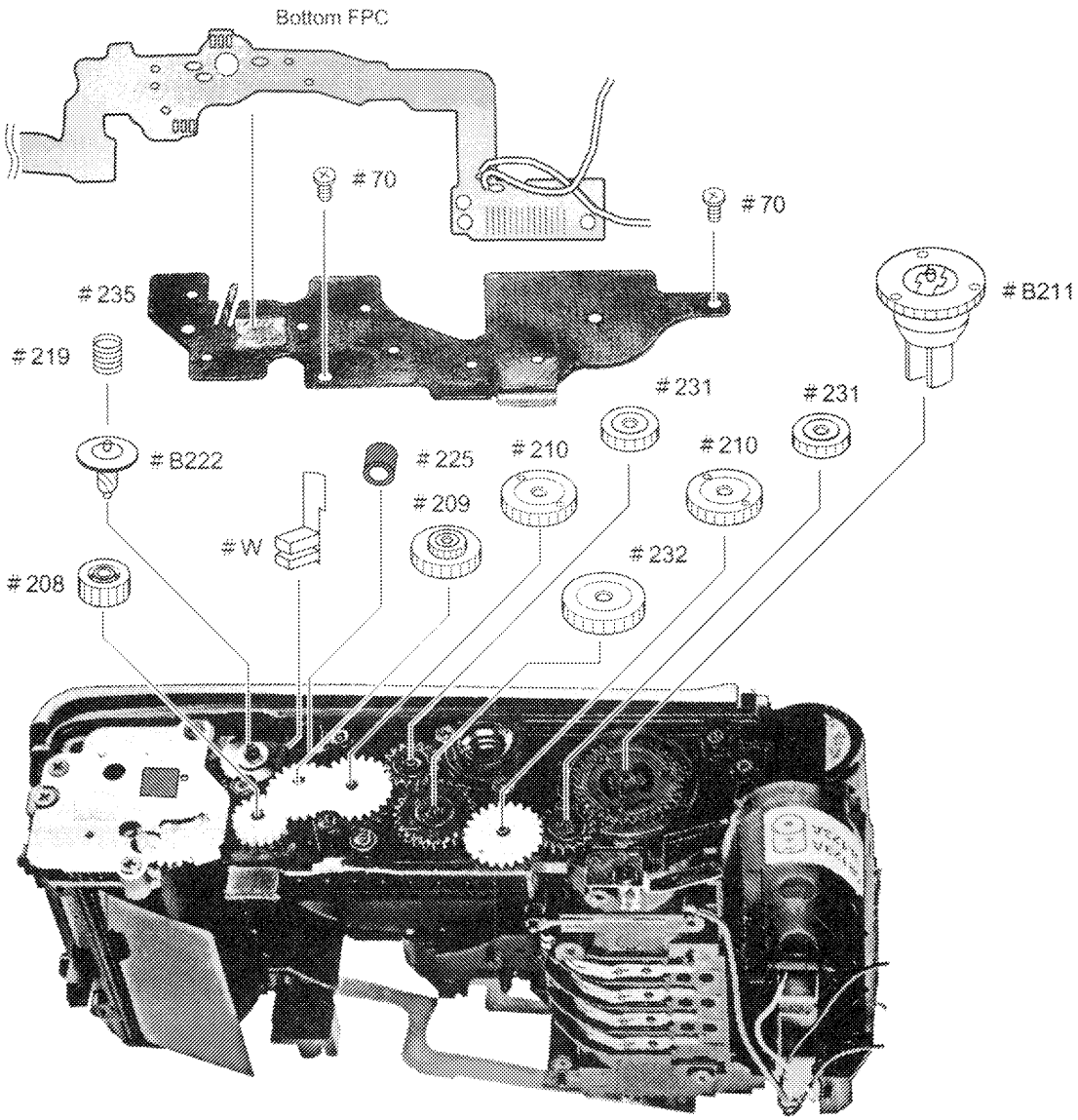
Separation of Lens Barrel Unit



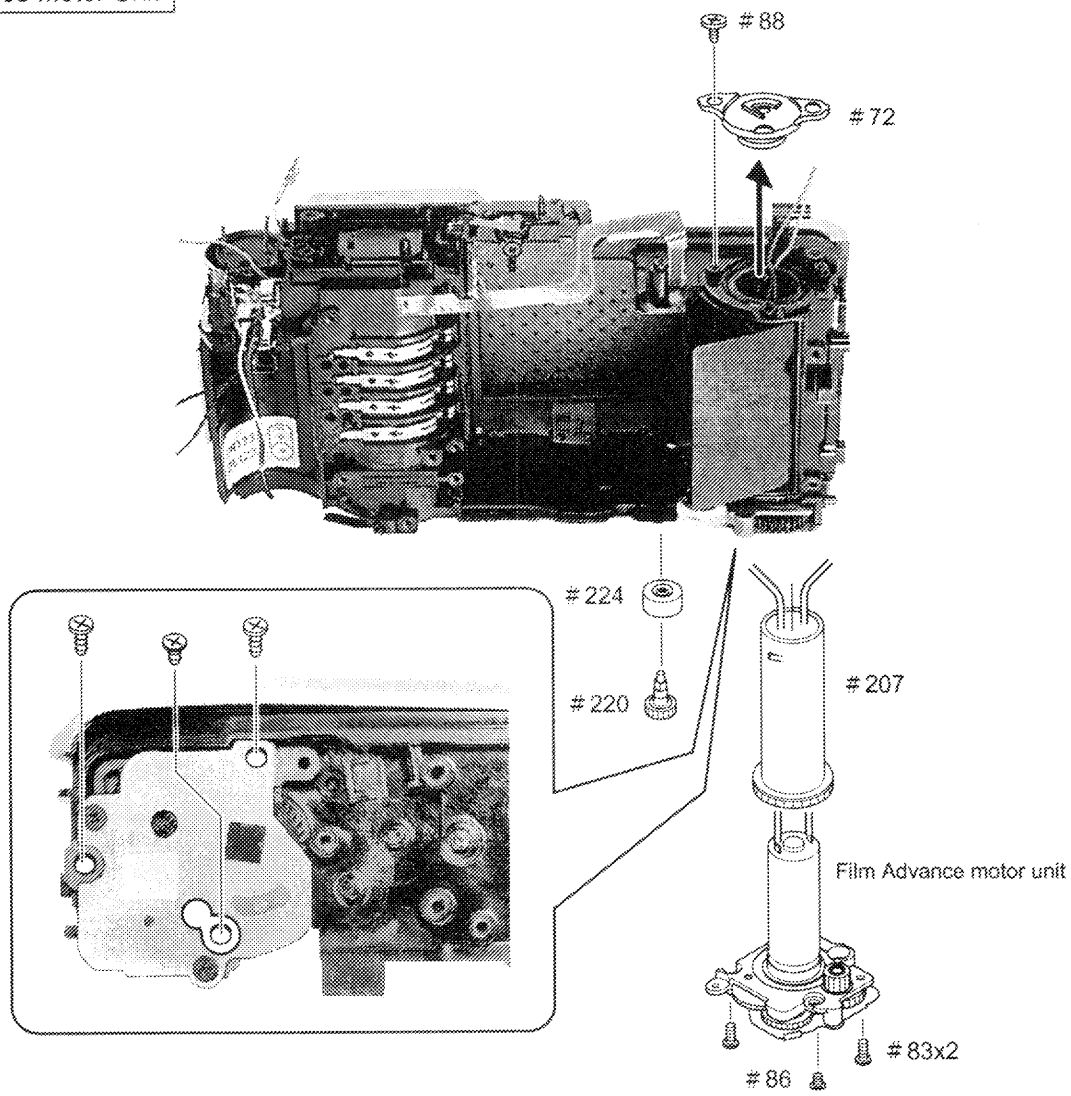


Film Advance Gear

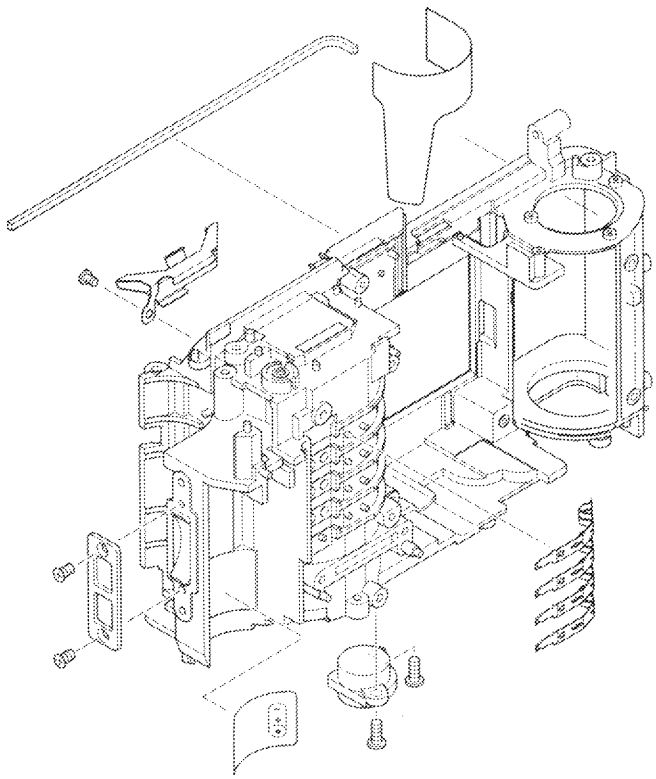


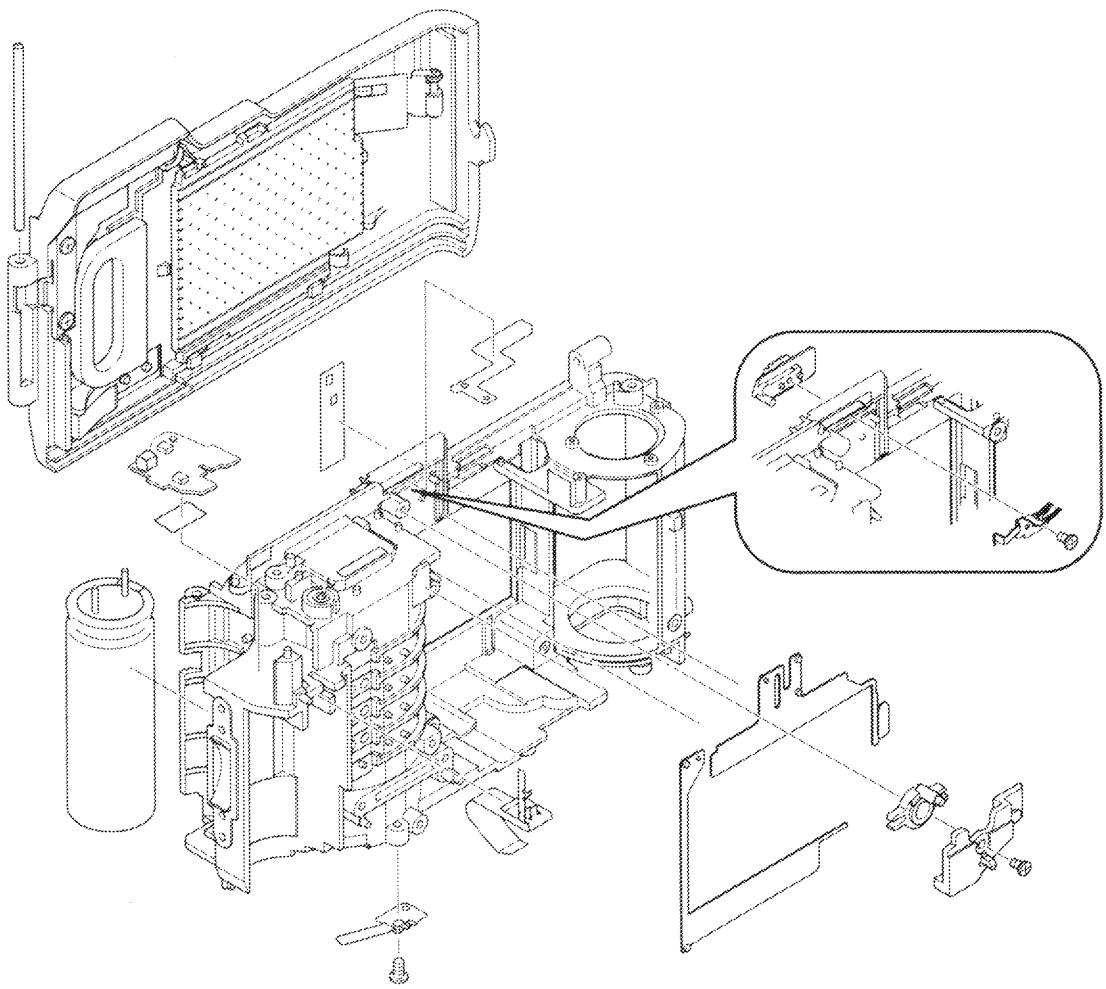


Film Advance Motor Unit

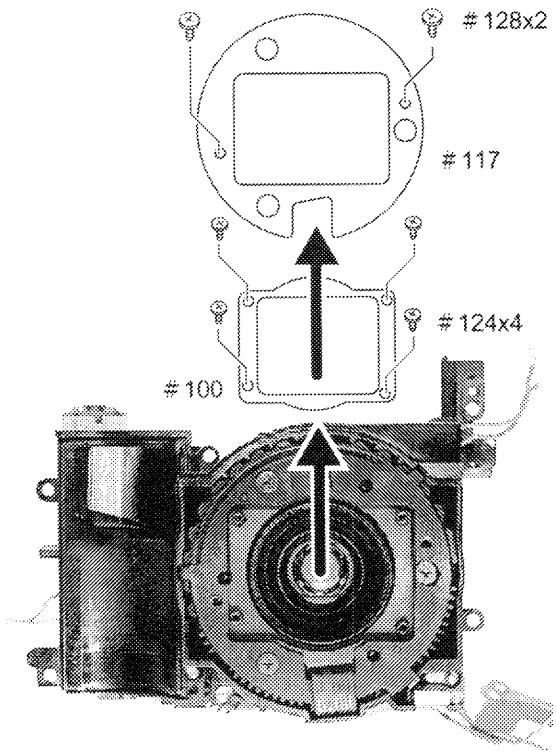


Rear Body and the Other Parts

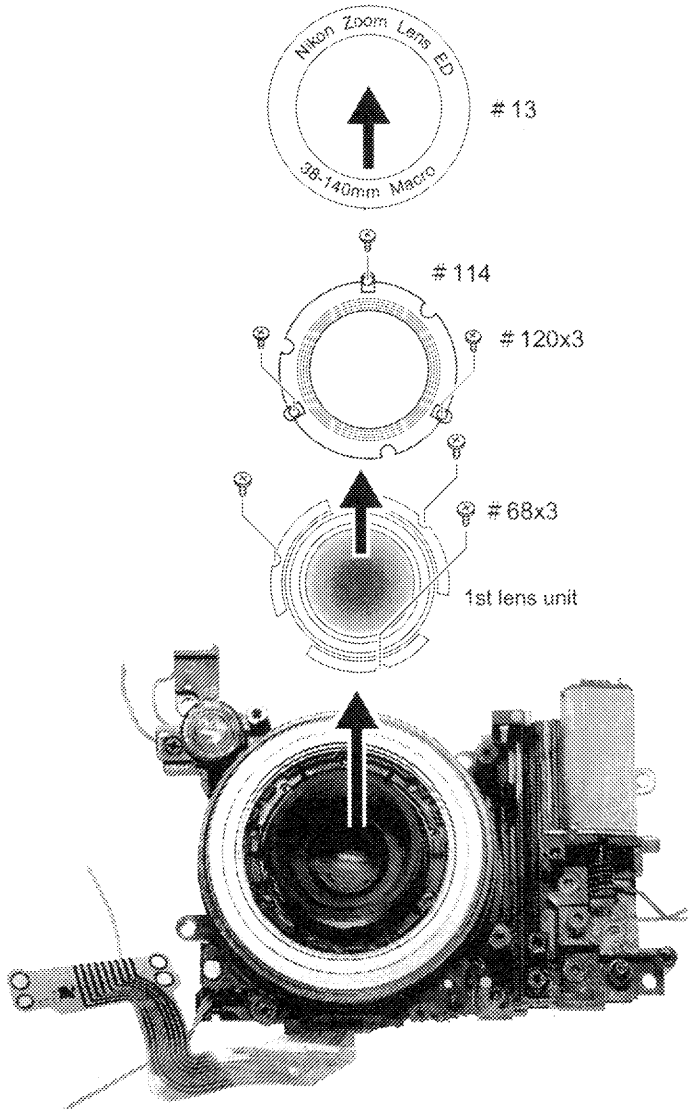




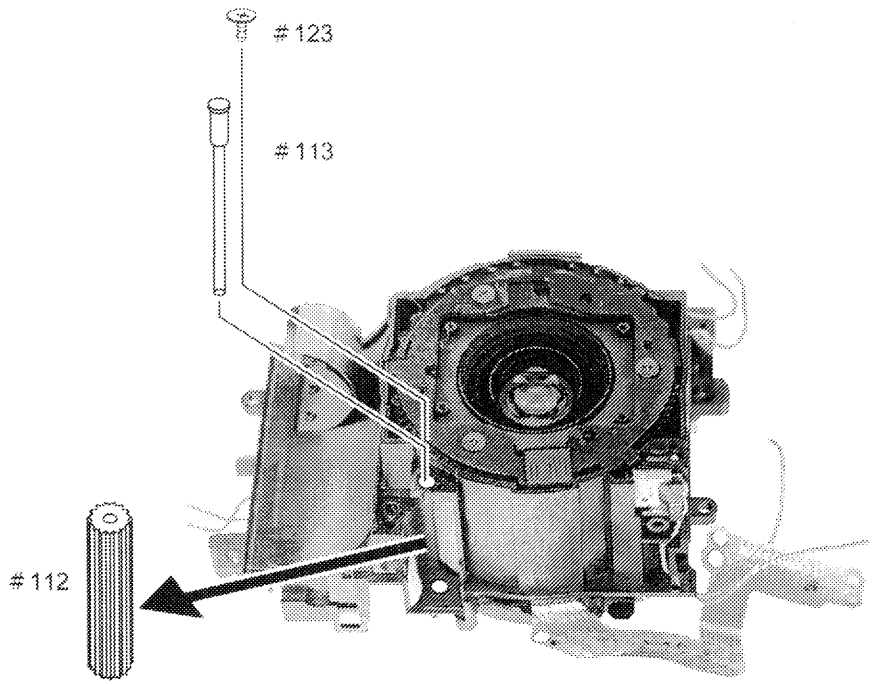
Rear Light Shield Frame



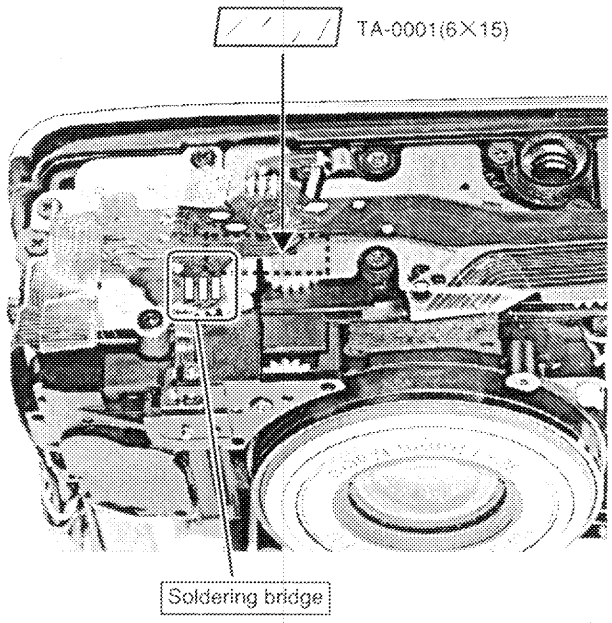
1st Lens Unit



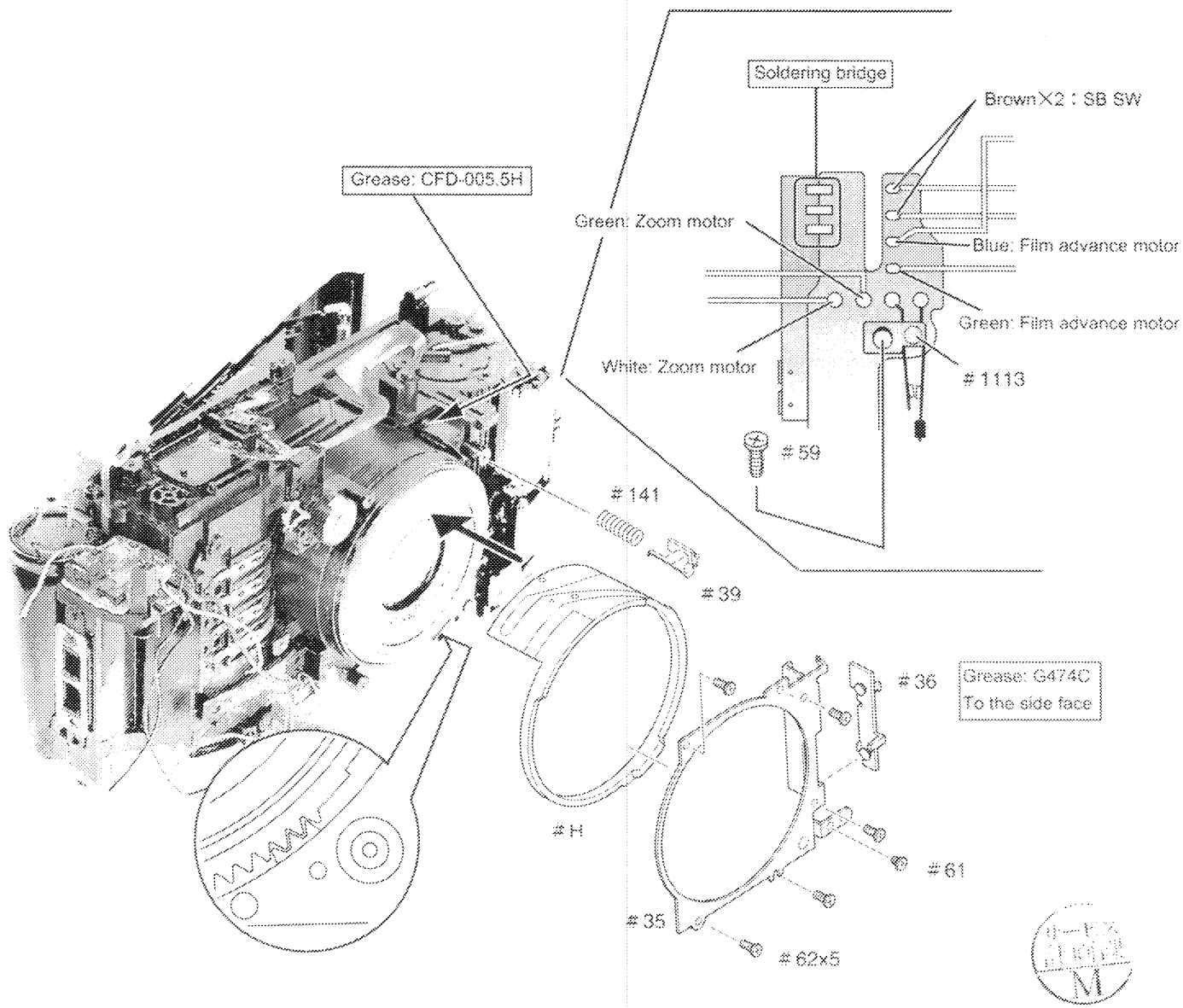
Zoom Coupling Gear



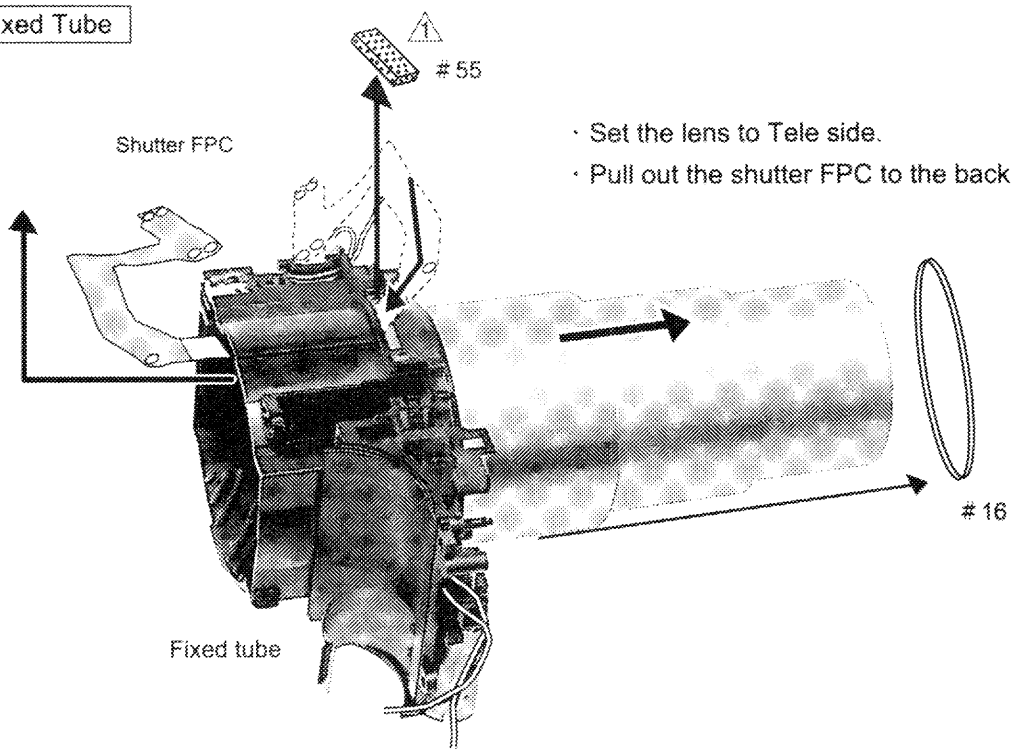
After type D



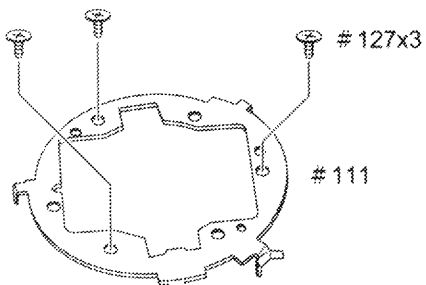
Finder Cam

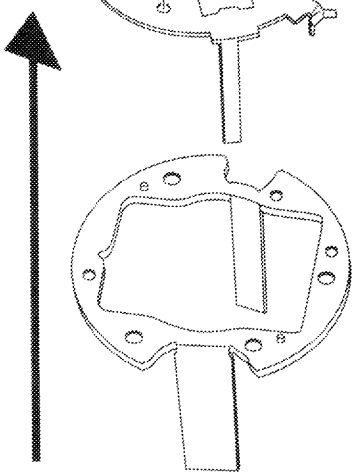


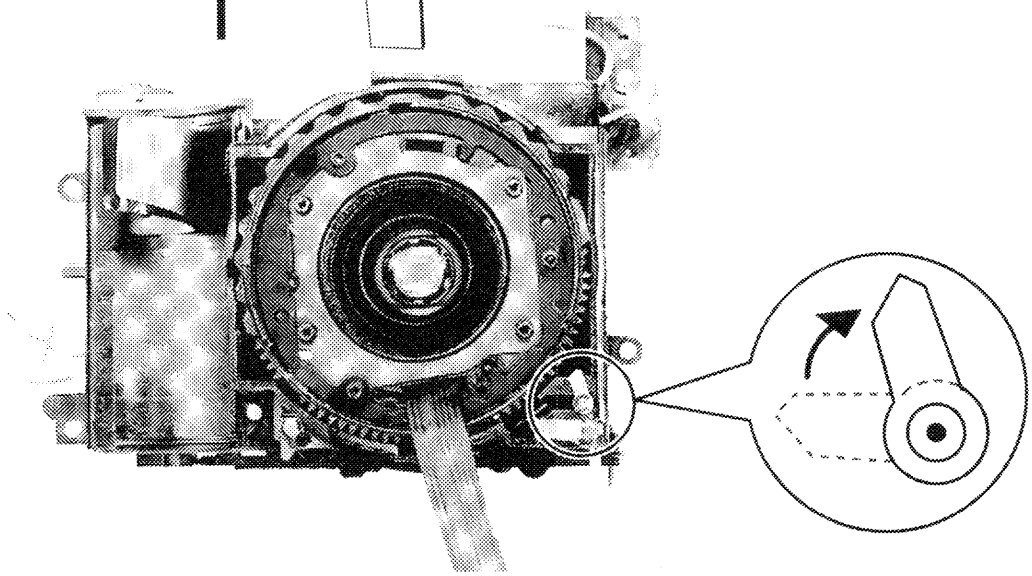
Fixed Tube



・Set the lens to Tele side.
・Pull out the shutter FPC to the back of the fixed tube.







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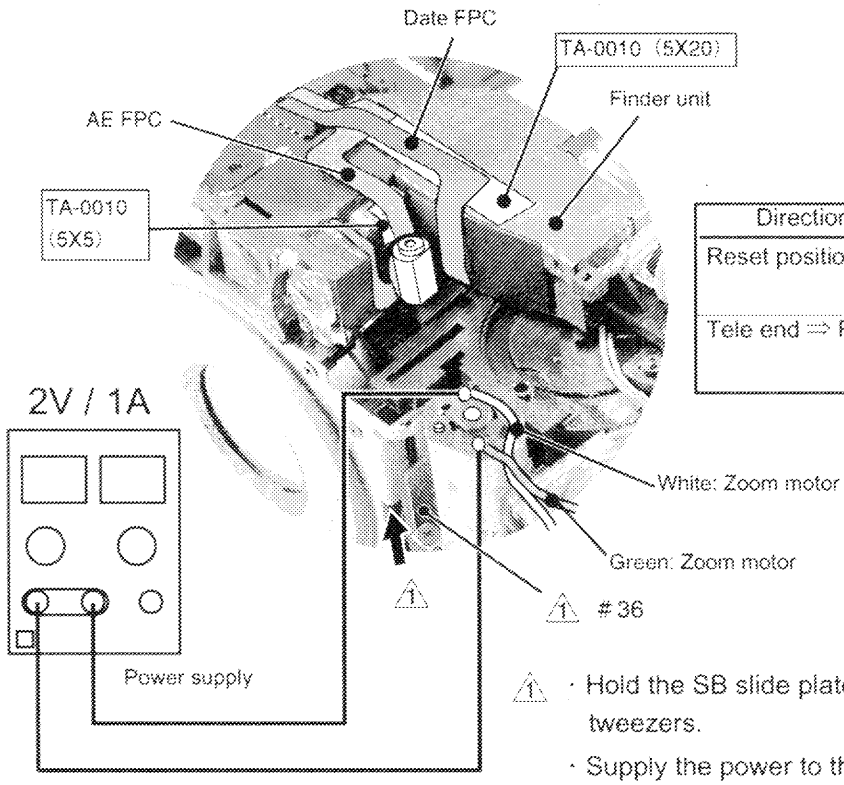
Arrangement of FPC and Confirmation of Finder Operation



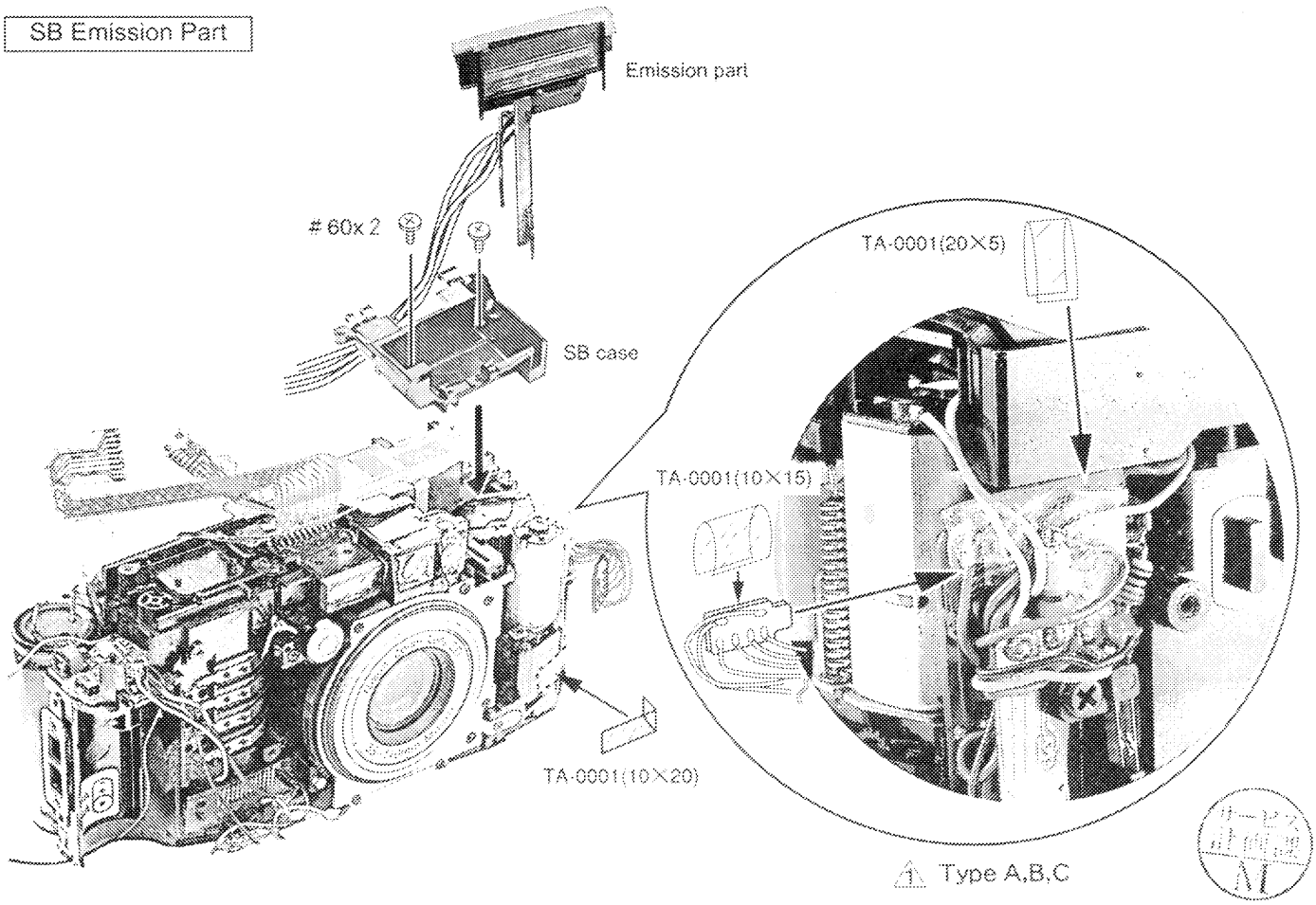
Direction to move	Polarity of the power supply	
Reset position ⇒Tele end	Green cord	−
	White cord	+
Tele end ⇒ Reset position	Green cord	+
	White cord	−

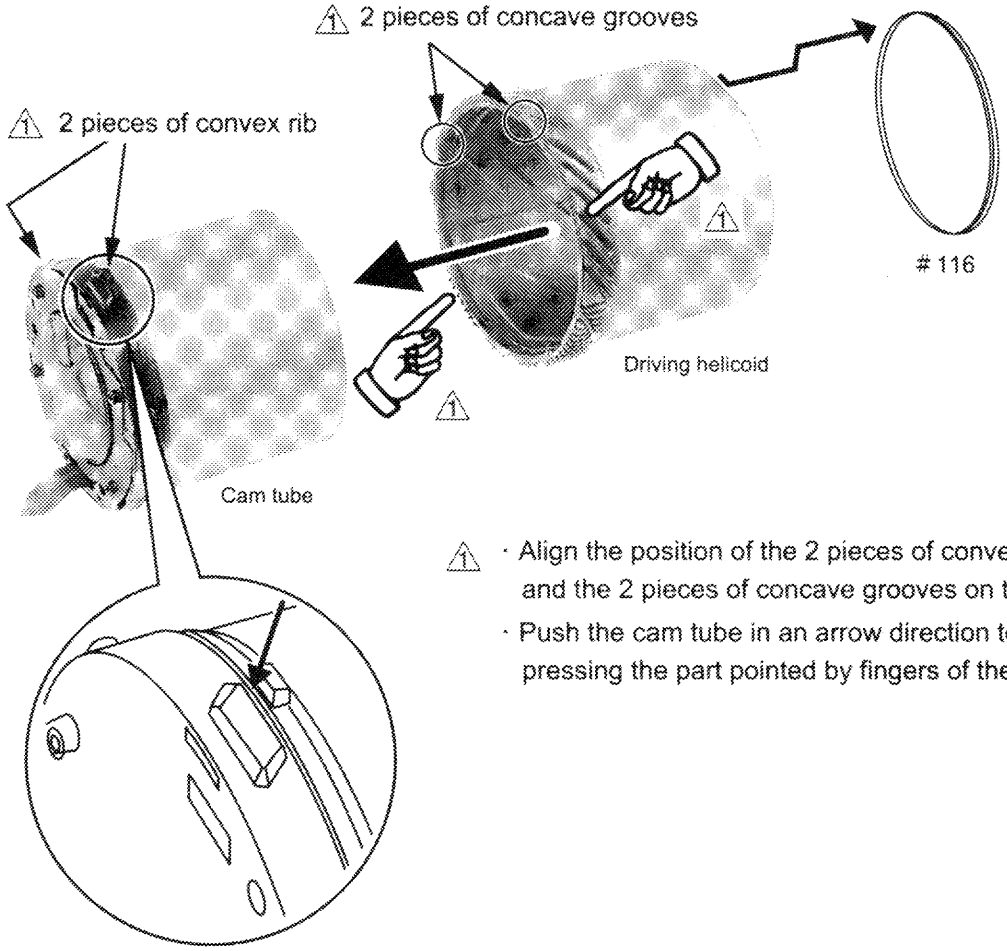
⚠1 · Hold the SB slide plate to the upper side by using a pair of tweezers.

· Supply the power to the zoom motor from the power supply at intervals so that the lens barrel unit operates.

· When the lens barrel unit zooms, confirm that the finder field changes at the same time.

SB Emission Part

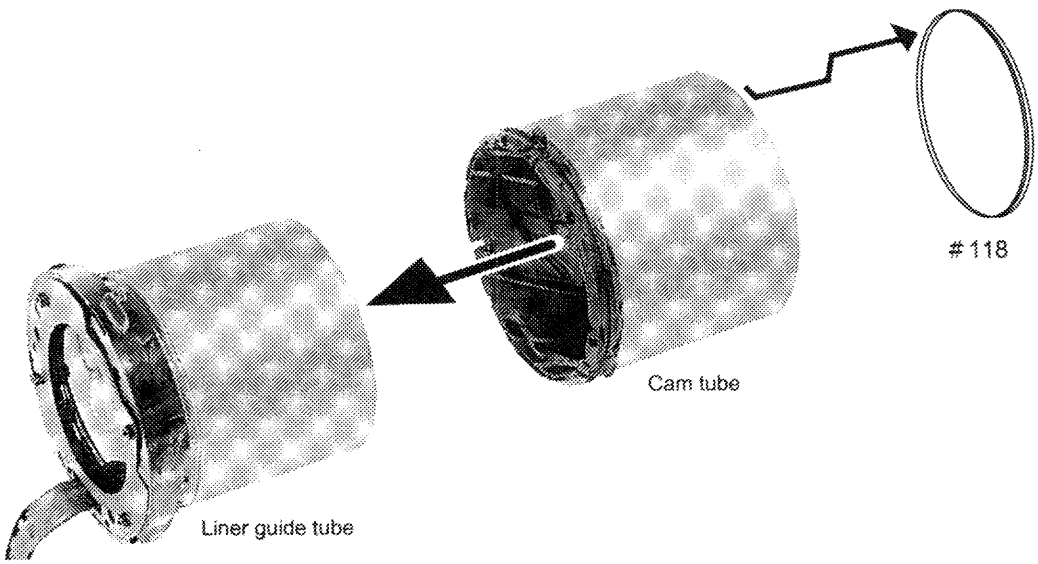




⚠1 · Align the position of the 2 pieces of convex rib on the cam tube and the 2 pieces of concave grooves on the driving helicoid.
· Push the cam tube in an arrow direction to remove it while pressing the part pointed by fingers of the driving helicoid.

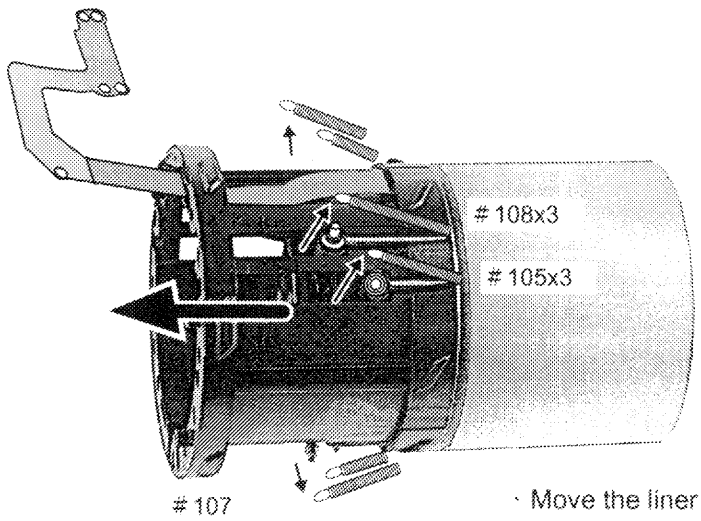
Cam Tube

· Insert the latch into the opening (3 locations) pointed by an arrow in the above Figure to separate the cam tube and the liner guide tube.

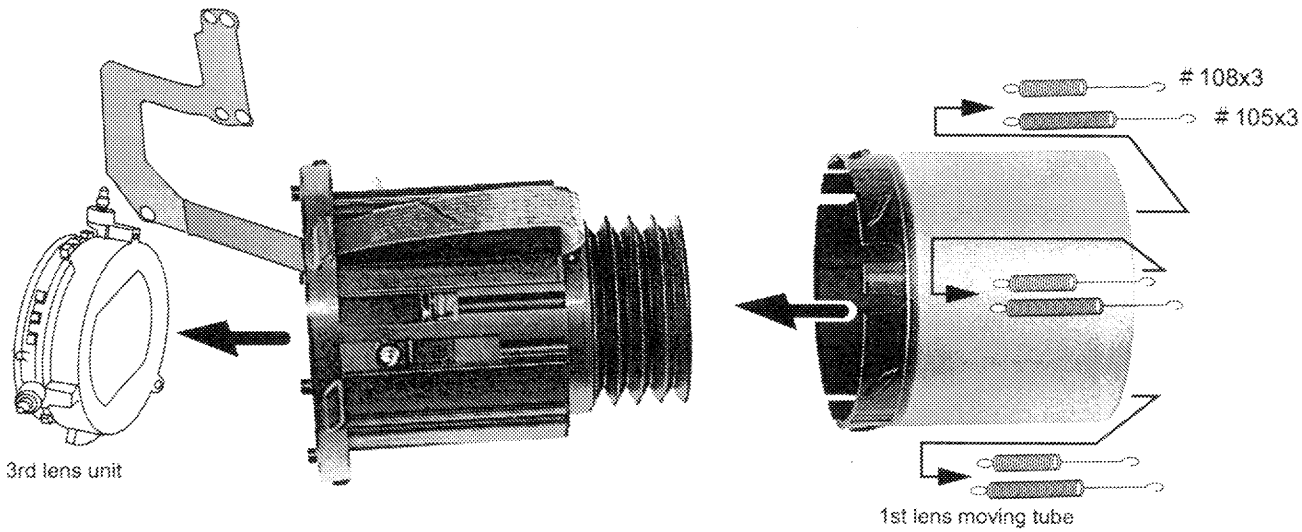


サービス計画課 M

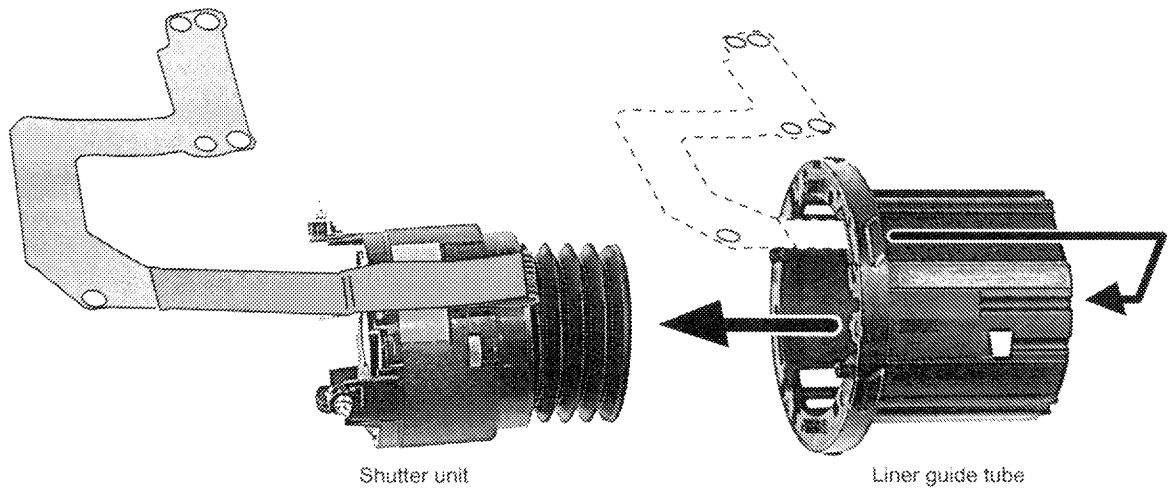
3rd Lens Unit/1st Lens Moving Tube



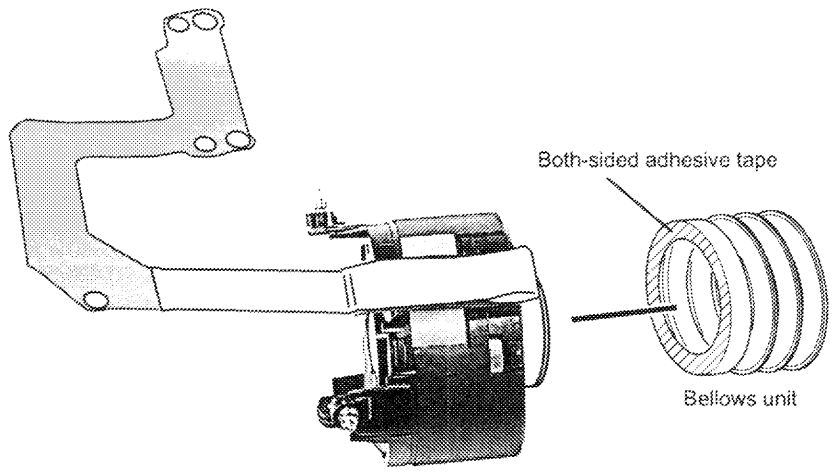
- Move the liner guide tube (#107) in an arrow direction.
- Remove the springs (#108 x 3) and (#105 x 3).



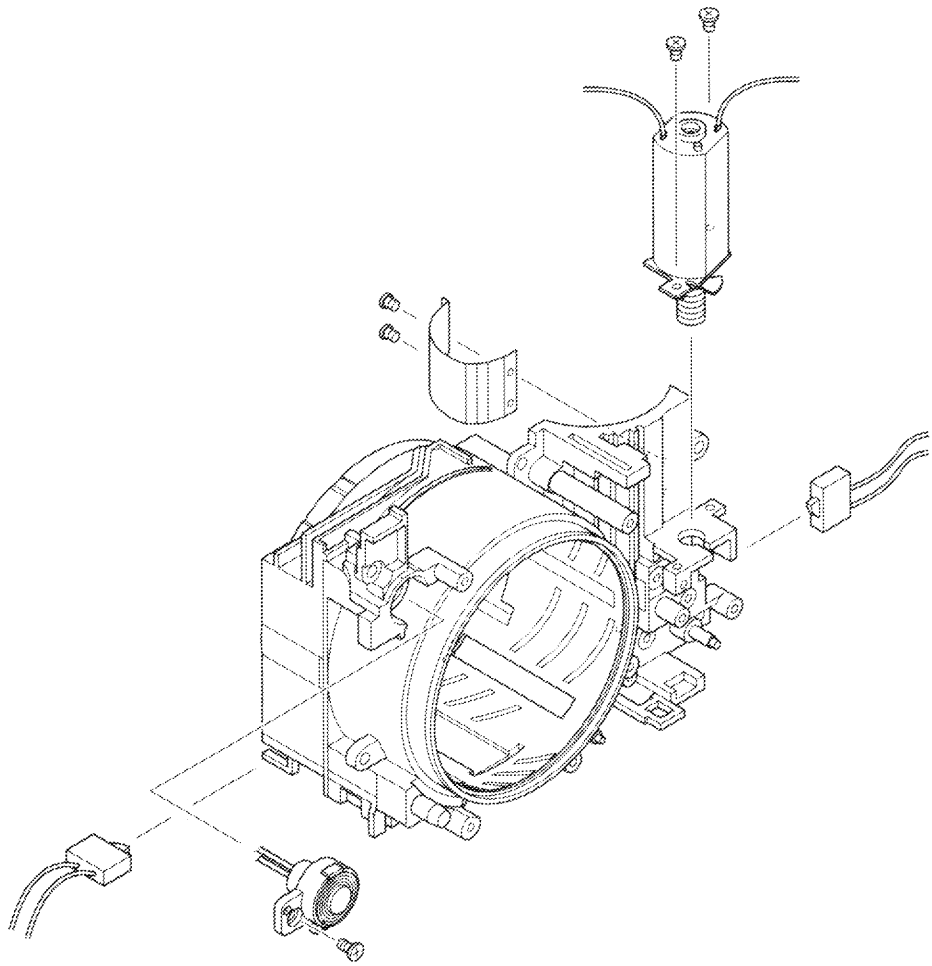
Shutter Unit/Liner Guide Tube



Bellows Unit

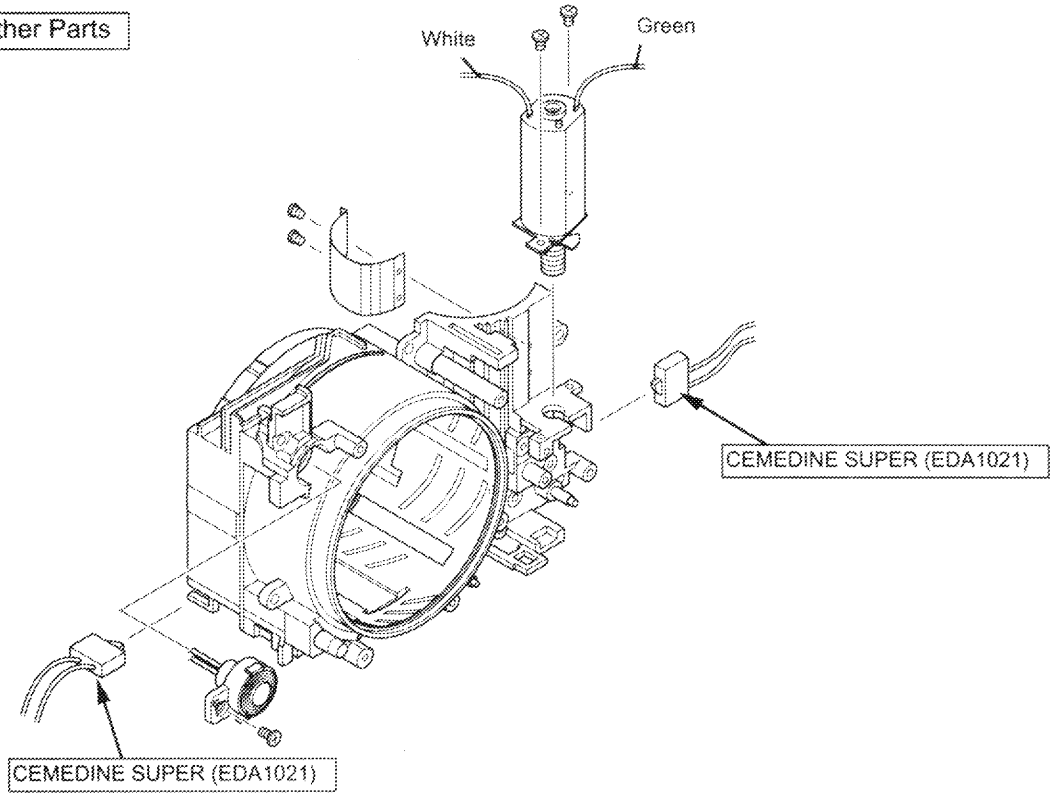


Fixed Tube and the Other Parts

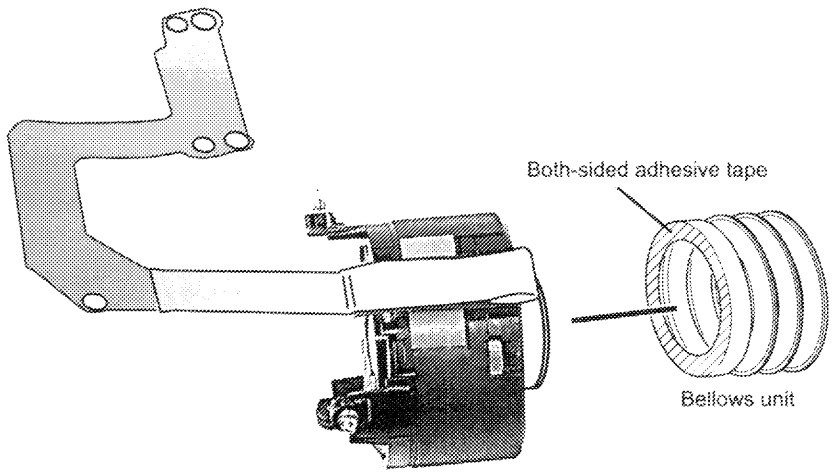


3 .ASSEMBLY / ADJUSTMENT

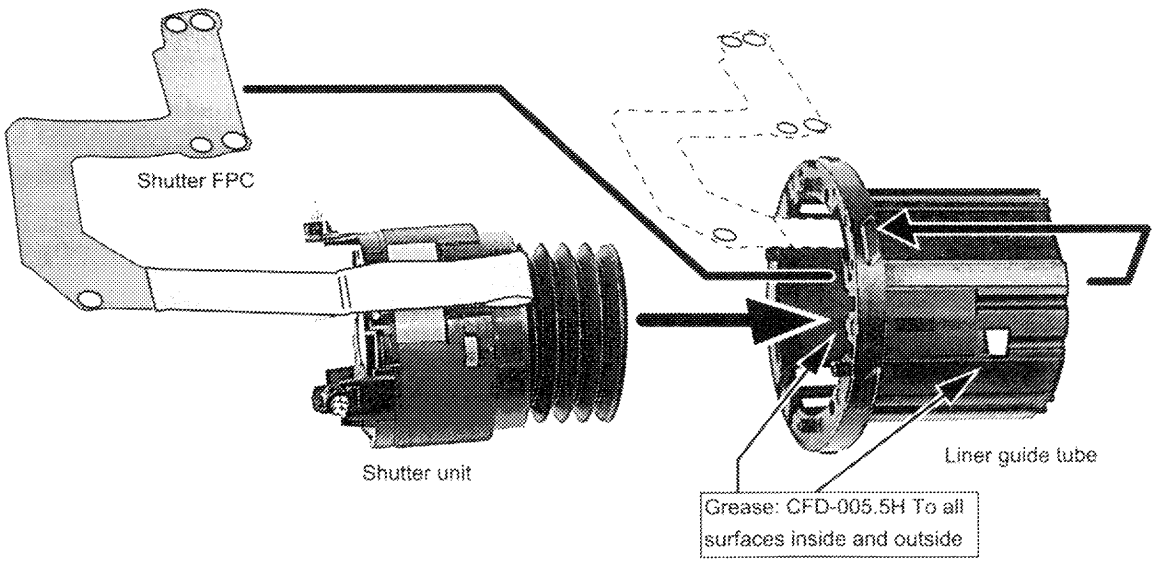
Fixed Tube and the Other Parts



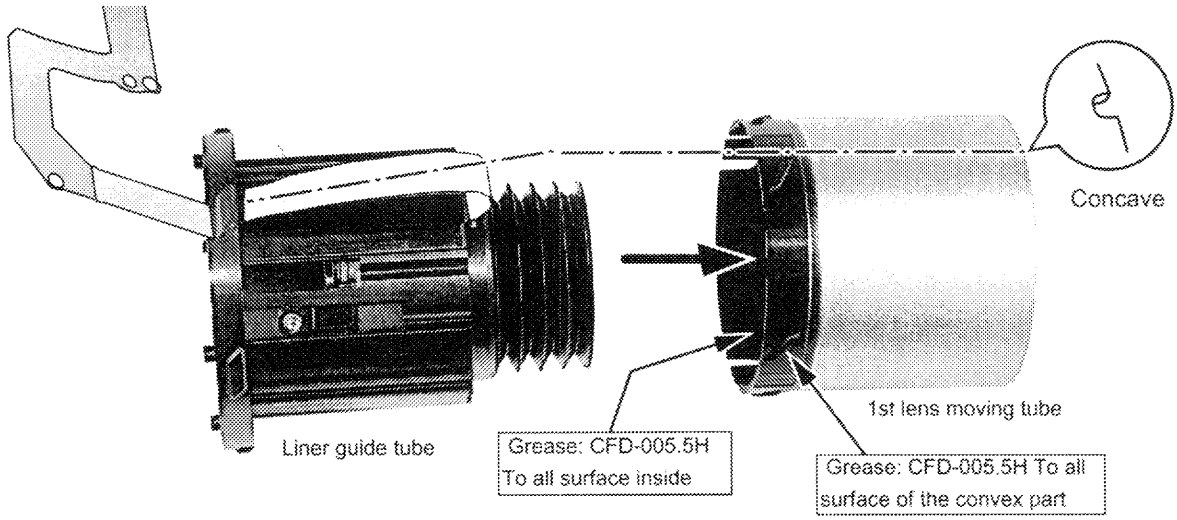
Bellows Unit

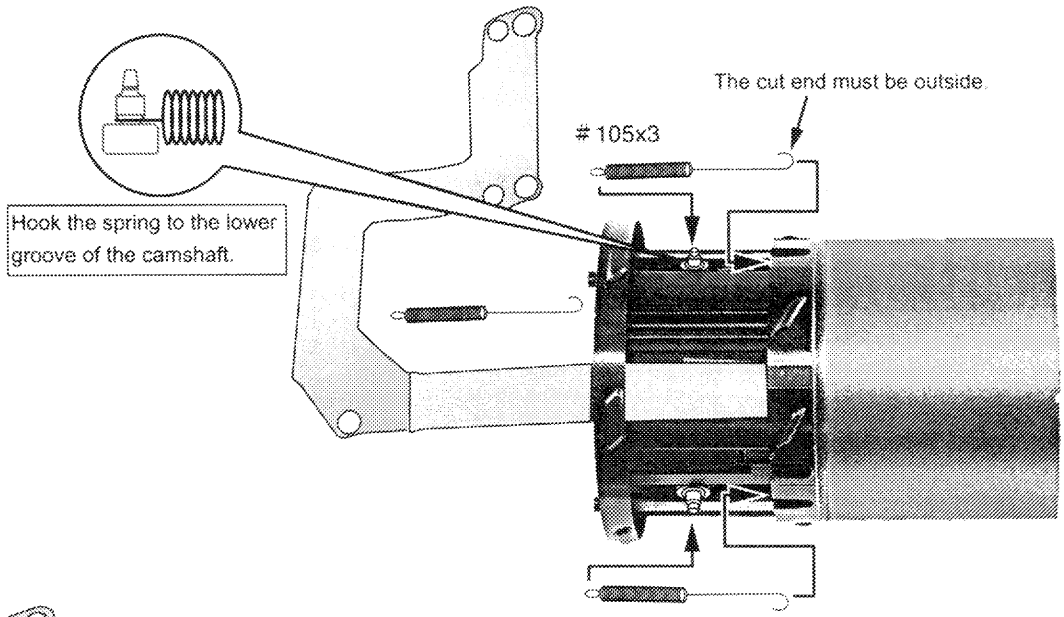


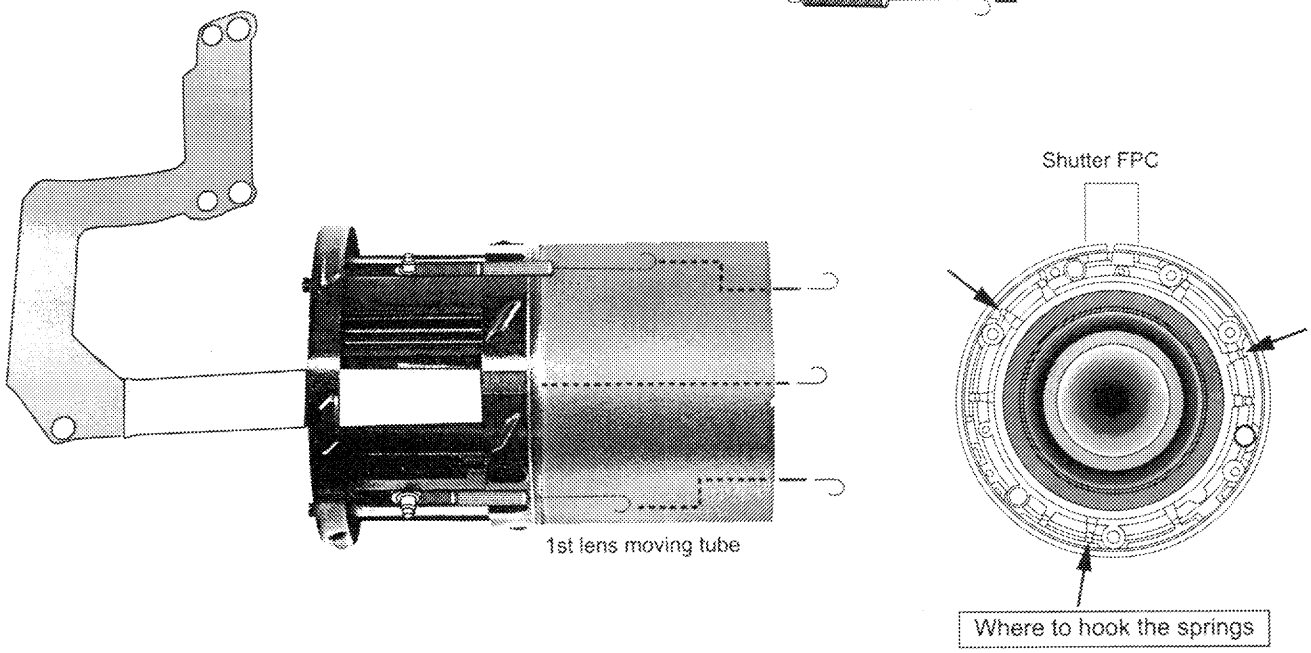
Shutter Unit/Liner Guide Tube



3rd Lens Unit/1st Lens Moving Tube

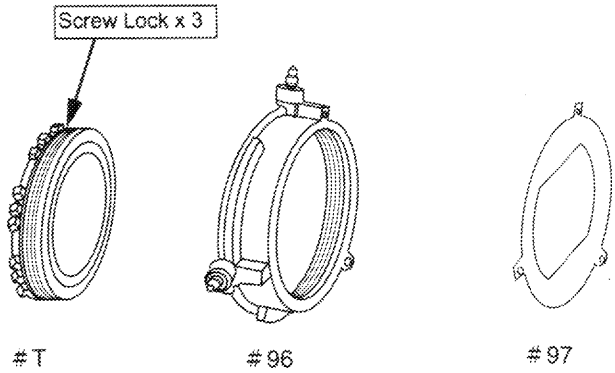






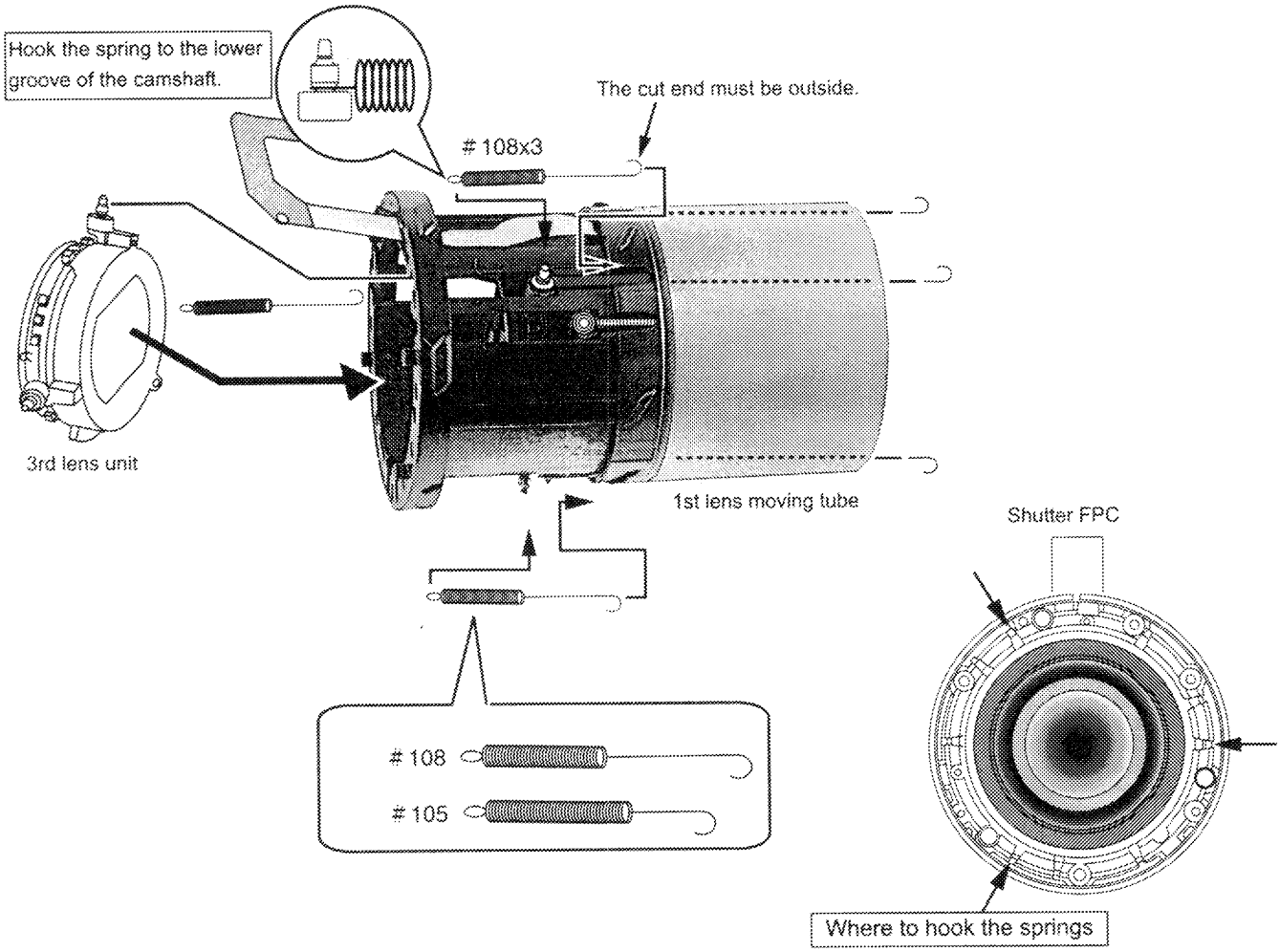
· Pull out the end of 3 pieces of the springs by using a pair of tweezers.

· Hook the end of 3 pieces of the springs to the 1st lens moving tube.



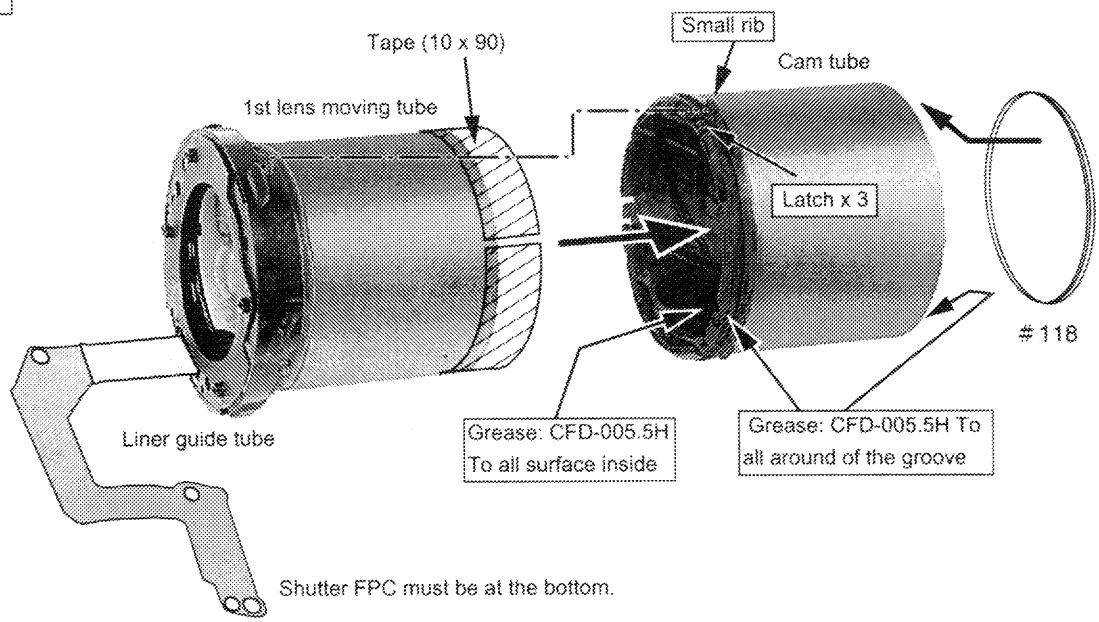
- When assembling the 3rd lens housing (#T) and the 3rd lens moving frame (#96), tighten them until they stop, then turn them to the other way by one rotation.

- After performing [Mechanical adjustment for TELE end lens back] (Page A38), apply the screw lock.



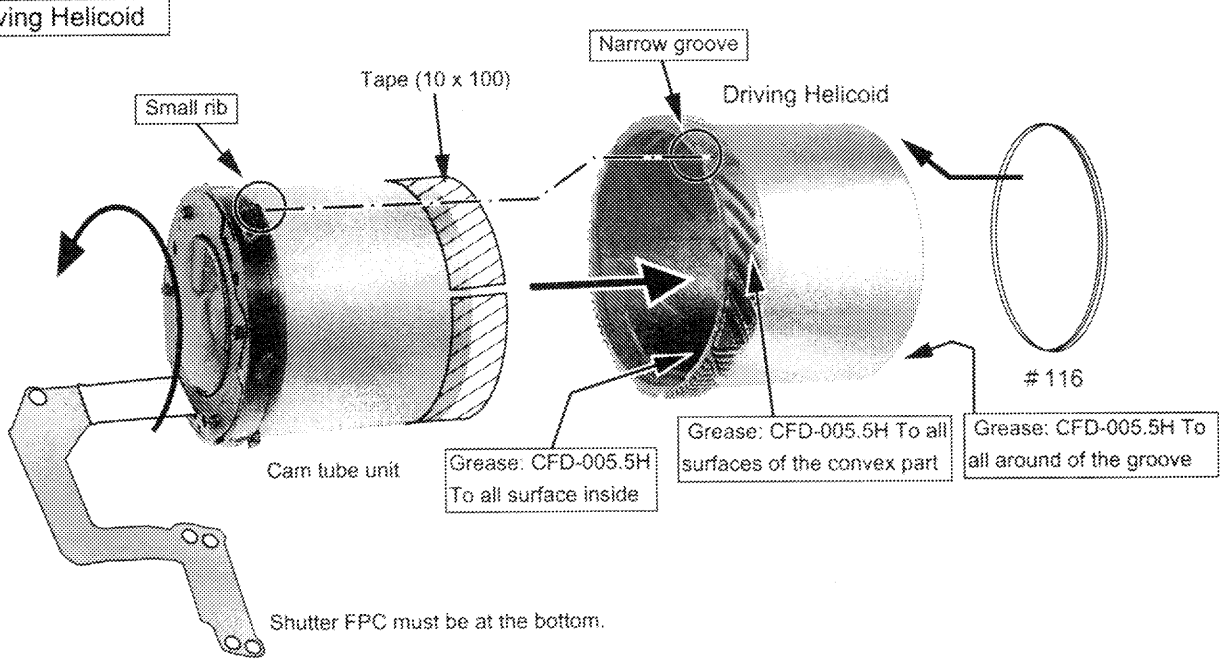
- Pull out the end of 3 pieces of the springs by using a pair of tweezers.
- Hook the end of 3 piece of the springs to the 1st lens moving tube.

Cam Tube

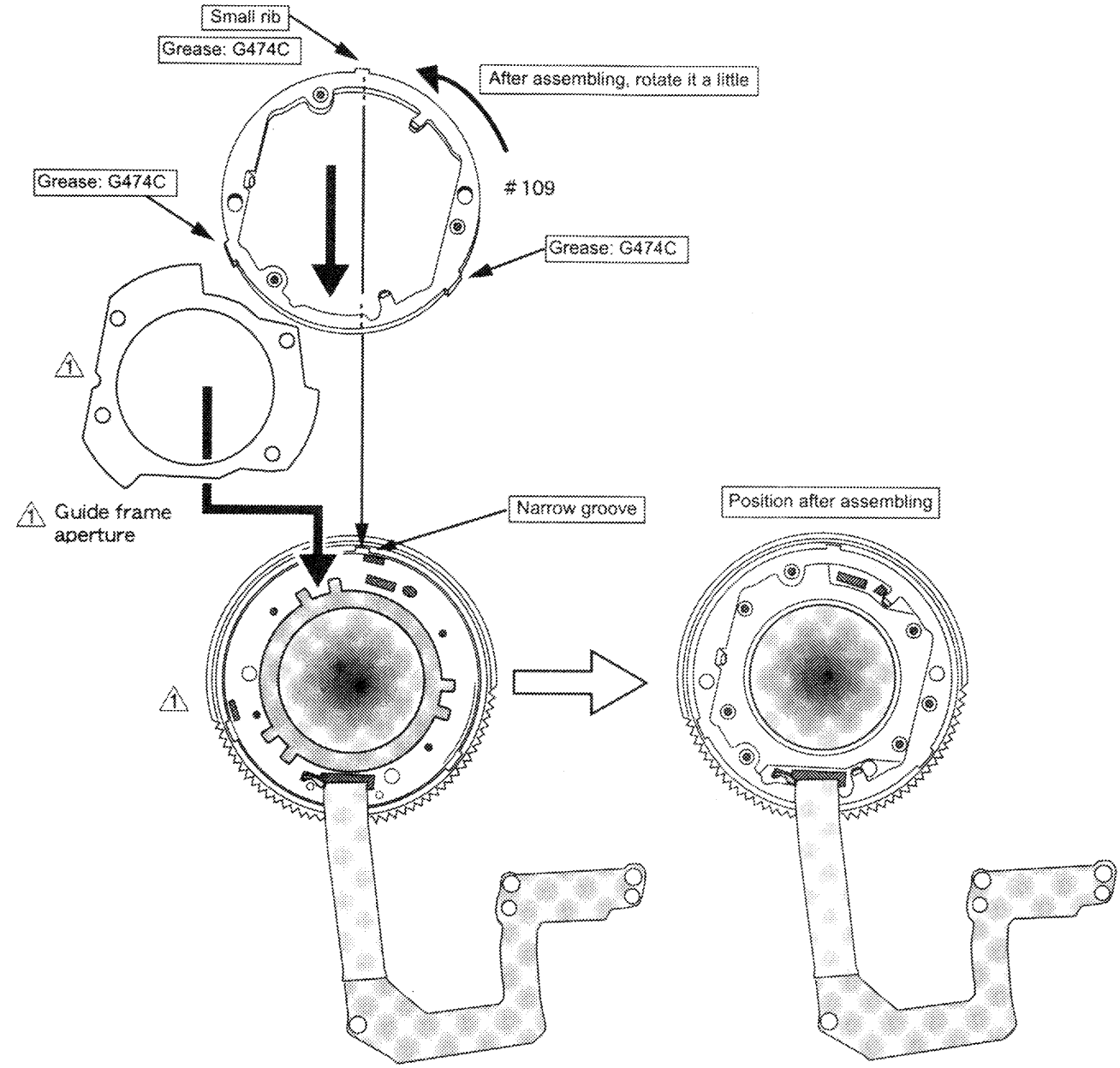


- Apply apiece of tape to the end of the 1st moving tube.
- Insert the liner guide tube into the cam tube at the position shown in Figure above.
- Set the rubber ring (#118) to the outside of the tape.
- Assemble the liner guide tube in the cam tube until the latch stops.
- Rotate the liner guide tube to inject the 1st moving tube. Then remove the tape.

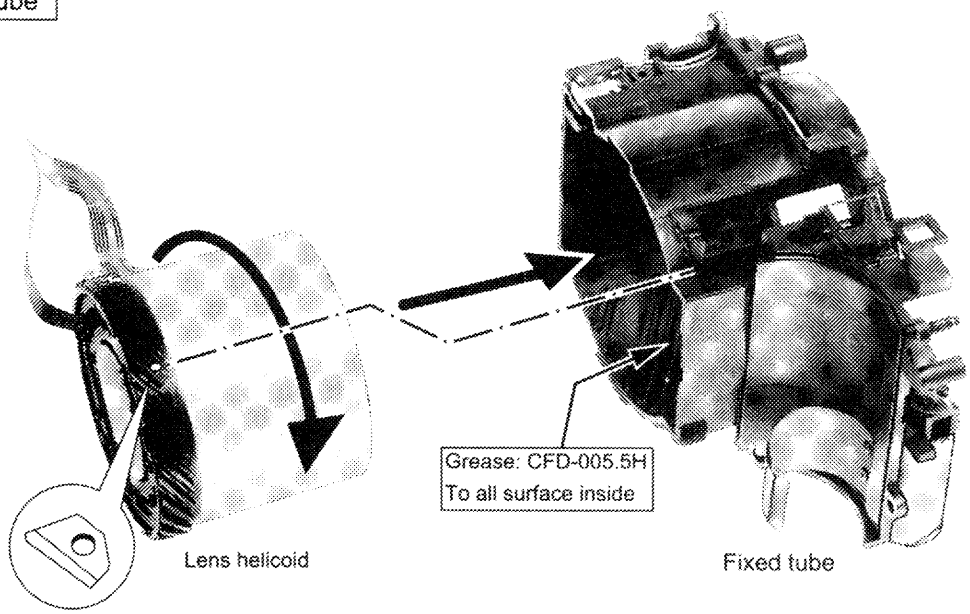
Driving Helicoid

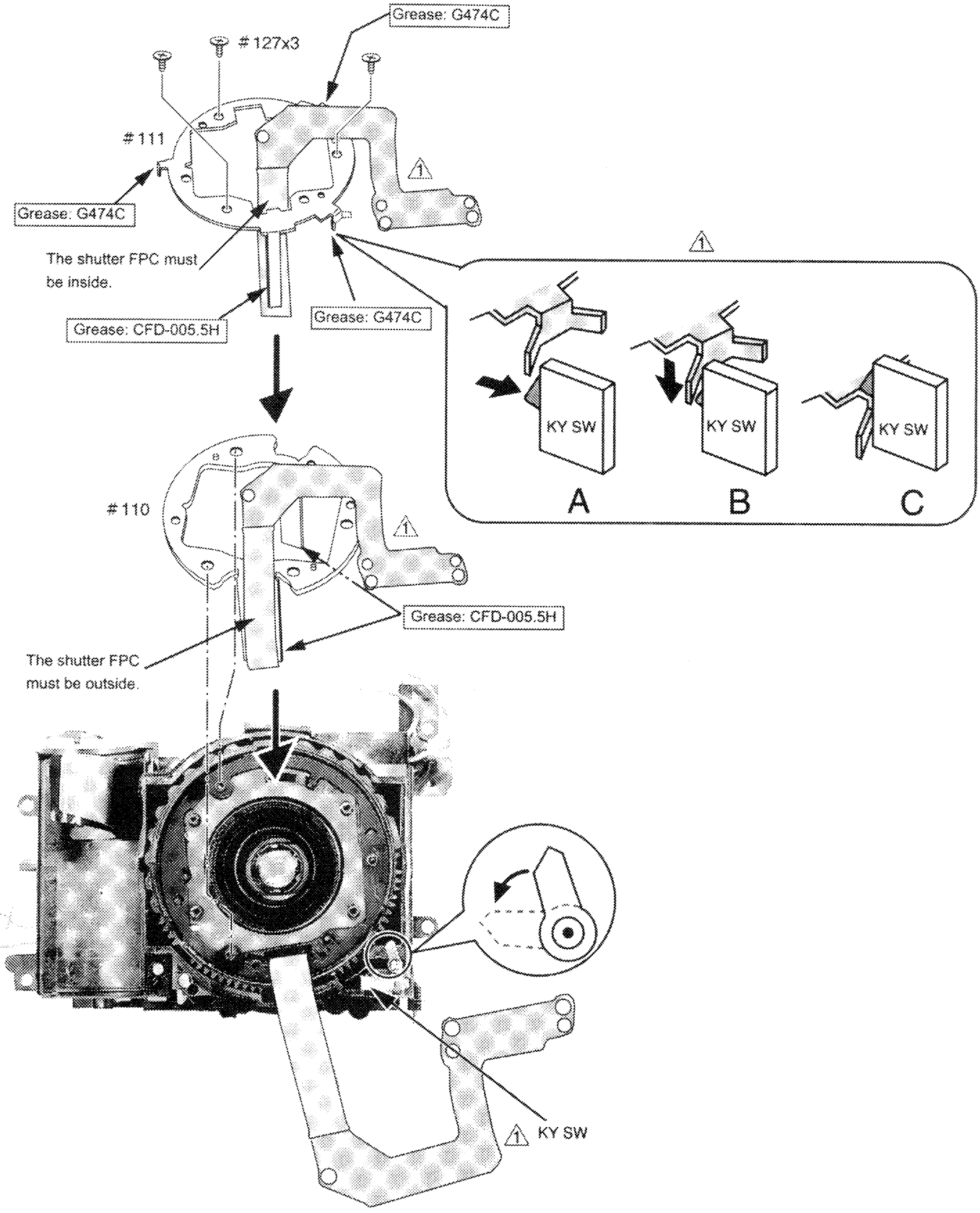


- Apply a piece of tape to the end of the cam tube.
- Insert the cam tube into the driving helicoid at the position shown in Figure above.
- Set the rubber ring (#116) to the outside of the tape.
- After assembling, rotate the liner guide tube anticlockwise to set the helicoid to Tele side.
- Remove the tape on the cam tube.


Small rib
Grease: G474C
After assembling, rotate it a little
Grease: G474C
#109
Grease: G474C
⚠1
⚠1 Guide frame aperture
Narrow groove
Position after assembling
⚠1

Fixed Tube


Grease: CFD-005.5H
To all surface inside
Lens helicoid
Fixed tube



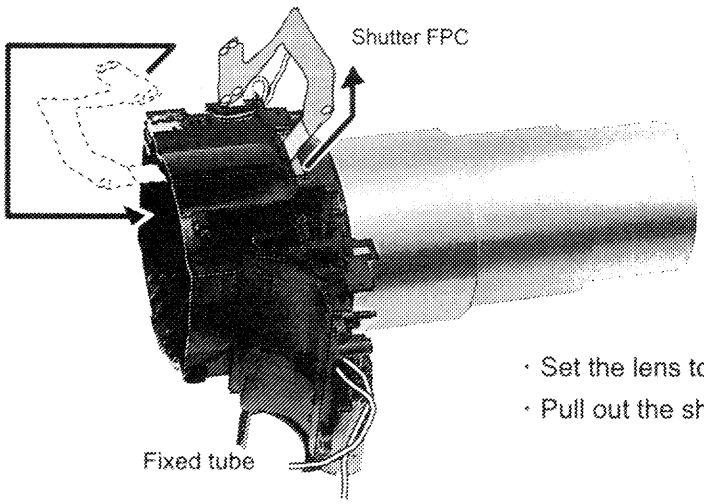
⚠1 · How to attach the bended part of the straight guide (#111)

A. Press and hold the KY-SW in an arrow direction by using tweezers, etc.

B. Keep [A] condition and attach the bended part of the straight guide (#111).

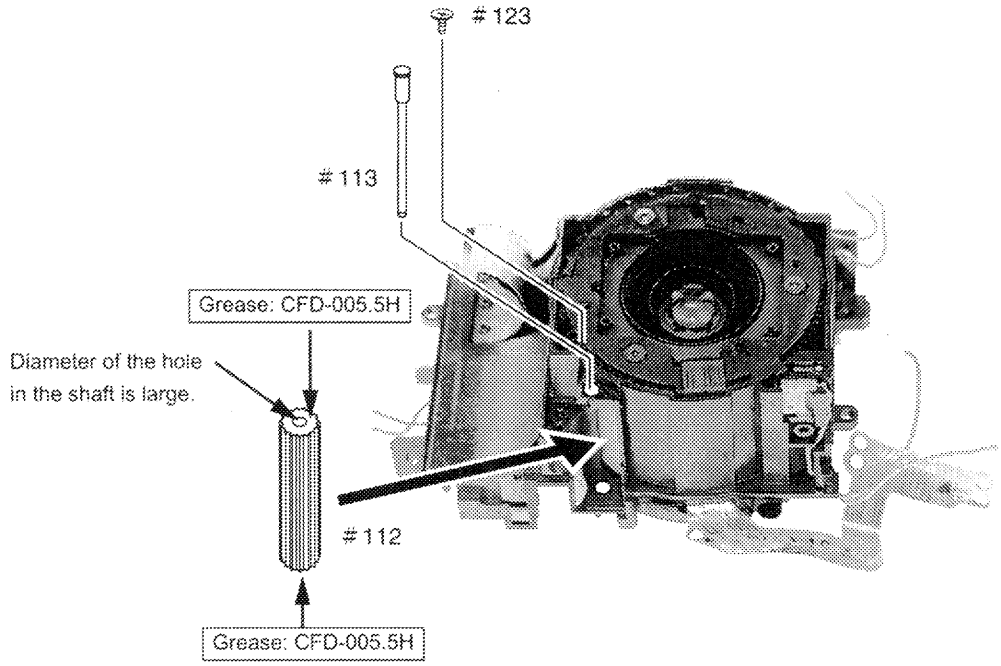
C. Remove the tweezers, etc. that pressed the KY-SW.

サービス計画課 M

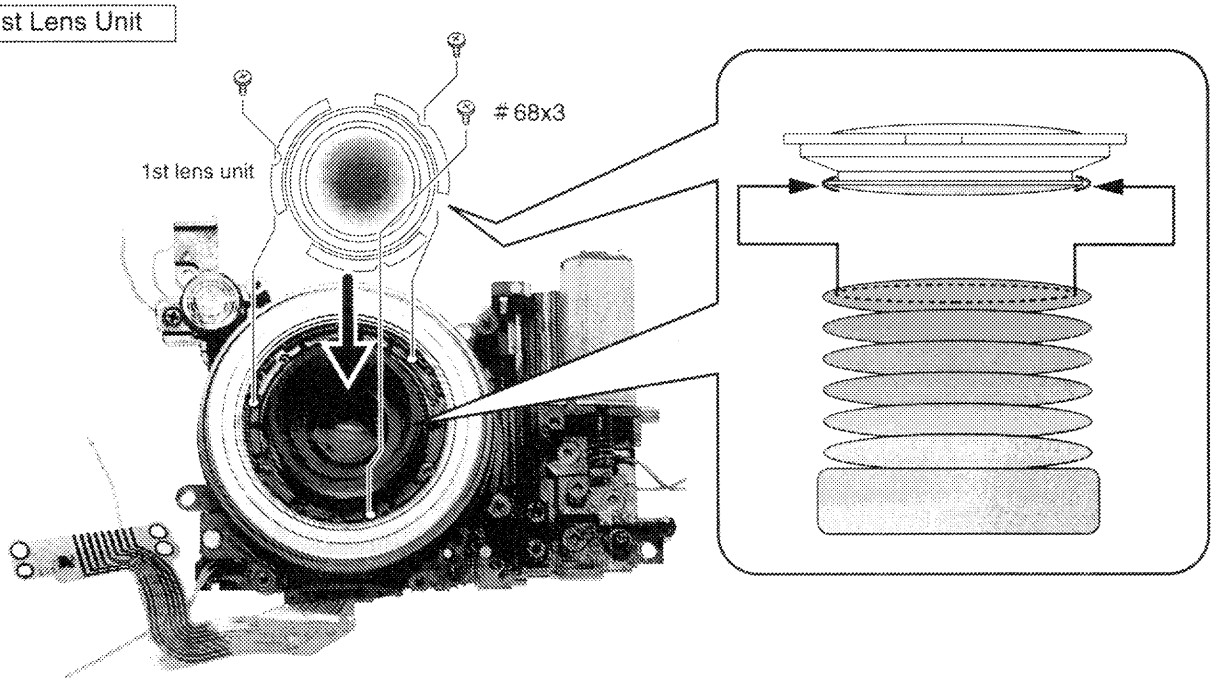


・Set the lens to Tele side.
・Pull out the shutter FPC to the back of the fixed tube.

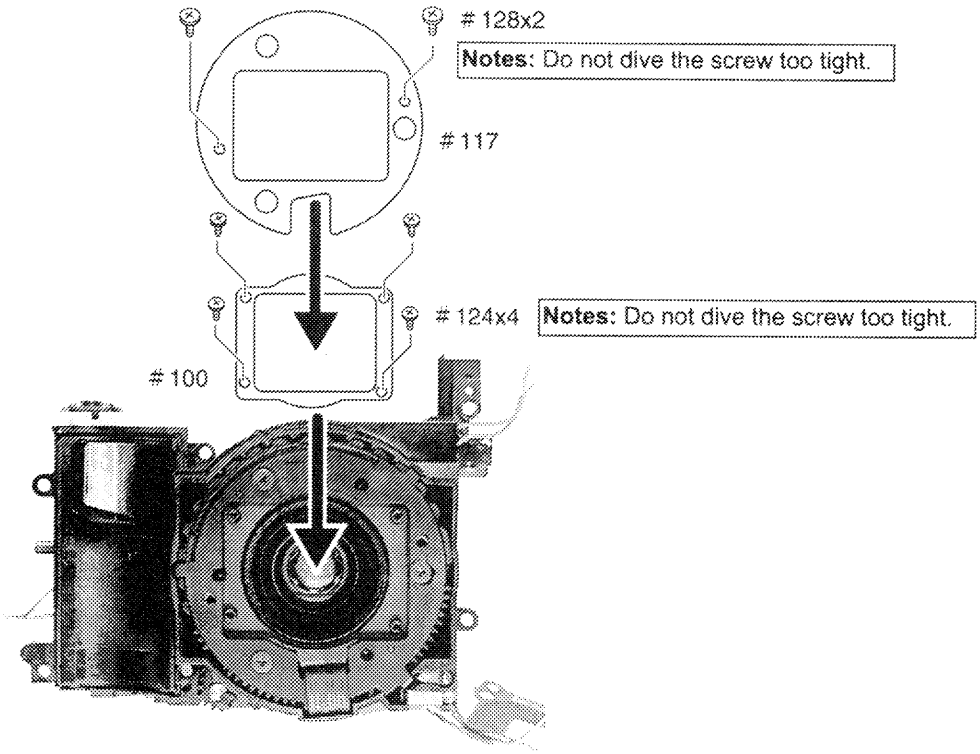
Zoom Coupling Gear



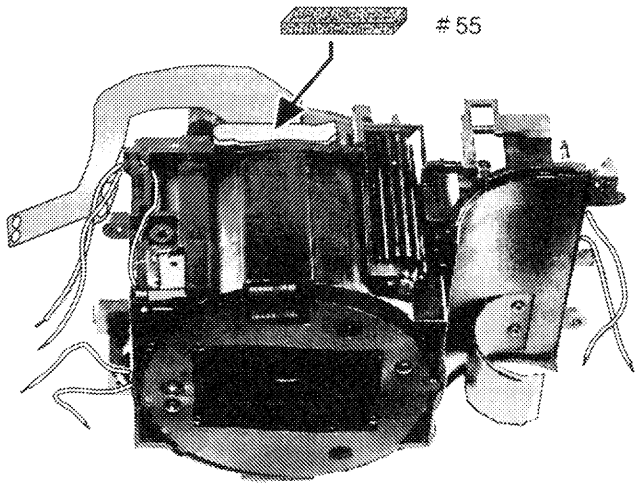
1st Lens Unit

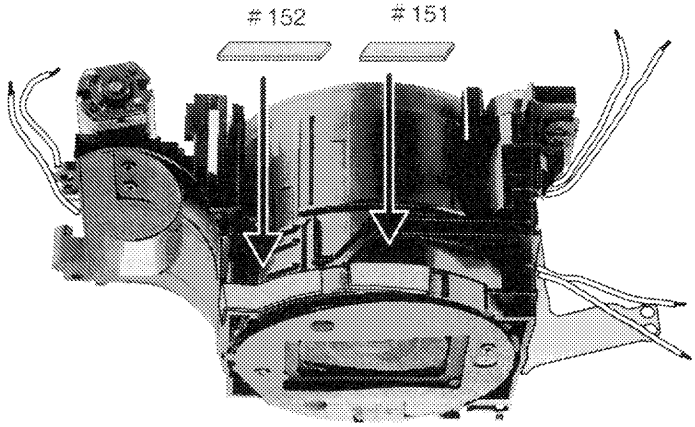


Rear Light Shield Frame

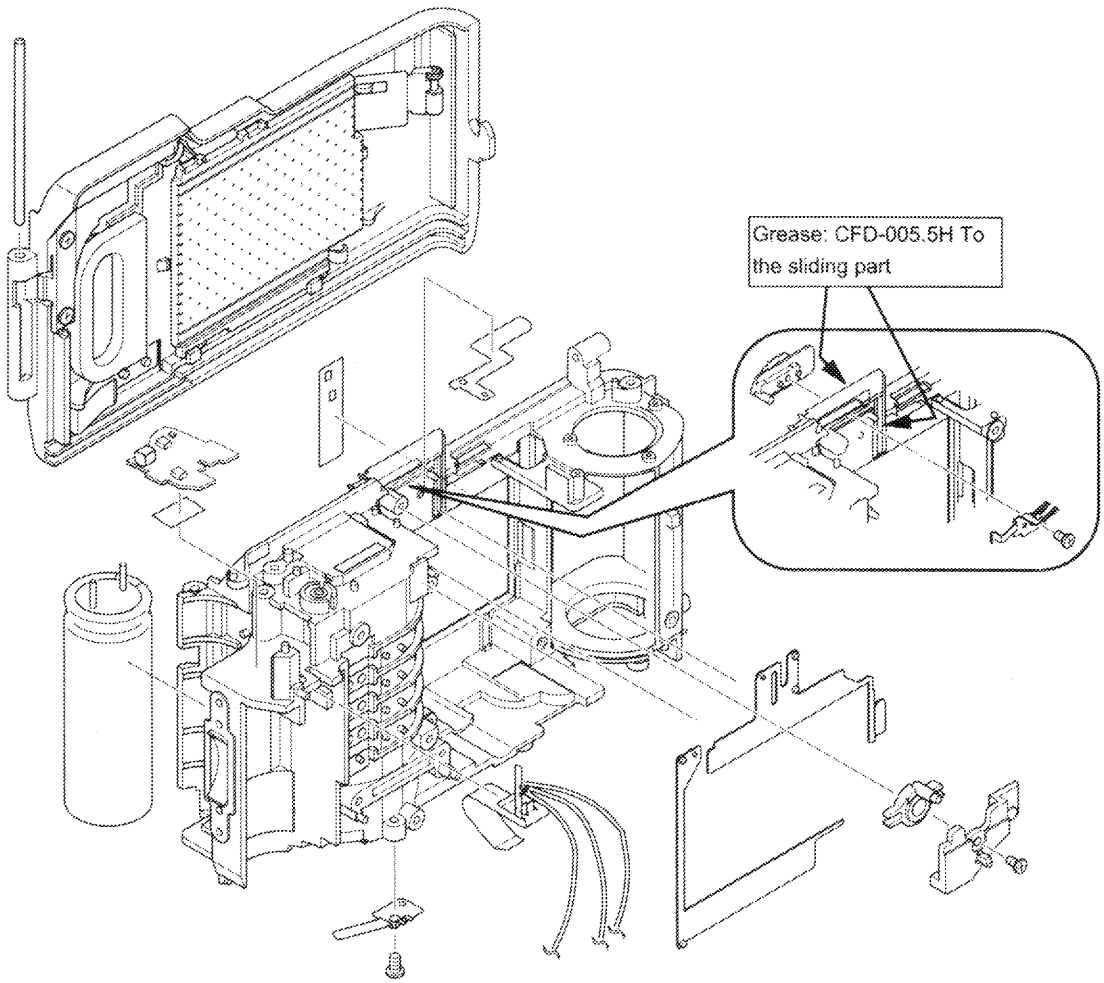


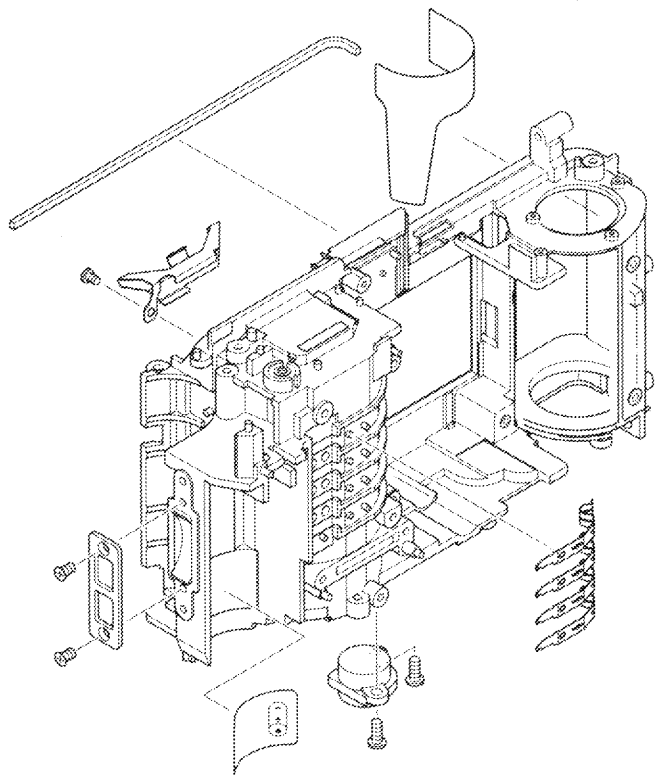
Applying Light Shield Sheet



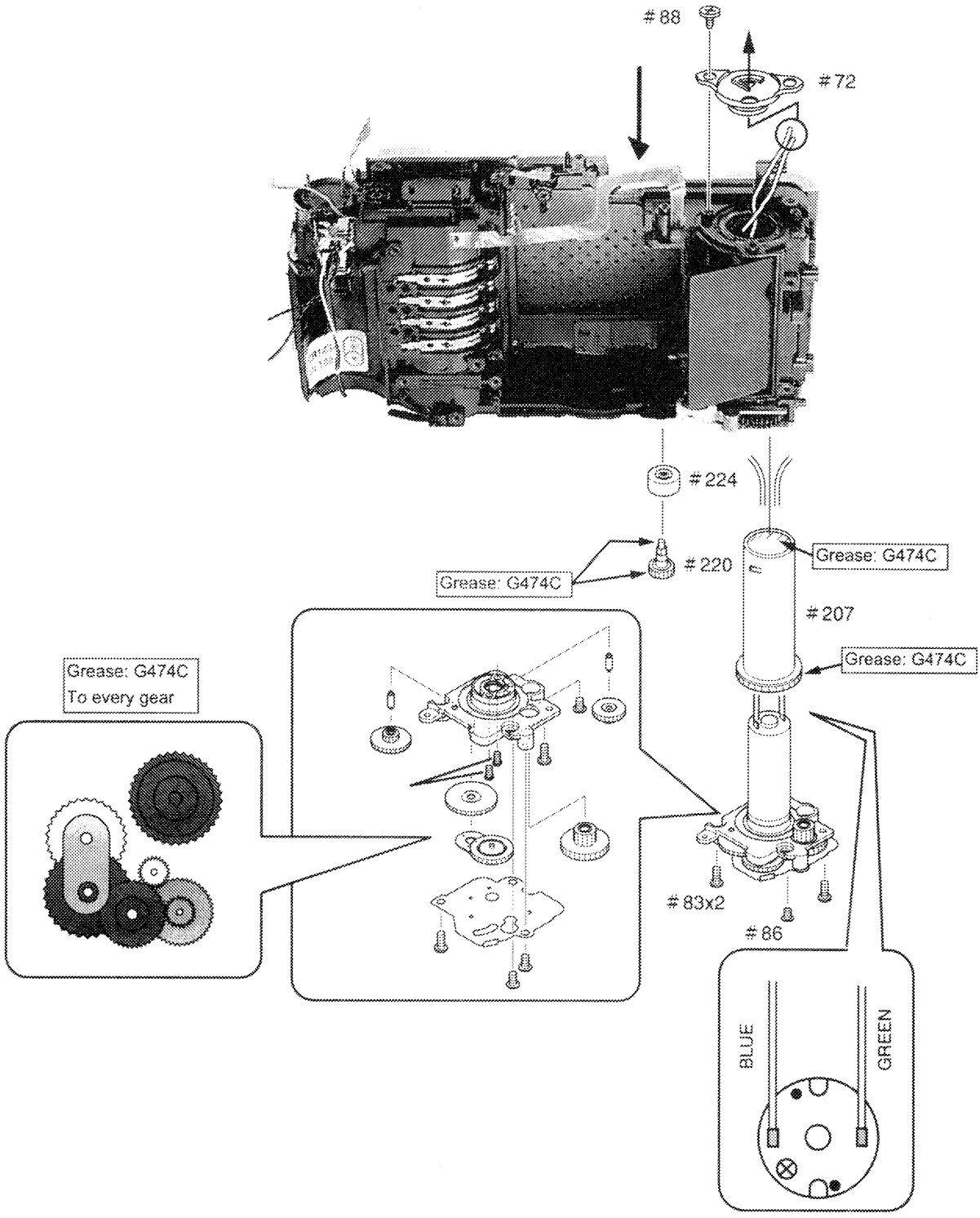


Rear Body and the Other Parts

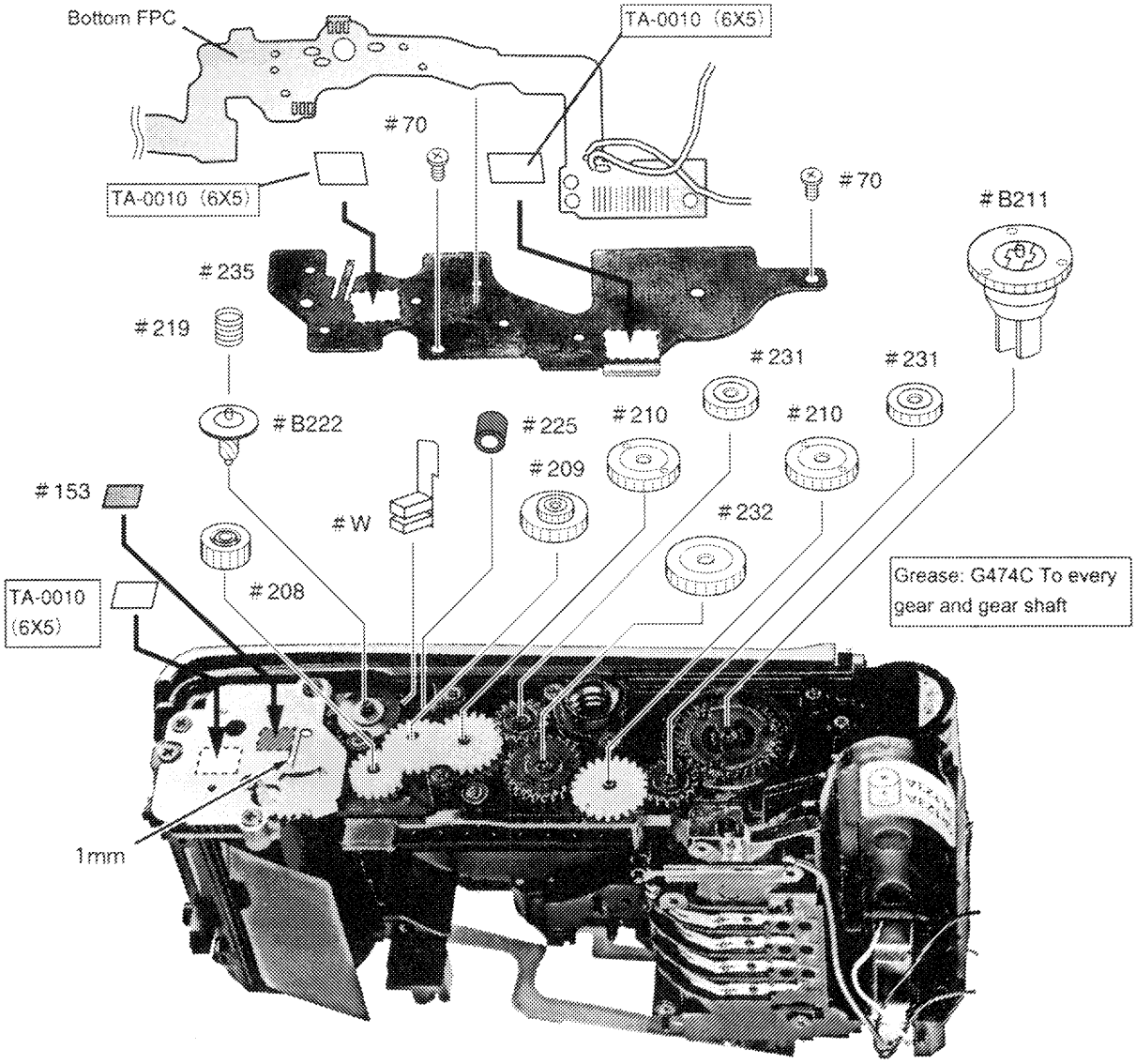


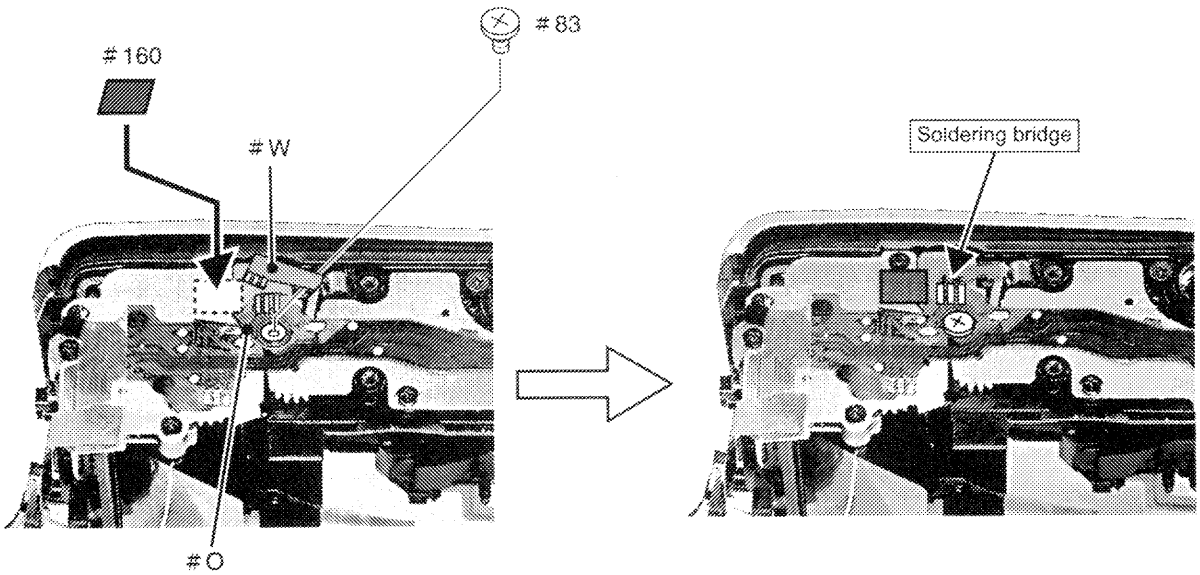


Film Advance Motor Unit

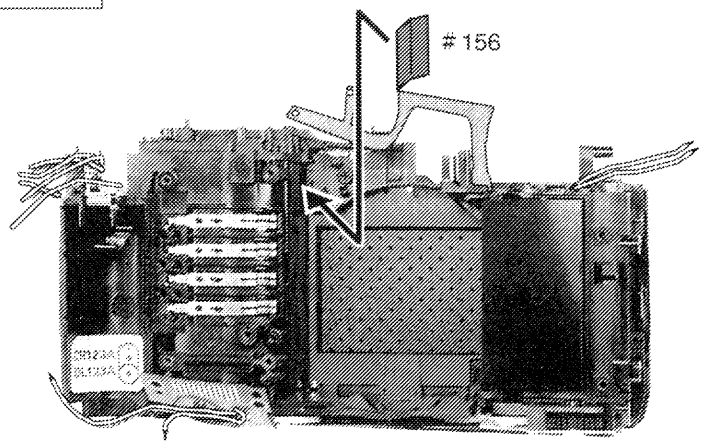


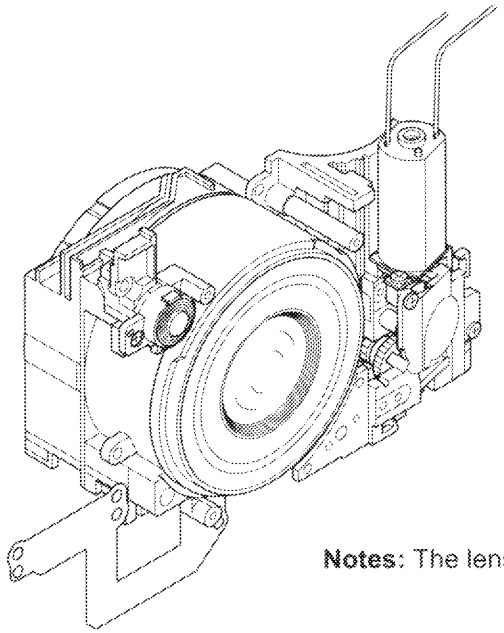
Film Advance Gear



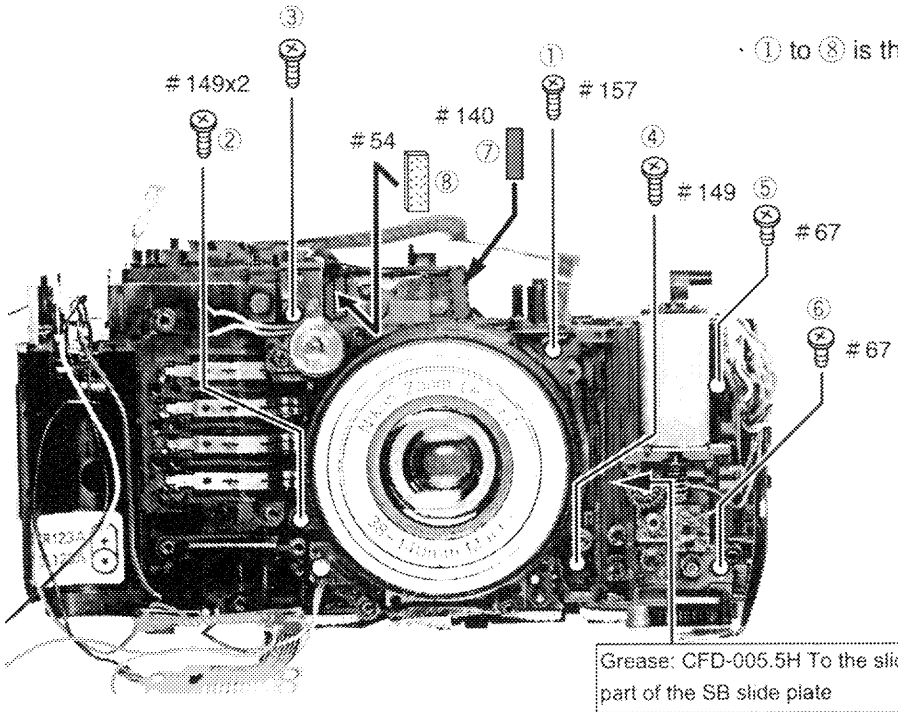


Assembly of Lens Barrel Unit





Notes: The lens helicoid must be at the reset position.

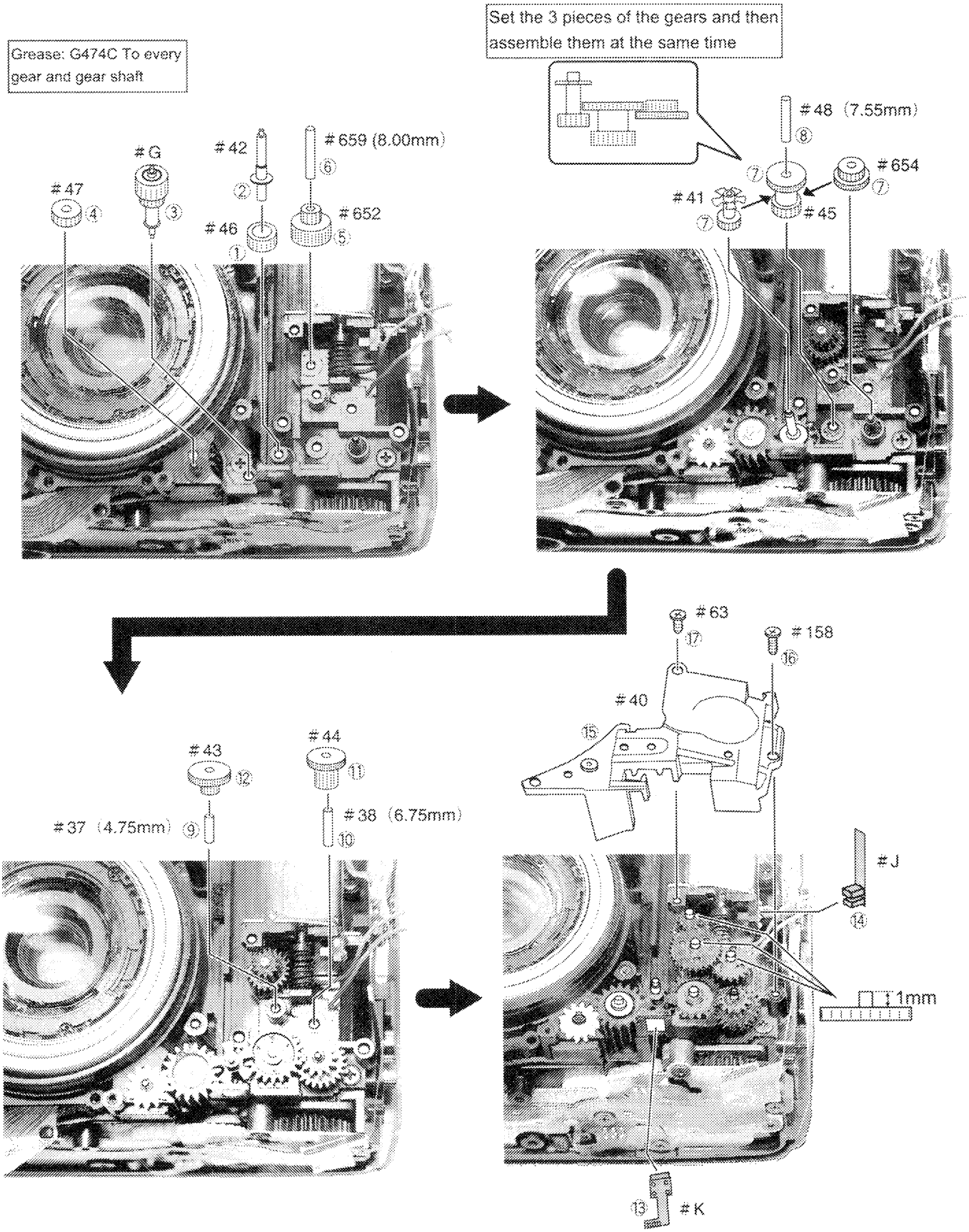


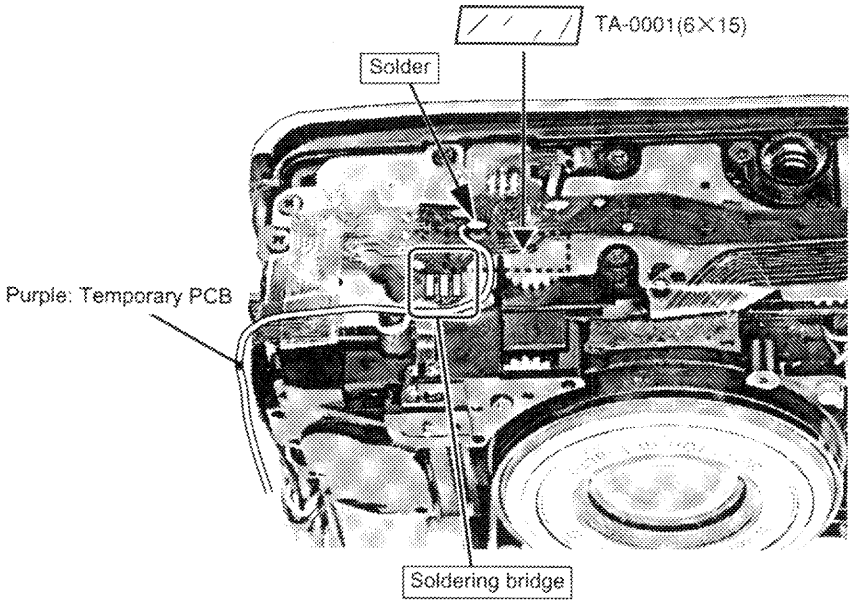
· ① to ⑧ is the order to assemble.

Grease: CFD-005.5H To the sliding part of the SB slide plate

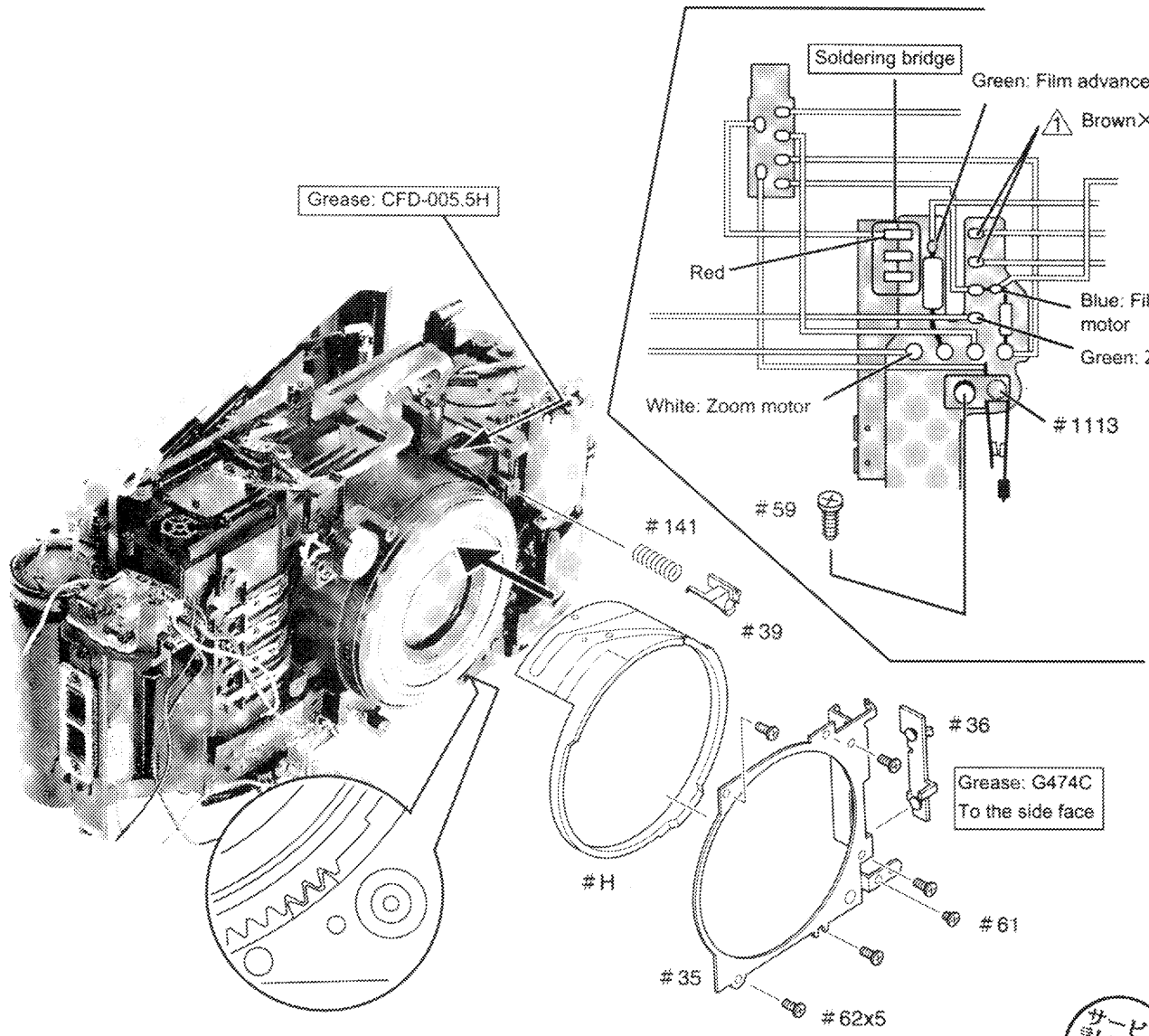
Zoom Gear

・① to ⑰ is the order to assemble.

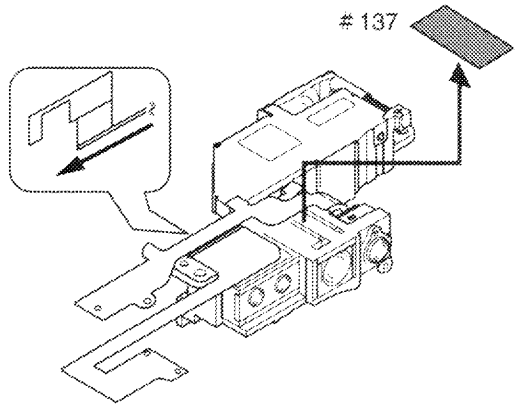



TA-0001(6×15)
Solder
Purple: Temporary PCB
Soldering bridge

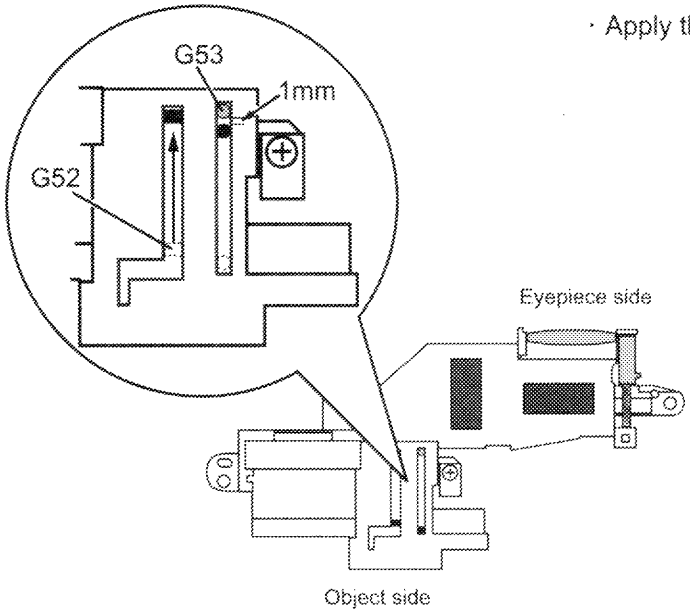
Finder Cam

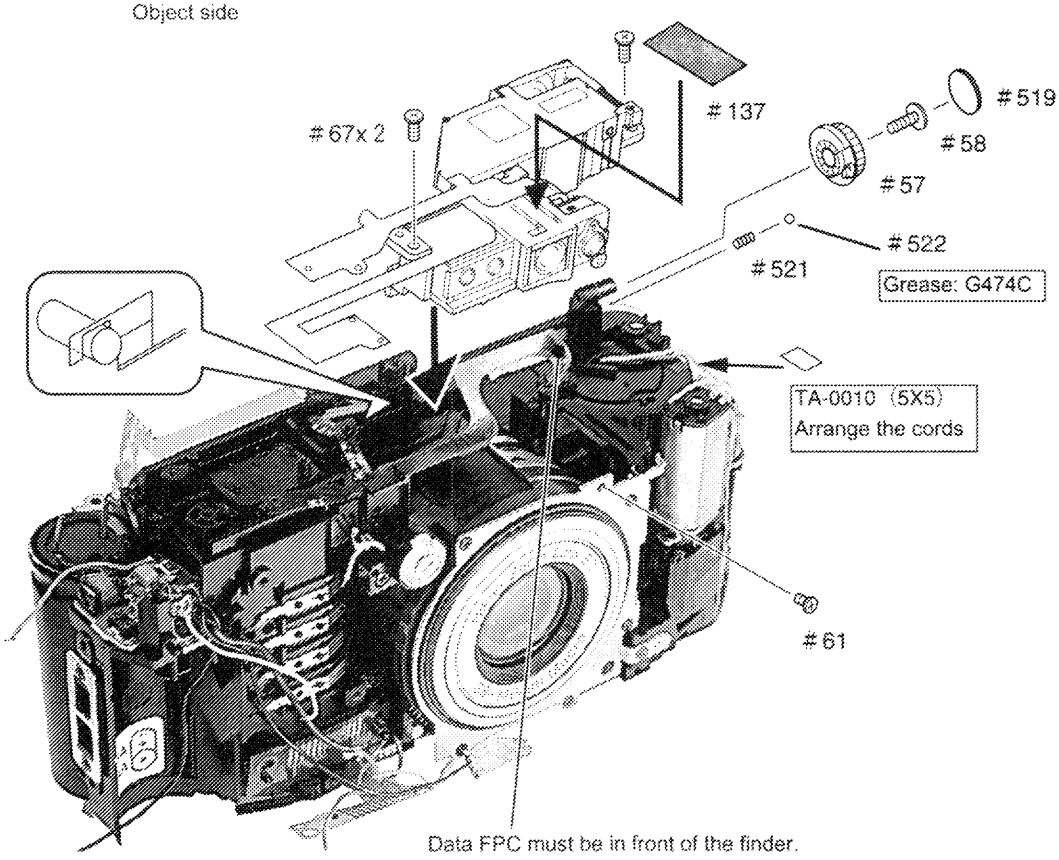

Soldering bridge
Green: Film advance motor
⚠ Brown×2 : SB SW
Grease: CFD-005.5H
Red
Blue: Film advance motor
Green: Zoom motor
White: Zoom motor
#1113
#59
#141
#39
#36
Grease: G474C
To the side face
#H
#61
#35
#62x5

Finder Unit

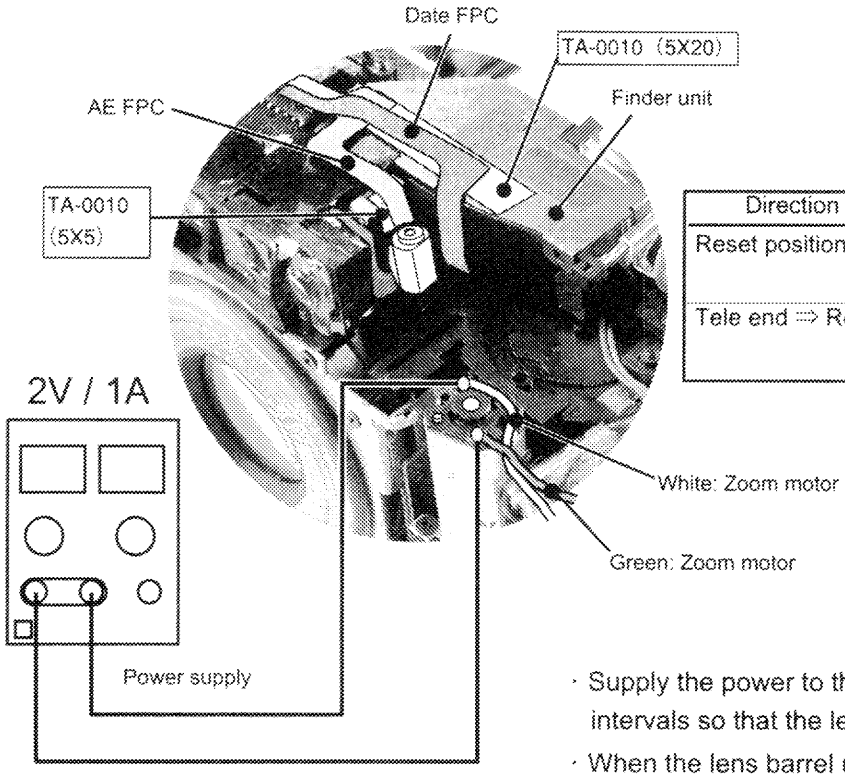


- Remove the light shield sheet (#137).
- Move the panorama lever in an arrow direction.
- Set the panorama knob of the camera to the normal position.
- Attach the finder unit to the camera.
- Move the G52 to the position shown in Figure.
- Attach the screws (#67 x 2) (#61).
- Apply the light shield sheet (#137).





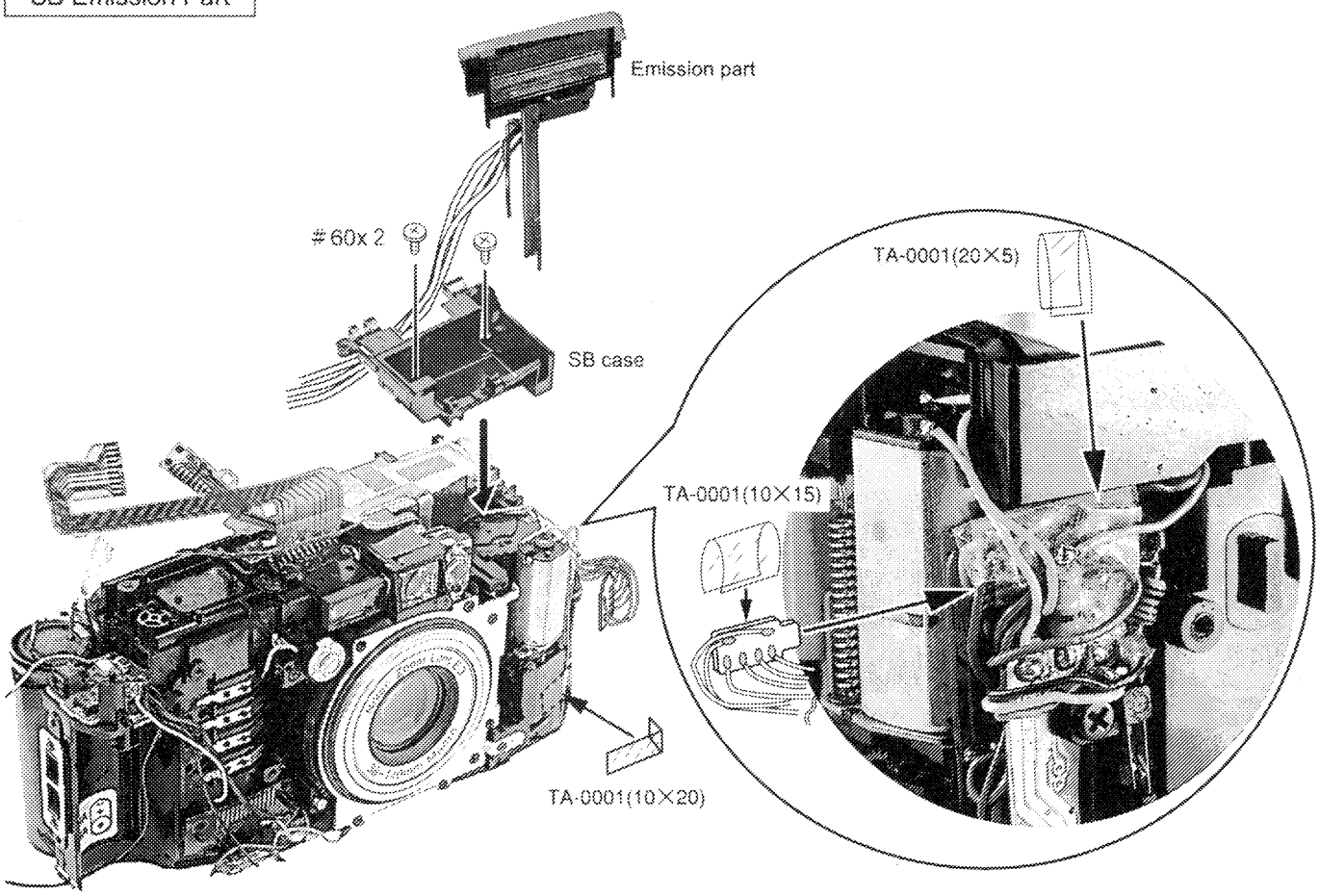
Arrangement of FPC and Confirmation of Finder Operation

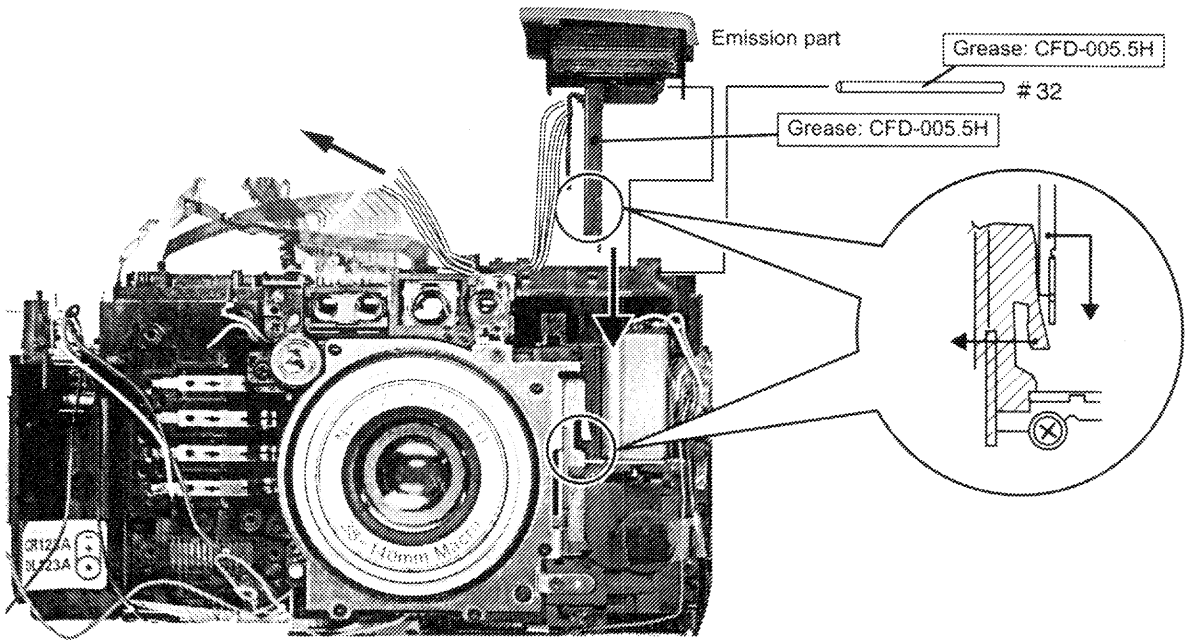


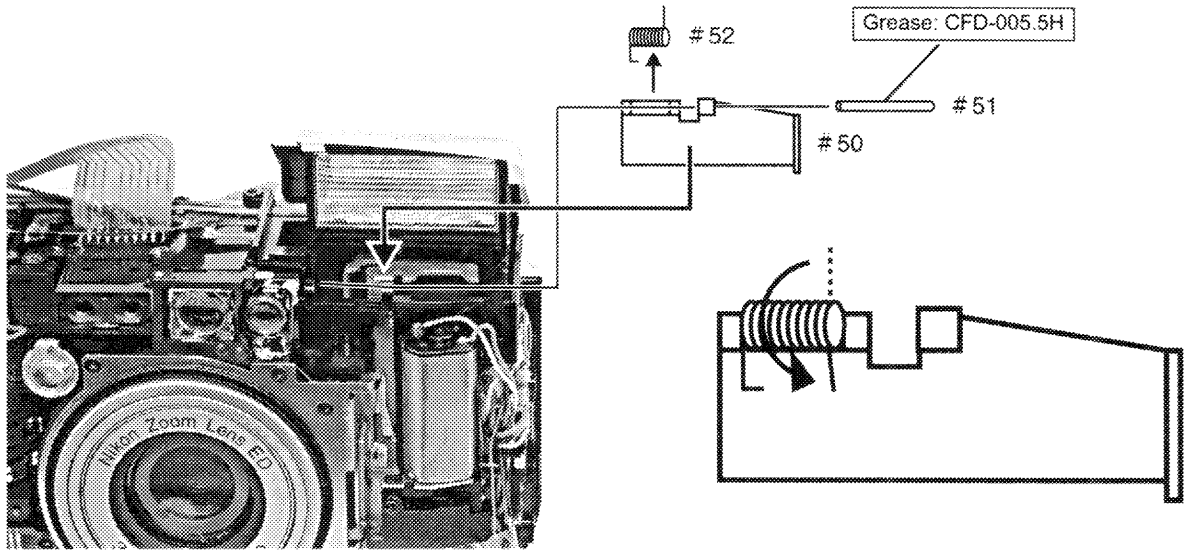
Direction to move	Polarity of the power supply	
Reset position ⇒Tele end	Green cord	−
	White cord	+
Tele end ⇒ Reset position	Green cord	+
	White cord	−

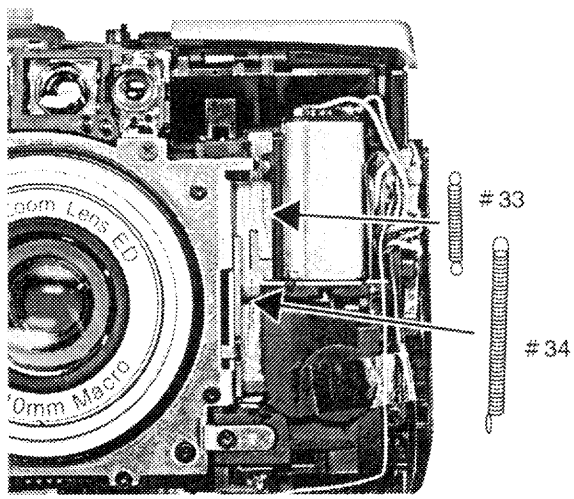
- Supply the power to the zoom motor from the power supply at intervals so that the lens barrel unit operates.
- When the lens barrel unit zooms, confirm that the finder field changes at the same time.

SB Emission Part

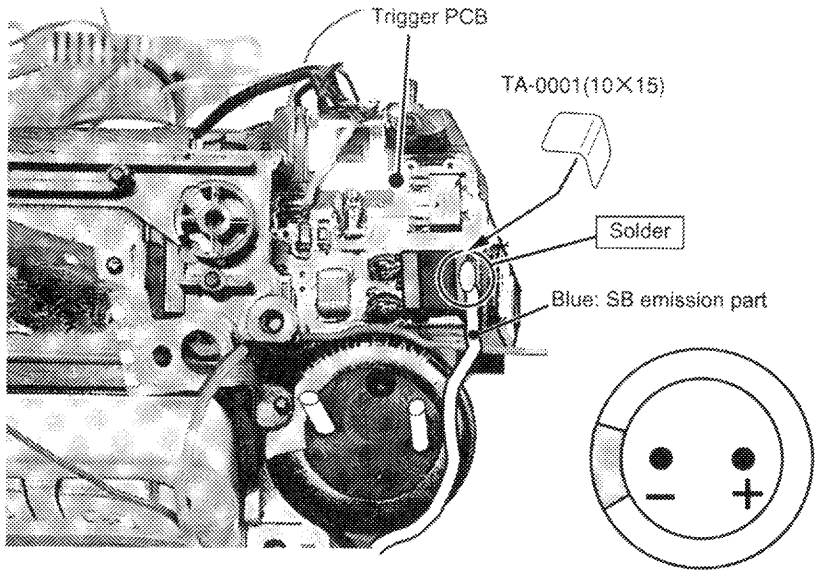


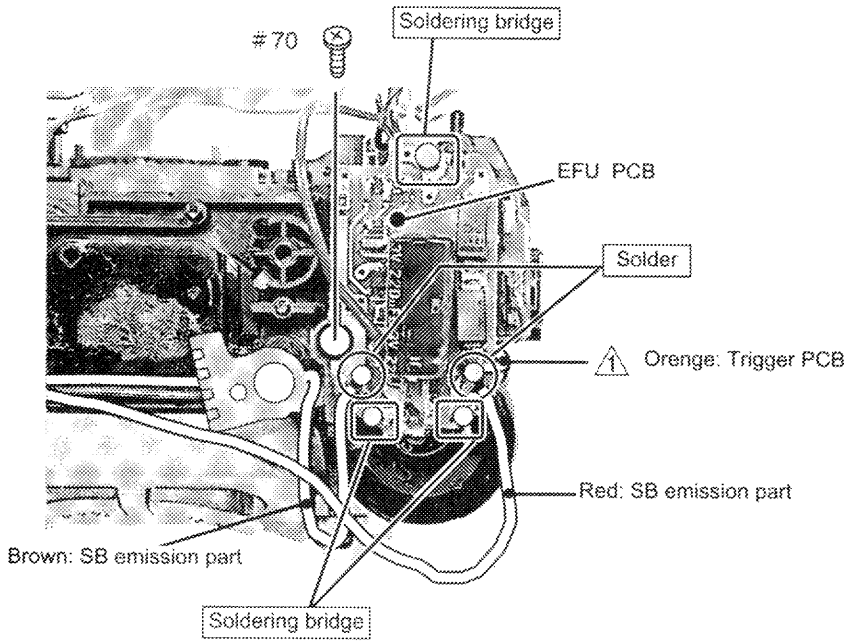

Emission part
Grease: CFD-005.5H
#32
Grease: CFD-005.5H


#52
Grease: CFD-005.5H
#51
#50


#33
#34

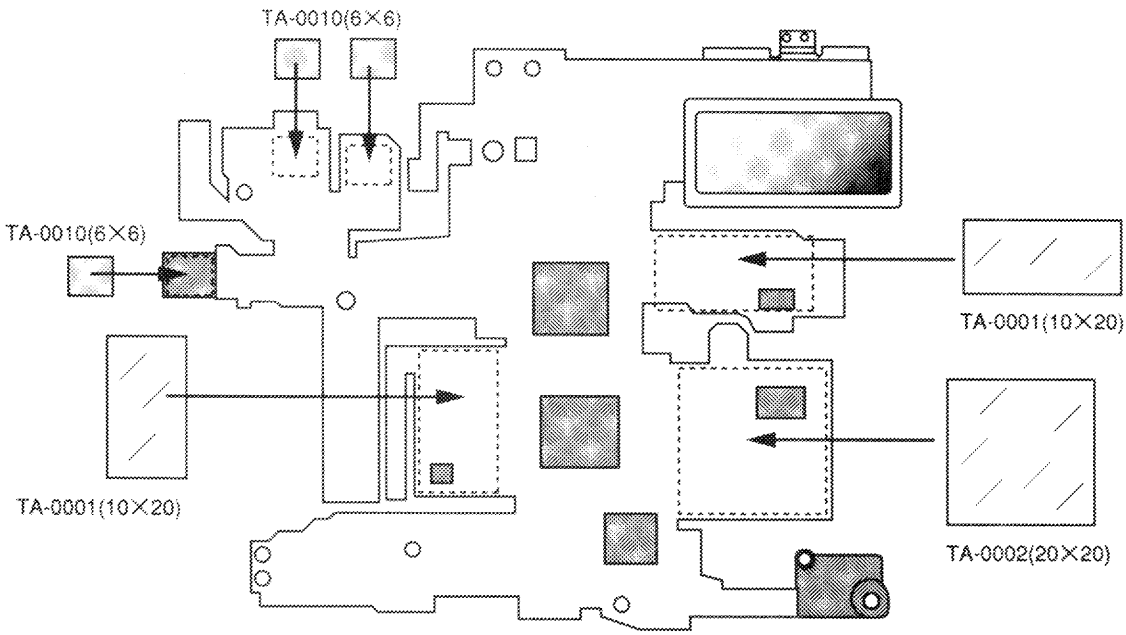
EFU PCB



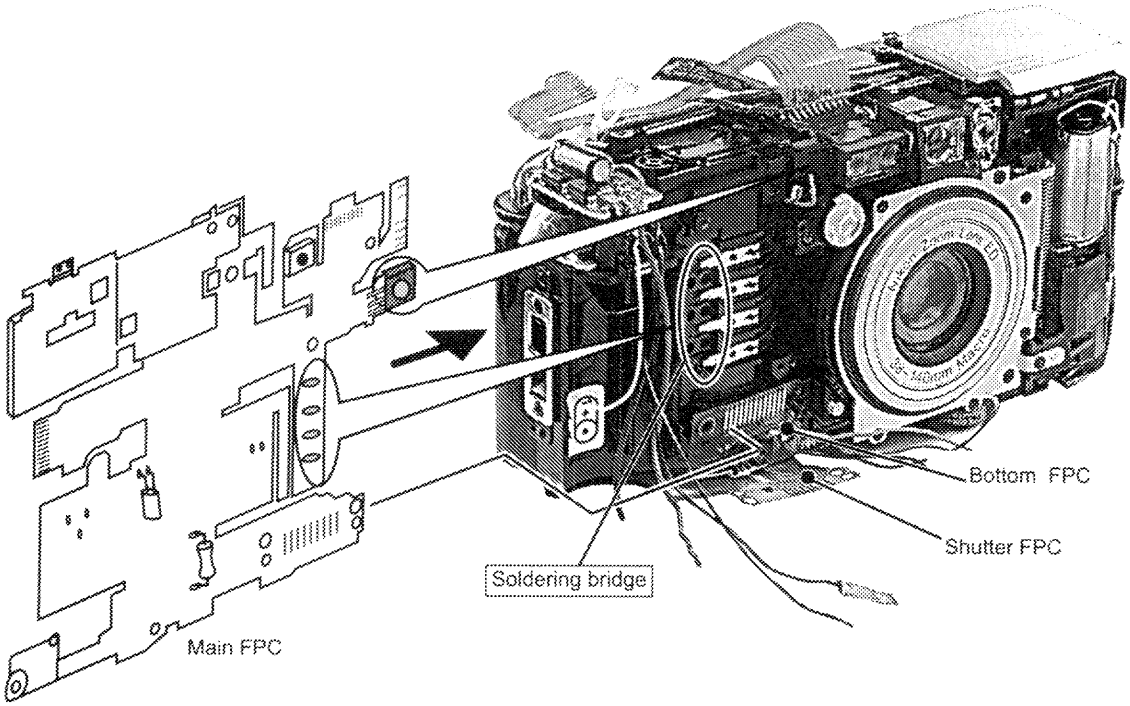


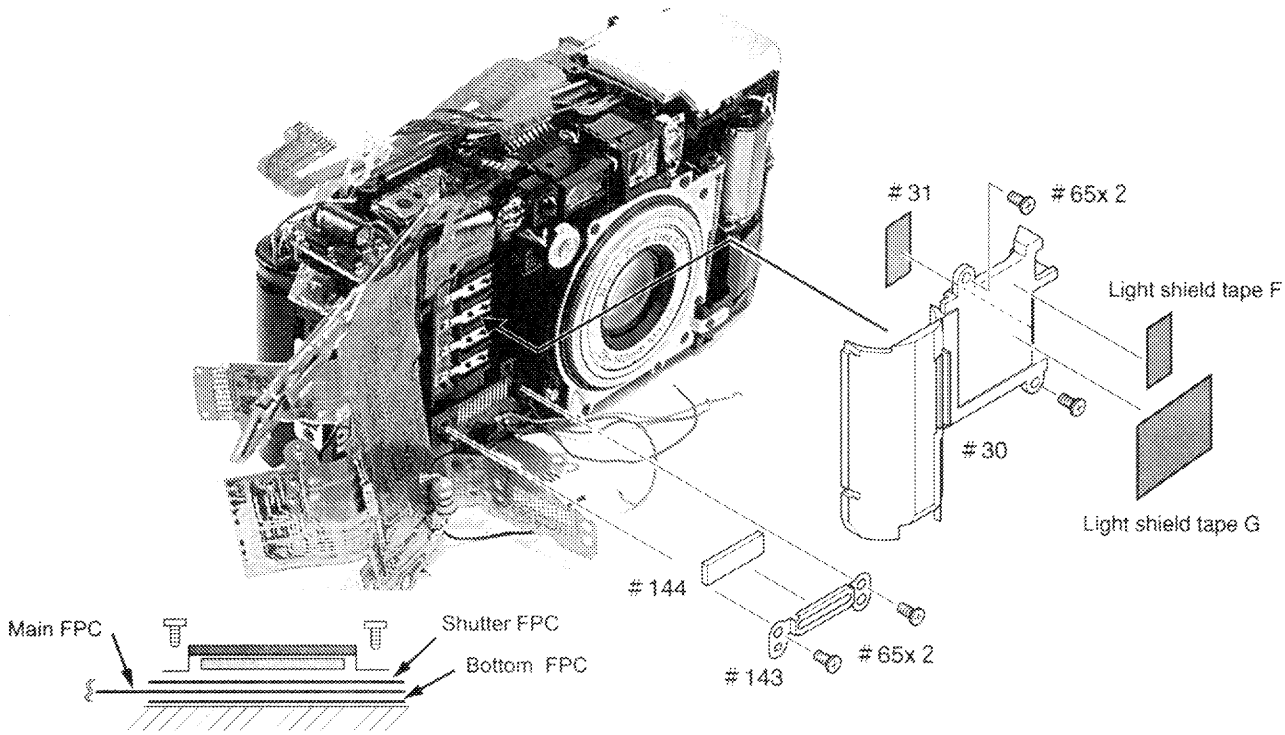
Main FPC

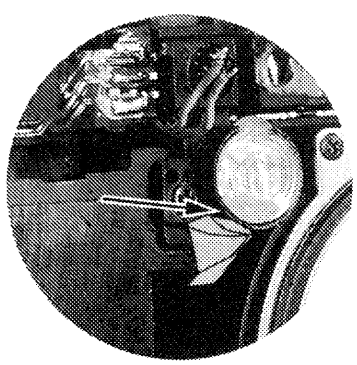
・Apply the insulating tape and the both-sided adhesive tape to the main FPC.



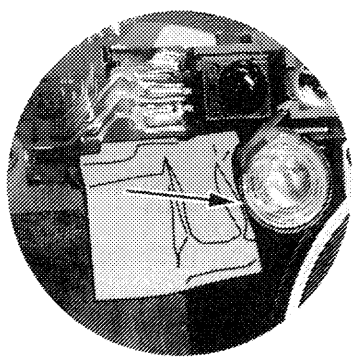
サービス計画課 M





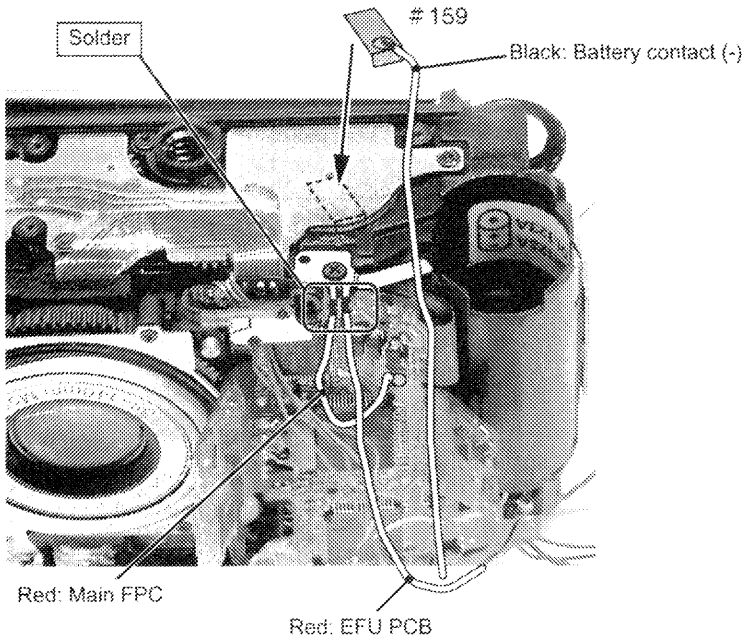


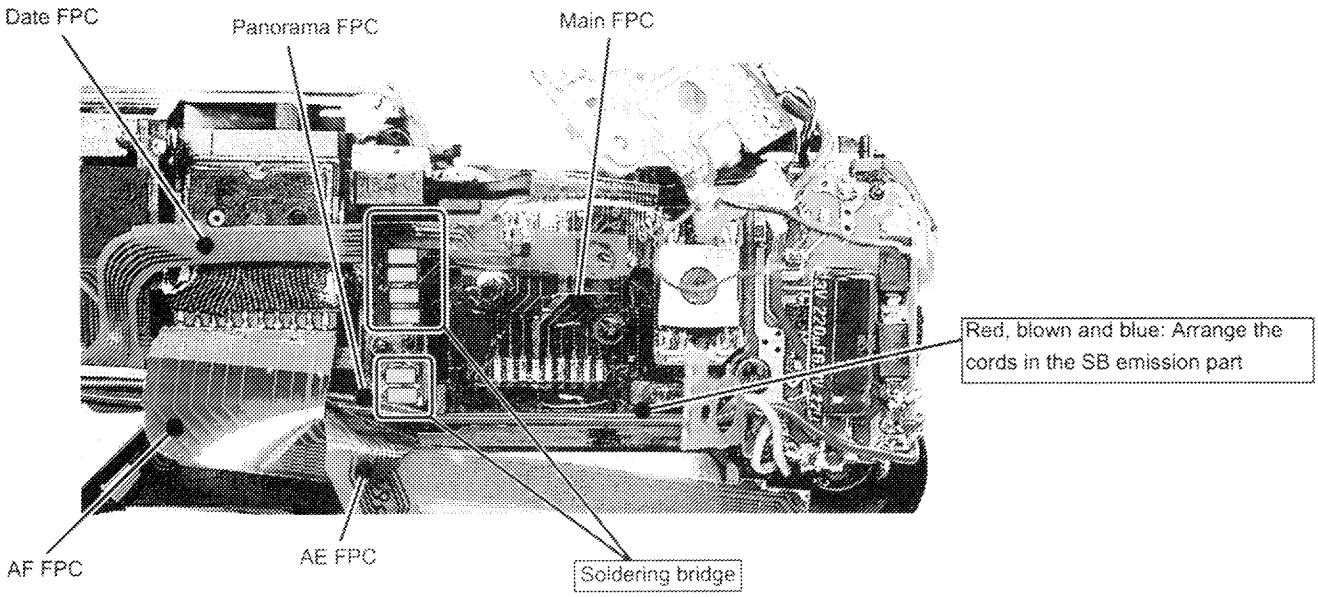
Light shield tape F

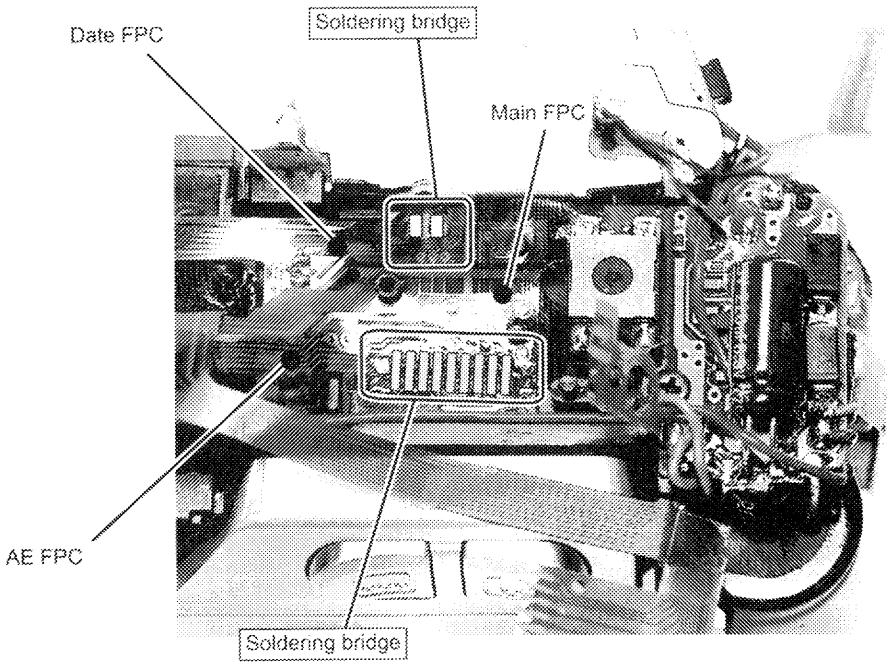


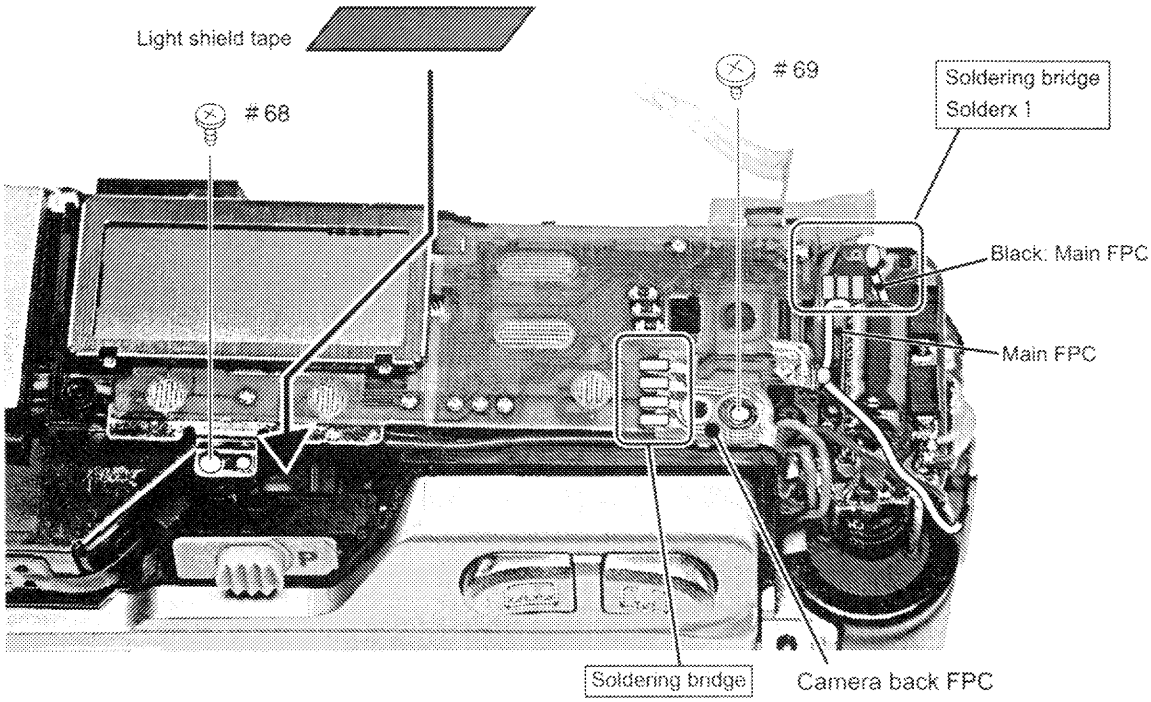
Light shield tape G

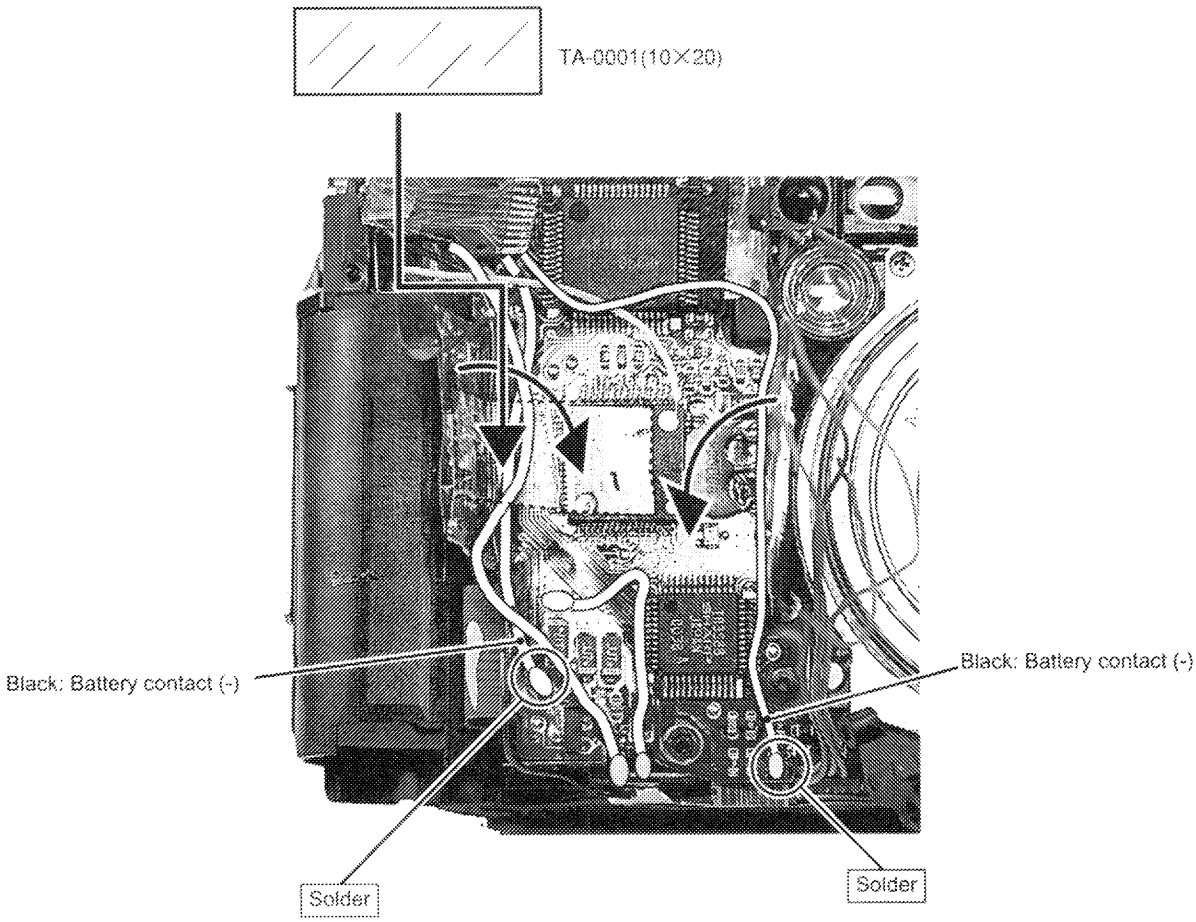
・Apply the light shield tape (#F, G) to the side of the assist lamp.

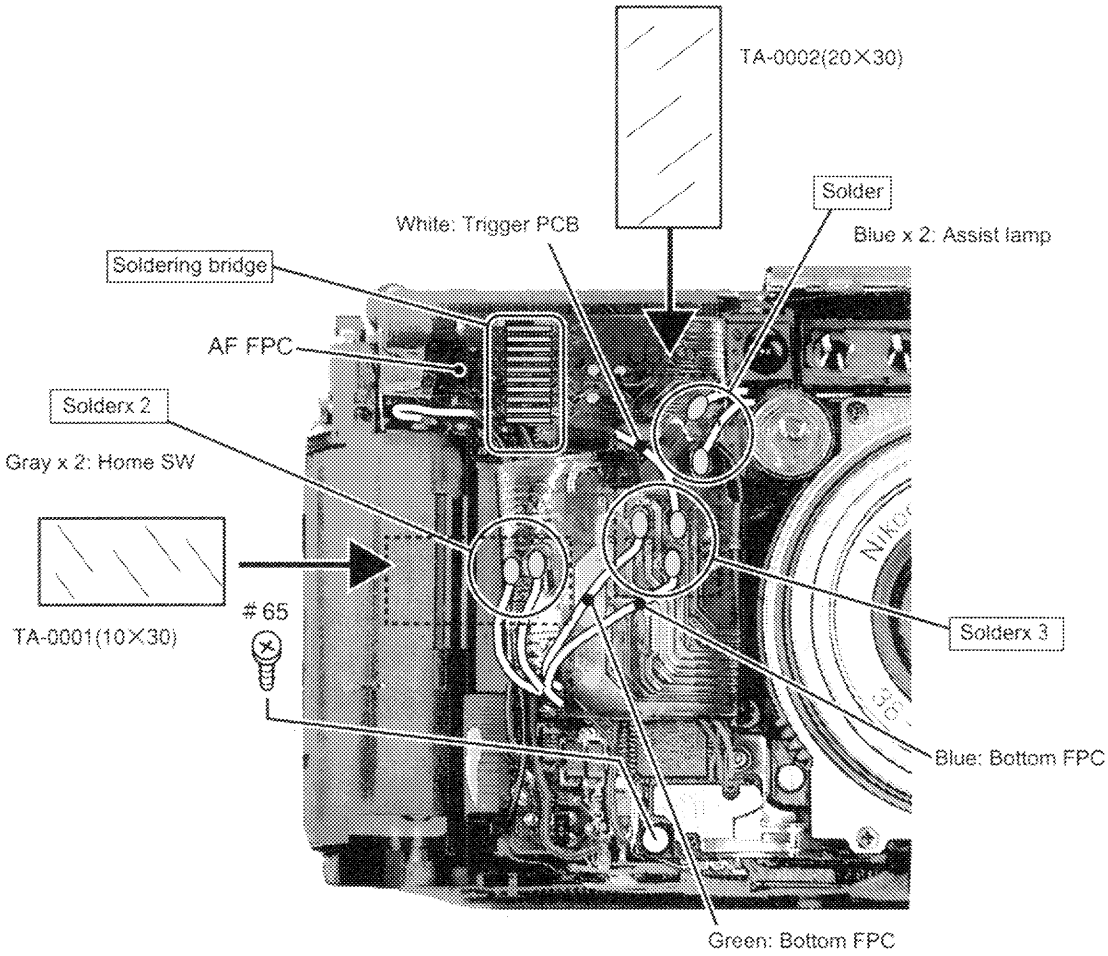

Solder
159
Black: Battery contact (-)
Red: Main FPC
Red: EFU PCB


Date FPC
Panorama FPC
Main FPC
Red, blown and blue: Arrange the cords in the SB emission part
AF FPC
AE FPC
Soldering bridge

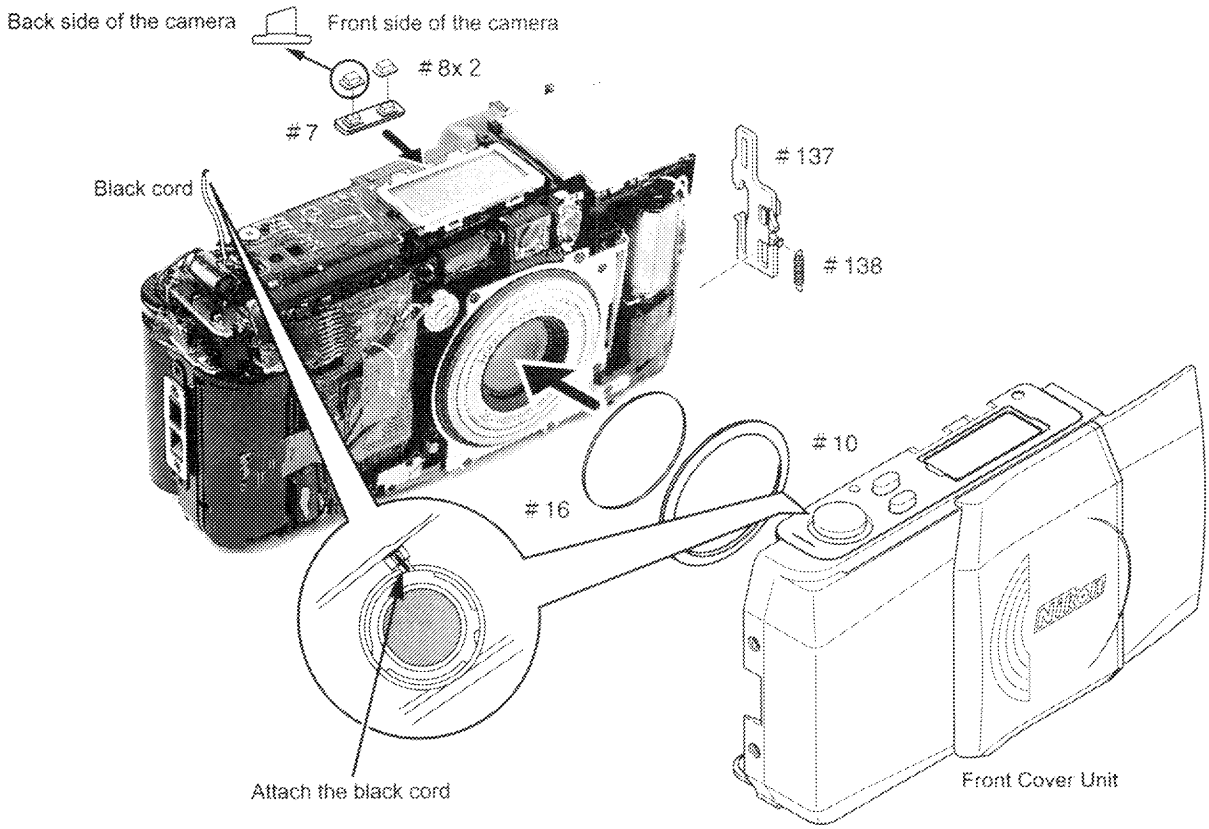

Soldering bridge
Date FPC
Main FPC
AE FPC
Soldering bridge


Light shield tape
68
69
Soldering bridge
Solderx 1
Black: Main FPC
Main FPC
Soldering bridge
Camera back FPC

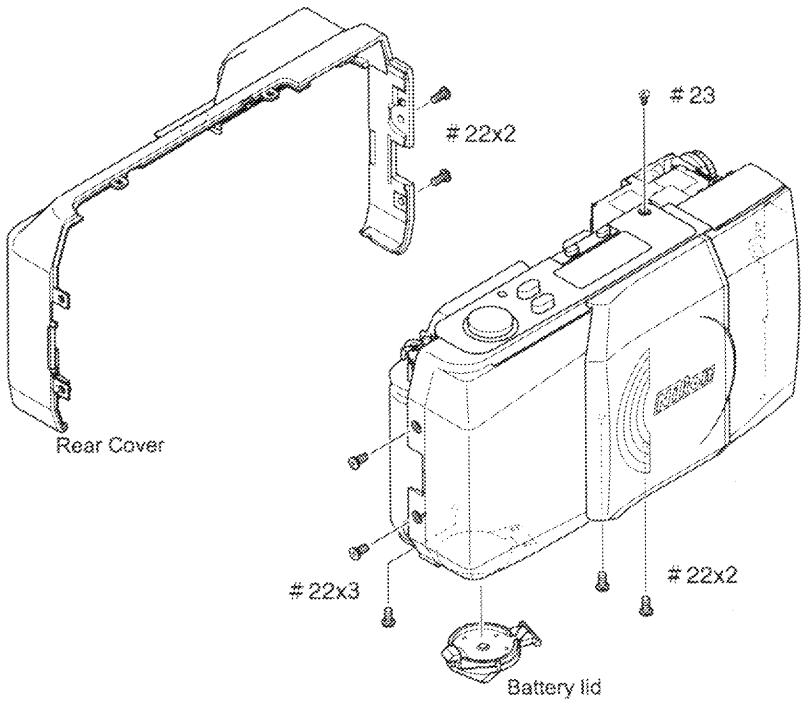

TA-0001(10×20)
Black: Battery contact (-)
Black: Battery contact (-)
Solder
Solder



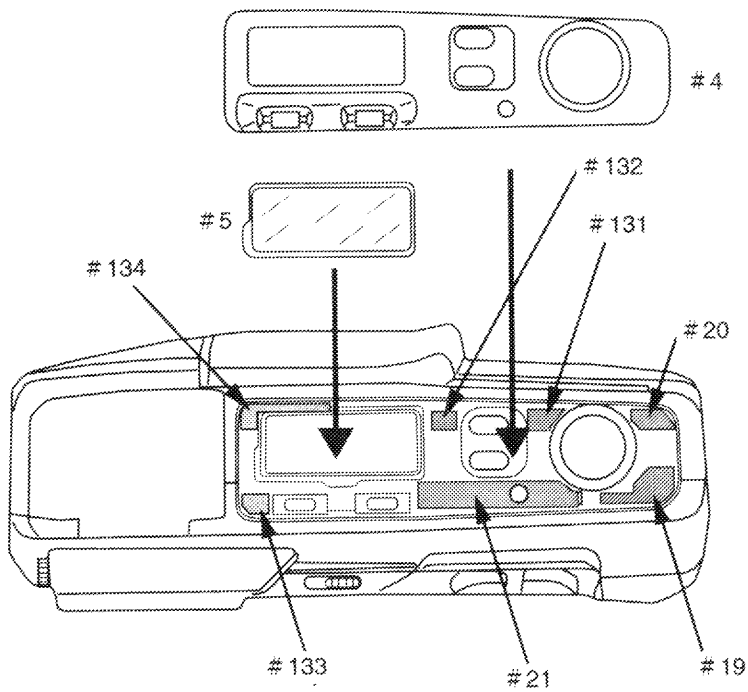
Front Cover Unit



Rear Cover



Top Cover

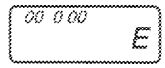


Inspection of lens back

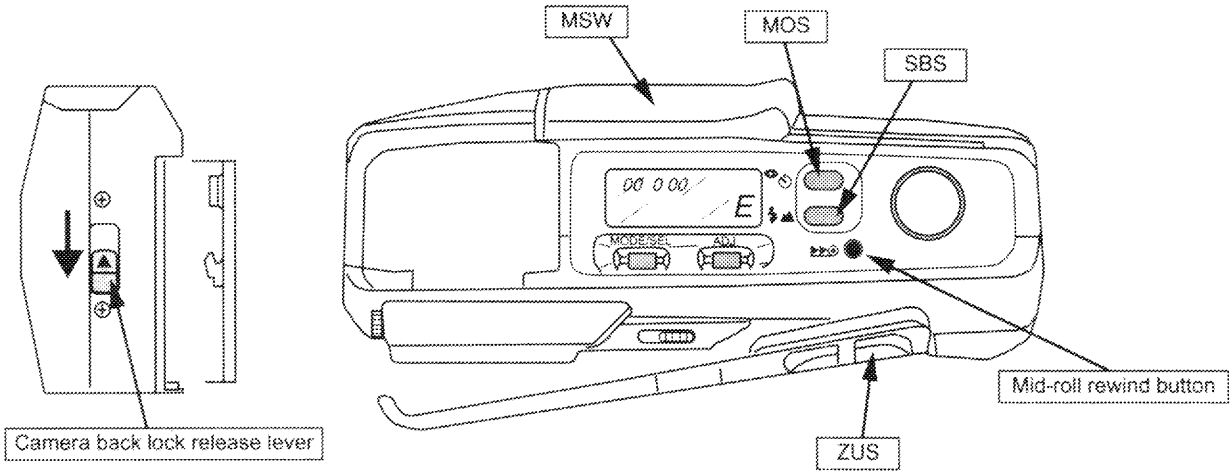
- The lens back of this camera can be checked in the manual inspection mode.
- Machine parts to be prepared for inspection and adjustment
  [1] Collimator (J19019)
  [2] Tool for adjusting focus stand (J15291)

Setting of manual inspection mode

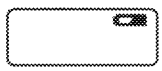
1. Open the camera back.
2. Set the camera back lock release lever to "close".
3. Make sure that "E" is lit on LCD while MSW is OFF. If " E" blinks, the manual inspection mode cannot be set.



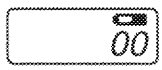
4. While ZUS, MOS and SBS are ON, keep pressing the Mid-roll rewind button for about 2 seconds.



5. When the battery mark is lit, release all the buttons pressed in "4".

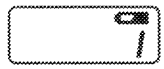


6. When MSW is ON, the lens moves to WIDE end and "00" is lit on LCD.
7. Set SBS to ON. The display on LCD is changed at random.



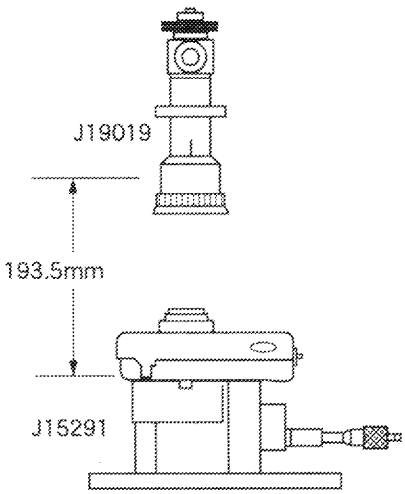
8. Set MOS to ON and, within 1 second, set SBS to ON. Keep this condition for about 10 seconds.
9. "E" is changed to "0" on LCD. (Keep the condition of the above "8".)

10. Under the condition of "8", keep MOS "ON", set SBS to OFF and to ON again.



11. When "0" is changed to "1" on LCD, set MOS and SBS to OFF.

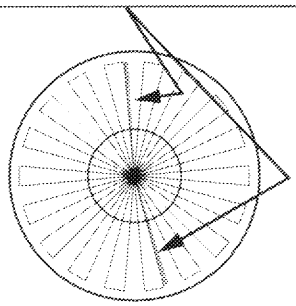
12. Press the release button. The lens back is set to "infinity" and the shutter is set to "Bulb", and the shutter is opened. (The shutter is closed after 100 seconds.)
13. Under this condition, measure the lens back at WIDE end.
14. Press the release button, and the shutter is closed.
15. Set ZUS to ON once, and the lens barrel moves to TELE side and stops at the "M1" position.
16. Repeat the above "12".
17. Measure the lens back when the zoom position is "M1".
18. Press the release button, and the shutter is closed.
19. Repeat the above "15" to "18" and measure the lens back when the lens barrel is at "M2" and at TELE end.
20. After measurement, remove the batteries from the camera.



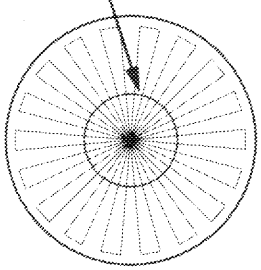
- Set the tool for adjusting focus stand (J15291) to "0".
- Turn the objective lens of the collimator (J19019) and measure the lens back.

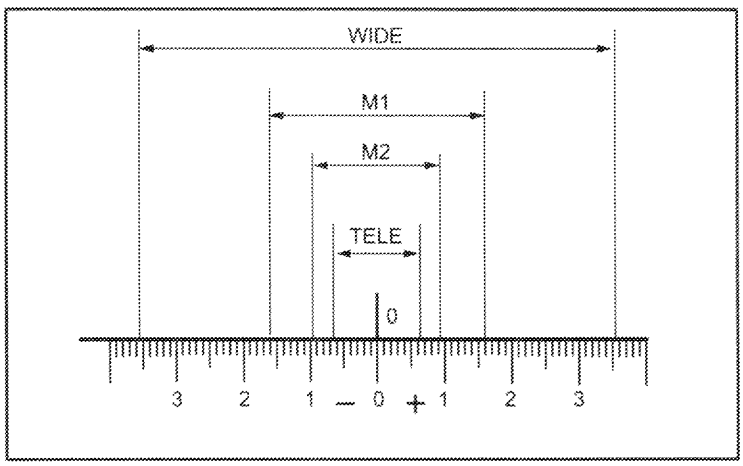
Standard of WIDE end	:	0±3.56mm
Standard of M1	:	0±1.60mm
Standard of M2	:	0±0.93mm
Standard of TELE end	:	0±0.64mm

WIDE end:
Position where the vertical line color is blue-purple (change point from blue to red)



M1, M2 and TELE end:
Focus position in scale circle





Inspection of AF step

· AF step of this camera can be checked in the manual inspection mode.

· Machine parts to be prepared for inspection and adjustment

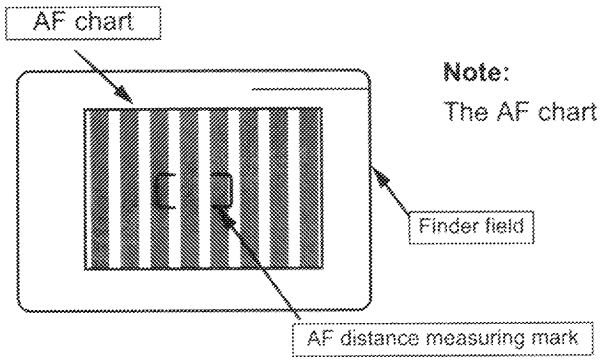
[1] Tripod

[2] AF chart

1. The camera back should be closed.
2. Carry out "3" to "7" of "Setting of manual inspection mode" in Page A24.
3. Set the camera and AF chart at the set distance of the following table and press the shutter button.
4. Read data when the self-timer indicator and red-eye reduction indicator appear on LCD.
5. If the data is out of standard, make adjustment. (Page A33)
6. After measurement, remove the batteries from the camera.

Standard

Set distance (m)	AF chart	AF step data
0.72	J 15374	"0575" → "058E" ← "05A7"
1.00	J 15373	"03E7" → "0400" ← "0419"
1.44	J 15373	"01AE" → "02C7" ← "02E0"
2.88	J 15372	"014A" → "0163" ← "017C"



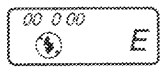
Note:
The AF chart should be within the finder's AF distance measuring mark.

AE inspection

· Machine parts to be prepared for inspection and adjustment

Shutter speed tester (EF8000) ISO100, K-1.3

1. Open the camera back in the normal mode.
2. Set the camera back lock release lever to "close".
3. Make sure that "E" blinks or is lit on LCD while MSW is ON.
4. Set the camera to "flash cancel mode" and to WIDE end.
5. Check the EE value with the shutter speed tester.
6. If luminance is LV7~LV14 and EE value is out of standard, make adjustment. (Page A34)
7. If luminance is LV14~LV17 and EE value is out of standard, make adjustment. (Page A35)



Standard of AE

Luminance	Standard
LV7~LV14	−1.0EV~+1.0EV
LV14~LV17	−1.0EV~+1.5EV

Adjustment

・The following adjustments can be performed with the manual adjustment mode in this camera.

Table-1

Adjustment procedure	Command No.	Adjustment item	Fixed value
	02	Adjustment for lens barrel reset position	68
3	04	Adjustment for zoom backlash	4E
4	05	Adjustment for TELE end position	68
1	07	Adjustment for lens barrel SW position	1110
2	08	Adjustment for edges in zoom deviation correction	
5	0A	Adjustment for TELE end lens back	05
6	0B	Adjustment for M2 lens back	80
7	0C	Adjustment for M1 lens back	80
8	0D	Adjustment for WIDE end lens back	80
①	17	Adjustment for AF short distance 0.72m	0DCB
②	18	Adjustment for AF middle distance 1.44m	098A
③	19	Adjustment for AF long distance 2.88m	053A
9	1A	Adjustment for AE light metering LV9 (ISO100)	48
10	1B	Adjustment for AE light metering LV15 (ISO100)	18
11	1C	Adjustment for shutter LV15 (ISO100)	60
	1D	Adjustment for voltage for complete charge	A0
	1F	Check of date copy LED	
12	22	Adjustment for FM opening	48
	23	Display of CPU version	

・When you wish to cancel the manual adjustment mode, remove the batteries from the camera.

Note 1:
Others except the command numbers shown in Table-1 are used for work process. Don't use them.
Note 2:
Observe the adjustment procedure shown in Table-1. When adjusting the AF distance measurement, also observe the adjustment procedure shown by numbers in circle.
For the command without number in "Adjustment procedure", you can make adjustment at any time.

・Adjustment items when disassembly or part replacement is done in repair.

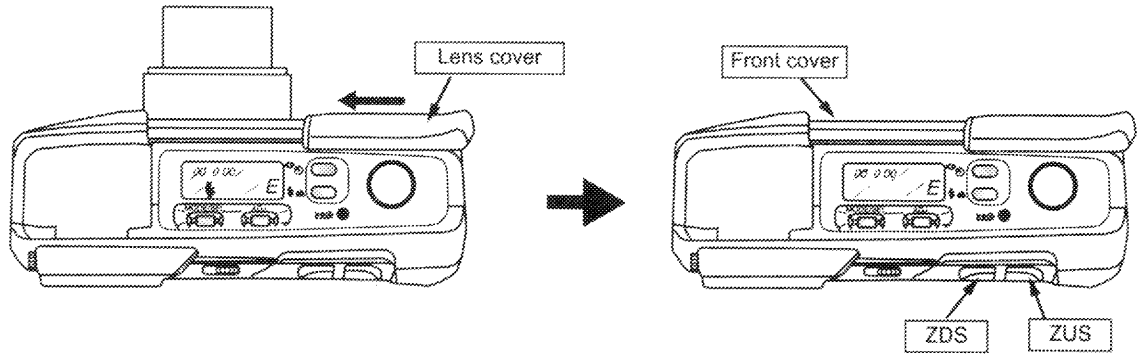
Table-2

Disassembly or part replacement	Necessary adjustment item (Command No.)									
Main FPC	All except 23 in Table-1									
Main condenser	1D									
EFU PCB unit	1D									
Finder cam	04	05	07	08	0A	0B	0C	0D		
Zoom gear	04	05	07	08	0A	0B	0C	0D		
Lens barrel unit	04	05	07	08	0A	0B	0C	0D		
Shutter unit	04	05	07	08	0A	0B	0C	0D	1C	
1st lens group chamber	0A	0B					0C	0D		
3rd lens group chamber	04	05	07	08	0A	0B	0C	0D		

Adjustment for lens barrel reset position

● **Standard**

1. When the lens cover is moved a little to "close" and the main switch is OFF, the lens barrel is at the same level as the front cover.
2. Under the above condition, press the front surface of lens. It sinks a little.
3. When the lens cover is opened and closed, the lens cover is fully closed at "close".



● Adjustment

When all the above three items are not satisfied, make adjustment.

1. Carry out "1" to "6" of "Setting of manual inspection mode" in Page A24.
2. Set ZUS to ON twice to display "02" on the LCD counter. 

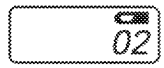
3. Set SBS to ON to decide the "02" adjustment command.
4. The current set data is displayed on the LCD counter. (Standard value "68") 

5. Press ZUS or ZDS to change the data.

   ZDS: The data value is reduced and, after adjustment, the lens barrel stop position moves backward.

   ZUS: The data value is increased and, after adjustment, the lens barrel stop position moves forward.

⚠ The adjustable data range is "40" to "80".

6. Press the shutter button fully. The changed data is written in EEPROM and at the same time the lens barrel moves to the reset position.
7. Check the reset position again and repeat the above "5" to "6" until the above standards are satisfied.
8. To end the adjustment command, press the Mid-roll rewind button.
9. "02" is displayed on LCD. 

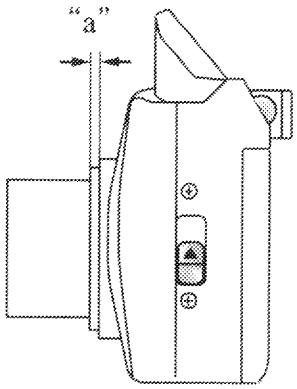
サービス計画課 M

Adjustment for lens barrel SW position (Adjustment for WIDE end position)

● **Standard**

When MSW is ON and the lens barrel stops at WIDE end, measure the length of "a" as shown below.

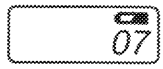
Standard: 1.5 to 1.7mm



● Adjustment

If the length is out of standard, make adjustment.

1. Carry out "1" to "6" of "Setting of manual inspection mode" in Page A24.
2. Set ZUS to ON several times to display "07" on the LCD counter.



3. Set SBS to ON to decide the "07" adjustment command.
4. The current set data is displayed on the LCD counter. (Standard value "1110")

5. Press ZUS or ZDS to change the data.
   ZDS: The data value is reduced and, after adjustment, the length of "a" is increased.
   ZUS: The data value is increased and, after adjustment, the length of "a" is decreased.

Refer to Page A43 for the details of display

⚠ The adjustable data range is "1080" to "1180".

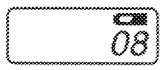
6. Press the shutter button fully. The changed data is written in EEPROM and at the same time the lens barrel moves from the sinking position to WIDE end.

7. Measure the length of "a" again and repeat the above "3" to "6" until the length is within the above standard.
8. When "Adjustment for lens barrel SW position (Adjustment for WIDE end position)" is done, perform "Adjustment for edges in zoom deviation correction".

Adjustment for edges in zoom deviation correction

● Adjustment

1. Set ZUS to ON once to display "08" on the LCD counter.

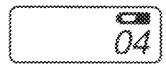


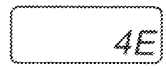
2. Set SBS to ON to decide the "08" adjustment command.
3. The lens barrel moves in the following order, to WIDE end, reset position, zoom middle position, reset position, and WIDE end, and automatic adjustment is done.
4. After "Adjustment for edges in zoom deviation correction", carry out "Adjustment for zoom backlash".

Adjustment for zoom backlash

● Adjustment

1. Set ZDS to ON four times to display "04" on the LCD counter.
2. Set SBS to ON to decide the "04" adjustment command.
3. The current set data is displayed on the LCD counter. (Standard value "4E")
4. Press the shutter button fully. The lens barrel moves in the following order, to WIDE end, zoom middle position and WIDE end.
5. When the lens barrel stops at WIDE end at last, check the movement of the speed light unit to the housing direction.





Standard:

The speed light unit should move to the housing direction in a very small angle and return to the original position.

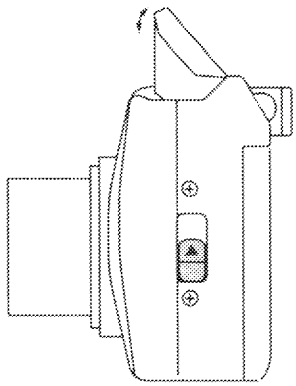
6. If the movement is out of standard, press ZUS or ZDS to change the data.

ZDS: The data value is reduced and, after adjustment, the movement of the speed light unit is smaller in the housing direction.

ZUS: The data is increased and, after adjustment, the movement of the speed light unit is larger in the housing direction.

⚠1 The adjustable data range is "40" to "70".

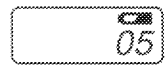
7. Press the shutter button fully. The changed data is written in EEPROM and at the same time the lens barrel moves as the above "4".
8. Repeat the above "6" to "7" until the above standard is satisfied.
9. To end the adjustment command, press the Mid-roll rewind button.
10. After "Adjustment for zoom backlash", carry out "Adjustment for TELE end position".

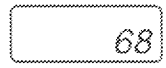


Adjustment for TELE end position

● Adjustment

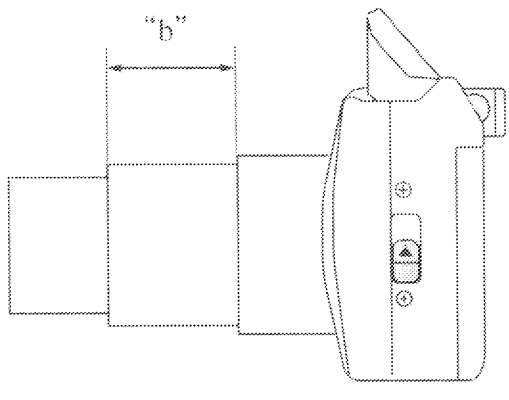
1. Set ZUS to ON once to display "05" on the LCD counter.
2. Set SBS to ON to decide the "05" adjustment command.
3. The current set data is displayed on the LCD counter. (standard value "68")
4. Press the shutter button fully. The lens barrel moves from WIDE end to TELE end.
5. When the lens barrel stops at ~~WIDE~~ TELE end, measure the length of "b" as shown below.





⚠2

Standard: 22.3 to 22.7mm



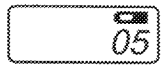
6. If the length is out of standard, set SBS to ON to display the set data on the LCD counter.
7. Press ZUS or ZDS to change the data.

   ZDS: The data value is reduced and, after adjustment, the length of "b" is decreased.

   ZUS: The data value is increased and, after adjustment, the length of "b" is increased.

⚠ The adjustable data range is "40" to "80".

8. Press the shutter button fully. The changed data is written in EEPROM and at the same time the lens barrel moves in the following order, to TELE end, WIDE end and TELE end.
9. Measure the length of "b" again.
10. Repeat the above "6" to "9" until the length is within the above standard.
11. "05" is displayed on LCD.



Ajustment for TELE end lens back (infinity)

● Adjustment

1. Set ZUS to ON five times to display "0A" on the LCD counter.

2. Set SBS to ON to decide the "0A" adjustment command.
3. The current set data is displayed on the LCD counter. (Standard value "05")

4. Open the camera back and press the shutter button fully. The lens barrel is at TELE end and the shutter is set to "valve" and is opened.
5. Under this condition, measure the lens back.

   Standard: 0±0.64mm

6. If the lens back is out of standard, press ZUS or ZDS to change the data.

   ZDS: The data value is reduced and, after adjustment, the measured value shifts to the positive side.

   ZUS: The data value is increased and, after adjustment, the measured value shifts to the negative side.

   The adjustable data range is "00" to "0A".

7. Press the shutter button and measure the lens back.
8. Repeat the above "6" to "7" until the lens back is within the above standard.
9. To end the adjustment command, press the Mid-roll rewind button.
10. The shutter is closed and "0A" is displayed on LCD.

11. If the value cannot be within the standard by the above adjustment because of the lens chamber replacement, etc., carry out mechanical adjustment. (Page A38)

Adjustment for M2 lens back (infinity)

● Adjustment

1. Set ZUS to ON once to display "0b" on the LCD counter.
2. Set SBS to ON to decide the "0b" adjustment command.
3. The current set data is displayed on the LCD counter. (Standard value "80")
4. Press the shutter button fully. The lens barrel is at M2 end position and the shutter is set to "valve" and is opened.
5. Under this condition, measure the lens back.

   Standard: 0±0.93mm

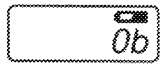
6. If the lens back is out of standard, press ZUS or ZDS to change the data.

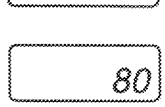
   ZDS: The data value is reduced and, after adjustment, the measured value shifts to the positive side.

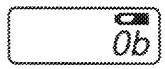
   ZUS: The data value is increased and, after adjustment, the measured value shifts to the negative side.

⚠ The adjustable data range is "00" to "FF".

7. Press the shutter button and measure the lens back.
8. Repeat the above "6" to "7" until the lens back is within the above standard.
9. To end the adjustment command, press the Mid-roll rewind button.
10. The shutter is closed and "0b" is displayed on LCD.







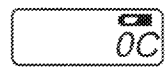
Adjustment for M1 lens back (infinity)

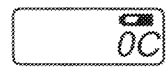
● Adjustment

1. Make adjustment in the same way as "Adjustment for M2 lens back (infinity)". The command to be selected is "0C".

   Standard of M1 lens back: 0±1.60mm

2. To end the adjustment command, press the Mid-roll rewind button.
3. "0C" is displayed on LCD.





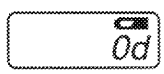
Adjustment for WIDE end lens back (infinity)

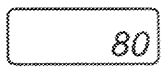
● Adjustment

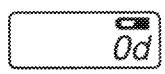
1. Make adjustment in the same way as "Adjustment for M2 lens back (infinity)". The command to be selected is "0d".

   Standard of WIDE end lens back: 0±3.56mm

2. To end the adjustment command, press the Mid-roll rewind button.
3. "0d" is displayed on LCD.





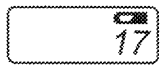


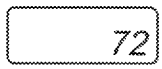
サービス計画課 M

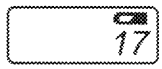
Adjustment for AF short distance

● Adjustment

1. Set ZUS to ON several times to display "17" on the LCD counter.
2. Set SBS to ON to decide the "17" adjustment command.
3. "72" is displayed on the LCD counter.
4. In the camera, set 0.72m as the distance from the AF chart (J15374) to the film surface.
5. Set SBS to ON, and distance is measured and the data is displayed on the LCD counter.
6. Press the shutter button fully. The measured distance is written in EEPROM and then "17" is automatically displayed on LCD.
7. Subsequently carry out "Adjustment for AF middle distance".



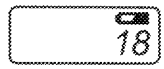


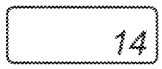


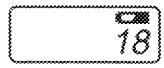
Adjustment for AF middle distance

● Adjustment

1. Set ZUS to ON once to display "18" on the LCD counter.
2. Set SBS to ON to decide the "18" adjustment command.
3. "14" is displayed on the LCD counter.
4. In the camera, set 1.44m as the distance from the AF chart (J15373) to the film surface.
5. Set SBS to ON, and distance is measured and the data is displayed on the LCD counter.
6. Press the shutter button fully. The measured distance is written in EEPROM and then "18" is automatically displayed on LCD.
7. Subsequently carry out "Adjustment for AF long distance".



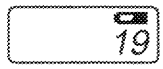


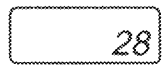


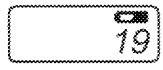
Adjustment for AF long distance

● Adjustment

1. Set ZUS to ON once to display "19" on the LCD counter.
2. Set SBS to ON to decide the "19" adjustment command.
3. "28" is displayed on the LCD counter.
4. In the camera, set 2.88m as the distance from the AF chart (J15372) to the film surface.
5. Set SBS to ON, and distance is measured and the data is displayed on the LCD counter.
6. Press the shutter button fully. The measured distance is written in EEPROM and then "19" is automatically displayed on LCD.
7. After all adjustments are ended, carry out "Inspection of AF step" in Page A26.



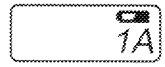


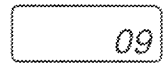


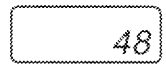
Adjustment for AE light metering (LV9)

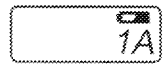
● Adjustment

1. Set ZUS to ON several times to display "1A" on the LCD counter.
2. Set SBS to ON to decide the "1A" adjustment command.
3. "09" is displayed on the LCD counter.
4. Set the shutter speed tester to "LV9". Set the camera onto the shutter speed tester and set SBS to ON.
5. Light metering is automatically done and the data is displayed on the LCD counter.
6. Press the shutter button fully. The measured ~~distance~~ AE data is written in EEPROM and then "1A" is automatically displayed on LCD.





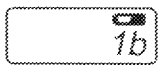


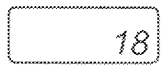


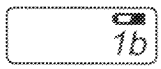
Adjustment for AE light metering (LV15)

● Adjustment

1. Set ZUS to ON once to display "1b" on the LCD counter.
2. Set SBS to ON to decide the "1b" adjustment command.
3. "15" is displayed on the LCD counter.
4. Set the shutter speed tester to "LV15". Set the camera onto the shutter speed tester and set SBS to ON.
5. Light metering is automatically done and the data is displayed on the LCD counter.
6. Press the shutter button fully. The measured ~~distance~~ AE data is written in EEPROM and then "1b" is automatically displayed on LCD.







Adjustment for shutter (LV15)

If luminance is LV14~LV17 and EE value is out of standard in AE inspection of Page A26, make adjustment.
After this adjustment, set the camera in the normal mode and check the light metering value of LV12 and LV19.

● Adjustment

1. Set ZUS to ON once to display "1C" on the LCD counter. → 1C
2. Set SBS to ON to decide the "1C" adjustment command.
3. The current set data is displayed on the LCD counter. (Standard value "60") → 60
4. Press ZUS or ZDS to change the data.
   ZDS: The data value is reduced and the EE value shifts to the negative side.
   ZUS: The data value is increased and the EE value shifts to the positive side.
5. Set the shutter speed tester to LV15 and set the camera onto the shutter speed tester.
6. Press the shutter button fully. The changed data is written in EEPROM and at the same time the shutter is released.
7. Repeat the above "4" to "6" until the EE value is within standard.
8. To end the adjustment command, press the Mid-roll rewind button. "1C" is displayed on LCD. → 1C

Standard of AE

Luminance	Standard
LV7~LV14	−1.0EV~+1.0EV
LV14~LV17	−1.0EV~+1.5EV

Adjustment for voltage for complete charge

· Machine parts to be prepared for adjustment
  [1] Digital multimeter
  [2] Constant-voltage power supply (2.8V and 2.5A) or battery (with full capacity)

● Adjustment

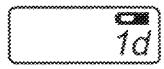
1. Remove the rear cover and discharge the main condenser.
2. Carry out "1" to "6" of "Setting of manual inspection mode" in Page A24.
3. Set ZUS to ON several times to display "1d" on the LCD counter. → 1d
4. Set SBS to ON to decide the "1d" adjustment command.
5. The current set data is displayed on the LCD counter. (Standard value "A0") → A0
6. Press the shutter button, and "C0" is displayed on LCD and charging starts. → C0
7. When charging of the main condenser is completed, the current adjusted data is displayed on LCD again. → A0
8. Measure the voltage of the main condenser.

Standard: 260V±3V

9. If the measured voltage is out of standard, press ZUS or ZDS to change the data.
   ZDS: The data value is reduced and the voltage shifts to the negative side.
   ZUS: The data value is increased and the voltage shifts to the positive side.

⚠ The adjustable data range is "80" to "C0".
   (0.5V is changed per 1 point.)

10. Repeat the discharge of main condenser and the above "6" to "9" until the voltage is within standard.
11. To end the adjustment command, press the Mid-roll rewind button. "1d" is displayed on LCD.

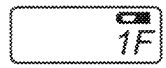


Check of date copy LED

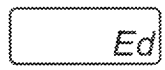
・Machine parts to be prepared for inspection
   [1] Magnifier
   [2] Tracing paper

● Inspection

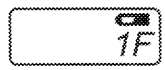
1. Set ZUS to ON once to display "1F" on the LCD counter.

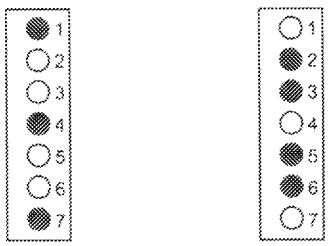


2. Set SBS to ON to decide the "1F" adjustment command.
3. "Ed" is displayed on the LCD counter.



4. Set the camera to "panorama", open the camera back and put a tracing paper onto the date copy LED window.
5. Set SBS to ON repeatedly and make sure that the dots "1, 4, 7" and "2, 3, 5, 6" are lit alternately on the date copy LED.
6. To end this command, press the Mid-roll rewind button. "1F" is displayed on LCD.





Arrangement of data LED

サービス計画課 M

Adjustment for FM opening

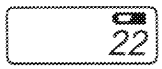
・Machine parts to be prepared for inspection

[1] Tripod

[2] Black paper (A4 size)

Carry out measurement with the distance 0.74m between the black paper and camera.

● Adjustment

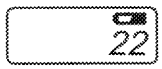
1. Set ZUS to ON several times to display "22" on the LCD counter. 

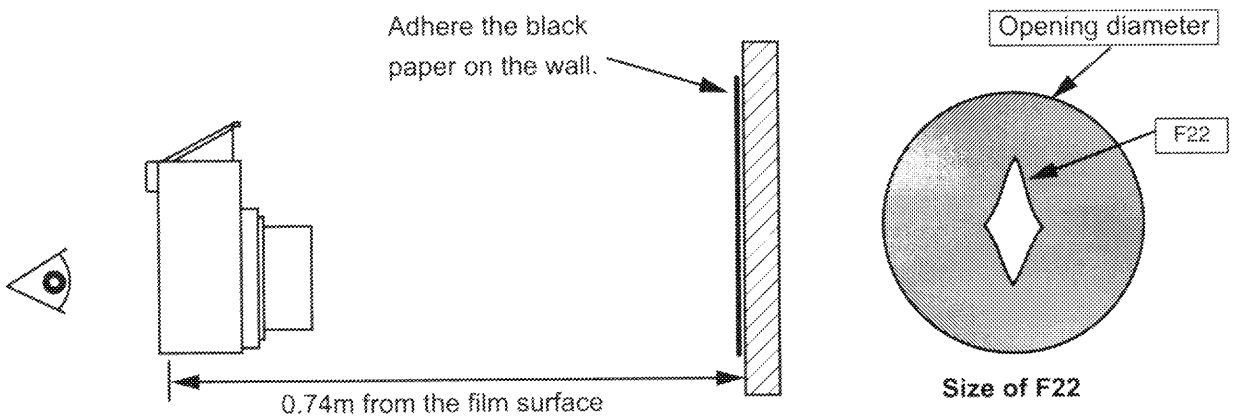
2. Set SBS to ON to decide the "22" adjustment command.
3. The current set data is displayed on the LCD counter. (Standard value "48") 

4. Press ZUS or ZDS to change the data.

   ZDS: The data value is reduced and the aperture diameter is smaller.

   ZUS: The data value is increased and the aperture diameter is larger.
5. Press the shutter button fully. The changed data is written in EEPROM and, after charging is completed, the shutter is released. Check visually the aperture size when released.

   Standard: Size of F22 (Approx. 1/15 area of full open F5.7)
6. Repeat the above "4" to "5" until the aperture is within standard.
7. To end the adjustment command, press the Mid-roll rewind button. "22" is displayed on LCD. 

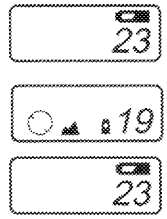


Display of CPU version

In this camera, the version of the mounted CPU can be read with the manual adjustment mode.

● Display

1. Set ZUS to ON several times to display "23" on the LCD counter.
2. Set SBS to ON to decide the "23" adjustment command.
3. The version of the mounted CPU is displayed on the LCD counter.
4. To end this command, press the Mid-roll rewind button. "23" is displayed on LCD.
5. Remove the batteries from the camera, and the manual adjustment mode is canceled.

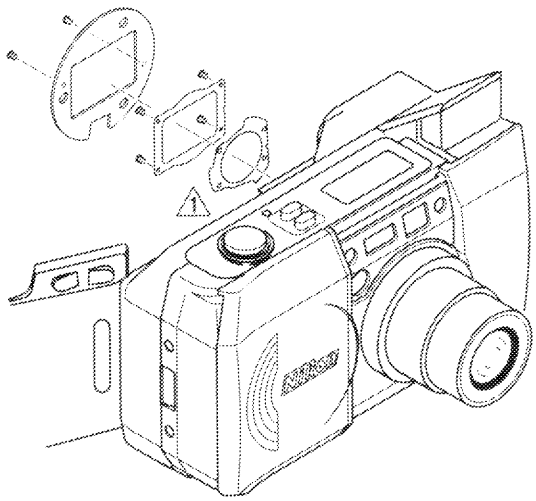


Mechanical adjustment for TELE end lens back

If the lens back is not within standard by electrical adjustment in "Adjustment for TELE end lens back" of Page A32, carry out mechanical adjustment in the following way and perform "Adjustment for TELE end lens back" again.

● Adjustment

1. Set the camera in the normal mode.
2. Open the camera back and set the camera back lock release lever to "close".
3. After setting MSW to ON, remove the batteries from the camera.
4. Remove the three of light-shield frame.
5. Let alcohol flow around the 3rd lens group chamber.
6. Turn the 3rd lens group chamber by using compasses.
   Clockwise: Shifts to the positive side.
   Counterclockwise: Shifts to the negative side.
7. Put the batteries into the camera.
8. Set MOS to ON and, within 1 second, set SBS to ON. Keep this condition for about 10 seconds.
9. "E" is changed to "0" on LCD. Keep the condition of "8".
10. Under the condition of "9", keep MOS "ON", set SBS to OFF and to ON again.
11. "0" is changed to "1" on LCD. Set MOS and SBS to OFF.
12. "E" is displayed on LCD.
13. Set ZUS to ON, set the lens barrel to TELE end and press the shutter button.
14. Measure the lens back by using the collimator and tool for adjusting focus stand.
15. Press the shutter button again and close the shutter.
16. Repeat the above "6", "13", "14" and "15" until the lens back is within standard.
17. Apply the screw lock to 3 places around the 3rd lens group chamber.
18. Set the three of light-shield frame.



サービス計画課 M

4. Combination of main FPC and bottom FPC

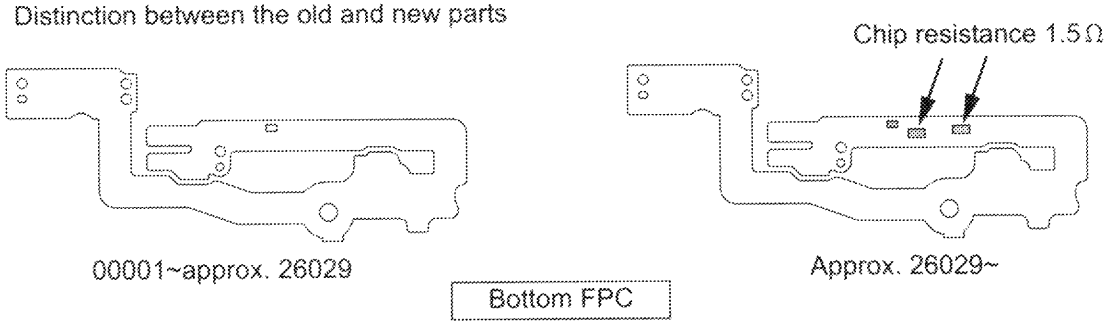
In the products at initial mass production, there are four types of combination of main FPC and bottom FPC. When replacing the parts of RP setting for repair, follow the instructions below.

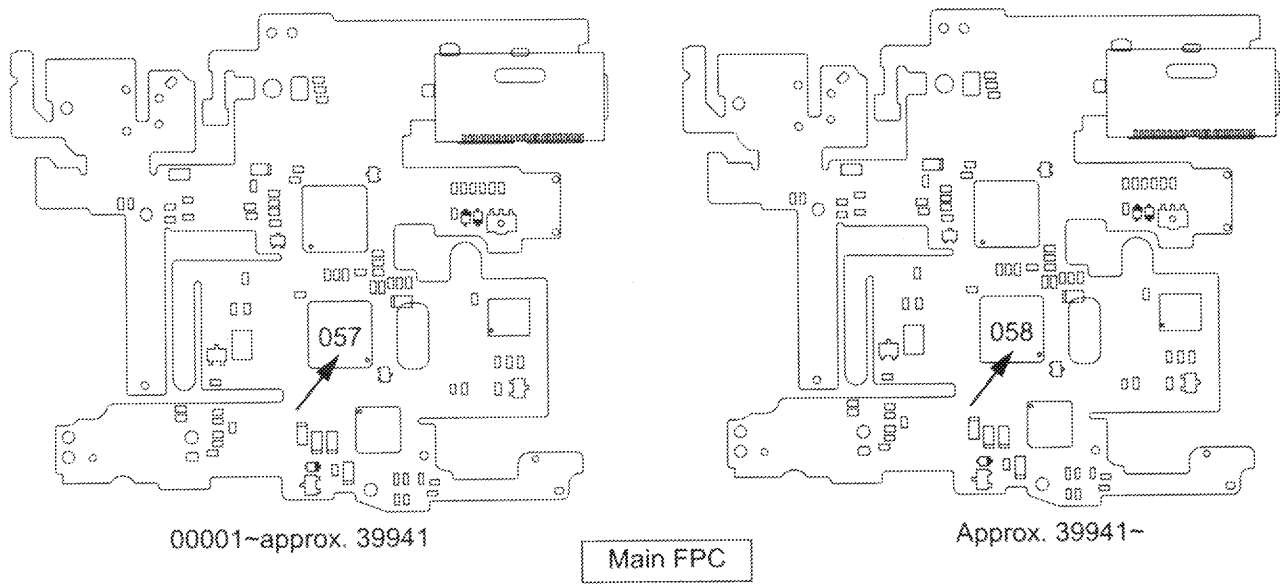
Combination	Bottom FPC display	Film advance motor series resistance	Main FPC display	Tentative PCB
A	Not used	0.82Ω is installed to outside	057	Used
B	Not used	0.82Ω is installed to outside	057	Used
C	M 3	Chip resistance 1.5Ω is installed to bottom FPC	057	Used
D	M 3	Chip resistance 1.5Ω is installed to bottom FPC	058	Not required

● Number of applicable products classified by combination

Combination	Number of products
A	00001~approx. 10000
B	Approx. 10000~approx. 26029
C	Approx. 26029~Approx. 39941
D	

● Distinction between the old and new parts





The parts of newest version will be supplied for main FPC and bottom FPC of RP setting.

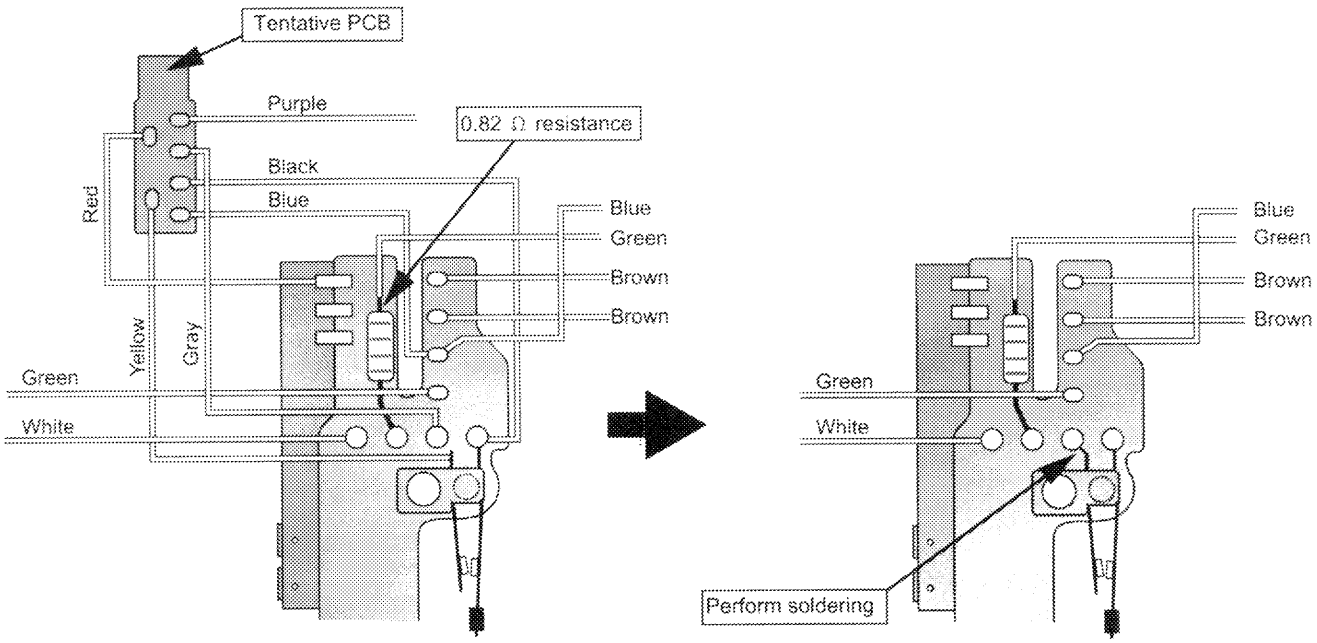
Repair should be done for each combination type.

1). Camera of type A

- When replacing main FPC

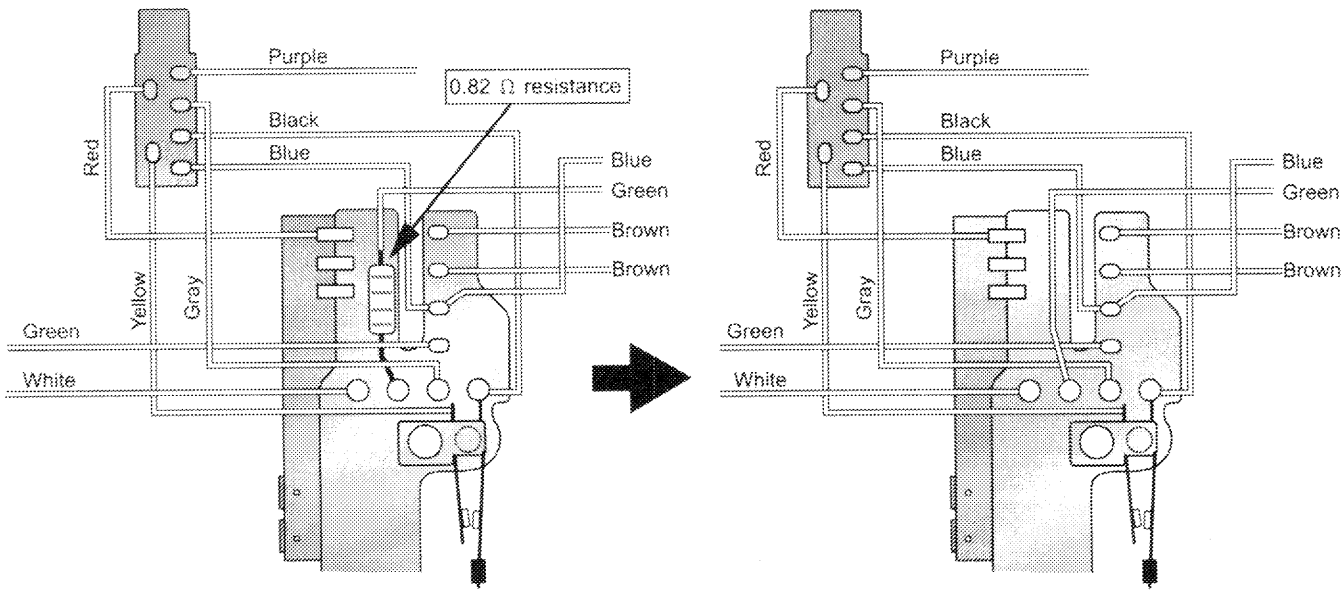
  [1] Remove only the tentative PCB.

  [2] Solder the armature of the camera back switch and the pattern of bottom FPC.



- When replacing bottom FPC

  [1] Remove only the 0.82 ohm resistance.

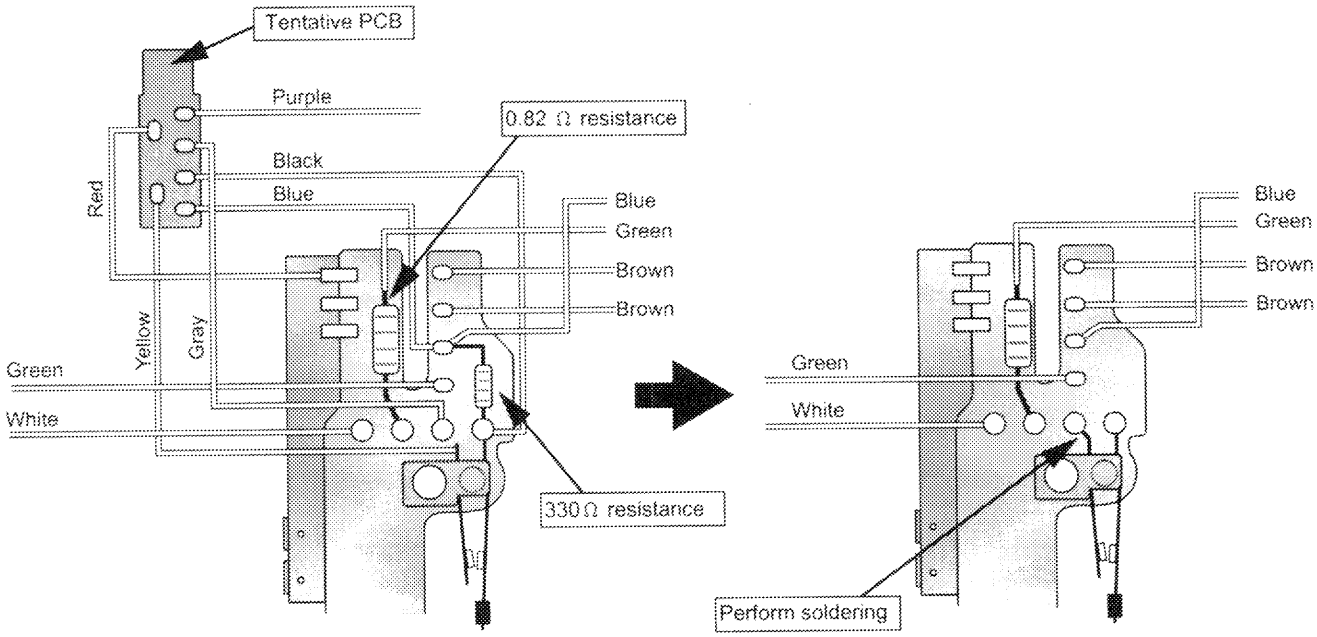


2). Camera of type B

● When replacing main FPC

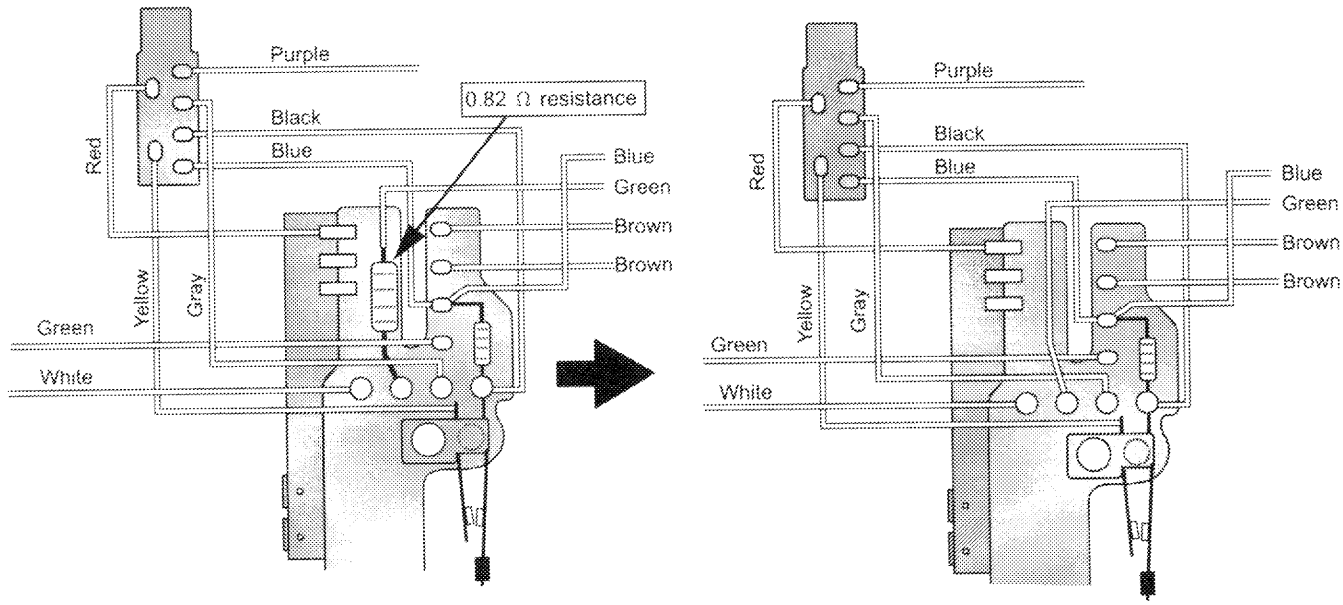
[1] Remove the tentative PCB and 330 ohm resistance.

[2] Solder the armature of the camera back switch and the pattern of bottom FPC.



● When replacing bottom FPC

[1] Remove only the 0.82 ohm resistance.

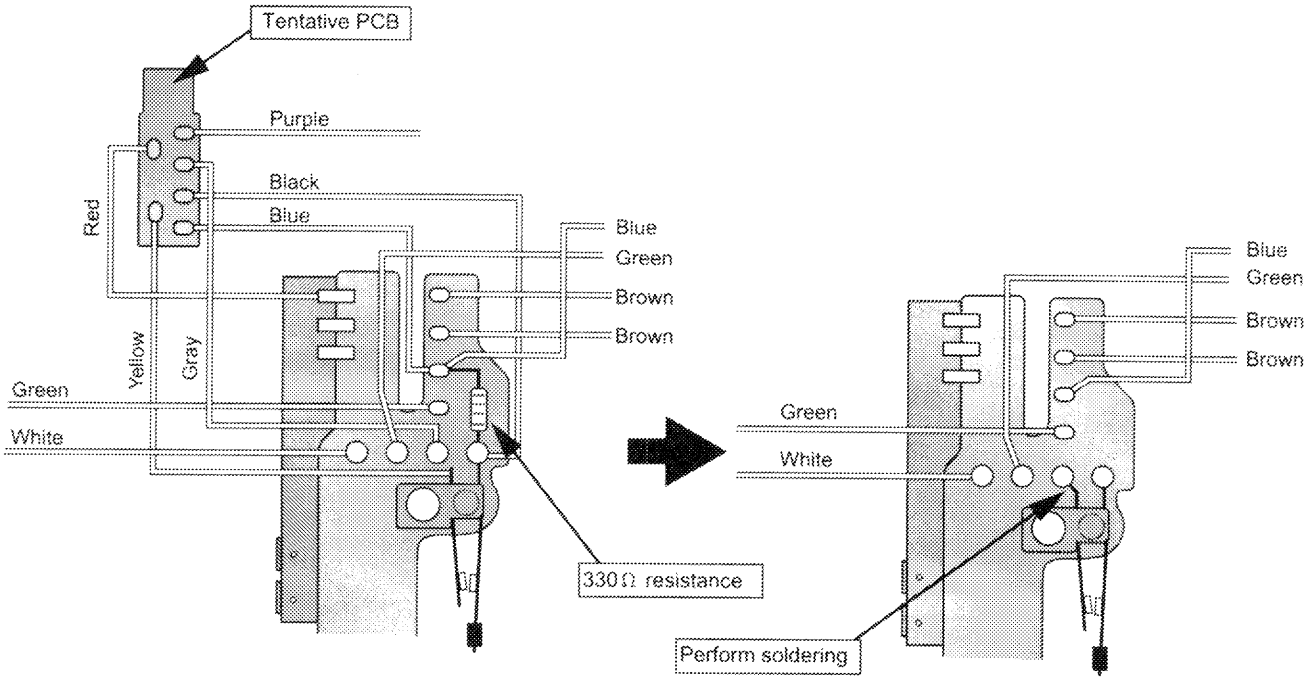


3). Camera of type C

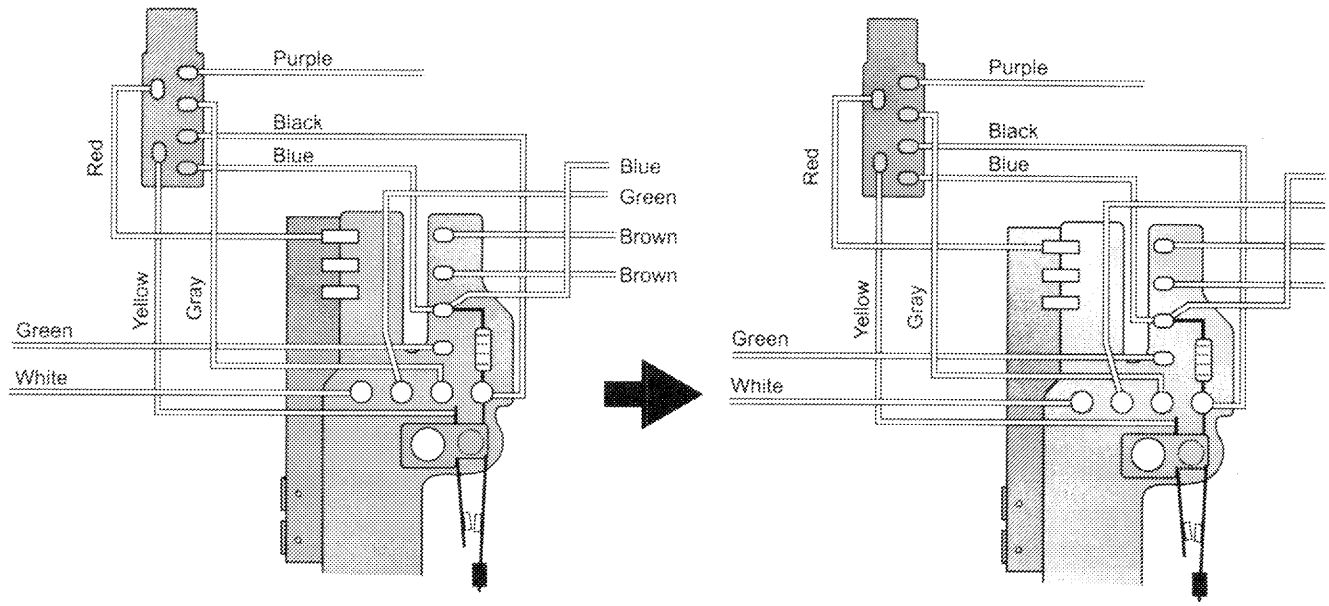
- When replacing main FPC

  [1] Remove the tentative PCB and 330 ohm resistance.

  [2] Solder the armature of the camera back switch and the pattern of bottom FPC.



- When replacing bottom FPC Don't remove the tentative PCB and 330 ohm resistance.

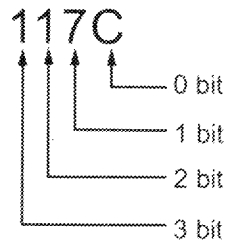


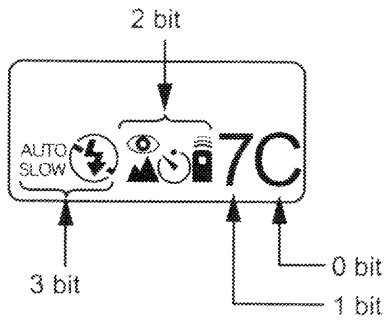
4). Camera of type D

- When replacing main FPC: Replace it as it is.
- When replacing bottom FPC: Replace it as it is.

5. Display of value on LCD

Hexadecimal display





Display mark	3-bit place	Read value
No display	0	0
	1	1
	2	2
	3	3
AUTO	4	4
AUTO	5	5
AUTO	6	6
AUTO	7	7
SLOW	8	8
SLOW	9	9
SLOW	0A	A
SLOW	0B	B
SLOW AUTO	0C	C
SLOW AUTO	0D	D
SLOW AUTO	0E	E
SLOW AUTO	0F	F

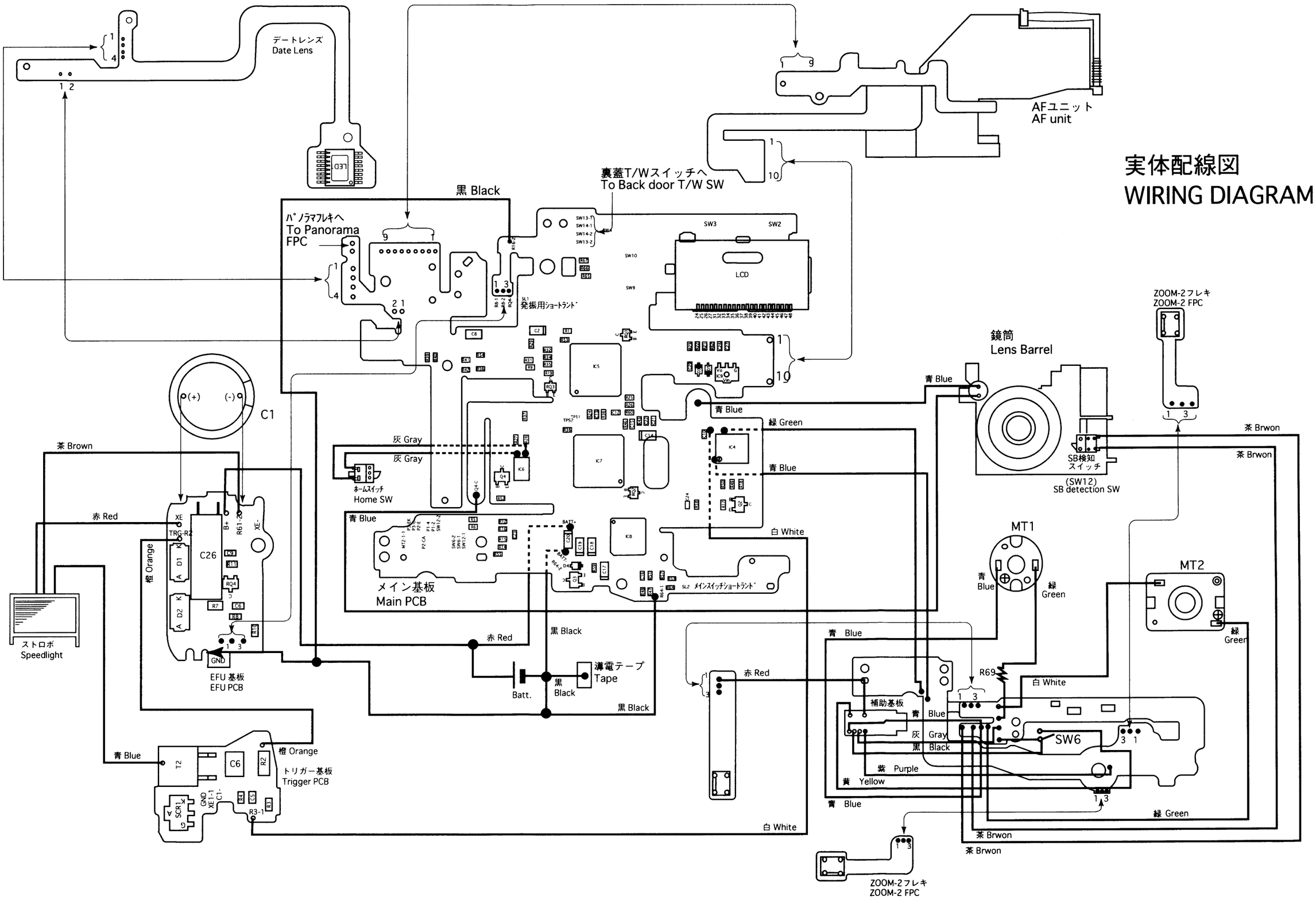
Display mark	1 2-bit place	Read value
No display	0	0
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9
	0A	A
	0B	B
	0C	C
	0D	D
	0E	E
	0F	F

Example

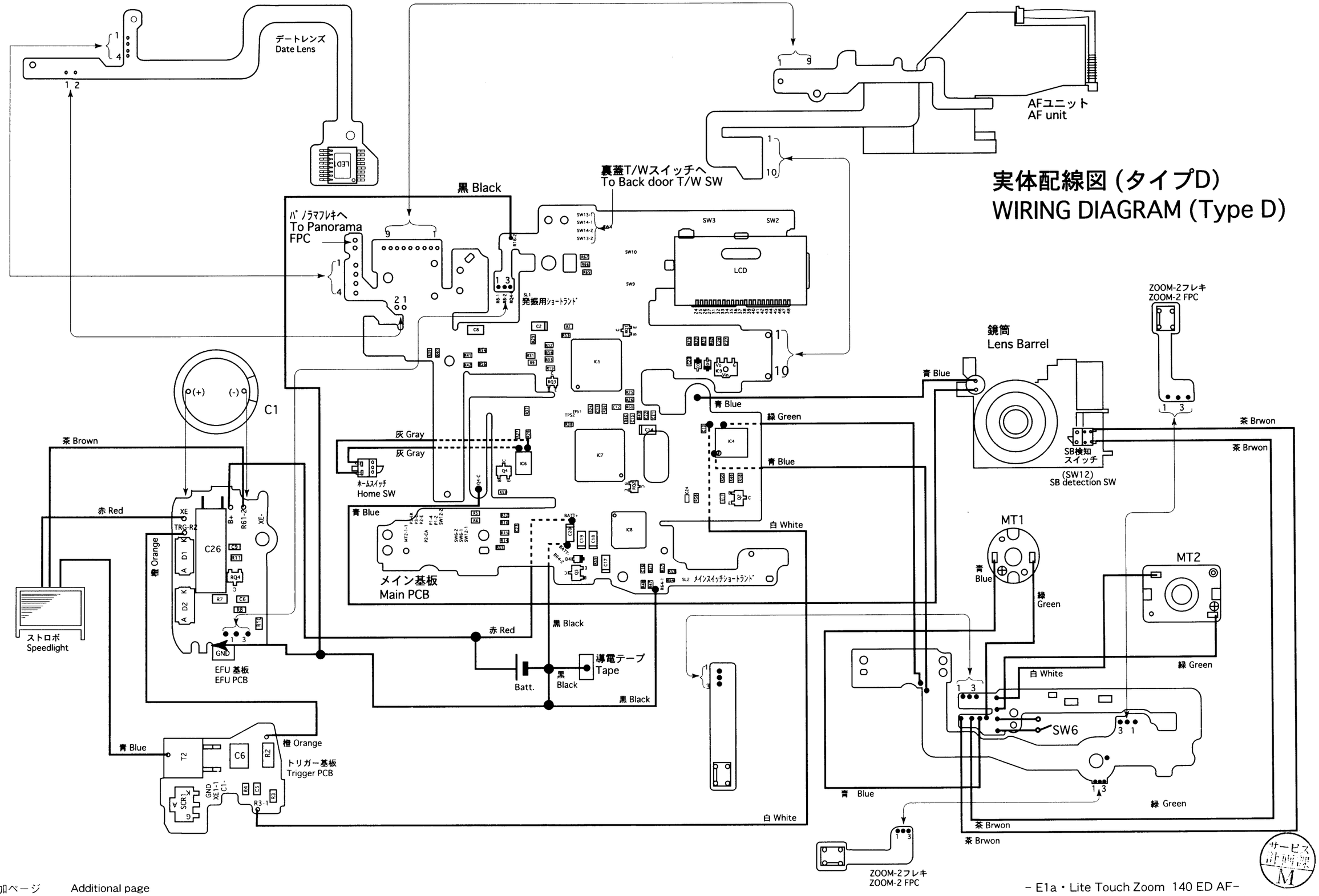
→ 7D7C

1 ×1 Change page

実体配線図
WIRING DIAGRAM



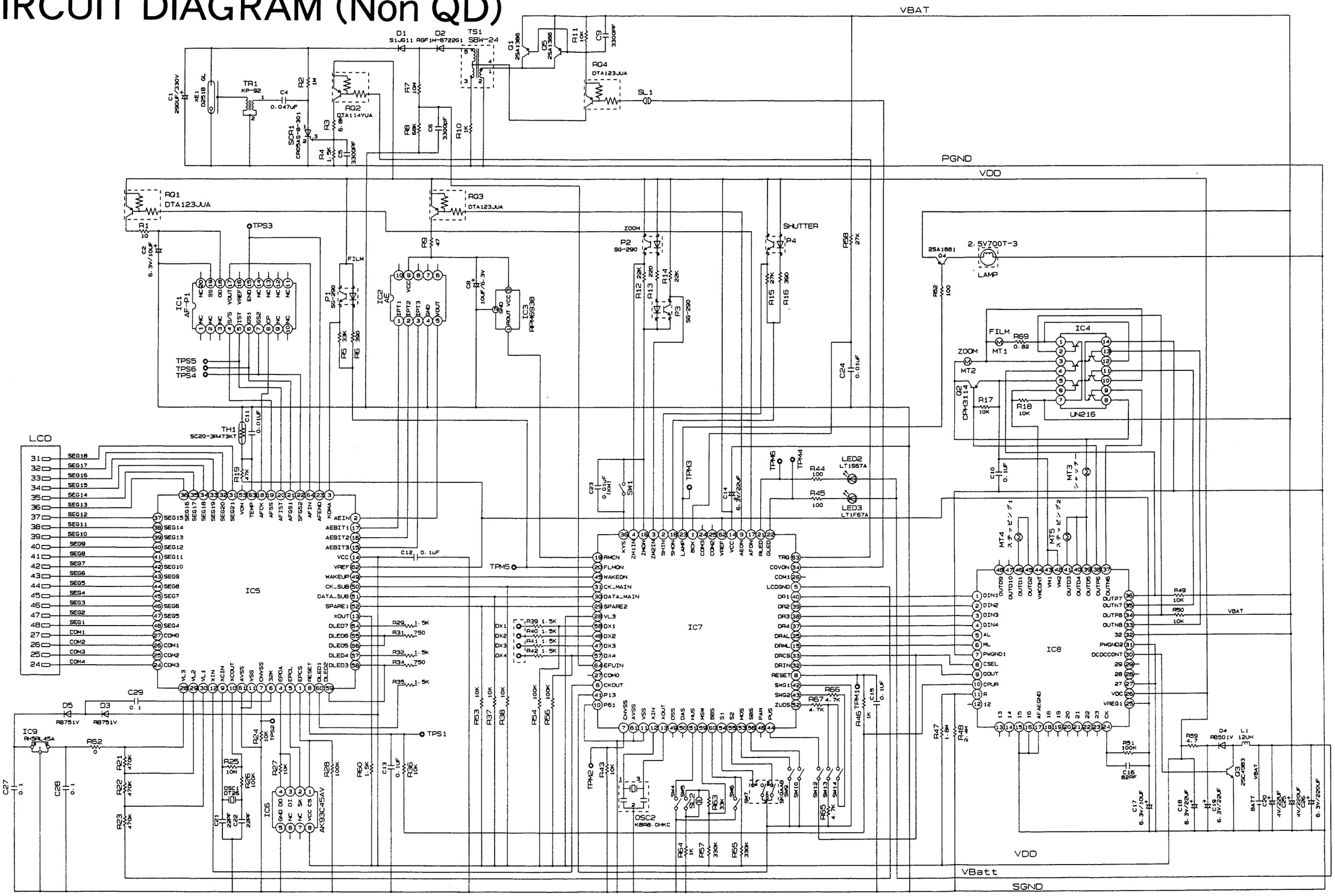
実体配線図 (タイプD)
WIRING DIAGRAM (Type D)



追加ページ　　Additional page

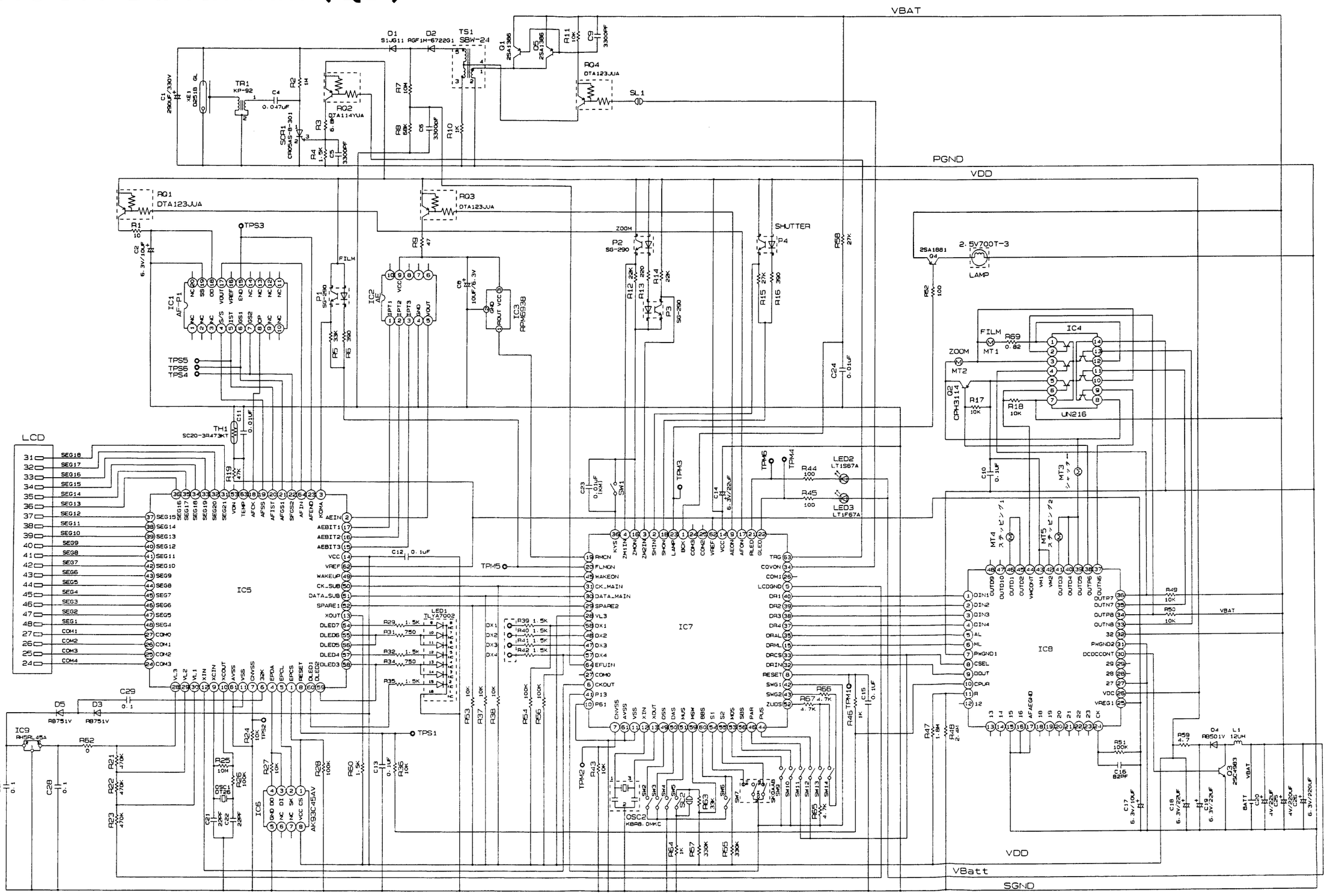
総合回路図（Non QD）

CIRCUIT DIAGRAM (Non QD)



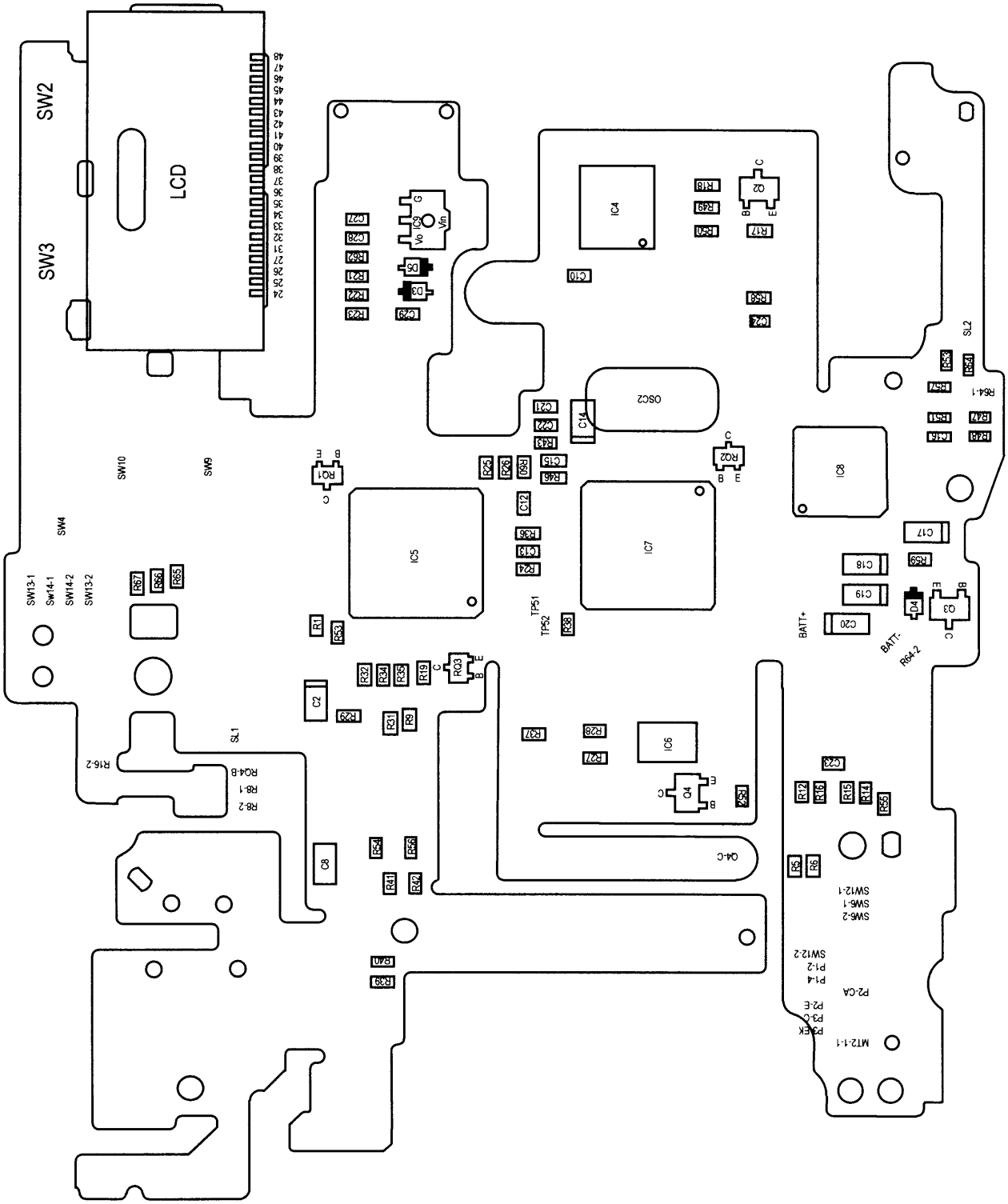
総合回路図（QD）

CIRCUIT DIAGRAM (QD)



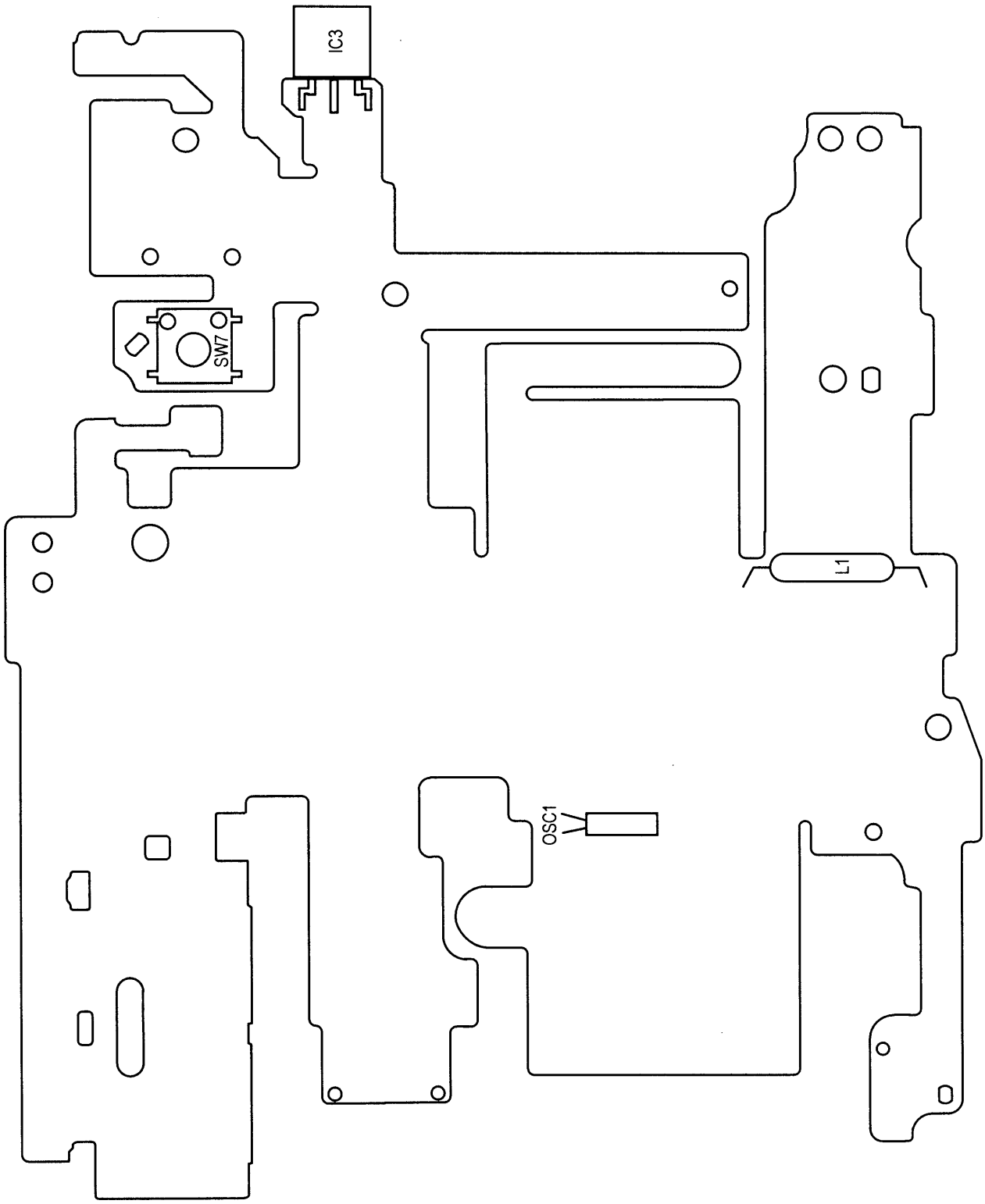
Main FPC

Surfase part mount figure



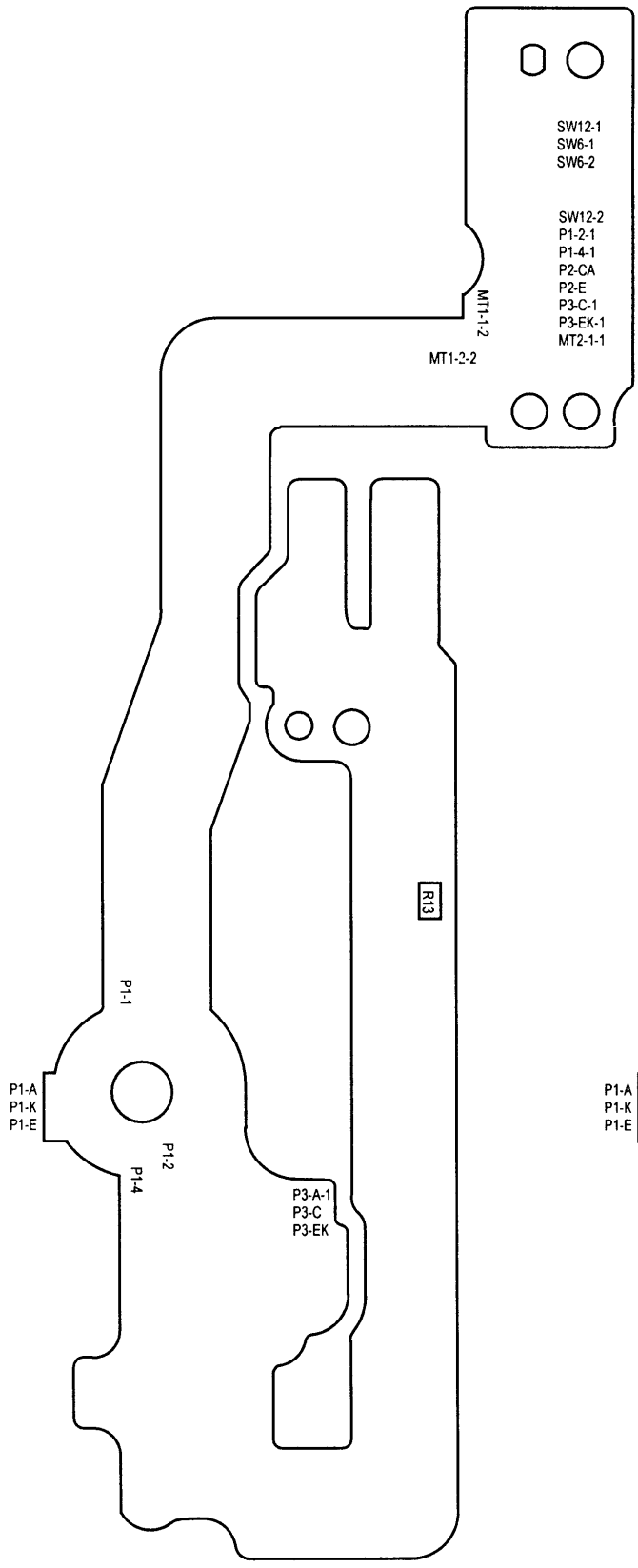
Main FPC

Reverse part mount figure

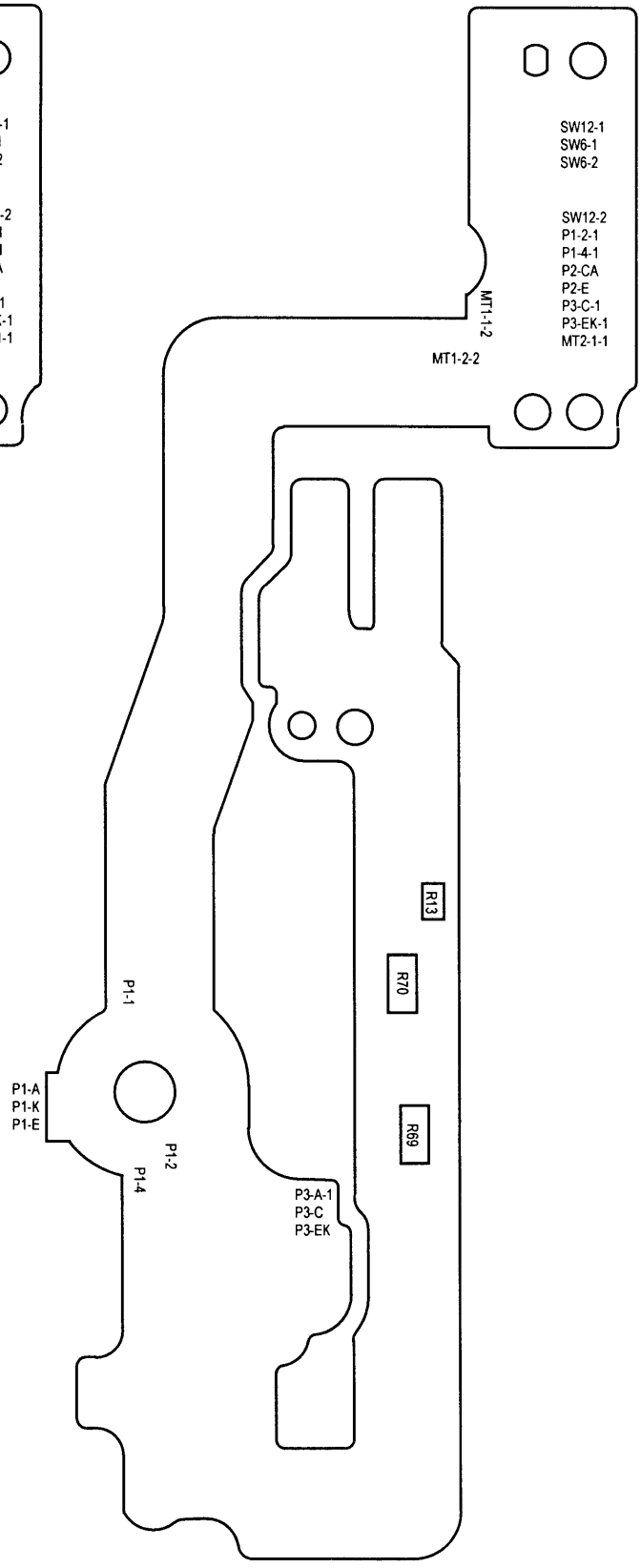


Bottom FPC

Part mount figure



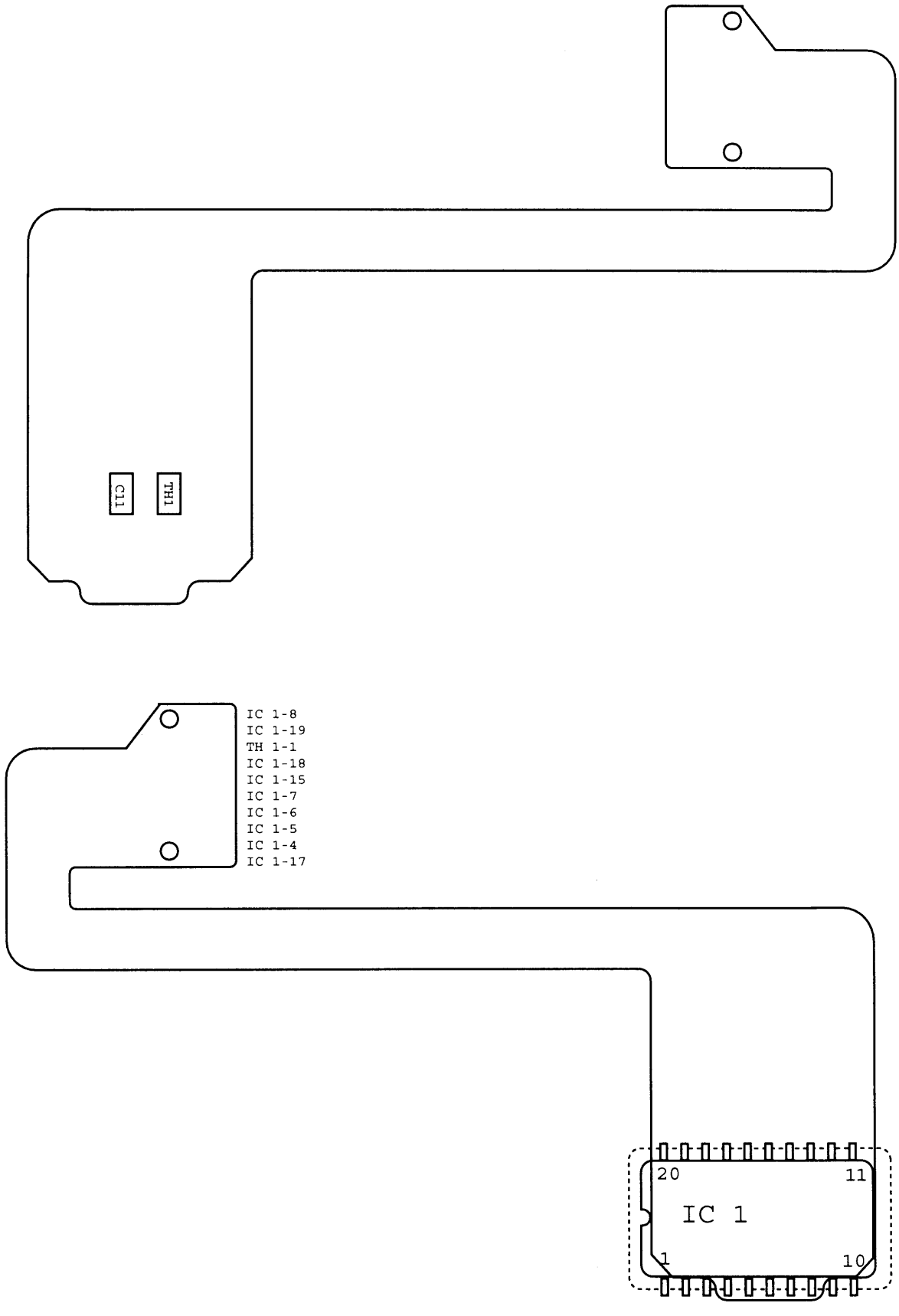
Beginning of the mass production



From the middle of the mass production

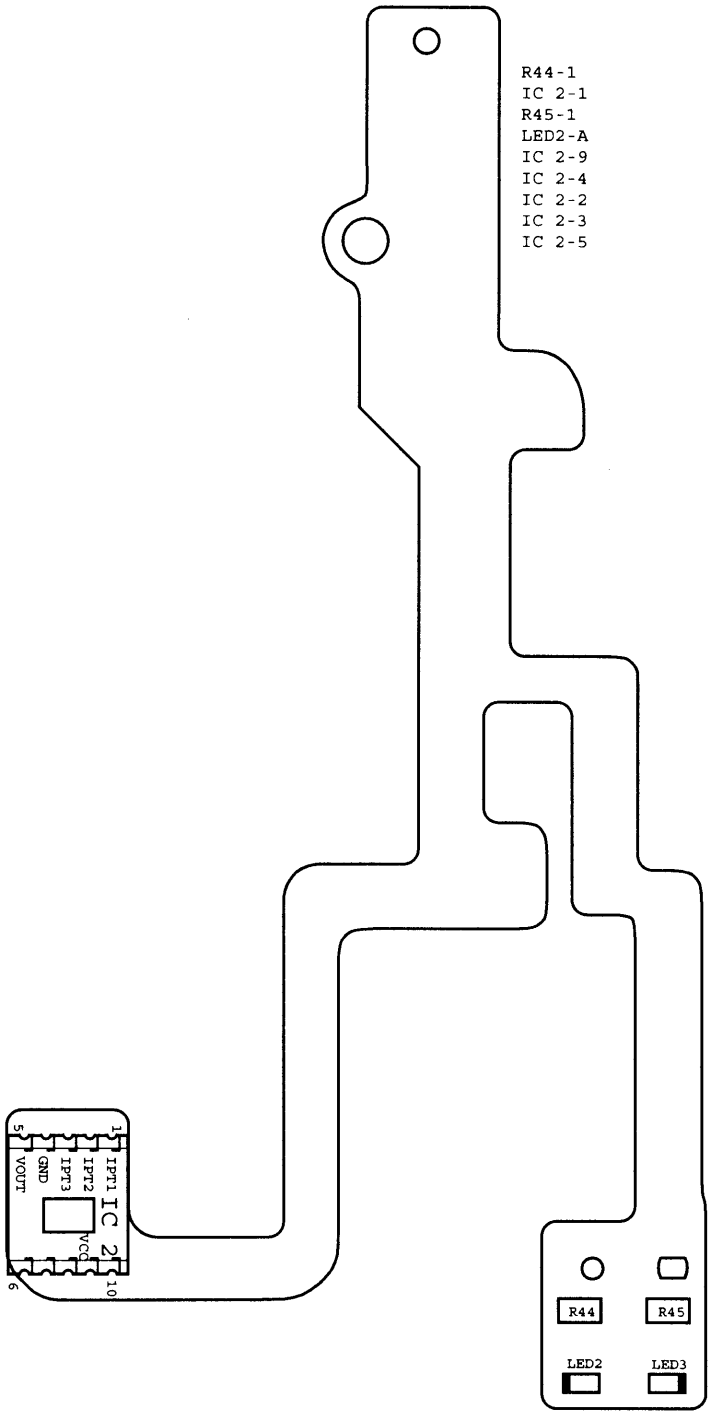
AF FPC

Part mount figure



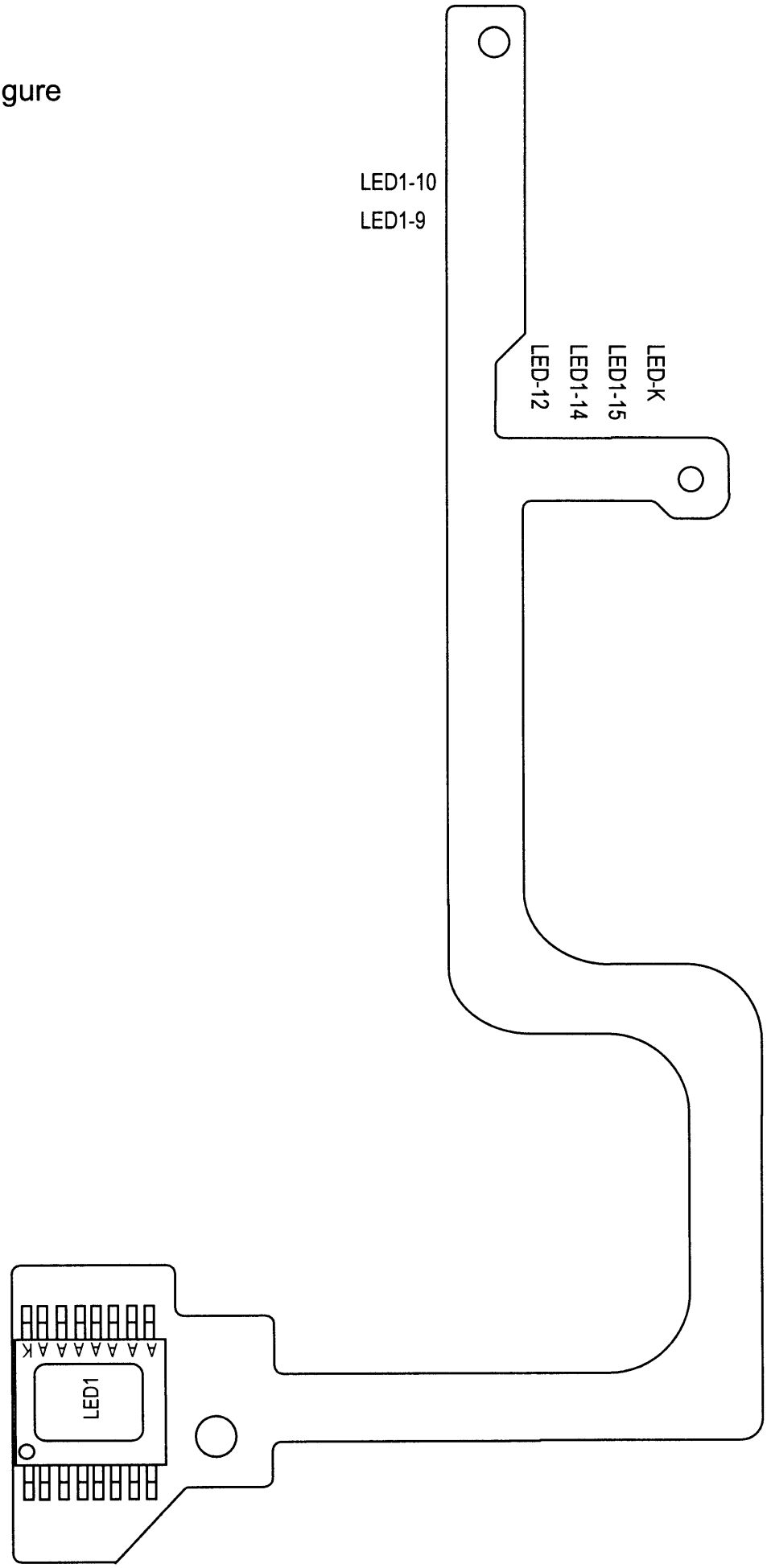
AE FPC

Part mount figure



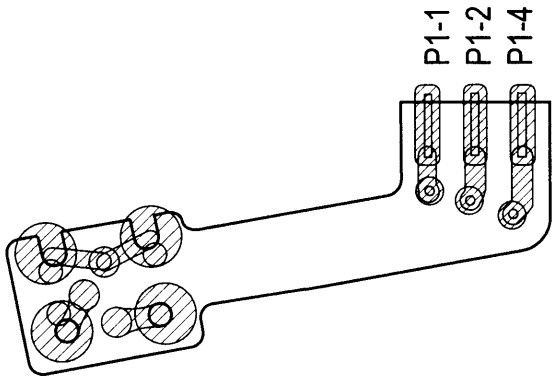
Date FPC

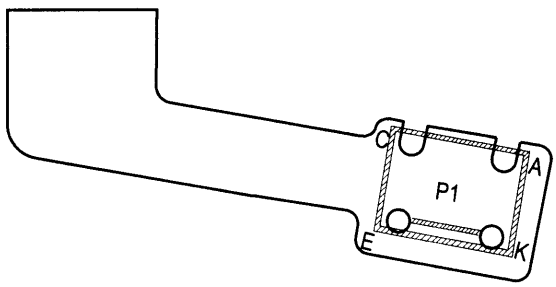
Part mount figure

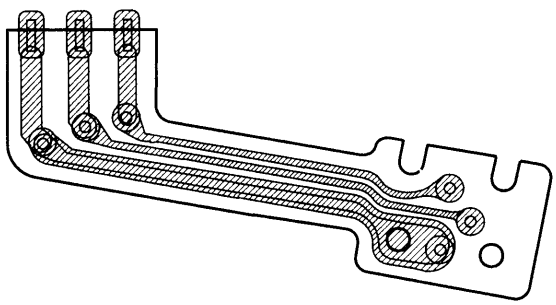


Film PI FPC

Part mount figure



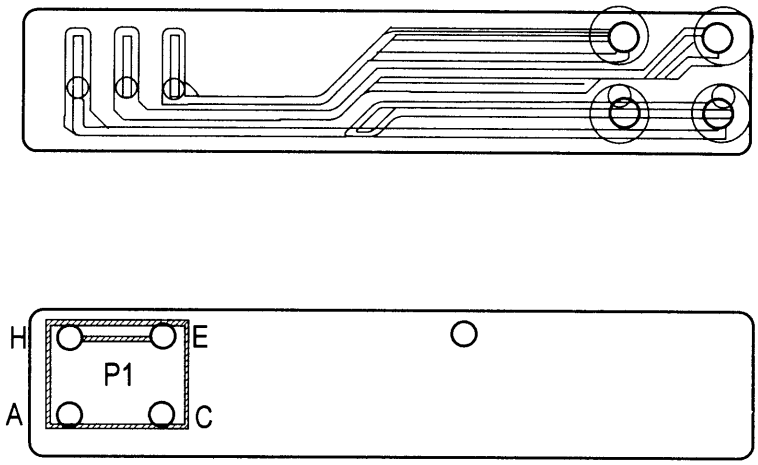




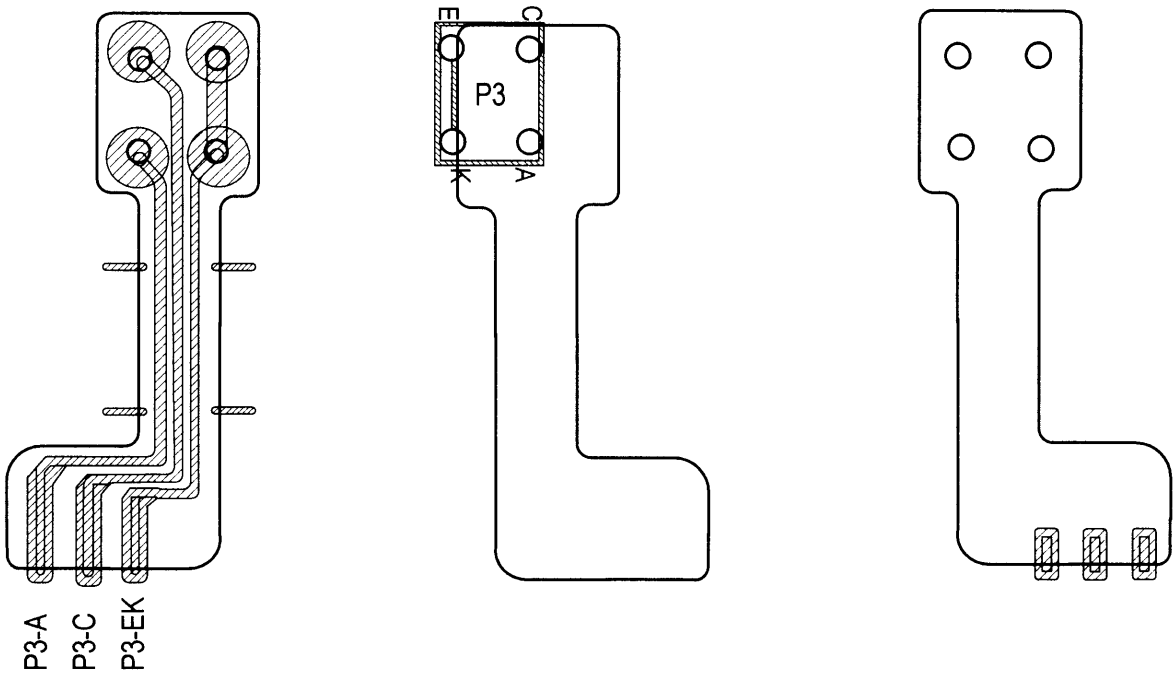
Zoom PI FPC

Part mount figure

Zoom1 FPC

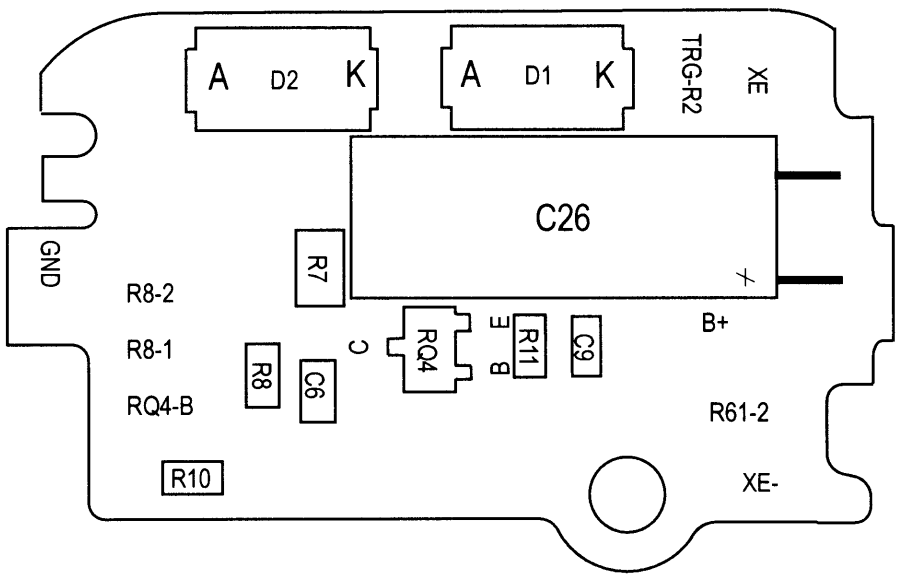


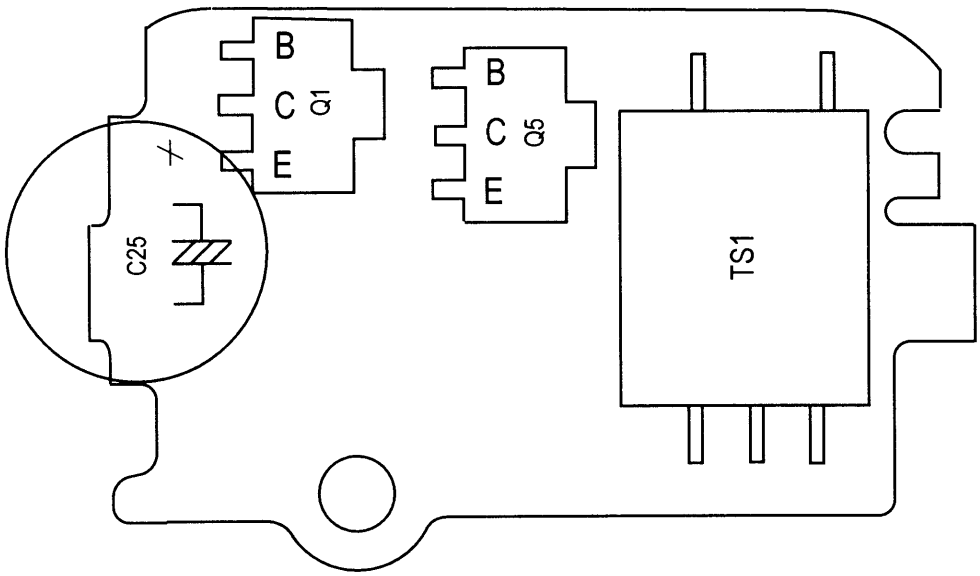
Zoom2 FPC



EFU PCB

Part mount figure





Trigger PCB

Part mount figure