

**TWZOOM 35◀▶70**

**TWZOOM 35◀▶70 QUARTZ DATE**

**Zoom●Touch 400**

**Zoom●Touch 400 QUARTZ DATE**

**FCA12001, FCA12201**

**FCA12101, 12301**

**REPAIR MANUAL**

修 理 指 針

**Nikon** | NIKON CORPORATION  
Tokyo, Japan

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SPECIFICATIONS

1. OUTLINE-----	M 1
2. SPECIFICATIONS-----	M 1
3. BASIC OPERATIONS-----	M 4
4. FUNCTIONS-----	M 7
5. TEST SPECIFICATIONS-----	M 1 4



Lens traveling distance	6mm at W, 30.4mm at T
Speed	Approx. 1.5 sec.
(2)Focusing	1st lens group helicoid traveling system
Lens traveling distance	1.062mm (MAX.)
(3)Lens barrel control	Reset by turning off power
(4)Lens cover	Opens/closes by turning on/off power
(5)Zoom f No. signal	15 signals between W and T
<b>•Exposure control</b>	
(1)Shutter	Cored-motor-driven programmed electronic shutter
(2)Exposure metering range	BV -1 ~ 11
(3)Auto exposure range (at ISO 100)	W: EV 4 ~ 17 T: EV 5.875 ~ 18.875
(4)Light sensor	Two-part SPD
(5)Exposure metering angle	Center: vertically 3.5°, horizontally 3.5° Periphery: vertically 9.0°, horizontally 14.5° (-1EV at center and all corners of frame)
(6)FM (flashmatic)	Electronic flashmatic to fire while shutter is opening
(7)FM range	W: f/3.96 ~ f/22.62 T: f/7.64 ~ f/39.73
(8)Automatic backlight compensation	Flash fires automatically in backlight condition.
(9)Automatic flash-firing in low brightness	Flash fires automatically in low brightness in Auto Flash mode and Auto Flash with red-eye reduction mode when low brightness is detected
(10) Auto exposure delay	1/37.5 sec. in Auto Flash mode 1 sec. in Flash Cancel mode 1/4 sec. in Anytime Flash mode 1/37.5 sec. in Auto Flash with red-eye reduction mode
<b>•Film speed</b>	
(1)Setting	Automatic setting by CAS code
(2)Usable film speed	ISO 64, 100, 200, 400, 1000, 1600
(3)When non-DX film is loaded	Automatically set to ISO 100

•Viewfinder

- (1)Type Mirror-reflex real-image viewfinder  
 (2)Lens 6 elements in 6 groups (4 mirrors)  
 construction  
 (3)Frame coverage Approx. 83% (in any zoom ratio at 3m)  
 (4)Magnification W: x 0.45  
 T: x 0.83  
 (5)Diopter -0.7Dpt. ( $\infty$ , both in viewfield and frame)  
 (6)Display Picture frame marks, parallax compensation marks, autofocus frame marks, green and red LEDs (at the right of viewfinder)

•Flash

- (1)Type Automatic zoom flash  
 (2)Mode 4 modes are provided -- Auto Flash mode, Flash Cancel mode, Anytime Flash mode, and Auto Flash with red-eye reduction mode (three weaker flashes fire before the full-brightness flash)  
 (3)Guide No. Full-brightness flash: 13.3 at W, 15.2 at T  
 Weaker flashes: 1.2 at W, 1.4 at T

•Self-timer

- (1)Type Electronic self-timer  
 (2)Start By depressing shutter release button  
 (3)Cancellation By turning off the main switch  
 (4)Mode 2 modes can be set by focus-mode/self-timer button: one-shot and two-shot operation modes  
 (Carefree Autofocus always works in self-timer operation.)  
 (5)Indication On/off: by red self-timer LED in front of the camera  
 Modes: in the LCD panel  
 (6)Delay time In one-shot operation:  
 10 sec. after the shutter release button is depressed (for 7 sec. the indicator lamp lights up and for 3 sec. it blinks.)  
 In two-shot operation:  
 the 1st shot: 10 sec. after the shutter release button is depressed (for 7 sec. the indicator lamp lights up and for 3 sec. it blinks.); the 2nd shot: 5 sec. after the first shot (for 2 sec. the indicator lamp lights up and for 3 sec. it blinks.)

•LCD

(1)Information

Frame counter, focus mode (including Infinity Focus mode), self-timer mode, flash mode, insufficient battery power

(2)Display timer

Display disappears after 3 min. (lens barrel returns to W position.)

Display disappears 8 sec. after blank shots or rewinding.finish

•Dimensions

TW ZOOM 35-70 /Zoom Touch 400:  
143.2(W)x73.2(H)x52.0(D)mm

TW ZOOM 35-70 QD /Zoom Touch 400 QD:  
143.2(W)x73.2(H)x54.4(D)mm

•Weight (without battery)

TW ZOOM 35-70 /Zoom Touch 400: Approx. 360g

TW ZOOM 35-70 QD /Zoom Touch 400 QD:  
Approx. 370g

3. BASIC OPERATIONS

•Back door unit

(1)When the back door is open

Lens barrel resets  
Main switch locked OFF

(2)When the back door is closed

1. With film loaded

Blank shots start 300ms after the back door is closed and stop when film advanced by four frames. [--] in LCD panel blinks during the blank shots (2Hz). LCD lights up [1] for 8 sec. after the blank shots completed.

2. With film unloaded or when loading fault is detected

Blank shots start 300ms after the back door is closed and stop 3 sec. after the shots started. Shutter release button can be depressed but the film does not advance. [-] in LCD panel blinks during the blank shots (2Hz), and [E] blinks after the shots finished (2 Hz, for 8 sec.). Reset by opening and closing of the back door.

3. At BC fault

Does not work

•Main switch

OFF → ON

Lens barrel adjusts to W position. Lens cover opens. LCD appears for 3 min. Input through all switches is possible.

ON → OFF

Lens barrel resets. Lens cover closes. LCD disappears. Input is possible only through MUS.

•Zooming

(1) Lens barrel operation

By pressing zoom button, lens barrel can be set at any focal length between 35mm and 70mm.

Zoom-up switch ON - moves to T  
ON → OFF - stops after

50ms compulsory move

Zoom-down switch ON - moves to W  
ON → OFF - stops after

putting lens barrel in order

(2) When fault is detected in lens barrel

When the lens barrel encoder signal does not change for more than 1 sec. while the lens barrel is moving, the helicoid motor turns OFF.

LCD - all the present display blinks (for 3 minutes, 4Hz)

Reset - possible through any operational input. Lens barrel reset.

(3) Flash operation

Flash unit moves as the lens barrel zooms up and down to change firing angle and guide No.

(4) Viewfinder operation

As the lens barrel zooms up and down, the 1st and 2nd lens groups of the viewfinder moves to zoom the viewfinder.

•Shutter release

(1) Pre-release (S1)

When pre-release (S1) is activated, the following actions are performed.

•Battery check (If battery is exhausted, all operations are prohibited)

•Focus lock for Autofocus

•Auto-exposure lock for auto-exposure metering,

•Judgement whether flash is necessary or not

•Flash starts oscillating only when flash is needed and when insufficiently charged.

Oscillating continues until the flash is fully

	charged even after S1 turns OFF.
	•Input by other operational switches is prohibited while the S1 is ON.
(2) Shutter release (S2)	When S2 is activated, the following actions are performed.
	•Focusing (1st group of lenses moves forward)
	•Opening and closing of shutter blades
	•Reset of 1st lens group
	<u>•Film advance</u>
(1) Advance start	Starts as soon as the shutter is released
(2) Advance finish	According to FSS signal (4 pulses/frame), the film advances by 1 frame and stops.
(3) Next shooting	When the advance finished and S1's OFF is detected, the next frame shooting becomes possible.
	<u>•Film rewinding</u>
(1) Rewinding start	
1. Automatic rewinding	Rewinding starts automatically in the following conditions.
	•When FSS signals are not produced for more than 3 sec.
	•When shooting of the 37th frame was finished (Rewinding starts after some film advance operation)
2. Mid-roll rewinding	Rewinding starts when MUS is ON for more than 0.3 sec.
	•MUS is not accepted even when the main switch is OFF,
	•MUS is not accepted when the LCD display's 8-sec. timer is in operation.
(2) Lens barrel reset	Lens barrel is reset before rewinding
(3) Rewinding latch	Rewinding latch is locked during rewinding and any operational input after MUS is not accepted.
(4) To interrupt rewinding	Rewinding stops by sliding the main switch during the rewinding (only as long as the main switch is held slid).
(5) Rewinding finish and stop	When rewinding is completed (when FSS signals are not produced for more than 3 sec.), rewinding stops as the film's flap is wound up into the film cartridge.



- |                                          |                                                                                                                                                                                                                    |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (6)After rewinding                       | Film advance operation is performed for 0.3 sec. after the rewinding is completed to release the fork.and to prepare for the next film loading.                                                                    |
| (7)Operations after the rewinding finish | Input through all the operational switches is prohibited, except the main switch and MUS to turn on LCD for 8 sec. By opening and closing the back door, input from all the operational switches becomes possible. |
| (8)LCD display                           | During the rewinding -- counts down the frame No.; after [1], [--] blinks (2 Hz).<br>After the rewinding finish -- [E] blinks (for 8 sec., 2 Hz)                                                                   |

#### 4. FUNCTIONS

##### •Continued operations and displays when batteries are changed

- |                               |                                                                                                                                                                                                                                                                                                 |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1)During blank shots         | When batteries are loaded again -- the camera does not operate.<br>When the main switch turns ON -- lens barrel moves to W. Only the shutter release is possible (film does not advance). LCD [E] blinks (for 3 min., 2 Hz)<br>By opening and closing the back door, film advances by 4 frames. |
| (2)When the film is advancing | Lens barrel resets. Film advances by 1 frame. LCD displays [frame No. just before the battery change + 1] (for 8 sec.).                                                                                                                                                                         |
| (3)During rewinding           | Automatically starts rewinding again. LCD [--] blinks (2 Hz).                                                                                                                                                                                                                                   |
| (4)After the rewinding finish | Input from operational switches other than the main switch and MUS is prohibited.<br>When the main switch turns ON -- only the shutter release is possible (Film does not advance). LCD [E] blinks (for 3 min., 2 Hz)                                                                           |
| (5)Function modes             | All canceled except PTS. Set to Auto Flash mode and Carefree Autofocus mode.                                                                                                                                                                                                                    |

##### •Battery check

- |                |                                                                                                                                                                                                                                                                 |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1)LCD display | Displayed in two steps<br>1st step: Blinking (2 Hz) battery mark appears to indicate battery power becomes weak but all operations are possible.<br>2nd step: All displays in LCD disappear to indicate battery is exhausted and all operations are impossible. |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

(2) Battery check point

Performed when any of the following switches turns ON:  
main switch, shutter pre-release, zoom-up switch, zoom-down switch, back-door switch, PWS, MUS

(3) Battery check method

By lighting up IRED by 1 point

•Shutter release prohibited

Shutter release is prohibited in the following situations:

- When the 2nd step of BC is detected
- When locked because insufficiently charged
- When the film is advancing
- During rewinding
- When the zoom switch is ON
- When the self-timer is in operation
- When the back door has not opened after film rewinding
- When AF/self-timer switch or flash switch is ON
- When the main switch is held slid
- When the back door is open

•Focusing

(1) Carefree Autofocus

The 3 IREDs emit modulated lights in turn (right → center → left) and the corresponding PSDs receive them. Data on the three distances to the subjects are sent to computer. Then focusing is controlled in steps with the calculated result.

(2) Spot Autofocus

The center IRED emits modulated light and the center PSD receives it. By the acquired data on the distance to the subject, focusing is controlled in steps.

•Infinity Focus

Sets to AF step 0 (45m), regardless of the distance to the subject

•Exposure metering

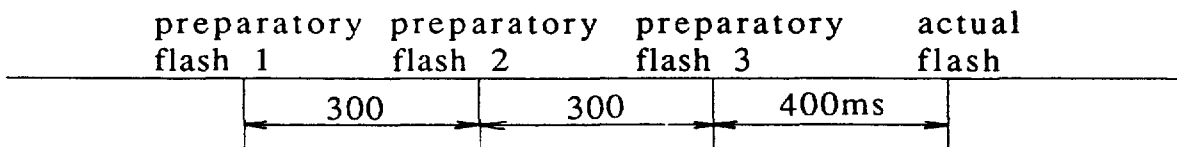
Exposure control, flash-firing judgement and backlight judgement are performed based on the exposure-metering output in center and periphery (center: CEV; periphery: REV) which is acquired through 2-part SPDs (center  $\varnothing$ 0.5mm; periphery 2.5 x 1.5mm)

•Shutter operation

- |                                          |                                                                                                                                                                                                                                                                                                       |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1)Confirmation of the original position | When the shutter motor rotates reversely and shutter encoder pulse 7.8ms is not produced, the original position is confirmed.                                                                                                                                                                         |
| (2)Control in steps                      | After the confirmation of the original position, shutter motor rotates. When the shutter encoder pulse reaches the appropriate step for metered distance, AF Mg turns OFF and the 1st group lenses stop.                                                                                              |
| (3)Exposure operation                    | By continuous rotation of the shutter motor, the shutter blades open and exposure operation is performed. AE Mg turns OFF according to the closing timing based on the exposure metering, and the blades close.                                                                                       |
| (4)Reset operation                       | After the exposure operation, shutter motor rotates reversely by the fixed pulses to perform AE Mg reset and 1st group lens resets.                                                                                                                                                                   |
| (5)When shutter fault is detected        | When the fixed number of pulses are not produced in the reset operation, shutter motor turns OFF.<br>LCD -- all the present display blinks (for 8 sec., 2 Hz)<br>*With some of the products manufactured in the beginning, LCD does not blink even when the fault is detected, if the film is loaded. |

•Flash modes

- |                                           |                                                                                                                                                           |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1)Auto Flash mode                        | Automatically fires under the flashmatic changeover level                                                                                                 |
| (2)Flash Cancellation mode                | Does not fire regardless of the brightness of the subject                                                                                                 |
| (3)Anytime Flash mode                     | Always fires regardless of the brightness of the subject                                                                                                  |
| (4)Auto Flash with red-eye reduction mode | To reduce the frequency of red eye, preparatory flash fires automatically three times before the actual flash when under the flashmatic changeover level. |



•Conditions to start flash oscillating

- (1) Preparatory charge
- (2) After shooting with flash fired
- (3) When locked because insufficiently charged

By turning the main switch ON, oscillating starts after the lens barrel moves to W.  
Oscillating starts after rewinding is completed  
Oscillating starts when shutter pre-release is activated and the flash is in firing conditions

•Conditions to interrupt and cancel oscillating

- (1) Conditions to interrupt
- (2) Conditions to cancel

- When zoom switches (zoom-up switch, zoom-down switch), Flash button, or Auto Focus button turns on
- When flash is fully charged and shutter pre-release is activated
- When NL2 is detected (usual condition when flash is fully charged)
- When shutter pre-release is activated and flash is not in firing conditions
- When the main switch turns OFF from ON, and MUS is ON
- When NL1 and 2 are not reached within 3 min. after oscillating started

•LCD display timer

- (1) 8-sec. timer
- (2) 3-min. timer
- (3) 3-min. timer reset

- After blank shots are taken
- After rewinding is completed
- After replacing battery with film loaded
- After main switch is turned ON
- After shutter pre-release is activated or zoom switches are turned ON

Timer is reset when any of the following switches turns ON while the timer is working:  
shutter pre-release, zoom switches, flash switch, main switch

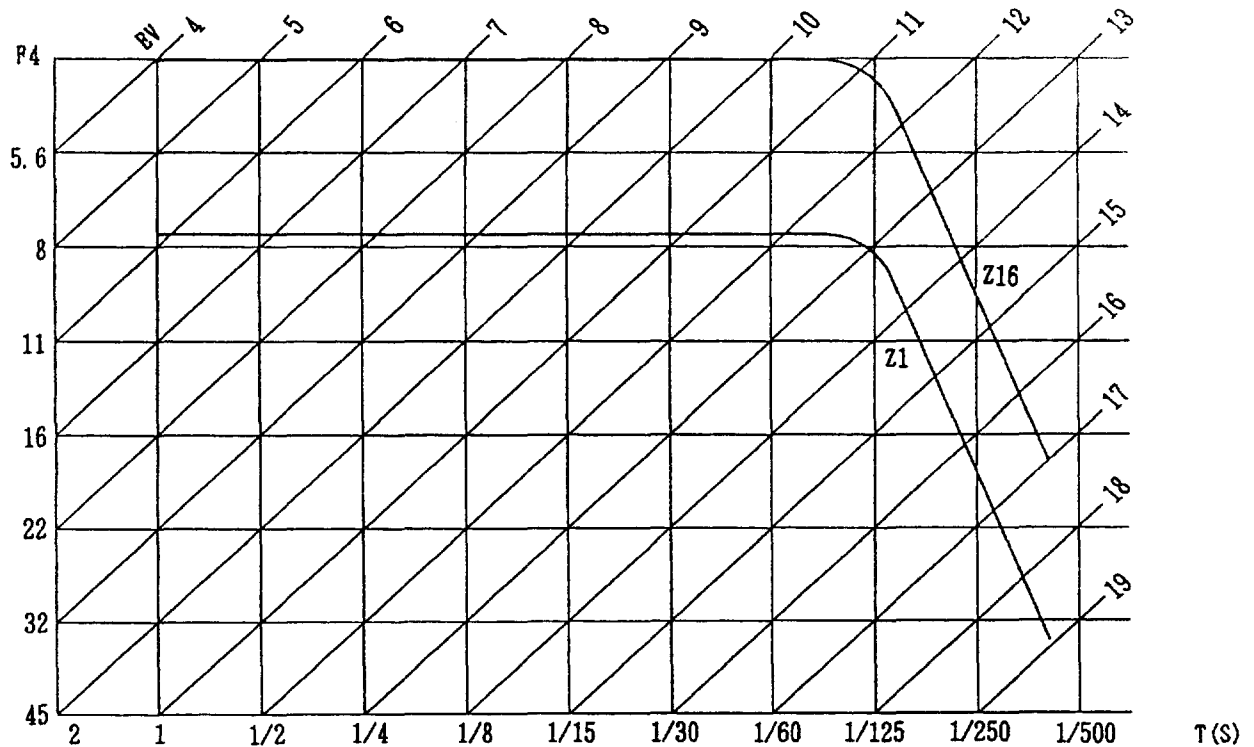
(4)When 3-min. timer turns off

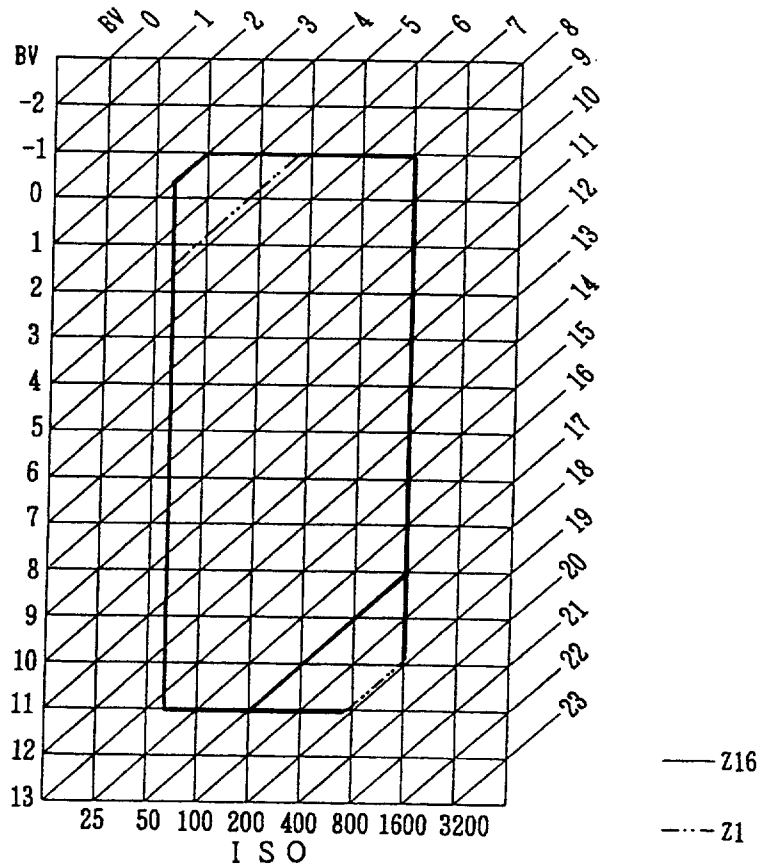
- After lens barrel moves to W, LCD disappears
- Lens barrel is reset when the timer turns off while fault is detected in the lens barrel and all indications on LCD are blinking
- When fault is detected in lens barrel while the lens barrel is moving after the timer turns off, helicoid motor turns OFF and all indications on LCD blinks for 3 min. Then lens barrel is reset and LCD disappears.

•Zoom f-number, signal

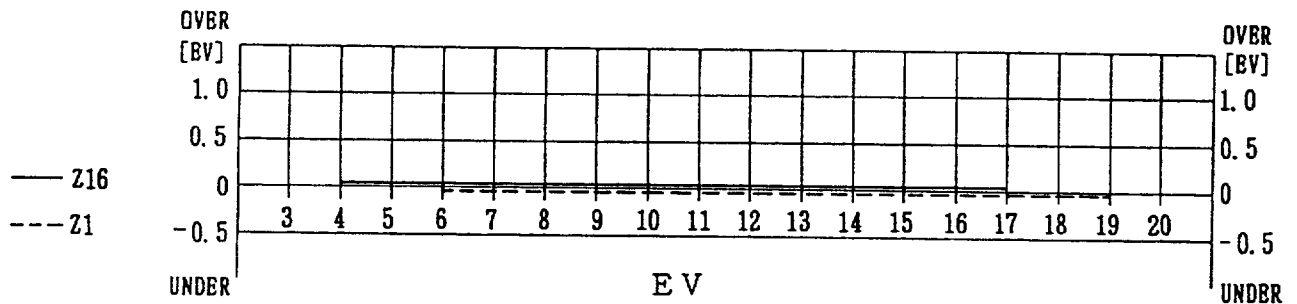
Zoom f-number signal matching lens focal length is given as encoder located inside lens barrel. Focal length between W and T is divided in 15 zones. Auto-exposure control, flashmatic control and flash-firing judgement are performed corresponding to the each zone signals.

Auto-exposure program chart





EV reference chart



•ISO film speed

ISO film speed is automatically set as follows:

Film speed to be set	Actual film speed
64	50 ~ 80
100	25 ~ 160, 100 ~ 160, Non DX
200	200 ~ 320
400	400 ~ 640
1000	800 ~ 1250
1600	1600 ~ 5000

•Viewfinder LED indications and warnings

	Red LED	Green LED
Lights up	Ready to fire	Subject is in focus
Blinks (2Hz)	Flash is not charged (in flash-firing conditions)	Too-close-warning or Too-far-warning
Does not light up	Flash cannot fire	Flash is insufficiently charged (in flash-firing conditions) or Insufficient battery power

(1)Too-close-warning

When the shutter pre-release is activated, green LED blinks (2 Hz) according to the flash mode and warns. Shutter release is possible.

Flash mode	Too-close-warning
Auto Flash mode Anytime Flash mode Auto Flash with red-eye reduction mode	0.636m
Flash Cancellation mode	1.009m

(2)Too-far-warning

When the ISO film speed and Auto-focus zone step are coupled as in the following table in flash-firing conditions, red LED blinks (2 Hz) and warns.

ISO film speed	Auto-focus zone step
64	1
100	1.2

•FM (flashmatic) range

Zone 16: F3.96 ~ F22.38  
Zone 1: F7.64 ~ F 43.22

•FM changeover level

Automatically changed into flashmatic control when satisfies any of the following conditions (conditions judged by REV output)

Judging level for low brightness

Zone No.	FM changeover level (EV)
Z 1	12.000
Z 2	11.875
Z 4	11.625
Z 5	11.500
Z 6	11.375
Z 7	11.250
Z 8	11.125
Z 9	11.000
Z 10	10.875
Z 11	10.750
Z 12	10.500
Z 13	10.250
Z 14	10.000
Z 15	9.750
Z 16	9.500

5. TEST SPECIFICATIONS

Manual inspection mode

This camera has Inspection mode (secret mode) besides the usual functions. By using this Inspection mode, inspection and adjustment of cameras can be made easier.

[The way to inspection mode]

1. Turn on the main switch and confirm that the display appears on LCD.
2. Press AF mode changeover switch and held it in and wait for 5 sec.

Note) Do not remove the finger until the whole process is over

3. Press the T - W changeover switch while pressing the AF mode changeover switch.
4. When the blinking [E] disappears and a figure appears, Inspection mode is activated.

(1)Set of Inspection mode number

Choose any number while seeing the mode number display.  
 Pressing zoom lever (T side): Counts down the mode number  
 Pressing zoom lever (W side): Increases the mode number

(2)Set to Action mode

Press the zoom lever while pressing the shutter pre-release switch(S1).

\*By activating S1, O mark is displayed.

T side: Action mode is activated (O is shown in upper position)

W side: Action mode is cancelled (O is shown in lower position)



## (3) Changing Inspection mode

By removing your finger from S1 while keeping the AF mode changeover switch pressed, condition goes back to Inspection mode number selection.

\*At this time, following setting of another mode number action is possible.

## (4) Performing of Inspection mode

After all the above operation, when you remove your finger from AF mode changeover switch and press S2 switch to release shutter, the operations you set are performed

## (5) Cancellation of Inspection mode

All the Inspection mode is cancelled when the main switch or power source turned OFF.

Table of Inspection mode

LCD display		Action	Content		
Zoom lever operation					
S1 OFF	S1 ON				
0	Upper	Test mode	*Unused	Concerning mode	
	Lower	Usual mode			
1	Upper	1-shot flash cancel	Holding of the set flash action		
	Lower	Usual mode	General action		
2	0 ~ 22 (Step value)	Setting of AF step value	Operation at the set step value		Concerning AF focusing
		Reading of step value for AF detection	Reading in usual focusing		
3	Upper	Step zoom	15 step zoom		
	Lower	Usual zoom	General action		
4	Upper	Bulb mode	Bulb by shutter release	Concerning bulb release	
	Lower	Usual shutter release	General action		
5	Upper	Permission of bulb mode	Enables input to mode 4		
	Lower	Bulb mode protect	Prohibits bulb mode input		

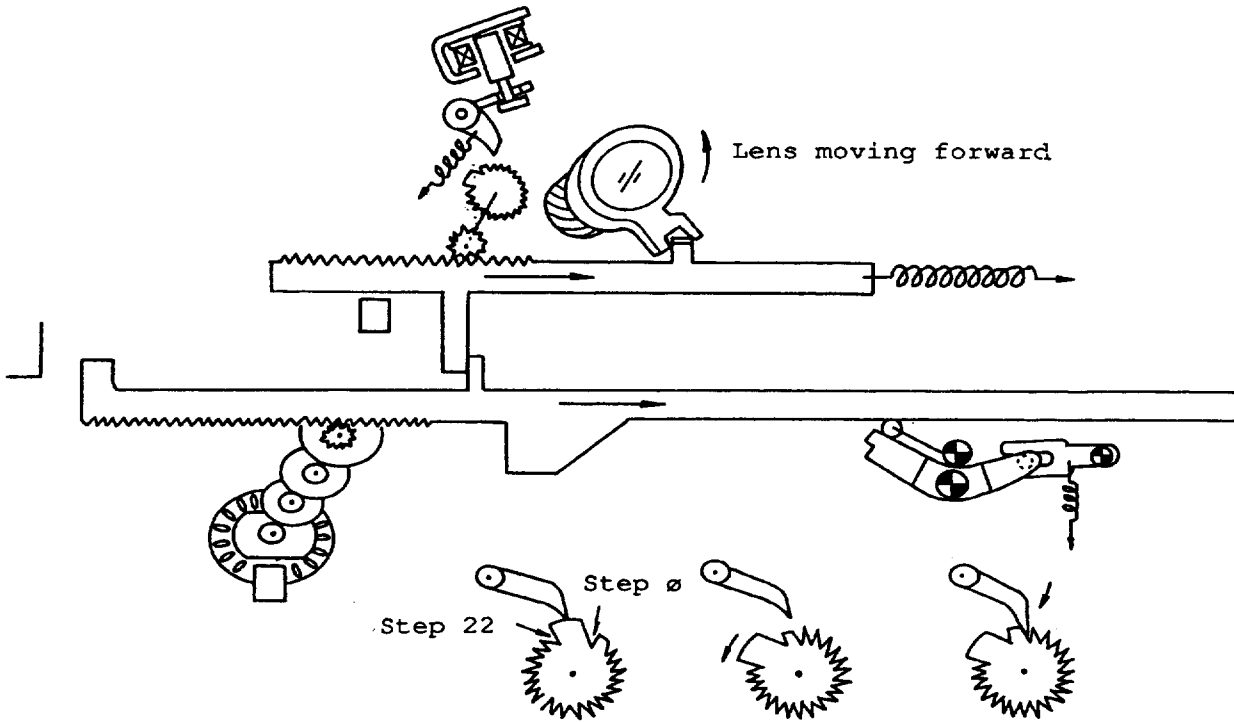
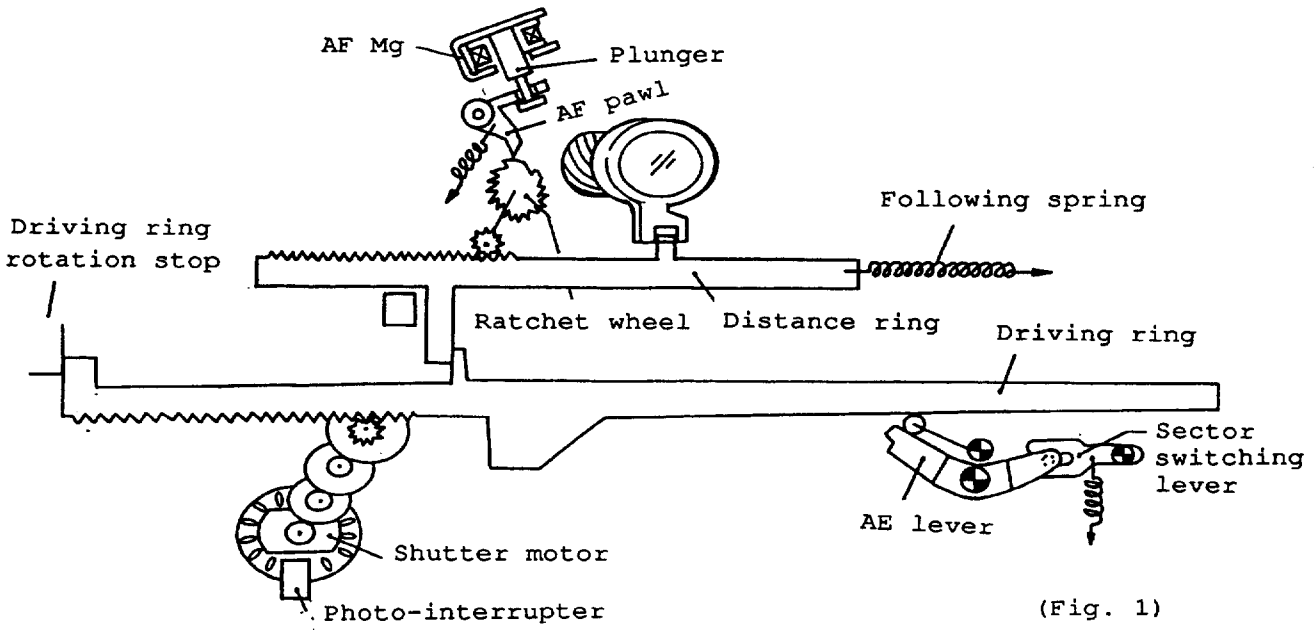
## Note

1. "Upper" and "Lower" in the table show the O mark's position

2. Input of Bulb mode action is not possible unless Inspection mode 5 is set to Bulb mode permission and then Inspection mode 4 is set to bulb mode.  
e.g.) Set Inspection mode 5 → Permission of Bulb mode → Set Inspection mode 4 → Entrance to Bulb mode → Bulb operation by shutter release → Bulb cancellation by shutter release again
  3. After every reading for step value for AF detection, turn OFF main switch, then press pre-release switch to start AF detection again and read step value.  
e.g.) Focus by shutter pre-release → Set Inspection mode 2 → Display of step value by shutter pre-release
  4. To set any AF step value in Inspection mode 2, operate zoom lever while keeping shutter pre-release pressed.  
e.g.) Set Inspection mode 2 → Display of step value by shutter pre-release → Set any step value by zoom lever
- \*When zoom lever is moved to T, the value increases; to W, the value counts down.

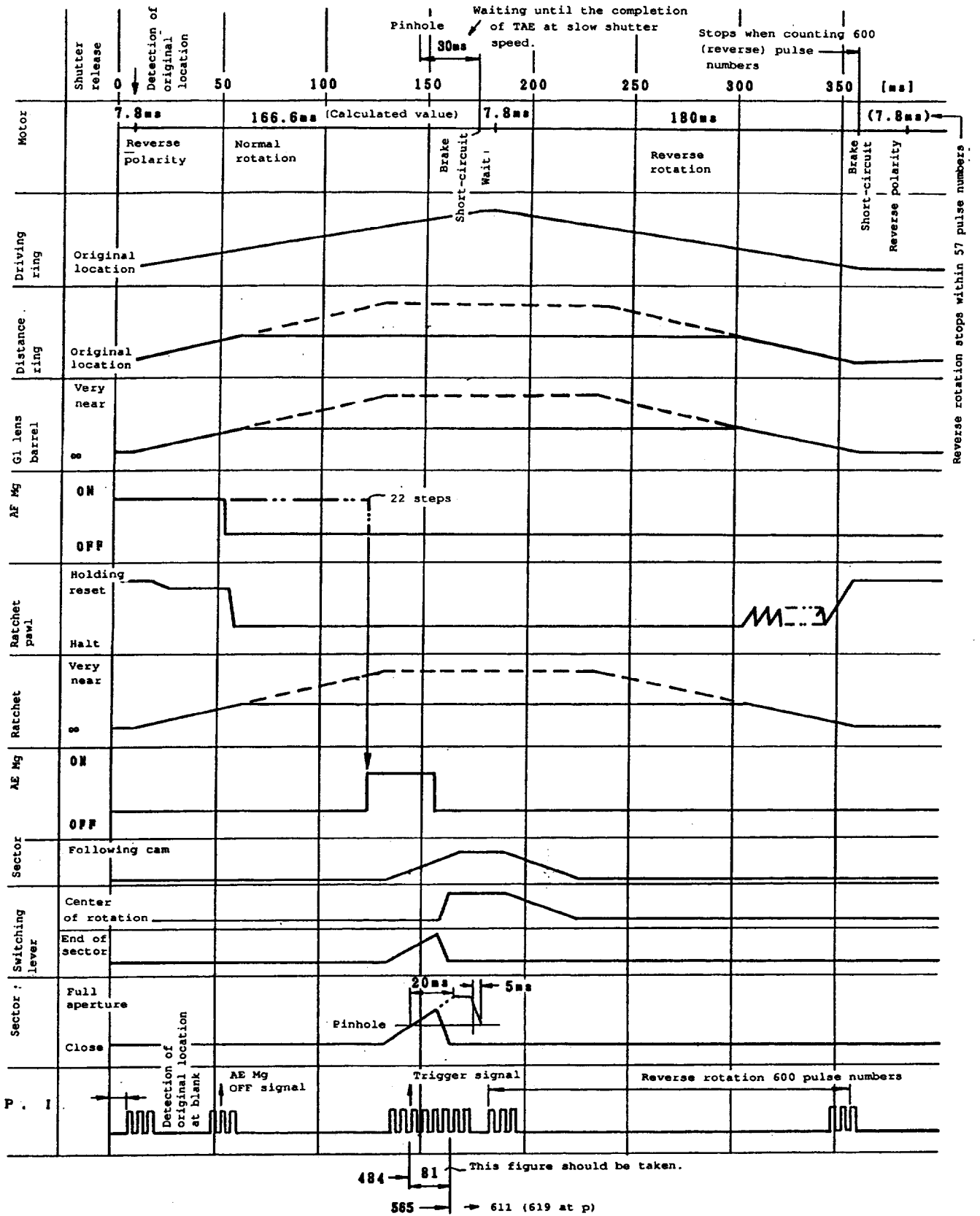
## Principle of shutter operation

1. Shutter mechanism reset operation (shutter motor rotates in reverse)  
As shown in Fig. 1, when the shutter motor rotates reversely, the driving ring returns back to the rotation stop of the driving ring on the shutter base plate, and it is locked. In this state, the distance ring is engaged with the driving ring. The ratchet wheel rotates along with the rotation of the distance ring, and pushes the AF pawl up to the position where force of attraction exists. Then the plunger is attracted to the AF Mg already activated.
2. Focus ring (shutter motor rotates normally.)  
As shown in Fig. 2, the photo-interrupter (PI) pulse counting starts immediately after the shutter motor rotates normally. With this movement, the driving ring moves toward the right (see Fig. 2) and the distance ring also moves toward the right due to the following spring force. And the activation of the AF Mg is off when the counter number reaches to the PI pulse number corresponding to the fixed AF step. Then AF Mg attraction goes out, the AF pawl drops in the fixed position of the ratchet wheel. The focus ring does not move along with the driving ring. The movement of the lens barrel then stops.
3. Sector switching operation  
Though AF operation is completed, the driving ring continues to move toward the right. Prepare for sector opening operation by activating AE Mg after cutting off electric power to AF Mg.  
The CPU continues to count the number of PI pulses immediately after the driving ring moves toward right. Electric power to the AE Mg is cut off when the PI pulse numbers reach to the fixed trigger pulse numbers (number of PI pulses generated during the time from when the driving ring returned to the original location until the sector becomes as small as a pinhole) for each shutter, or it starts counting time until the flash trigger is ON.
4. Reset operation  
Electric power to the AE Mg is cut OFF when fixed time is elapsed, and flash trigger is turned ON. Then shutter motor is braked and the motor rotates in reverse. During the course when the driving ring moves back to left, the distance ring returns back to the original position. The shutter driving sequence is completed.
5. Notes  
When returning the driving ring back to the original location, the CPU decides that trouble occurs in the shutter and LCD blinks, when PI pulse numbers generated are less than standard value if the driving ring cannot be returned back to the original location due to some reason.



(Fig. 2)

### Shutter basic sequence



## DISASSEMBLING PROCEDURES & ASSEMBLING & ADJUSTMENTS

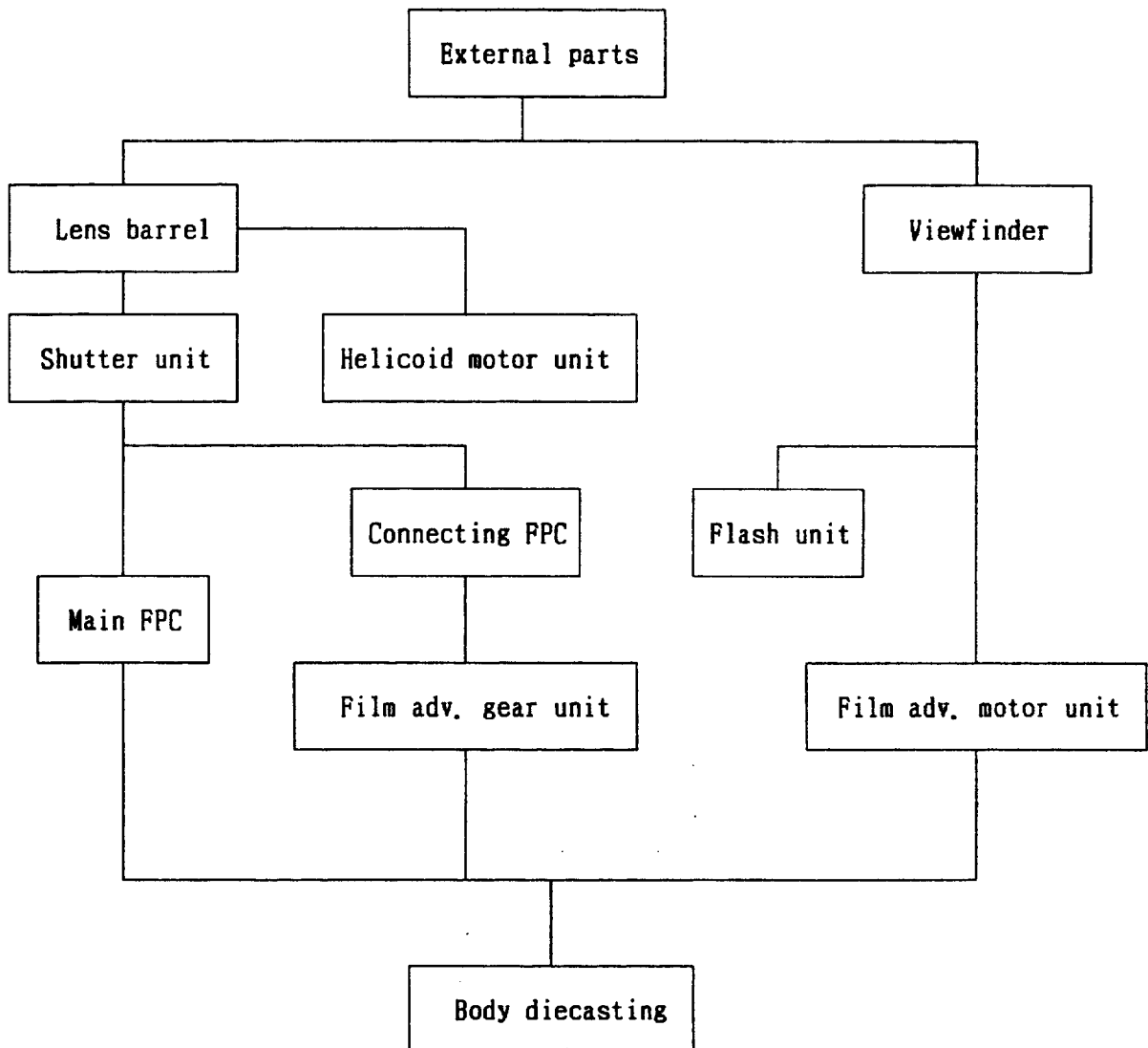
### (1) DISASSEMBLING PROCEDURE

Disassembling procedure chart for Body Diecasting -----	D 1
Disassembling procedure chart for Lens Barrel -----	D 2
(1) External parts -----	D 3
(2) Lens barrel -----	D 4
(3) Viewfinder -----	D 5
(4) Flash unit base plate/Film advance motor unit -----	D 6
(5) Free sprocket unit -----	D 6
(6) Connecting FPC -----	D 7
(7) Winding/Rewindg gear -----	D 7
(8) Lens barrel -----	D 8
(9) Shutter unit -----	D 1 0

### (2) ASSEMBLING & ADJUSTMENT

Shutter unit -----	A 1
2nd Lens group unit -----	A 5
Attaching outer helicoid unit and I. RED unit -----	A 6
Encoder contact unit -----	A 8
Helicoid motor unit -----	A 8
Main FPC -----	A 9
W/R motor gear -----	A 9
Connecting FPC -----	A 1 0
W/R motor unit and free sprocket unit -----	A 1 0
SB base plate -----	A 1 1
Finder unit -----	A 1 1
Attaching lens barrel unit -----	A 1 2
F gear unit -----	A 1 5
Attaching front cover unit -----	A 1 9
Attaching rear and bottom covers -----	A 2 3

DISASSEMBLING PROCEDURE CHART FOR BODY DIECASTING

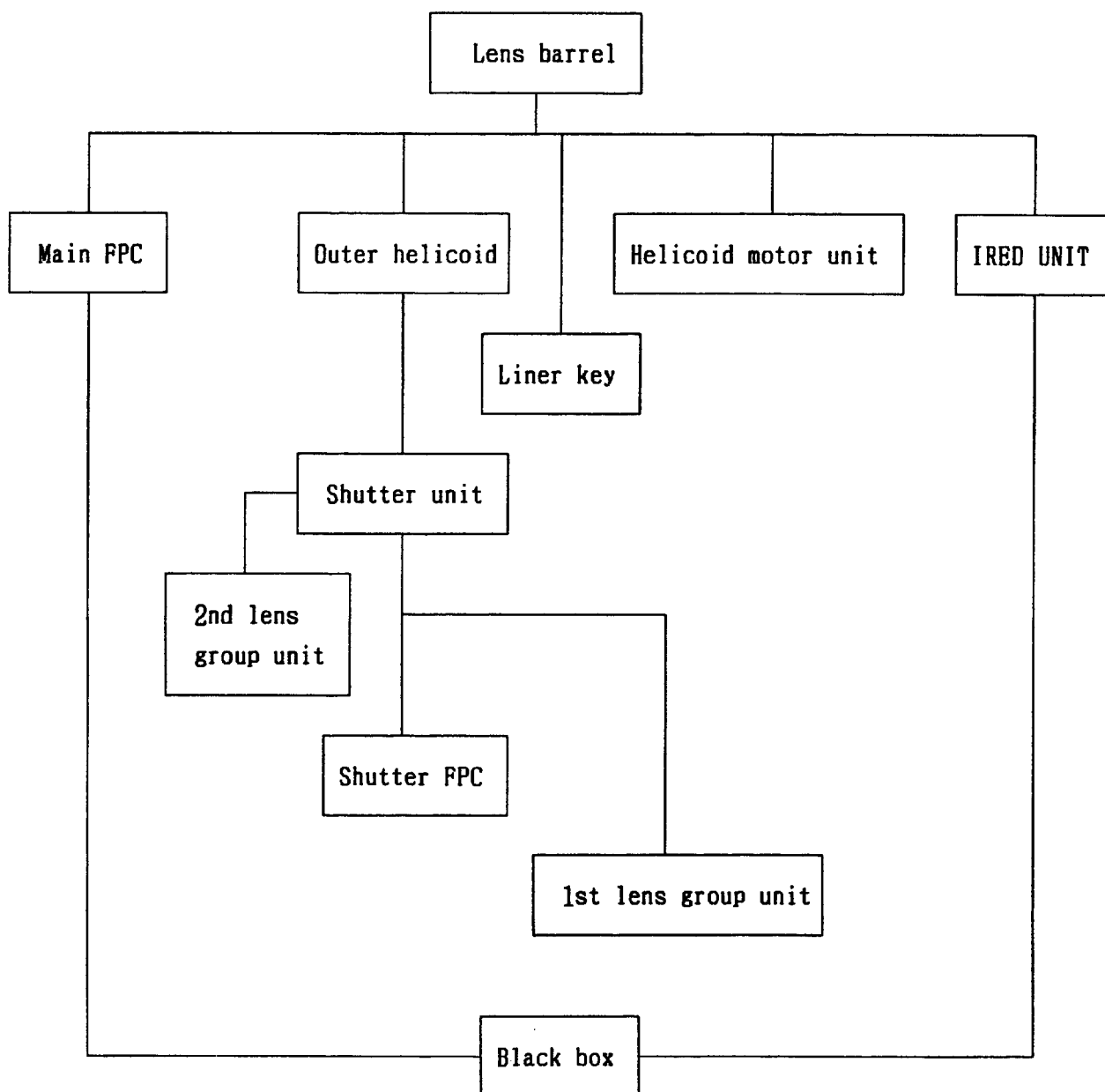


Note: 1. With the lens barrel cover removed, an adjustment at both ends of focal length can be performed by rotating the 1st lens group unit.

※ An adjustment of back focus can also be performed from the aperture side. After turning the clutch of back focus adjustment, adjust the encoder contact unit position.

2. "DISASSEMBLING PROCEDURE CHART FOR LENS BARREL" is shown on next page.

DISASSEMBLING PROCEDURE CHART FOR LENS BARREL



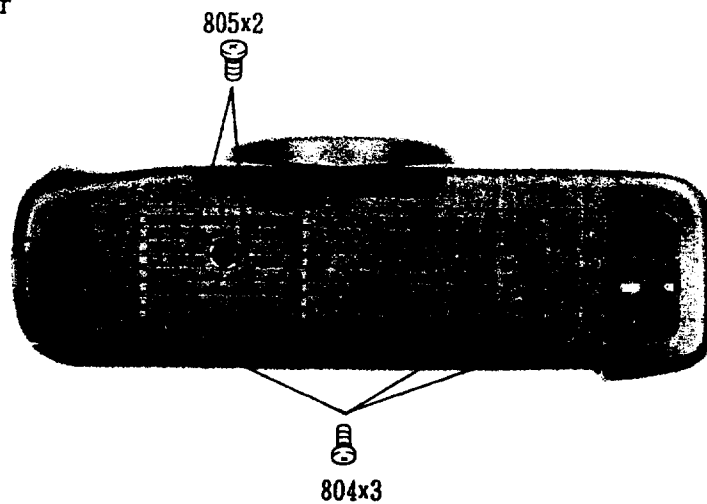


DISASSEMBLING PROCEDURES (BODY)

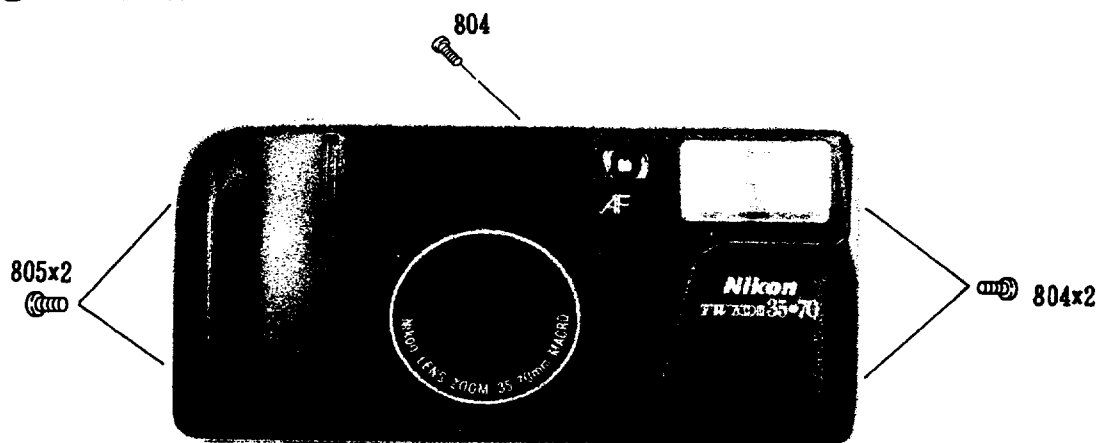
- Note: 1) Observe the arrangement of lead wires and screws for less confusion in reassembling.  
 2) Be sure to remove batteries before disassembling.  
 3) Be sure to discharge the main condenser in disassembling.  
 4) As the IC is susceptible to static electricity, earth it in operation.  
 5) Tap tight screws are used in this camera.

(1) External parts

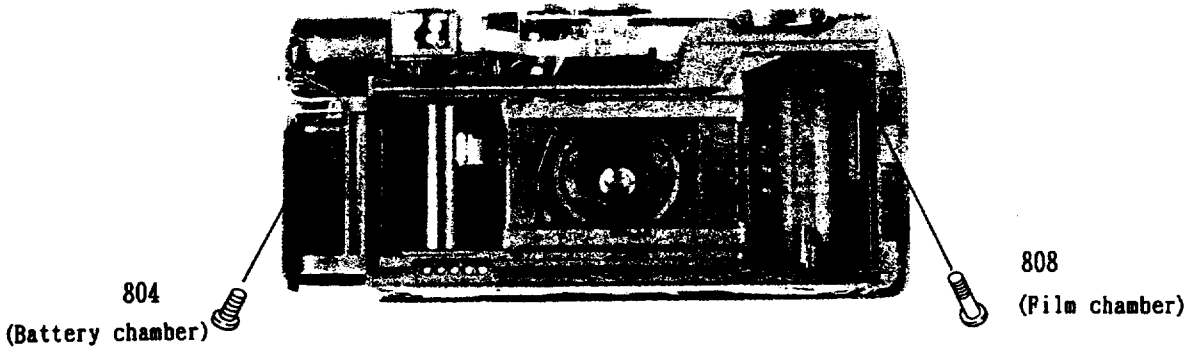
① Bottom cover



② Rear cover

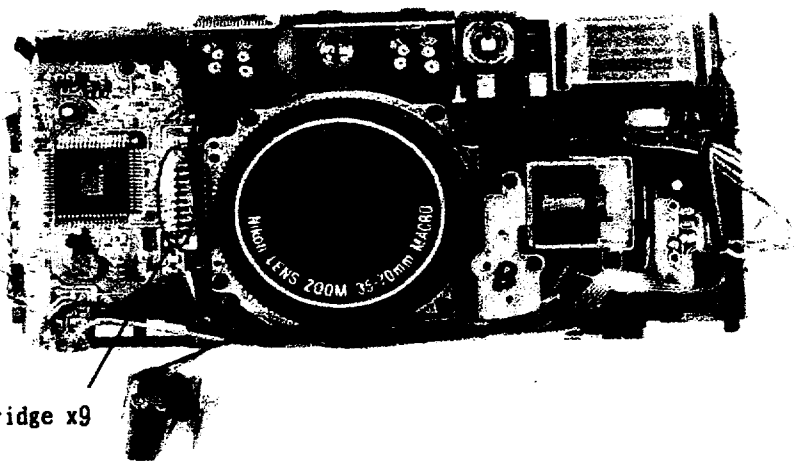
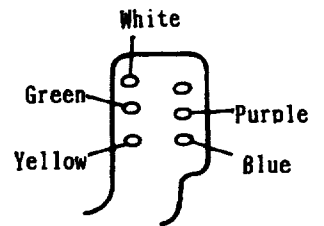
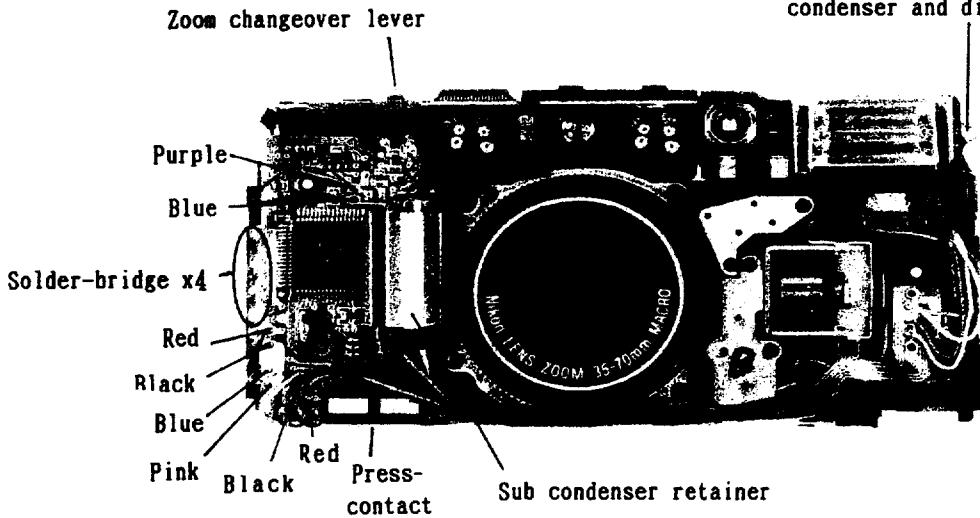


③ Front cover



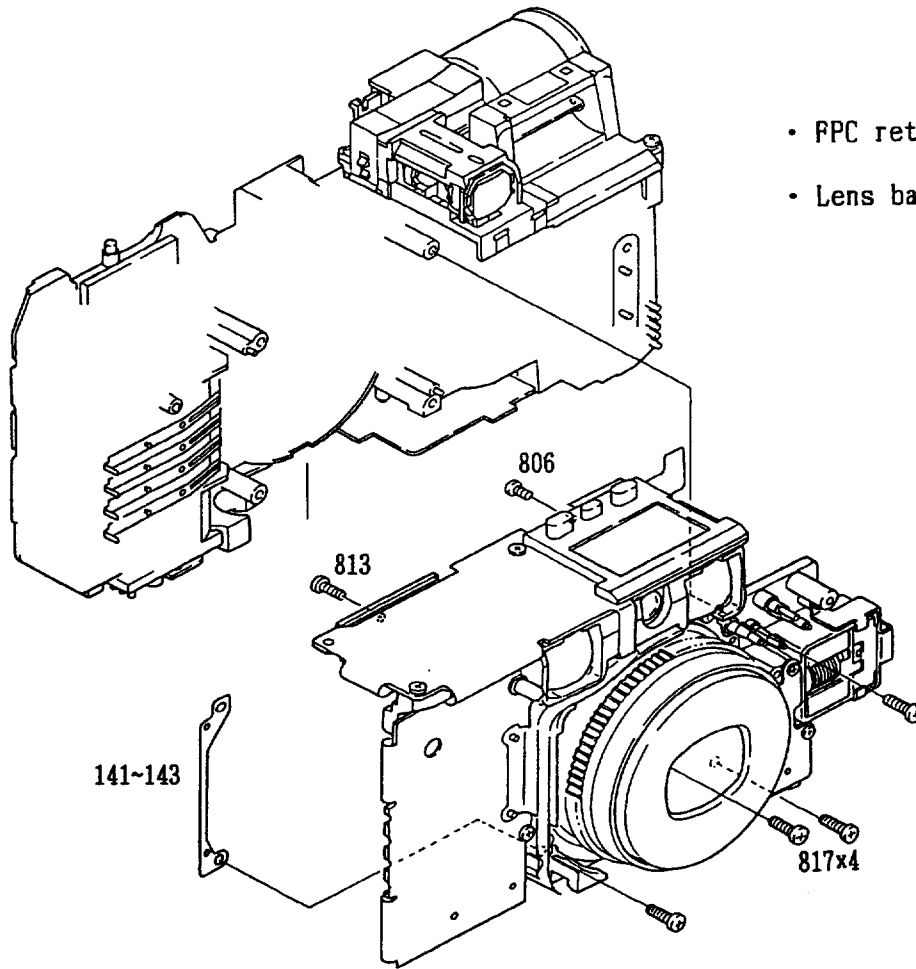
(2) Lens barrel

\* Strip the acetate tape of the main condenser and discharge it.



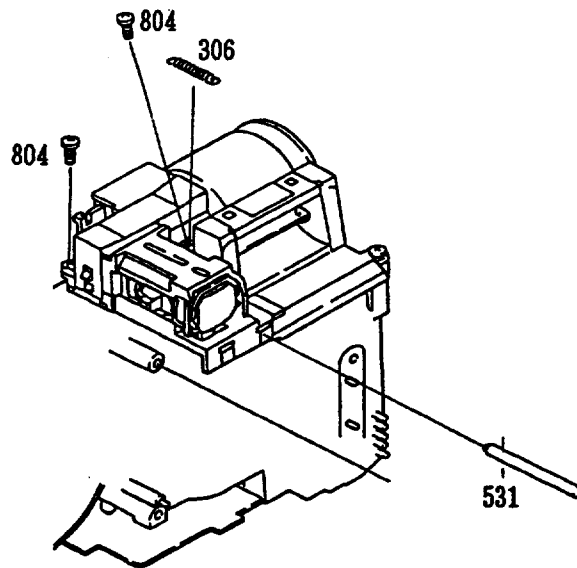
- Retainer plate #517
- Gear #516, #520, #515, #514

FCA12001-R. 3283. A



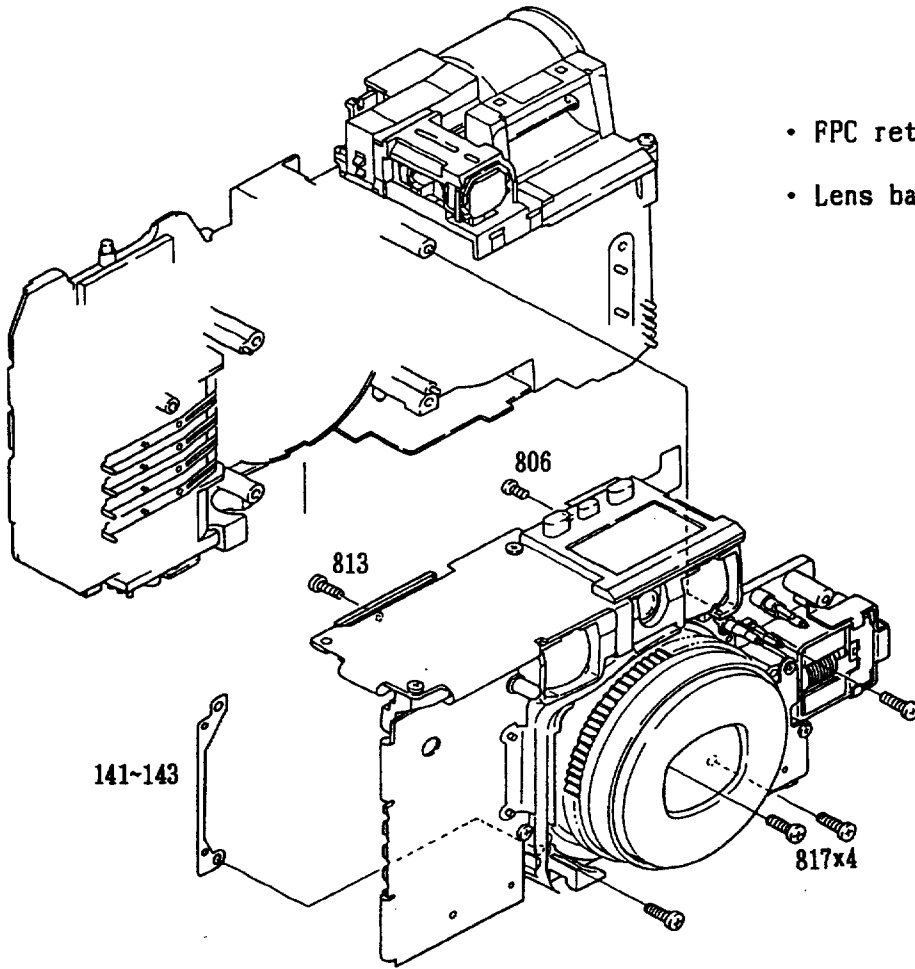
- PPC retainer screw #813, #806
- Lens barrel screw #817 x4

(3) Viewfinder



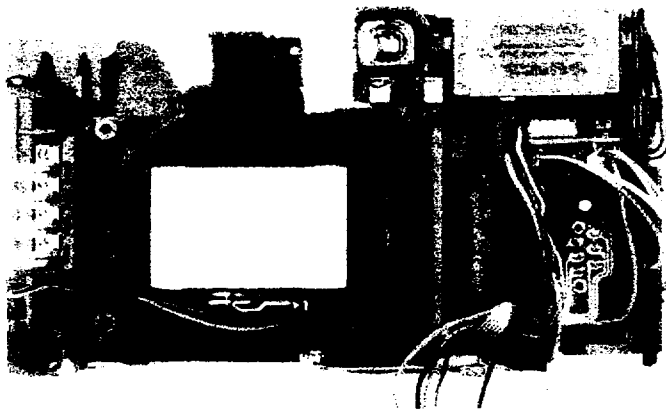
- Spring #306
- Screw #804 x2
- Retainer spring #532
- Guide shaft
- \* Pull it out

- D 5 -



- PFC retainer screw #813, #806
- Lens barrel screw #817 x4

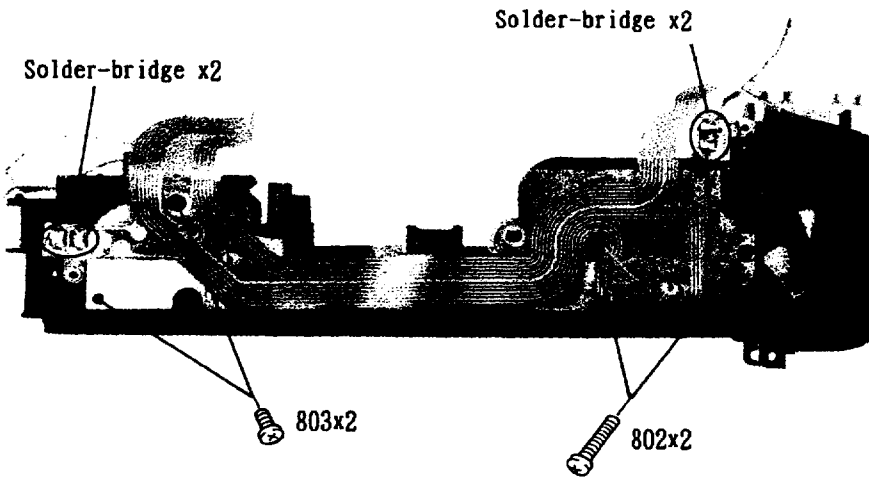
(3) Viewfinder



- Spring #306
- Screw #804 x2
- Retainer spring #532
- Guide shaft
- \* Pull it out

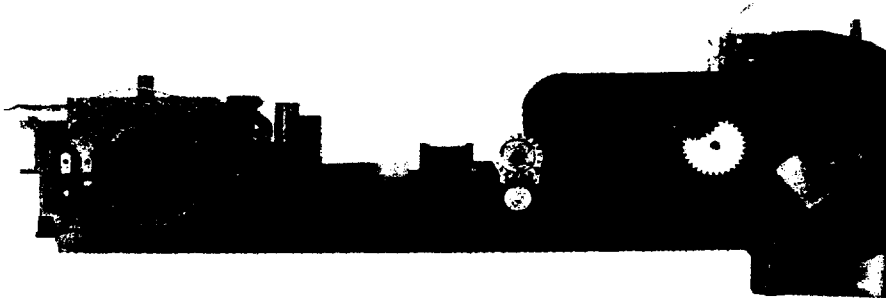


(6) Connecting FPC



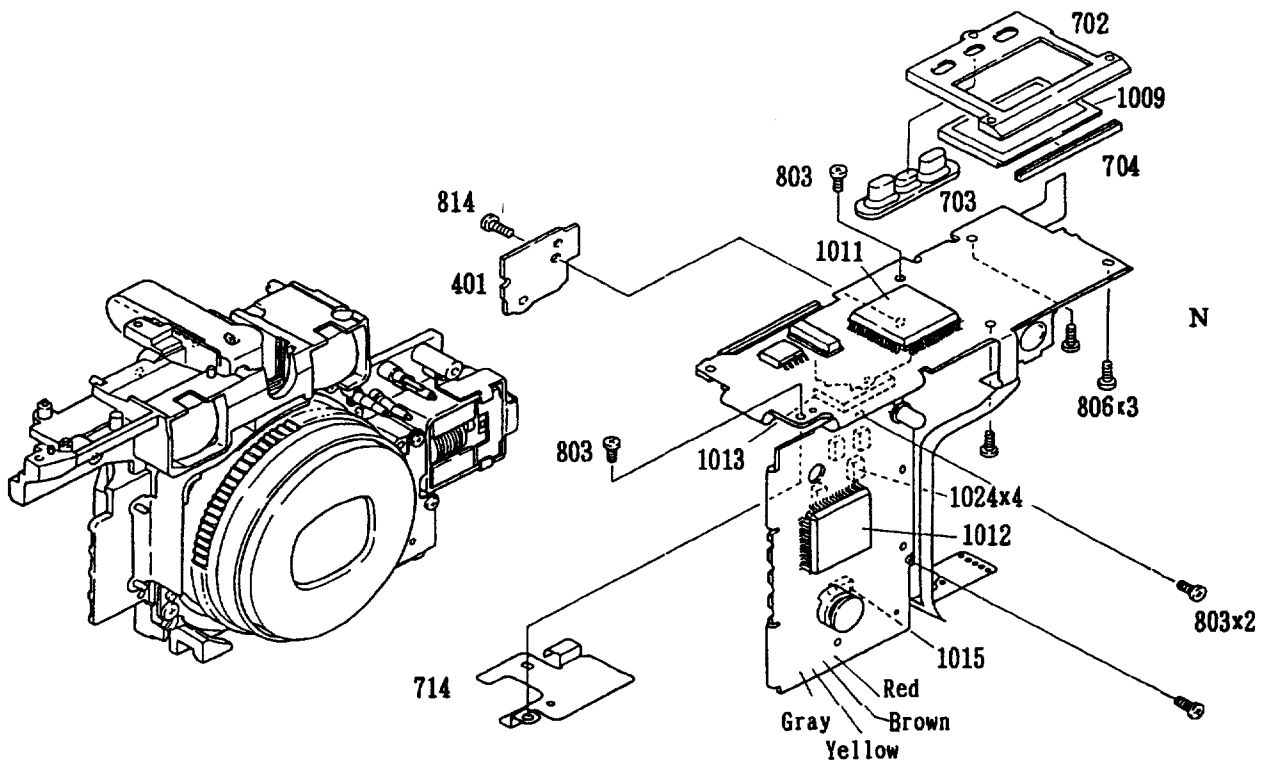
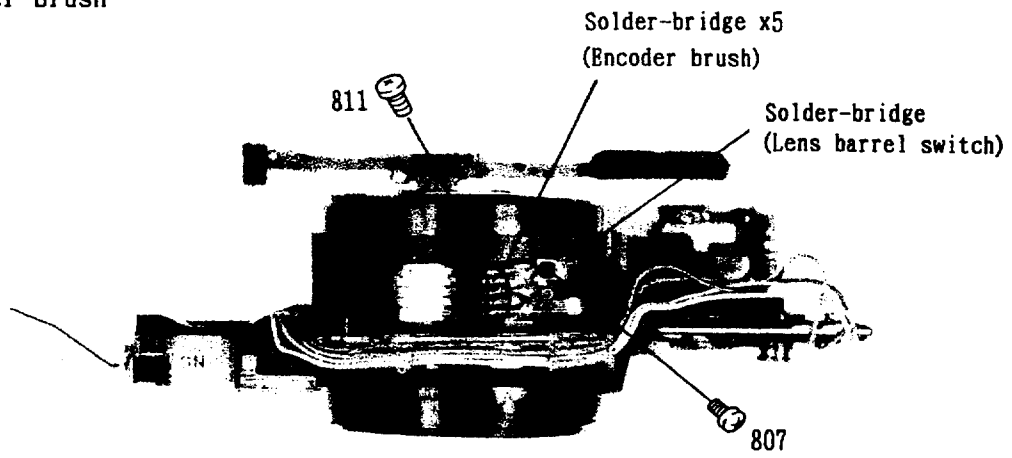
- Solder-bridge x4
- Screw #803 x2, #802 x2

(7) Winding/Rewinding gear



(8) Lens barrel

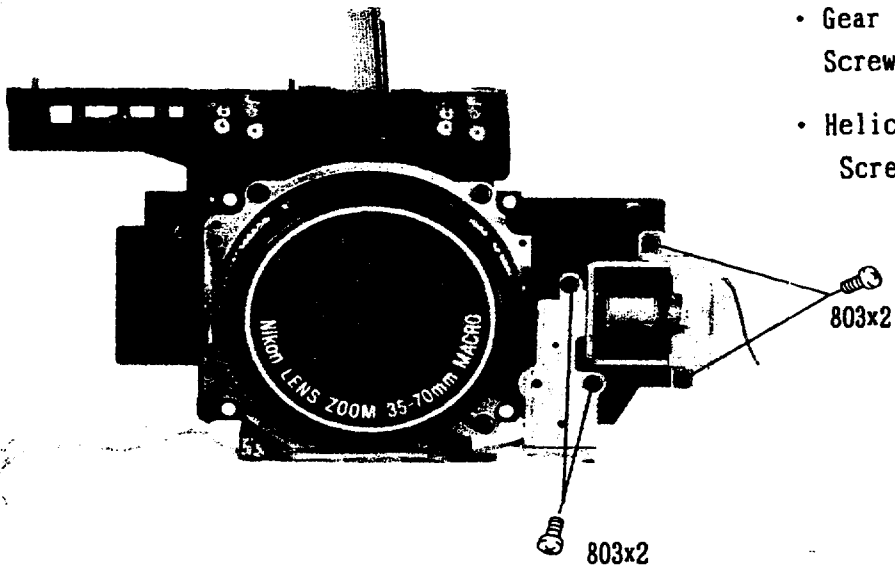
- ① Main FPC
- ② Encoder brush



- IRED code x4
- Screw #803 x4
- PSD retainer plate #401 Screw #814

※ Be careful not to damage FPC when you pull out PSD and SPD.

③ Helicoid motor unit and gear unit

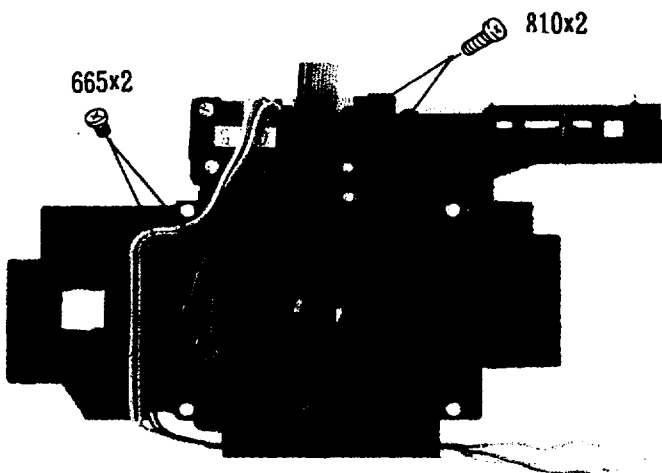


- Gear retainer plate #677  
Screw #803 x2
- Helicoid motor #L  
Screw #803 x2

④ Shutter unit

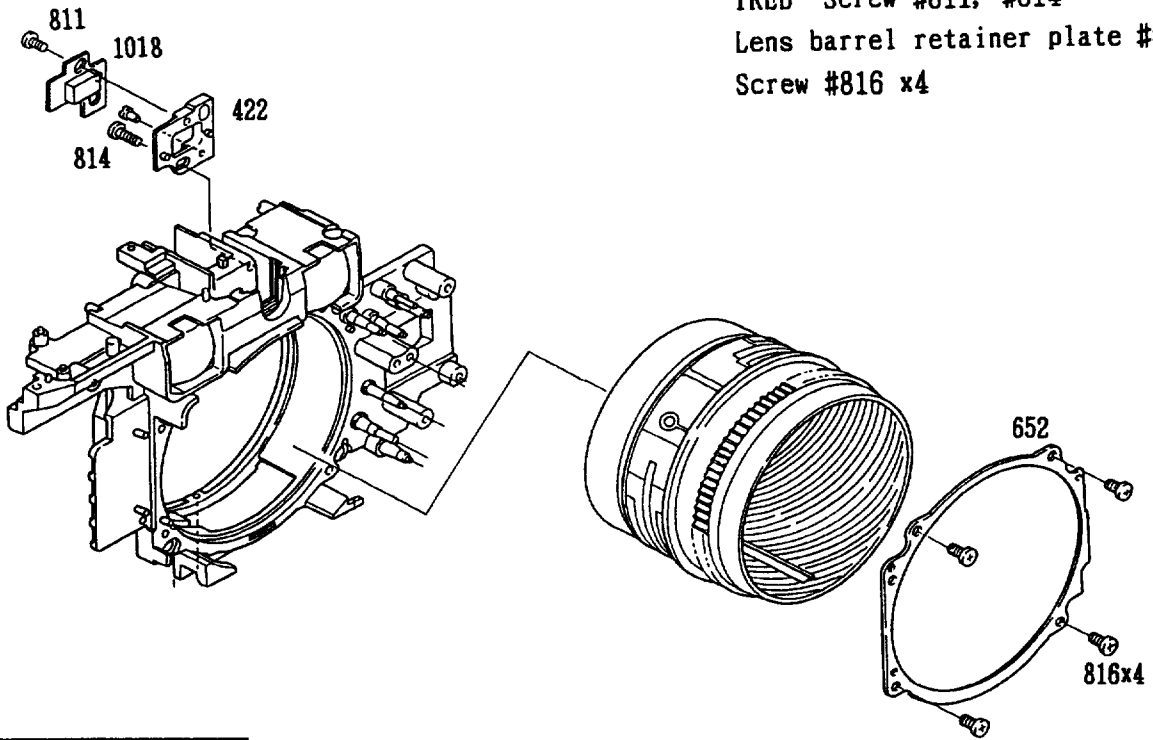


- Remove Shutter PPC from the black box.
- Guide key, #810 x2
- Clutch, Screw #665 x 2
- Turn the unit along the direction indicated by the arrow and pull it out.



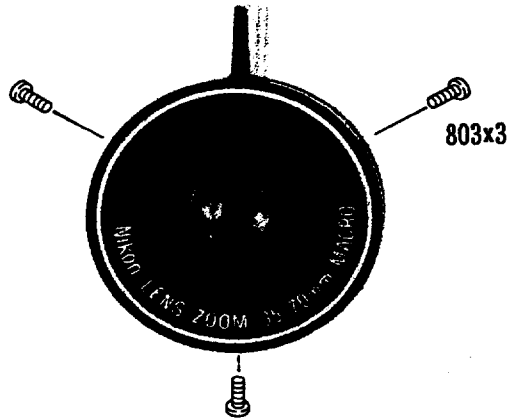


⑤ Outer helicoid unit, IRED unit

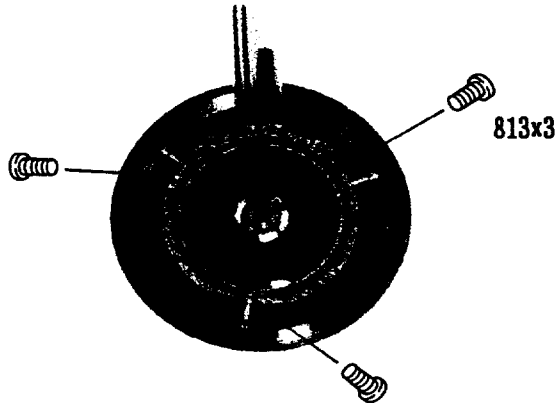


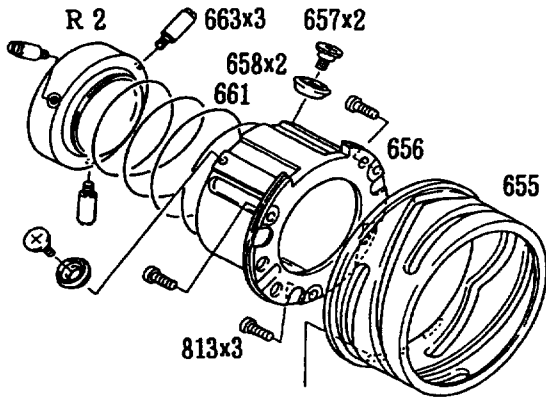
(9) Shutter unit

① Lens barrel cover

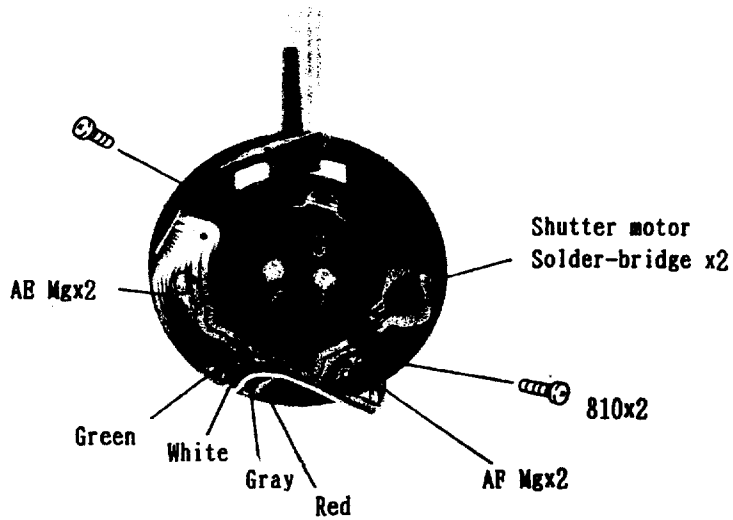


② 2nd lens group

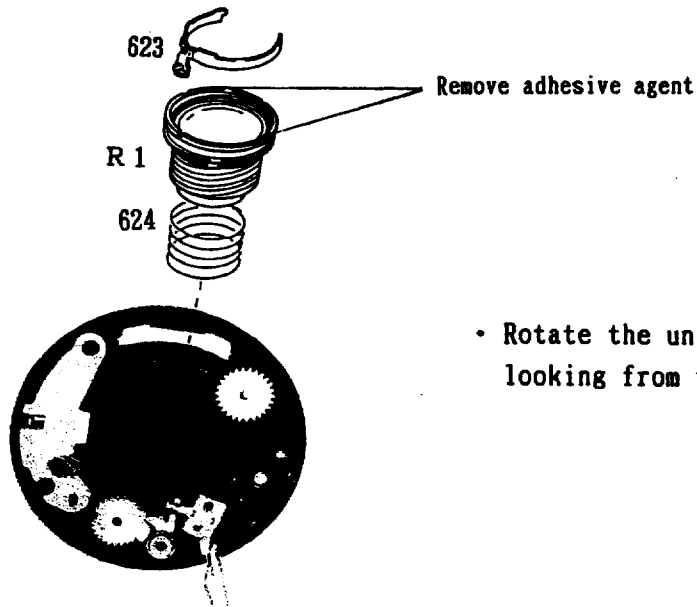




③ Shutter retainer plate

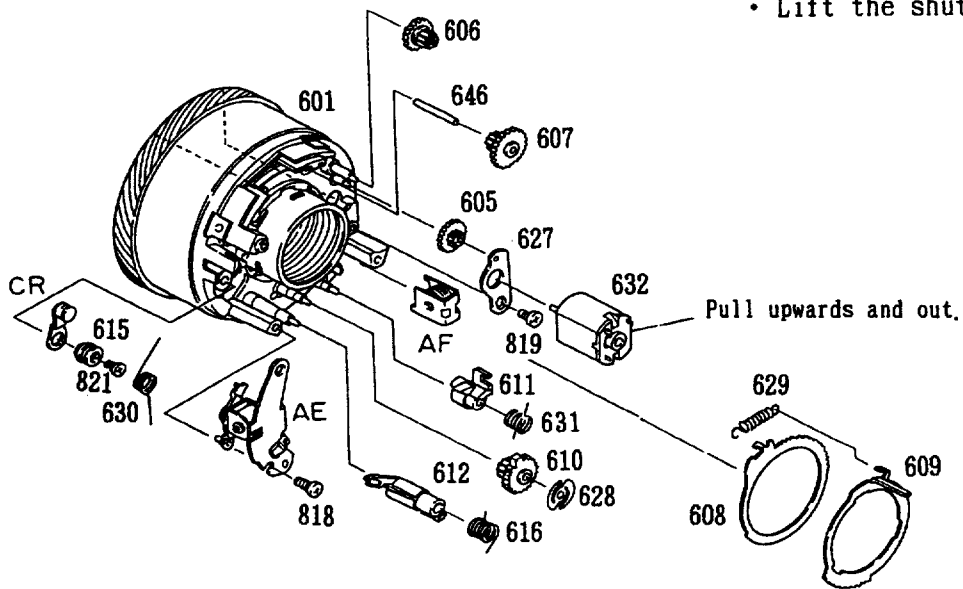


④ 1st lens group

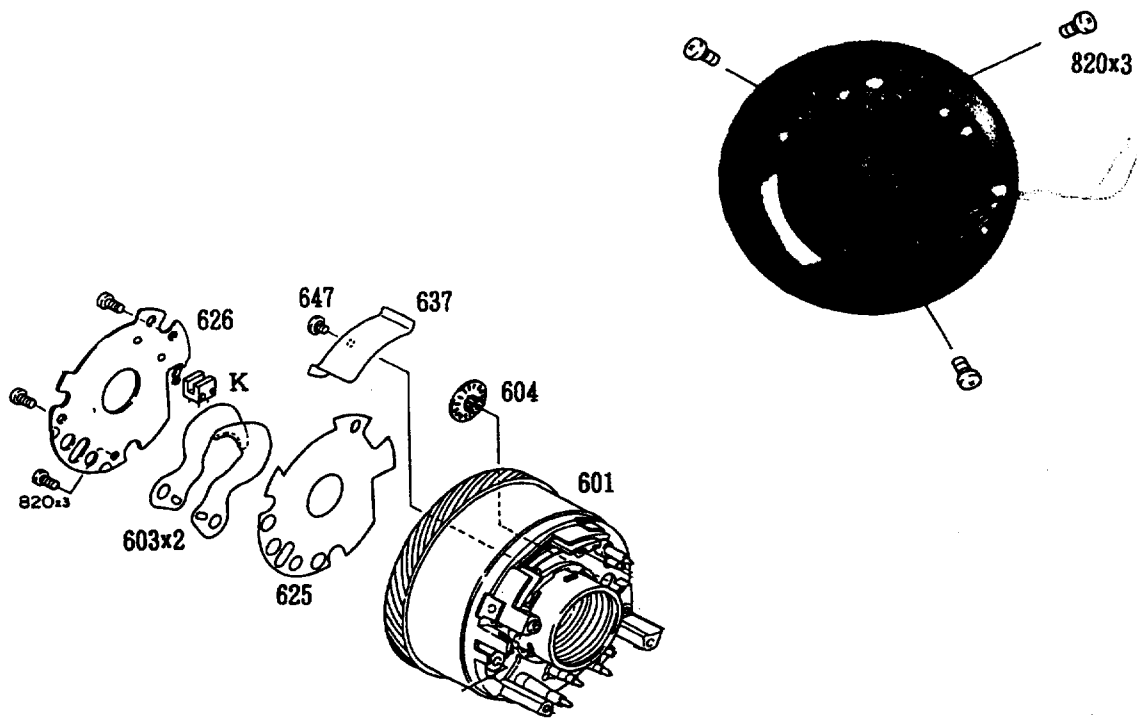


⑤ Shutter motor, AE, AF Mg gear

- AE Mg Screw #818
- Lift the shutter motor upwards

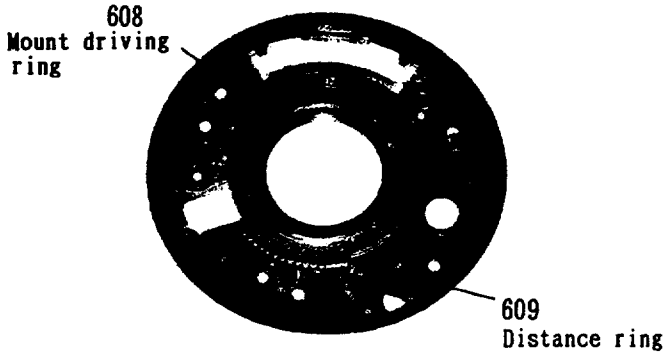


⑥ Photo interrupter #K, Shutter blade #603 x2



ASSEMBLING & ADJUSTMENT

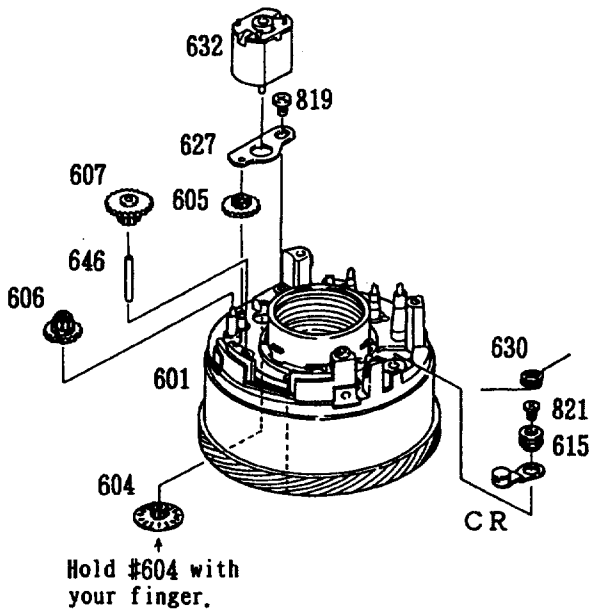
SHUTTER UNIT



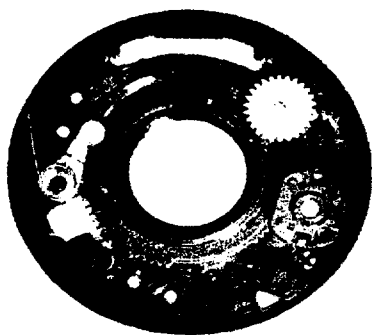
- 1) Mount driving ring (#608) on shutter base plate (#601).
- 2) Aligning three notches on distance ring (#609) with protrusions on the plate, attach distance ring.

Inspection:

Turn distance ring and driving ring to confirm they can be rotated smoothly.

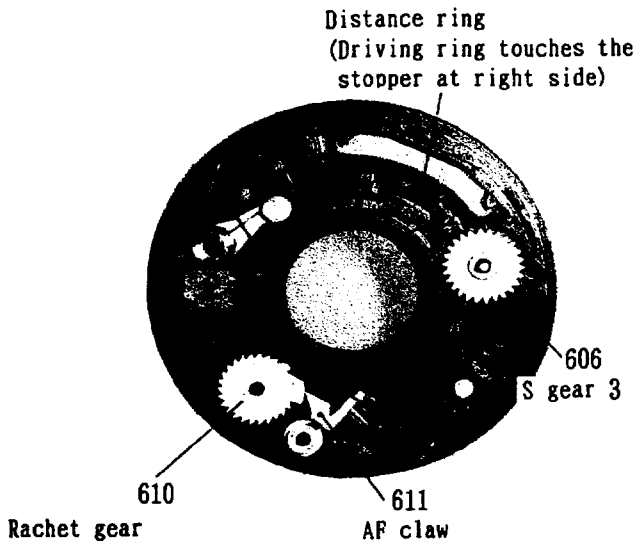


- 3) Attach cam shaft (#615) on cam CR and fix them with a screw (#821).
- 4) Attach SG shaft (#646).
- 5) After attaching S gear 2 (#605), fix gear retainer plate (#627) with a screw (#819)
- 6) While holding S gear 1 (#604) with your finger, depress shutter motor (#632) as deep as it will go.
- 7) Attach S gear 3 (#606) and S gear 4 (#607).



8) Attaching ratchet gear:

- ① Rotate S gear 3 (#606) so that driving ring touches the stopper at right side.
- ② To prevent the driving ring going away from the stopper, hold S gear (#606) with your finger.
- ③ Without removing your finger, from the gear, mount ratchet gear (#610) so AF claw (#611) catches the gear. (See figure.)



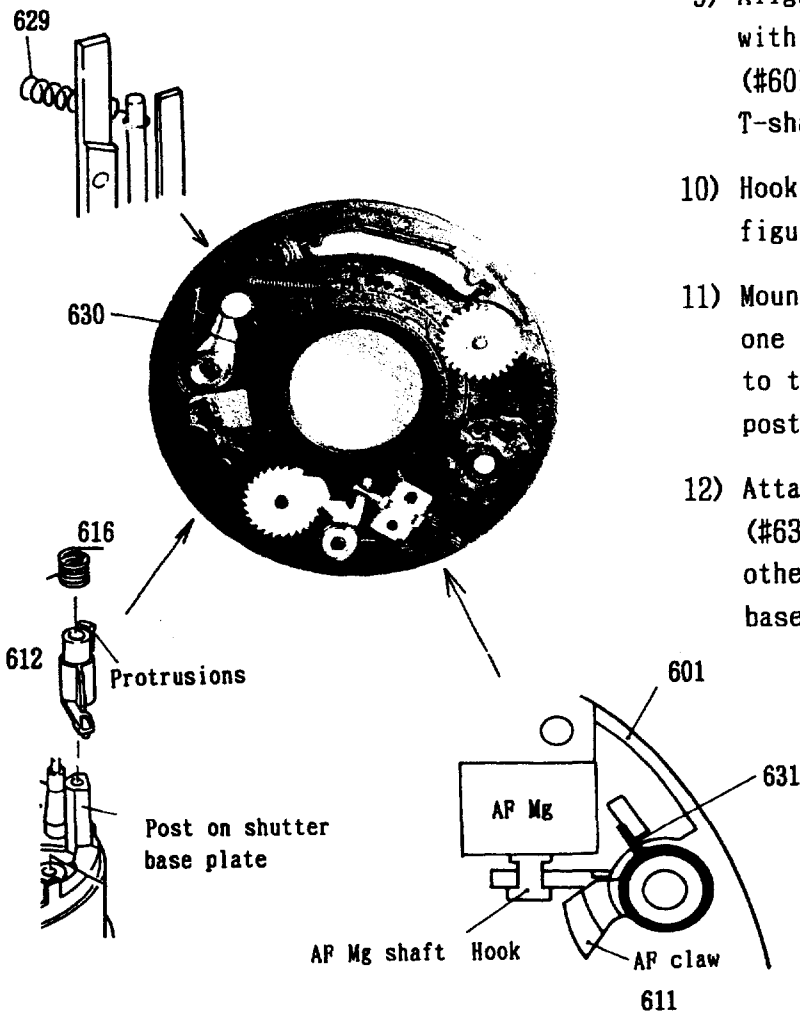
- 9) Aligning three protrusions on AF Mg with grooves on shutter base plate (#601), insert AF Mg shaft into the T-shape-grooves on AF claw.

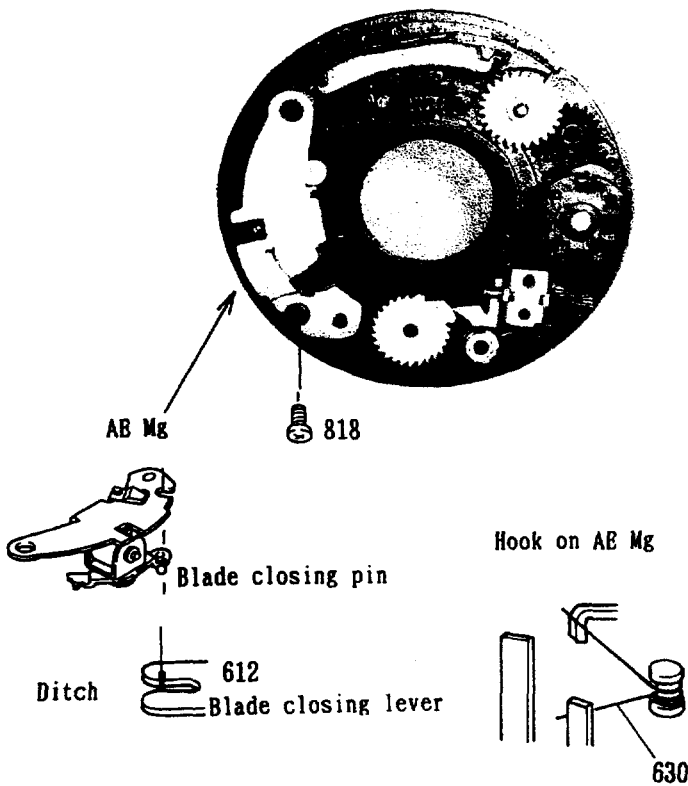
- 10) Hook AF claw spring (#631) as figured.

- 11) Mount blade driving lever. Attach one end of blade close spring (#616) to the hook and other end to the post on shutter base plate.

- 12) Attach one end of MG reset spring (#630) to hook on the cam and the other end to the post on shutter base plate.

- 13) Hook spring (#629) on the post on shutter base plate and distance ring.



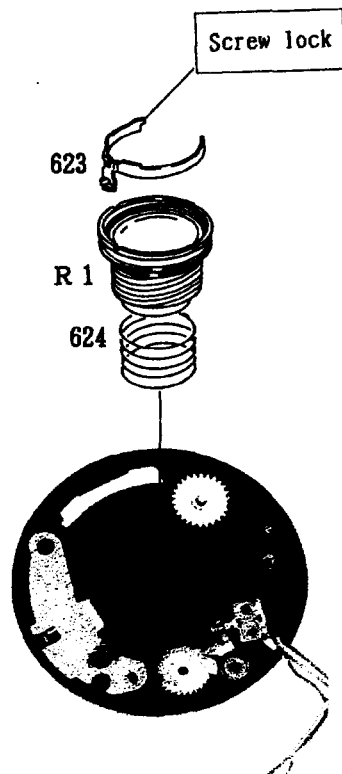


14) Mount AE Mg so that blade closing pin is fit to the groove of blade closing lever (#612) on shutter base plate. Fix AE Mg with a screw (#818).

15) Attach the spring (#630) to the hook on the AE Mg again.

Inspection:

- ① Move the blade closing lever and confirm AE Mg's blade closing pin moves smoothly.
- ② Confirm that cam pin, driving ring and AE lever are to be certain space.



16) Mounting 1st lens group unit

- ① Attach focus ring (#623) to 1st lens group unit (#R1).
- ② Mount 1st group spring.
- ③ Confirm that fork on focus ring is fitted with the post on distance ring (#609).
- ④ Mount 1st lens group unit.

※ Helicoid can be positioned any place.

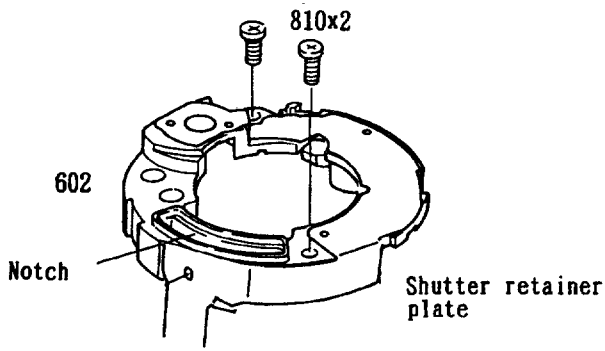
FCA 12001-R. 3283. A

17) Pass the shutter PPC (#T) through the opening on the shutter base plate.

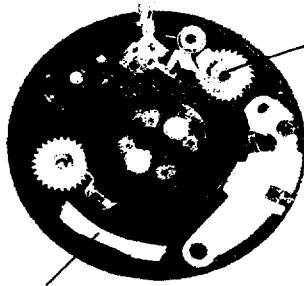
18) Put ratchet spring (#628) on ratchet gear (#610).

※ Two protrusions facing up.

19) Align openings on shutter base plate and on shutter retainer plate, fix them with screws (#810 x 2).



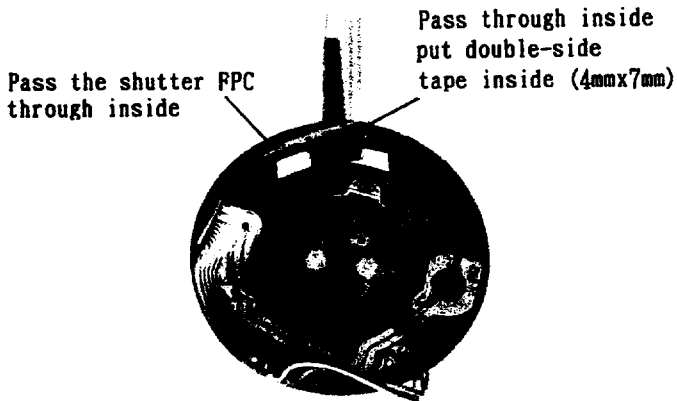
Protrusions should be facing up



628  
Ratch spring #628

Pass the shutter PPC through the opening on shutter base plate

20) Pass four Photo interrupter cords through hole shutter base plate solder x4.

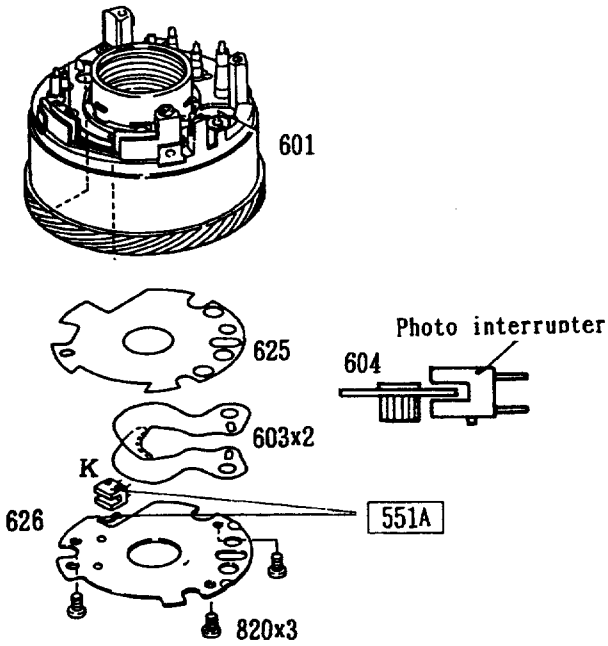


Lead wires same as disassembly

21) Mount shutter blade

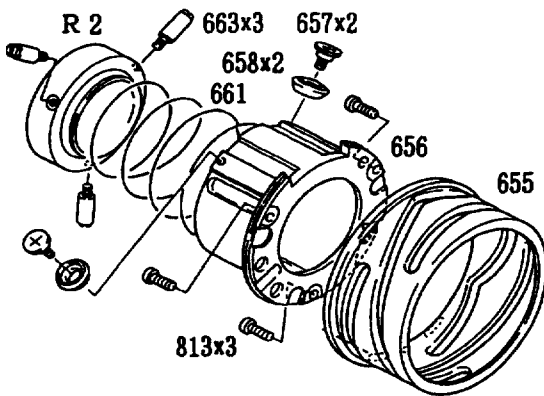
- ① Aligning two protrusion on photo interrupter with two pits on shutter base plate, set S gear 1 to photo interrupter.
- ② Alining the holes , mount blade front plate (#625) on shutter base plate.
- ※ Make sure the right blade is facing up.
- ③ The blade rear plate with three screw (#820) x3.

※ Photo interrupter on holder of blade rear plate with 551A.



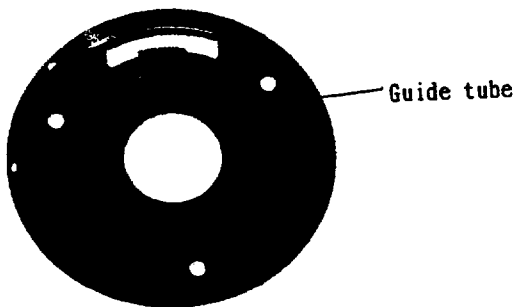
2ND LENS GROUP UNIT

- 1) Attaching 2nd lens group unit (#R2) with three cam pins (#663 x 3).

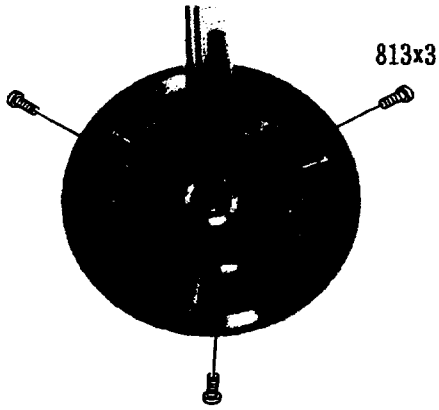


Inspection:

Turn guide tube (#656) counter-clockwise until it stops, then confirm it is positioned as figured.

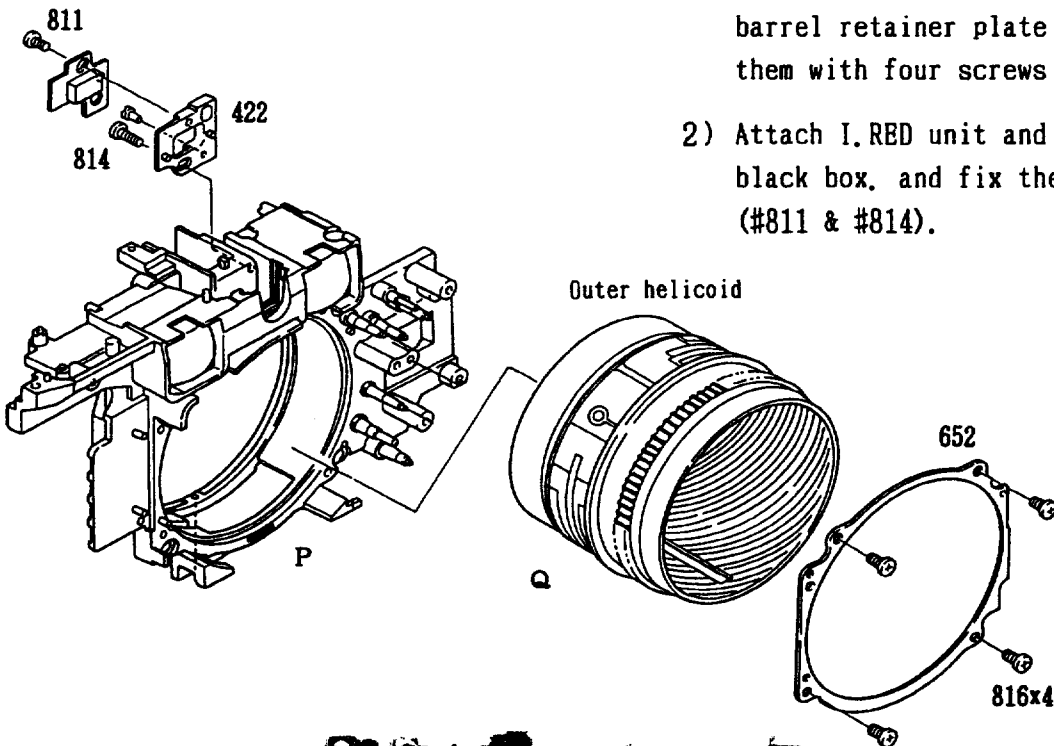




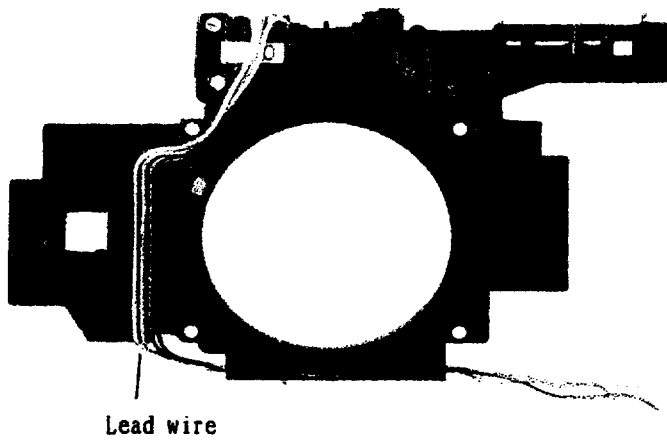


- 2) Mount 2nd lens group unit to shutter base plate.
- 3) Pass shutter FPC through two rollers. Screw #813x3.

ATTACHING OUTER HELICOID UNIT AND I. RED UNIT

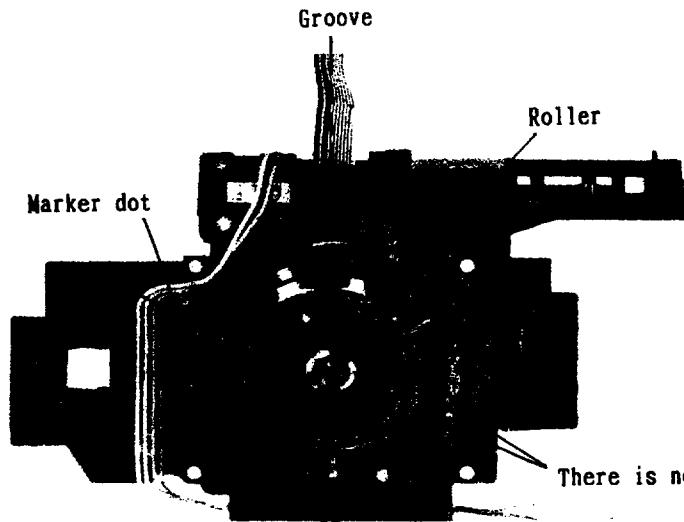


- 1) Mount outer helicoid unit (#Q) on black box (#P). Hold it with lens barrel retainer plate (#652) and fix them with four screws (#816x4).
- 2) Attach I. RED unit and IRED base plate to black box, and fix them with two screws (#811 & #814).

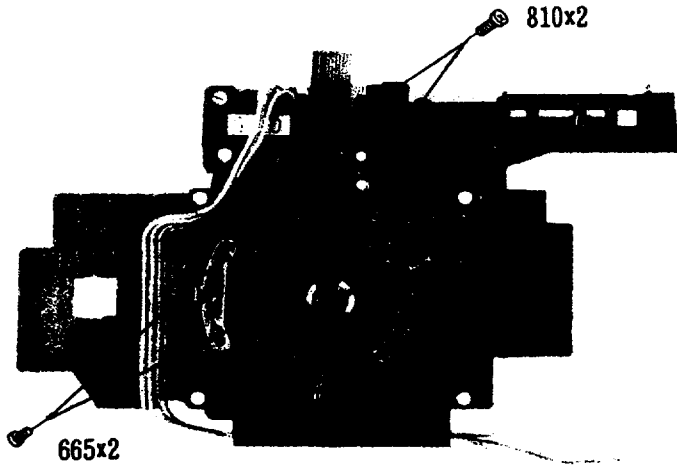


ATTACHING SHUTTER UNIT

- ① Align the center of clutch notch of outer helicoid unit with the marker dot on black box.
- ② Screw the shutter unit into the outer helicoid unit.
- ③ Align center of two rollers with center of groove on the black box.



- ④ Confirm there is no difference in the level between the shutter base plate and the outer helicoid unit.

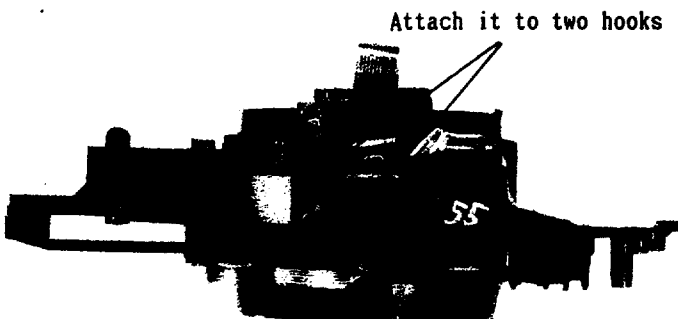


- Attach the guide key with two screws (#810 x 2).
- Attach the clutch with two screws (#665 x 2)

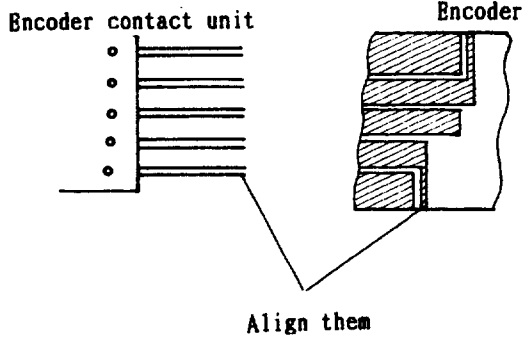
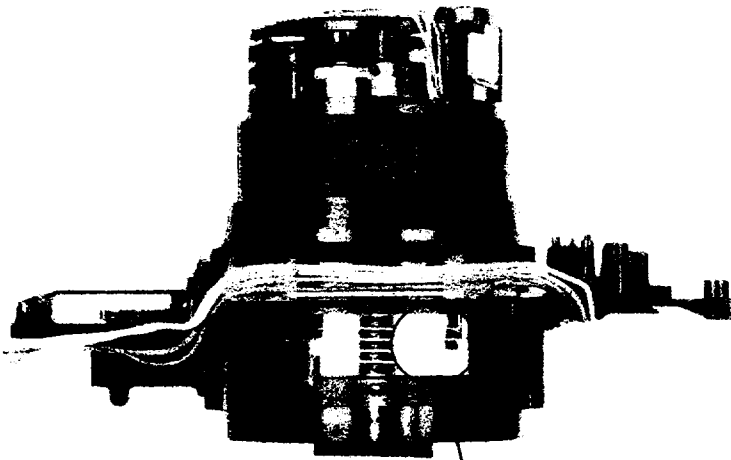
- Pass FPC through inside the shutter base plate and attach it to two hooks.

Inspection:

Confirm that inner helicoid unit can be rotated smoothly.



ENCODER CONTACT UNIT



Encoder contact unit position  
(Tele-mode mechanical lock position)

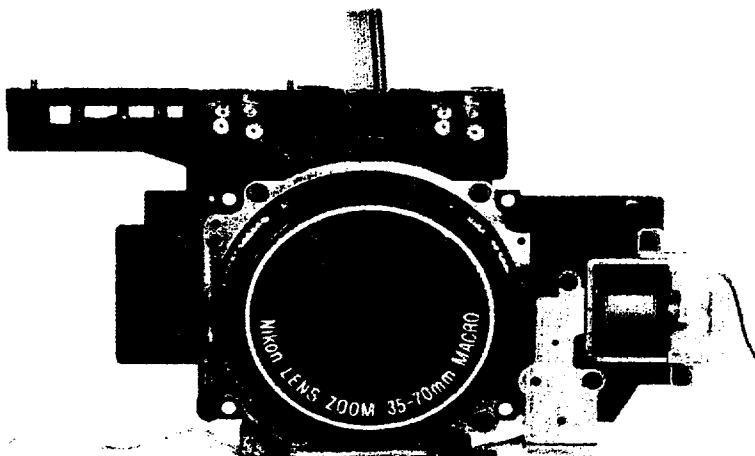
- ① Rotate the inner helicoid unit until it lightly touches the Tele-side stopper. (Take special care to avoid striking the stopper with the helicoid unit).
- ② For lens barrel movement, slightly turn the inner helicoid unit back to Wide-side
- ③ At this Tele mode mechanical lock position, fix the encoder contact unit with a screw (#811). (See figure)

Note:

Encoder contact unit will move as the clutch moves. If you move the clutch, adjust the encoder contact position.

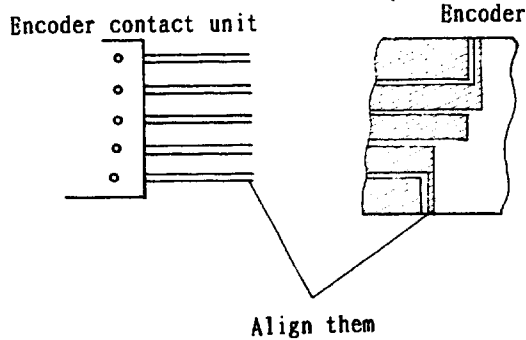
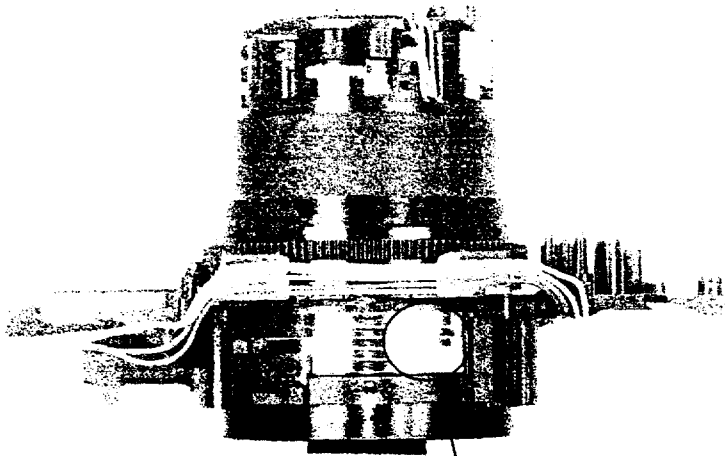
- ④ Fix barrel SW (#673) with a screw (#807).

HELICOIDMOTOR UNIT



- 1) Attach gears in the following order:  
L gear 2-3 (#679) ⇒ L gear 4-5 (#680)  
⇒ L gear 6-7 (#679) ⇒ L gear 8 (#682)
- 2) Attach the lens barrel and helicoid-motor unit (#L).
- 3) Then fix gear retainer plate (#677) with two screws (#803x2) and fix the helicoid motor unit with two screws (#803x2).

ENCODER CONTACT UNIT



Encoder contact unit position  
(Tele-mode mechanical lock position)

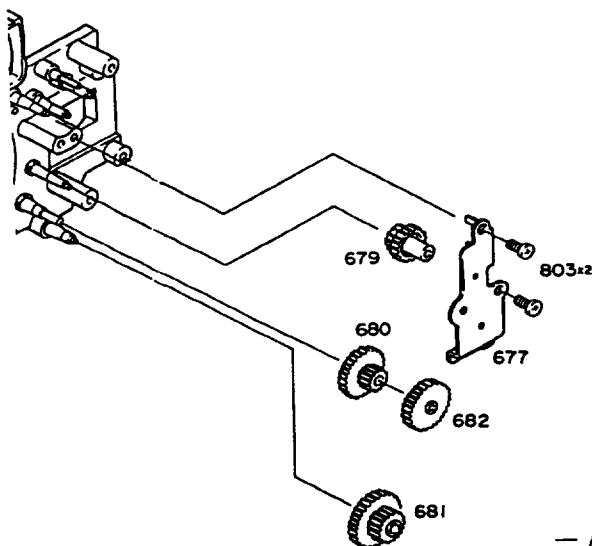
- ① Rotate the inner helicoid unit until it lightly touches the Tele-side stopper. (Take special care to avoid striking the stopper with the helicoid unit).
- ② For lens barrel movement, slightly turn the inner helicoid unit back to Wide-side
- ③ At this Tele mode mechanical lock position, fix the encoder contact unit with a screw (#811). (See figure)

Note:

Encoder contact unit will move as the clutch moves. If you move the clutch, adjust the encoder contact position.

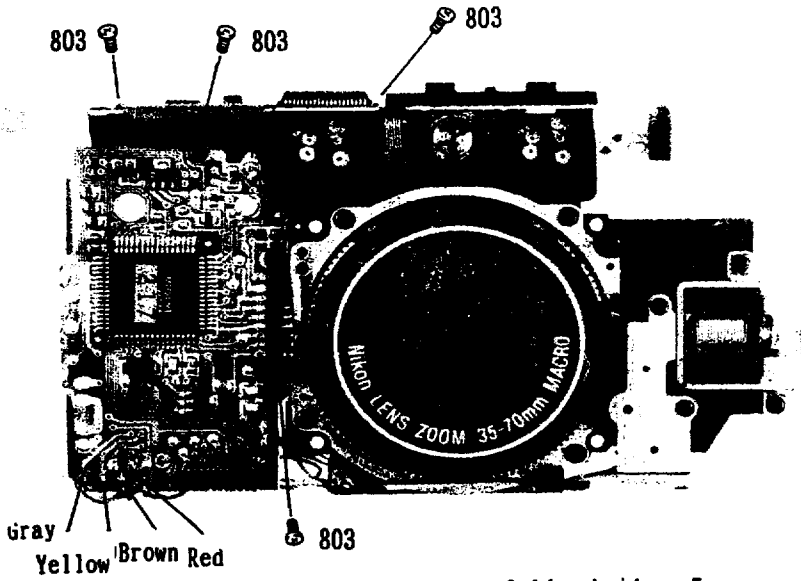
- ④ Fix barrel SW (#673) with a screw (#807).

HELICOIDMOTOR UNIT



- 1) Attach gears in the following order:  
L gear 2-3 (#679) ⇒ L gear 4-5 (#680)  
⇒ L gear 6-7 (#679) ⇒ L gear 8 (#682)
- 2) Attach the lens barrel and helicoid-motor unit (#L).
- 3) Then fix gear retainer plate (#677) with two screws (#803x2) and fix the helicoid motor unit with two screws (#803x2).

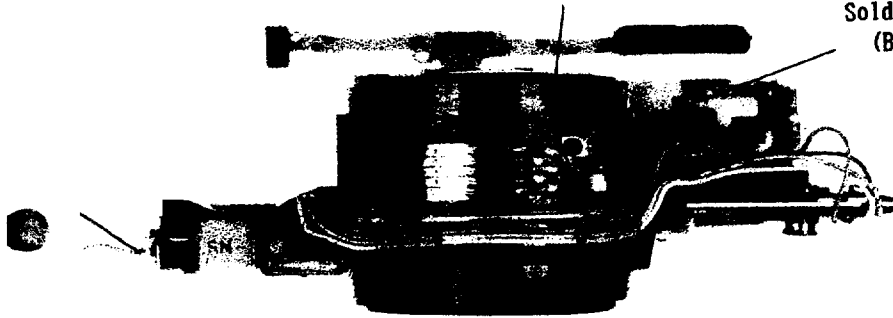
MAIN PPC



- I. RED cordx4
- #803 screw x4
- I. RED retainer plate (#401) & #814 screw
- ※ Attach the IC protect plate too.

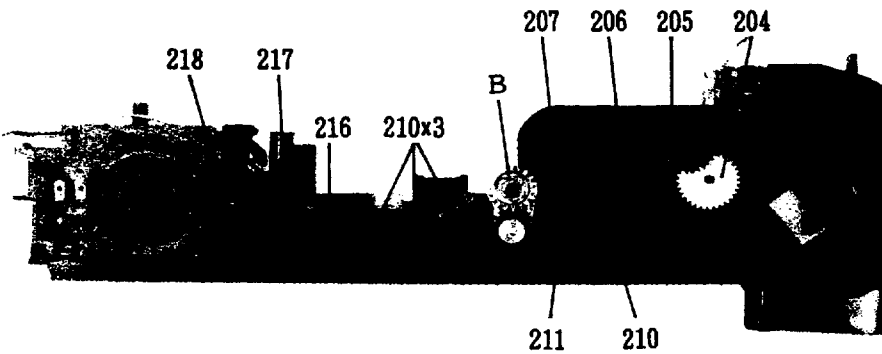
Solder-bridge x5  
(Encoder contact)

Solder-bridge x1  
(Barrel SW)

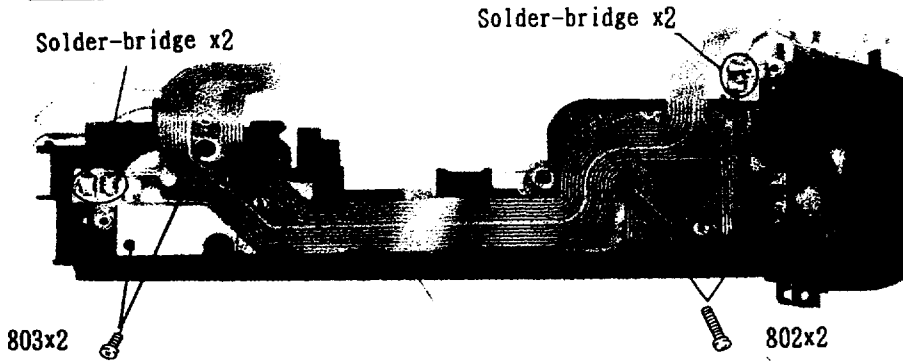


W/R MOTOR GEAR

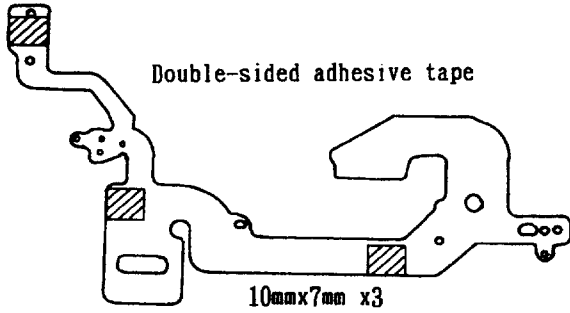
- Rewind fork unit #C
- #803 screw x3
- #802 screw x2



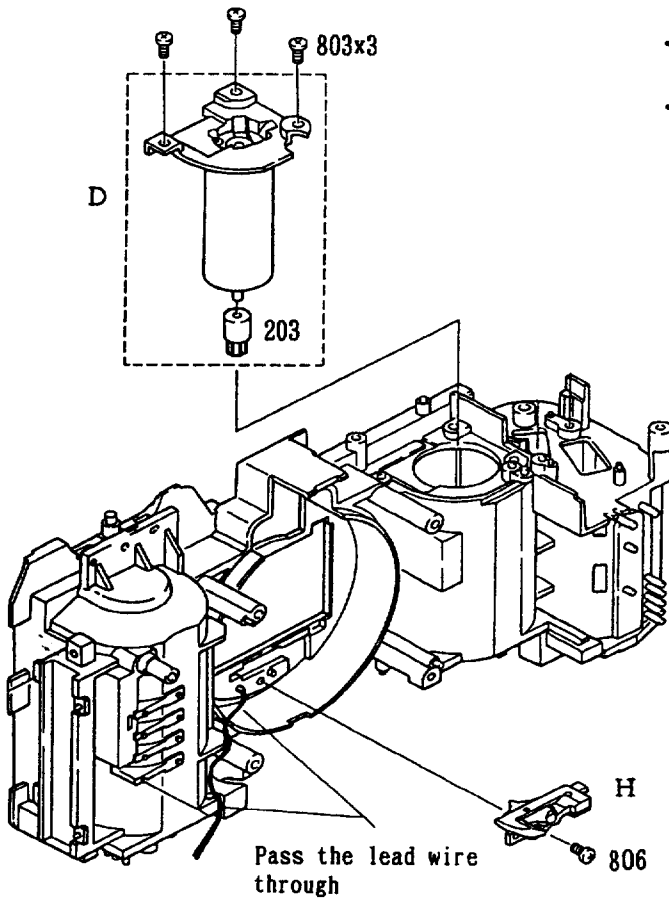
CONNECTING FPC



- Solder-bridge x4
- #803 screw x2
- #802 screw x2



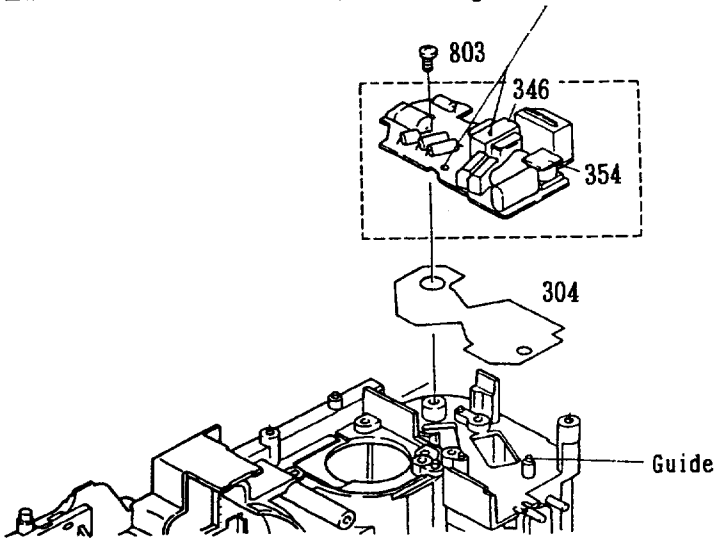
W/R MOTOR UNIT AND FREE SPROCKET UNIT



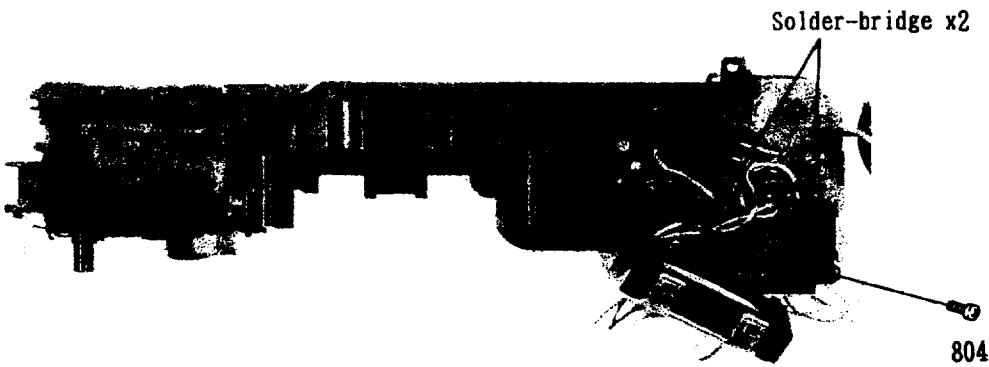
- W/R motor unit & #803 screw x3
- Free sprocket unit and #806 screw
- ※Pass the lead wire through two guide grooves.

SB BASE PLATE

Solder-bridge & Battery contact

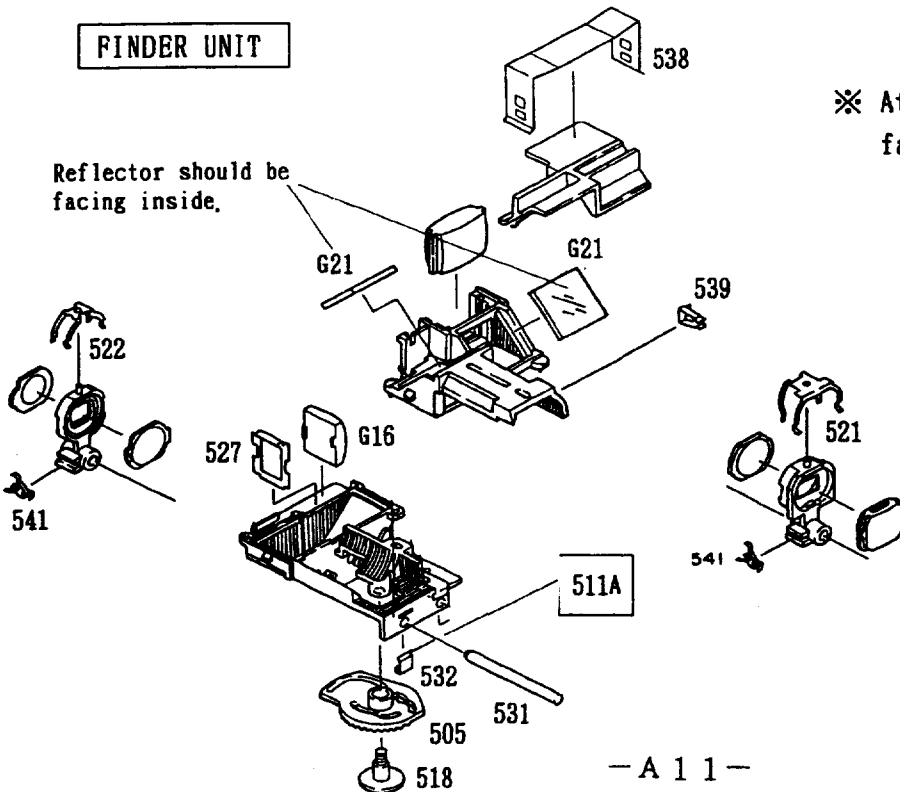


- 1) Aligning holes on SB insulating plate (#304) with guides on the body, put the SB insulating plate on the body. Then attach SB base plate and fix with a screw (#803).
- 2) Solder-bridge with battery contact also Black and Red cords.
- 3) SB guide (#303) & #804 screw.

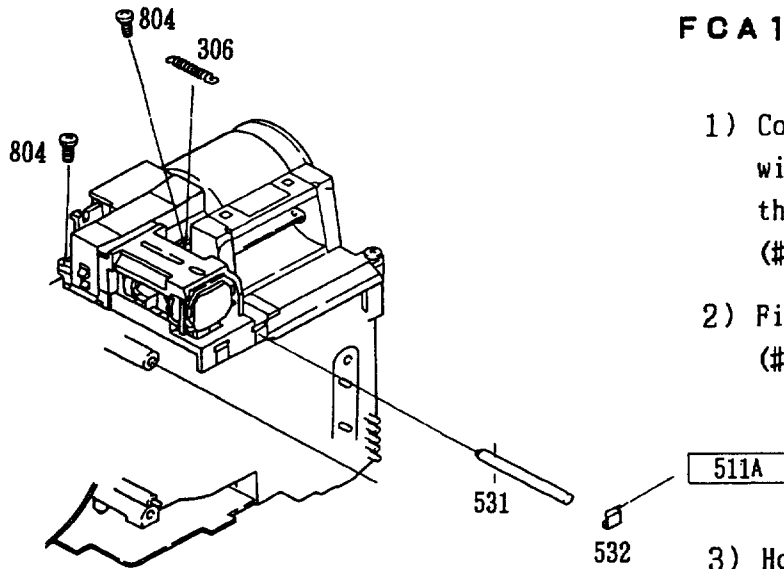


FINDER UNIT

Reflector should be facing inside.



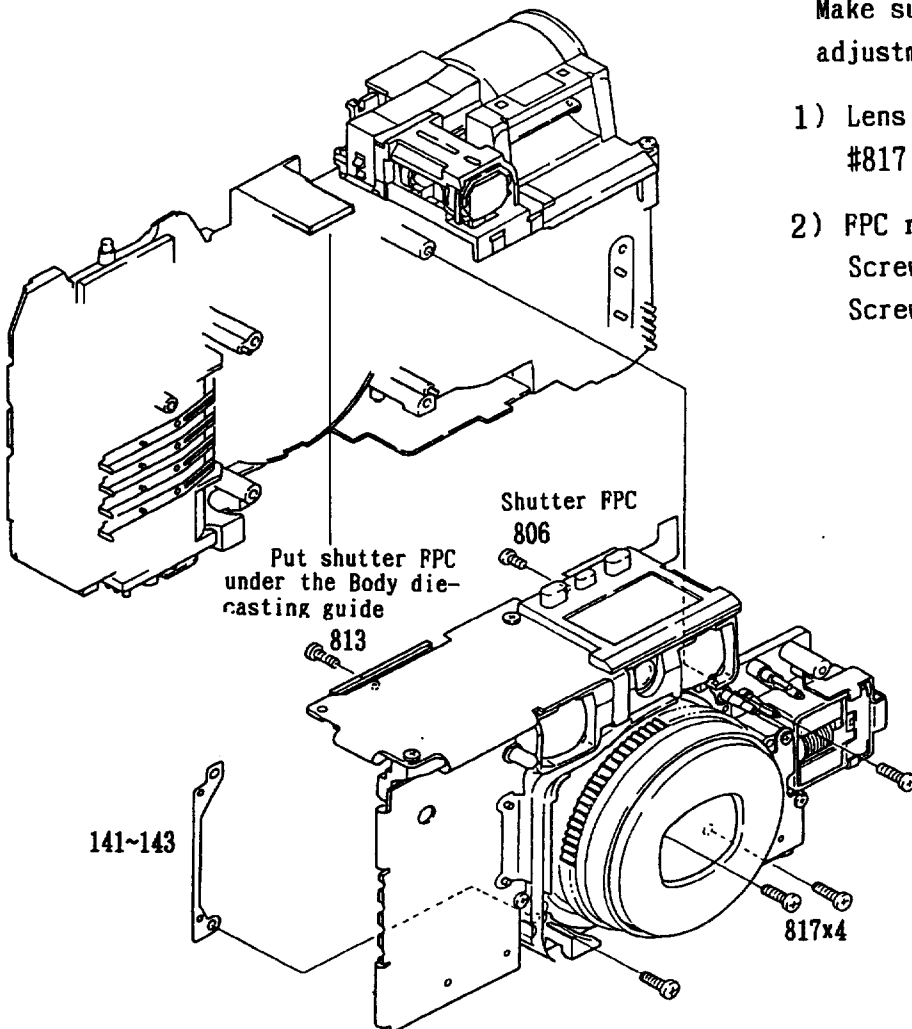
※ Attach G21 x2 with the reflector facing inside.



- 1) Connect SB unit and finder unit with guide shaft (#531) and fix the shaft with retainer spring (#532).
- 2) Fix the units with two screws (#804x2).

- 3) Hook the spring (#306) between the finder unit and the SB unit.

ATTACHING LENS BARREL UNIT

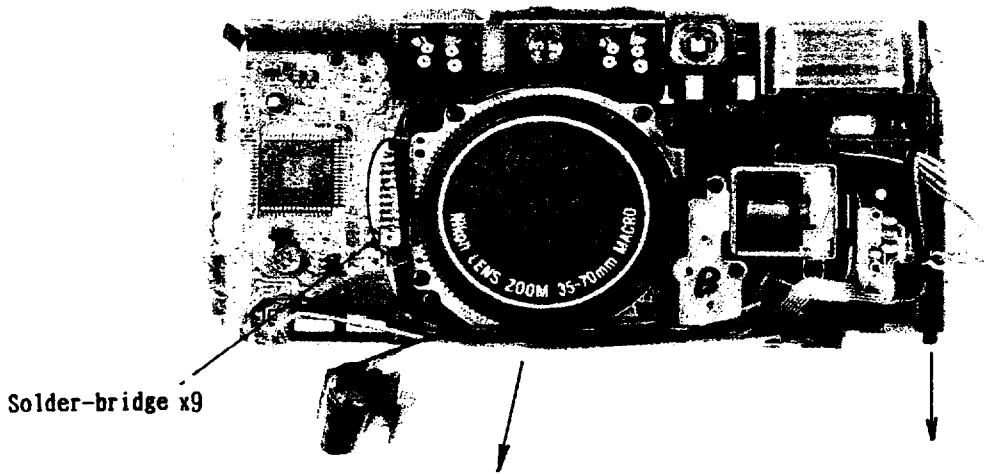


Make sure not to lose the BF adjustment plates (#141 ~ #143).

- 1) Lens barrel unit on body with #817 screw x4.
- 2) PPC retainer  
Screws #813 & #806  
Screws #817x4

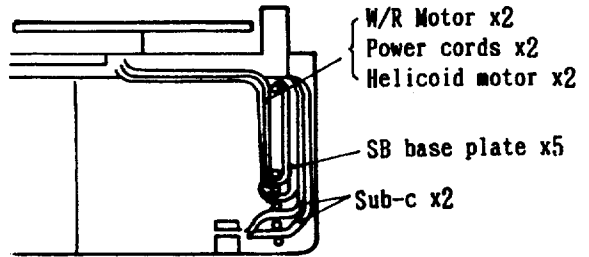
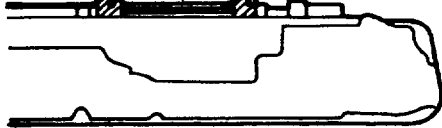


Lead wire



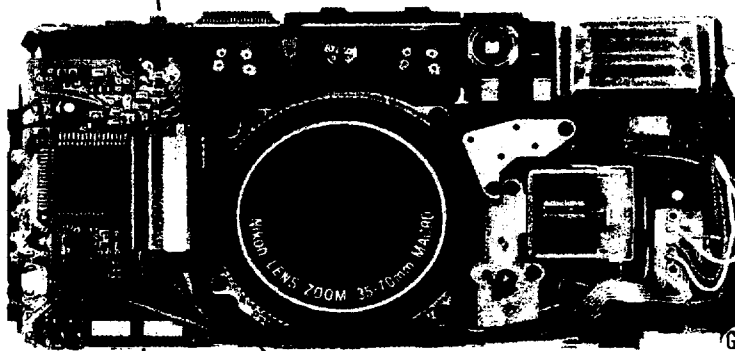
Solder-bridge x9

Double-side adhesive tape  
Lead wire



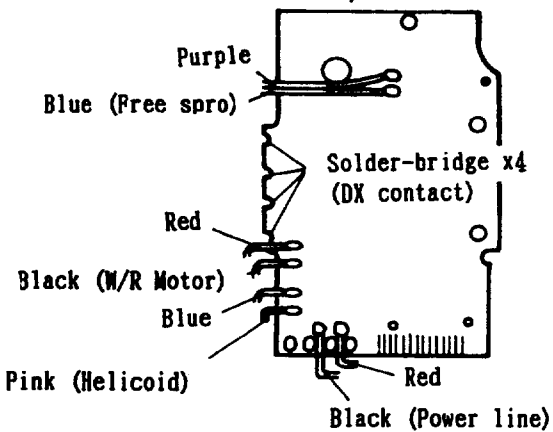
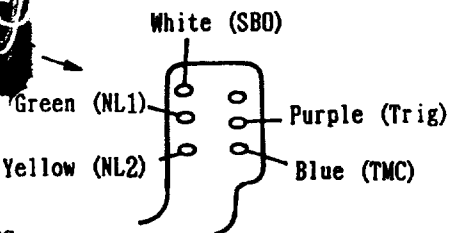
W/R Motor x2  
Power cords x2  
Helicoid motor x2  
SB base plate x5  
Sub-c x2

Zoom lever



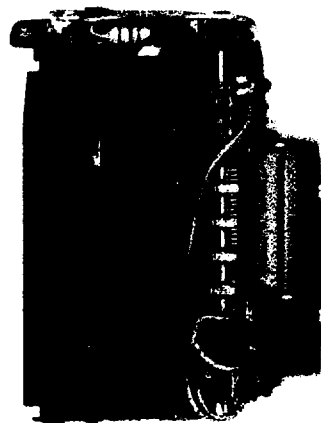
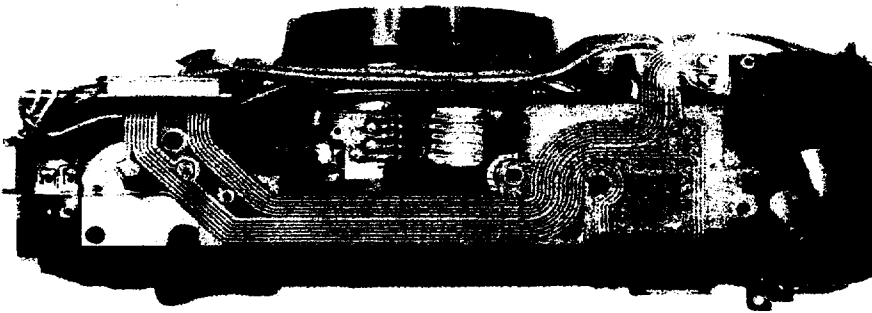
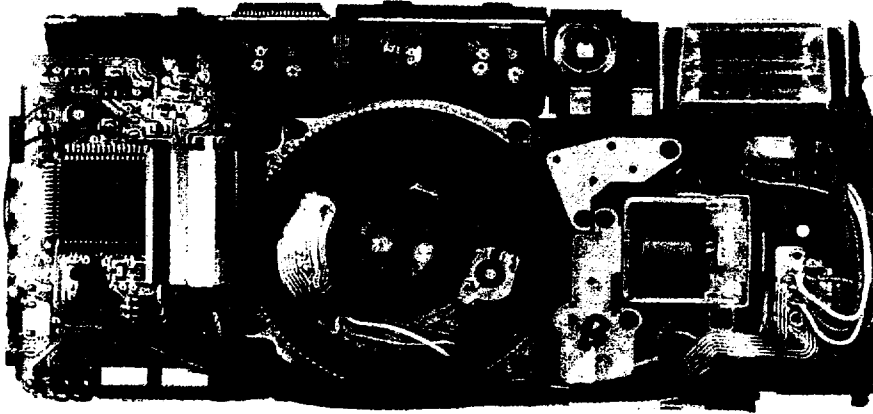
Press contact

Main PPC



FCA12001-R. 3283. A

Lead wire

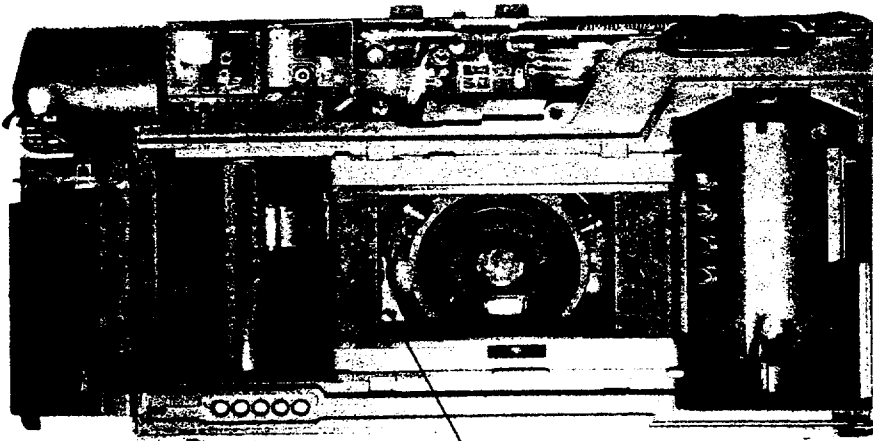


QUICK REFERENCE OF ADJUSTMENT TABLE

Readout values at Tele	Readout values at Wide (Standard)	
	Upper Limit	Lower Limit
TELE-150	UPPER -14	LOWER -69
TELE-151	UPPER -18	LOWER -72
TELE-152	UPPER -22	LOWER -76
TELE-153	UPPER -26	LOWER -80
TELE-154	UPPER -30	LOWER -84
TELE-155	UPPER -33	LOWER -87
TELE-156	UPPER -37	LOWER -91
TELE-157	UPPER -41	LOWER -95
TELE-158	UPPER -45	LOWER -99
TELE-159	UPPER -48	LOWER-102
TELE-160	UPPER -52	LOWER-106
TELE-161	UPPER -56	LOWER-110
TELE-162	UPPER -60	LOWER-114
TELE-163	UPPER -63	LOWER-117
TELE-164	UPPER -67	LOWER-121
TELE-165	UPPER -71	LOWER-125
TELE-166	UPPER -75	LOWER-129
TELE-167	UPPER -78	LOWER-132
TELE-168	UPPER -82	LOWER-136
TELE-169	UPPER -86	LOWER-140
TELE-170	UPPER -90	LOWER-144
TELE-171	UPPER -93	LOWER-147
TELE-172	UPPER -97	LOWER-151
TELE-173	UPPER-101	LOWER-155
TELE-174	UPPER-105	LOWER-159
TELE-175	UPPER-108	LOWER-162
TELE-176	UPPER-112	LOWER-166
TELE-177	UPPER-116	LOWER-170
TELE-178	UPPER-120	LOWER-174
TELE-179	UPPER-123	LOWER-177
TELE-180	UPPER-127	LOWER-181
TELE-181	UPPER-131	LOWER-185
TELE-182	UPPER-135	LOWER-189
TELE-183	UPPER-138	LOWER-193
TELE-184	UPPER-142	LOWER-196
TELE-185	UPPER-146	LOWER-200

- \* If collimator indications at Upper Limit over (Turn the 1st lens clockwise)
- \* If collimator indications at lower Limit over (Turn the 1st lens counter clockwise).

(2) Adjustment of back focus

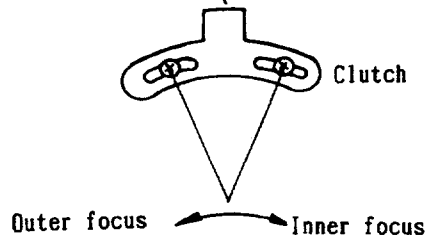


Turn the clutch to adjust the collimator reading so it is within the specified range\* shown below:

W end  $-173 \pm 20$  scales

T end  $-185 \pm 11$  scales

After adjustment, apply screw Lock on screw (#665x2).

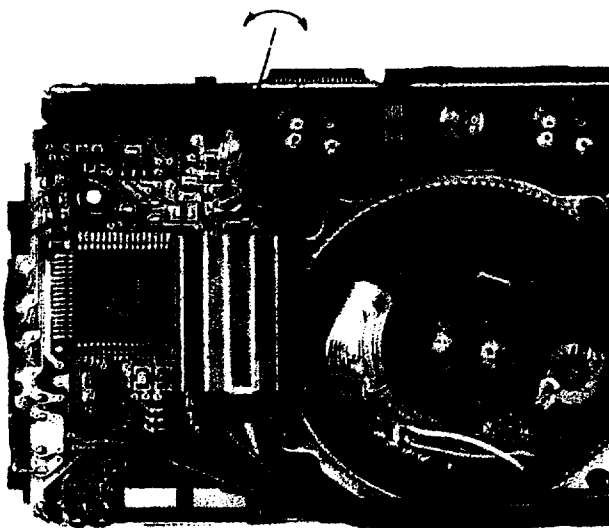


2. ADJUSTMENT OF I. RED CURRENT

※ If the main FPC or I. RED is replaced with a new one, adjust of I. RED.

- Tools
- Regulated power supply ( $6V \pm 0.03V$ )
  - Oscilloscope

Half-fixed resistance



By turning the half-fixed resistance on the main FPC, adjust power consumption value at I. red turning on (at IRED for battery check turning on).

Turn colkwise to decrease the valule  
Turn counterclockwise to increase value

Standard:  $385mA \pm 5mA$

OPERATION CHECK

After attaching lens barrel unit, connecting wires and solder-bridge, you can operate the camera body for inspection.

Inspection

- ① Install battery back inside the battery chamber (or use a regulated power supply) and attach the battery chamber lid.
- ② Press the back door switch with the back door or other object to turn it off.
  - ※ Confirm that indications appear on the LCD and that film advance operation is performed.
- ③ Using a pinset, short-circuit main SW.
  - ※ Confirm that lens adjusts to wide position.
- ④ Put shutter release button on the contact and depress the shutter release button.
  - ※ Confirm that the shutter is released, green and/or red LED lights up/blinks and flash fires. Also confirm that lens is zoomed up/down.

Notes:

- ① Be careful not to receive an electric shock.
- ② If camera does not operate properly, immediately remove battery pack (or turn of the regulated power supply unit).  
If the body is short-circuited, electric parts may be damaged.
- ③ After checking operation, be sure to discharge main condenser for safety's sake.

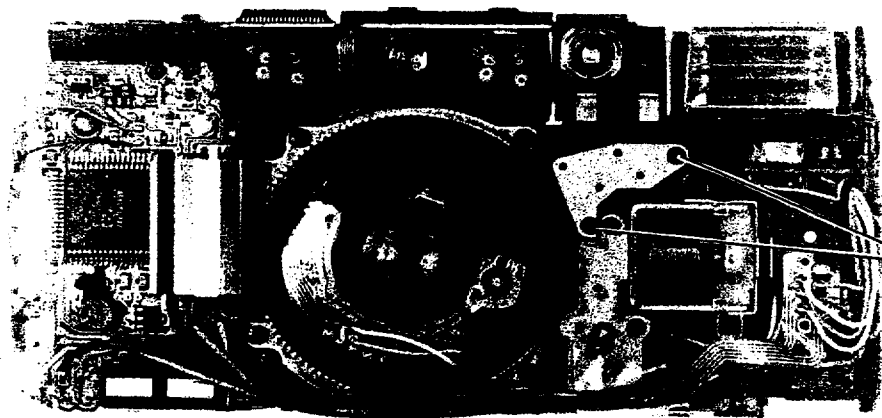
F GEAR UNIT



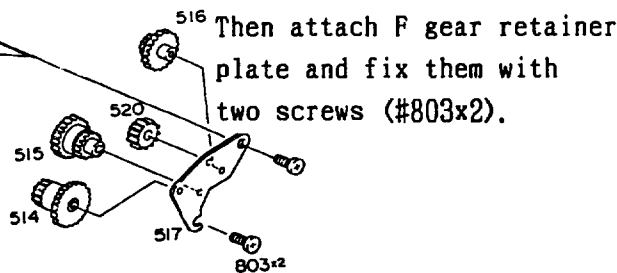
Zoom cam move to left 5

Mount F gear unit

- ① Attach lens barrel and set it the original position.
  - ※ At the original position, lens cover should close.
- ② Turn zoom cam (#505) in the direction of the arrow until stops.



- ③ Attach F gear 3-4 (#515), F gear 7 (#520), F gear 5-6 (#516) and F gear 1-2 (#514).



OPERATION CHECK

After attaching lens barrel unit, connecting wires and solder-bridge, you can operate the camera body for inspection.

Inspection

- ① Install battery back inside the battery chamber (or use a regulated power supply) and attach the battery chamber lid.
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  - ※ Confirm that the shutter is released, green and/or red LED lights up/blinks and flash fires. Also confirm that lens is zoomed up/down.

Notes:

- ① Be careful not to receive an electric shock.
- ② If camera does not operate properly, immediately remove battery pack (or turn of the regulated power supply unit).  
If the body is short-circuited, electric parts may be damaged.
- ③ After checking operation, be sure to discharge main condenser for safety's sake.

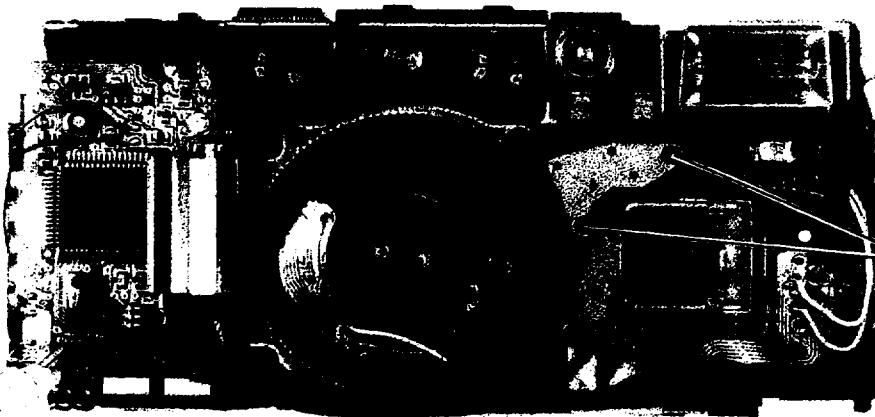
**F GEAR UNIT**



Zoom cam move to left

Mount F gear unit

- ① Attach lens barrel and set it the original position.
  - ※ At the original position, lens cover should close.
- ② Turn zoom cam (#505) in the direction of the arrow until stops.
- ③ Attach F gear 3-4 (#515), F gear 7 (#520), F gear 5-6 (#516) and F gear 1-2 (#514).  
Then attach F gear retainer plate and fix them with two screws (#803x2).



## 1. ADJUSTMENT OF BACK FOCUS

(1) Adjustment at both ends of focal length

(2) Adjustment of back focus

- Tools:
- Collimator J19019 (24LT-2DTS,  $f=193.5\text{mm}$ )
  - Mirror
  - Camera back substitute tool (Self-made; Sets camera in the same condition as when camera back is closed)

(1) Adjustment at both ends of focal length

① Set manual inspection mode to "Bulb" mode (Step 7). Refer to "SPECIFICATIONS."

※ AE Mg may be damaged if shutter blade is left open for 1/2 minute or more.

② Put clutch screw at the center of the stopper.

③ With lens retracted, temporarily position 1st lens group unit 0.5mm away from the end of shutter motor.

④ At the longest zoom setting, read collimator. If it indicates approx.  $-160 \sim -170$ , adjust the longest focal length with the clutch.

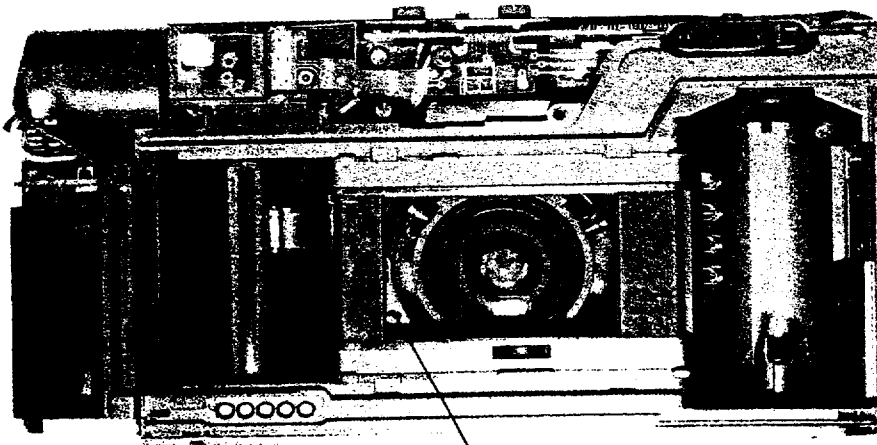
※ If focal length cannot be adjusted with the clutch, rotate the 1st lens group.

⑤ If collimator indications at both end focal length are within the specified range (shown on the Table), ends of focal length need no adjustment. Perform back focus adjustment.

If collimator indications are out of the specified range, rotate the 1st lens group to adjust the shortest focal length and read the collimator again. If indication for longest focal length is out of the range, adjust with the clutch as mentioned in the previous step.

For example, if the collimator indicates  $-165$  for Tele and  $-140$  for Wide, adjust the focal length ends by slightly rotating the 1st group counter-clockwise.

(2) Adjustment of back focus

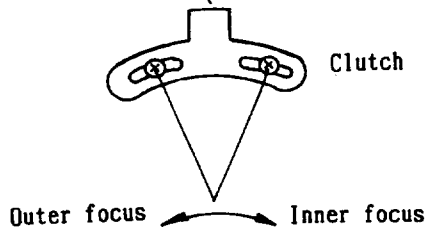


Turn the clutch to adjust the collimator reading so it is within the specified range\* shown below:

W end  $-173 \pm 20$  scales

T end  $-185 \pm 11$  scales

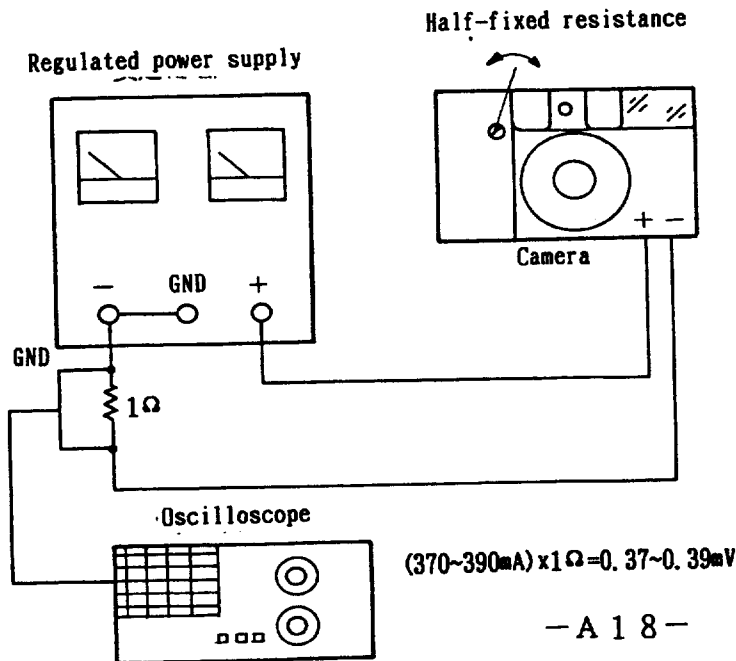
After adjustment, apply screw Lock on screw (#665x2).



2. ADJUSTMENT OF I. RED CURRENT

※ If the main FPC or I. RED is replaced with a new one, adjust of I. RED.

- Tools
- Regulated power supply ( $6V \pm 0.03V$ )
  - Oscilloscope

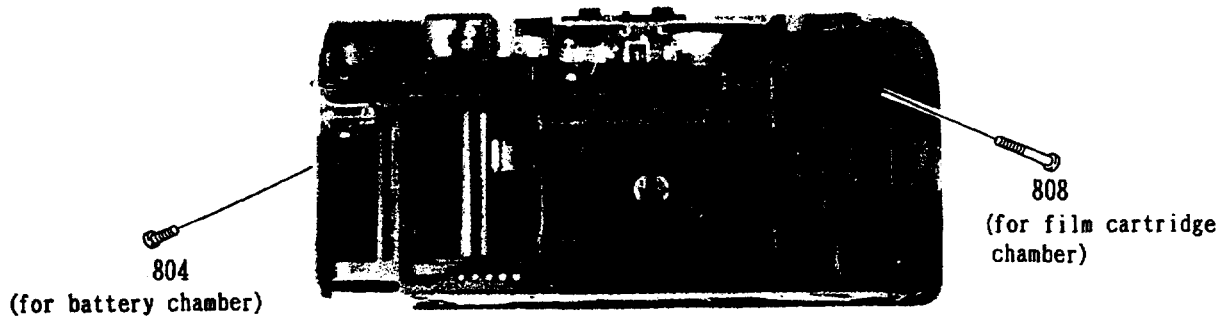


Turn colkwise to decrease the valule  
Turn counterclockwise to increase value

Standard:  $385mA \pm 5mA$



## ATTACHING FRONT COVER UNIT



## 3. ADJUSTMENT OF AF/AE ACCURACY

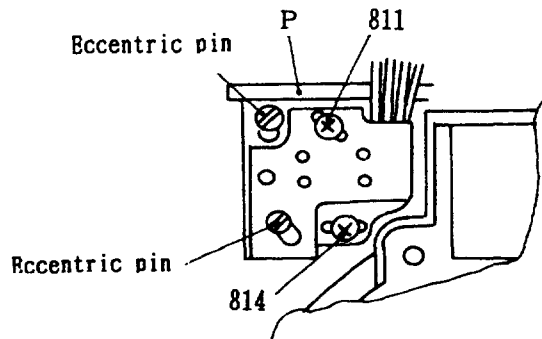
- Tools:
- PC-9800 series personal computer
  - Connector relay box J15278
  - Data back contact connector tool J15286
  - TW Zoom 35-70 inspection program J18218
  - Standard reflector paper J18190
  - Shutter tester EF-511N

## (1) Adjustment of AF sensor

If location of infrared ray from I. RED or PSD sensor is shifted, detected distance value is

To make accurate focus detection, adjust PSD sensor location and spot where infrared ray from IRED reaches.

- ① Set the standard reflector paper at a position 1.346m (STEP 114/8) away from the camera body.  
Connect the camera body and personal computer and select "Adjustment of AF sensor" from the menu.
- ② Start camera's focus detection and read "I1 + I2" and rotate the eccentric pin (at I. RED side) so that "I1 + I2" reaches its maximum value.
- ③ After adjustment, apply Super Cemedine on the eccentric pin for 5 minutes.



Standard value: 70 ~ 90

## (2) Inspection and adjustment of AF accuracy

Compare the actual camera-to-subject distance with a distance measured by the camera. Compensate the difference.

- ① Connect the camera body and the personal computer.  
Set the standard reflector paper at a position 1.346m (STEP 114/8) away from the camera body.  
Start focus detection.
- ② Read the distance camera measured to get amount of compensation. Write the data to EEPROM.
- ③ Set the standard reflector paper at a position 0.748m (STEP 224/8) away from the camera body and start focus detection.
- ④ Read the distance camera measured to get amount of compensation.  
Write the data to EEPROM.
- ⑤ Set the standard reflector paper at a position 3.062m (STEP 44/8) away from the camera body and start focus detection.
- ⑥ Read the distance camera measured to get amount of compensation. Write the data to EEPROM.
- ⑦ Write the data for compensation to EEPROM.
- ⑧ Start focus detection to confirm the calculated value.

## 4. Inspection and adjustment of distance limit (far side)

Usually, camera can detect focus up to a distance less than STEP 2. If a subject is located at STEP 2 or far away, focus is set to infinity.

In rare cases, focus is set to infinity with a subject located within 6m.

Set distance limit plate and check the camera body's distance limit.

Make sure to switch to STEP 2. Set the distance limit plate at the position 6.02m away from the camera body and start focus detection.

Usually, normal value of EEPROM has no problem and requires no adjustment.

## 5. Inspection and Adjustment of AF step pulse

Confirm that AF claw falls into the proper groove for the step value the camera measured.

- ① Connect the camera body to the personal computer or set the camera to the manual inspection mode.
- ② With the lens zoomed up, remove the lens barrel cover.
- ③ Set STEP 2. Release the shutter in "Bulb" mode and confirm\* that the AF claw falls into the proper groove.
- ④ Set STEP 11. Release the shutter in "Bulb" mode and confirm\* that the AF claw falls into the proper groove.

Set STEP 21. Release the shutter in "Bulb" mode and confirm\* that the AF claw falls into the proper groove.

\* With the lens zoomed up, without lens barrel cover

If the AF claw falls in the wrong position, adjust AF step pulse in the following manner:

Adjust

- a. If necessary, connect the camera to the personal computer.
  - b. Select "Adjustment of AF Pulse" from menu.
  - c. Rewrite value to BEPROM.
- Then inspect the position of AF claw again.

## 6. Inspection and adjustment of AE

In the same manner as for SLRs, adjust luminance value with shift value and  $r$  value so that AE measuring accuracy is expected to be within a specific range. Release the shutter and confirm EV. If EV obtained is out of the specific range, mechanically adjust AE accuracy by compensating number of pulse.

(1) Adjustment of AE  $r$  value and shift value)

- ① Write the initial value for AE shift to E2PROM. Turn on the camera body's exposure meter to measure the brightness of reflector set at LV9. (AE shift)
- ② Calculate shift compensation value and write it to E2PROM. (AE shift)
- ③ Measure the brightness of reflector set at LV 9.
- ④ Measure the brightness of reflector set at LV 15.
- ⑤ With the data obtained in previous steps, get shift value and  $r$  value.
- ⑥ Write adjustment values to E2PROM.

(2) Adjustment of AE trigger pulse

- ① Write the initial value of AE trigger pulse to E2PROM.
- ② Set the reflector brightness at LV 15. Release the shutter and amount of lighting ring the lens.
- ③ With data on exposure, get a proper AE trigger pulse.

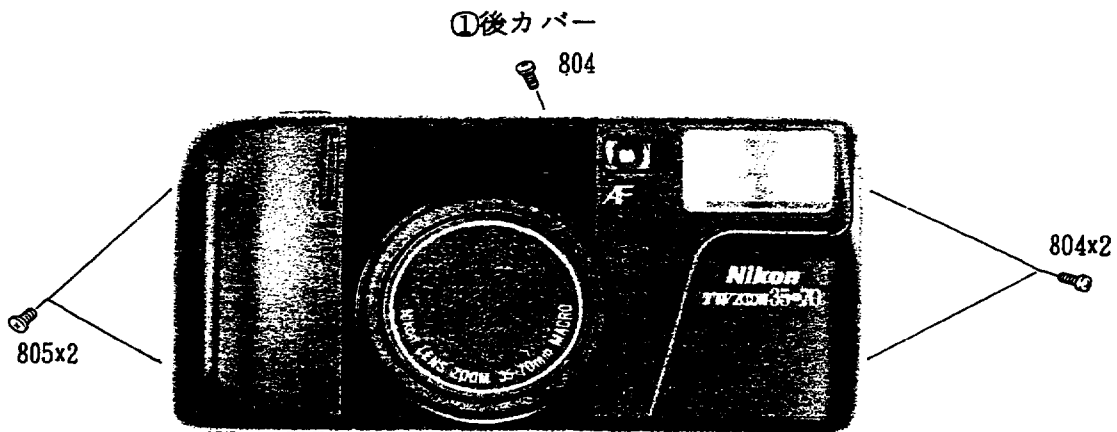
\* When replacing a part listed below, some adjustment may be required. \*

Item to be adjusted	Parts replaced	Assembly			Part			
	FPC	Shutter	Encoder	CPU	MD-IC	AE-IC	I. RED	Inside shutter
IRED current value	○						○	
AF Sensor	○					○	○	
AF inspection	○			○	○	○	○	
Far distance limit*	○						○	
AF step pulse	○	○		○	○	○		○
Focal length ends		○						○
Back focus**	○	○	○					○
AE inspection	○	○		○	○	○		○

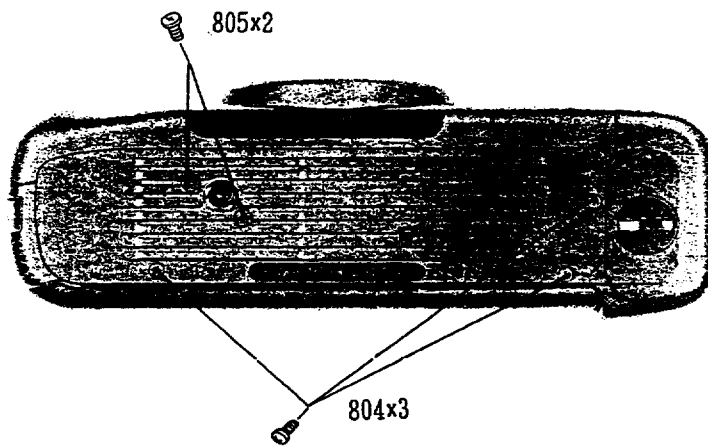
\* 1. Only inspection is necessary

\*\*2. Always adjust back focus when the front panel is removed.

外観部



②底カバー



△ サ技報 93-41 参照  
 サ技報 93-51 参照  
 レリーズ釦(#709-1)へ変更の件



# Inspection Standard for Repair

[ 1 ] INSPECTION STANDARD FOR RPAIR -----	R 1
[ 2 ] TOOLS -----	T 1

## CONDITION FOR INSPECTION

Normal temperature:  $25 \pm 5$  ° C      Relative humidity  $65 \pm 20\%$

Power source:  $6 \pm 0.03V$       2A or more at 1.0  $\Omega$  load

light source: Surface light source 2856 ° K

K coefficient: 1.3

Standard reflector: J18190 OXFORD Gray No. 22

※ It is recommended to start the inspection after the temperature of the camera becomes equal to the normal room temperature.

[1] INSPECTION OF STANDARD FOR REPAIR

Item	Standard	Tool
<b>LENS</b>		
Picture frame	Width: $24 \begin{smallmatrix} +0.8 \\ -0.9 \end{smallmatrix}$ mm      Length: $36 \begin{smallmatrix} +0.8 \\ -0.9 \end{smallmatrix}$ mm  Aperture f/8-16 at both Z16, Z8, Z1 check the above figures after taking pictures in Z16, Z8, Z1(f/8-16 distance: infinity)	Silde calipers Scale Film -- Tri-X
Frame to frame space	0.5~3.5mm within	
Frame position	Over 0.2mm between film cartridge and frame inclination of frame is less than 0.15mm	
Light leakage	Light should not leak when is exposure to a brightness of 400,000 lux (min) in Wide, Tele and Reset modes.	
Film scratch	No prominent scratches on film (check by shoot-ing Sky using film)	
Focal length	Z16: $f35mm \begin{smallmatrix} +4\% \\ -0\% \end{smallmatrix}$ Z1: $f70mm \begin{smallmatrix} 0\% \\ -4\% \end{smallmatrix}$ (distance:infinity)	
f number	Z16: $F4.0 \begin{smallmatrix} +4\% \\ -0\% \end{smallmatrix}$ Z1: $F7.6 \begin{smallmatrix} 0\% \\ -4\% \end{smallmatrix}$ (distance:infinity)	
Focus back	Mounting flat mirror on inner film guide rail at step-7. W    -173 ± 20 T    -185 ± 11	

**SHUTTER**

AE accuracy			Limit	Allowance $\Delta n_{EV}$	Variation $P_{EV}$	
	A E	ISO 100	Z16	$4 \leq EV < 6$	±1.5EV	
Z1			$5.875 \leq EV < 7.875$			
Z16			$6 \leq EV < 15$	±1.0EV	0.8EV less	
Z1			$7.875 \leq EV < 16$			
Z16		$15 \leq EV \leq 16$	±1.5EV	1.0EV less		
ISO 100 以外		Z16	See figure-Auto exposure range	±1.7EV	1.5EV less	Not to be inverted.
		Z1				
		Z16		±1.2EV	1.1EV less	
Z1		±1.7EV	1.5EV less			
Allowance between the Tele and Wide. $5.875 \leq EV < 15$				0.3EV less		

Item	Standard				Tool
<b>SHUTTER</b>					
AE accuracy	Check count: Release the shutter five time. Allowance $\Delta n$ : Release the shutter five time with check value. Variation p: Check to five time with difference value to max and min. q: Release the/ shutter five time with average value.				AE shutter tester
Shutter limit speed	Mode		Shutter limit		
	Auto flash (PTS)		31ms $\pm$ 6ms		
	Flash-cancel		1000ms $\pm$ 200ms		
	Anytime flash		250ms $\pm$ 50ms		
(Flash-matic) accuracy	Zone	Limit	Allowance	Variastion	
FM aperture	Z16 Z11	full $\leq$ F $\leq$ minimum full $\leq$ F $\leq$ minimum	$\pm 1$ EV	0.9AV	Not to be inverted 0.8AV over

FM Aperture accuracy

FM control value

Zone 1	ISO	64	100	200	400	1000	1600
	step						
	1	7.641	7.641	7.641	7.641	7.641	7.979
	2	7.641	7.641	7.641	7.641	8.701	11.28
	3	7.641	7.641	7.641	7.641	11.28	14.63
	4	7.641	7.641	7.641	9.086	14.01	18.17
	5	7.641	7.641	7.641	10.80	16.66	21.61
	6	7.641	7.641	8.701	12.30	19.81	24.61
	7	7.641	7.641	9.909	14.01	22.56	28.02
	8	7.641	7.979	10.80	15.95	24.61	31.91
	9	7.641	8.701	12.30	17.40	28.02	34.80
	10	7.641	9.489	13.41	18.97	30.56	37.95
	11	8.332	10.34	14.63	20.69	33.33	41.39
	12	9.086	11.28	15.95	22.56	36.34	43.22
	13	9.489	11.78	16.66	23.56	37.95	43.22
	14	9.909	12.30	18.17	24.61	39.63	43.22
	15	10.80	13.41	18.97	26.83	43.22	43.22
	16	11.28	14.63	19.81	29.26	43.22	43.22
	17	11.78	14.63	20.69	29.26	43.22	43.22
	18	12.85	15.95	22.56	31.91	43.22	43.22
	19	12.85	16.66	23.56	33.33	43.22	43.22
	20	13.41	16.66	24.61	33.33	43.22	43.22
	21	14.01	18.17	24.61	36.34	43.22	43.22
	22	14.63	18.97	25.70	37.95	43.22	43.22



Item	Standard						Tool
<b>SHUTTER</b>							
Zone 16	FM control value						
	ISO Step	64	100	200	400	1000	1600
	1	3.957	3.957	3.957	3.957	4.914	6.372
	2	3.957	3.957	3.957	4.506	6.949	9.012
	3	3.957	3.957	4.132	5.843	9.012	11.68
	4	3.957	3.957	5.131	7.257	11.19	14.51
	5	3.957	4.315	5.843	8.630	13.30	17.26
	6	3.957	4.914	6.949	9.828	15.15	19.65
	7	4.506	5.596	7.914	11.19	18.02	22.38
	8	4.914	6.102	8.630	12.20	19.65	22.38
	9	5.596	6.949	9.828	13.89	22.38	22.38
	10	6.102	7.578	10.71	15.15	22.38	22.38
	11	6.654	8.630	11.68	17.26	22.38	22.38
	12	7.257	9.012	12.74	18.02	22.38	22.38
	13	7.578	9.411	13.30	18.82	22.38	22.38
	14	7.914	10.26	13.89	20.52	22.38	22.38
	15	8.630	10.71	15.15	21.43	22.38	22.38
	16	9.012	11.19	15.82	22.38	22.38	22.38
	17	9.411	11.68	16.52	22.38	22.38	22.38
	18	10.26	12.74	18.02	22.38	22.38	22.38
19	10.26	13.30	18.02	22.38	22.38	22.38	
20	10.71	13.30	19.65	22.38	22.38	22.38	
21	11.19	14.51	20.52	22.38	22.38	22.38	
22	11.68	14.51	20.52	22.38	22.38	22.38	
<b>FLASH</b>							
Color temperature	5500° K ± 300 ° K						Flash meter New Battery AE test device Stop watch
Guide number		Main flash		Pre-flash			
	Z16	13.3 ± 0.4 EV		1.2 ± 0.8 EV			
	Z1	15.2 ± 0.4 EV		1.4 ± 0.7 EV			
Check to Guide number charging stops after 3 sec.							
Light distribution		Frame to half		Difference between the periphery and control		Within -1.0EV	
		Up and down	Left and right				
	Z 16	Up 22° Down 24.5°	Left 30° Right 34.5°				
	Z 1	Up 13° Down 15°	Left 18° Right 22°				

FCA12001-R. 3283. A

Item	Standard			Tool
<b>FLASH</b>				
Flash firing switching level (auto flash)	Using film (ISO 100), turn main switch ON. Z16 -----LV8.5 ~ 10.5 Z1 ----- LV11 ~ 13			Flash meter Battery AE test device Stopwatch
ABL firing luminance level	The level should be changed When the EV difference between the periphery and central area is 0.875EV.			
Firing interval in PTS mode	Pre-1 to pre-2: 300ms                      Pre-2 to pre-3: 300ms Pre-3 to firing: 400ms			
<b>AF ACCURACY</b>				
High intensity limit	It should be Step 1 when shutter is released at LV15 (while shading AF illumination window)			AE test device
No signal metering	It should be Step 1 when shutter is released (while closing AF illumination window)			
Warning distance	Normal: 0.63 to 0.65m                      Firing: 0.982 to 1.045m Green LED blinks to warn (while shading AE window at infinity distance)			
Switching distance	Step 1 should switch over to Step 2 at the distance of 6.022m.			
AF Step location and switching position	*Each Step and distance (m)			
	Step	Distance set (m)	Switching distance (m)	Amount G1 lens moved out (mm)
	0	(∞)	Manual	(0)
	1	7.452	6.022	0.0939
	2	5.056		0.1392
	3	3.837	3.428	0.1846
	4	3.009	2.829	0.2299
	5	2.603	2.412	0.2753
	6	2.248	2.105	0.3206
	7	1.980	1.870	0.3660
	8	1.772	1.684	0.4113
	9	1.604	1.533	0.4567
	10	1.467	1.408	0.5020
	11	1.353	1.303	0.5473
	12	1.256	1.213	0.5927
	13	1.173	1.136	0.6380
	14	1.101	1.068	0.6834
	15	1.038	1.009	0.7287
	16	0.982	0.957	0.7741
	17	0.933	0.910	0.8194
	18	0.888	0.868	0.8648
	19	0.849	0.830	0.9101
	20	0.813	0.796	0.9555
	21	0.780	0.765	1.0008
	22	0.750		1.0462



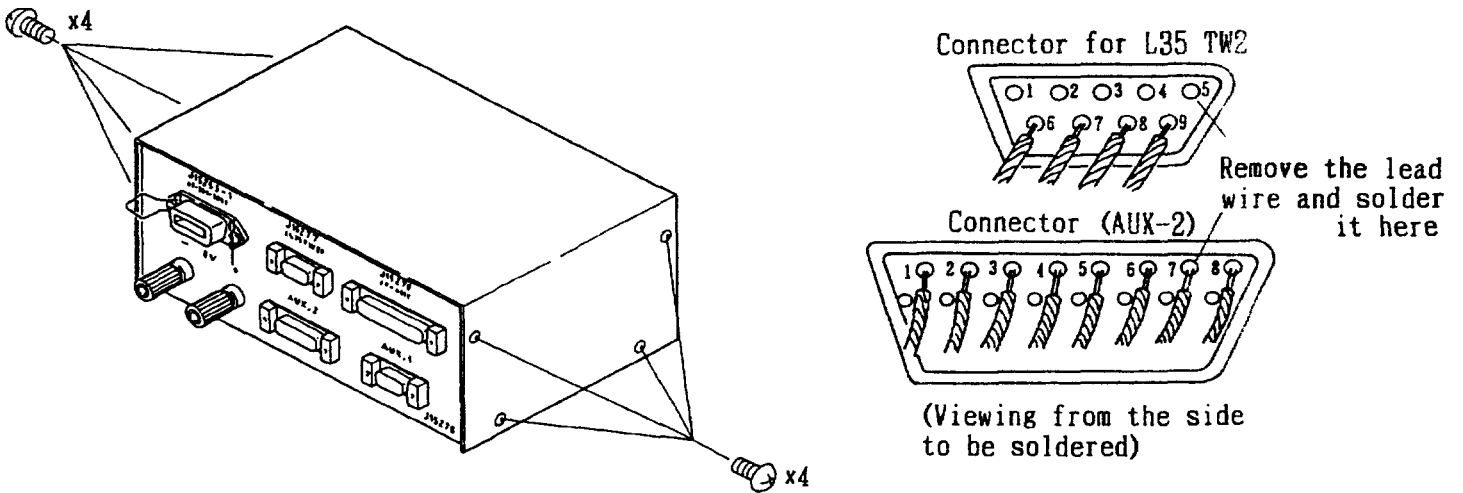
Item	Standard	Tool										
<b>VIEWFINDER</b>												
Dioptr	-0.7 $\begin{smallmatrix} +0.7 \\ -0.8 \end{smallmatrix}$ Dpt Limit 1 Dpt of Tele · Wide											
Viewfinder coverage	Set the chart 3.0m (1.038) <table border="1" style="margin-left: 40px;"> <tr> <td></td> <td>Up and down</td> <td>Left and right</td> </tr> <tr> <td>W</td> <td>84.4 <math>\pm \frac{1}{2}</math> %</td> <td>86.1 <math>\pm \frac{1}{2}</math> %</td> </tr> <tr> <td>T</td> <td>87.4 <math>\pm \frac{1}{2}</math> %</td> <td>86.0 <math>\pm \frac{1}{2}</math> %</td> </tr> </table>		Up and down	Left and right	W	84.4 $\pm \frac{1}{2}$ %	86.1 $\pm \frac{1}{2}$ %	T	87.4 $\pm \frac{1}{2}$ %	86.0 $\pm \frac{1}{2}$ %		
	Up and down	Left and right										
W	84.4 $\pm \frac{1}{2}$ %	86.1 $\pm \frac{1}{2}$ %										
T	87.4 $\pm \frac{1}{2}$ %	86.0 $\pm \frac{1}{2}$ %										
Parallax	Entire viewfield is same as will appear on film shooting must be made at distance 2m for Z1 to Z6. Up and down: Under 1.2mm Left and right: Under 1.5mm											
<b>CAMERA BACK</b>												
Open lever tension	350 $\begin{smallmatrix} +150 \\ -100 \end{smallmatrix}$ g	Slide calipers Tension gauge Dial gauge Dial indicator and Stand										
Camera back	Thrust space: 0.3mm less Space: 0.6mm less											
Pressure plate	Within 0.05mm      Tension: 350~500g Heigth: 3.0 $\pm$ 0.2											
<b>DX CONTACT</b>												
DX contact	Height: 1.4 $\begin{smallmatrix} +0.35 \\ -0.35 \end{smallmatrix}$ mm      Tension: 43 $\begin{smallmatrix} +15 \\ -15 \end{smallmatrix}$ g											
Reading of DX data	ISO setting should be changed according to the film loaded. 64, 100, 200, 400, 1000, 1600 To be set ISO 100 when non DX.											
<b>FILM GUIDE RAIL</b>												
Difference between internal and external film guide rail	22 $\pm$ 0.03mm											
Parallel of external film-guide rail	0.08mm											
Flatness of external film:guide rail	0.06mm											
Difference between internal and aperture	Without 0.25mm											
Internal and external width	<table border="1" style="margin-left: 40px;"> <tr> <td rowspan="2">Internal</td> <td>Up side</td> <td>1.1</td> <td rowspan="4"><math>\pm</math> 0.2mm</td> </tr> <tr> <td>Down side</td> <td>1.2</td> </tr> <tr> <td rowspan="2">External</td> <td>Up side</td> <td>1.5</td> </tr> <tr> <td>Down side</td> <td>1.2</td> </tr> </table>	Internal	Up side	1.1	$\pm$ 0.2mm	Down side	1.2	External	Up side	1.5	Down side	1.2
Internal	Up side		1.1	$\pm$ 0.2mm								
	Down side	1.2										
External	Up side	1.5										
	Down side	1.2										
Internal space of external film guid rails	35.1 $\begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$											
<b>OTHERS</b>												
Tripod	JIS B7103 (U 1/4 20/inch)											

TOOL INSTRUCTION

1. Name: Tool to connect contacts of data backs for TW Zoom 35 <math>\triangleleft>70</math> (Made by Nikon)
2. Purposes: To inspect and adjust functions of TW Zoom 35<math>\triangleleft>70</math>
3. before using:  
Alter part of the arrangement of lead wires inside the Connector relay box (15278) to enable the use of the tool for TW Zoom 35<math>\triangleleft>70</math> (J15286) onto the common connector (for TW2, TW20).

Procedure

- ① Remove the screw x8 in the both side of Connector relay box (J15278) and upper cover.
- ② Remove the lead wire of Pin terminal 7 of Connector (AUX-2) and solder it to Pin terminal 5 of Connector (TW2, TW20).
- ③ Attach the upper cover again and fasten it with Screws x8.

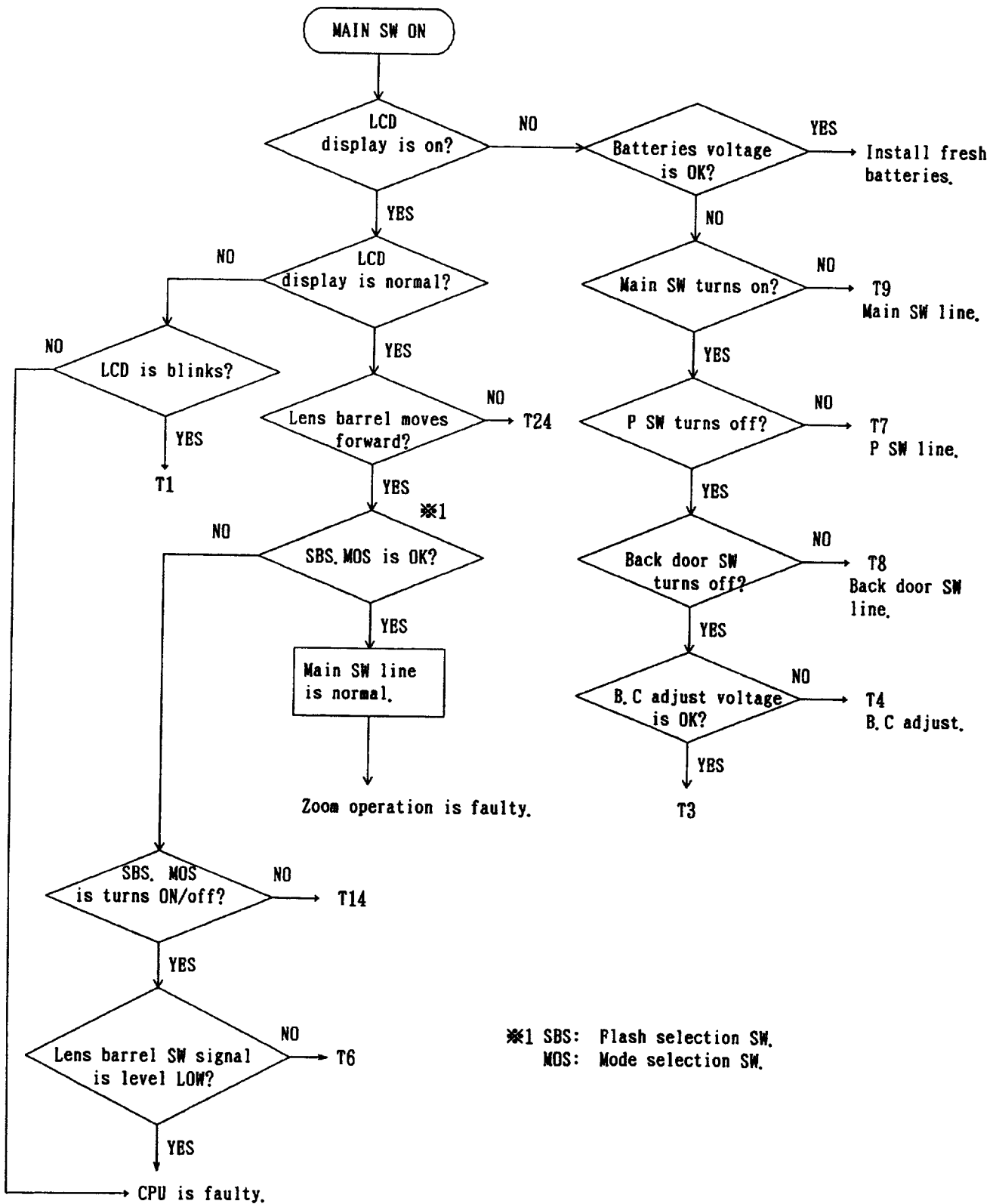


4. Notes

- ① The colors of lead wires connected to a terminal are not always the same.
- ② Be careful not to short-circuit terminals when soldering.
- ③ Refer to the TW20's repair manual as for attaching the connector to cameras.

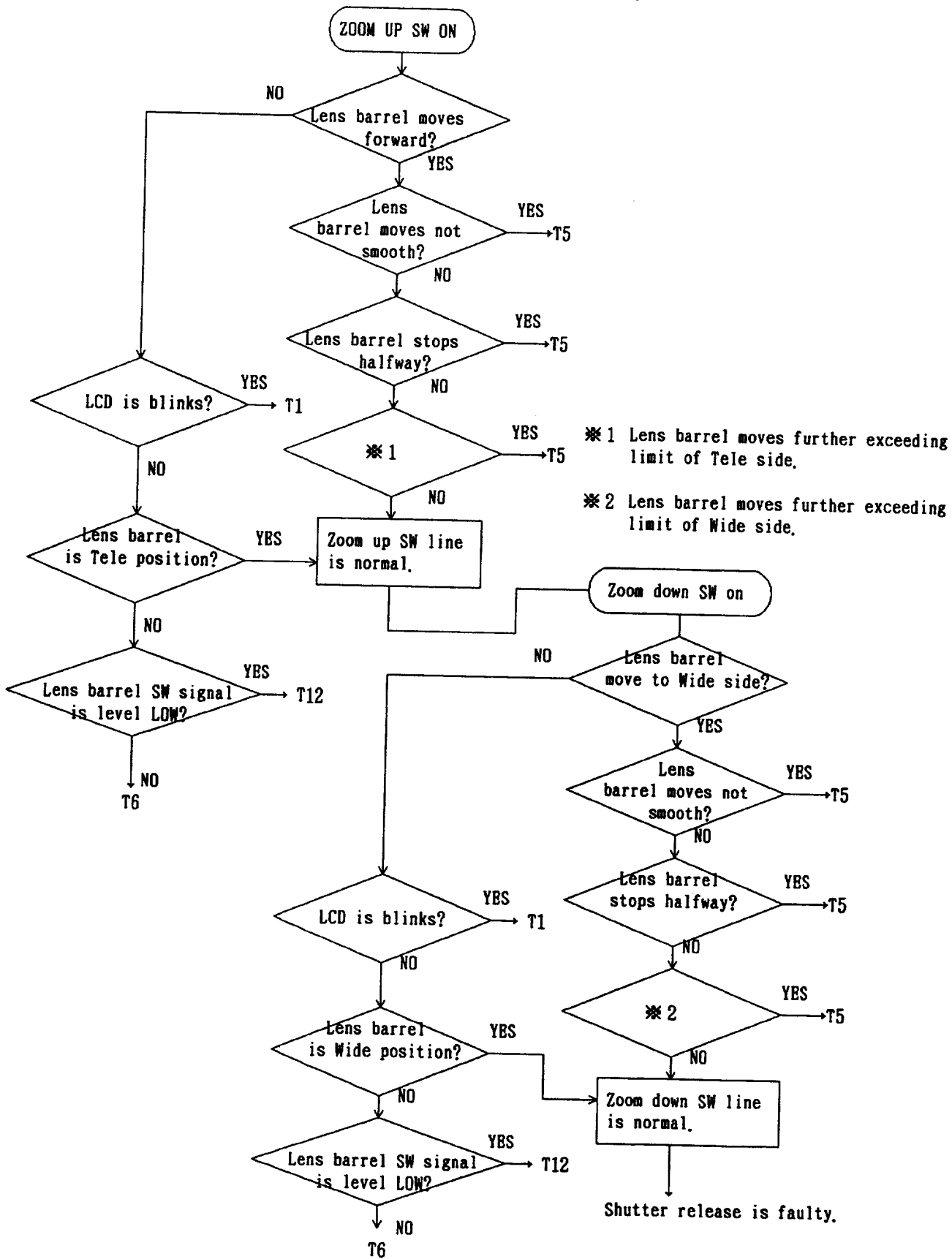
TROUBLE SHOOTING

1. Trouble occurs when main SW Turns on.

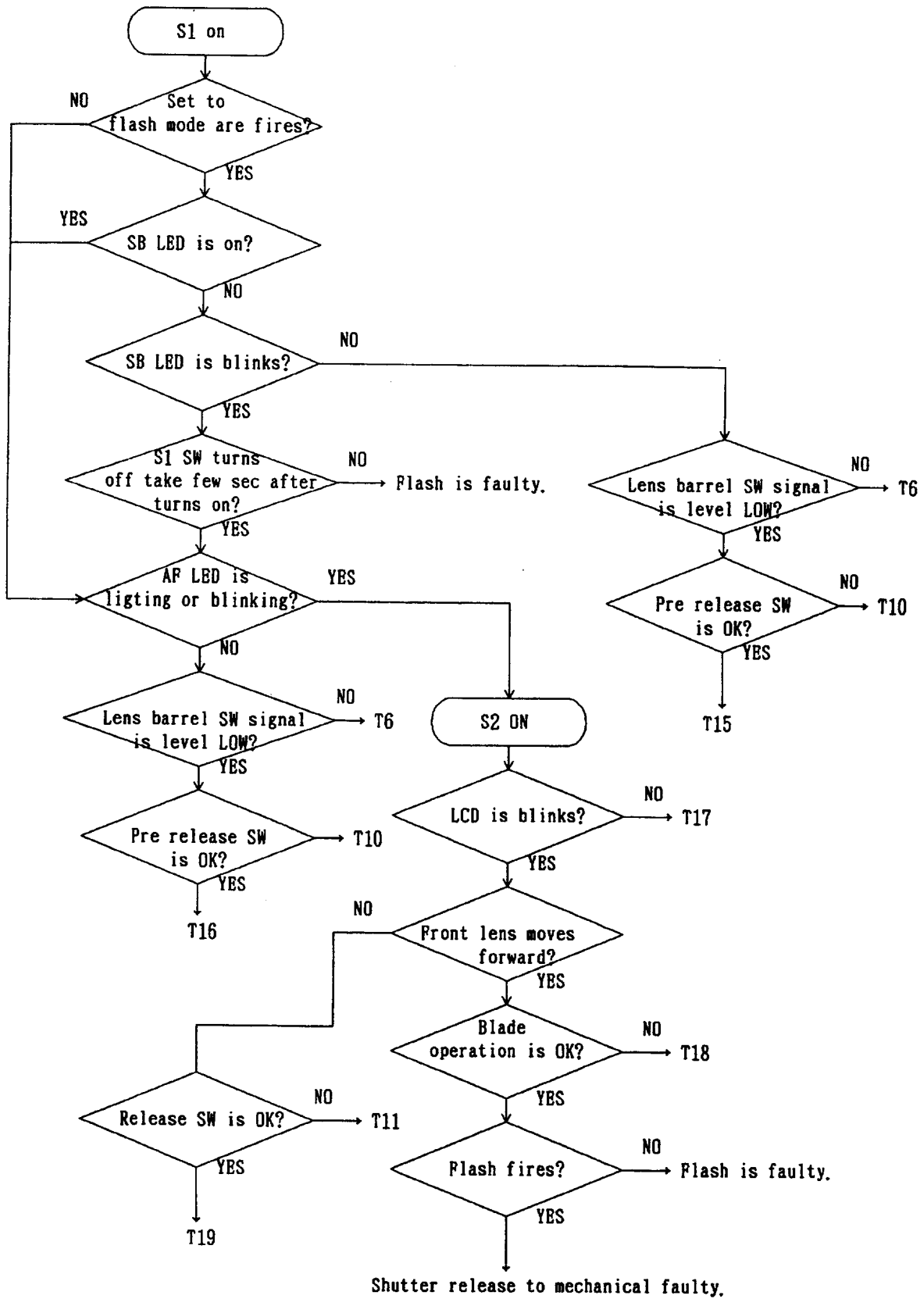


\*1 SBS: Flash selection SW.  
 MOS: Mode selection SW.

2. Zooming operation is faulty.

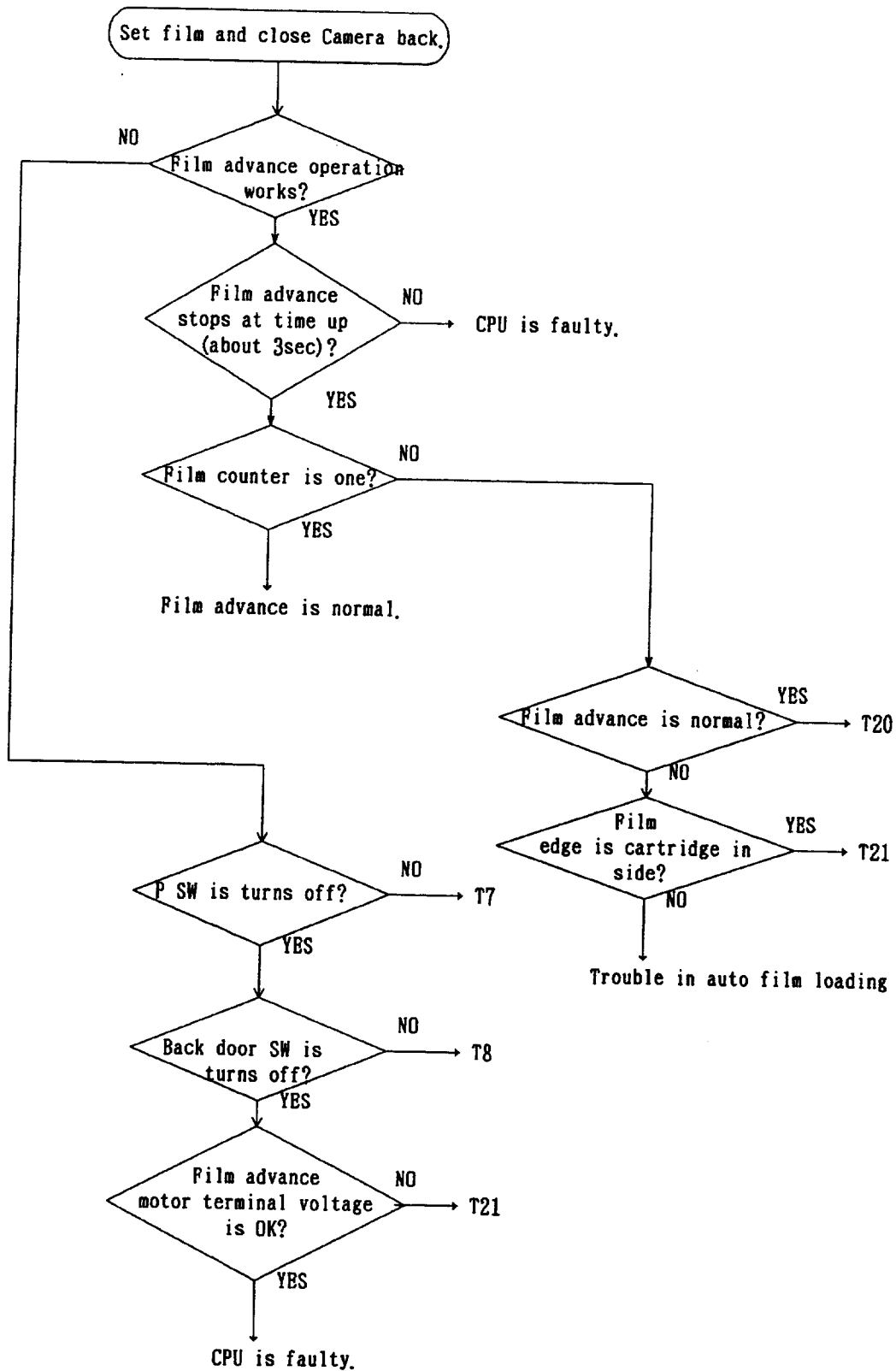


3. Shutter release is faulty.

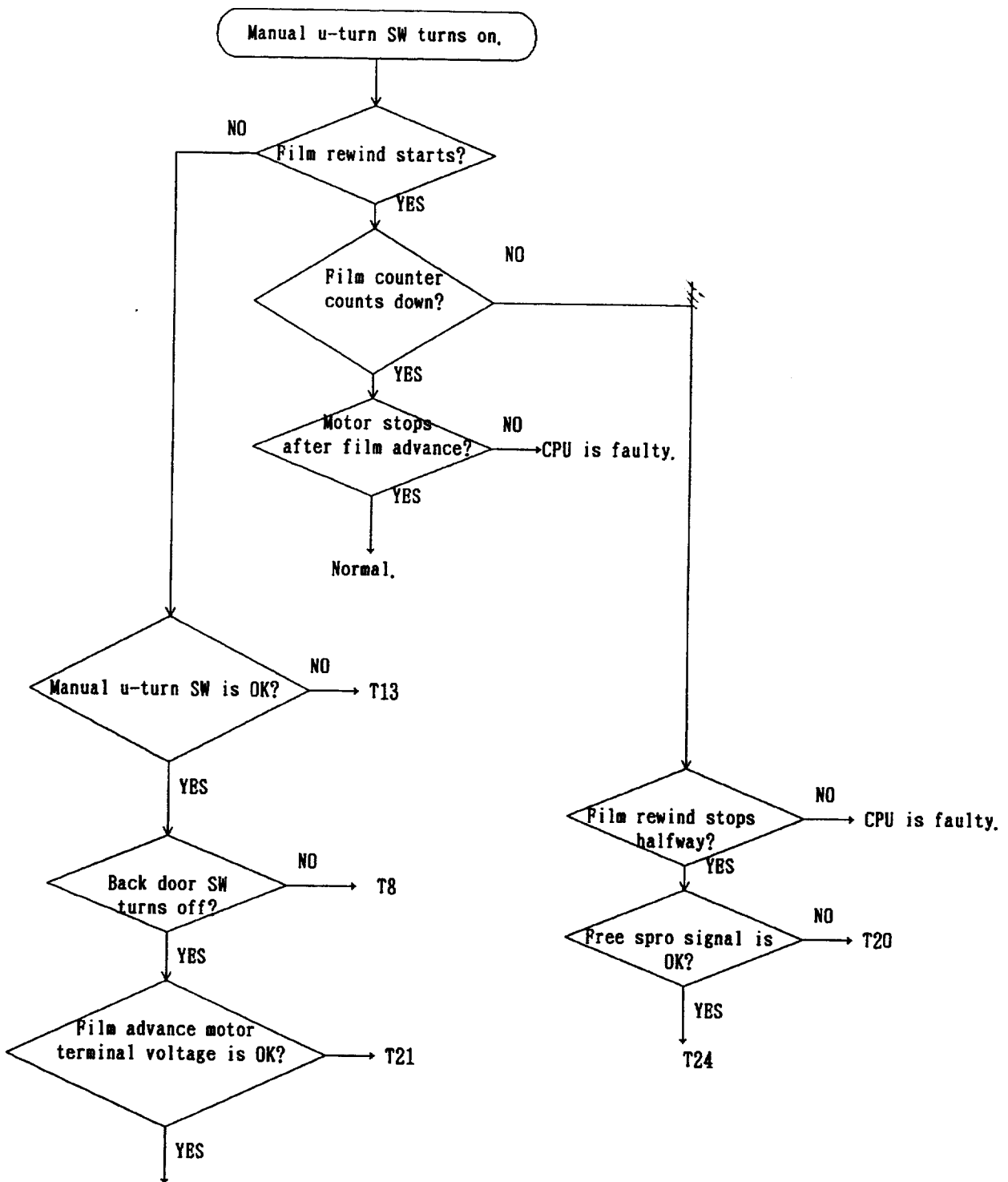




4. Trouble in film advance

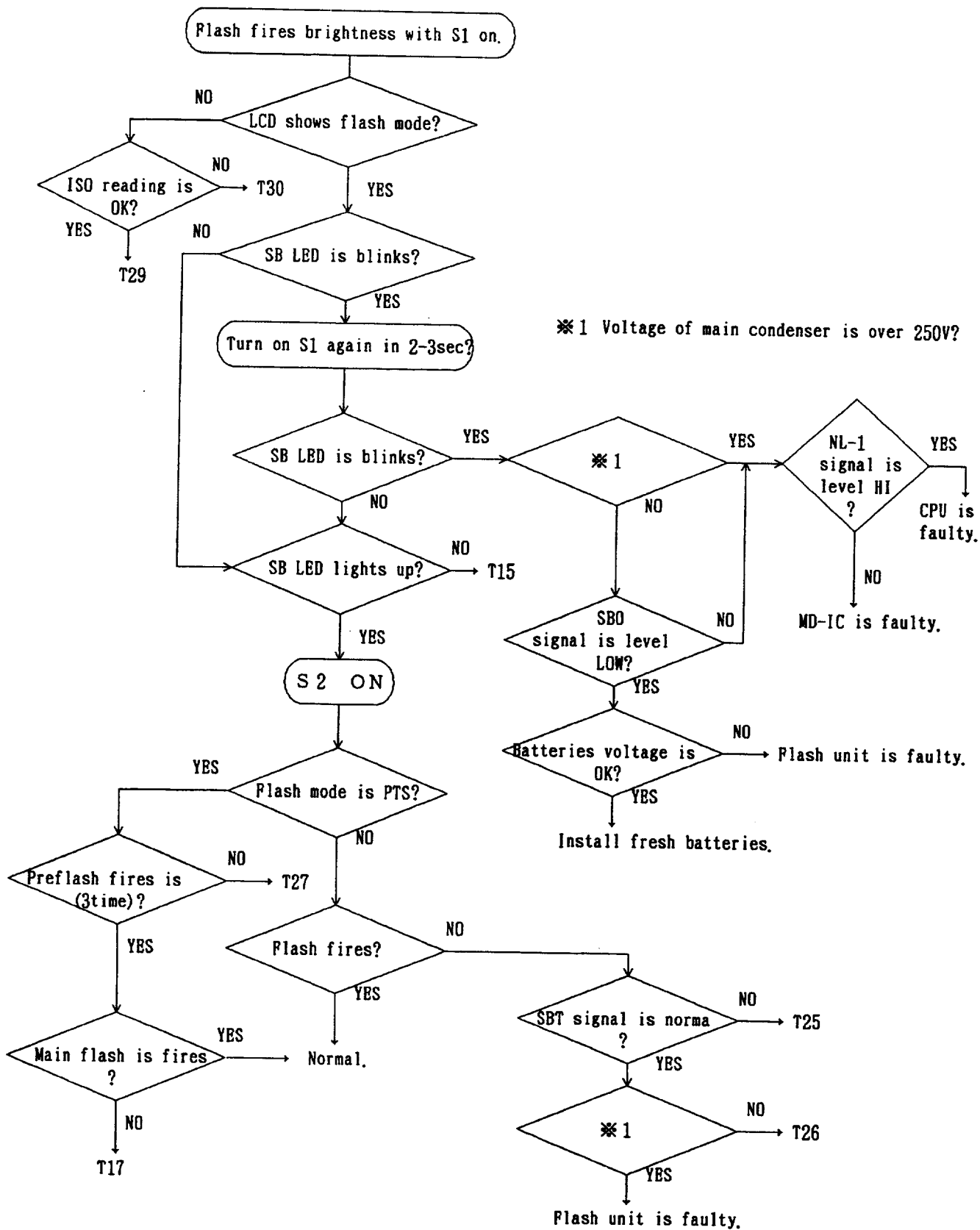


5. Film rewind is faulty.



CPU is faulty.

6. Flash is faulty.



## T1. Defective stopping of the lens barrel

1. Imperfect contact of the encoder
2. Failure of the encoder FPC
3. Defective motion arising from foreign matter embedded in the helicoid unit and gears
4. Defective motion due to a broken gear
5. Omission of a pinion gear from the helicoid motor unit
6. Contact between the barrel brush fixing machine screws and the outer helicoid unit due to their length

## T2. Defects in the helicoid motor unit

1. Defective wiring and soldering between the helicoid motor unit and the main FPC
2. Failure of the MD-IC, TR (Q5,Q6) on the main FPC
3. Failure of the helicoid motor unit

## T3. Failure of the Power System

1. Defective wiring between the battery contact and the main FPC
2. Failure of the MD-IC, regulator (U5), and coil (L1) on the main FPC

## T4. Defective Adjustment of the BC

1. Rewrite the contents of the E<sup>2</sup> PROM.

T5. Defective Encoder Signals

1. Imperfect contact of the encoder
2. Disconnection and short-circuit of the encoder FPC pattern
3. Defective soldering between the encoder contact and the main FPC
4. Disconnection of the connecting FPC pattern

T6. Abnormality in the Lens Barrel System

1. Imperfect contact of the barrel brush
2. Disconnection and short-circuit of the encoder FPC pattern
3. Defective soldering between the barrel brush and the main FPC
4. Disconnection of the main FPC pattern

T7. Failure of the P SW System

1. Failure of the P SW parts
2. Defective soldering between the P SW and the connecting FPC
3. Disconnection of the connecting FPC pattern
4. Defective press-fitting between the main FPC and the connecting FPC

T8. Defect in the back door SW

1. Failure of the rear cover switch parts
2. Defective soldering between the rear cover and the connecting FPC
3. Disconnection of the connecting FPC pattern
4. Defective press-fitting between the main FPC and the connecting FPC

T9. Failure of the Main SW System

1. Imperfect contact of the main SW brush
2. Disconnection and short-circuit of the main FPC pattern

T10. Defect in the S1 System

1. Imperfect contact of the S1 switch's conductive rubber
2. Disconnection and short-circuit of the main FPC pattern

T11. Defect in the S2 System

1. Imperfect contact of the S2 switch's conductive rubber
2. Disconnection and short-circuit of the main FPC pattern

T12. Defect in the ZM SW System

1. Imperfect contact of the ZM switch's conductive rubber
2. Disconnection and short-circuit of the main FPC pattern

T13. Defect in the Manual U-Turn System

1. Imperfect contact of the manual U-turn switch's conductive rubber
2. Disconnection and short-circuit of the main FPC pattern

T14. Abnormality in the SBS and MOS Systems

1. Imperfect contact of the SBS and MOS switch's conductive rubber
2. Disconnection and short-circuit of the main FPC pattern

T15. Failure of the SB LED System

1. Disconnection of the main FPC pattern
2. Failure of the LED element
3. Failure of the MD-IC

T16. Failure of the AF-LED

1. Disconnection of the FPC pattern
2. Failure of the LED element
3. Failure of the MD-IC

## T17. Defective stopping of the Shutter

1. The motor shutter does not drive.  
Failure of the shutter motor  
Disconnection of the main FPC and shutter FPC patterns  
Failure of the MD-IC, TR, and (Q6, Q7) on the main FPC
2. The photo-interrupter signal does not change  
Failure of the photo-interrupter element  
Disconnection of the main FPC and shutter FPC patterns  
Failure of the MD-IC on the main FPC
3. Defective soldering between the main FPC and the shutter FPC

## T18. Failure of the AE Mg

1. Disconnection of the AE Mg
2. Disconnection of the main FPC and shutter FPC patterns
3. Failure of the MD-IC on the main FPC
4. Defective soldering between the main FPC and the shutter FPC
5. Insufficient performance of the magnet



## T19. Defect in the Shutter Control System

1. Disconnection of the AF Mg  
Disconnection of the main FPC and shutter FPC patterns  
Failure in the MD-IC on the main FPC  
Defective soldering between the main FPC and the shutter FPC  
Insufficient performance of the magnet
2. Insufficient performance of the 1st lens group unit
3. Insufficient data on the E<sup>2</sup> PROM  
AF step pulse  
AF end pulse  
Shutter-controlled total pulse

## T20. Defect in the free spro Signal

1. Disconnection of the main FPC pattern
2. Imperfect contact of the free spro brush
3. Defective press-fitting of the free spro pattern

## T21. Defect in the W/R motor circuit

1. Failure of the W/R motor
2. Failure of the MD-IC, TR, and (Q4, Q5) on the main FPC
3. Failure of the wiring for the W/R motor and soldering

## T22. Film Advancing Defect

1. Incorrect film setting
2. Failure of the MD-IC, TR, and (Q4, Q5) on the main FPC

## T23. Rewinding Interruption

1. Rewound film remains in the cartridge

## T25. Defect in the SBT Signal

1. Disconnection of the main FPC and the connecting FPC patterns
2. Defective press-fitting between the main FPC and the connecting FPC
3. Defective wiring between the connecting FPC and the SB unit
4. Failure in the MD-IC

## T26. Defect in the Pressure Raising System

1. Defect in the SBO system signal  
Disconnection of the main FPC and the connecting FPC patterns  
Defective press-fitting between the main FPC and the connecting FPC  
Defective wiring between the connecting FPC and the SB unit  
Failure of the MD-IC
2. Defective wiring in the SB condenser power source

## T27. Defect in the TMC System Signal

1. Disconnection of the main FPC and the connecting FPC patterns
2. Defective press-fitting between the main FPC and the connecting FPC

3. Defective wiring between the connecting FPC and the SB unit
4. Failure of the MD-IC

#### T28. Abnormality in the NLS System

1. Disconnection of the main FPC and the connecting FPC patterns
2. Defective press-fitting between the main FPC and the connecting FPC
3. Defective wiring between the connecting FPC and the SB unit
4. Failure of the MD-IC
5. Failure of the SB unit

#### T29. Failure of the AE

1. Disconnection of the pattern of short-circuit of the main FPC
2. Failure of the AEAf-1
3. Failure of the light acceptance element (SPD)

#### T30. Failure of the DX

1. Defective soldering of the DX contact and the main FPC
2. Disconnection of the pattern of short-circuit of the main FPC
3. Failure in the vertical pull resistance element on the main FPC
4. Contact between the DX contact and the main FPC backing plate

**©Supplement (Guide for replacing TW ZOOM 35◀▶70 main FPC)**

- Up to now you have had to disassemble the lens barrel when replacing the TW ZOOM 35 • 70' s main FPC (as instructed in the Repair Manual). We have prepared supplementary instructions that enable you to replace the main FPC without disassembling the lens barrel and that reduce the repair time.

File this instruction manual in the Repair Manual as an appendix.

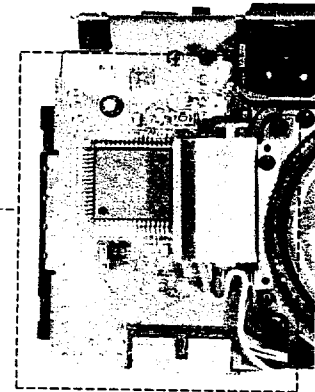
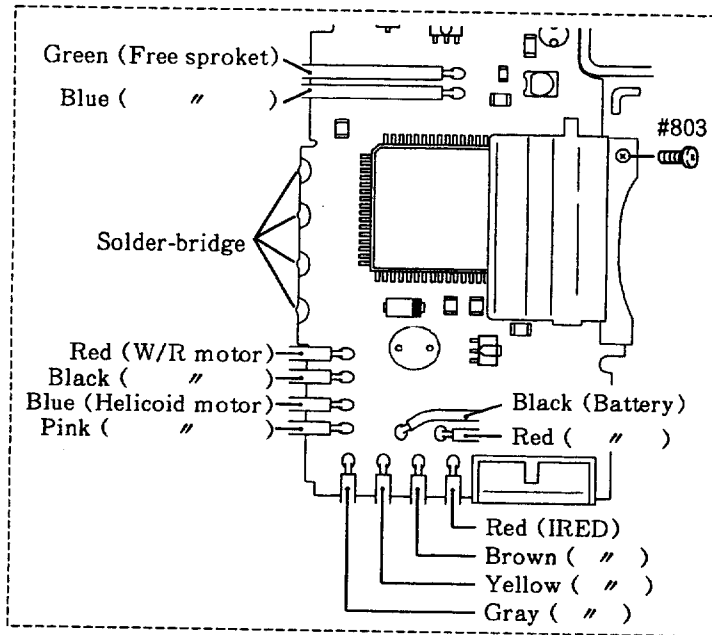
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# © Guide for replacing TW ZOOM 35◀▶70 main FPC

## Instruction

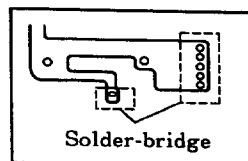
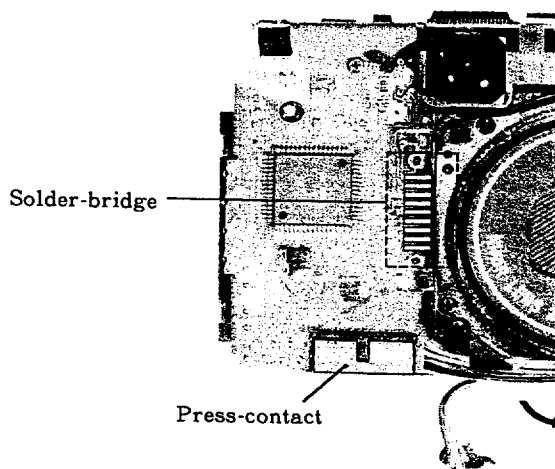
1, Remove external parts (Manual page D3)

2, Sub condenser retainer, Remove solder-bridge and wires



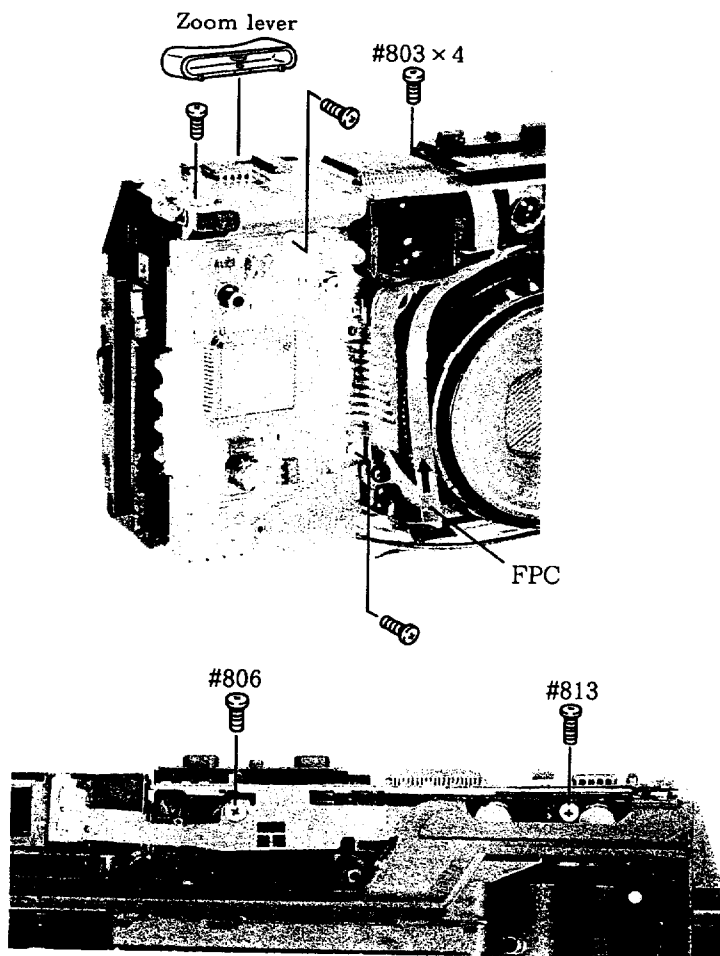
- Remove 12 wires and solder bridges (4 units).
- Remove screw #803 to remove the sub-condenser retainer.

3, Remove Press-contact and solder-bridge



- Remove solder bridge at the shutter FPC and remove the lens barrel switch unit.
- Remove press contact at the bottom FPC.

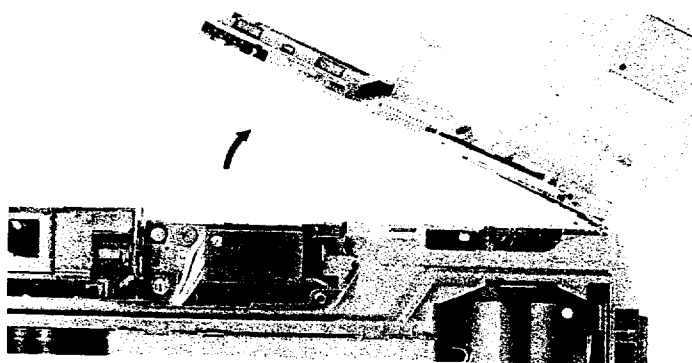
4, Remove zoom lever and screws



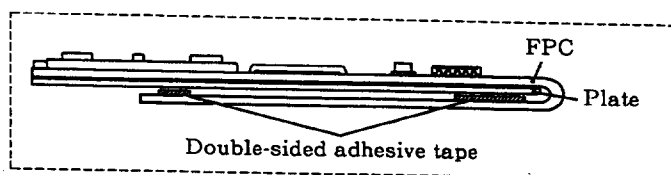
- As shown in the picture, pull out the FPC in the direction of the arrow from the opening of the bottom wires.

- Remove the zoom lever.

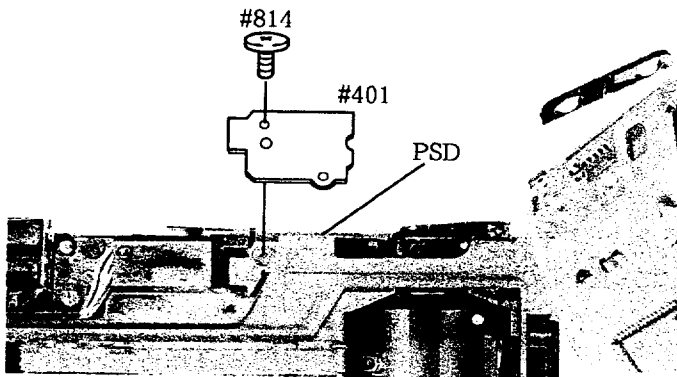
5, Peel off double-sided adhesive tape from FPC



- As shown in the picture, peel off double-sided adhesive tape and lift up the FPC, away from the camera body.

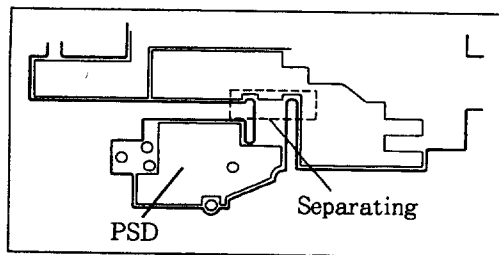


6, Remove main FPC



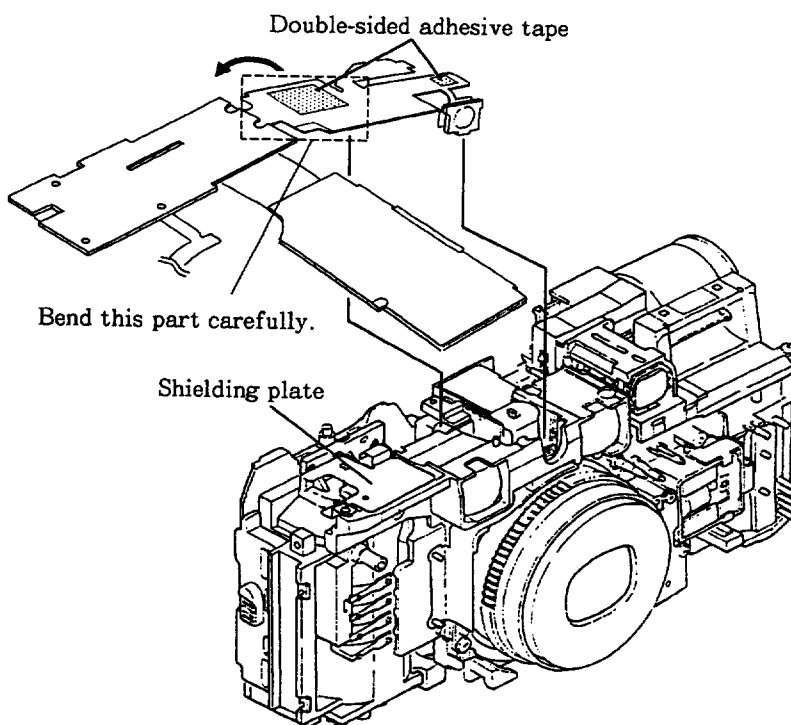
- Main FPC can be removed when screw #813 which secures retaining plate #401 is removed.

**Note:** When removing the PSD, be sure not to damage the positioning pin on the lens barrel base plate. If the positioning pin is damaged adjustment of AF sensor becomes impossible. You also will have to replace the lens barrel base plate.



**Reference:** As shown in the figure on the left, the main FPC can easily be removed by separating the main FPC from the PSD.

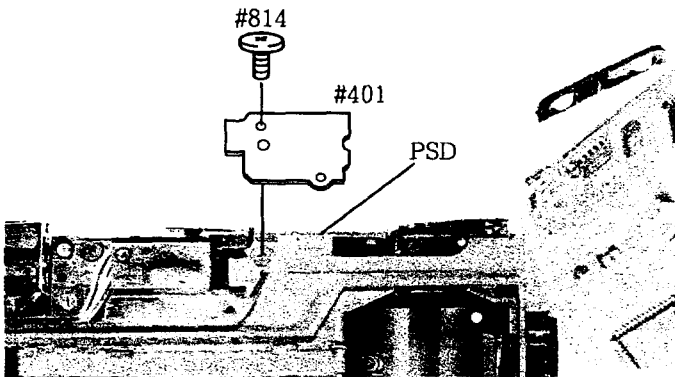
7, Mount the main FPC



- As shown in the figure, mount the new main FPC after peeling off double-sided adhesive tape. (Do not use a craft knife as it may damage the FPC.)

**Note:** When peeling off the double-sided adhesive tape from main FPC, be sure not to bend the main FPC or damage electrical equipment or soldered parts. Do not forget to attach the shielding plate because it may easily become detached.

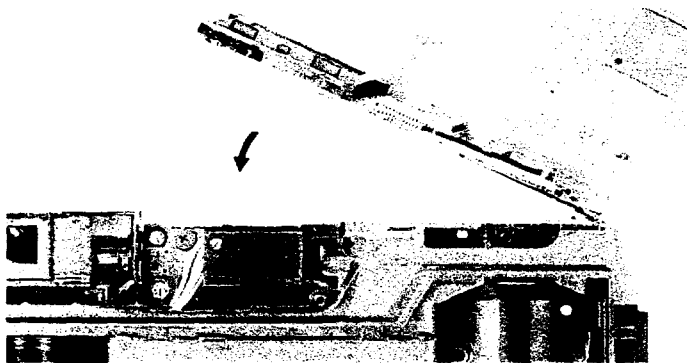
8, PSD retaining plate #401



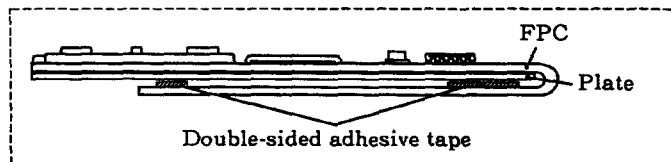
- Secure retaining plate #401 and the main FPC with screw #814.

**Note:** When mounting the PSD, be sure not to damage the positioning pin on the lens barrel base plate. If the positioning pin is damaged adjustment of AF sensor becomes impossible. You also will have to replace the lens barrel base plate.

9, Stick on the FPC (using double-sided adhesive tape).

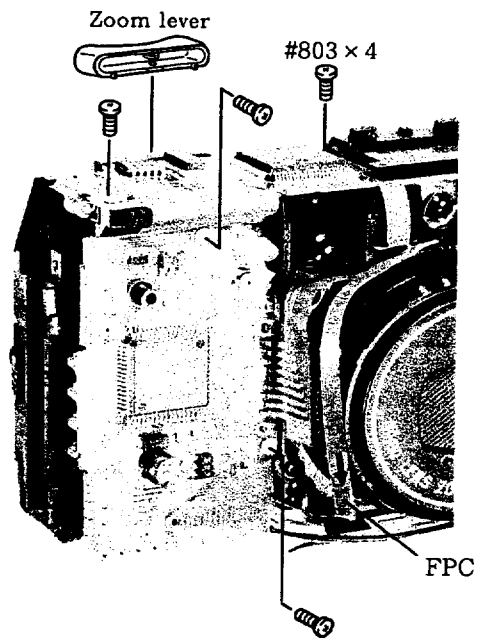
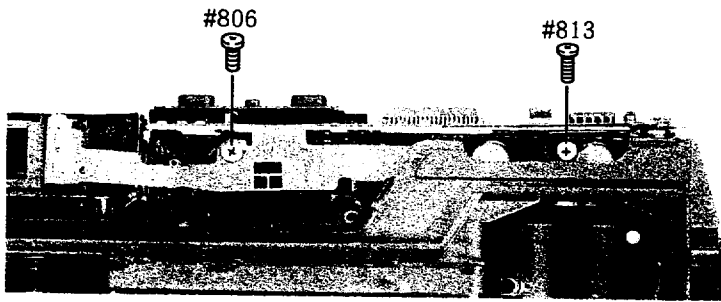


- As shown in the picture, move down the main FPC in the direction of the arrow and stick it on with double-sided adhesive. (Refer to the figure below.)





10, Mount the zoom lever and screws

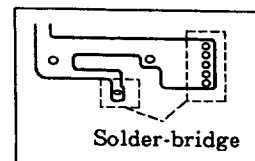
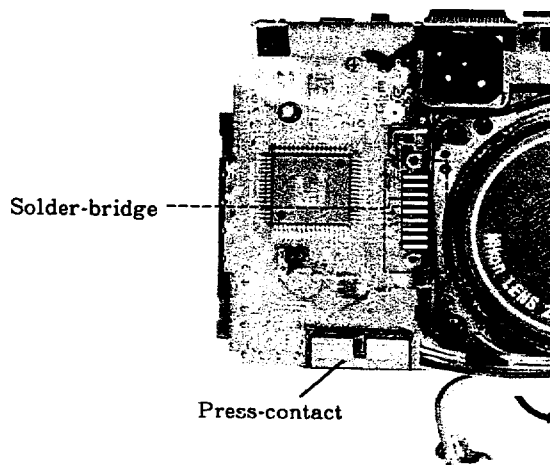


- As shown in the picture, insert the FPC in the direction of the arrow toward the opening of the bottom wires.

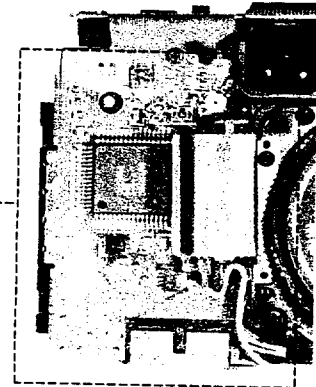
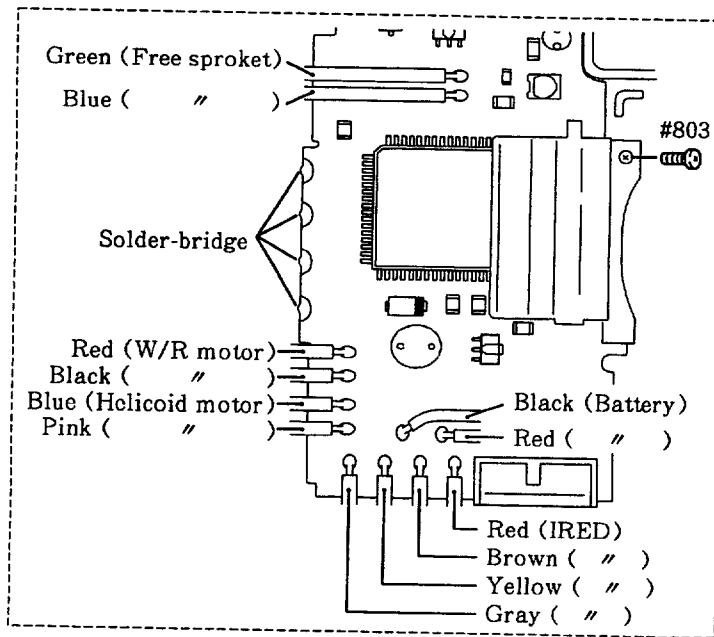
**Note:** When inserting the FPC, be sure not to bend or damage it.

- Mount the zoom lever.

11, Press-contact, solder-bridge



12, Sub condenser retainer, soldering wires, DX contacts solder-bridge

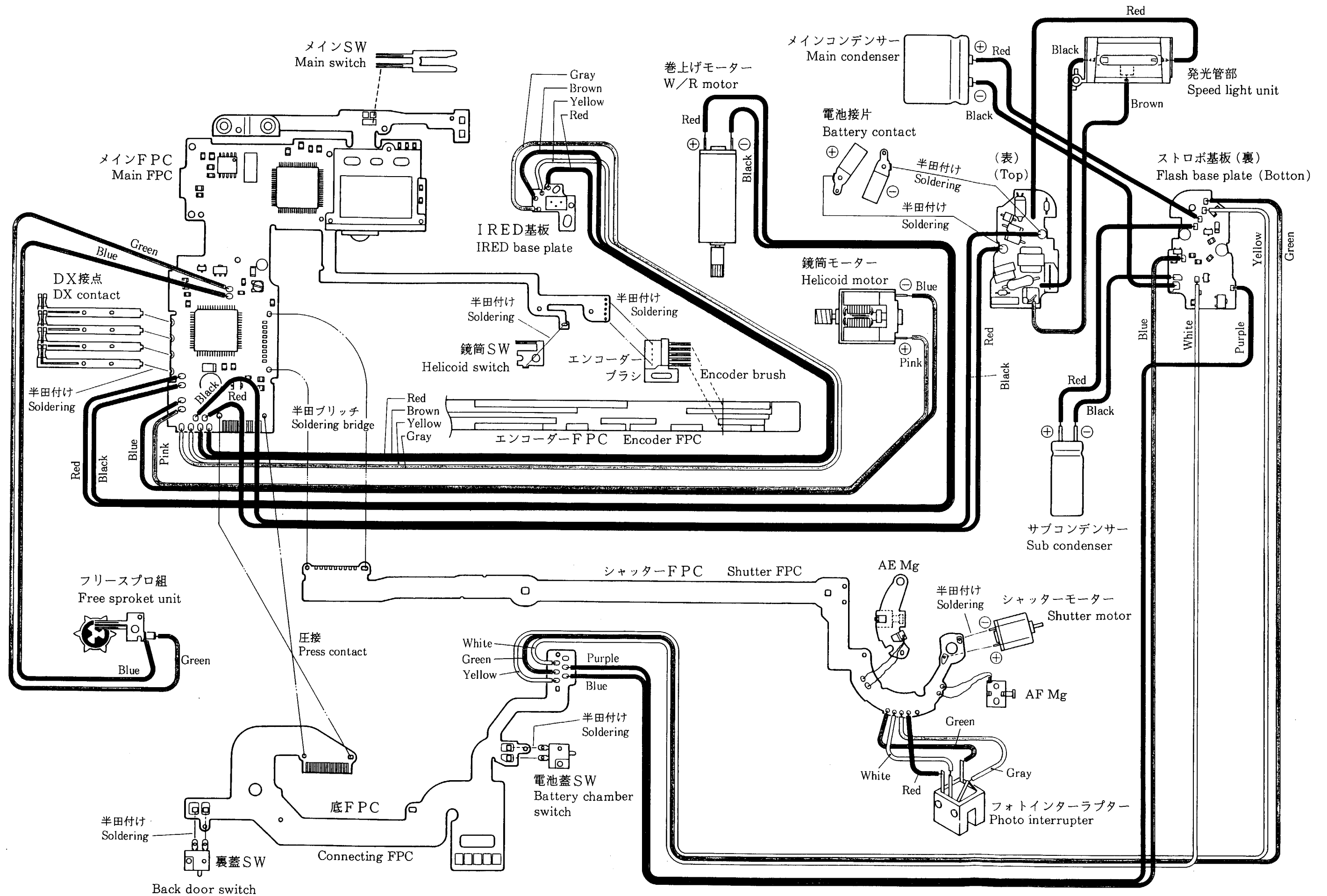


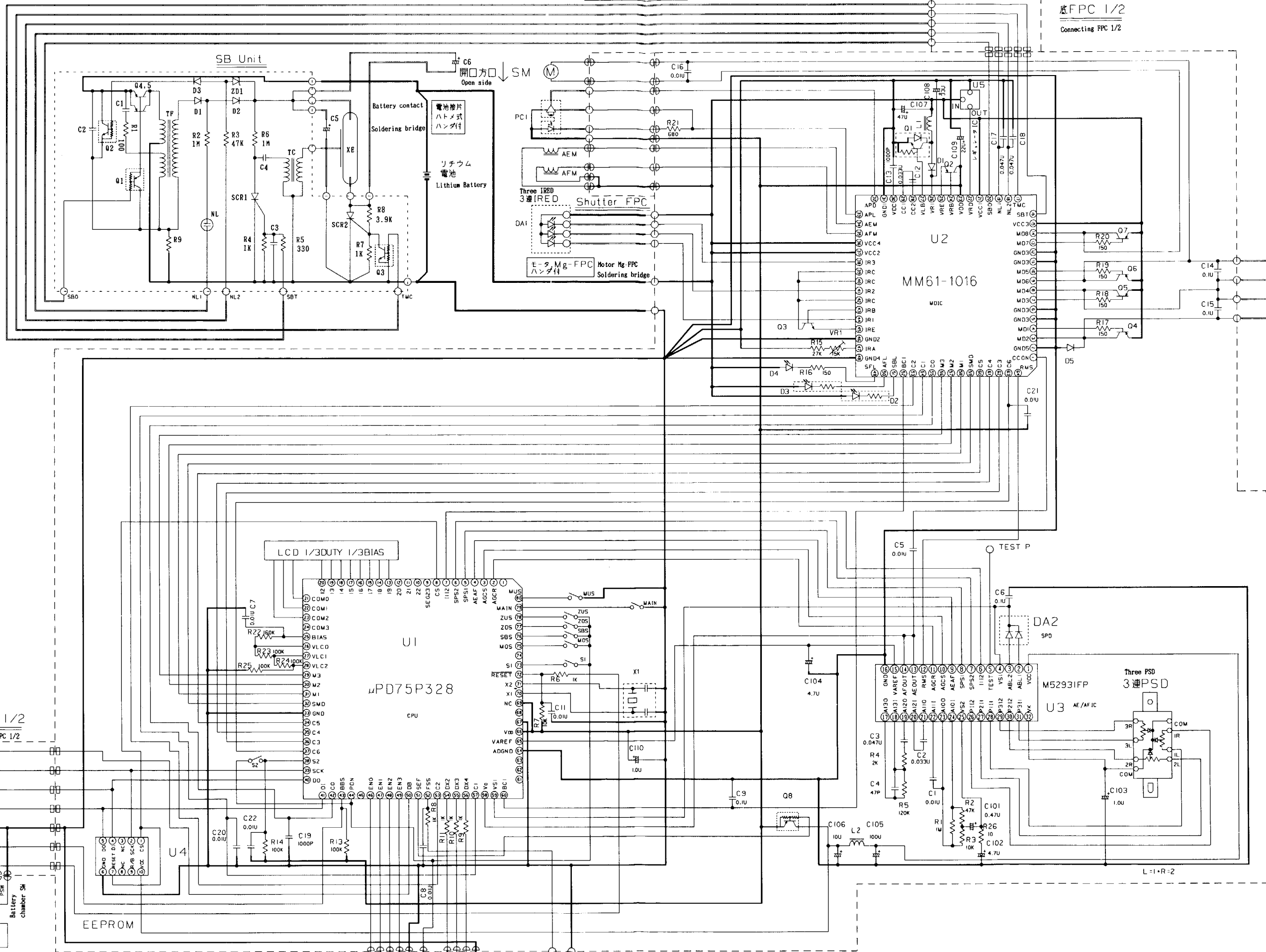
- Make solder bridge between wires and DX contacts.
- Secure the sub condenser retainer with screw #803.

13, Adjustment (Manual page A 16)

Electric Circuit

Wiring Diagram	-----	E 1
Circuit Diagram	-----	E 2
Circuitry Parts Locations	-----	E 3
Checking Lands	-----	E 4
FPC	-----	E 5
SB Base Plate	-----	E 6
LCD Display	-----	E 7
Switches	-----	E 8
IC Terminal	-----	E 9





Tele side  
LM ↓ テレ方向  
MM ↑ 巻き上げ方向  
Winding side

底FPC 1/2  
Connecting FPC 1/2

DB  
SCK  
DI  
GND

Back door SW  
779 SW  
電池室SW  
Battery Chamber SW  
SW-FPC  
ハンダ付  
SW-FPC  
Soldering bridge

FPC-FPC  
クリップ圧接  
FPC-FPC  
Press Contact

Brush-FPC  
Soldering bridge

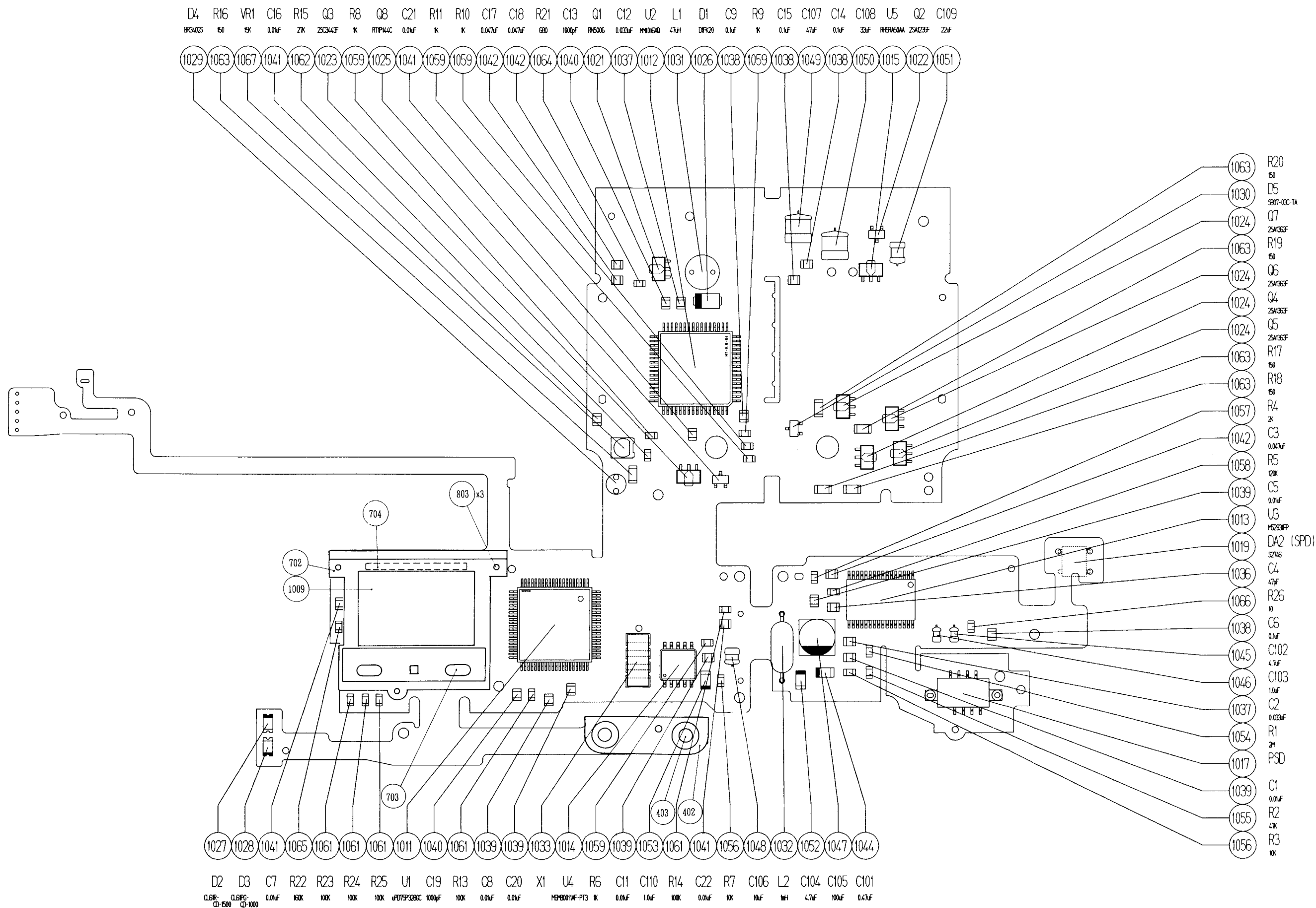
ブラシ-FPC  
ハンダ付

DX2DX3DX4  
DX contact  
Soldering bridge

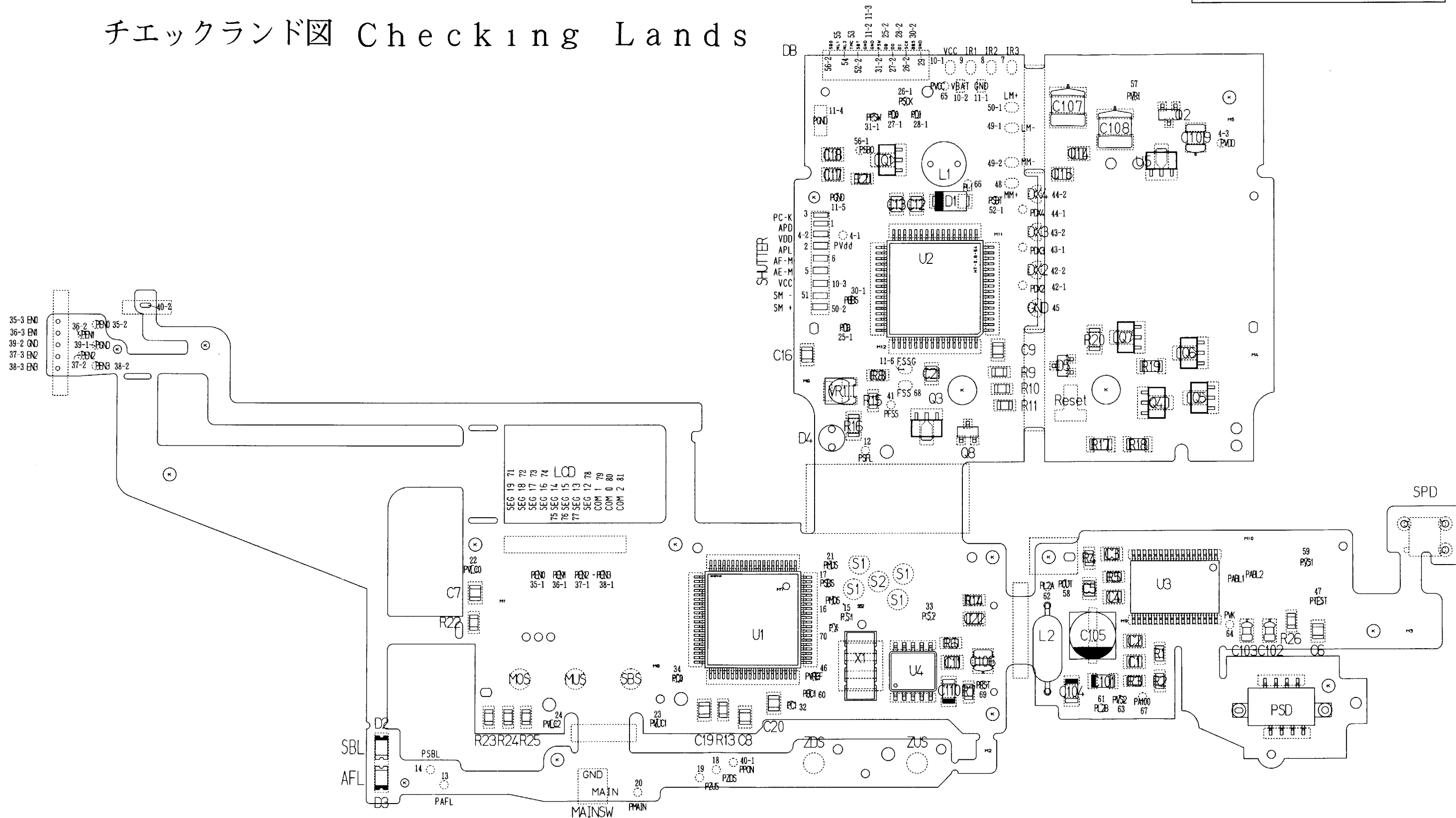
Main FPC

C10: 欠番 Blank  
R12: 欠番 Blank

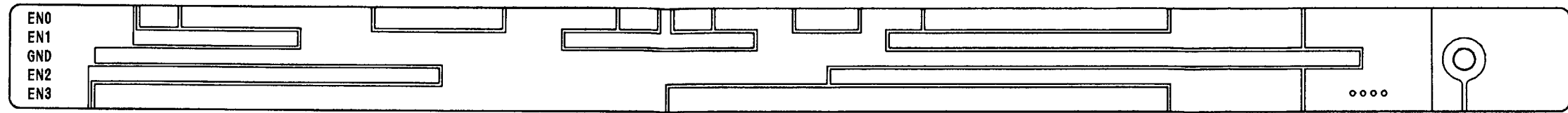
电子部品配置图  
Circuitry Parts Locations



# チェックランド図 Checking Lands

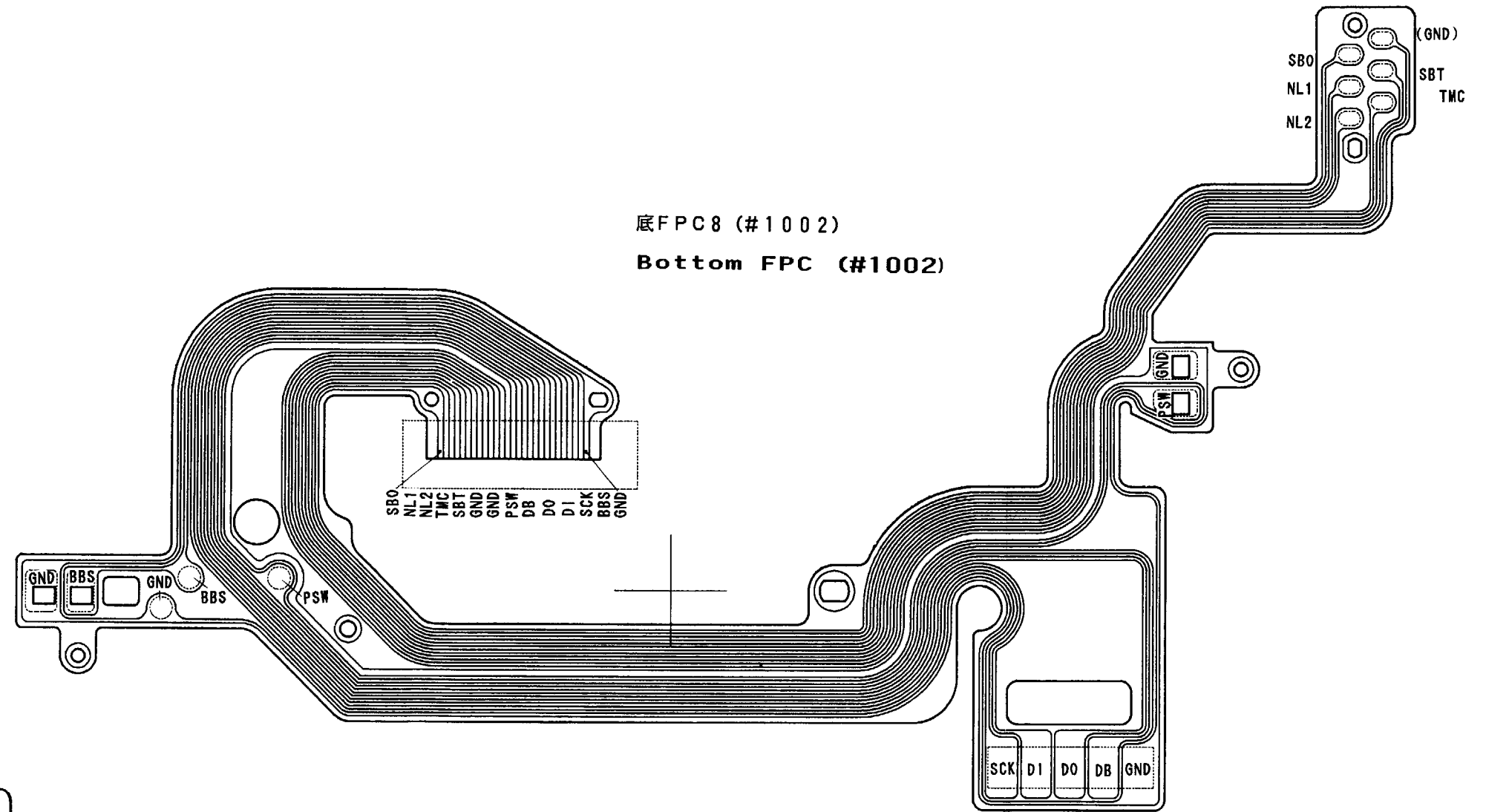


Encoder FPC (#1004)



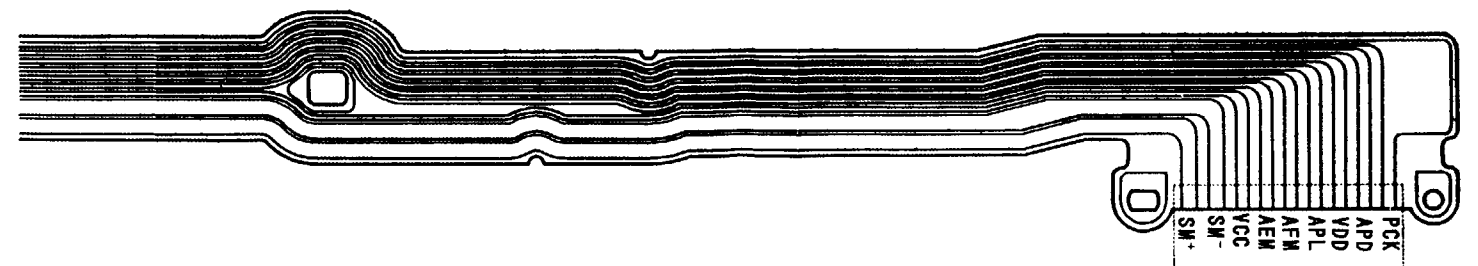
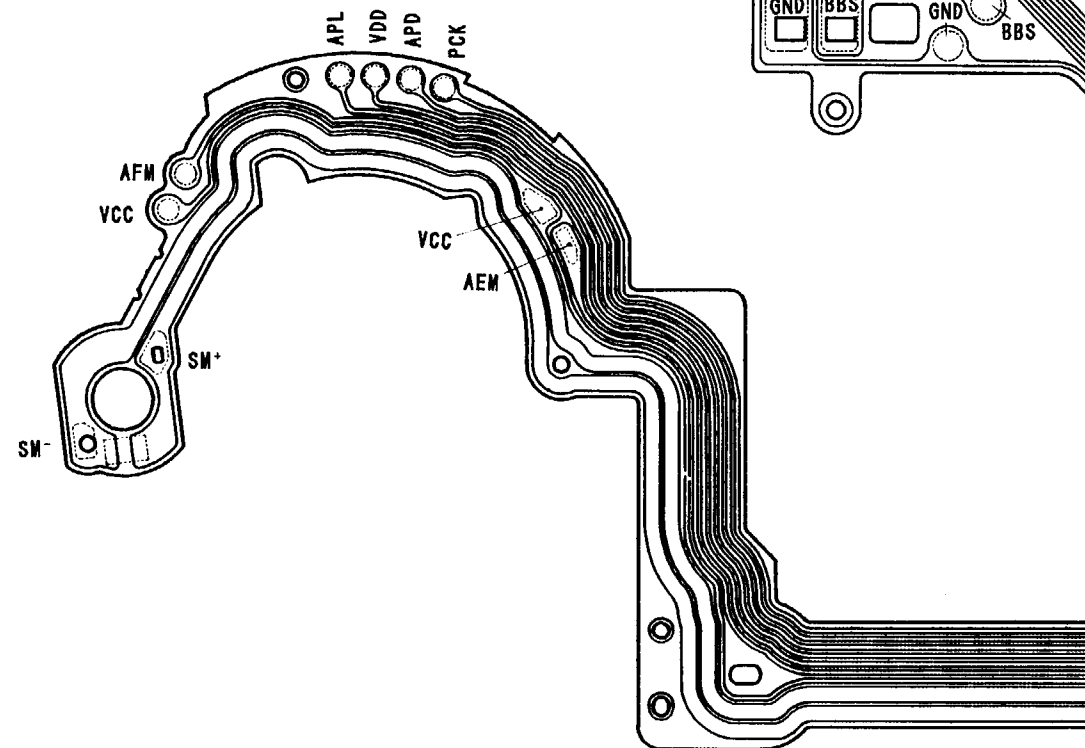
底FPC8 (#1002)

Bottom FPC (#1002)

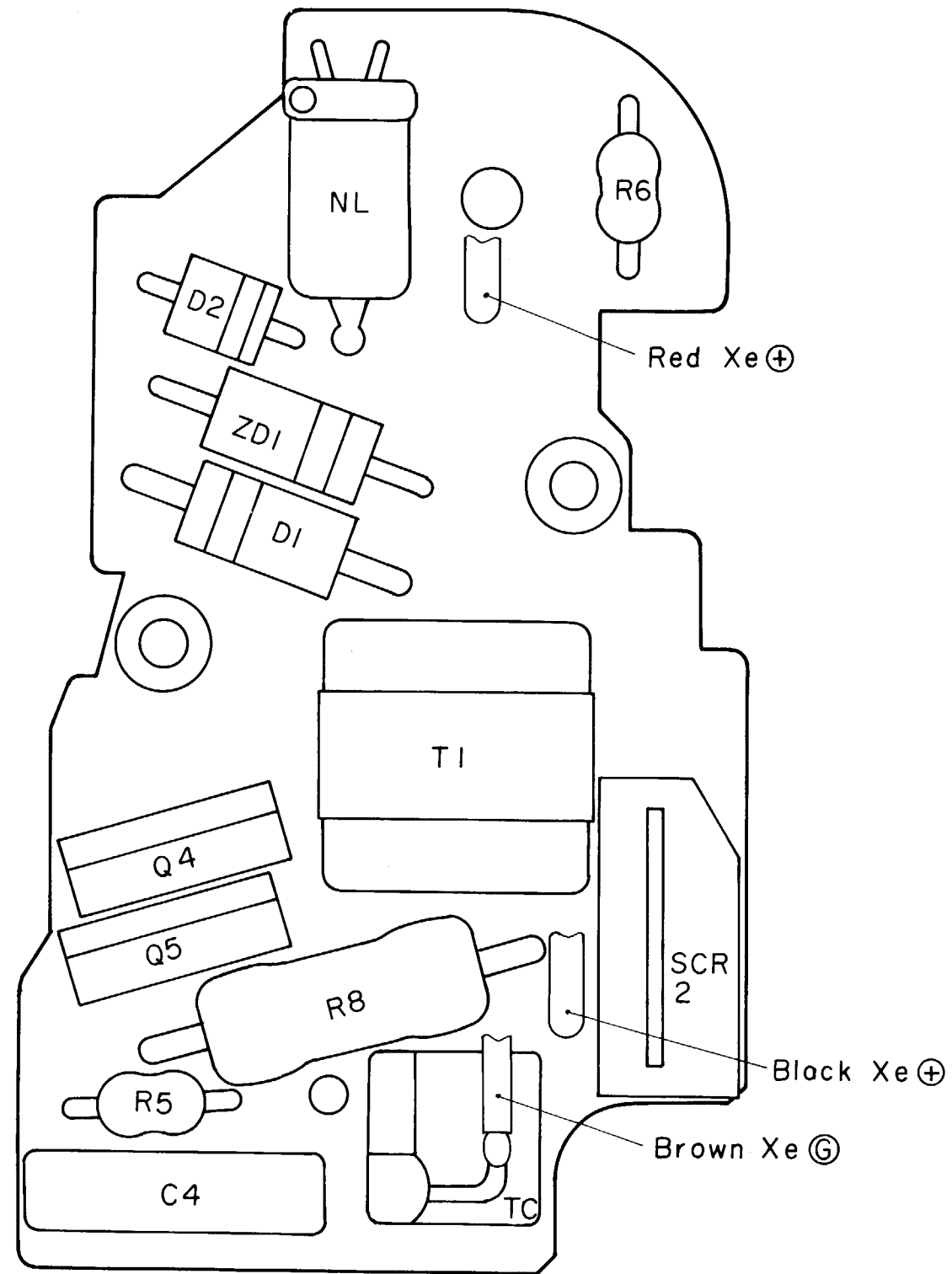
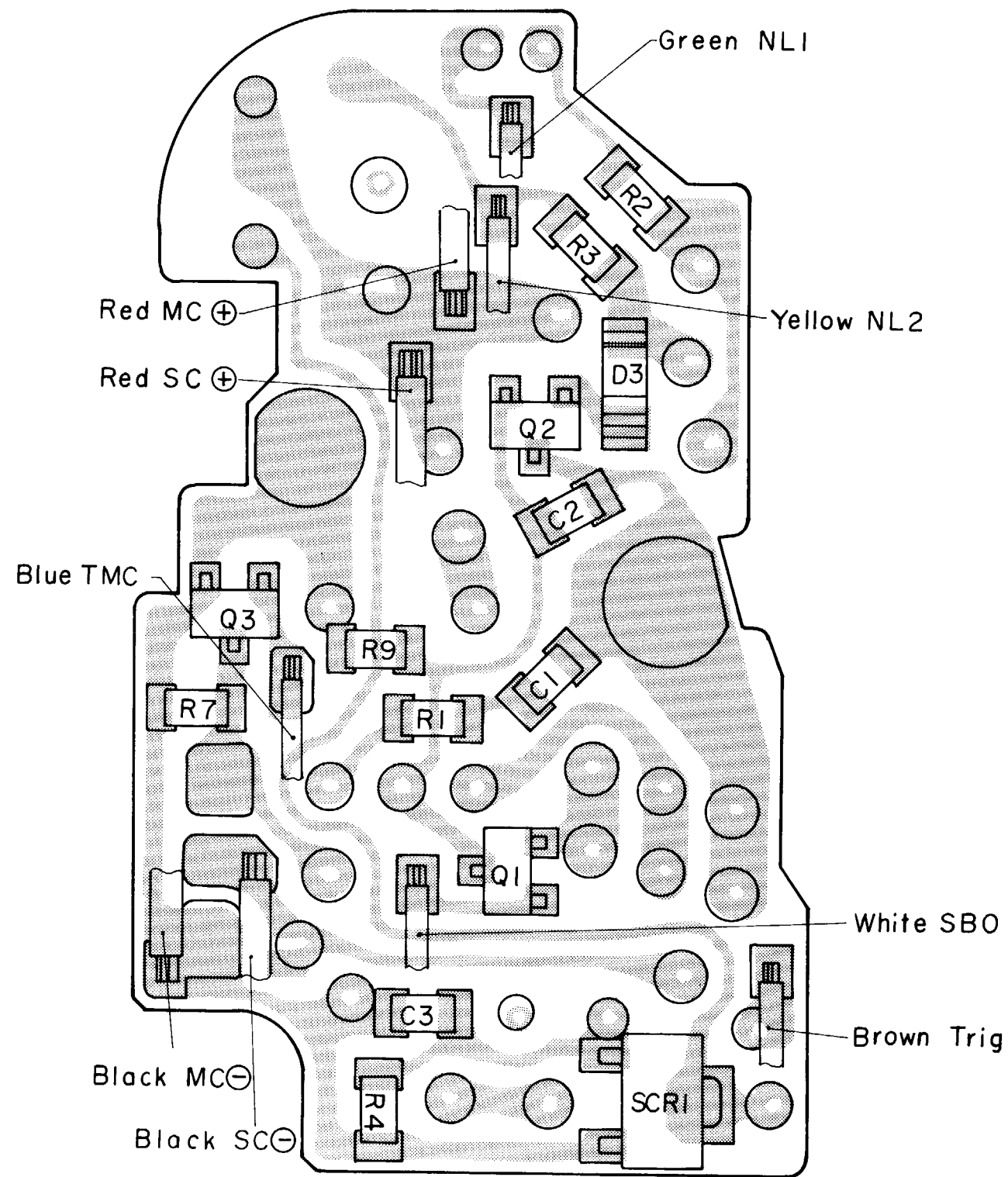


シャッターFPC (#1003)

Shutter FPC (#1004)

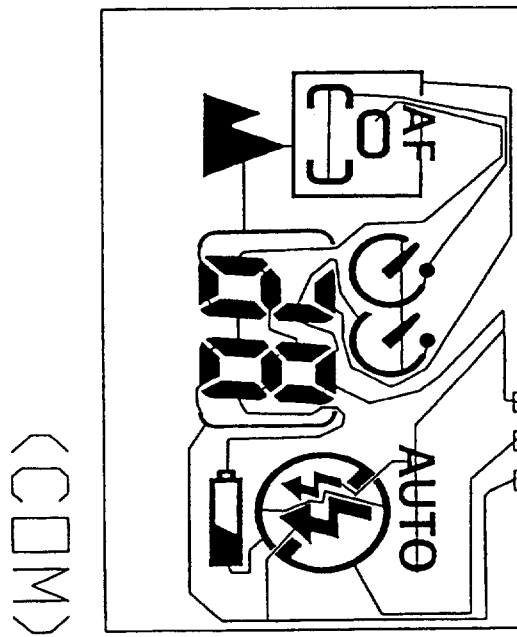
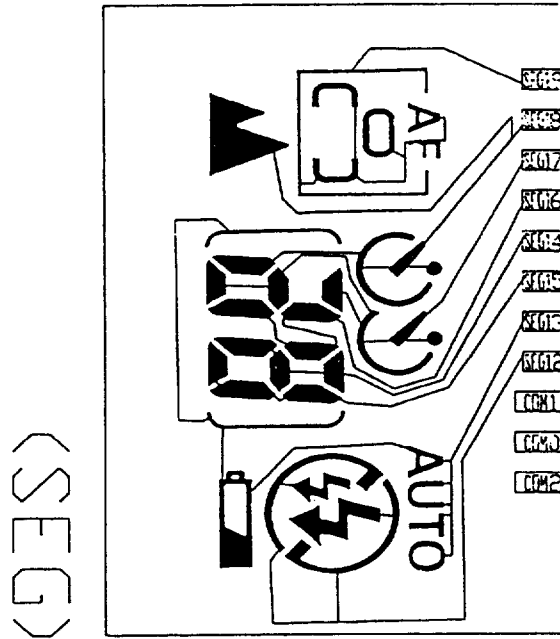






R1	100Ω
R2	1M Ω
R3	47KΩ
R4	1KΩ
R5Z	330Ω
R6	1MΩ
R7	1KΩ
R8	3.9KΩ
R9	1.2KΩ
Q1	DTA123JK
Q2	DTC114YK
Q3	DTC113ZK
Q4	2SB1307M
Q5	2SB1307M
C1	2200PF
C2	0.022 μF
C3	0.047 μF
C4	0.033 μF
D1	RGPO2-17
D2	MPG06G
D3	RLS72
SCR1	CR02AS-8
SCR2	CR3AMZ
NL	270V
T1	S-551
ZD1	1AZ330X
TC	TS50AS-2P

LCD表示部 LCD Display



## NAMES AND FUNCTIONS OF SWITCHES

Name		Mark	Operation/Function	CPU pin Lands
Main SW		MAIN	Start input SW	7 9
Release button	Pre-release SW	S 1	Metering, Focusing	7 3
	Release SW	S 2	Release	3 8
Manual rewind SW		MUS	Manual film rewind	8 0
Speedlight select SW		SBS	Speedlight selection	7 6
Mode SW		MOS	Mode selection	7 5
Zoom SW	Zoom up SW	ZUS	Zoom up	7 8
	Zoom down SW	ZDS	Zoom down	7 7
Camera back SW		BBS	Recognizes condition of camera back	4 3
Battery chamber SW		PSW	Recognizes condition of battery chamber	7 2
Helicoid group	Helicoid SW	PON	Recognizes condition of Helicoid position	4 4
	Helicoid encoder	EN 0	Encoder signal	4 6
		EN 1	Encoder signal	4 7
		EN 2	Encoder signal	4 8
		EN 3	Encoder signal	4 9
Free spro SW		FSS	Film advance signal input	5 2

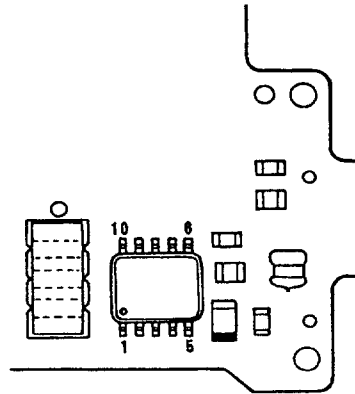
## EXTERNAL COMMUNICATION NAME

Function	Mark	Signal	CPU pin Lands
Battery contact	VCC		
	GND		
Data back contact	DB	Data Back writing/Data communication timing	5 0
	D 0	Data communication output	4 0
	D I	Data communication input	4 1
	SCK	Data communication clock	3 9
	GND		
DX contact	DX 2	DX signal	5 4
	DX 3	DX signal	5 5
	DX 4	DX signal	5 6
	GND		

IC TAMINAL

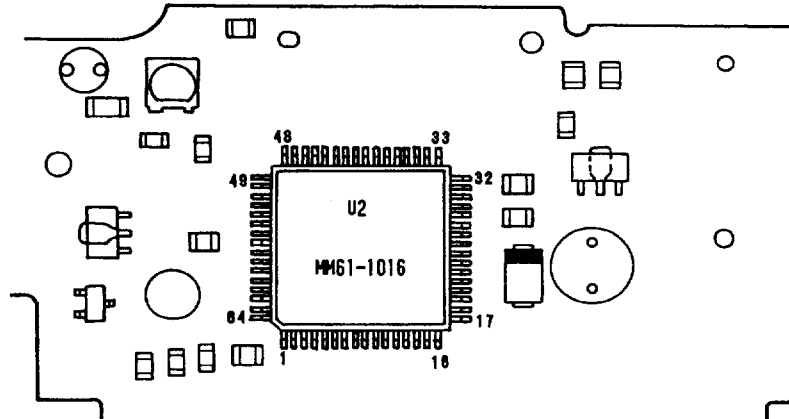
EEPROM

M6M80011AFP



Pin No.	Mark	Control
1	CS	Chip select input
2	SCK	Clock input
3	N · C	—————
4	DI	Data input
5	DO	Data output
6	GND	—————
7	RESET	Reset input
8	N · C	—————
9	RDY/BUSY	Busy output
10	VDD	E <sup>2</sup> PROM power supply

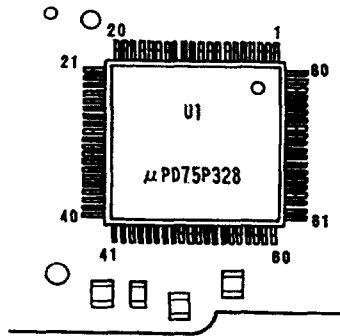
MD-IC  
MM61-1016



Pin No.	Mark	I/O	Signal	Content
1	CCON	OUT	Condenser switching	Condenser switching
2	GND5	—		CCON & MD PREDRIVE GND
3	MD2	OUT	Motor control	M Motor, NPN collector
4	MD1	OUT		M Motor, PNP base
5	GND3	—		GND
6	GND3	—		
7	MD3	OUT		M, L motor PNP base drive
8	MD4	OUT		M, L motor NPN collector
9	MD6	OUT		L, S motor NPN collector
10	MD5	OUT		L, S motor PNP base drive
11	GND3	—		GND
12	GND3	—		
13	MD7	OUT		S motor PNP base drive
14	MD8	OUT		S motor NPN collector
15	VCC3	IN		VCC
16	SBT	OUT		SB control
17	TMC	OUT	Output command signal	
18	NL2	IN	SB oscillation stop input	
19	NL1	IN	SB charging completion signal input	
20	SBO	OUT	SB oscillation control signal input	
21	VCC1	—	DC-DC Converter	VCC
22	VRD	IN		Spare power input
23	VDD	OUT		Power output
24	VRB	—		DOWN, Reg, TR, base
25	VRE	—		DOWN, Reg, TR, emitter
26	VR1	—		SW Reg. output
27	VLB	—		SW Reg. TR base

Pin No	Mark	I/O	Signal	Content
28	CC2	—	DC-DC Converter	Condenser
29	CC1	—		Condenser
30	VDC	—		Oscillation condenser
31	GND1	—		GND
32	APD	IN	Photo interrupter control	Photo interrupter input
33	APL	OUT		Photo interrupter LED drive
34	AEM	OUT	MG control	AE Mg Drive
35	AFM	OUT		AE Mg Drive
36	VCC4	IN	B. C	VCC
37	VCC2	IN	Control I-RED	VCC
38	IR3	OUT		I RED drive 3
39	IRC	—		I RED TR collector
40	IRC	—		I RED TR collector
41	IR2	OUT		I RED drive 2
42	IRC	—		I RED TR collector
43	IRB	—		I RED TR base
44	IR1	OUT		I RED drive 1
45	IRE	—		I RED TR emitter
46	GND2	—		I RED GND
47	IRA	—		I RED current
48	GND4	—		Data input/output
49	SFL	OUT	LED display	LED DRIVE on self
50	AFL	OUT		LED DRIVE on AF
51	SBL	OUT		LED DRIVE on SB
52	BC1	OUT	B. C	B. C VOLTAGE outout
53	C2	IN	Data input/output	Signal input 2
54	C1	OUT		Signal output 1
55	C0	OUT		Signal output 0
56	M3	IN	Mode selection	Mode selection input signal 3
57	M2	IN		Mode selection input signal 2
58	M1	IN		Mode selection input signal 1
59	SMD	IN	Power control	Power control
60	C5	IN	Data input/output	Signal input 5
61	C4	IN		Signal input 4
62	C3	IN		Signal input 3
63	C6	IN		Signal input 6
64	RMS	IN		RM signal input

CPU  
 $\mu$ PD75P328

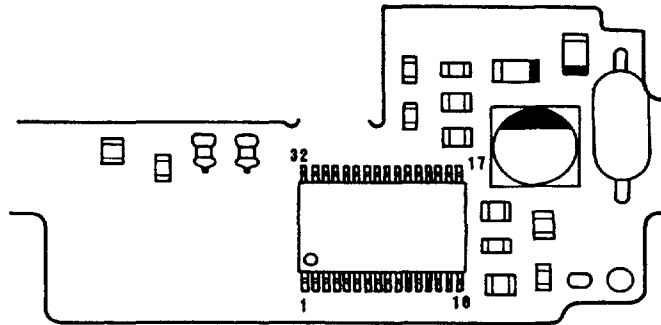


Pin No.	Mark	Contents
1	—	Open
2	AG CR	AE/AP IC control
3	AG CS	AE/AP IC control
4	AE AF	AE/AP IC control
5	SP S1	AE/AP IC control
6	S2 S2	AE/AP IC control
7	I1 I2	AE/AP IC control
8	CS	E <sup>2</sup> PROM control
9	SEG 2 3	Open
10	2 2	Open
11	2 1	Open
12	2 0	Open
13	1 9	LCD driver
14	1 8	LCD driver
15	1 7	LCD driver
16	1 6	LCD driver
17	1 5	LCD driver
18	1 4	LCD driver
19	1 3	LCD driver
20	1 2	LCD driver
21	CMO 0	LCD driver Common Lands 0
22	CMO 1	LCD driver Common Lands 1
23	CMO 2	LCD driver Common Lands 2
24	CMO 3	Open
25	BIAS	LCD bias
26	VLC 0	LCD bias
27	VLC 1	LCD bias
28	VLC 2	LCD bias
29	M3	MD-IC Mode selection output signal 3
30	M2	MD-IC Mode selection output signal 2
31	M1	MD-IC Mode selection output signal 1
32	SMD	MD-IC Power control
33	GND	GND
34	C5	Output signal 5
35	C4	Output signal 4
36	C3	Output signal 3

Pin No.	Mark	Contents
37	C6	Mode selection 6
38	S2	Release SW
39	SCK	Out of connection output
40	D0	Out of connection output
41	D1	Out of connection output
42	CO	MD-IC signal output
43	BBS	Back door SW
44	PON	Helicoid SW
45	————	Open
46	EN0	Encoder signal
47	EN1	Encoder signal
48	EN2	Encoder signal
49	EN3	Encoder GND
50	DB	From DB external connection
51	SEF	Power control, AE/AF IC and E <sup>2</sup> PROM
52	FSS	Free spro signal
53	C2	Output signal 2
54	DX2	DX signal
55	DX3	DX signal
56	DX4	DX signal
57	C1	MD-IC signal output
58	V0	AE or AP output signal
59	VS1	AE Vref
60	BC1	B.C voltage
61	————	Open
62	————	Open
63	————	Open
64	ADGND	AD GND
65	VAREF	AE/AF Vref
66	VDD	CPU power supply
67	GND	GND
68	————	Open
69	NC	To VDD, pull up
70	X1	Oscillator input (4.19MHz)
71	X2	Oscillator input
72	RESET	Battery chamber SW
73	S1	Pre-release SW
74	————	Open
75	MOS	Mode SW
76	SBS	SB selection SW
77	ZDS	Zoom down switch
78	ZUS	Zoom up switch
79	MAIN	Main switch
80	MUS	Manual rewind SW



AE/AF IC pin  
M52931FP



Pin No	Mark	I/O	Signal	Contents
1	VCC			VCC 5.25V type
2	ABL1	IN	AE SPD input	AE SPD input land
3	ABL2	IN		AE SPD input land
4	VS1	OUT	AE Vref	AE vref (2.4V)
5	TEST	OUT	TBST land	Test land to IC AF
6	I1 I2	IN	Control signal	Switch to AE and AF
7	SPS2	IN		Switch to AE PSD (PSD1, PSD2, PSD3)
8	SPS1	IN		Switch to AE PSD (PSD1, PSD2, PSD3)
9	AEAF	IN		Switch to AE and AF
10	AGCS	IN		AF AGC set signal
11	AGCR	IN		AF AGC Reset signal
12	—		N. C	—
13	AE OUT		AE output	AE output signal
14	AF OUT		AF output	AF output signal
15	VA REF		Conversion VREF to AD	AD conversion Vref output
16	GND			
17	A13 OUT	OUT	AF signal amplifier	A13 output (AF AMP)
18	A13 IN	IN		A13 input (AF AMP)
19	A12 OUT	OUT		A12 output (AF AMP)
20	A12 IN	IN		A12 input (AF AMP)
21	A11 OUT	OUT		A11 output (AF AMP)
22	A11 IN	IN		A11 input (AF AMP)
23	A10 OUT	OUT		A10 output (AF AMP)
24	A10 IN	IN		A10 input (AF AMP)
25	VS2	OUT	AF Vref	AF vref (2.0V)
26	P1 I2	IN	AF PSD input	I2 signal input land
27	P2 I1	IN		I1 signal input land
28	P1 I1	IN		I1 signal input land
29	P3 I2	IN		I2 signal input land
30	P2 I2	IN		I2 signal input land
31	P3 I1	IN		I1 signal input land
32	VK	OUT	AF Vref	Connecting AF vref to PSD cathode (3.1V)

## Main FPC Check Lands

No	Land	Sig- nal	Contents	I/O	Connection		External Connection
					IC	Pin No	
1	APD	APD	Photo interrupter input	Input	U2	32	S-FPC solder-bridge
2	APL	APL	Photo interrupter GND	Output	U2	33	S-FPC solder-bridge
3	PC-K	PCK	Photo interrupter LED cathode	Output	U2	(33)	S-FPC solder-bridge
4-1	PVdd	VDD	Power supply 5.5V	Output	U1 U2	66 23	Check Land
4-2	VDD						S-FPC solder-bridge
4-3	PVdd						Checking Land
5	AE-M	ABM	AE Mg Drive	Output	U2	34	S-FPC solder-bridge
6	AF-M	AFM	AE Mg Drive	Output	U2	35	S-FPC solder-bridge
7	IR3	IR3	IRED Drive 3 (Left)	Output	U2	38	Soldering of Lead wires (IRED)
8	IR2	IR2	IRED Drive 2 (Right)	Output	U2	41	Soldering of Lead wires (IRED)
9	IR1	IR1	IRED Drive 1 (Center)	Output	U2	44	Soldering of Lead wires (IRED)
10-1	VCC	VCC	Battery	Input	U2	15, 21 36, 37	Soldering of Lead wires (IRED)
10-2	VBAT						Soldering of Lead wires (BAT)
10-3	VCC						S-FPC solder-bridge
11-1	GND  PGND FSSG	GND	GND				Soldering of Lead wire (BAT)
11-2							Press-contact, Connecting FPC
11-3							Press-contact, Connecting FPC
11-4							Check Land
11-5							Check Land
11-6							Soldering of Lead wires (FSS)
12	PSFL	SFL	Self LED Drive	Output	U2	(49)	Check Land
13	PAPL	APL	AFL LED Drive	Output	U2	50	Check Land
14	PSBL	SBL	SB LED Drive	Output	U2	51	Check Land
15	PS1	S1	S1 Pre-release	Input	U1	73	Check Land
16	PMOS	MOS	Mode selection	Input	U1	75	Check Land
17	PSBS	SBS	SB Mode selection	Input	U1	76	Check Land
18	PZDS	ZDS	Zoom down switch	Input	U1	77	Check Land
19	PZUS	ZUS	Zoom up switch	Input	U1	78	Check Land
20	PMAIN	MAIN	Main switch	Input	U1	79	Check Land

No.	Land	Signal	Contents	I/O	Connection		External Connection
					IC	Pin No.	
21	PMUS	MUS	Manual rewind SW	Input	U1	80	Check Land
22	PVLC0	VLC0	LCD Vref 0 Approx. 3.6V	Input	U1	26	Check Land
23	PVLC1	VLC1	LCD Vref 1 Approx. 2.4V	Input	U1	27	Check Land
24	PVLC2	VLC2	LCD Vref 2 Approx. 1.2V	Input	U1	28	Check Land
25-1	PDB	DB	Data back writing	Output	U1	50	Check Land
25-2	DB		Data communication				Press-contact, Connecting FPC
26-1	PSCK	SCK	Data communication	Output	U1	39	Check Land
26-2	SCK						Press-contact, Connecting FPC
27-1	PDO	DO	Data communication	Output	U1	40	Check Land
27-2	DO						Press-contact, Connecting FPC
28-1	PDI	DI	Data communication	Input	U1	41	Check Land
28-2	DI						Press-contact, Connecting FPC
29	GND	GND	Data communication GND				Press-contact, Connecting FPC
30-1	PBBS	BBS	Back door switch	Input	U1	43	Check Land
30-2	BBS						Press-contact, Connecting FPC
31-1	PPSW	PSW	Battery chamber switch	Input	U1	(72)	Check Land
31-2	PSW						Press-contact, Connecting FPC
32	PC1	C1	C1 signal	Output	U1	57	Check Land
					U2	54	
33	PS2	S2	S2 Switch	Input	U1	38	Check Land
34	PC0	C0	C0 signal	Output	U1	42	Check Land
					U2	55	
35-1	PEN0	ENO	Encoder signal 0	Input	U1	46	Check Land
35-2							Check Land
35-3	BNO						Solder-bridge, encoder brush
36-1	PEN1	EN1	Encoder signal 1	Input	U1	47	Check Land
36-2							Check Land
36-3	EN1						Solder-bridge, encoder brush
37-1	PEN2	EN2	Encoder signal 2	Input	U1	48	Check Land
37-2							Check Land
37-3	EN2						Solder-bridge, encoder brush

No.	Land	Signal	Contents	I/O	Connection		External Connection	
					IC	Pin No.		
38-1	PEN3	EN3	Encoder signal	Input	U1	49	Check Land	
38-2							Check Land	
38-3							EN3	Solder-bridge, encoder brush
39-1	PGND	GND	Encoder signal GND				Check Land	
39-2	GND						Solder-bridge, encoder brush	
40-1	PPON	PON	PON switch	Input	U1	44	Check Land	
40-2	PON						Solder-bridge, encoder brush	
41	PFSS	FSS1	Free spro SW signal GND	Input	U1	52	Check Land	
42-1	PDX2	DX2	DX input 2	Input	U1	(54)	Check Land	
42-2	DX2						Solder-bridge, DX contact	
43-1	PDX3	DX3	DX input 3	Input	U1	(55)	Check Land	
43-2	DX3						Solder-bridge, DX contact	
44-1	PDX4	DX4	DX input 4	Input	U1	(56)	Check Land	
44-2	DX4						Solder-bridge, DX contact	
45	GND	GND	DXGND				Solder-bridge, DX contact	
46	PVREF	VREF	VREF	Output	U1 U3	65 15	Check Land	
47	PTEST	TEST	TEST	Output	U3	5	Check Land	
48	MM+	MD2	Motor Drive 2	Output	U2	3	Soldering of Lead wire	(Winding motor)
49-1	LM-	MD4	Motor Drive 4	Output	U2	8		(Helicoid motor)
49-2	MM-							(Winding motor)
50-1	LM+	MD6	Motor Drive 6	Output	U2	9		(Helicoid motor)
50-2	SM+						S-FPC solder-bridge	
51	SM-	MD8	Motor Drive 8	Output	U2	14	S-FPC solder-bridge	
52-1	PSBT	SBT	SB trigger	Output	U2	16	Checking Land	
52-2	SBT						Press-contact, Connecting FPC	
53	TMC	TMC	SB control	Output	U2	17	Press-contact, Connecting FPC	
54	NL1	NL1	Charging completion 1	Input	U2	19	Press-contact, Connecting FPC	
55	NL2	NL2	Charging completion 2	Input	U2	18	Press-contact, Connecting FPC	
56-1	PSBO	SBO	SB oscillation control	Output	U2	20	Check Land	
56-2	SBO						Press-contact, Connecting FPC	

No.	Land	Signal	Contents	I/O	Connection		External Connection
					IC	Pin No.	
57	PVRI	VRI	Power supply Approx. 5.8V (SW, REG output)	Output	U2	26	Check land
58	POUT	VO	A BAF outout	Output	U1 U3	58 13, 14	Check land
59	PVS1	VS1	AE Vref (Approx. 2.3V)	Output	U1 U3	59 4	Check land
60	PBC1	BC1	B.C voltage	Output	U1 U2	60 52	Check land
61	PL2B	L2IN	L2 Connection		U4	10	Check land
62	PL2A	L2OUT	L2 Connection		U3	1	Check land
63	PVS2	VS2	Af Vref (Approx. 2V)	Output	U3	25	Check land
64	PVK	VK	PSD bias (Approx. 3.1V)	Output	U3	32	Check land
65	PVCC	VCC	L1 connection				
66	PL1	L1OUT	L1 connection				
67	PA100	A10OUT	U3 A10 output	Output	U3	23	Check land
68	PSS	FSS	Free spro signal	Input	U1	(52)	Check land
69	PRST	RST	BAT chamber SW (Reset sig.)	Input	U1	72	Check land
70	PX	X	Oscillator	Output	U1	71	Check land
71	SEG 19	SEG 19	LCD segment drive 19	Output	U1	13	LCD press contact
72	SEG 18	SEG 18	LCD segment drive 18	Output	U1	14	LCD press contact
73	SEG 17	SEG 17	LCD segment drive 17	Output	U1	15	LCD press contact
74	SEG 16	SEG 16	LCD segment drive 16	Output	U1	16	LCD press contact
75	SEG 14	SEG 14	LCD segment drive 14	Output	U1	18	LCD press contact
76	SEG 15	SEG 15	LCD segment drive 15	Output	U1	17	LCD press contact
77	SEG 13	SEG 13	LCD segment drive 13	Output	U1	19	LCD press contact
78	SEG 12	SEG 12	LCD segment drive 12	Output	U1	20	LCD press contact
79	COM 1	COM 1	LCD common drive 1	Output	U1	22	LCD press contact
80	COM 0	COM 0	LCD common drive 2	Output	U1	21	LCD press contact
81	COM 2	COM 2	LCD common drive 3	Output	U1	23	LCD press contact

TW ZOOM 35.70 E<sup>2</sup> PROM DATA

Address	Description		Standard value	Notes
0	No. of shutter release operation		0	Storing total No. of shutter release operation (Note 1)
1	Flag 0	No. of films	0/253	Memory device for storing the state of camera's CPU
2	Flag 1		0/0	
3	Focus back		0/0	Not used
4	AE shift adjustment (periphery)	AE shift adjustment (central)	103/135	Varies depending on cameras used
5	AE motor speed	AE gradient adjustment (central)	59/128	
6	AE trigger pulse		496	
7	Starting time of braking AE motor		622	
8	AF shift adjustment (left)	AF shift adjustment (central)	128/128	Varies depending on cameras used
9	AF gradient adjustment 1 (central)	AF shift adjustment (right)	128/128	• AF gradient adjustment 1 (near $r$ )
10	AF gradient adjustment 1 (right)	AF gradient adjustment 1 (left)	128/128	• AF gradient adjustment 2 (far $r$ )
11	AF gradient adjustment 2 (left)	AF gradient adjustment 2 (central)	128/128	
12	AF $\infty$ adjustment (central)	AF gradient adjustment (right)	128/128	
13	AF $\infty$ adjustment (right)	AF $\infty$ adjustment (left)	128/128	
14	B.C 2	B.C 1	67/70	Varies depending on cameras used
15	ZMB	ZMA	40/2	Fixed value
16	ZMD	ZMC	50/10	
17	ZMF	ZME	10/40	
18	ZMH	ZMG	70/200	
19	X2	X1	29/255	Fixed value
20	X4	X3	255/58	
21	X6	X5	0/0	
22	AF MAX RNG	AF MIN RNG	70/50	Fixed value
23	AGC MAX1		30/30	Varies depending/ on cameras used
24	AGC MAX3	AGC MAX2	30/30	
25	ERROR		0	Error flag due to camera operation (Note 2)
26	STEP 1		60	

Add-ress	Description	Standard value	Notes	
27	STEP 2	76	Varies depending on cameras used  1 STEP = Alteration of 16 pulses	
28	STEP 3	92		
29	STEP 4	108		
30	STEP 5	124		
31	STEP 6	140		
32	STEP 7	156		
33	STEP 8	172		
34	STEP 9	188		
35	STEP 10	204		
36	STEP 11	220		
37	STEP 12	236		
38	STEP 13	252		Varies depending on cameras used
39	STEP 14	268		
40	STEP 15	284		
41	STEP 16	300		
42	STEP 17	316		
43	STEP 18	332		
44	STEP 19	348		
45	STEP 20	364		
46	STEP 21	380		
47	STEP 22	396		
48	Total No. of pulses to detect AF motor	550	Fixed value	
49	AF END pulse	416	Fixed value (Note 3)	

Note 1: Available to count normal shutter release operation only.

※ No counting is performed while in the process of communication to personal computer.

Note 2: If trouble occurs while running a camera, an error number is written in the address of 26.

No.	Contents of error
1	TSD (Thermal shutdown of MD, IC)
2	Lens barrel stops abnormally
3	Shutter operation stops abnormally
4	Battery check voltage: Below BC 1
5	Battery check voltage: Below BC 2

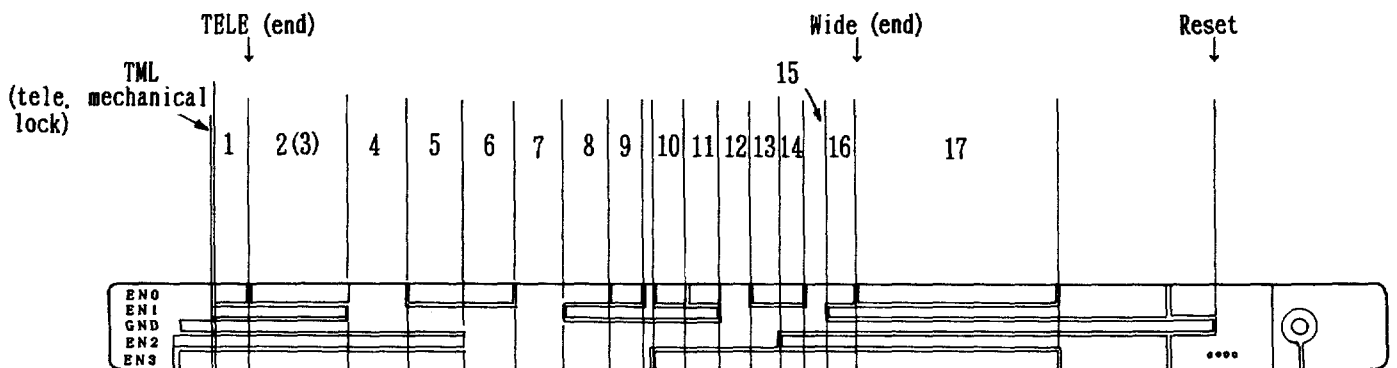
※ Error number indicates the final trouble.

Note 3: Make sure you rewrite the value of addresses 49 to 416 when FPC is replaced, because the value of address 49 differs from that of FPC assembly part.

Focus distance at each zone and F No.

Zone	Focal length	Full aperture F No.	Distance lens moved out	BN 0	BN 1	GND(low)	BN 2	BN 3
TML	—	—	25.958	Short H			H	L
Z 1	68.1	7.6	24.958	H	H		H	L
Z 2	66.2	7.4	23.133	L	H		H	L
			20.545					
Z 4	60.7	6.8	18.076	L	L		H	L
Z 5	58.1	6.5	15.791	H	L		H	L
Z 6	55.6	6.2	13.670	H	L		L	L
Z 7	53.3	5.9	11.692	L	L		L	L
Z 8	51.0	5.7	9.8619	L	H		L	L
Z 9	48.8	5.4	8.1757	H	H		L	L
Z10	46.8	5.2	6.6234	H	H		L	H
Z11	44.8	5.0	5.2061	L	H		L	H
Z12	42.9	4.8	3.9217	L	L		L	H
Z13	41.1	4.6	2.7571	H	L		L	H
Z14	39.3	4.4	1.7191	H	L		H	H
Z15	37.7	4.2	0.8016	L	L		H	H
Z16	36.1	4.0	0.000	L	H		H	H
Z17	—	—	—	H	H		H	H
Re	—	—	—	H	H		H	H

\* Focus distance: Indicates focus distance at the point where zone switches over when lens barrel moves out from Wide-angle to Telephoto.





## 展開図・部品表編

## 〔1〕 展開図

本体部, モーター部, フリースポロ部, DX接点部	-----	F 1
巻上げ・巻き戻しギア部	-----	F 2
ファインダー部, スピードライトユニット部	-----	F 3
外ヘリコイド, 鏡筒基板部, 鏡筒モーター部	-----	F 4
シャッター部	-----	F 5
メインFPC部, マスターレンズ部	-----	F 6
底フレキ部	-----	F 7
前カバー部	-----	F 8
後カバー部, 裏蓋部	-----	F 9
底カバー部, 電池蓋部	-----	F 10

## 〔2〕 部品表

部品表	-----	P 1
部組品表	-----	P 14

## Exploded Drawings &amp; Parts List

## 〔1〕 Exploded Drawings

BODY DIECASRING, MOTOR UNIT, FSS SPORO UNIT, DX CONTACT UNIT	---	F 1
WINDING & REWINDING GEARS	-----	F 2
FINDER UNIT, FLASH UNIT	-----	F 3
OUTER HELICOID, LENS BARREL BASE PLATE, MOTOR UNIT	-----	F 4
SHUTTER UNIT	-----	F 5
MAIN FPC UNIT, MASTER LENS UNIT	-----	F 6
CONNECTING FPC	-----	F 7
FRONT COVER	-----	F 8
REAR COVER, BACK DOOR	-----	F 9
BOTTOM COVER, BATTERY CHAMBER LID	-----	F 10

## 〔2〕 Parts List

Parts List	-----	P 1
Assembly List	-----	P 14

作成承認印	配布許可印
	

TW Zoom 35~70  
TW Zoom 35~70 QUARTZ DATE  
Zoom Touch 400  
Zoom Touch 400 QUARTZ DATE

PARTS LIST (REVISED-1)  
修理部品表 (改訂-1)

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Tokyo, Japan

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Feb. 17. 1994

BODY DIECASRING, MOTOR UNIT, FSS SPORO UNIT, DX CONTACT UNIT

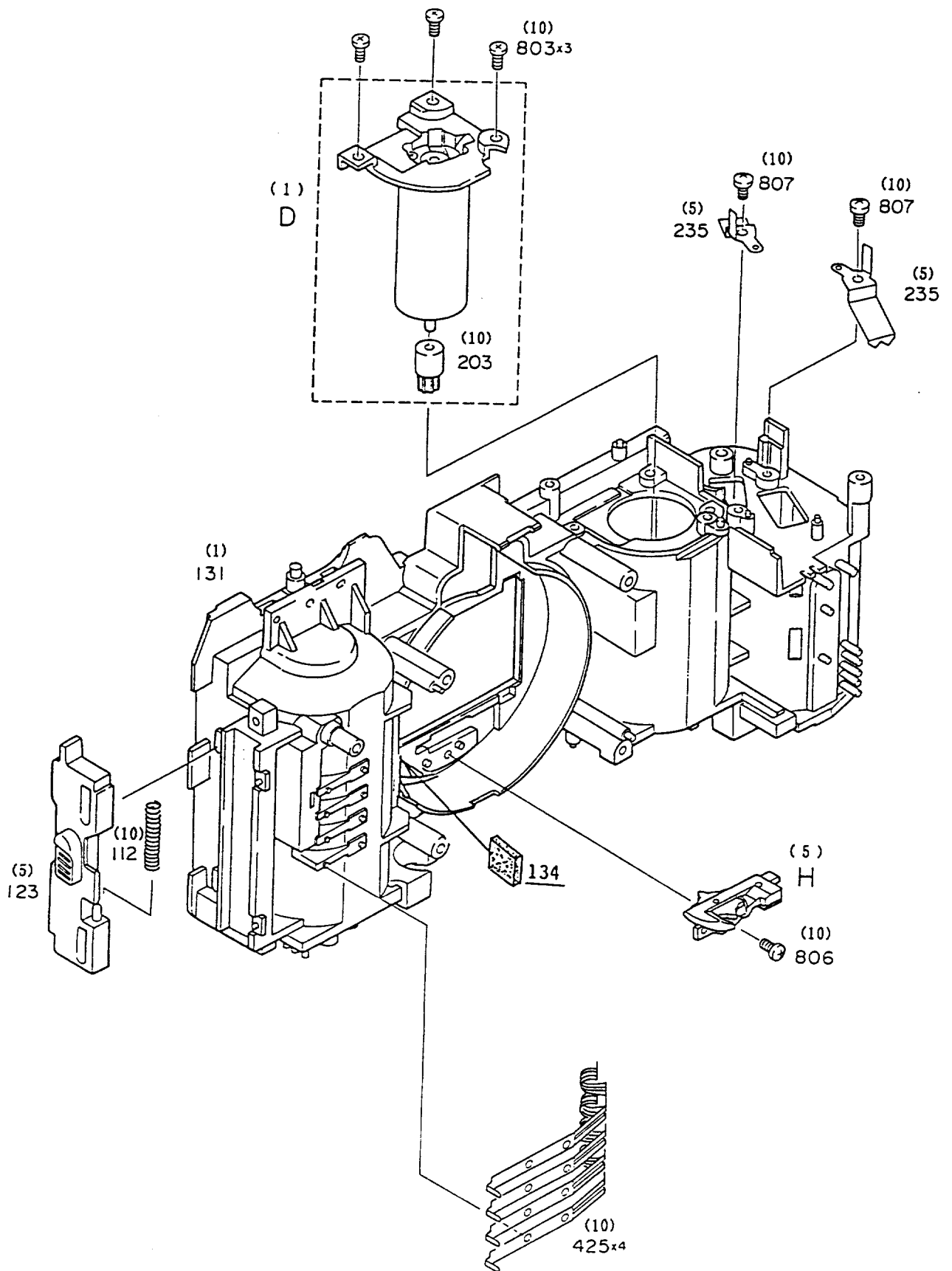


Fig. 1

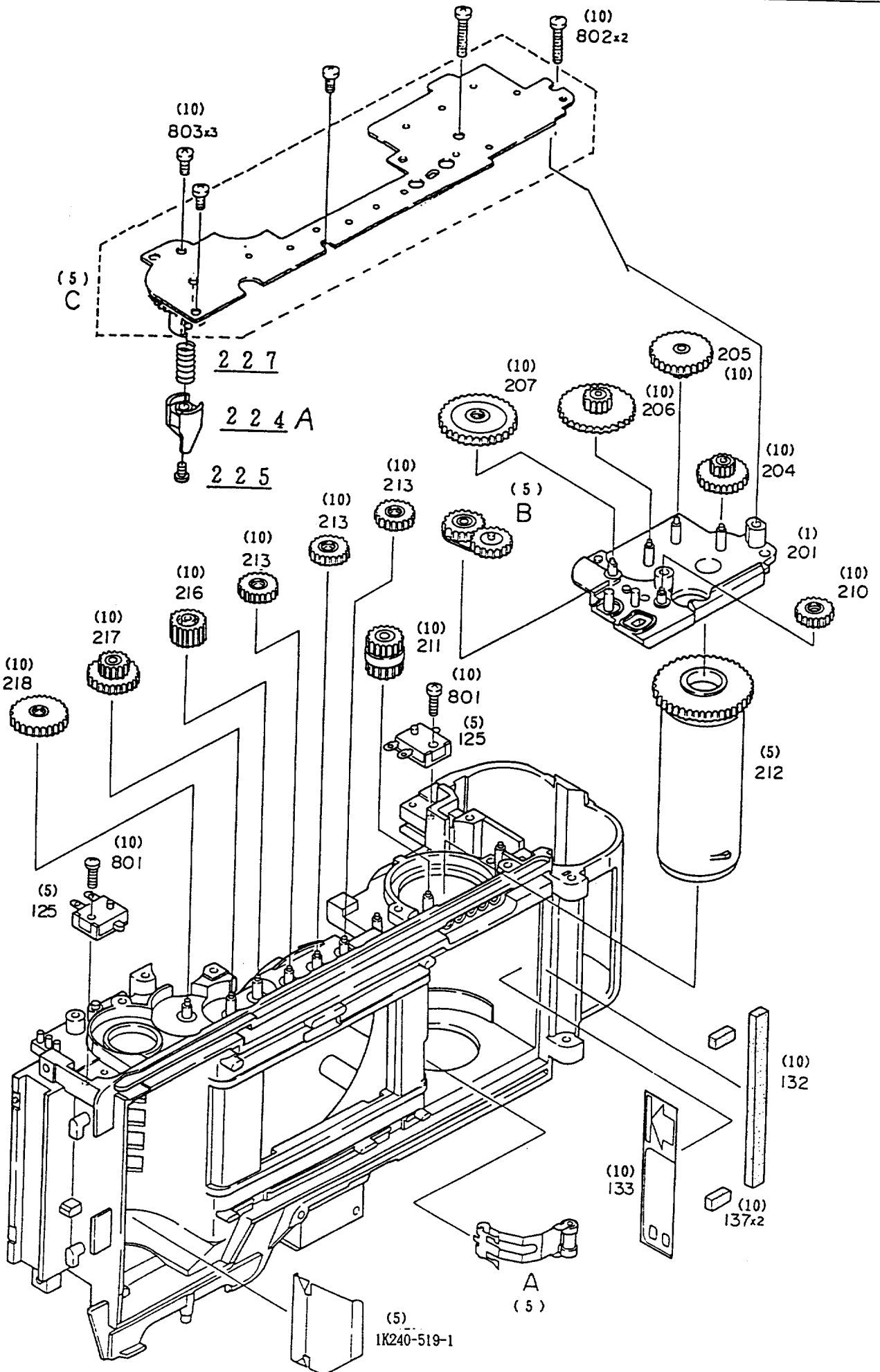


Fig. 2

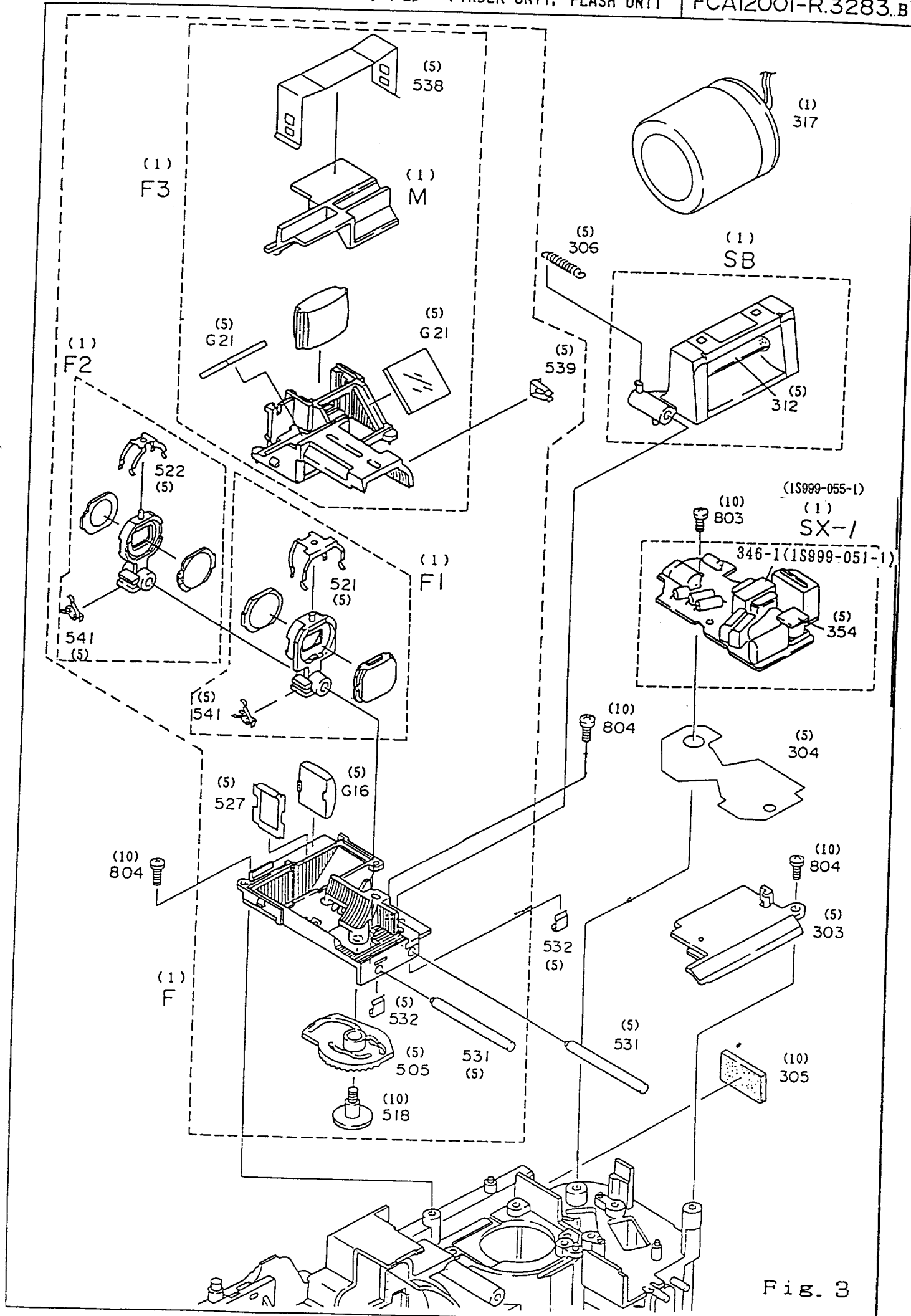


Fig. 3

OUTER HELICOID, LENS BARREL BASE PLATE, MOTOR UNIT

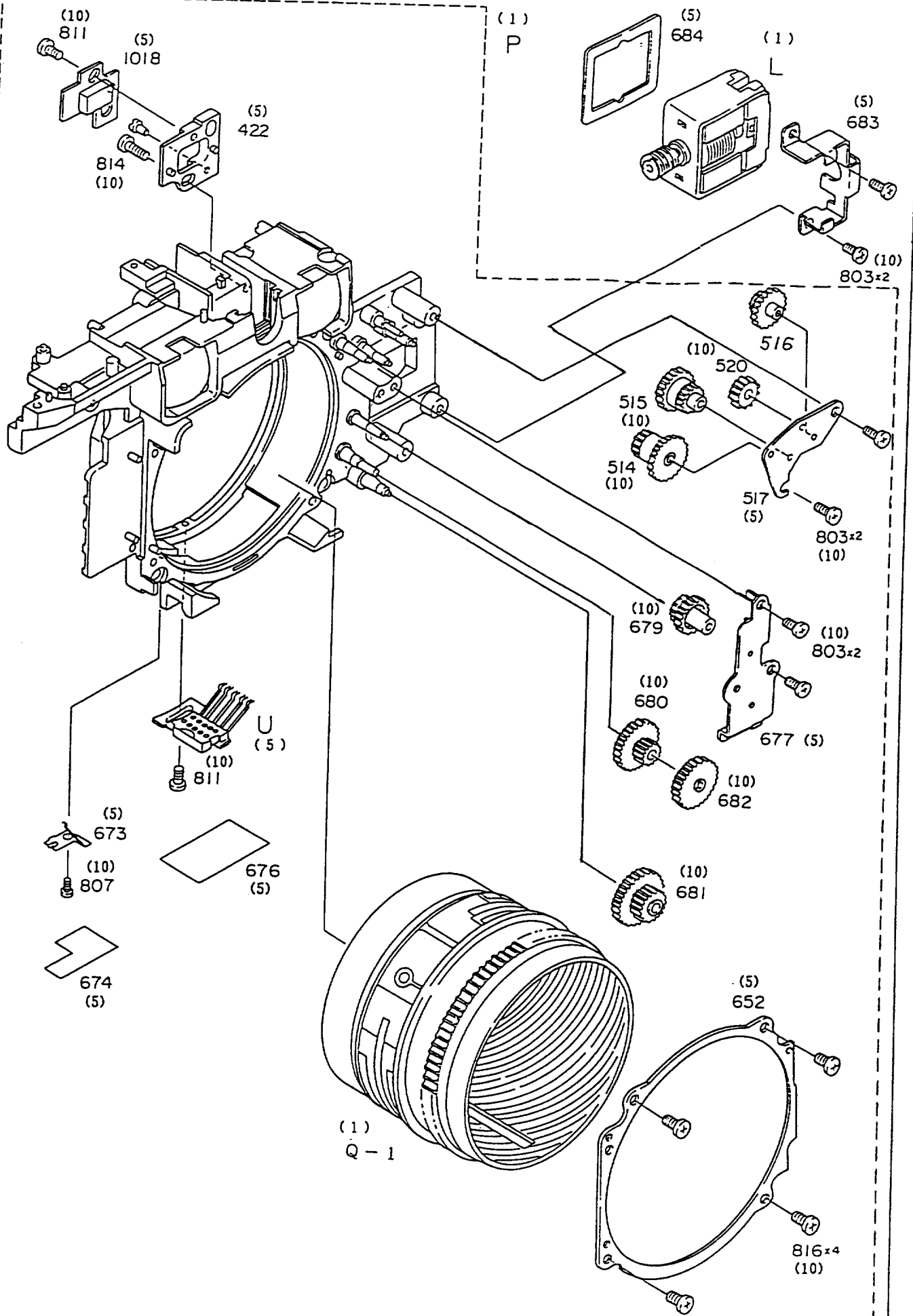


Fig. 4



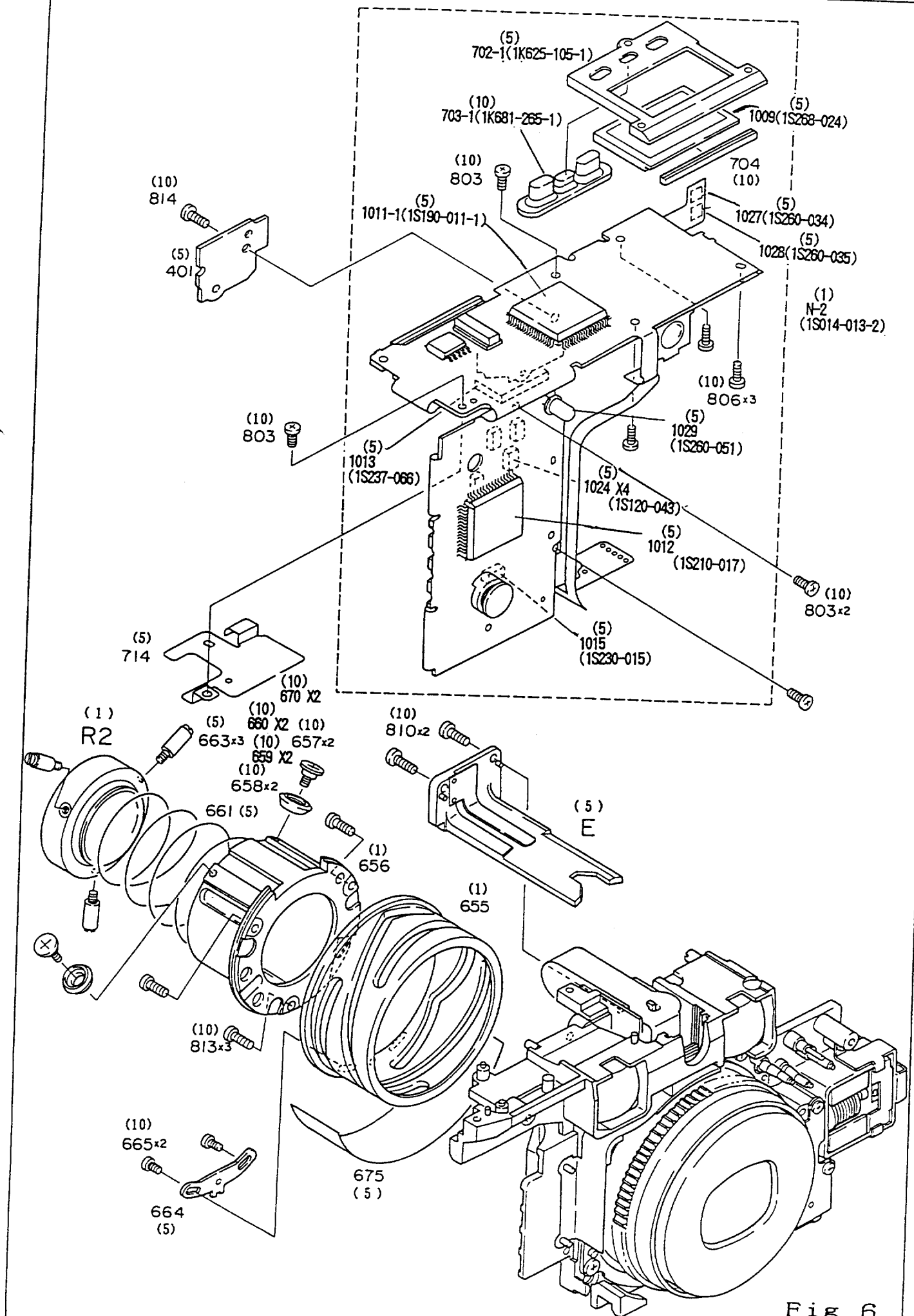


Fig. 6



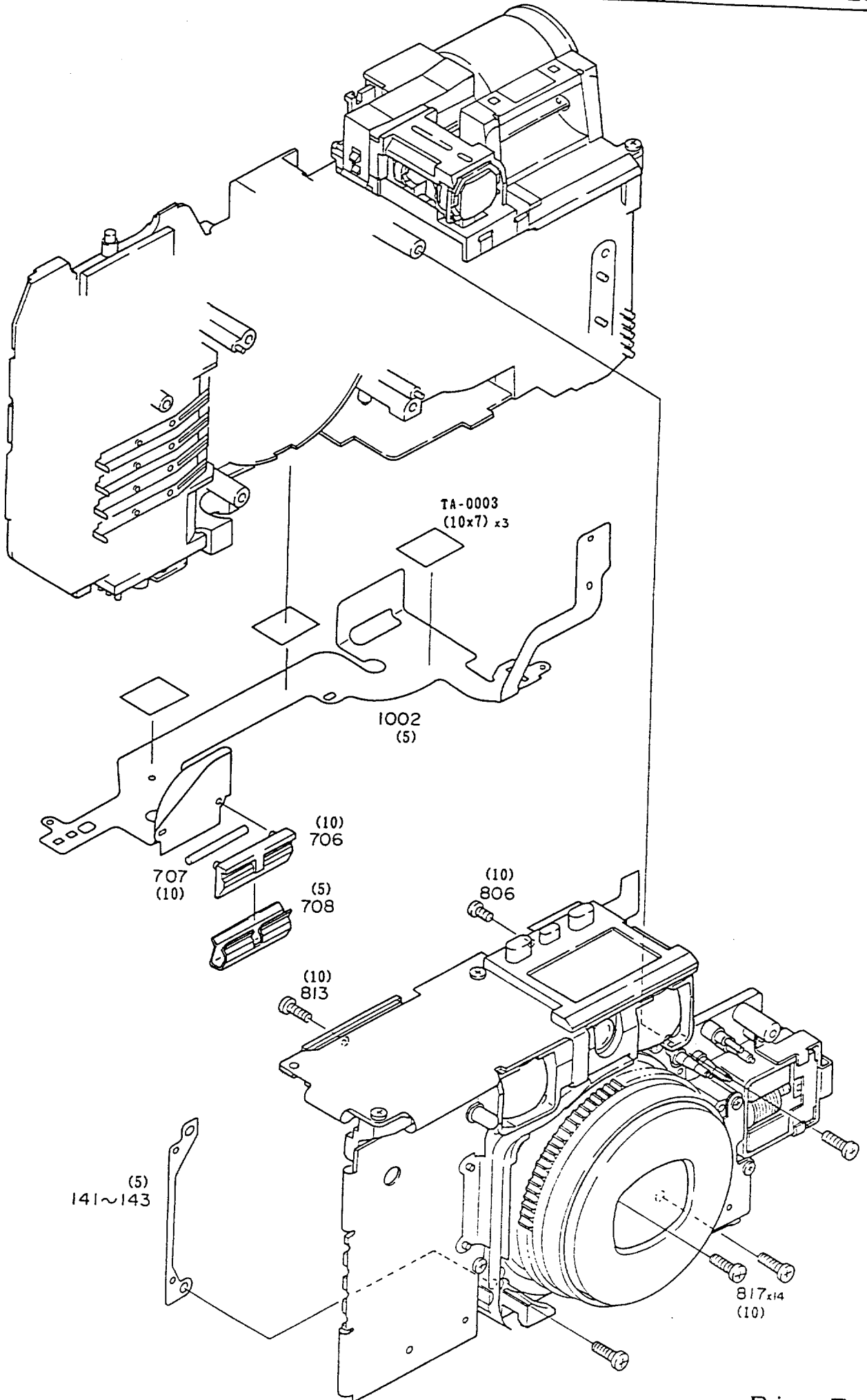


Fig. 7

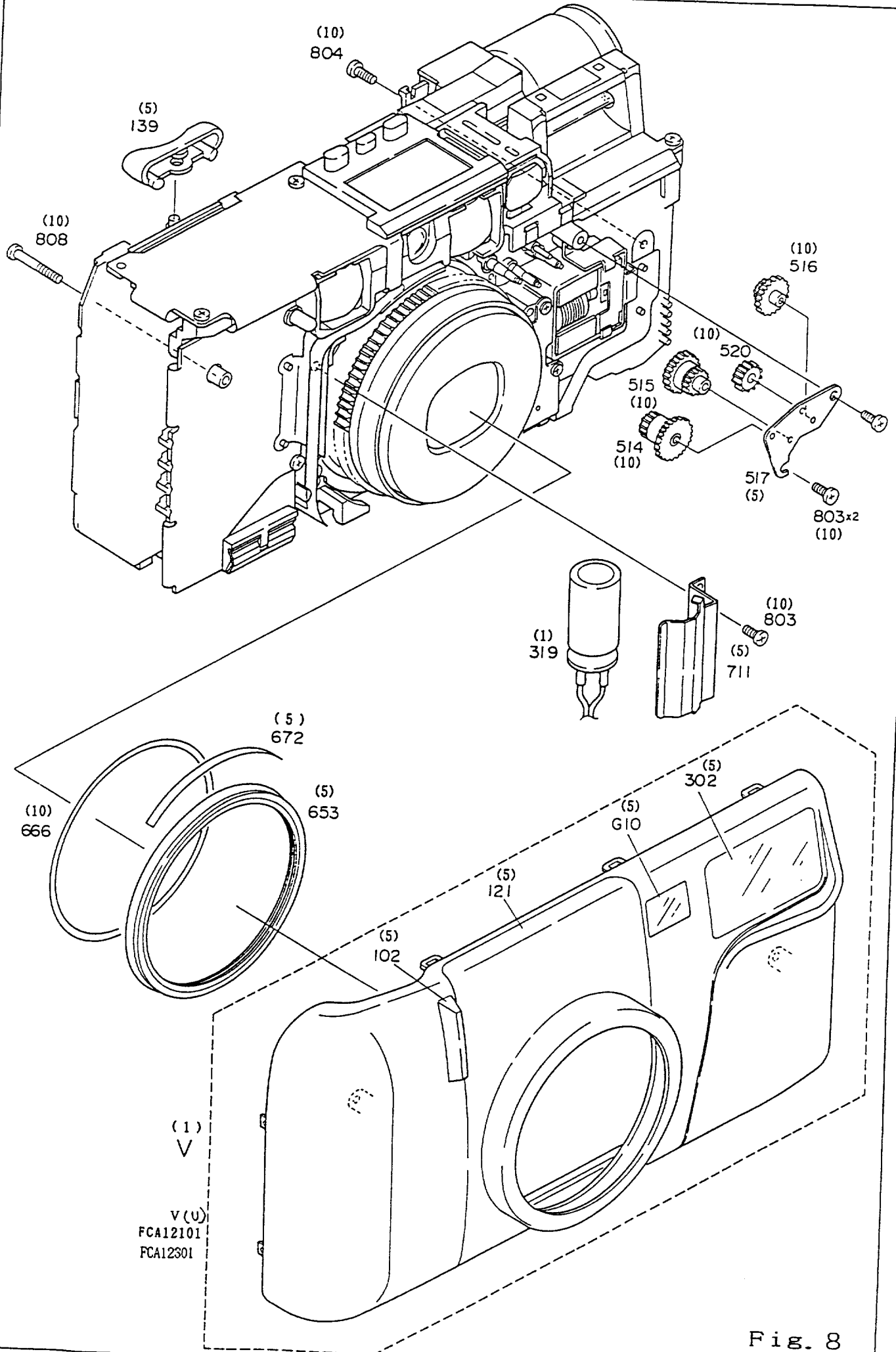


Fig. 8

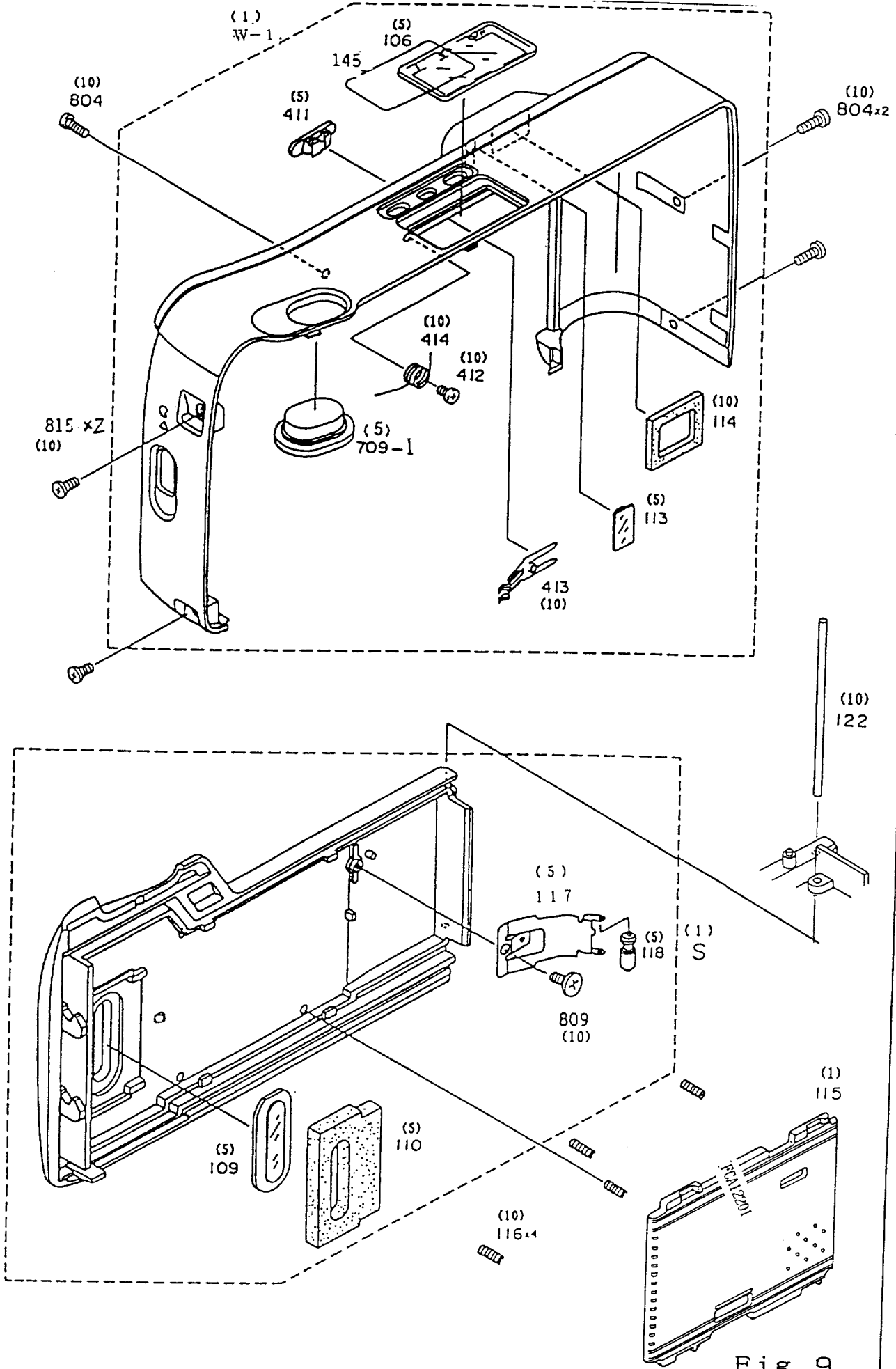


Fig. 9

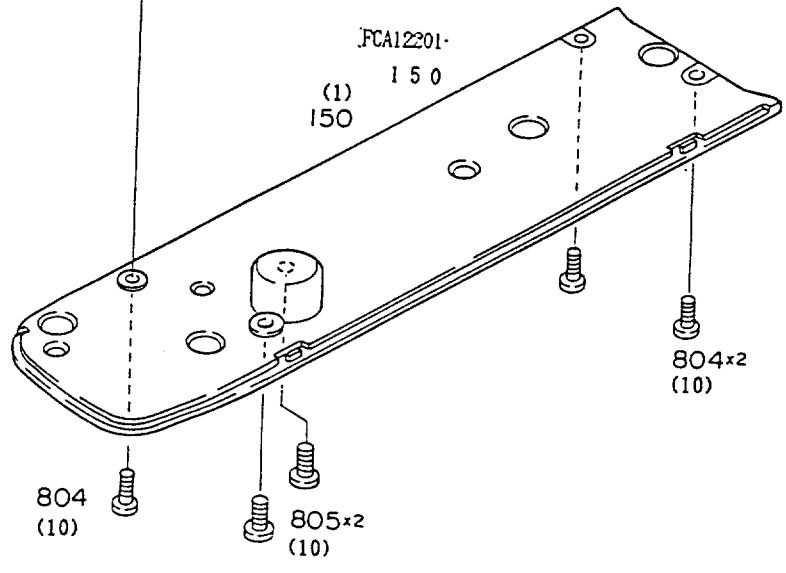
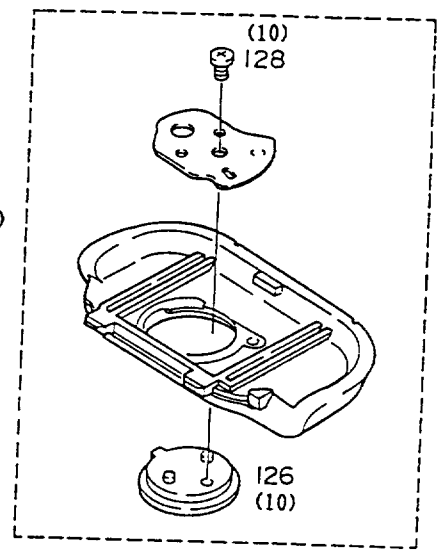
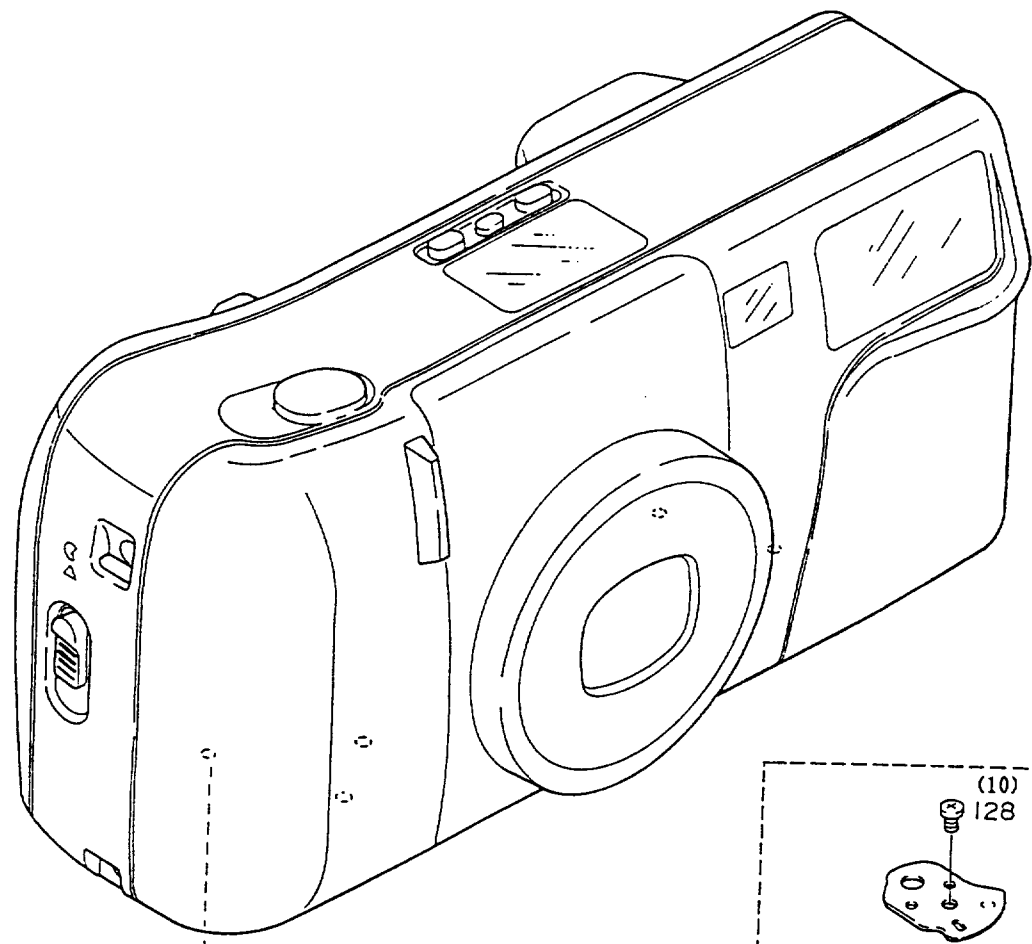


Fig. 10

部品表 Parts List

FCA12001-R. 3283. B

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Qty Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Class. of Salabil- ity	備考 Remarks	要求単位 Order Unit Qty
102 (FCA12001-102)		セルフLED窓 Self-timer window	1	V	8	○△		5
<del>104</del> (FCA12001-102) 1K240-519-1		パトローネ押さえ Patorone retainer	1		2	○	RP-9392 FCA090001 を代用	5
106 (FCA12001-106)		LCD窓 LCD window	1	W-1	9	○△		5
109 (FCA12001-109)		パトローネ窓 Patorone window	1	S	9.11	○△	QD共通	5
110 (FCA12001-110)		パトローネモルト Ptorone sponge	1	S	9.11	○△	QD共通	5
112 (FCA12001-112)		裏蓋鍵バネ Lock key spring	1		1	○	QD共通	10
113 (FCA12001-113)		LED窓 LED window	1	W-1	9	○△		5
114 (FCA12001-114)		モルト Sponge	1	W-1	9	○△		10
115 (FCA12001-115)		圧板 Pressure plate	1		9.11	○	QD共通	1
116 (FCA11001-116)		圧板コイルバネ Pressure plate spring	4		9.11	○	FCA11001-116 QD共通	10
117 (FCA11001-117)		フィルム押さえ Back door film roller arm	1	S	9.11	○△	FCA11001-117 QD共通	5
118 (FCA11001-118)		フィルムローラー Back door film roller	1	S	9	○△	FCA11001-118 QD共通	5
121 (FCA12001-121)		前ガラス Front window	1	V	8	○△		5
122 (FCA12001-122)		裏蓋軸 Shaft. camera back	1		9	○		10
123 (FCA12001-123)		カギ板 Lock key	1		1	○		5
125 (FCA11001-241)		裏蓋SW Back door SW.	2		2	○	FCA11001-241	5
126 (FCA12001-126)		ロック蓋 Lock button	1	X	10	○△		10

部品表 Parts List

FCA12001-R. 3283. B

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Qty Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Class. of Salabil- ity	備考 Remarks	要求単位 Order Unit Qty
128 (FCA12001-128)		電池蓋押さえ止めビス Screw	1	X	10	○△		10
131 (FCA12001-131)		本体 Body die-casting	1		1	○		1
132 (FCA12001-132)		遮光モルトA Light-baffle sponge A	1		2	○		10
133 (FCA12001-133)		Fシール Film leader position index	1		2	○	FCA11001-233	10
134 (FCA12001-134)		遮光モルトC Light-baffle sponge C	1		1	○	RP-9036	10
137 (FCA12001-137)		遮光モルトB Light-baffle sponge B	2		2	○		10
139 (FCA12001-139)		ズームレバー Zoom lever	1		8	○		5
141 (FCA12001-141)		BF調整板 BF adjustment plate	0~2		7	○		5
142 (FCA12001-142)		BF調整板 BF adjustment plate	0~2		7	○		5
143 (FCA12001-143)		BF調整板 BF adjustment plate	0~2		7	○		5
145 (FCA12001-145)		LCD窓接着テープ Protect tape	1		9	○	RP-9036 RP-9105	5
150 (FCA12001-150)		底カバー Bottom cover	1		10	○	NO入り部品	1
201 (FCA12001-201)		巻上げ基板 Winding base plate	1		2	○		1
203 (FCA12001-203)		モーターピニオン1 Pinion gear	1	D	1	○		10
204 (FCA12001-204)		ギア2-3 Gear 2-3	1		2	○		10
205 (FCA12001-205)		ギア4-5 Gear 4-5	1		2	○	FCA11001-205	10

部品表 Parts List

FCA12001-R. 3283. B

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Qty Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Class. of Salabil- ity	備考 Remarks	要求単位 Order Unit Qty
206 (FCA12001-206)		ギア6-7 Gear 6-7	1		2	○	FCA11001-206	10
207 (FCA12001-207)		ギア8 Gear 8	1		2	○	FCA11001-207	10
210 (FCA12001-210)		ギア11 Gear 11	1		2	○	FCA11001-210	10
211 (FCA12001-211)		ギア12-13 Gear 12-13	1		2	○		10
212 (FCA12001-212)		スプール Spool	1		2	○		5
213 (FCA12001-213)		ギア21-22-23 Gear 21-22-23	3		2	○	RP-9208	5
216 (FCA12001-216)		ギア24-25 Gear 24-25	1		2	○	FCA11001-216	10
217 (FCA12001-217)		ギア26-27 Gear 26-27	1		2	○	FCA11001-217	10
218 (FCA12001-218)		ギア28 Gear 28	1		2	○		10
224A (FCA12001-224A)		巻戻しフォーク Rewind fork	1		2	○	RP-9036	5
225 (FCA12001-225)		巻戻しフォークビス Rewind fork screw	1		2	○	RP-9036	5
227 (FCA12001-227)		巻戻しフォークばね Rewind fork spring	1		2	○	RP-9036	5
235 (FCA12001-235)		電池接片 Battery contact	2		1	○		5
302 (1K681-302)		プロテクター Diffuser	1	V	8	○△		5
303 (FCA12001-303)		SBガイド SB guide	1		3	○		5
304 (FCA12001-304)		SB絶縁板 SB insulating plate	1		3	○		5

部品表 Parts List

FCA12001-R. 3283. B

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Qty Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Class. of Salabil- ity	備考 Remarks	要求単位 Order Unit Qty
305 (FCA12001-305)		メインコンモルト Light-tight sponge	1		3	○		10
306 (FCA12001-306)		SB枠用バネ Spring	1		3	○		5
312 (1S999-048)		XE管 Xenon-lamp	1	SB	3	○△		5
317 (1S999-049)		メインコン Main condenser	1		3	○		1
319 (1S999-050)		サブコン Sub condenser	1		8	○		1
346-1 (1S999-051-1)		発信トランス Transformer	1	SX-1	3	○△	RP-9253 製技92F-201 参照	5
354 (1S999-052)		トリガーコイル (TS50AS-2P) Trigger coil (TS50AS-2P)	1	SX-1	3	○△		5
401 (FCA12001-401)		PSD押さえ板 PSD retainer plate	1		6	○		5
411 (FCA12001-411)		メインSWレバー Main SW lever	1	W-1	9	○△		5
412 (FCA12001-412)		メインSWビス Main SW screw	1	W-1	9	○△		10
413 (FCA12001-413)		メインSWブラシ Main SW contact	1	W-1	9	○△		10
414 (FCA12001-414)		メインSWバネ Main SW spring	1	W-1	9	○△		10
422 (FCA12001-422)		I. RED台座 I. RED base plate	1	P	4	○△		5
425 (FCA12001-425)		DX接片 DX contact	4		1	○		10
505 (FCA12001-505)		Fズームカム Finder zoom cam	1	F	3	○△		5
514 (FCA12001-514)		Fギア1-2 F gear 1-2	1		8	○		10



部品表 Parts List

FCA12001-R. 3283. B

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Qty Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Class. of Salabil- ity	備考 Remarks	要求単位 Order Unit Qty
515 (FCA12001-515)		Fギア3-4 F gear 3-4	1		8	○		10
516 (FCA12001-516)		Fギア5-6 F gear 5-6	1		8	○		10
517 (FCA12001-517)		Fギア押さえ板 F gear retainer plate	1		8	○		5
518 (FCA12001-518)		Fカムビス Screw	1	F	3	○△		10
520 (FCA12001-520)		Fギア7 F gear 7	1		8	○		10
521 (FCA12001-521)		F1群押さえバネ F1 retainer spring	1	F1	3	○△		5
522 (FCA12001-522)		F2群押さえバネ F2 retainer spring	1	F2	3	○△		5
527 (FCA12001-527)		視野枠 Finder frame	1	F	3	○△		5
531 (FCA12001-531)		Fガイド棒 Guide shaft	2	F	3	○△	RP-9110	5
532 (FCA12001-532)		Fガイド押さえバネ Retainer spring	2	F	3	○△	RP-9110	5
538 (FCA12001-538)		Fブロック押さえA Finder box retainer A	1	F F3	3	○△	RP-9110	5
539 (FCA12001-539)		Fブロック押さえB Finder box retainer B	1		3	○		5
541 (FCA12001-541)		ガタ取りバネ Gap direction spring	2	F F1, F2	3	○△	RP-9110	5
601 (FCA12001-601)		S基板 Shutter base plate	1	SH	5	○△		1
602 (FCA12001-602)		S押さえ板 Shutter retainer plate	1	SH	5	○△		1
603 (FCA12001-603)		セクター Shutter blade	2	SH	5	○△		10

部品表 Parts List

FCA12001-R. 3283. B

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Q'ty Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Class. of Salabil- ity	備考 Remarks	要求単位 Order Unit Q'ty
604 (FCA12001-604)		Sギア1 S gear 1	1	SH	5	○△		10
605 (FCA12001-605)		Sギア2 S gear 2	1	SH	5	○△		10
606 (FCA12001-606)		Sギア3 S gear 3	1	SH	5	○△		10
607 (FCA12001-607)		Sギア4 S gear 4	1	SH	5	○△		10
608 (FCA12001-608)		駆動環 Driving ring	1	SH	5	○△		5
609 (FCA12001-609)		距離環 Distance ring	1	SH	5	○△		5
610 (FCA12001-610)		ラチェット車 Ratchet gear	1	SH	5	○△		10
611 (FCA12001-611)		AF爪 AF claw	1	SH	5	○△		10
612 (FCA12001-612)		セクター開閉レバー Blade driving lever	1	SH	5	○△		10
615 (FCA12001-615)		カムフロア軸 Cam shaft	1	SH	5	○△		10
616 (FCA12001-616)		S閉じバネ Blade close spring	1	SH	5	○△		10
623 (FCA12001-623)		ピント環 Focus ring	1		5	○		10
624 (FCA12001-624)		1群付勢バネ Spring, 1st group	1		5	○		10
625 (FCA12001-625)		羽根前板 Blade front plate	1	SH	4	○△		5

部品表 Parts List

FCA12001-R. 3283. B

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Q'ty Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Class. of Salabil- ity	備考 Remarks	要求単位 Order Unit Q'ty
6 2 6 (FCA12001-626)		羽根後板 Blade rear plate	1	SH	4	○△		5
6 2 7 (FCA12001-627)		ギア押さえ板 Gear retainer plate	1	SH	5	○△		5
6 2 8 (FCA12001-628)		ラチェットバネ Ratchet spring	1	SH	5	○△		10
6 2 9 (FCA12001-629)		追従バネ Spring	1	SH	5	○△		10
6 3 0 (FCA12001-630)		MGリセットバネ MG reset spring	1	SH	5	○△		10
6 3 1 (FCA12001-631)		AFツメバネ AF claw spring	1	SH	5	○△		10
6 3 2 (FCA12001-632)		シャッターモーター Shutter motor	1	SH	5	○△		1
6 3 7 (FCA12001-637)		遮光板 Light-baffle plate	1	SH	4	○△		5
6 4 6 (FCA12001-656)		SG4軸 SG shaft	1	SH	4	○△		10
6 4 7 (FCA12001-647)		遮光板止めビス Screw	1	SH	4	○△		10
6 5 2 (FCA12001-652)		鏡筒押さえ Lens barrel retainer plate	1		4	○		5
6 5 3 (FCA12001-653)		カーテン Curtain	1		8	○		5
6 5 5 (FCA12001-655)		2群カム環 2nd group cam ring	1		6	○		1
6 5 6 (FCA12001-656)		直進ガイド筒 Guide tube	1		6	○		1
6 5 7 (FCA12001-657)		ローラー止めビス Screw	2		6	○		10
6 5 8 (FCA12001-658)		ローラー Roller	0~2		6	○		10

部品表 Parts List

FCA12001-R. 3283. B

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Qty Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Class. of Salabil- ity	備考 Remarks	要求単位 Order Unit Qty
659 (FCA12001-659)		ローラー Roller	0~2		6	○		10
660 (FCA12001-660)		ローラー Roller	0~2		6	○		10
661 (FCA12001-661)		2群付勢バネ Spring 2nd group	1		6	○		5
663 (FCA12001-663)		カムピン Cam pin	3		6	○		5
664 (FCA12001-664)		調整クラッチ Clutch	1		6	○		5
665 (FCA12001-665)		クラッチビス Screw	2		6	○		10
666 (FCA12001-666)		カーテンワシャー Washer	1		8	○		10
670 (FCA12001-670)		ローラー Roller	0~2		6	○	RP-9036	10
672 (FCA12001-672)		テープ Tape	1		8	○		5
673 (FCA12001-673)		鏡筒SW Barrel SW	1		4	○		5
674 (FCA12001-674)		防塵カバーA Dust protect A	1		4	○		5
675 (FCA12001-675)		保護テープ Tape	1		6	○		5
676 (FCA12001-676)		防塵カバーB Dust protect B	1		4	○		5
677 (FCA12001-677)		ギア押さえ板 Gear retainer plate	1		4	○		5
679 (FCA12001-679)		Lギア2-3 L gear 2-3	1		4	○		10
680 (FCA12001-680)		Lギア4-5 L gear 4-5	1		4	○		10

部品表 Parts List

FCA12001-R. 3283. B

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Qty Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Class. of Salabil- ity	備考 Remarks	要求単位 Order Unit Qty
681 (FCA12001-681)		Lギア6-7 L gear 6-7	1		4	○		10
682 (FCA12001-682)		Lギア8 L gear 8	1		4	○		10
683 (FCA12001-683)		Lモーター押さえ板 Lens motor retainer plate	1		4	○		5
684 (FCA12001-684)		Lモーター防振ゴム L motor protect rever	1		4	○	FCA11001-646	5
685 (FCA12001-685)		鏡筒 Lens barrel	1		5	○		1
686 (FCA12001-686)		前環 Front ring	1		5	○		1
687 (FCA12001-687)		バリア上 Upper lens cover	1		5	○		5
688 (FCA12001-688)		バリア下 Lower lens cover	1		5	○		5
690 (FCA12001-690)		バリアリング Lens cover ring	1		5	○		5
691 (FCA12001-691)		バリアレバー Lens cover lever	1		5	○		5
692 (FCA12001-692)		バリア段ビス Screw	1		5	○		10
693 (FCA12001-693)		バリア閉じバネ Lens cover closing spring	2		5	○		10
694 (FCA12001-694)		バリア開きバネ Lens cover opening spring	1		5	○		10
702-1 (1K625-105-1)		LCD枠 LCD frame	1	N-2	6	○△	RP-9136 製技91F-2024参照	5
703 (1K681-265)		モード釦 Mode button	1	N	6	○△	RP-9253 製技91F-2024参照	10
703-1 (1K681-265-1)		モード釦 Mode button	1	N-2	6	○△	RP-9253 製技91F-2024参照	10

部品表 Parts List

FCA12001-R. 3283. B

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Qty Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Class. of Salabil- ity	備考 Remarks	要求単位 Order Unit Qty
706 (FCA12001-706)		圧接モールド Press-contact mold	1		7	○		10
707 (FCA12001-707)		圧接ゴム Press-contact rubber	1		7	○		10
708 (FCA12001-708)		圧接バネ Press-contact spring	1		7	○		5
<del>709 (FCA12001-709)</del>		リリース釦 Release button	1	W	9	○△	RP-93E7	10
709-1 (FCA12001-709-1)		リリース釦 Release button	1	W-1	9	○△	RP-93E7	5
711 (FCA12001-711)		サブコンホルダー Sub condenser holder	1		8	○		5
713 (FCA12001-713)		シャッターフレキ当板 Shutter FPC protect plate	1	SH. T	5	○△		5
714 (FCA12001-714)		シールド板 IC protect plate	1		6	○		5
801 (FCA12001-801)		Screw	2		2	○		10
802 (FCA12001-802)		Screw	2		2	○	FCA11001-819	10
803 (FCA12001-803)		Screw	22		1.2 4.8	○	FCA11001-810	10
804 (FCA12001-804)		Screw	12		3.5 8.9 10	○	FCA10001-620 RP-9105	10
805 (FCA12001-805)		Screw	2		9.10	○		10
806 (1K010-111-1)		Screw	5	N	1.7 6	○△	FCA10001-619	10
807 (FCA12001-807)		Screw	3	H	4.1	○△	FCA10001-618	10
808 (FCA12001-808)		Screw	1		8	○		10

部品表 Parts List

FCA12001-R. 3283. B

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Qty Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Class. of Salabil- ity	備考 Remarks	要求単位 Order Unit Qty
809 (FCA12001-809)		Screw	1	S	9	○△	RP-9036	10
810 (FCA12001-810)		Screw	4	SH	5.6	○△		10
811 (FCA12001-811)		Screw	2	P	4	○△		10
813 (FCA12001-813)		Screw	6		5.6 7	○	FCA11001-817	10
814 (FCA12001-814)		Screw	2	P	4.6	○△		10
815 (FCA12001-815)		Screw	2		9	○	RP-9036	10
816 (FCA12001-816)		Screw	4		4	○		10
817 (FCA12001-817)		Screw	4		7	○		10
<del>818 (FCA12001-818)</del>		Screw	1	SH	5	○△	RP-9105	10
819 (FCA12001-819)		Screw	1	SH	5	○△		10
820 (FCA12001-820)		Screw	2	SH	5	○△		10
821 (FCA12001-821)		Screw	1	SH	5	○△		10

部品表 Parts List

FCA12001-R. 3283. B

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Qty Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Class. of Salabil- ity	備考 Remarks	要求単位 Order Unit Qty
1002 (FCA12001-1002)		底FPC Connecting FPC	1		7	○		5
1003 (FCA12001-1003)		シャッターフレキ ※ Shutter F.P.C	1	SH-1 T	5	○△		5
1009 (IS268-024)		LCD LCD (CC50Y-TS)	1	N-2	6	○△		5
1011 (IS190-011)		CPU IC ※ CPU IC (μPD75P328)	1	N	6	○△	RP-9208	5
1011-1 (IS190-011-1)		CPU IC (V17) ※ CPU IC	1	N-2	6	○△	RP-9208 製技92F2029 参照	5
1012 (IS210-017)		MD-IC ※ MD IC (MM61-1016)	1	N-2	6	○△		5
1013 (IS237-066)		AE/AF. IC ※ AE/AF. IC (M52931FP)	1	N-2	6	○△		5
1015 (IS230-015)		定電圧IC ※ Regulator (RH5RA50AA)	1	N-2	6	○△		5
1018 (IB060-450)		3連 IRED IRED unit (LN1404)	1	P	4	○△		5
1024 (IS120-043)		トランジスタ Transistor (2SA1363-T11-1F)	4	N-2	6	○△		5
1027 (IS260-034)		LED 赤 LED (Red)	1	N-2	6	○△	RP-9101	5
1028 (IS260-035)		LED 赤 LED (Green)	1	N-2	6	○△	RP-9101	5
1029 (IS260-051)		セルフLED Self LED	1	N-2	6	○△	RP-9101	5
G10 (FCA12001-G10)		F窓 Finder window	1	V	8	○△		5
G16 (FCA12001-G16)		G16 G16	1	F	3	○△		5
G21 (FCA12001-G21)		G21 G21	2	F3	3	○△		5



部品表 Parts List

FCA12001-R. 3283. B

部品番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Qty Per Unit	部組品番号 Assembly	参照 図番 Fig. No.	販売区分 Class. of Salabil- ity	備考 Remarks	要求単位 Order Unit Qty
W-0080BK		リード線 Lead wire				×		1 roll
W-0080RE		リード線 Lead wire				×		1 roll
W-0080BN		リード線 Lead wire				×		1 roll
W-0080YE		リード線 Lead wire				×		1 roll
W-0080GY		リード線 Lead wire				×		1 roll
W-0080PU		リード線 Lead wire				×		1 roll
W-0080BE		リード線 Lead wire				×		1 roll
W-0080OR		リード線 Lead wire				×		1 roll
W-0080GN		リード線 Lead wire				×		1 roll
W-0080WH		リード線 Lead wire				×		1 roll
W-0056RE		リード線 Lead wire				×		1 roll
W-0056WH		リード線 Lead wire				×		1 roll
W-0056GN		リード線 Lead wire				×		1 roll
W-0056GY		リード線 Lead wire				×		1 roll

部組品表 Assembly List

FCA12001-R. 3283. B

部組番号 Part No.	補助番号 Ckt No.	名称 Name	1台分 個数 Qty Per Unit	大部組品番号 Main assembly No.	参照 図番 Fig. No.	備考 Remarks	要求単位 Order Unit Qty
A (FCA12001-A)		フィルム押さえ Body-side film roller unit	1		2		5
AF (FCA12001-AF)		AF. MG組 AF MG unit	1		5		5
AE (FCA12001-AE)		AE. MG組 AE MG unit	1		5		5
B (FCA12001-B)		遊星ギア Planetary gear unit	1		2		5
C (FCA12001-C)		巻き戻しフォーク基板 Rewind fork unit	1		2	RP-9036	5
CR (FCA12001-CR)		カムフロアレバー Cam lever	1		5		5
D (FCA12001-D)		巻上げモーター W/R motor unit	1		1		1
E (FCA12001-E)		直進ガイドキー Guide key	1		6		5
F (FCA12001-F)		Fブロック Finder box unit	1		3	RP-9036 RP-9110	1
F1 (FCA12001-F1)		F. 1群 Finder 1st group unit	1		3	RP-9036 RP-9110	1
F2 (FCA12001-F2)		F. 2群 Finder 2nd group unit	1		3	RP-9036 RP-9110	1
F3 (FCA12001-F3)		F上蓋 Finder cover unit	1		3	RP-9036 RP-9110	1
H (FCA12001-H)		フリースプロ組 Free sprocket unit	1		1		5
K (FCA12001-K)		フォトインタラプタ Photo inter rupter	1		5		5
L (FCA12001-L)		鏡筒モーター Helicoidmotor unit	1		4		1
M (FCA12001-M)		Fミラー蓋 F mirror cap	1		3		1





