



YASHICA T4

Slim T

Repair Manual





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A. DESCRIPTION OF MECHANISM

A-1 Features

1. Ultra-thin, full-auto design incorporating retractable Carl Zeiss lens

Just 37mm (1-7/16") thin [T4D, 39mm (1-9/16")], and lightweight, this fashionably styled mini-compact camera uniquely features the incomparably high-quality Carl Zeiss Tessar T* 35mm f/3.5 lens which allows for an unequalled, pinpoint sharp, top clarity, high contrast/color reproducibility, natural color-balanced image. Additionally, the lens retracts when not in use and the protective barrier covers it.

2. Highly precise triple-beam infrared AF system

Extra-sharp focusing is ensured through employment of the advanced 3-beam infrared active AF system (with focus lock capability) which minutely (160 steps) controls the focusing range to cover from a very close 35cm (13-3/4") to infinity. Thus even if the center beam passes between two people or objects, the other beam(s) will sense the correct focus. While close-up is ideal for shooting such subjects as flowers and documents, the especially convenient Distant Scenery mode is perfect for situations like taking clear, crisp photos of distant scenes (such landscapes) through the window.

3. Automatic backlight compensation

In addition to having Program AE with a wide a shutter speed range (1~1/700sec.) for greater creativity, the 2-segment SPD device even senses a backlit subject (when the central image is darker than the periphery), and automatically controls the exposure determination to compensate for this normally difficult lighting condition, plus if necessary, triggers the built-in flash (daylight flash synch). Thus the snapshooter is assured of getting the best exposure possible for any type of photo, simply, automatically.

4. Multiple exposure functions including red-eye reduction

A number of exposure modes [automatic flash activation, pre-flash, on-demand flash, and night-scene (no-flash) & distant scenery mode] are readily selectable for truly flexible and enjoyable photography to cover a wide range of conditions and choices from normal ones to very artistic mood shots. The BBC (Background Brightness Control) function is incorporated to ensure clear reproduction of both the subject and background in flash photography. When shooting at night or indoors with the on-demand flash mode, the shutter is set to a slower speed to make a fine portrait while naturally retaining the lighting conditions and scene. Plus, for use under certain flash conditions (such as in a dimly lit room), when the subject's pupils will be wide open and appear red in the photo, a pre-flash function can be selected so that the first burst of light allows the pupils to adjust just prior to the immediate second flash. This function greatly reduces the chance of "red-eye" occurring.

5. Informative viewfinder and LCD panel

The real-image finder incorporates a close-up parallax compensation frame, and to its right are twin LEDs (the green LED below, blinks for too-close warning and lights when it's in focus; the top red LED blinks while the flash is charging, and lights for possible camera shake warning). All to make your picture composition a breeze while keeping your eyes on the subject. Also, on the top of the camera is a small LCD panel which provides additional information including a film counter, self-timer countdown, battery warning, exposure mode and distant scenery mode setting indicators.

YASHICA T4/T4D SPECIFICATIONS

Type:	35mm lens shutter auto-focus AE camera with built-in flash.
Lens:	Carl Zeiss Tessar T* 35mm f/3.5 lens (4-elements in 3-groups)
Shutter:	Programmed electronic shutter (1 sec.-1/700sec.)
Exposure Control:	Programmed AE, automatic backlight correction, automatic daylight synchro function, with AE lock, combined with focus lock.
Metering Range:	EV3.5-EV17 (ISO 100)
Metering System:	External metering system with dual metering single SPD cell.
Film Speed Setting:	Automatic setting (DX method) between ISO 50 and ISO 3200 (for each step). Set to ISO 100 for non-DX film.
Focusing:	Infrared beam active multi auto-focus with focus lock, combined with AE lock
Shooting Distance:	0.35 meter (1.1ft.) to infinity
Viewfinder:	•Type: Real-image viewfinder. •Information in Viewfinder: Close-range picture frame, focusing frame. Indications beside Viewfinder Eyepiece: Auto-focusing display (green LED), flash display/low light warning (red LED)
Display Panel:	Exposure counter/remaining time on self-timer, battery warning mark, shooting mode mark (automatic flash activation mode, red-eye reduction mode, on-demand flash mode, night-scene mode <no flash>, infinity lock mode)
Film Loading:	Auto-loading (automatic film advance to frame No.1)
Film Advance:	Automatic
Film Rewinding:	Auto-return/auto-stop. Film can be rewound in mid-roll.
Exposure Counter:	Automatic resetting, additive type
Self-timer:	Electronic type, approx. 10-second delay; cancellable
Flash:	Flashmatic method. Charging time: Approximately 3.5 seconds (at normal temperature when using a new battery, according to our testing standards) •Shooting distance: 0.35 to 3 meters (1.1-9.8 ft.) (ISO 100 negative colour film)
Shooting Mode:	Possible to choose from automatic flash activation, red-eye reduction. on-demand flash mode, night-scene (no flash) mode, infinity lock. (User-selectable by pushing exposure mode button)
Battery:	One 3V lithium battery (CR123A). Approximately 20 rolls of 24-exposure film can be exposed when half of the pictures are taken with flash (at normal temperature with a new battery, according to our testing standards).

Dimensions and 116.5(W) x 63.5(H) x 37(D)mm (4-5/8 x 2-1/2 x 1-7/16 inch),
Weight (T4): 170g (6.0oz) (without battery)

ADDITIONAL SPECIFICATIONS FOR T4D MODEL

Auto-dating Unit
(for T4D only): Built-in quartz clock with LCD display (auto-calender)

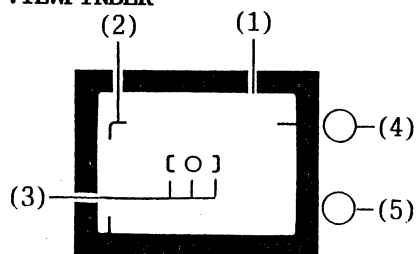
Imprint Options: 1. Year/Month/Day. 2. Day/Hour Minute. 3. No imprint.
4. Month/Day/Year. 5. Day/Month/Year.

Dimensions and 116.5(W) x 63.5(H) x 39(D)mm (4-5/8 x 2-1/2 x 1-9/16 inch),
Weight: 180g (6.4oz.) (without battery, with data back)

* Specifications and design are subject to change without notice.

LCD INFORMATION AND VIEWFINDER

VIEWFINDER



(1) Picture Frame

Place the subject in this picture frame when photographing at distances between long distance and approximately 0.7 meter.

(2) Close-Range Picture Frame

Place the subject in this picture frame when photographing at a distance between approximately 0.7 meter and 0.35 meter.

(3) Focusing Frame

The Frame for focusing on the subject. When using a focus lock while taking a picture of portrait or group, etc., Please aim the ○ mark to the subject you want to have it in focus.

(4) Red LED

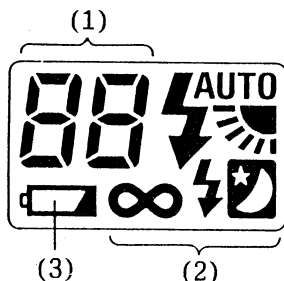
Lighting (Displayed when the shutter release is pressed halfway down):
Warns of flash lighting during automatic flash activation mode, red-eye reduction mode and on-demand flash mode.
Warns of camera shake during night-scene mode or distant scenery mode.
Blinking: During flash charging (goes out when charging is completed).

(5) Green LED (Displayed when the shutter release is pressed halfway down).

Lighting: When the camera is focused.






Blinking: When the subject is too close and not properly in focus.

DISPLAY PANEL



(1) Exposure Counter/Self-Timer remaining time

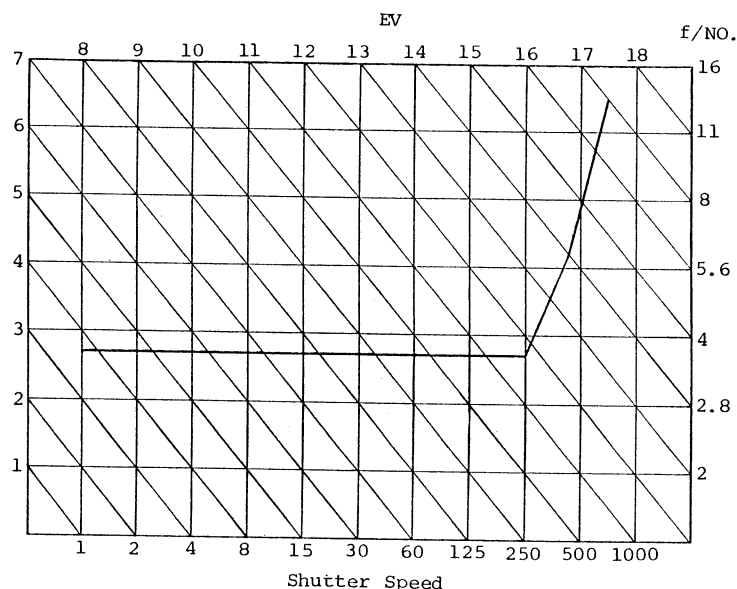
(2) Shooting mode mark

Display for automatic flash activation mode , red-eye reduction mode , on-demand flash mode , night-scene mode , distant scenery mode .

(3) Battery Warning Mark.

Warns when it is the time to replace the battery.

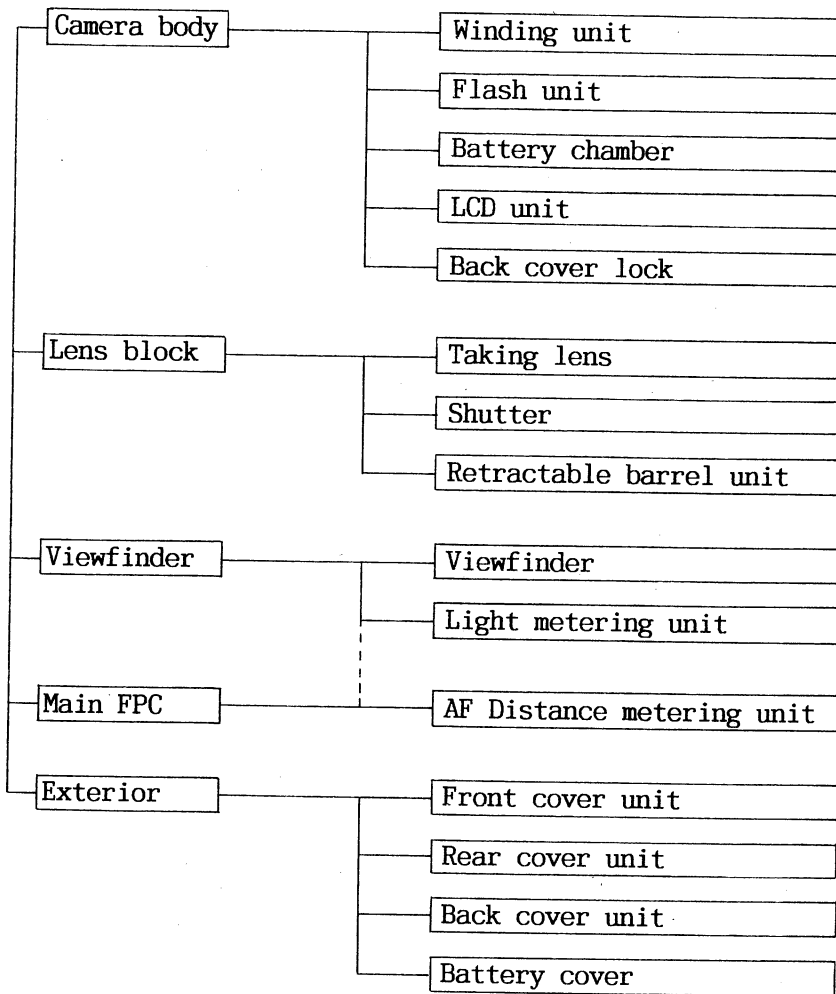
PROGRAM CHART



A-2 INTERNAL STRUCTURE

This camera consists of five major blocks — camera body, lens block, viewfinder, main FPC and exterior.

Mechanical System Diagram



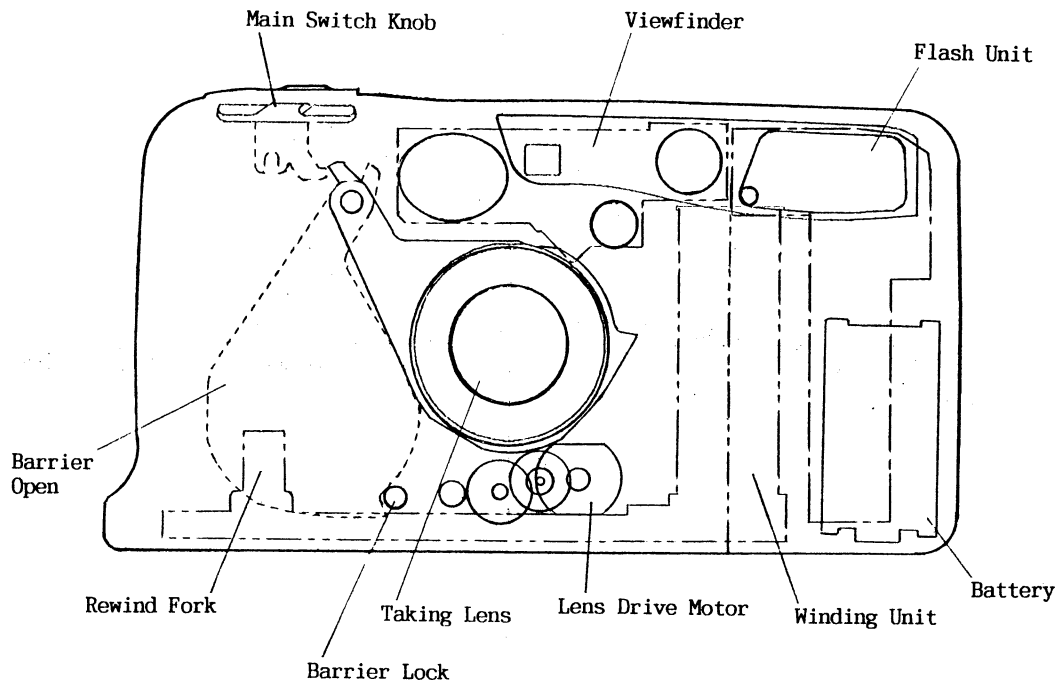
[Winding Unit]

The winding motor is located in the spool. The spool and the winding motor are integrated in a single unit.

The rewinding gear train, positioned on the bottom of the camera body, is connected with the epicyclic gear clutch.

The rotation of the winding motor shaft is transferred via the differential gear train to the projections of the spool to perform winding.

For rewinding, the motor is reversed to rotate the rewind fork via the spool gear, epicyclic gear and the gear train.
The reflection type photo-interrupter detects perforations to control winding and rewinding.



[Flash Unit]

This small flash in the upper right part of the body is of a flashmatic control type.

An appropriate flash type (pre-flash, full flash or soft flash) can be selected according to the shooting conditions.

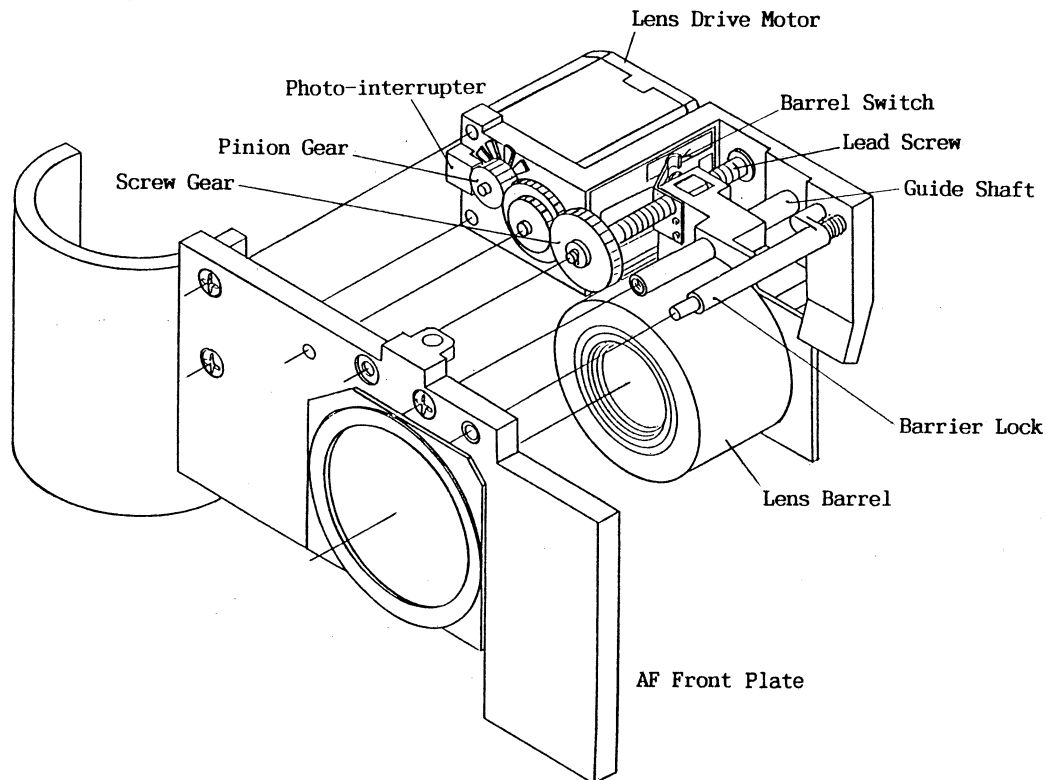
The CPU controls the start and stop of charging the flash capacitor and the flash timing.

[Lens Block]

The lens block consists of the taking lens, shutter and retractable barrel unit.

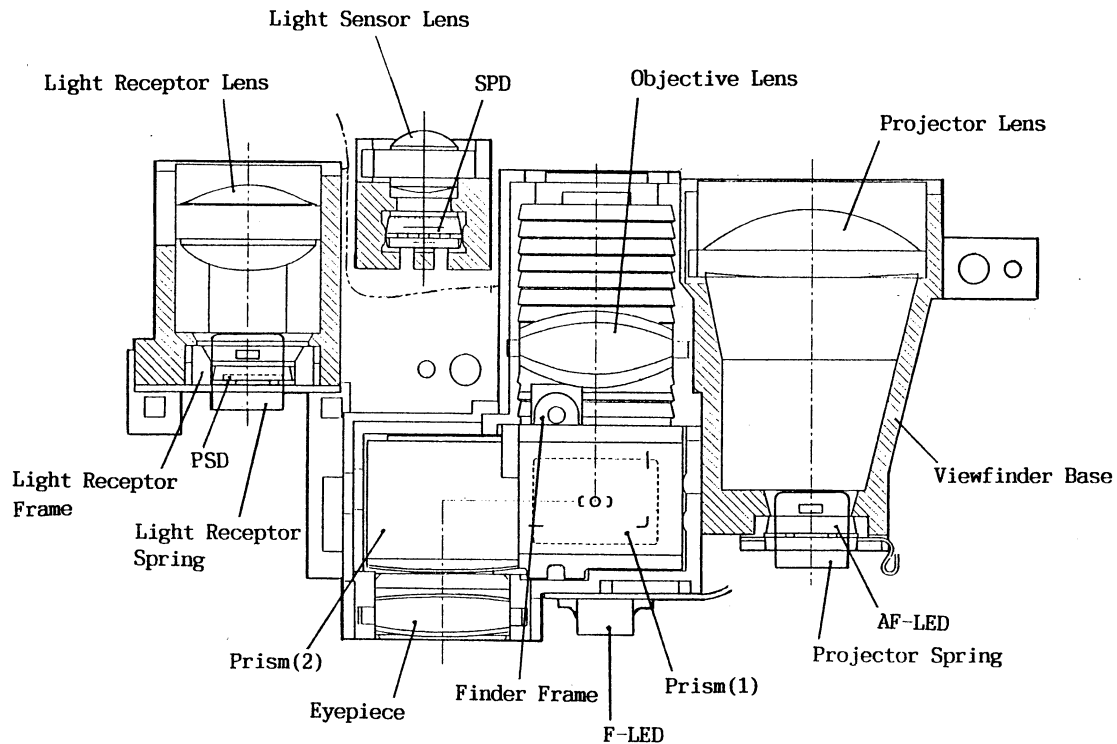
The rotation of the pinion on a dedicated motor is transferred via a gear train to the screw gear, which controls barrel retracting and focusing with the lead screw and guide shaft.

The signal for control is detected by a photo-interrupter through a slit in the motor pinion gear.
 The lens is detected by the position detector switch (barrel switch) and advanced to a proper position.



[Viewfinder]

The viewfinder is of a bright and clear real image type.
 This viewfinder of 0.43 magnifications uses a parallax compensation mark for the field of view in a closest area of 0.35m.
 The optical system consists of the objective lens, eyepiece, prism (1), prism(2), finder frame, projector lens, light receptor lens and light sensor lens.
 The AF-LED for the AF system, incorporated in the main FPC, is looked on the viewfinder base by the projector spring.
 Also the PSD, incorporated in the main FPC, is locked on the viewfinder base by the light receptor spring.
 As the light metering element, a 2-segment SPD permitting backlight correction shooting is inserted from above in the hole in the viewfinder base.

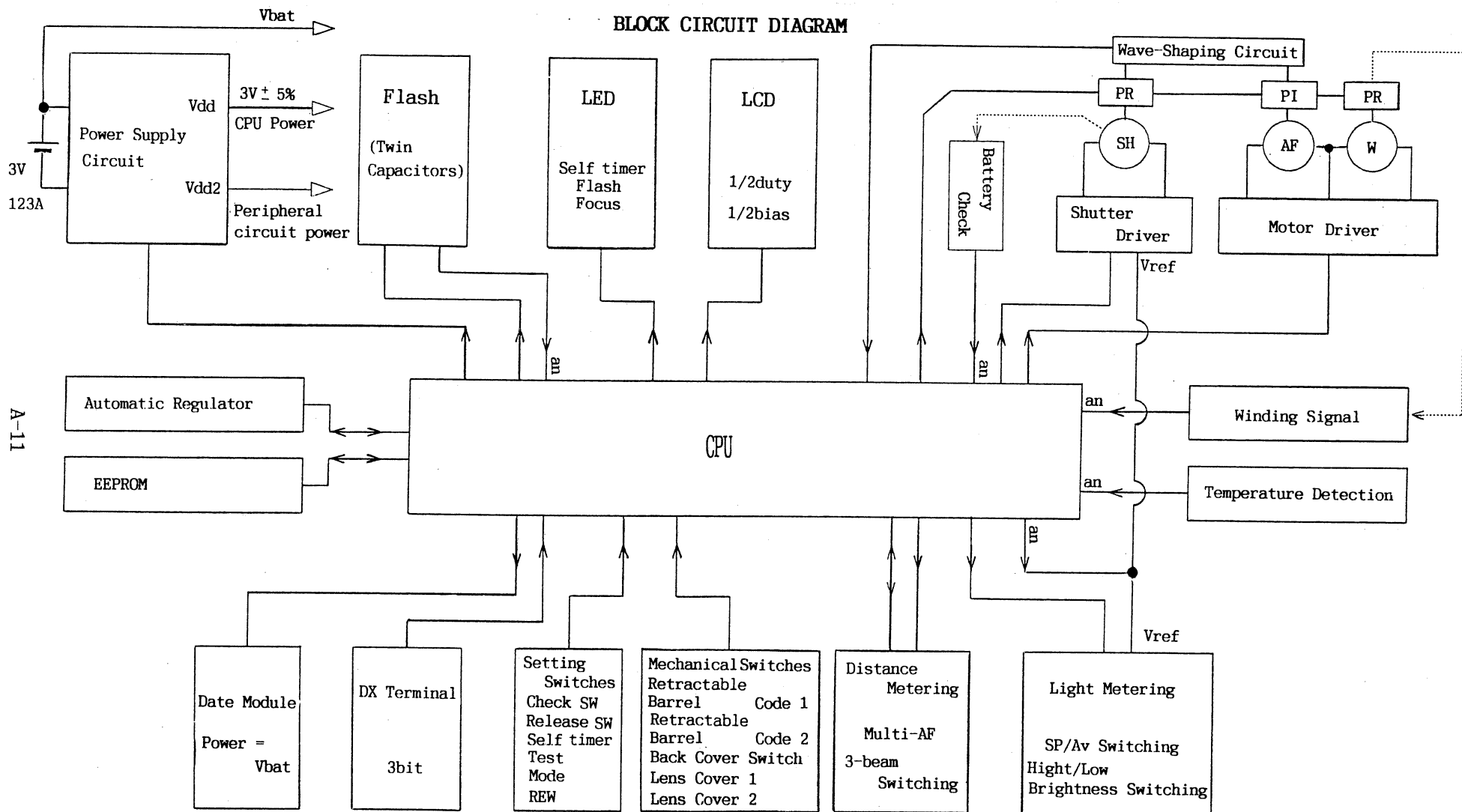


[Main FPC]

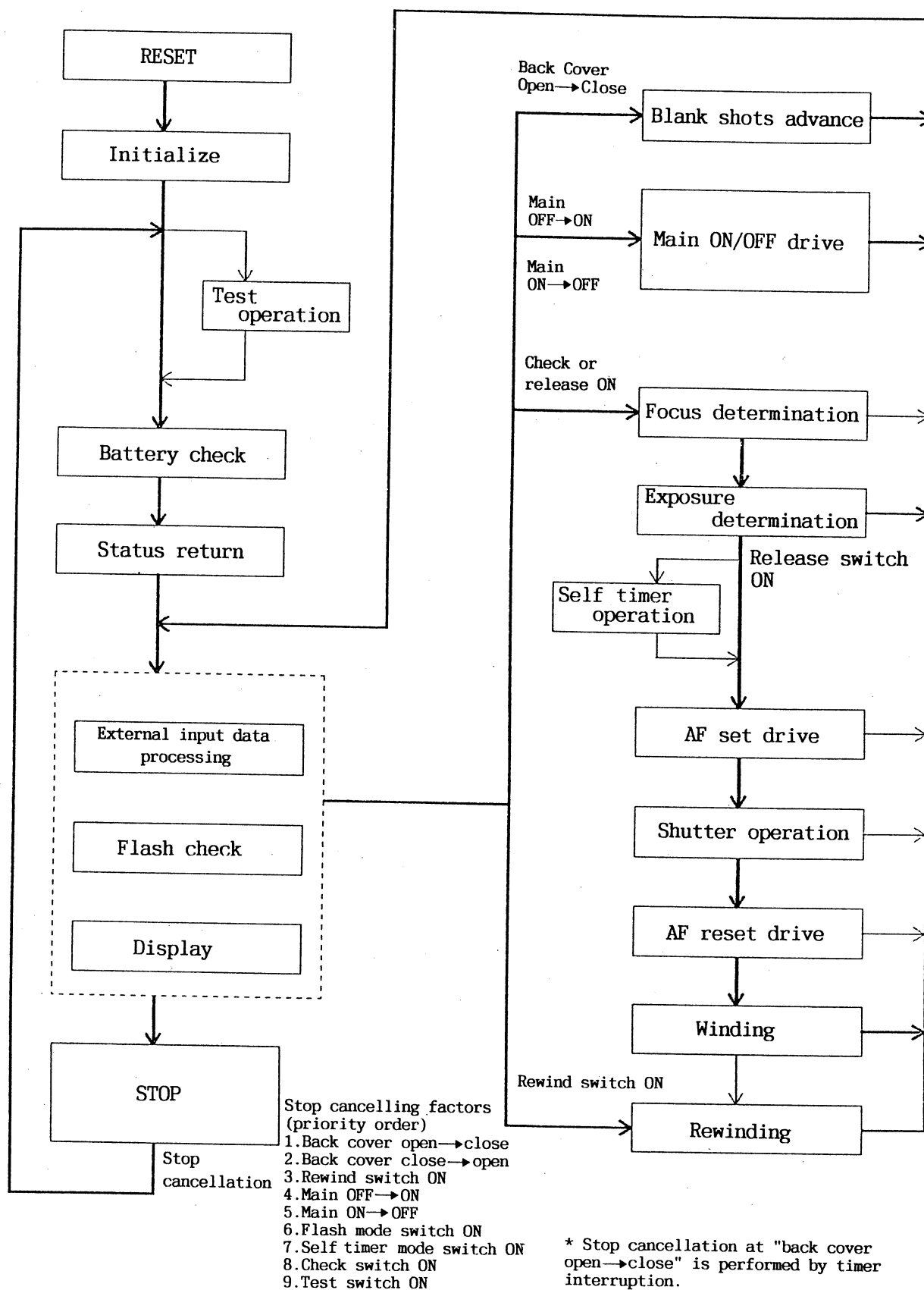
The main FPC incorporates an 8-bit CPU which controls the all camera functions and the operation of the shutter. In addition to the CPU, the FPC is provided with various important functions, such as EEPROM for backup memory, reset circuit, input switches, AF circuit (AF-LED, PSD), power circuit, motor drive circuit (AF, winding, shutter), LEDs, LCDs and light metering circuit.

[Front Cover/Barrier]

The lens barrier is located in the front cover. Operating the main switch knob from "OFF" to "ON" will open the barrier and advance the lens barrel. Operating the main switch knob from "ON" to "OFF" will restore the lens barrel to its original position. Then the barrier lock will be released and the barrier will be closed by the spring.

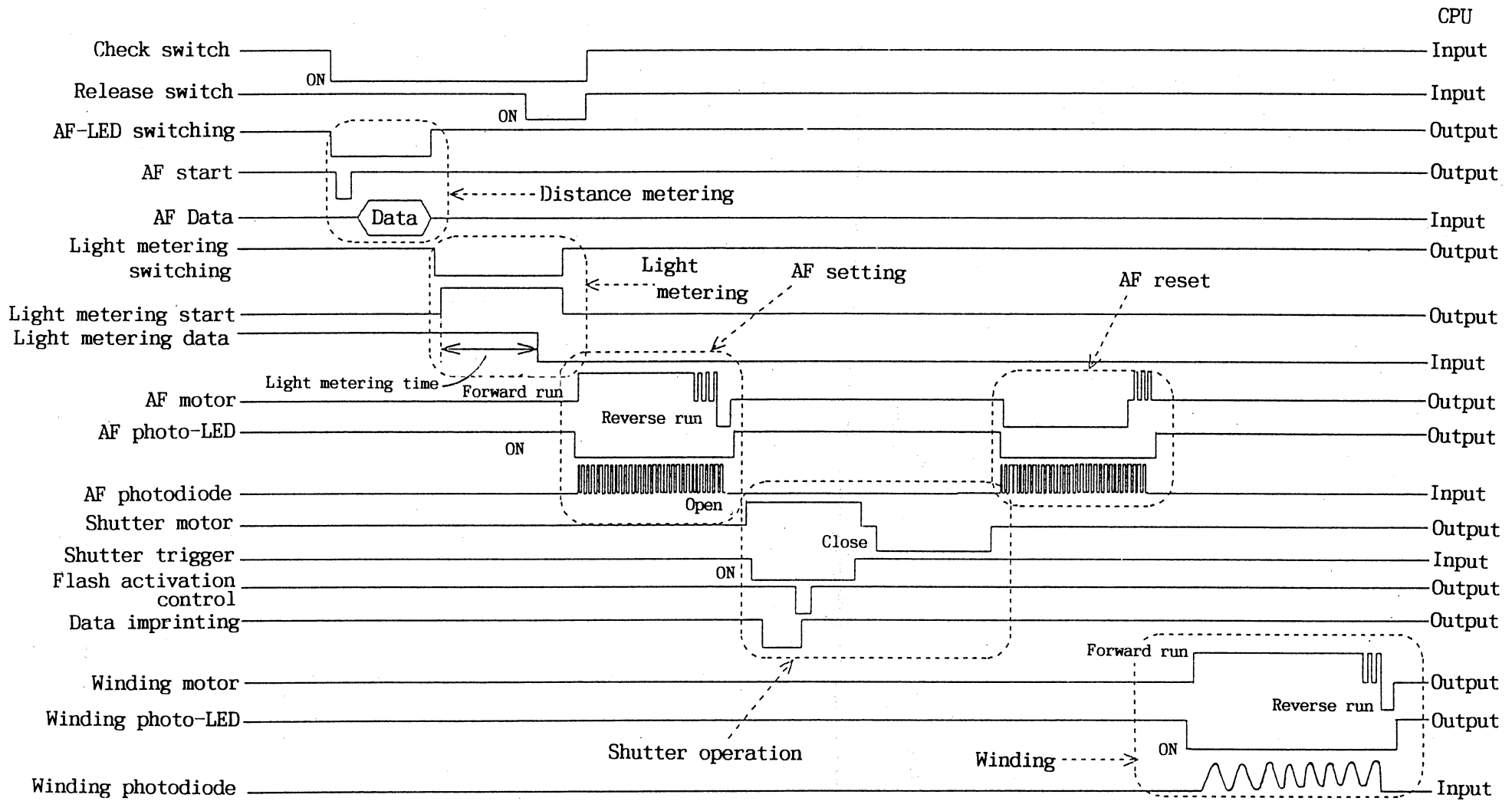


FLOWCHART



TIMING CHART

A-13



A-3 Description of Electronic Circuit

Power Supply Circuit

I. Functions: ① Generates various powers under control by IC101.

② Generates a regulated voltage of 3V by the boosting circuit.

③ Vdd = battery voltage at standby

II. Operation: ① Booster ON when POW1 (41 pin) is H. Vdd = $3V \pm 2.5\%$

② Booster OFF when POW1 (41 pin) is L. Vdd = battery voltage

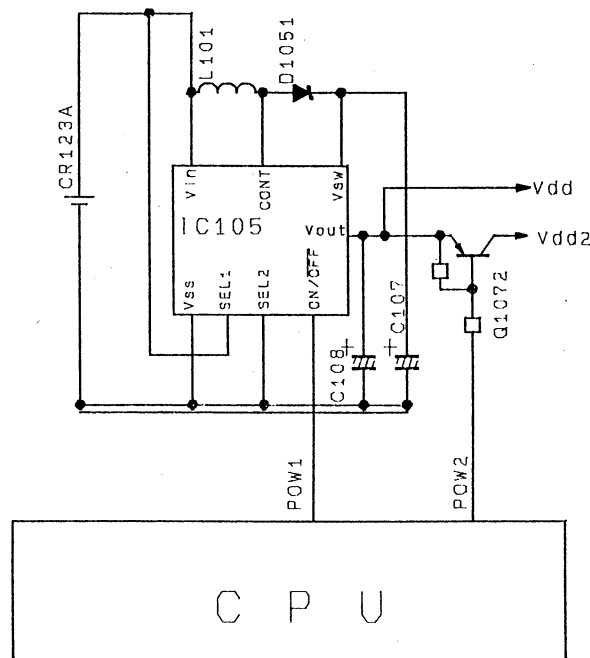
③ Vdd ON when POW2 (35 pin) is L. Vdd2 = Vdd

④ Vdd2 OFF when POW2 (35 pin) is H.

III. Status: Operation POW1 = H, POW2 = L

 Standby POW1 = L, POW2 = H

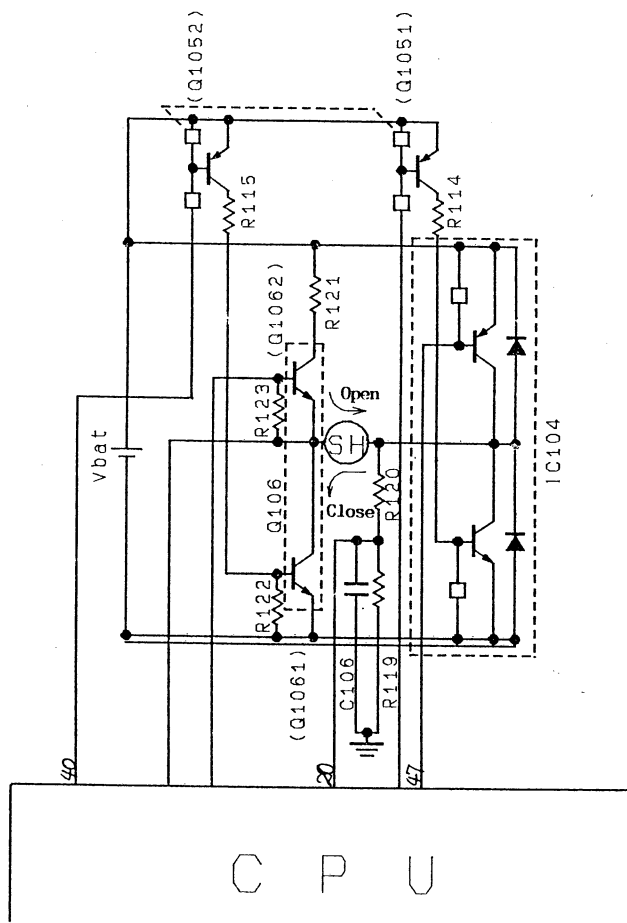
IV. Circuit diagram



BC Circuit

- I. Outlines:
- ① IC101 checks the remaining power of the battery by A-D conversion.
 - ② Decision is made by two kinds of A-D values — one without load and the other with shutter closing load.
- II. Function: Makes the following decisions from two kinds of data with load and without load:
- (1) Sufficient power of battery
 - (2) Battery replacement warning level (B1 level)
 - (3) Camera operation inhibition level (B2 level)
- III. Operation:
- ① Without load
PORT65 (47 pin) = L and PORT41 (20 pin) line is A-D converted.
 - ② With shutter load
PORT65 (47 pin) = L and PORT76 (40 pin) = L.
Shutter closing voltage is applied and PORT41 (20 pin) line is A-D converted.
- IV. Decision:
- ① B1 level = about 2.4V with shutter load
 - ② B2 level = about 2.2V or below

V. Circuit diagram



Light Metering Circuit

- I. Outline: Light metering data is produced by measuring the integration time of SPD photo-current.
An optimum exposure is determined by spot/ave. metering.
Light metering range is divided into two steps, covering a wide range.
- II. Functions: Switches light metering area ----- average/spot
Switches light metering range----- low brightness (3 to 10 EV)/
high brightness (10 to 17 EV)
- III. Output control
- Light metering area ① Average ----- AE1 (38 pin) = L, AE2 (37 pin) = X
② Spot ----- AE1 (38 pin) = H, AE2 (37 pin) = L
Note: X is either H or L.
- Ev area ① Low brightness AE2 (37 Pin) = L, AE1 (38 pin) = L,
② High brightness AE2 (37 pin) = H, AE1 (38 pin) = L

IV. Data input

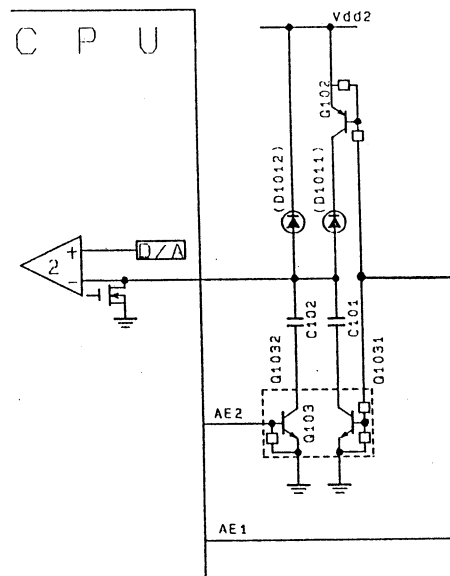
- ① Vref is set by DA (12 pin).
- ② Outputs are set. (AE1 (38 pin), AE2 (37 pin))
- ③ The capacitor is discharged (1 msec) by the transistor in IC101 (CPU).
- ④ The internal timer counts the time till the inversion of the comparator in IC101.
- ⑤ As a countermeasure against fluorescent lamps, when the inversion time is less than 10 msec, ② to ④ above are repeated until the total inversion time reaches 10 msec and then an average is taken as the light measuring data.

Note: When the capacitor is charged fully with the internal transistor turned off, the potential of the inversion input line (16 pin) becomes about $V_{dd} + 0.3V$.

V. Light metering sequence

- ① Average low brightness average metering
- ② Average high brightness average metering
- ③ Spot metering

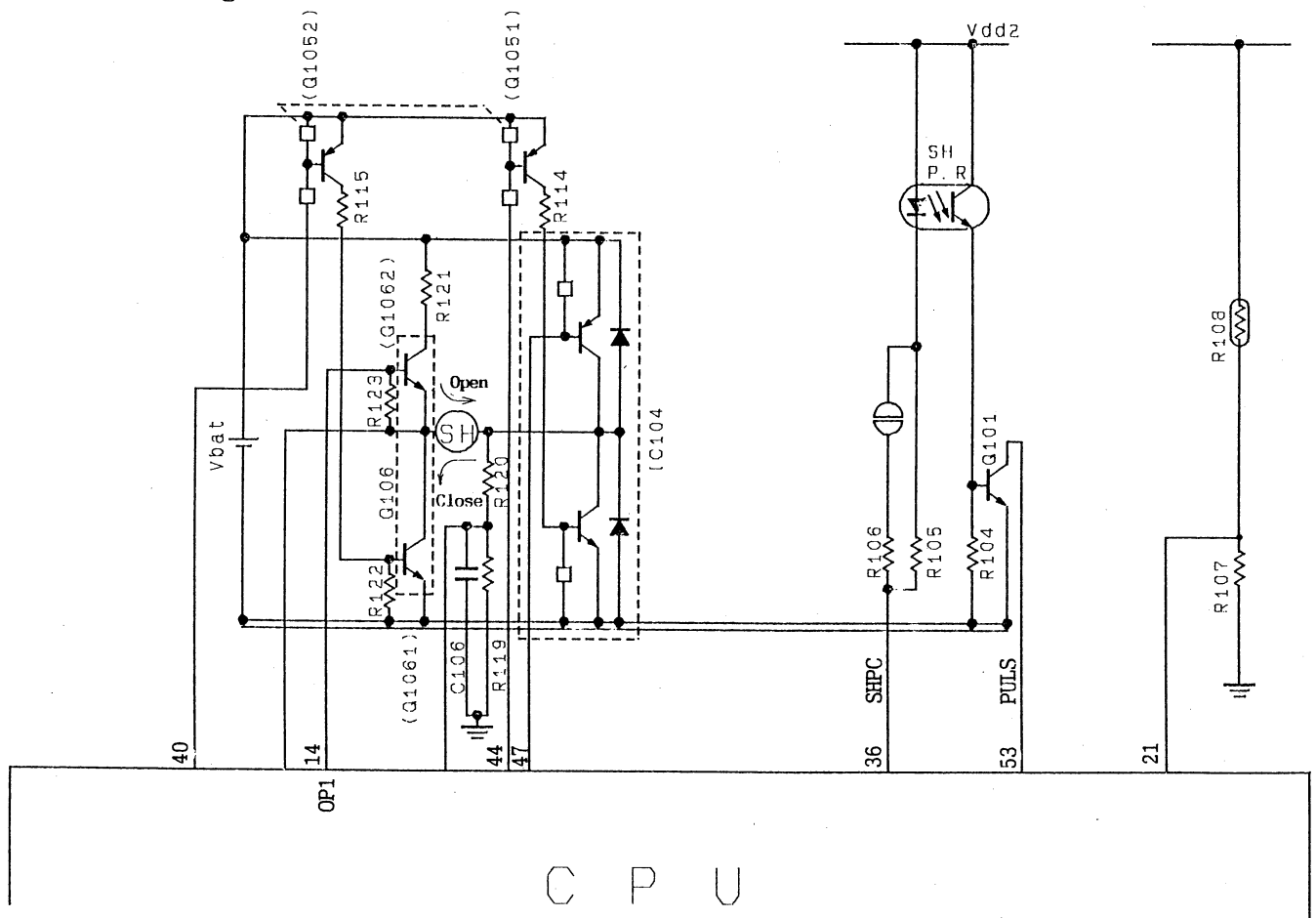
VI. Circuit diagram



Shutter Drive Circuit

- I. Functions:
- ① Controls the rise curve by the voltage regulator circuit.
 - ② Performs temperature compensation of drive voltage.
 - ③ Detects a non-contact blade position by the photo reflector.
- II. Operation:
- ① The temperature is measured by the thermistor (R108) and the shutter opening voltage data stored in IC103 is corrected.
 - ② OP1 (14 pin) output is set according to the shutter opening voltage data. At the same time, PORT62 (44 pin) is turned "L" and the shutter opening voltage is applied.
 - ③ SHPC is turned on to detect the shutter blade position. (36 pin = L)
 - ④ PORT32 (53 pin) detects the shutter blade position as a photo coupler signal (PULS).
 - ⑤ FM and other operations are performed, as required.
 - ⑥ Shutter closing switch is turned on and the shutter is closed.
(PORT65 (47 pin) = L, PORT76 (40 pin) = L)

III. Circuit diagram



AF Circuit

I . Outline:

- ① 3-beam multi-AF
Distance metering range
Center LED ----- 0.35 to 6m
Right and left LEDs----- 0.7 to 4m
From the 3-beam data, an optimum value is calculated as the
light metering data.

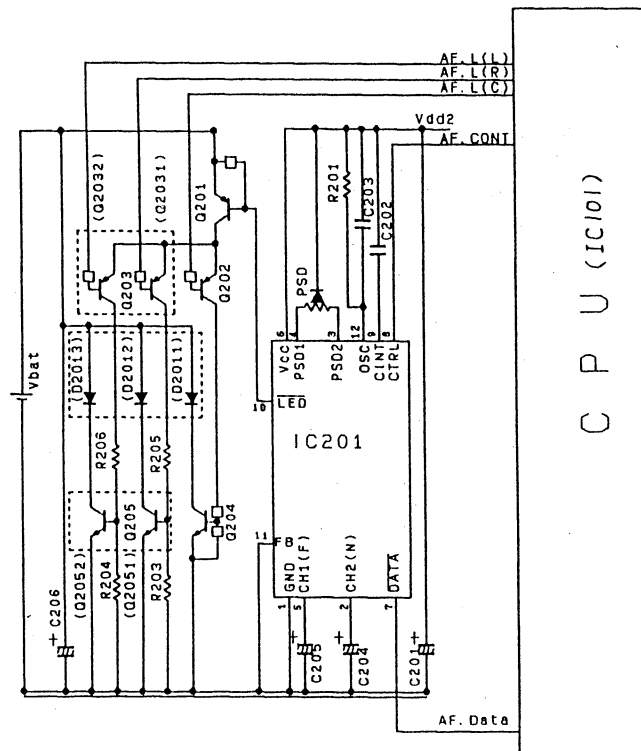
II. Operation:

- ① Any one is selected from three IR -LEDs.
- ② Serial communication with IC101
 - (1) Starting of AF IC (IC101→IC201)
 - (2) Completion of AF operation (IC201→IC101)
 - (3) Transfer of AF data (IC201→IC101)
- ③ ① and ② are performed for each LED, whenever necessary.

III. Details:

- ① The center LED is selected by IR-LED selector ("L" ACTIVE). AF CENTER terminal (42 pin) = L, AF RIGHT terminal (43 pin), LEFT terminal (44 pin) = H
- ② AF- CONT (34 pin) is turned "L" and AF IC is started.
- ③ Upon completion of AF IC operation, AF-Data line (54 pin) is turned "H".
- ④ IC101 receives AF data by 8-bit serial communication at the AF -CONT terminal and AF-Data terminal.
- ⑤ The "long range" LED is selected by the LED selector. After that, ② to ④ are performed.
- ⑥ The "close range" LED is selected by the LED selector. After that, ② to ④ are performed.

IV. Circuit diagram



Blank Shots Advance

- I. Function:
- ① Performs analog detection of film perforations directly by the photo reflector.
 - ② Calculates, from the analog values above, an optimum threshold value for film loading and stores it in memory.
 - ③ Controls all winding related operations according to the threshold value.
- II. Operation:
- ① Black shots advance is started at "open→close" of the back cover.
 - ② The winding photo coupler (WPC) is turned on (37 pin = L).
 - ③ The winding motor is set for forward run,
 - ④ IC101 receives the analog waveform from WPC at the WIND terminal (22 pin) and calculates and detects the maximum and minimum values from the first eight pulses.
 - ⑤ The detection of the maximum and minimum values is monitored by pulse output at PORT74 (38 pin).
 - ⑥ After determination of the maximum and minimum values, IC101 calculates an optimum threshold value and counts the number of frames according to the value. The detection of the threshold value is monitored by pulse output at PORT72 (36 pin).
 - ⑦ Pulse drive is started at the 7th perforation to slow down the motor.
 - ⑧ The motor is stopped by reverse run (Brake) at the 8th perforation, thus completing the blank shots advance.

III. Control output

Control	Winding	Duty ON	Duty OFF	Brake
Port60 (42pin)	L	L	H	H
61 (43pin)	H(OPEN)	H	H	L
63 (45pin)	H(OPEN)	H	H	L
64 (46pin)	L	L	H	H

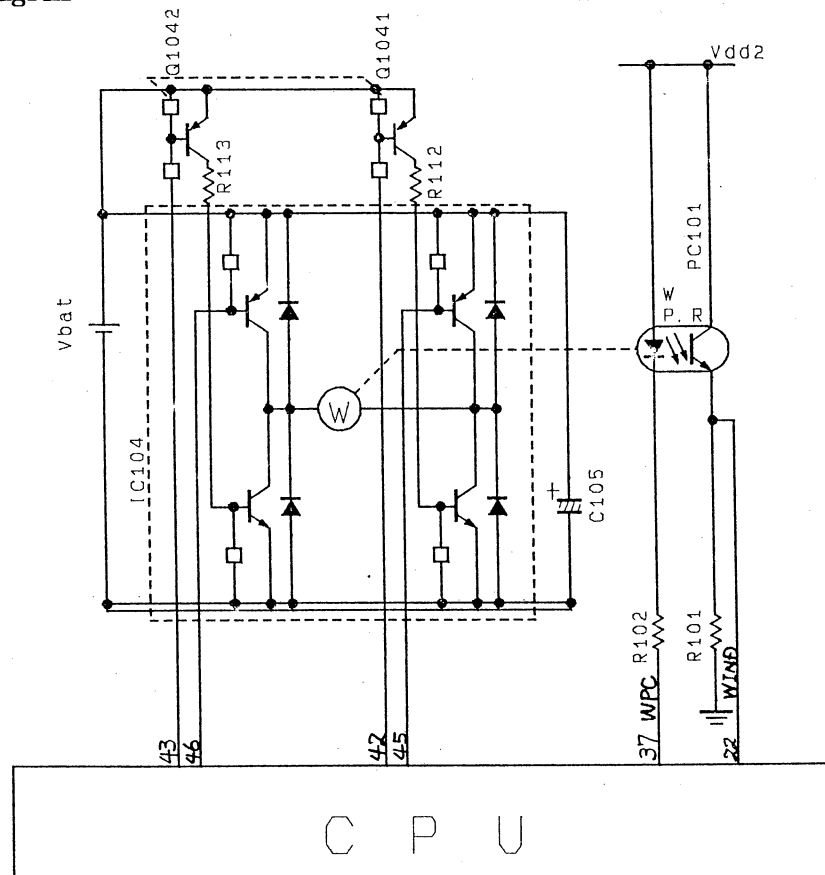
IV. Circuit diagram

See "Winding/Rewinding".

Winding/Rewinding

- I. Functions:
- ① Performs analog detection of film perforations directly by the photo reflector.
 - ② Controls film advance according to the threshold value calculated at blank shots advance.
- II. Operation 1 (Winding)
- ① The winding photo coupler (WPC) is turned on (37 pin = L).
 - ② The winding motor is set for forward run.
 - ③ IC101 receives the analog waveform at the WIND terminal (22 pin) and counts perforations according to the threshold data.
 - ④ Immediately (One perforation) before the arrival of the third frame, the duty drive is started to slow down the motor.
 - ⑤ The motor is stopped by reverse run (Brake) at the third frame.
- III. Operation 2 (Rewinding)
1. Auto return
 - ① Rewinding is started when the film is not wound by one frame in two seconds during winding operation.
 - ② The winding motor is set for reverse run.
 - ③ After rewinding to the end, completion of film rewinding is detected at no perforation change for seven or more seconds and the motor is stopped.
 - ④ Finally the motor is operated forward for 200 msec and the epicyclic gear position is changed, completing rewinding.
 2. On-demand rewinding
 - ① When the on-demand rewind button is pressed, IC101 starts rewinding.
 - ② The subsequent operations are the same as auto return.

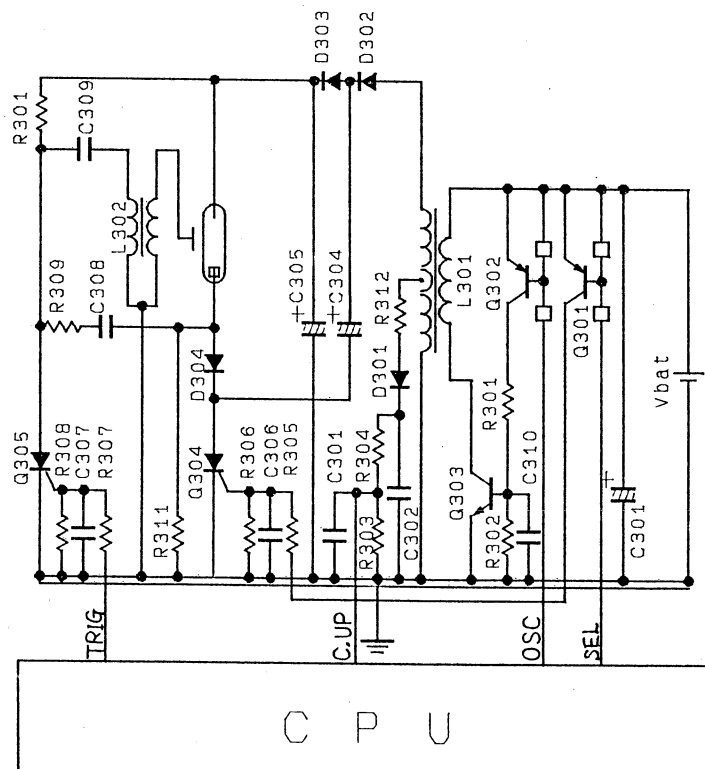
IV. Circuit diagram



Flash Circuit

- I. Function: Activates flash at a selected power using two flash capacitors — the sub capacitor (small) and the main capacitor (large).
- II. Operation:
- ① Charging ----- The SEL terminal (57 pin) is set to "L", the flash unit is subjected to external oscillation (50 KHz) at the OSC terminal (56 pin) to charge the main and sub capacitors.
 - ② Charge check ----- The charge voltage is checked at the CPU terminal (19 pin) by A-D conversion. When the CPU line voltage has reached 1.9V (equivalent to 300V charge voltage), charging is completed by turning off the OSC oscillation output.
 - ③ Pre-flash or soft flash ----- The SEL terminal (57 pin) turns "H" and the TRIG terminal (55 pin) outputs a trigger pulse. Flash is activated with the sub capacitor only.
 - ④ Full flash ----- The SEL terminal turns "L" and the TRIG terminal output a trigger pulse. Flash is activated with both the main and sub capacitors.

III. Circuit diagram



A-4 DESCRIPTION OF IC TERMINALS

IC101 (CPU)

Pin No.	Terminal Name	I/O	Symbol	Description of Terminal		
01	SEG7	0	SEG7	1d	1c	LCD drive terminal 1/2 bias 1/2 duty
02	SEG8	0	SEG8		∞	
03	SEG9	0	SEG9	$\frac{1}{2}$	$\frac{1}{2}$	
04	SEG10	0	SER10	—	AUTO	
05	SEG11	0	SEG11			
06	COM2	0	COM2	2g 2a 2b 2c 1g 1a 1b 1c ∞ $\frac{1}{2}$ AUTO		
07	COM1	0	COM1	2e 2f 2d 1e 1f 1d $\frac{1}{2}$		
08	Port20	I	DX0	DX input terminal 0		
			REQ	Auto regulation mode: Request signal from regulator to camera		
09	Port21	I	DX1	DX input terminal 1		
			C/D	Auto regulation mode: Command/data identification signal		
10	Port22	I	DX2	DX input terminal 2		
11	Port23	I	L.COV1	Lens cover detection: "L" at open		
12	OP1IN+	I	DA	DA reference output		
13	OP1IN-	I	—	Shutter power feedback input		
14	OP1OUT	0	—	Shutter & light metering reference output		
15	COMP2+	I	—	Light metering reference input		
16	COMP2-	I	SPD-ACOM	Light metering integration input		
17	Vdd		Vdd	CPU power: Operation = 3V, Standby = battery voltage		
18	Vref		—	CPU analog reference power		
19	Port40	AD	C.UP	Flash charge completion detect: 1.9V for 300V main capacitor		
20	Port41	AD	BC	Battery check input/power-on reset: AF adjustment at 3V		
21	Port42	AD	TC	Temperature detection 25°C = 2.5V + 30mV/°C		

IC101 (CPU)

Pin No.	Terminal Name	I/O	Symbol	Description of Terminal	
22	Port43	AD	WIND	Direct processing of analog waveform at winding	
23	Port44	I	-	Not used	
24	Port45	I	-	Not used	
25	RESET	I	RESET	Rest input terminal: Active "L"	
26	TESTIC	I	-	Not used	
27	GND		GND	CPU power GND	
28	CK1	I	-	System clock CR oscillation input	
29	CK2	O	-	System clock CR oscillation output	
30	Port10	I	BCOD1	Retract barrel position detect code 1	Retract = 0,0 Standby = 1,0 AF area = 1,1 Close = 0,1
31	Port11	I	BCOD2	Retract barrel position detect code 2	
32	Port12	I	S2	Release switch: "L" at ON	
33	Port13	I	SD1	Auto regulation mode: Output of serial communication with regulator	
34	Port70	O	AFCONT	AFIC control (Start signal & serial communication clock)	
35	Port71	O	POW2	Add2 control: Active "L"	
36	Port72	O	SH-PC	Shutter position detect photo coupler LED: "L" at shutter drive	
			Vth.mon	Film position detect monitor at winding	
37	Port73	O	W-PC	Film travel detect photo coupler LED: "L" at winding	
			AE2	Range switching at ave. metering: Low brightness "L", high brightness "H"	
38	Port74	O	AF-PC	Retract barrel travel detect photo coupler: "L" at retract barrel drive	
			AE1	Light metering area switching: Ave. "L", Spot "H"	
			Vpp.mon	Detect monitor for film position operation data at blank shots advance	
39	Port75	O	LEDENA	Indicator LED enable: Active "L"	
40	Port76	O	SHOFF	"L" at shutter OFF	
41	Port77	O	POW1	Vdd control: "H" at CPU operation, "L" at standby	

IC101 (CPU)

Pin No.	Terminal Name	I/O	Symbol	Description of Terminal
42	Port60	0	IRLED-C	3-beam infrared LED center select: Active "L"
				"L" at winding
43	Port61	0	IRLED-U	3-beam infrared LED high pos.select: Active "L"
				"L" at rewinding/"L" at retract barrel advance
44	Port62	0	IRLED-L	3-beam infrared LED low pos. select: Active "L"
				"L" at shutter opening/"L" at barrel retracting
45	Port63	0	SELF-1	Self LED control: "L" at lighting
				"L" at rewinding
46	Port64	0	PINT-L	Focus LED control: "L" at lighting
				"L" at winding/"L" at barrel retracting
47	Port65	0	STROB-L	Flash LED control: "L" at lighting
				"L" at shutter close/ "L" at retract barrel advance
48	Port66	0	DATE	Date imprinting signal: "H" pluse at imprinting
			SD0	Auto regulation mode: Output of serial communication with regulator
49	Port67	0	SCL	Clock for serial communication with EEPROM
				Auto regulation mode: Clock for serial communication with regulator
50	Port50	I/O	SDA	Bidirectional data bus for serial communication with EEPROM
51	Port30	I	L.COV2	Lens cover travel detect timing SW.: Power-on at "L"
52	Port31	I	B.COV	Back cover switch: "L" at open
53	Port32	I	PULS	Shutter & AF photo coupler wave-shaping Output
54	Port33	I	AF-DATA	AFIC serial data output
55	Port51	0	TRIG	Flash trigger: 1ms H pulse
56	Port52	0	OSC	Flash charging control: External oscillation 50KHz duty 60% "L"
57	Port53	0	SEL	Flash intensity select: Only sub capacitor = H, Full flash = L
			ACK	Auto regulation mode: Acknowledge of REQ signal

IC101 (CPU)

Pin No.	Terminal Name	I/O	Symbol	Description of Terminal		
58	Port00	I	S1	Check switch: "L" at ON		
59	Port01	I	TEST	Auto regulation mode: Mode transition terminal, Active "L"		
60	Port02	I	S3	Self switch: "L" at ON		
61	Port03	I	MODE	Mode change switch: "L" at ON		
62	Port04	I	REW	On-demand rewind switch: "L" at ON		
63	GND		GND			
64	OSCOU	O	-	Crystal oscillator 32KHz output		
65	OSCIN	I	-	Crystal oscillator 32KHz input		
66	SEG0	O	SEG0	2e	2g	LCD drive terminal 1/2 bias 2/2 duty
67	SEG1	O	SEG1	2f	2a	
68	SEG2	O	SEG2	-	2b	
69	SEG3	O	SEG3	2d	2c	
70	SEG4	O	SEG4	1e	1g	
71	SEG5	O	SEG5	1f	1a	
72	SEG6	O	SEG6	-	1b	

IC102 (Voltage detect IC)

Pin No.	Terminal Name	I/O	Symbol	Description of Terminal
1	Vout	O	Vdet	"L" output, IC101 reset, Nch open drain
2	Vin	I	Vdd	Vdd 2.2V or below detect, Hysteresis 1.1V
3	Vss		GND	

IC103 (EEPROM)

Pin No.	Terminal Name	I/O	Symbol	Description of Terminal
1	NC			
2	NC			
3	NC			
4	Vss		GND	
5	SDA	I/O	SDA	Bidirectional bus of EEPROM
6	SCL	I	SCL	EEPROM clock input
7	NC			
8	Vcc		Vdd2	

IC104 (MDIC)

Pin No.	Terminal Name	I/O	Symbol	Description of Terminal
1	IN1L	I	Port62'	1st stage transistor ON at shutter opening or barrel retracting, 0.8V
2	OUT1	O	SH-	Battery voltage at negative terminal opening of shutter motor
3	GND		GND	
4	OUT2	O	NC	
5	IN2L	I	Port61'	1st stage transistor ON at rewinding or retract barrel advance, 0.8V
6	GND		GND	
7	OUT3	O	NC	
8	IN3L	I	Port60'	1st stage transistor ON at winding, 0.8V
9	IN3H	I	Port63'	"L" at rewinding
10	OUT3	O	WI-	Negative terminal of winding motor
11	Vcc		Vbat	
12	IN2H	I	Port64	"L" at winding or barrel retracting
13	OUT3	O	AF-/WI+	Positive terminal of winding motor/ negative terminal of AF motor
14	Vcc		Vbat	
15	OUT1	O	AF+	Positive terminal of AF motor
16	IN1H	I	Port65	"L" at retract barrel advance or shutter close

IC105 (Power supply IC)

Pin No.	Terminal Name	I/O	Symbol	Description of Terminal
1	Vin		Vbat	IC power, 1.2V or more boosting capacity
2	ON/OFF	I	POW1	IC control terminal: "H": 3V boosting, "L": battery voltage
3	SEL1	I	Vbat	Standby output setting: "H": battery voltage "L": GND
4	SEL2	I	GND	Vout output setting: "H":5V "L": 3V
5	Vout	O	Vdd	Output terminal: 3V at operation, battery voltage at standby
6	Vsw	O	Vsw	Switching regulator output
7	CONT	O	-	Internal switching transistor output
8	Vss		GND	IC power GND

IC201 (AFIC)

Pin No.	Terminal Name	I/O	Symbol	Description of Terminal
1	GND			
2	CH2(N)	I		Stationary light hold capacitor (close distance)
3	PSD2	I		PSD input terminal (close distance)
4	PSD1	I		PSD input terminal (long distance)
5	CH1(F)	I		Stationary light hold capacitor (long distance)
6	Vcc		Vdd2	AFIC power
7	DATA	O	AF-DATA	AFIC serial data output
8	CTRL	I	AF-CONT	AFIC control terminal
9	CINT	O		Integration capacitor charge output
10	LED	O		Infrared LED lighting timing control
11	FB	I		Infrared LED constant current feedback, not used
12	OSC	I		Close for AFIC, CR oscillation 32KHz

A-5 Description of Electric Parts

Symbol	Name	Function
IC101	CPU	Sequence control Motor drive control Shutter control Battery check LCD/LED lighting Power supply circuit control Flash control AF-IC control EEPROM control Temperature sensor input Light metering PC control/input Each switch read
IC102	Reset IC	CPU hard reset
IC103	EEPROM	Backup of status data & adjusted values
IC104	MD-IC	Control of AF motor and winding motor Control of shutter motor (1/2)
IC105	Power Supply IC	Power to system (3V generation)
IC201	AF-IC	Distance metering IC
Q101	NPN Transistor	Wave-shaping of AFPC and SHPC
Q102	PNP Transistor	Light metering area switching
Q103	NPN Transistor 2	Range switching
Q104	PNP Transistor 2	MDIC pre-driver
Q105	PNP Transistor 2	MDIC pre-driver
Q106	NPN-Tr 2-pcs In	Control of shutter motor
Q107	PNP-Tr 2-pcs In	LED lighting control (1/2) Power supply Vdd2 control (2/2)
Q201	PNP-Tr R In	IRLED lighting timing driver
Q202	PNP-Tr R In	IRLED selector (CENTER)
Q203	PNP-Tr 2-pcs R In	IRLED selector (LOWER) (1/2) IRLED selector (UPPER) (2/2)
Q204	NPN Power Tr R In	IRLED driver (CENTER)
Q205	NPN-Tr 2-pcs	IRLED driver (LOWER) (1/2) IRLED driver (UPPER) (2/2)

Symbol	Name	Function
Q301	PNP-Tr R In	Capacitor selector pre-driver
Q302	PNP-Tr R In	Oscillation pre-driver
Q303	NPN-Tr Power	Oscillation switching transistor
Q304	Thyristor Power	Main thyristor, Capacitor selector
Q305	Thyristor	Flash trigger
Q401	NPN-Tr R In	Date imprinting
D101	2-segment SPD	Peripheral SPD (1/2) Spot SPD (2/2)
D102	Chip Red LED	Flash indicator
D103	Chip Green LED	AF shap focus indicator
D104	Chip Red LED	Self timer LED
D105	Schottky Diode	Power supply booster switching
D201	Triple IRLED	Infrared 3-beam for multi-AF
D301	Diode	Charge voltage detector (Intermediate tap rectifying)
D302	High Voltage Diode	Transformer secondary side rectifier (High protection against reverse voltage)
D303	High Voltage Diode	Transformer secondary side rectifier (Large forward current raring)
D304	Diode	Double boosting
D401	Schottky Diode	Date module power
R101	Resistor 56K	Winding photo reflector signal detector
R102	Resistor 300	Winding photo reflector LED
R103	Resistor 470	AF photo-interrupter LED
R104	Resistor 27K	AF, Shutter PC wave-shaping transistor BE
R105	Resistor 470	Shutter photo reflector LED
R106	Resistor 910	Shutter photo reflector LED (switching by rank)
R107	Resistor 10K	Temperature sensor reference

Symbol	Name	Function
R108	Thermistor 10K	Temperature sensor
R109	Resistor 82K-G	System clock
R110	Resistor 1K	Reset line delay
R111	Resistor 10K	EEPROM SDA line pull-up
R112	Resistor 120	Motor driver base resistance
R113	Resistor 120	Motor driver base resistance
R114	Resistor 120	Motor driver base resistance
R115	Resistor 120	Motor driver base resistance
R116	Resistor 120	Motor driver base resistance
R117	Resistor 120	Motor driver base resistance
R118	Resistor 120	Motor driver base resistance
R119	Resistor 56K	Battery check voltage divider
R120	Resistor 10K	Battery check voltage divider
R121	Resistor 3.9	Shutter motor transistor protector
R122	Resistor 4.7K	Shutter motor transistor base
R123	Resistor 4.7K	Shutter motor transistor base
R124	Resistor 120	Flash LED (red) current limiter
R125	Resistor 82	Focus LED (green) current limiter
R126	Resistor 120	Self timer LED (red) current limiter
R201	Resistor 100K	AFIC clock
R202	Missing No.	
R203	Resistor 4.7K	IRLED (LOWER) drive transistor BE
R204	Resistor 4.7K	IRLED (UPPER) drive transistor BE
R205	Resistor 120	IRLED (LOWER) drive transistor base R
R206	Resistor 120	IRLED (UPPER) drive transistor base R
R301	Resistor 33	Flash primary side oscillation transistor base R
R302	Resistor 470	Flash primary side oscillation transistor BE

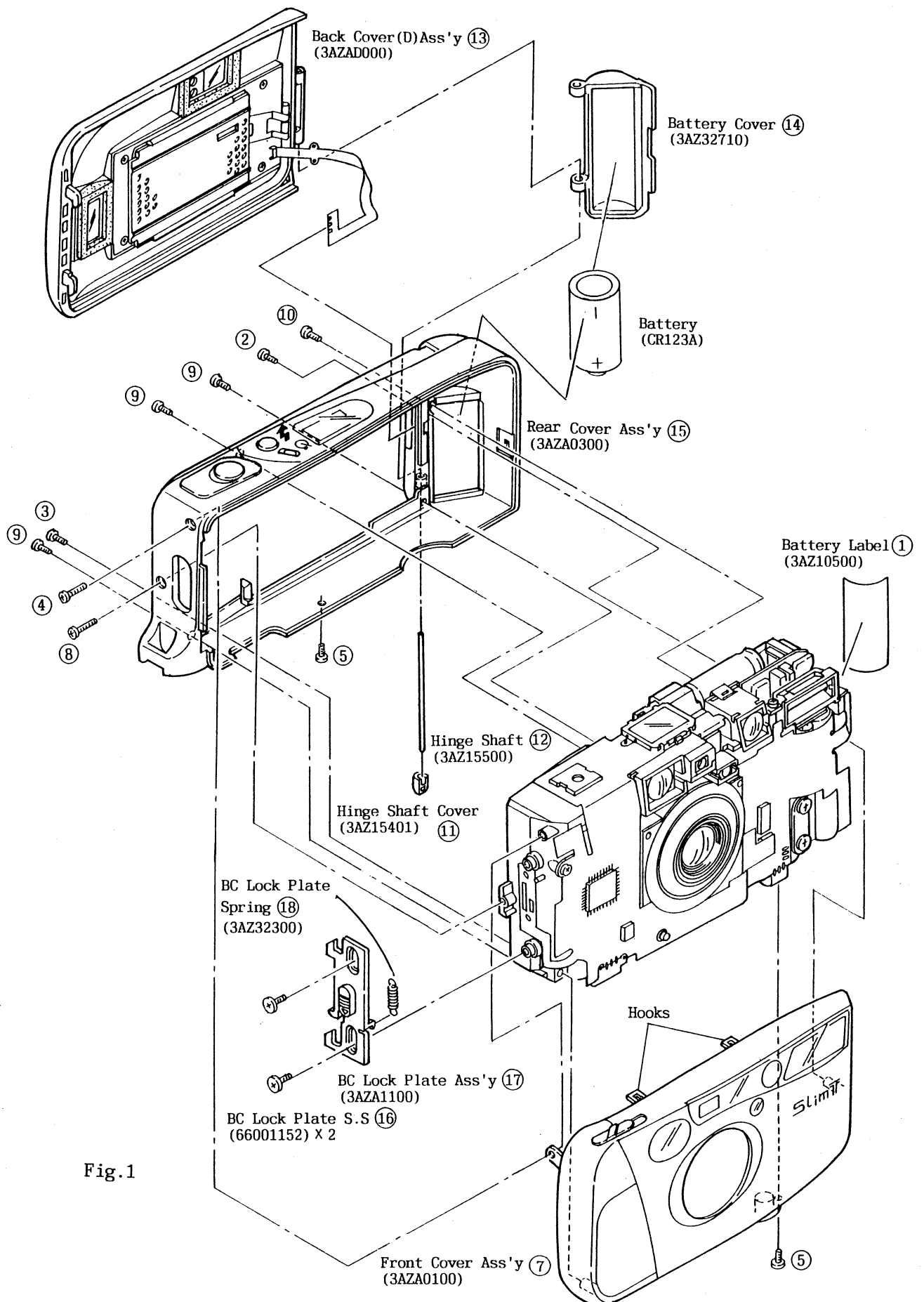
Symbol	Name	Function
R303	Resistor 10K-G	Flash charge voltage detect voltage divider
R304	Resistor 27K-G	Flash charge voltage detect voltage divider
R305	Resistor 33	Main thyristor, Gate input R
R306	Resistor 220	Main thyristor, Noise remover
R307	Resistor 330	Trigger thyristor, Gate input R
R308	Resistor 1K	Trigger thyristor, Gate input
R309	Resistor 22	Double boosting
R310	Resistor 1M	Trigger voltage
R311	Resistor 100K	Double boosting
R312	Resistor 1K	Flash charge voltage detect ripple remover
C101	Capacitor 1000p	Spot metering photocurrent integration capacitor
C102	Capacitor 0.022	Average high brightness metering photocurrent integration capacitor
C103	Capacitor 0.1	Reset line delay
C104	Capacitor 0.1	CPU bypass capacitor
C105	Aluminum Capacitor 100	Motor drive
C106	Capacitor 0.1	Battery check line smoother
C107	Tantalum Capacitor 1	Power supply IC output Vdd line
C108	Tantalum Capacitor 10	Power supply IC output Vsw line
C201	Tantalum Capacitor 47	AFIC bypass capacitor
C202	Film capacitor 0.068	AF data integration capacitor
C203	Capacitor 330	AFIC clock
C204	Tantalum Capacitor 0.47	Memory capacitor (close distance)
C205	Tantalum Capacitor 0.47	Memory capacitor (long distance)
C206	Aluminum Capacitor 220	IRLED power

Symbol	Name	Function
C301	Aluminum Capacitor 100	Flash charging compensation
C302	Capacitor 0.1	Flash charge voltage detect smoothing
C303	Capacitor 0.1	Flash charge voltage detect line
C304	Aluminum Capacitor 20/330V	Sub capacitor (pre-flash)
C305	Aluminum Capacitor 100/330	Main capacitor
C306	Capacitor 0.047	Main thyristor gate input
C307	Capacitor 0.047	Trigger thyristor gate input
C308	Film Capacitor 0.047	Double boosing
C309	Film Capacitor 0.033	Flash trigger
C310	Capacitor 0.047	Oscillation switching transistor BE
C401	Tantalum Capacitor 47	Date module power
L101	Coil 56 μ	Switching regulator
L301	Oscillation Transformer	Flash booster
L302	Trigger coil	Flash trigger
PC101	Photo-Reflector	Film winding signal detector
PC102	Photo-Interrupter	Retract barrel advance stop control
PC103	Incorporated in shutter unit	Shutter blade position detector
X'tal	Crystal Oscillator	Sub clock 32KHz
PSD	PSD	AF Sensor

Symbol	Name	Function
M1	Incorporated in winding unit	Film winding DC motor
M2	DC Motor	Retract barrel advance
M3	Incorporated in shutter unit	Shutter blade drive (Iris motor)
Flash Tube		Flash activation

B. DISASSEMBLY & REASSEMBLY PROCEDURE

REMOVAL OF EXTERIOR PARTS



B-1 Removal of Exterior Parts

B-1-1 Removal of Front Cover Ass'y (See Fig.1)

- 1) Open the Battery Cover and remove the battery.
- 2) Peel off the Battery Label (3AZ10500) ① inside the battery chamber and remove the Front Cover Setscrew (69114076) ②.
- 3) Open the Back Cover (D) Ass'y and remove the Front Cover Setscrew (69114076) ③ inside the cartridge chamber.
- 4) Remove the Rear Cover Setscrew (69215079) ④.
- 5) Remove the Rear Cover Setscrew (66001033) ⑤ and (69114579) ⑤.
- 6) Remove the Front Cover Ass'y (3AZA0100) ⑦ forward.

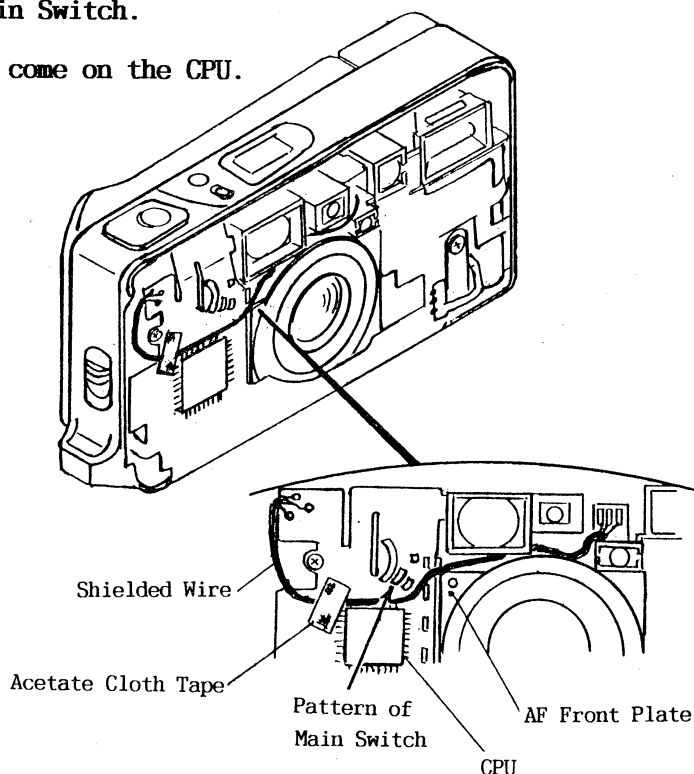
Notes:

- a) Remove the Front Cover Ass'y while pushing its two hooks.

[Notes on Reassembly of Front Cover Ass'y]

- a) Before installing the Front Cover, make sure that the shielded wire does not come on the AF Front Plate.
- b) Wipe the pattern of the Main Switch with a lens cleaning paper with ether alcohol.
- c) Fasten the shielded wire with Acetate Cloth Tape so that the wire never comes in contact with the pattern of the Main Switch.
- d) The shielded wire must not come on the CPU.

Fig.2



B-1-2 Removal of Rear Cover Ass'y

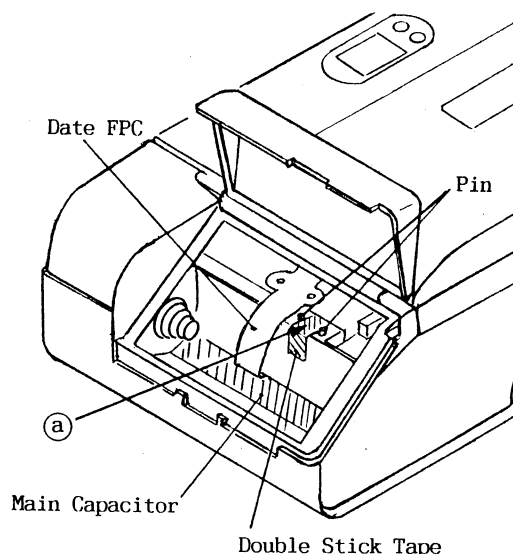
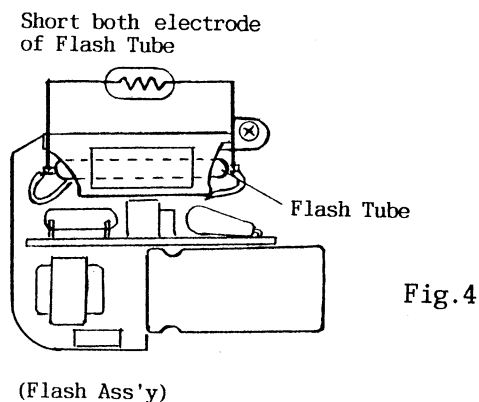
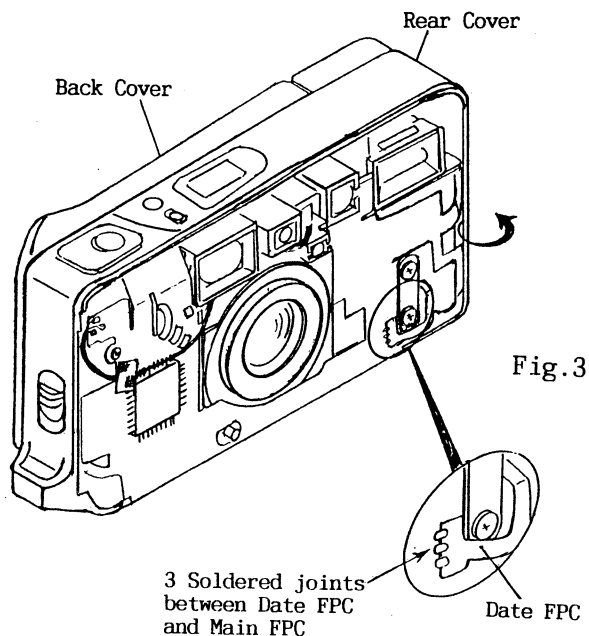
- 1) Unsolder the 3 soldered joints between the Date FPC and the Main FPC. (See Fig.3)
- 2) Remove the Rear Cover Setscrew (69214079) ⑧.
- 3) Open the Back Cover (D) Ass'y and remove the Rear Cover Setscrews (69114076) x3 ⑨.
- 4) Open the Battery Cover and remove the Rear Cover Setscrew (69114076) ⑩.
- 5) Peel off the portion ① of the Date FPC. (The portion ① of the Date FPC is fixed with Double Stick Tape.) (See Fig.5)
- 6) Remove the Rear Cover Ass'y and the Back Cover (D) Ass'y with the Battery Cover together in the direction of the arrow. (See Fig.3)

Notes:

- a) Be sure to perform discharging at the electrode of the Flash Tube, which has been kept at a high voltage.
- b) Disassembly of the non-date camera does not need steps 1) and 5).

[Reassembly of Rear Cover Ass'y and Back Cover (D) Ass'y]

- a) Install the Rear Cover Ass'y from the BC Lock Plate side with the Battery Cover and the Back Cover (D) Ass'y open.
- b) Attach the Date FPC to the pins on the Body and fix it with Double Stick Tape.
- c) Fit the Rear Cover completely.
- d) Lead the end of the Date FPC between the Main Capacitor and the Body, and place it on the front.



B-1-3 Removal of Back Cover (D) Ass'y (See Fig.1)

- 1) Remove the Hinge Shaft Cover (3AZ15401) ⑪ .
(The Hinge Shaft Cover is glued to the Rear Cover.)
- 2) Pull out the Hinge Shaft (3AZ15500) ⑫ .
- 3) Remove the Back Cover (D) Ass'y (3AZAD000) ⑬ and Battery Cover (3AZ32710) ⑭ from the Rear Cover Ass'y (3AZA0300) ⑮ .

B-1-4 Removal of BC Lock Plate Ass'y (See Fig.1)

- 1) Remove the BC Lock Plate Setscrews (66001152) x 2 ⑯ .
- 2) Remove the BC Lock Plate Ass'y (3AZA1100) ⑰ and BC Lock Plate Spring (3AZ32300) ⑱ .

Notes:

- a) Take care not to deform the Back Cover Switch Contact.
- b) Before installing the BC Lock Plate Ass'y, wipe the Back Cover Switch Contact with a lens cleaning paper with ether alcohol.
- c) Apply a small amount of Grease I-40 to two positions on the BC Lock Plate Ass'y.

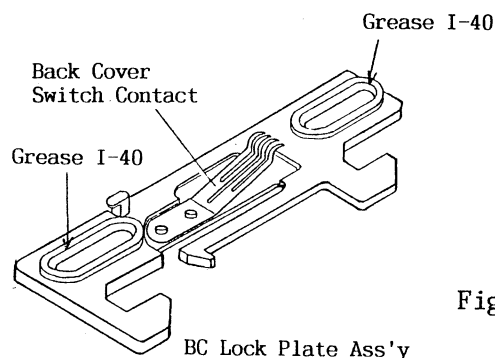


Fig.6

REMOVAL OF MAIN FPC ASS'Y

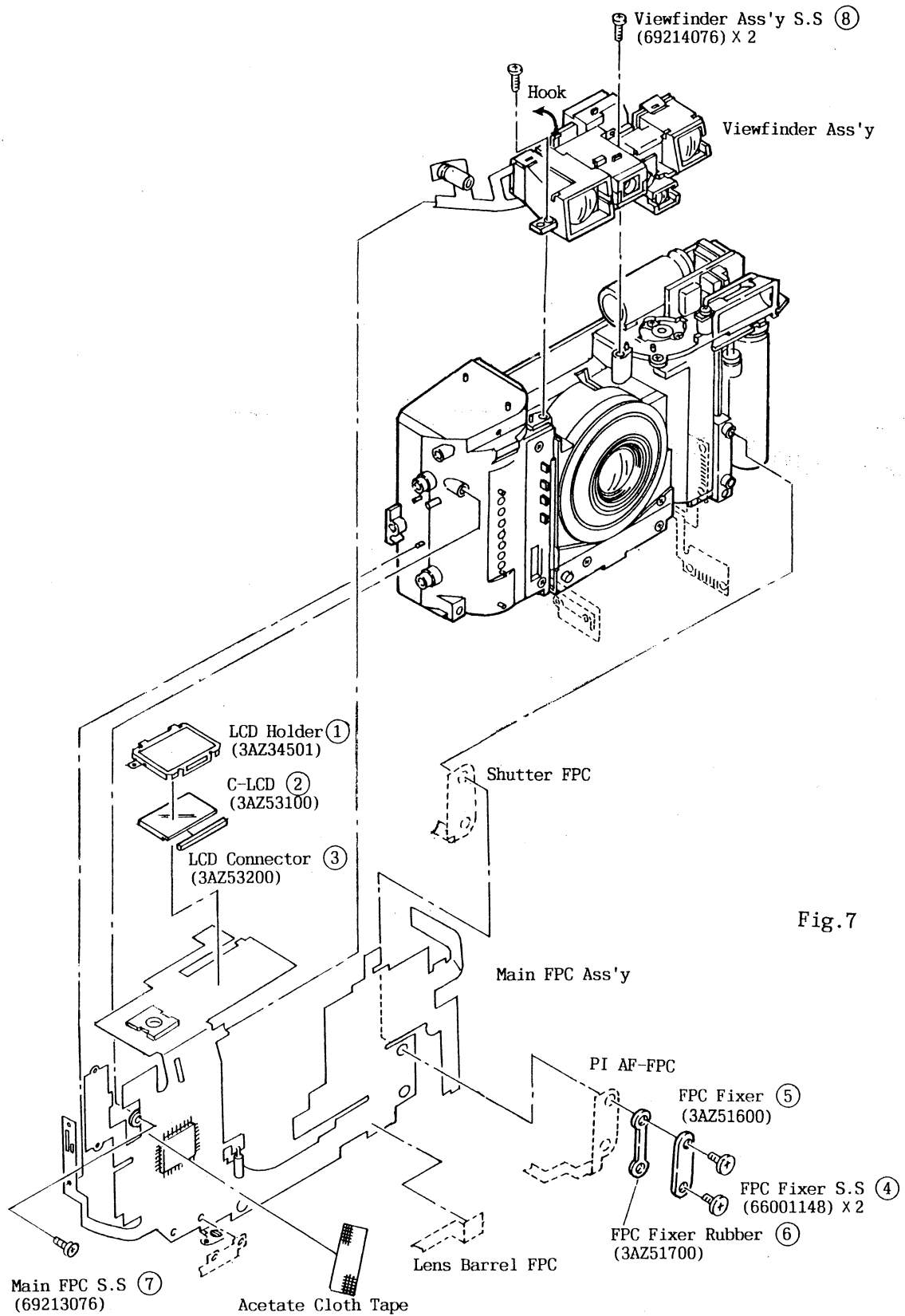


Fig.7

B-2-1 Removal Main FPC Ass'y & Viewfinder Ass'y

- Notes:**

- Black lead wire (Power Supply \ominus), Red lead wire (Power Supply \oplus)
Brown lead wire (AF Motor \ominus), Blue lead wire (Winding Motor \oplus)
Orange lead wire (Winding Motor \ominus), Yellow lead wire (AF Motor \oplus)

-
- Fig. 8
- Shield
- Red
- White
- Hook
- 5 soldered joints between Main FPC and Flash Board
- Insulate with Acetate Cloth Tape and do not soldering at this pattern.
- 3 soldered joints between Main FPC and Lens Barrel FPC
- 4 soldered joints between Main FPC and DX-SW
- 3 soldered joints between Main FPC and PI WI-FPC
- Black
- Red
- Brown
- Orange
- Blue
- Yellow
- White
- Yellow

- 5) Unsolder the 3 cores of the shielded wire on the Main FPC.
- 6) Unsolder the 3 soldered joints between the Main FPC and the PI WI FPC.
- 7) Unsolder the 3 soldered joints between the Main FPC and the Lens Barrel FPC.
- 8) Unsolder the 4 soldered joints between the Main FPC and the DX-SW terminals.
- 9) Remove the FPC Fixer Setscrews (66001148) x 2 ④ , FPC Fixer (3AZ51600) ⑤ and FPC Fixer Rubber (3AZ51700) ⑥ .
- 10) Remove the Main FPC Setscrew (69213076) ⑦ .
- 11) Peel off the upper portion of the Main FPC in the direction of the arrow (See Fig.10) and remove the Viewfinder Ass'y Setscrews (69214076) x 2 ⑧ .
- 12) Remove the AF Base W/M-FPC Ass'y (3AZAF000) ⑨ .

Notes:

- a) The Main FPC is fixed to the Body with Double Stick Tape.
In case of peeling it off, therefore, take care not to break the pattern on the Main FPC.

[Notes on Reassembly of LCD Connector]

- a) Wipe the pattern on the Main FPC.
- b) Install the LCD Connector with its conductive surfaces up and down.

Fig.9

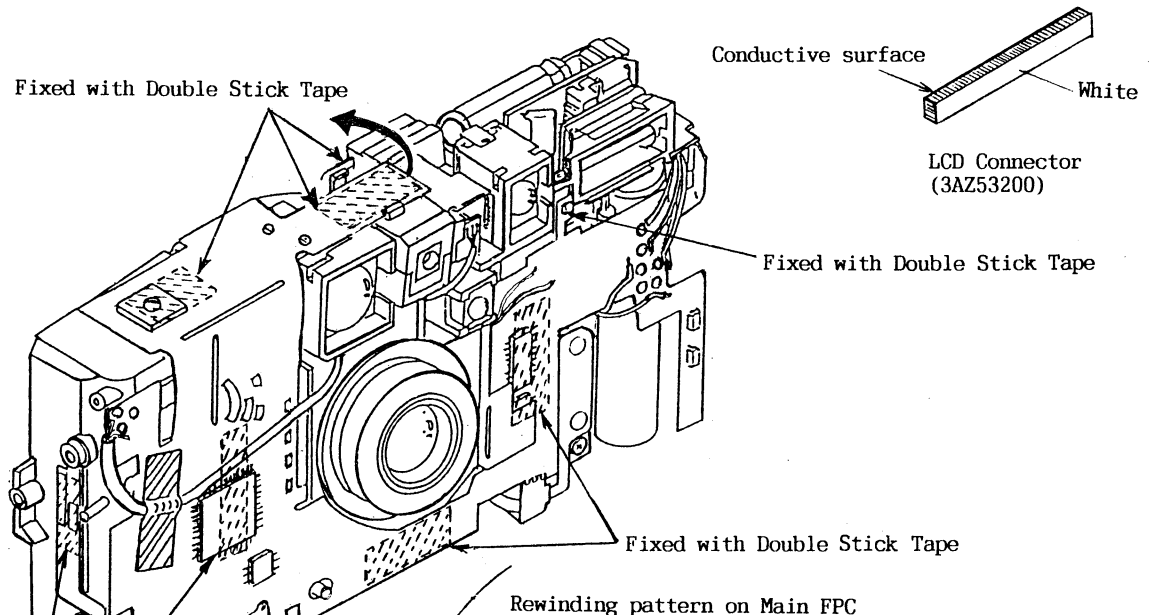
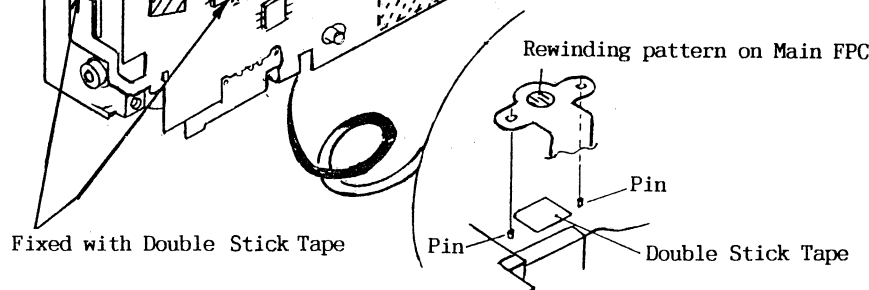
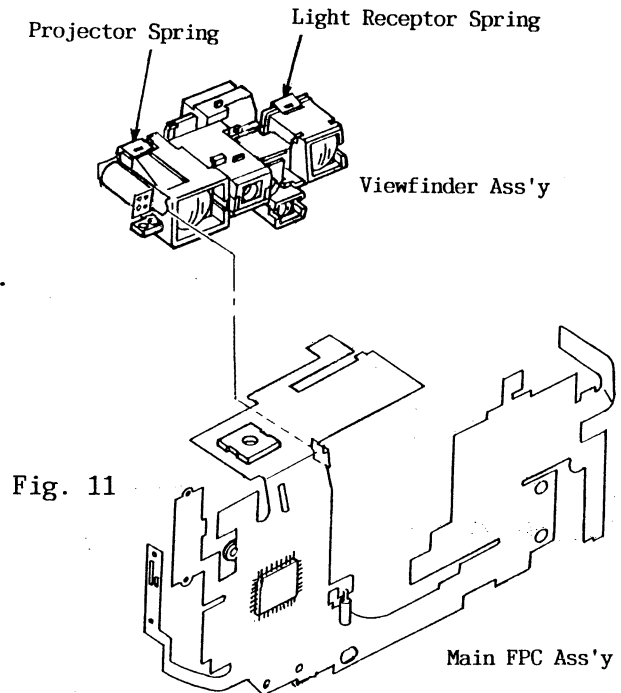


Fig.10



[Notes on Handling of Main FPC Ass'y & Viewfinder Ass'y]

Never separate the Main FPC Ass'y and the Viewfinder Ass'y from each other if you do not have the AF-LED position adjusting tool (CCD camera enabling observation of infrared light). Especially, take great care not to move the Projector Spring (AF-LED position adjustment) or the Light Receptor Spring (PSD position adjustment). Service parts will be supplied with the positions of the AF-LED and PSD adjusted. When replacement is needed, replace the set of AF Base W/M-FPC Ass'y (3AZAEF00) with a new one.

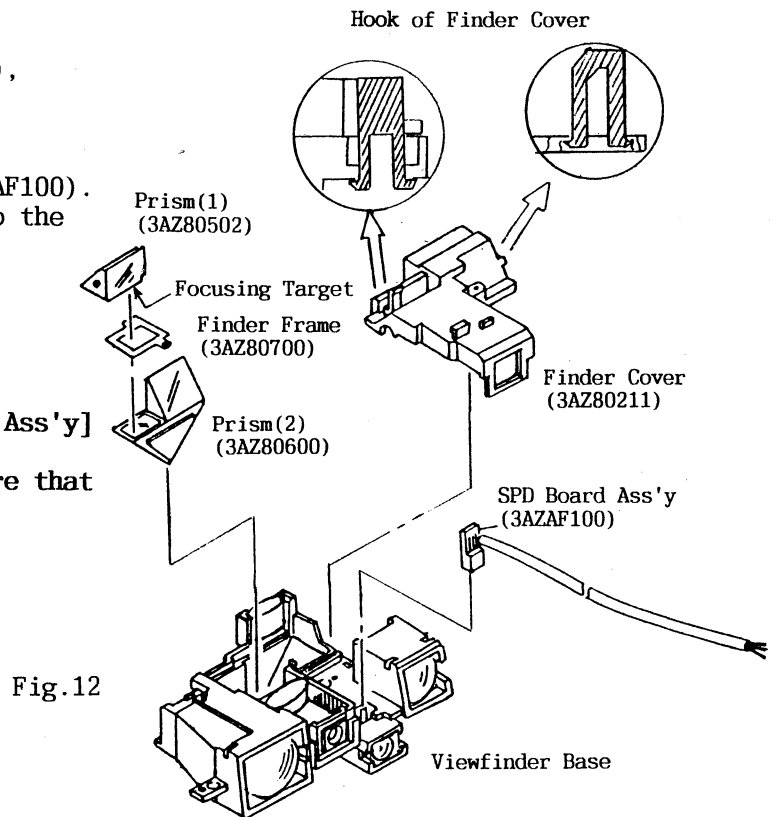


[Disassembly of Viewfinder Ass'y]

- 1) Release the two hooks of the Finder Cover, and the Finder Cover (3AZ80211) will come off.
- 2) After removing the Finder Cover, take off the Prism (1) (3AZ8502), Finder Frame (3AZ80600) and Prism (2) (3AZ80600).
- 3) Remove the SPD Board Ass'y (3AZAF100). (The SPD Board Ass'y is glued to the Viewfinder Base.)

[Notes on Reassembly of Viewfinder Ass'y]

Look in the Viewfinder and make sure that there is no dust.



[Forming of Main FPC Ass'y]

When replacing the Main FPC Ass'y, form the new FPC as shown below and install it.

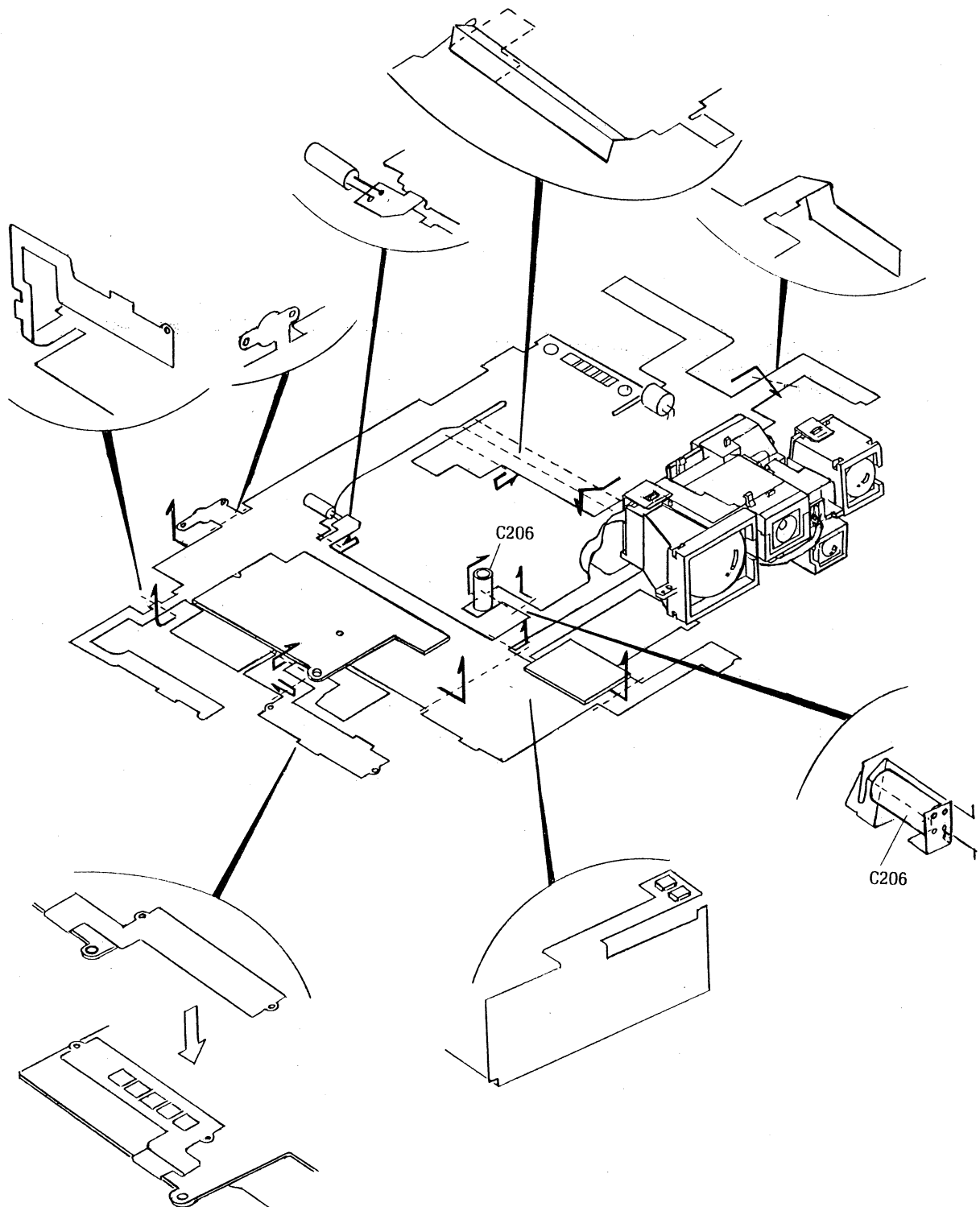


Fig.13

[Dressing of AF Lead Wire and Shielded Wire]

- a) When installing the Viewfinder Ass'y, lead the AF lead wires (yellow and white) under the Viewfinder between the portion of Light Projector and the Light Sensor as shown in Fig.14.
- b) Lead the shielded wire under the Viewfinder as shown in Fig.14 while installing the Viewfinder Ass'y.

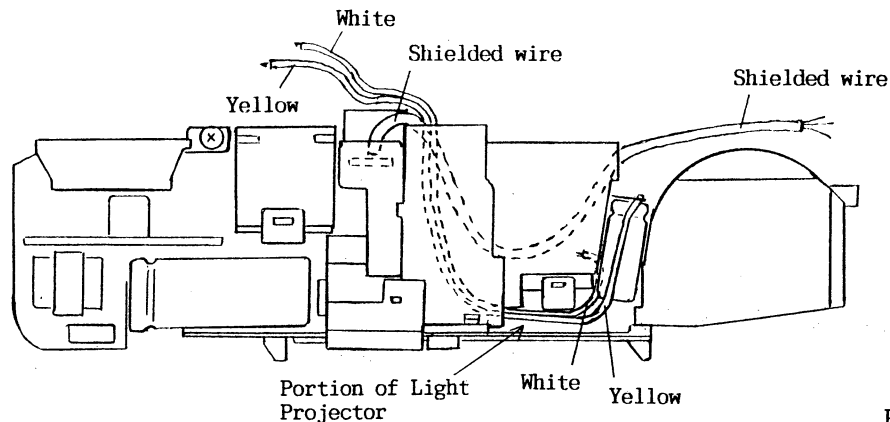


Fig.14

Notes:

- a) No lead wire must be pressed between the Viewfinder and the Body.

[Notes on Reassembly of Main FPC Ass'y]

When installing the Main FPC Ass'y in the Body, push it in the direction of the arrow to prevent barrier operation trouble.
Fix the Main FPC Ass'y with Double Stick Tape.

(Positioning of Main FPC Ass'y)

Push the portion (B) in the direction of the arrow while pressing it and fix the Main FPC. In doing so, make sure that the portion (C) is at the center or on the right of the hole.

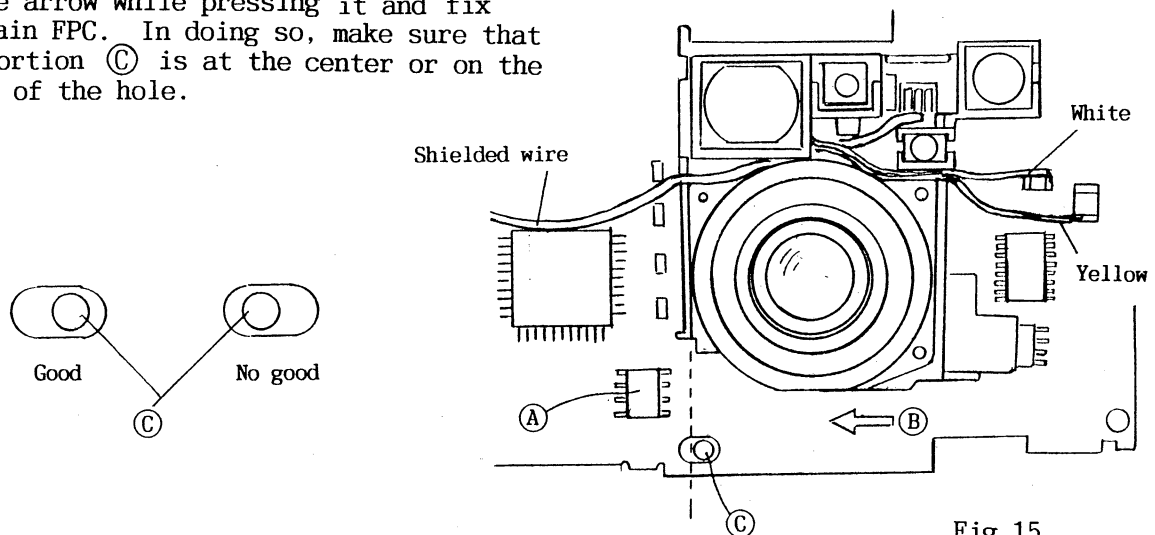


Fig.15

REMOVAL OF FLASH ASS'Y

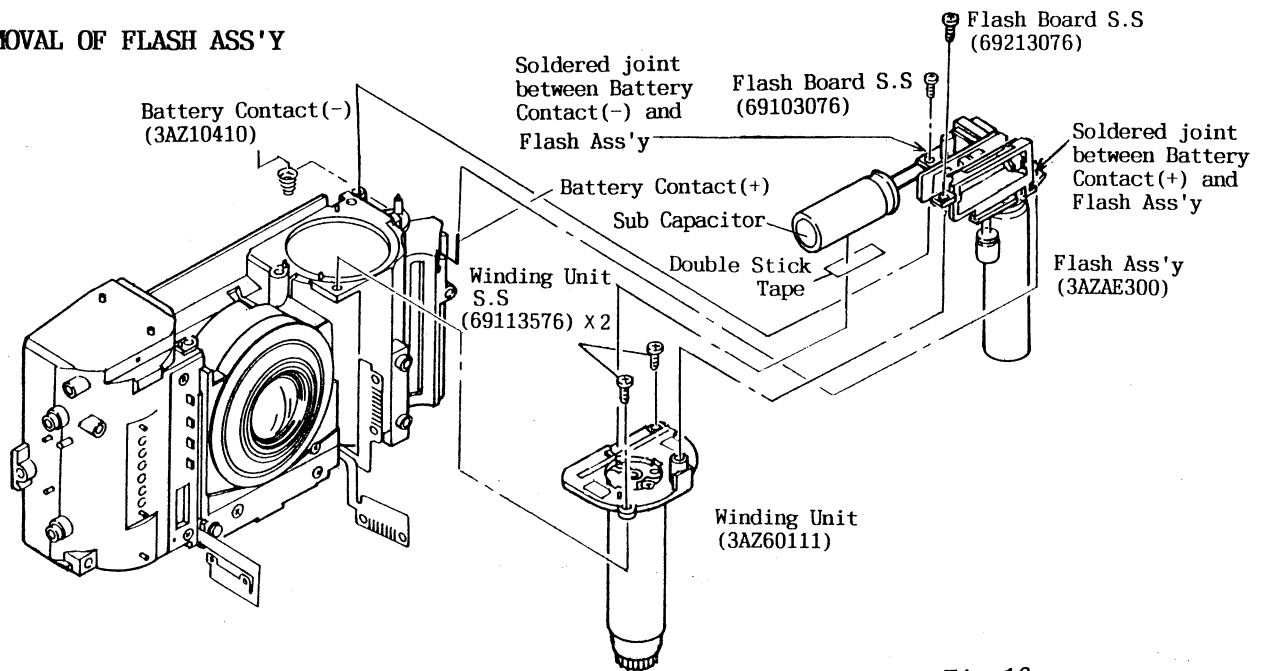


Fig.16

DISASSEMBLY OF WINDING MECHANISM

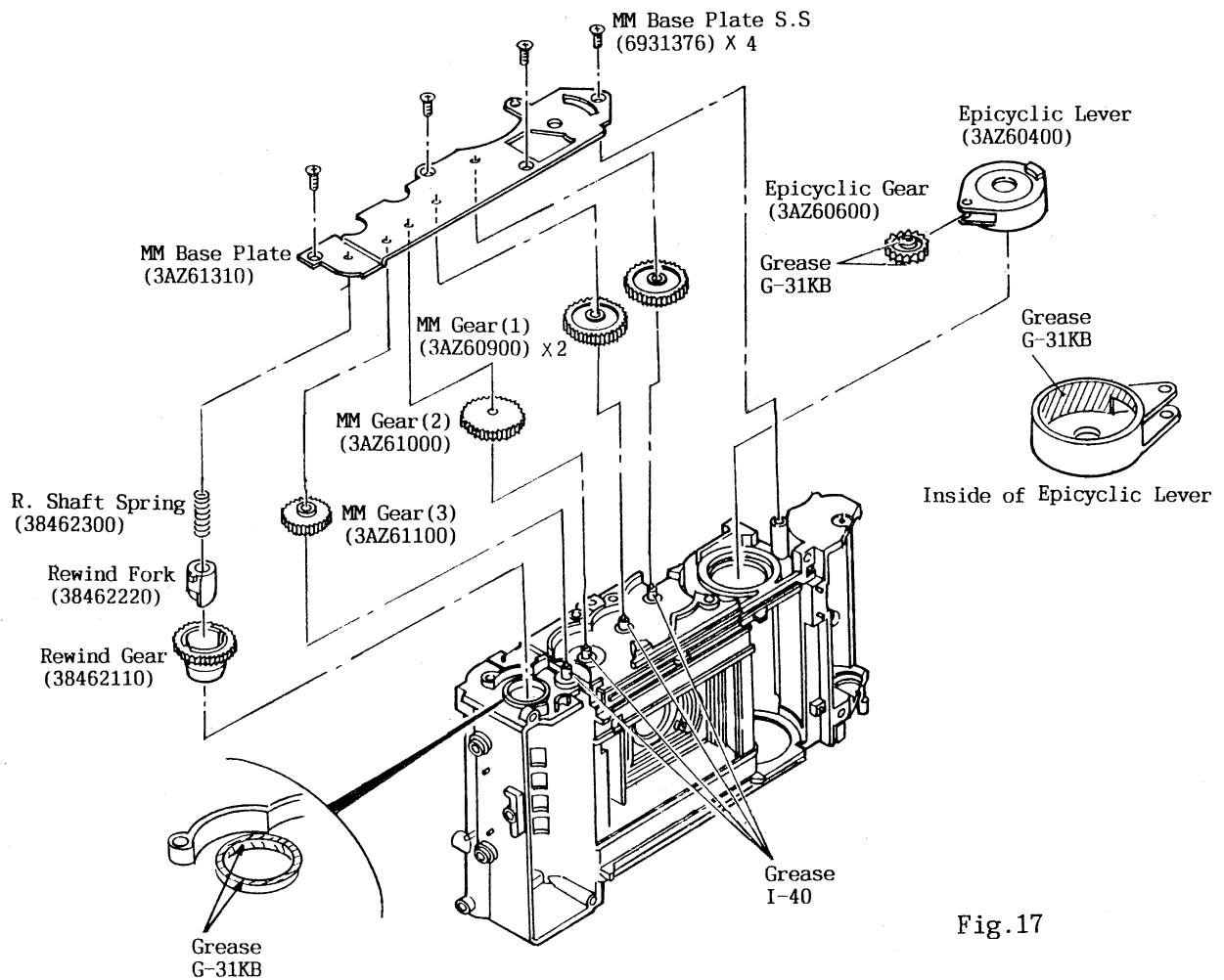


Fig.17

B-3 Removal of Flash Ass'y

B-3-1 Removal of Flash Ass'y (See Fig.16)

- 1) Unsolder the soldered joint between the Battery Contact (-) (3AZ10410) and the Flash Board and then remove the Battery Contact (-).
- 2) Unsolder the soldered joint between the Battery Contact (+) (3AZ10320) and the Flash Board.
- 3) Remove the Flash Board Setscrews (69213076) and (69103076).
- 4) Remove the Flash Ass'y (3AZAE300).

Notes:

- a) The Sub Capacitor is fixed to the Winding Unit with Double Stick Tape.

B-4 Disassembly of Winding Mechanism

B-4-1 Removal of Winding Gears (See Fig.17)

- 1) Remove the MM Base Plate Setscrews (69313576) x4 and the MM Base Plate (3AZ61310).
- 2) Remove the R. Shaft Spring (38462300), Rewind Fork (38462220) and Rewind Gear (38462110).
- 3) Remove the MM Gear (2) (3AZ61000), MM Gear (3) (3AZ61100) and MM Gears (1) (3AZ60900) x2.
- 4) Remove the Epicyclic Lever (3AZ60400) and Epicyclic Gear (3AZ60600) together.

B-4-2 Removal of Winding Unit (See Fig.16)

- 1) Remove the Winding Unit (3AZ60111) by taking out the Winding Unit Setscrews (69113576) x2.

Notes:

- a) Parts of the Winding Unit are not supplied separately.
When any part requires replacement, replace the Winding Unit (3AZ60111) with a new one.
- b) Shielder is applied in the gap between the Winding Unit and the Body. (See Fig.22)

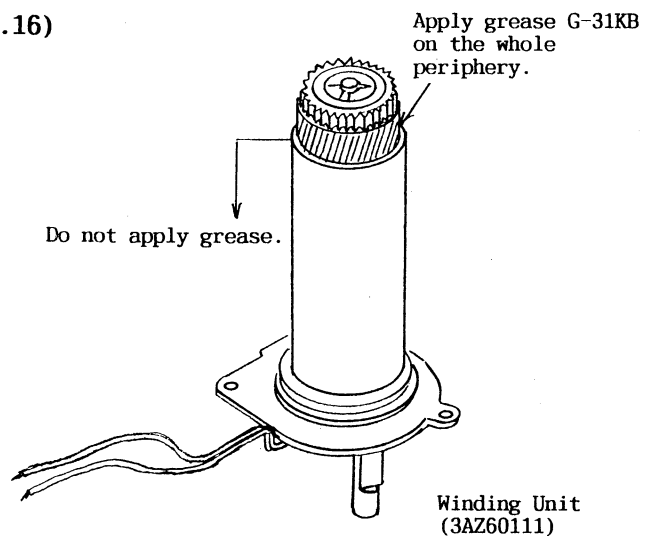
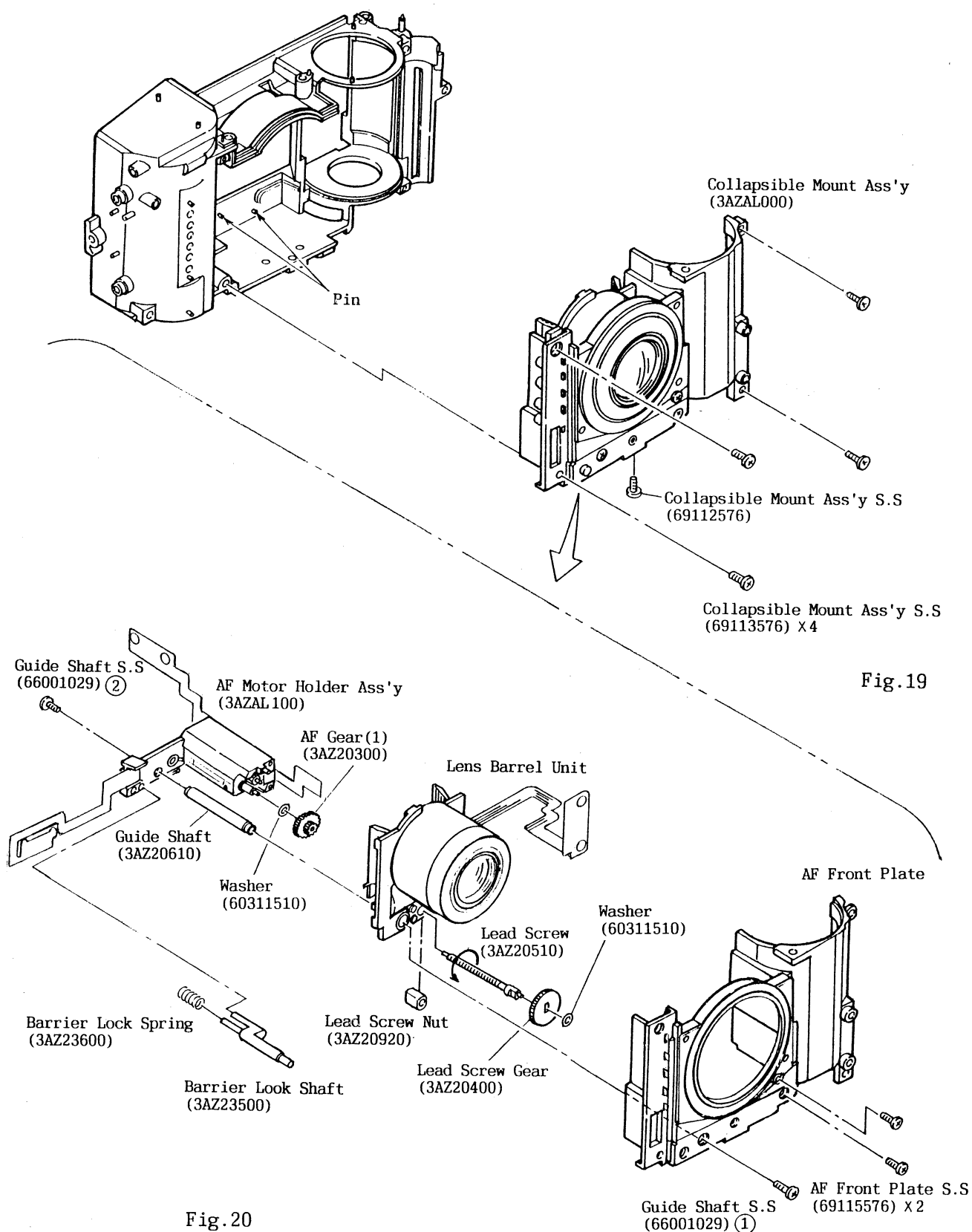


Fig.18

REMOVAL OF COLLAPSIBLE MOUNT ASS'Y



B-5 Removal of Collapsible Mount Ass'y

B-5-1 Removal of Collapsible Mount Ass'y (See Fig.19)

- 1) Remove the Collapsible Mount Ass'y (3AZAL000) from the Body by taking off the Collapsible Mount Ass'y Setscrews (69112576) and (69113576) X4.

Notes:

- a) Shielder is applied in the gap between the Collapsible Mount Ass'y and the Body. (See Fig.22)

[Notes on Reassembly of Collapsible Mount Ass'y]

- a) Install the Collapsible Mount Ass'y in the Body after making sure that the gap between the Motor Holder and the Shutter is in parallel.
- b) When installing the Collapsible Mount Ass'y, fit the two holes (See Fig.20) in the Motor Holder to the two pins (See Fig.19) of the Body.

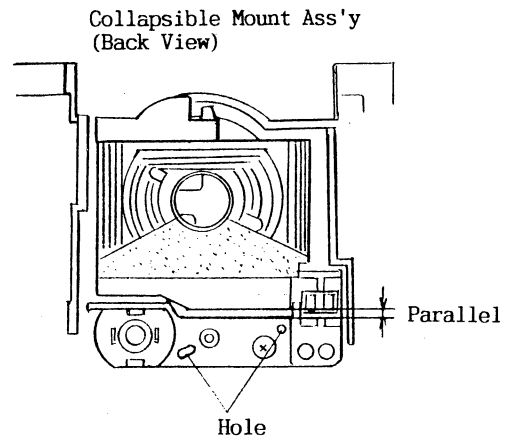


Fig.21

B-5-2 Disassembly of Collapsible Mount Ass'y (See Fig.20)

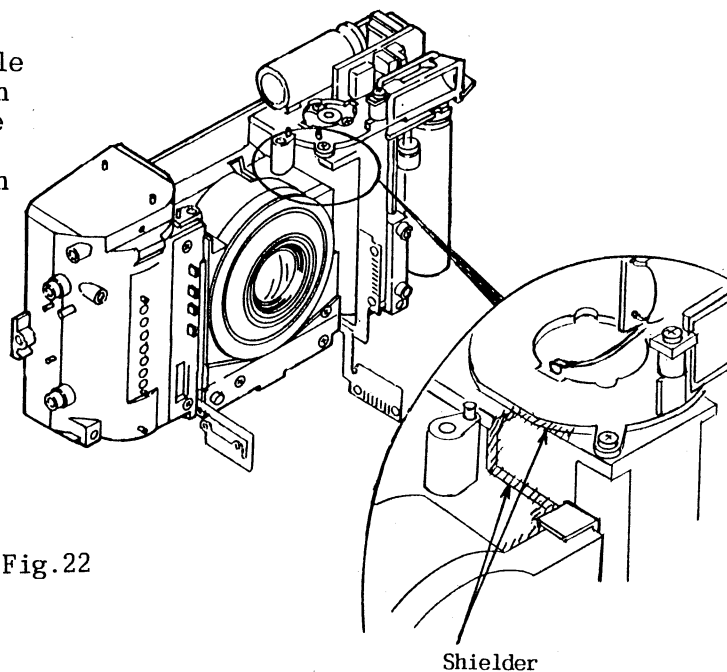
- 1) Remove the AF Front Plate Setscrews (69115576) X 2.
- 2) Remove the Guide Shaft Setscrew (66001029) ①.
- 3) Remove the AF Moter Holder Ass'y (3AZAL100), Barrier Lock Spring (3AZ23600) and Barrier Lock Shaft (3AZ23500).
- 4) Remove the AF Gear (1) (3AZ20300) and Washer (60311510).
- 5) Remove the Guide Shaft Setscrew (66001029) ②.
- 6) Remove the Washer (60311510) and Lead Screw Gear (3AZ20400).
- 7) Remove the Lens Barrel Unit from the AF Front Plate.

Notes:

- a) Remember that the Shutter FPC is fixed to the AF Front Plate with Double Stick Tape. (See Fig.33)
- 8) Remove the Guide Shaft (3AZ20610).
 - 9) Remove the Lead Screw (3AZ20510) by turning it counterclockwise.
 - 10) Remove the Lead Screw Nut (3AZ20920).

[Shielder Application Area]

After installing the Collapsible Mount Ass'y and Winding Unit in the Body, apply shielder to the area shown at right. Neglect of shielder application will cause light leakage.



[Disuse of Washer]

- In the course of production, two Washers (60311510) will be disused.

AF Gear (1) (3AZ20300)	Washer (60311510)
Black gear	Used
White gear	Not used

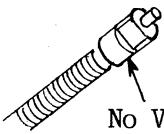
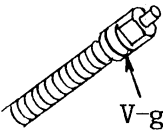
Lead Screw Gear (3AZ20400)	Washer (60311510)
 No V-groove	Used
 V-groove	Not used

Fig.23

[Reassembly of AF Front Plate]

- 1) Insert the DX-SW (3AZ12101) in the AF Front Plate (3AZ20110).
In doing so, engage the claw of the DX-SW properly with the hole in the AF Front Plate.
- 2) Fix the specified two sides of the DX-SW with glue (Cemedine 551).
- 3) Apply grease (PERMALUB G2) to the Light-proof Barrel Plate (3AZ22200). After that, wipe gently with Lens Cleaning Paper to remove excessive grease.
- 4) Fit the holes in the Light-Proof Barrel Plate to the pins of the AF Front Plate and fix with glue (Cemedine 551) so that the Light-Proof Barrel Plate is in close contact with the AF Front Plate.
- 5) From the back side of the AF Front Plate, stick Barrel Light-Proof Cloth in a circle along the thickness of the AF Front Plate.
- 6) Make sure that the Barrel Light-Proof Cloth is not dislocated and the Light-Proof Barrel Plate is not floating.
- 7) Set the AL Roller (39662500) in the AL Roller Holder (39662600).
- 8) Install the AL Roller Holder & AL Roller on the AF Front Plate and fix the AL Roller Holder with glue at two points.

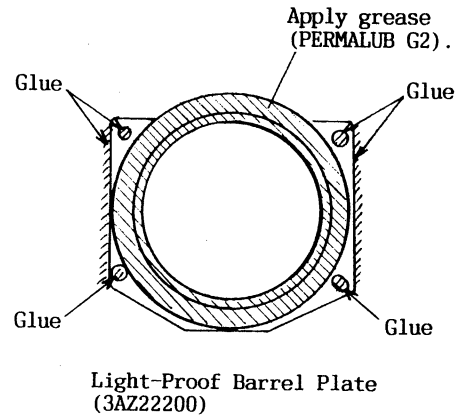


Fig.24

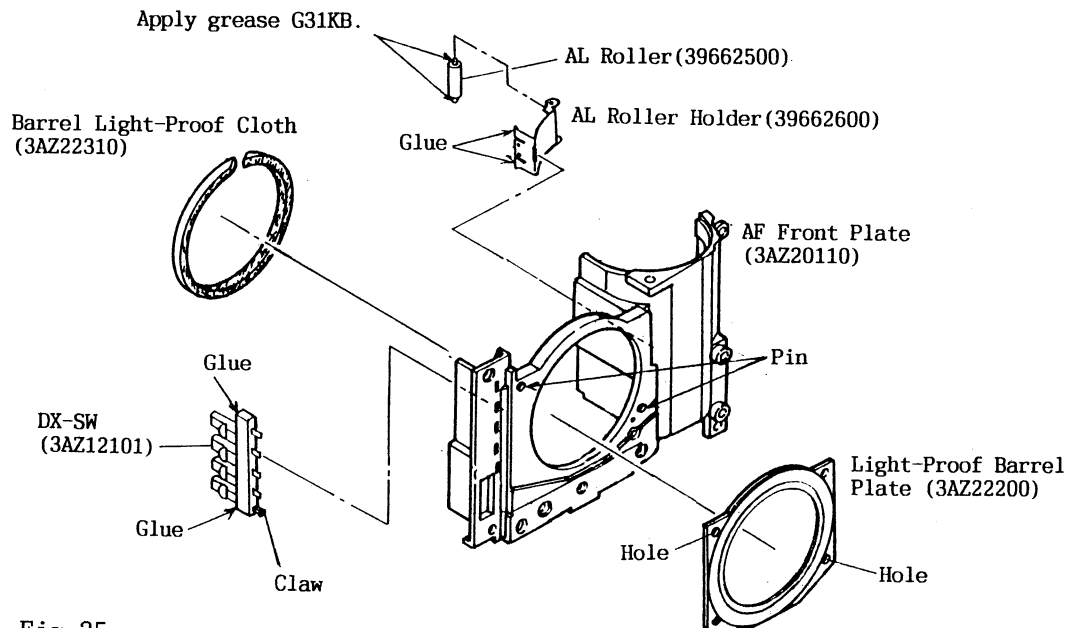


Fig.25

[Reassembly of Lens Barrel]

- 1) Install the Taking Lens Unit (3AZ23000) on the Shutter Unit (3AZ22000) and tighten it with the Taking Lens Unit Setscrews (69113576) x3.
- 2) From the inside of the Shutter Frame, apply a small amount of glue (Cemedine 551) to the three holes.
- 3) With the silk-screen printed "Tessar 3.5/35" up, install the Shutter Front Cover (3AZ22140) by engaging the three claws of the Shutter Front Cover with the three holes in the Shutter Frame.
- 4) From the reference surface (a) on the Shutter Frame, attach Barrel Decorating Tape (3AZ22410) along the surface (b) of the Shutter Front Cover. In doing so, take care not to produce a gap between the Shutter Front Cover and the Barrel Decorating Tape.
- 5) Make sure that the Barrel Decorating Tape is free from wrinkles, bubbles and irregularity.

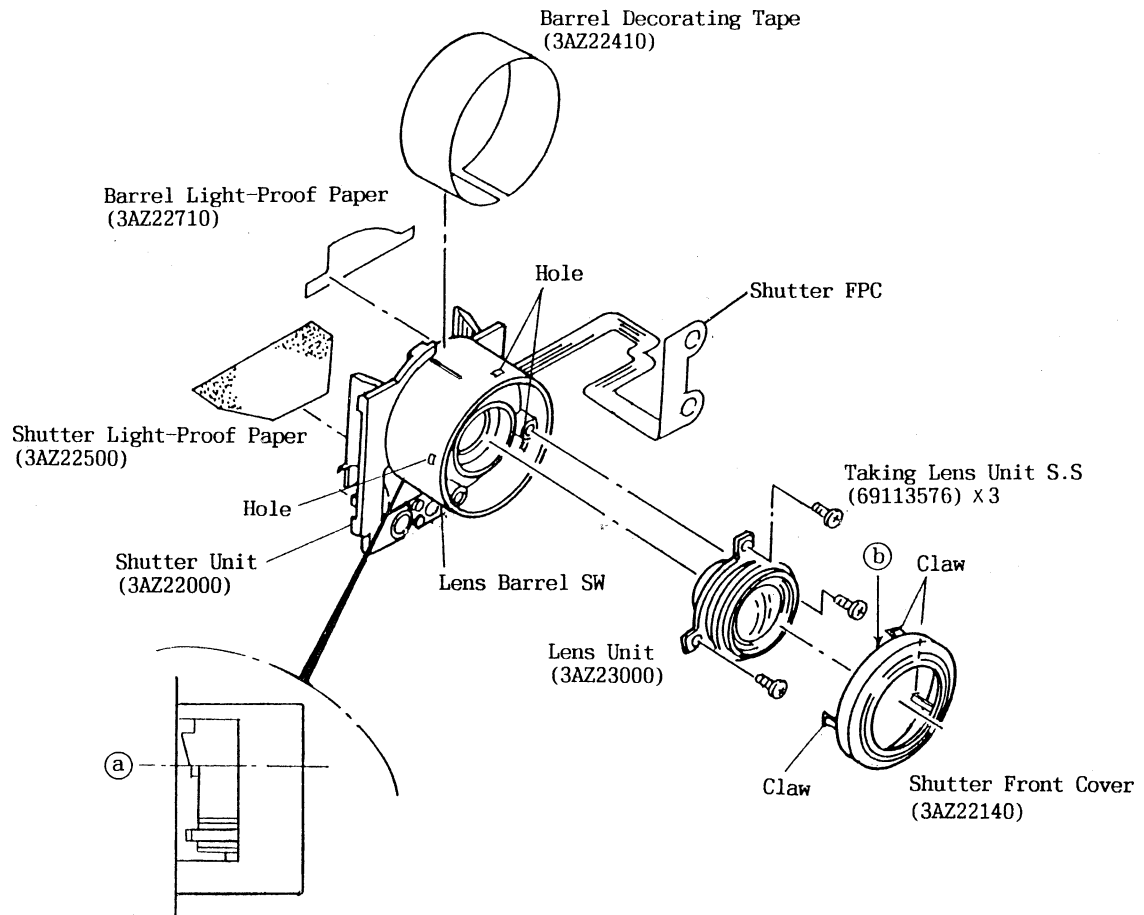


Fig.26

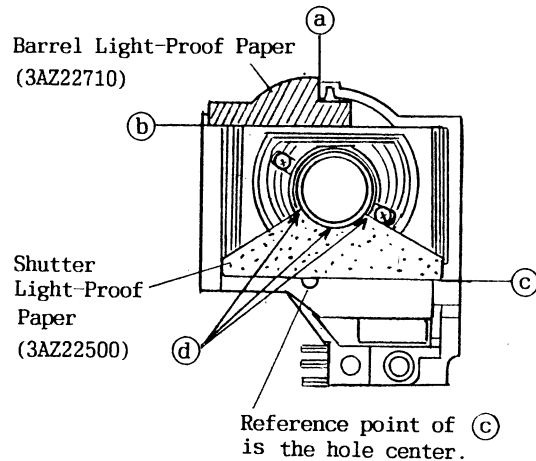
Notes:

- a) Take care not to deform or smear the Lens Barrel Switch.

- 6) Attach the Shutter Light-Proof Paper (3AZ22500) on the Shutter Unit with ③ as the reference.
- 7) Attach the Barrel Light-Proof Paper (3AZ22710) on the Shutter Unit with ① and ② as the reference.

Notes:

- a) Take care that the portion ④ of the Shutter Light-Proof Paper will not intercept light beam. Also press it with your finger to prevent peeling off.



[Back of Shutter Unit]

Fig.27

[Reassembly of AF Motor Holder]

(Attaching position of Lens Barrel FPC Tape)

- 1) Peel off the base sheet from the Lens Barrel FPC Tape (3AZ21501) and attach the tape on the AF Motor Holder in parallel by fitting it to the pin of the AF Motor Holder. The attached Lens Barrel FPC Tape shall be free from wrinkles, overlap and bubbles.
- 2) Attach the Lens Barrel FPC (3AZ51101) on the Lens Barrel FPC Tape in parallel with the AF Motor Holder.
- 3) Wipe the Switch pattern on the Lens Barrel FPC.

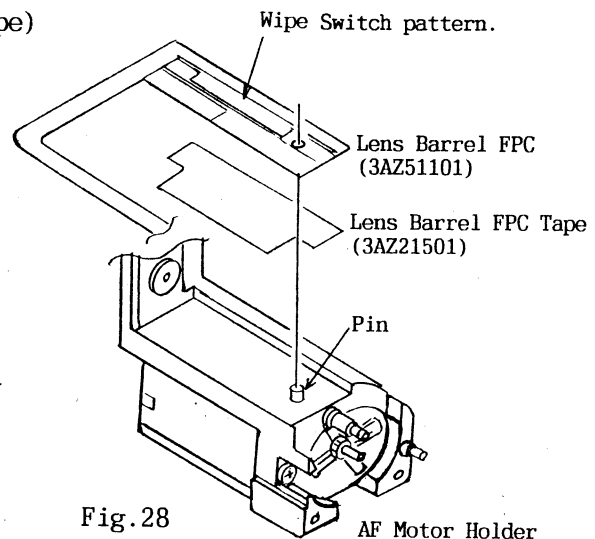


Fig.28

(Installation of Photo-Interrupter)

- 1) Install the cut portion of the Photo-Interrupter (5ENCSG105F***01) in the AF Motor Holder in a position as shown in Fig.29.
- 2) Engage the holes of the PI WI-FPC (3AZ50901) with the legs of the Photo-Interrupter and solder them.
- 3) Cut the legs of the Photo-Interrupter.

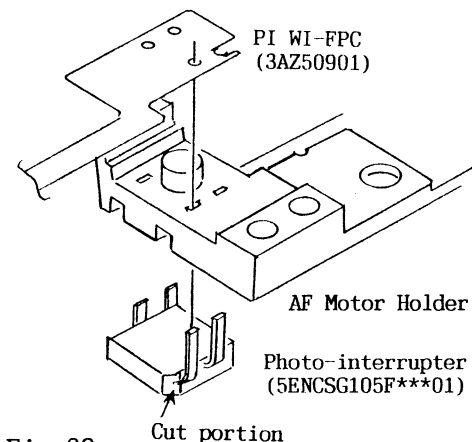
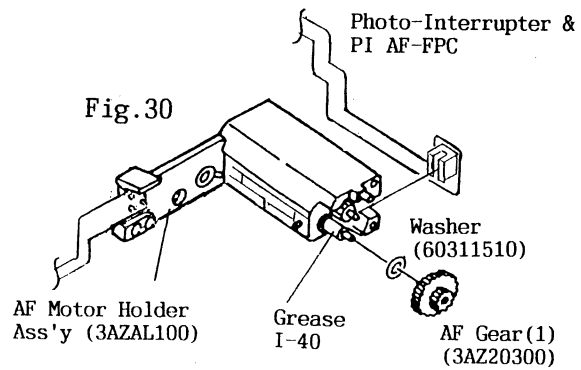


Fig.29

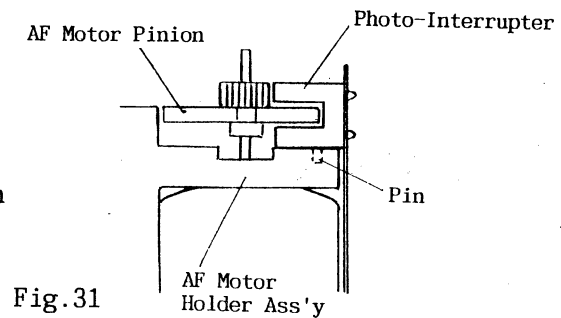
[Reassembly of Collapsible Mount Ass'y]

- 1) Install the Washer (60311510) and AF Gear (1) (3AZ20300) on the AF Motor Holder Ass'y (3AZAL100).

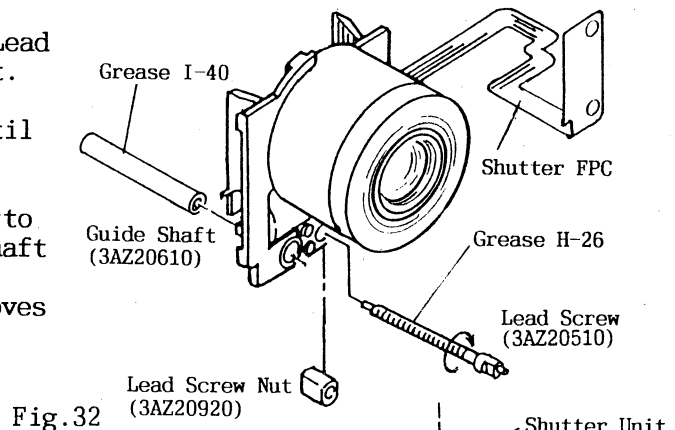
* The Washer (60311510) will be disused in the course of production.
(See Page B-16)



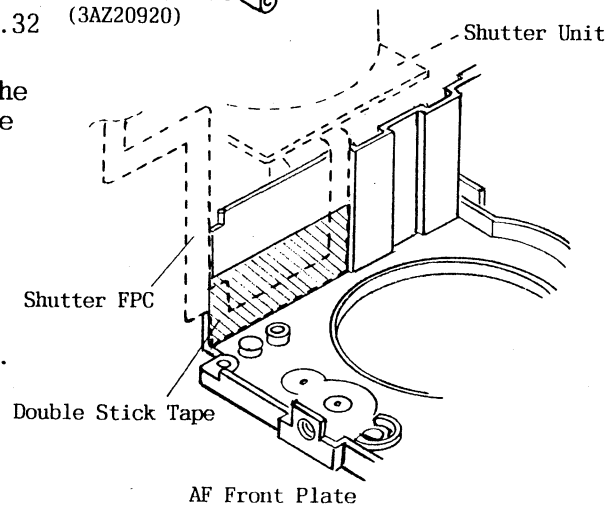
- 2) Install the Photo-Interrupter & PI AF-FPC by fitting its pin in the hole in the AF Motor Holder Ass'y. In doing so, set the Photo-Interrupter on the AF Motor Holder Ass'y with the AF Motor Pinion placed in the recession of the Photo-Interrupter.



- 3) Install the Lead Screw Nut (3AZ20920) on the Shutter Unit.
- 4) Apply grease H-26 evenly to the Lead Screw (3AZ20510) while turning it.
- 5) Turn the Lead Screw clockwise until it is half inserted.
- 6) Apply a thin film of grease I-40 to the whole surface of the Guide Shaft (3AZ20610) and insert the shaft. Make sure that the Guide Shaft moves smoothly.



- 7) Attach Double Stick Tape (9X16) on the inside of the AF Front Plate along the corner.
- 8) Attach the Shutter FPC on the Double Stick Tape. (Attach the Shutter FPC in the position as shown in broken lines in Fig.33.) After attaching the Shutter FPC, take care not to break the printed circuit.



- 9) From the inside of the AF Front Plate, apply grease H-26 to the inside of the Lead Screw Hole.
- 10) Install the Lead Screw Gear (3AZ20400) and Washer (60311510) at the end of the Lead Screw.

Notes:

- a) When installing the Lead Screw Gear, take care not to confuse the head and tail of the gear. (See Fig.31)
- b) The Washer will be disused in the course of production. (See page B-16)

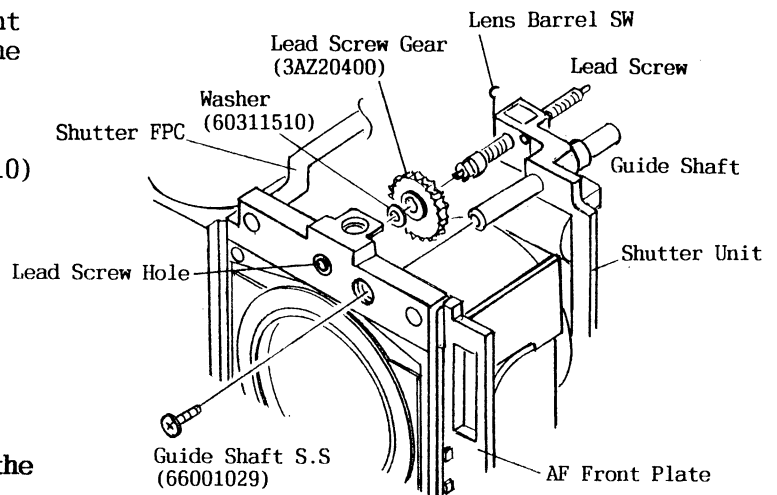


Fig.34

- 11) Install the Shutter Unit and the AF Front Plate to each other.
- 12) Make sure that the Guide Shaft and the AF Front Plate are in close contact with each other. Then tighten the Guide Shaft Setscrew (66001029).

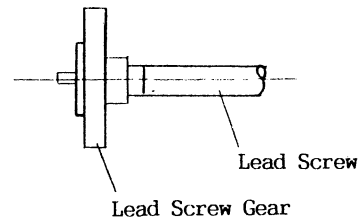


Fig.35

- 13) Wipe the pattern on the Lens Barrel FPC of the AF Motor Holder Ass'y with a lens cleaning paper with ether alcohol. Apply a small amount of grease G-347CA (conductive grease) to the pattern on the Lens Barrel FPC.

- 14) Wipe the Lens Barrel Switch on the Shutter Unit with a lens cleaning paper with ether alcohol.
- 15) Apply grease H-26 to the inside of the Lead Screw Hole in the AF Motor Holder.
- 16) Apply grease H-26 to the two specified areas on the Barrier Lock Shaft.

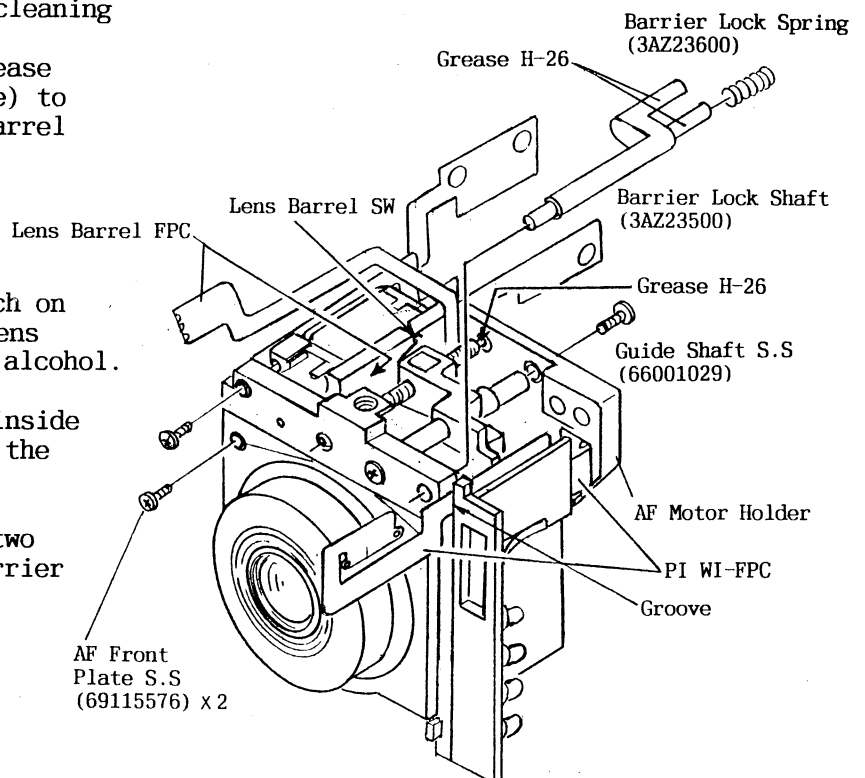


Fig.36

- 17) Install the Barrier Lock Shaft (3AZ23500) and set the Barrier Lock Spring (3AZ23600) on the Barrier Lock Shaft.
- 18) Install the AF Motor Holder Ass'y on the AF Front Plate.
In doing so, fit the Barrier Lock Shaft, Lead Screw and Guide Shaft in the holes in the AF Motor Holder.
Bend the PI WI-FPC by 90 degrees and dress it on the front side through the groove in the AF Front Plate.
- 19) Make sure that the AF Front Plate and the AF Motor Holder are in close contact with each other. Then tighten the Guide Shaft Setscrews (66001029) and AF Front Plate Setscrews (69115576) X 2.

- 20) Attach Double Stick Tape on the Lens Motor.
- 21) Attach the Lens Barrel FPC on the Double Stick Tape.
Fix the brown and yellow lead wires with Double Stick Tape.
- 22) Attach the PI AF-FPC on the Double Stick Tape and bend it midway by 180 degrees for dressing.
- 23) Bend the Shutter FPC midway by 180 degrees for dressing.

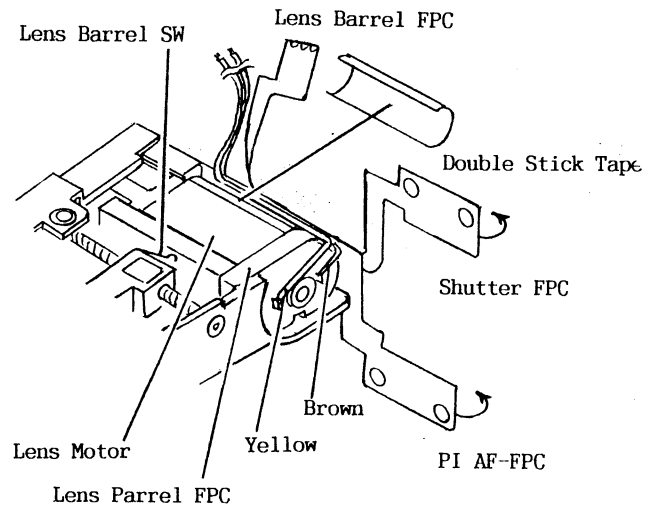
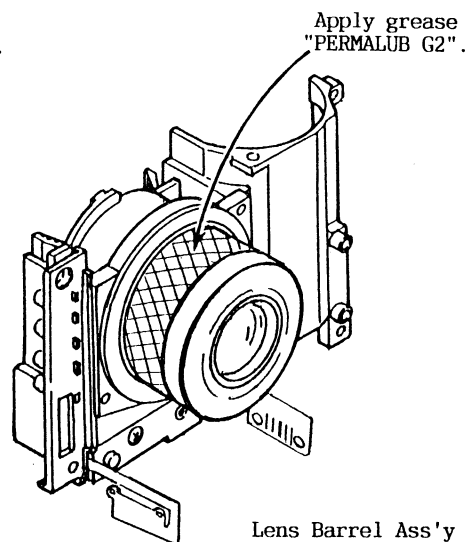


Fig.37

[Grease Application to Lens Barrel Ass'y]

- ① Set the Regulated D.C Power Supply at 2.0V.
 - ② Connect the positive terminal of the Regulated D.C Power Supply to the brown lead wire of the Lens Motor. Connect the negative terminal to the yellow lead wire of the Lens Motor.
 - ③ Advance the taking lens.
 - ④ Apply grease (PERMALUB G2) to the whole periphery of the Barrel Decorating Tape.
- * Apply grease evenly.



Lens Barrel Ass'y

Fig.38

[Confirmation of Lens Barrel Retraction]

- ① Set the Regulated D.C Power Supply at 2.0V.
- ② Connect the positive terminal of the Regulated D.C Power Supply to the brown lead wire of the Lens Motor.
Connect the negative terminal to the yellow lead wire of the Lens Motor.
- ③ Make sure that the taking lens advances.
- ④ Connect the positive terminal of the Regulated D.C Power Supply to the yellow lead wire of the Lens Motor.
Connect the negative terminal to the brown lead wire of the Lens Motor.
- ⑤ Make sure that the taking lens retracts.
The lens must move forward and backward within 500mA all over the moving range.
Make sure that there is no lens moving noise or unstable lens moving.
Make sure that the Lens Barrel Switch slides along the pattern on the Lens Barrel FPC.

[Dressing of FPC after Installation of Lens Barrel Ass'y on Body]

After installing the Lens Barrel Ass'y on the Body, dress each FPC as instructed below to prevent noise from being caused by the Epicyclic Gear coming in contact with the Lens Barrel FPC, PI AF-FPC or Shutter FPC:

- ① Dress the Lens Barrel FPC downward with tweezers.
- ② Dress the PI AF-FPC and Shutter FPC forward with tweezers.
- ③ Fix the yellow and brown lead wires of the Lens Motor to the Lens Motor with Double Stick Tape.

Notes:

- a) Take care not to damage any FPC with tweezers.

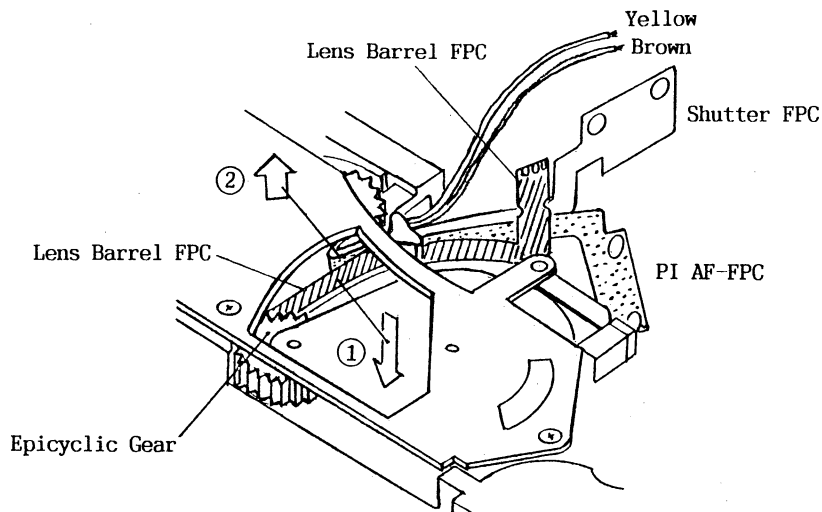


Fig.39

B-7 Disassembly of Back Cover (D) Ass'y

B-7-1 Disassembly of Back Cover (D) Ass'y

- 1) Remove the Pressure Plate (3AZ16030).
- 2) Remove the Back Cover Base Plate Setscrews (69313076) X4 and the Back Cover Base Plate Ass'y (3AZAD100).
- 3) Remove the Auto Date Module (3AZ40500) and Date FPC Ass'y (3AZADE00) together.
- 4) Remove the Mode Button (3AZ40400).

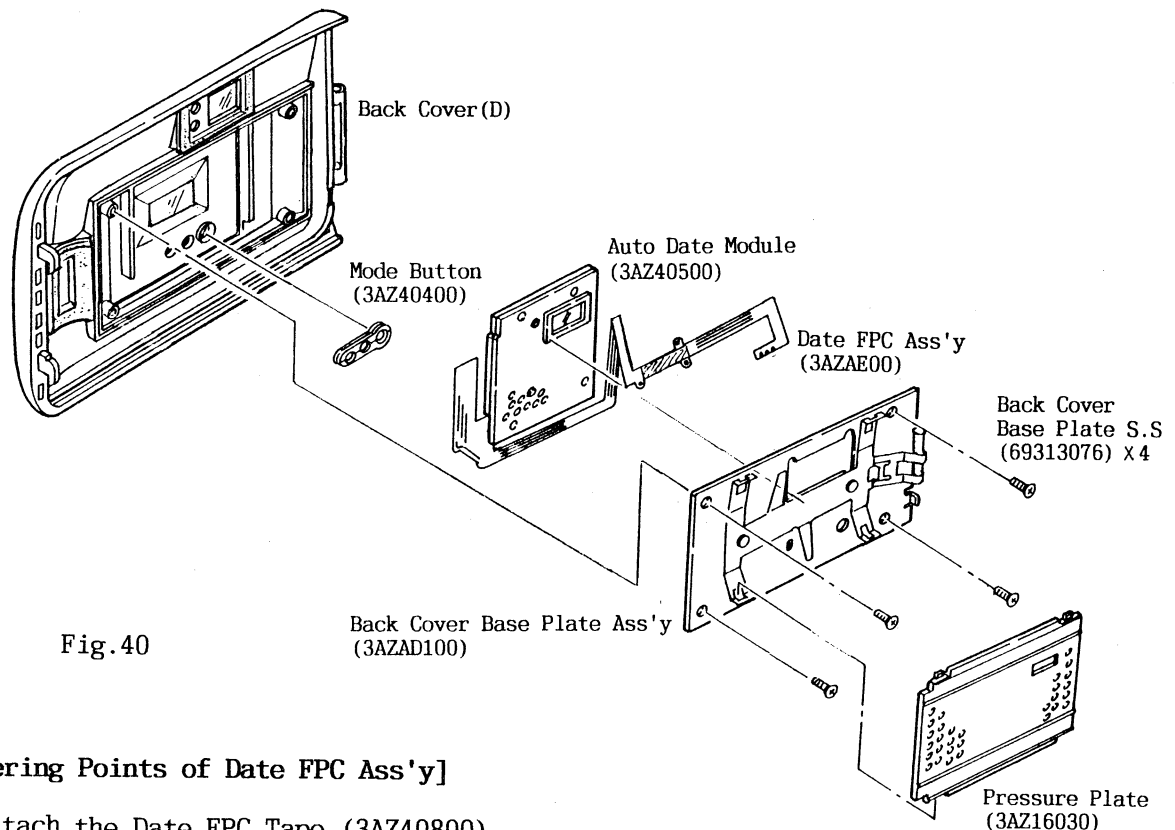


Fig. 40

[Soldering Points of Date FPC Ass'y]

- ① Attach the Date FPC Tape (3AZ40800) on the Date FPC Ass'y.
- * Attach the Date FPC Tape so that it does not project from the width of FPC.
- ② Solder the Date FPC Ass'y to the Auto Date Module.
- * Solder the Date FPC Ass'y so that it is in parallel with the Auto Date Module.
Never install the portion (A) shown with an arrow in the direction of expansion.
- ③ Bend the Date FPC.

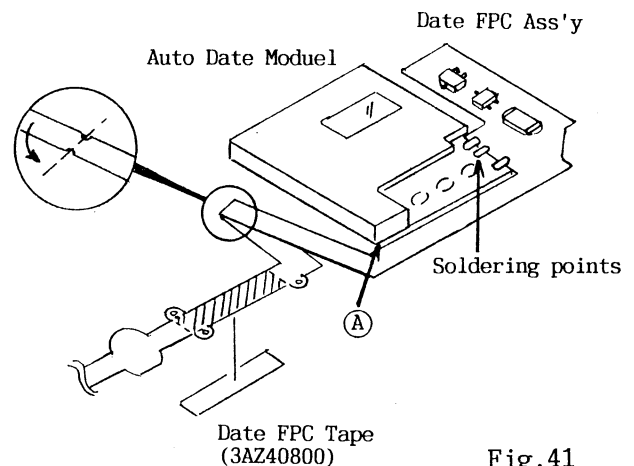
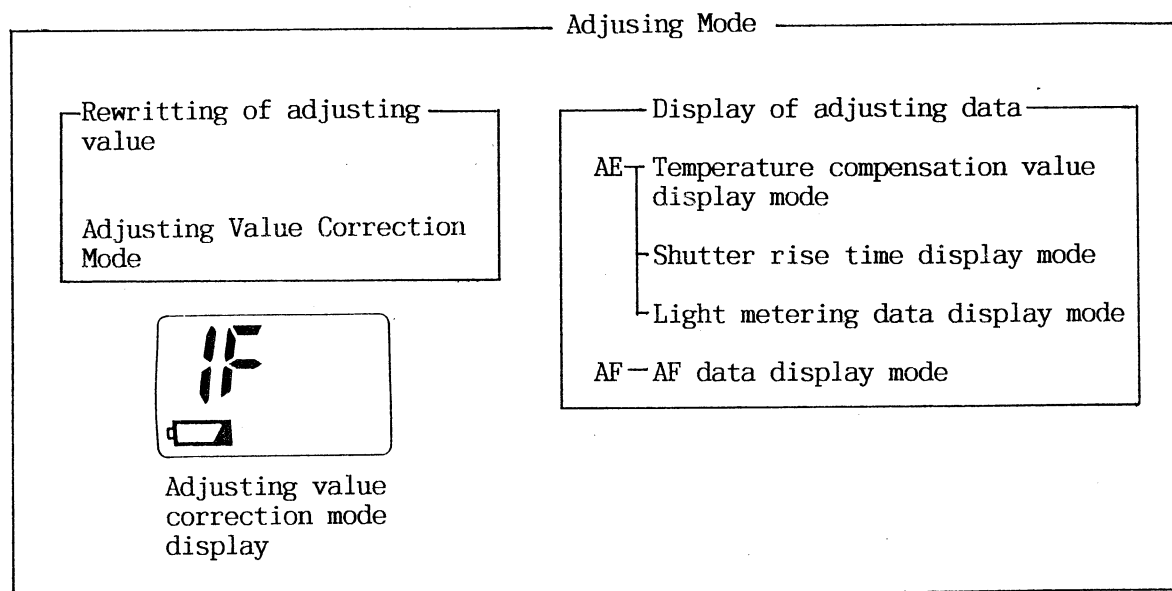


Fig. 41

C. ADJUSTMENT PROCEDURE AND OTHERS

C-1 Adjustments of Compensation Values

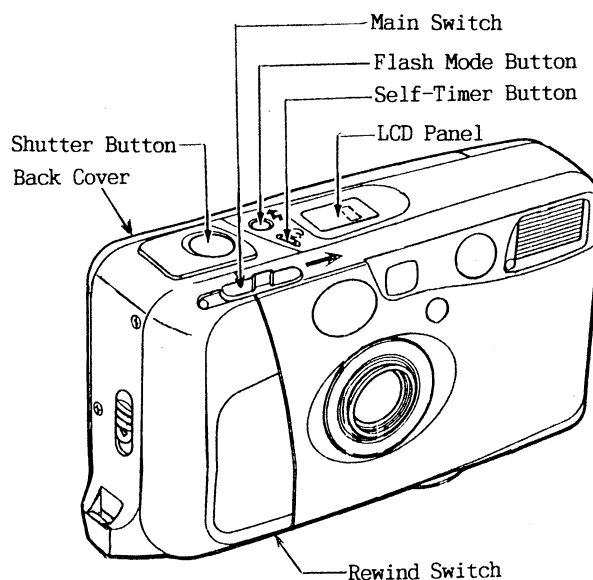
- * This camera permits the adjustments of compensation values (adjusting values) by its own manual operation. Therefore, such adjustments can be made on the camera and measuring instruments without communicating with any special adjustment apparatus.
- In adjustment, each adjusting value can be displayed on the LCD or the display of the backup data written on EEPROM can be changed.



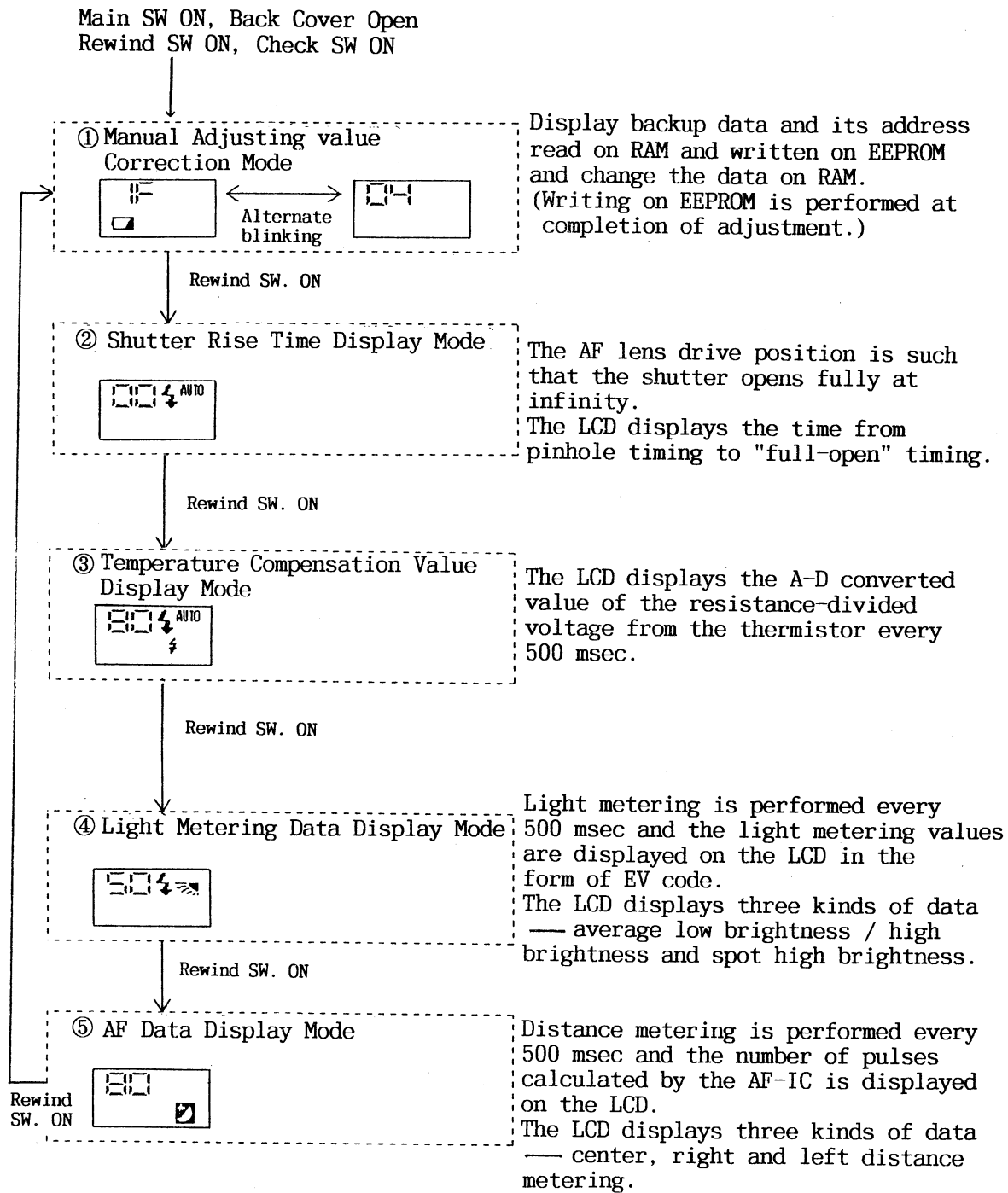
C-1-1 Setting of Adjusting Mode

Follow the following procedure:

- ① Turn on the Main Switch.
- ② Open the Back Cover.
- ③ Press the Rewind Switch and within 1.5 seconds press the Shutter Button halfway down (Check Switch ON) while keeping the Rewind Switch pressed. 1.5 seconds or more later, Adjusting Value Correction Mode will be displayed on the LCD.
(Mode setting is not performed if the Shutter Release is also turned ON).



C-1-2 Kinds of Adjustments and Transition Procedure



C-1-3 Completion of Adjusting Mode (Writing into EEPROM)

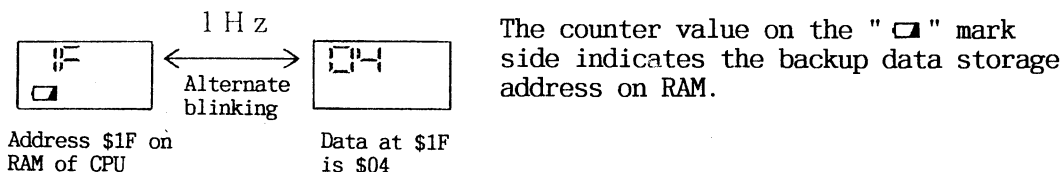
In any mode, turning off the Main Switch will complete the current operation. Then all the backup data on RAM are written on EEPROM. The LCD display returns to "□" display. Writing of adjusting values is performed only by turning off the Main Switch.

C-1-4 Description of Operation in Adjusting Mode

No normal camera operations are performed in any adjusting mode. Therefore, no unnecessary switch detections are performed. At the occurrence of an error in adjusting mode, the error code is written on EEPROM the same way as in normal operation and the adjusting mode is completed.

1. Adjusting Value Correction Mode

- ① At transition to the adjusting mode, this adjusting value correction mode is set first.
- ② When this mode is set, the data storage address (RAM) and the data blink alternately at 1 Hz on the LCD.



The addresses displayed are \$1F to \$57. The display start address is \$1F. After the final address \$57, the display returns to \$1F.

- ③ Change of address and data

Address change:

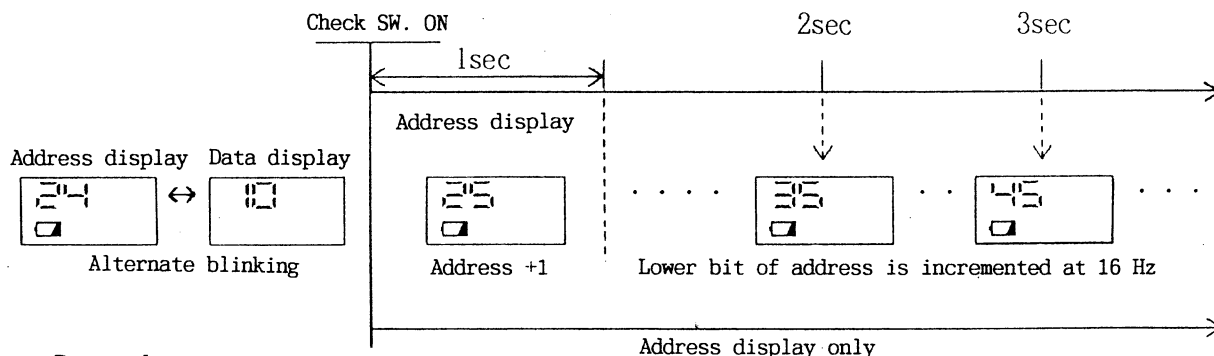
The address display is automatically incremented while the Check Switch is turned on.

The address is changed by +1 within 1 sec after turning on the Check Switch. When the Check Switch is kept on for more than 1 sec, the lower bit is incremented at 16 Hz.

Address only is displayed as long as the Check Switch is turned on.

With the Check Switch turned off, the address currently displayed and its data blink alternately at 1 Hz.

Example: When Check Switch is turned on at address \$24 display



Data change:

Data can be changed by turning on the Self-timer Switch or Flash Mode Switch. Data only is displayed as long as the Self-timer Switch or Flash Mode Switch is turned on. With both switches turned off, the address and data blink. The data change range is \$00 to \$FF. \$FF is followed by \$00.

a) Data increment

The data display is automatically incremented while the Self-timer Switch is turned on.

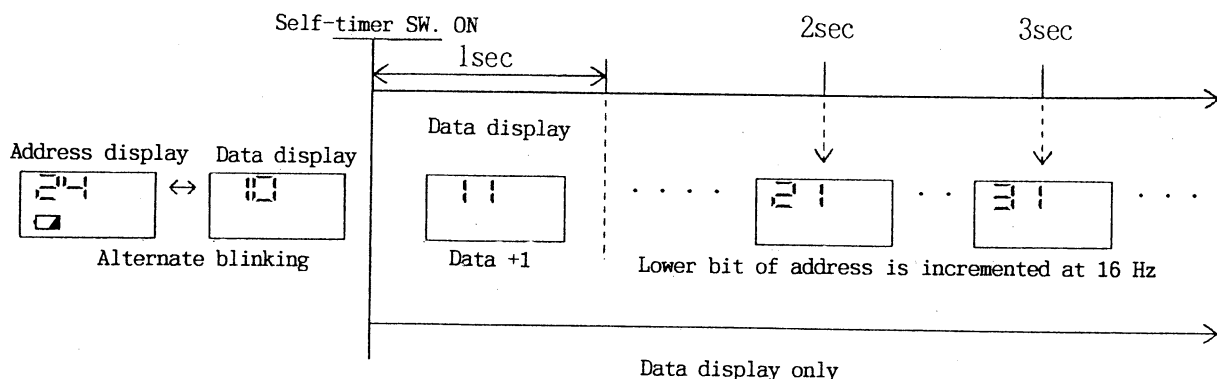
Increment is performed the same way as that at address change.

b) Data decrement

The data display is automatically decremented while the Flash Mode Switch is turned on.

The timing of decrement is the same as that of increment.

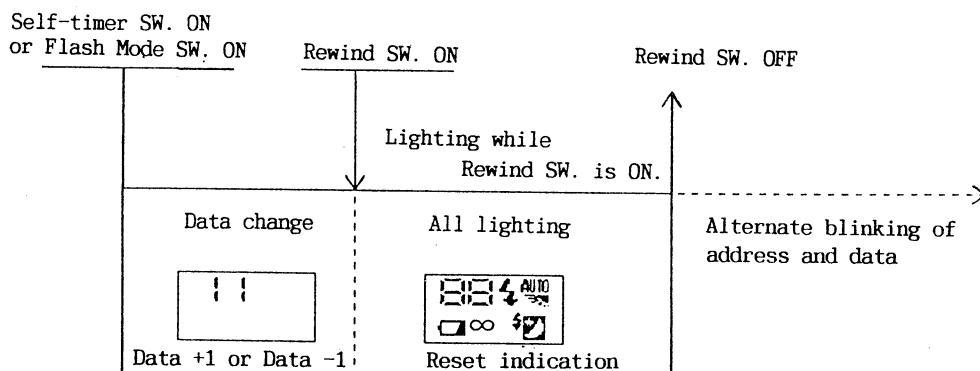
Increment of data \$10 at address \$24 (on CPU)



- ④ Reset of all backup data (Writing of initial adjusting value)
* Perform this reset when EEPROM has been replaced.

During data change by press of the Self-timer Switch or Flash Mode Switch, perform the writing of the initial adjusting value by turning on the Rewind Switch.

- a) Set the data address (address \$1F) in the backup data area to \$04, the film counter (address \$20) to \$00 and the status information (address \$21) to \$0F.
- b) Clear all of the battery level (address \$24) in the adjusting value area through the AF set drive start remaining pulse (address \$4B) to \$00.

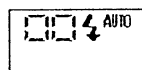


* Operation is Self-timer SW or Flash Mode, whichever pressed

- ⑤ During address change or data change in this mode, no other switch detections are performed.
- ⑥ Transition to the next mode by turning on the Rewind Switch and completion of adjusting mode can be performed only during alternate blinking of address and data, not during address or data change.

2. Shutter Rise Time Display Mode

- ① This mode is set by turning on the Rewind Switch in the adjusting value correction mode.
- ② At the beginning of this mode, the LCD display is as follows:



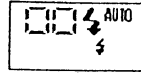
Lighting

- ③ Operate the shutter by turning on the Release Switch and measure the time from the pinhole timing to the "full open" timing.
 - Shutter time is 1/60 to the turning off of the Release Switch.
 - Like in the normal camera operation, the shutter operates in the sequence of AF set drive → Shutter operation → AF reset drive. The AF set drive position in this case is infinity (backup data).
 - After completion of shutter operation, AF reset drive is performed.
- ④ After completion of AF reset drive, the measured time is displayed on the LCD.

The time displayed is represented by \$00 to \$FF with 1 step for 61 μ s. That is, the measured timer value is represented by HEX as it is.
- ⑤ In this mode, no other switch detections are performed during a series of AF set drive, shutter operation and AF reset.
- ⑥ At the occurrence of an operation error during AF set drive, shutter operation or AF reset drive, the adjusting mode is canceled. (Writing on EEPROM is not performed.)

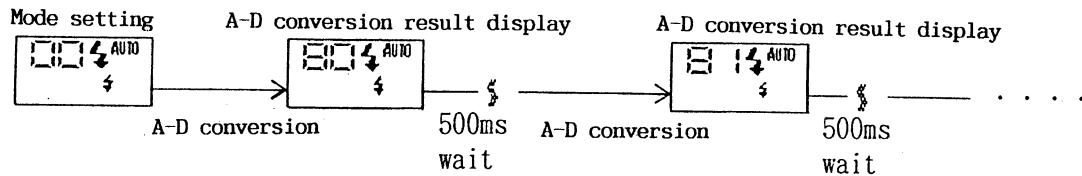
3. Temperature Compensation Value Display Mode

- ① This mode is set by turning on the Rewind Switch in the shutter rise time display mode.
- ② At the beginning of this mode, the LCD display is as follows:



Lighting

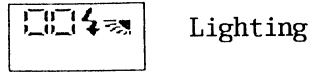
- ③ Every 500 ms, the input voltage of P42 (thermistor temperature detector) is A-D converted and displayed on the LCD.



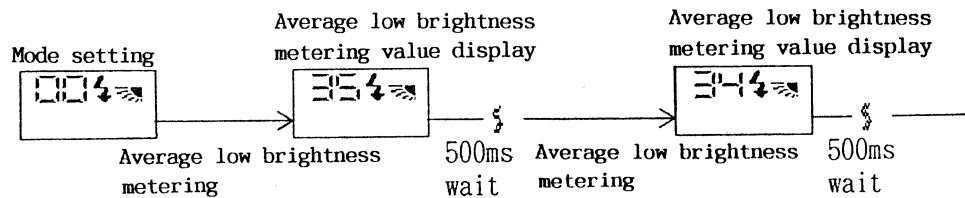
- ④ When the Release Switch is turned on during 500 ms wait, the shutter is operated at the shutter time equivalent to EV17 (\$00 in shutter time code). Like in the normal camera operation, the shutter operates in the sequence of AF set drive, shutter operation and AF reset drive. The AF set drive position in this case is infinity.
- ⑤ In this mode, no other switch detections are performed during A-D conversion and a series of AF set drive, shutter operation and AF reset.
- ⑥ At the occurrence of an operation error during AF set drive, shutter operation or AF reset drive, the adjusting mode is canceled.
(Writing on EEPROM is not performed.)

4. Light Metering Data Display Mode

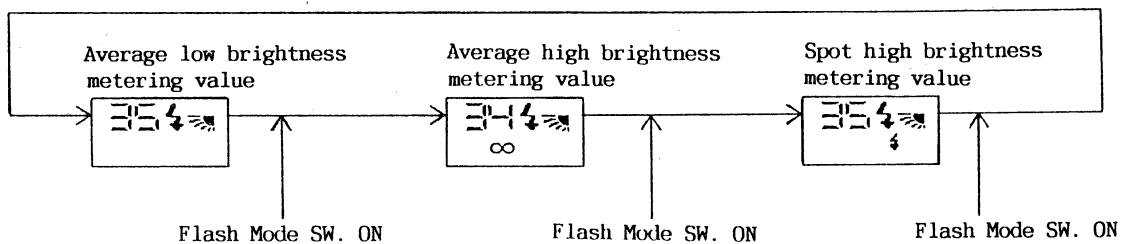
- ① This mode is set by turning on the Rewind Switch in the temperature compensation value display mode.
- ② At the beginning of this mode, the LCD display is as follows:



- ③ Every 500 ms, average light metering is performed and the EV value conversion code for the average light metering value is displayed on the LCD continuously.



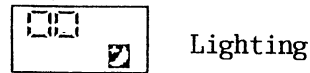
- ④ By turning on the Flash Mode Switch in the state ③ above, the EV conversion code display can be switched between the average high brightness metering value and the spot high brightness metering value. The LCD display in this case is as shown below. After the spot high brightness metering value, the display returns to the average low brightness metering value.



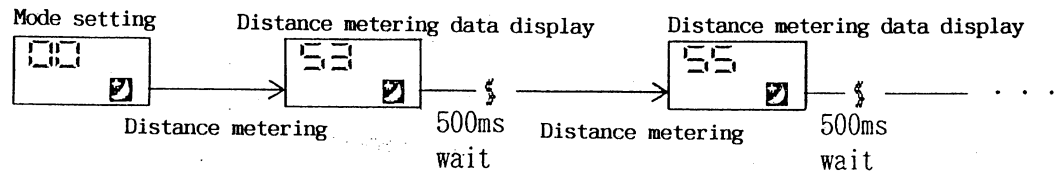
- ⑤ When the Release Switch is turned on during 500 ms wait, the shutter is operated at the shutter time calculated from the current light metering time. (The shutter time is determined from the average metering value at the average metering value display or from the stop metering value at the spot metering value display.)
Like in the normal camera operation, the shutter operates in the sequence of AF set drive, shutter operation and AF reset drive.
The AF set drive position in this case is infinity.
- ⑥ In this mode, no other switch detections are performed during a series of AF set drive, shutter operation and AF reset.
- ⑦ At the occurrence of an operation error during AF set drive, shutter operation or AF reset drive, the adjusting mode is canceled.
(Writing on EEPROM is not performed.)

5. AF Data Display Mode

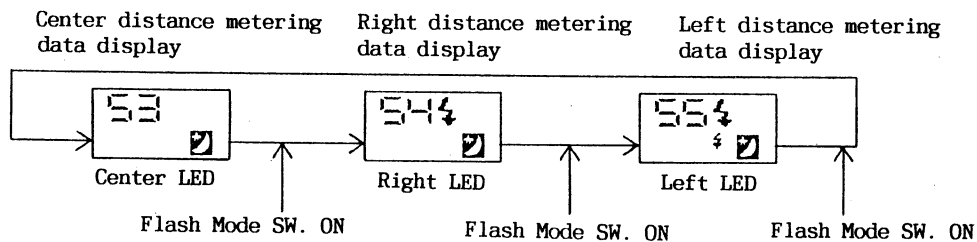
- ① This mode is set by turning on the Rewind Switch in the light metering data display mode.
- ② At the beginning of this mode, the LCD display is as follows:



- ③ Every 500 ms, distance metering is performed and the distance metering data from the AF-IC is displayed on the LCD continuously.



- ④ The distance metering result display by selection of the right or left LED is performed by turning on the Flash mode Switch in the state above. The display in this case is as shown below. After the left LED, the display returns to the center LED distance metering result.



- ⑤ At the next turning on of the Rewind Switch, the mode returns to the adjusting value correction mode.

C-1-5 Adjustment Procedure

Adjust and write the backup data written on EEPROM by the following procedure:

1. Lens infinity position adjustment (Address \$26)

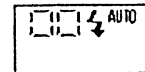
Find the real infinity position of the lens and P2 pulse (EEPROM writing address \$26).

Measuring instrument: Collimator (F = 193.5 mm)

Standard : 0 ± 1.5 mm at use of film
 $+0.5 \pm 1.5$ mm at use of mirror (Do not use reference mirror stand.)

- 1) Set film on the camera. Close the Back Cover.
- 2) After blank shots advance, set the adjusting mode.
- 3) Close the Back Cover.
- 4) Turn on the Rewind Switch once to set the shutter rise mode.
- 5) Set the camera on the collimator and press the Shutter Button. As long as the Release is kept on, the camera advances the lens by the number of pulses equivalent to the adjusting value of P2 pulse and keeps the shutter fully open.
- 6) Find the sharp focus position of the collimator image by moving the objective lens of the collimator.
- 7) Read the scale (D mm) of the objective helicoid of the collimator and find the deflection ΔL mm from the infinity position by consulting the list on page C-12.
- 8) The travel per lens barrel drive pulse is 0.027 mm.
Therefore, calculate the adjusting value of P2 pulse from
$$\text{Adjusting pulse count} = \Delta L / 0.027$$
To calculate the adjusting pulse count, repeat the above procedure five times and take an average. In doing so, the result is not acceptable if the variation of five times is eight pulses or more.
- 9) Write the calculated adjusting pulse count at address \$26 in the adjusting value correction mode and then turn off the Main Switch.

Shutter Rise Mode

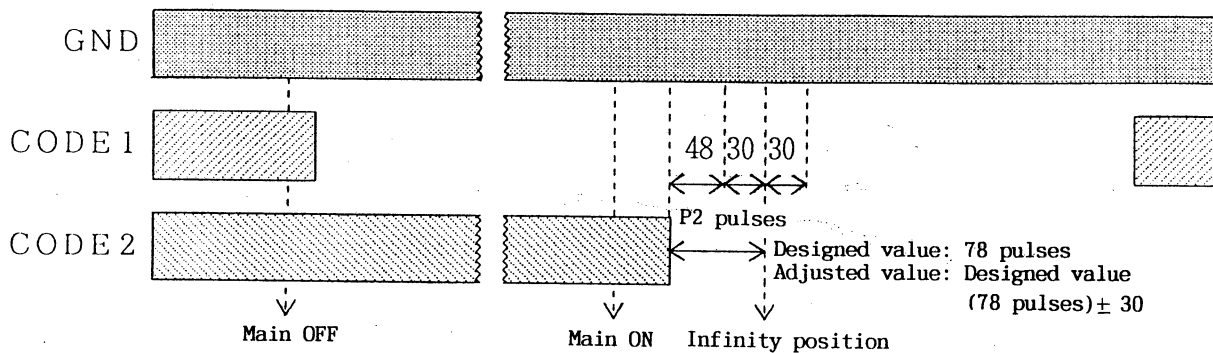


- 10) Measure the deflection from the infinity position again and make sure that the calculated adjusting pulse count is within ± 2 pulses. Upon this, the adjustment is completed.

Notes:

- a) Power is being consumed during full opening of the shutter.
Therefore, try to minimize the full opening time (max. 3 min).
(Power is stopped by turning off the release.)

Relationship between retract barrel codes and lens position



$$P2 \text{ pulses} = \text{Basic designed value } 78 \text{ pulses} + \text{Adjusting value } (\pm 30 \text{ pulses})$$

Adjusting values are held by eight bits with signs representing the deflection from the basic designed value "\$00" (78).

The basic designed value is held as ROM data.

The adjusting width is within \$E2 (-30) to \$1E (+30).

Adjusting value[HEX]	E2	E3	•	FE	FF	00	01	02	•	1D	1E
[DEC]	-30	-29	•	-2	-1	0	+1	+2	•	+29	+30
P2 pulses	30	31	•	4C	4D	4E	4F	50	•	6B	6C
[DEC]	48	49	•	76	77	78	79	80	•	107	108

Example:

- ① When the compensation value in the camera is 0
- ② Read the scale (D mm) of the objective helicoid of the collimator.
D = +5.0 mm
- ③ Find the ΔL mm of D = +5.0 mm from the table "Difference between film surface and focal plane".
 ΔL mm = 0.1679
- ④ The adjusting pulse count is
 $\Delta L \text{ mm} / 0.027 = 0.1679 / 0.027 = 6$ (pulses)
- ⑤ Correction by +6 pulses is made for the compensation value "0" in the camera.
0 - (+6) = -6

The adjusting value of -6 pulses is represented as \$FA in two's complement form.

- ⑥ Write \$FA at address \$26 in the adjusting value correction mode and then turn off the Main Switch.

Difference between film surface and focal plane

D	f	5	6	65	7	8	9	10	30	32	35	38	40
0.1	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0003	0.0003	0.0024	0.0027	0.0033	0.0039	0.0043
0.2	0.0001	0.0002	0.0002	0.0003	0.0003	0.0004	0.0005	0.0005	0.0028	0.0055	0.0066	0.0077	0.0086
0.3	0.0002	0.0003	0.0003	0.0004	0.0005	0.0007	0.0008	0.0008	0.0072	0.0082	0.0098	0.0116	0.0128
0.4	0.0003	0.0004	0.0004	0.0005	0.0007	0.0009	0.0011	0.0011	0.0096	0.0110	0.0131	0.0155	0.0171
0.5	0.0003	0.0005	0.0005	0.0007	0.0009	0.0011	0.0013	0.0013	0.0120	0.0137	0.0164	0.0193	0.0214
0.6	0.0004	0.0006	0.0007	0.0008	0.0010	0.0013	0.0016	0.0016	0.0145	0.0185	0.0197	0.0232	0.0257
0.7	0.0005	0.0007	0.0008	0.0009	0.0011	0.0012	0.0015	0.0019	0.0169	0.0192	0.0230	0.0271	0.0300
0.8	0.0005	0.0008	0.0009	0.0011	0.0014	0.0017	0.0021	0.0021	0.0193	0.0220	0.0263	0.0310	0.0343
0.9	0.0006	0.0009	0.0010	0.0012	0.0015	0.0020	0.0024	0.0024	0.0217	0.0247	0.0296	0.0349	0.0386
1.0	0.0007	0.0010	0.0011	0.0013	0.0017	0.0022	0.0027	0.0027	0.0242	0.0275	0.0329	0.0388	0.0430
1.2	0.0008	0.0012	0.0014	0.0016	0.0021	0.0026	0.0032	0.0032	0.0290	0.0330	0.0395	0.0466	0.0516
1.4	0.0009	0.0014	0.0016	0.0018	0.0024	0.0031	0.0038	0.0038	0.0339	0.0386	0.0461	0.0544	0.0603
1.6	0.0011	0.0016	0.0018	0.0021	0.0028	0.0035	0.0043	0.0043	0.0388	0.0441	0.0528	0.0622	0.0689
1.8	0.0012	0.0017	0.0020	0.0024	0.0031	0.0039	0.0049	0.0049	0.0437	0.0497	0.0594	0.0701	0.0776
2.0	0.0013	0.0019	0.0023	0.0026	0.0035	0.0044	0.0053	0.0053	0.0486	0.0553	0.0662	0.0779	0.0864
2.2	0.0015	0.0021	0.0025	0.0029	0.0038	0.0048	0.0059	0.0059	0.0535	0.0608	0.0728	0.0858	0.0951
2.4	0.0016	0.0023	0.0027	0.0032	0.0042	0.0053	0.0065	0.0065	0.0584	0.0667	0.0795	0.0937	0.1038
2.6	0.0018	0.0025	0.0030	0.0034	0.0045	0.0057	0.0070	0.0070	0.0633	0.0721	0.0862	0.1016	0.1126
2.8	0.0019	0.0027	0.0032	0.0037	0.0048	0.0061	0.0076	0.0076	0.0683	0.0777	0.0930	0.1096	0.1214
3.0	0.0020	0.0029	0.0034	0.0040	0.0052	0.0063	0.0081	0.0081	0.0732	0.0833	0.0997	0.1175	0.1302
3.5	0.0024	0.0034	0.0040	0.0047	0.0061	0.0077	0.0095	0.0095	0.0857	0.0975	0.1166	0.1375	0.1523
4.0	0.0027	0.0039	0.0046	0.0053	0.0070	0.0088	0.0109	0.0109	0.0982	0.1117	0.1336	0.1575	0.1745
4.5	0.0031	0.0044	0.0052	0.0060	0.0079	0.0100	0.0123	0.0123	0.1107	0.1260	0.1507	0.1777	0.1969
5.0	0.0034	0.0049	0.0058	0.0067	0.0088	0.0111	0.0137	0.0137	0.1234	0.1404	0.1679	0.1979	0.2193
5.5	0.0038	0.0054	0.0064	0.0074	0.0097	0.0122	0.0151	0.0151	0.1361	0.1548	0.1852	0.2183	0.2419
6.0	0.0041	0.0060	0.0070	0.0081	0.0106	0.0134	0.0165	0.0165	0.1488	0.1693	0.2026	0.2388	0.2645
6.5	0.0045	0.0065	0.0076	0.0088	0.0115	0.0146	0.0180	0.0180	0.1617	0.1839	0.2201	0.2591	0.2874
7.0	0.0048	0.0070	0.0082	0.0095	0.0124	0.0157	0.0194	0.0194	0.1746	0.1986	0.2376	0.2801	0.3104
7.5	0.0052	0.0075	0.0088	0.0102	0.0133	0.0169	0.0208	0.0208	0.1875	0.2134	0.2553	0.3009	0.3334
8.0	0.0056	0.0080	0.0094	0.0109	0.0143	0.0181	0.0223	0.0223	0.2006	0.2282	0.2730	0.3218	0.3566
8.5	0.0059	0.0085	0.0100	0.0116	0.0152	0.0192	0.0237	0.0237	0.2137	0.2431	0.2909	0.3429	0.3799
9.0	0.0063	0.0091	0.0106	0.0124	0.0161	0.0204	0.0252	0.0252	0.2268	0.2581	0.3088	0.3640	0.4034
9.5	0.0067	0.0096	0.0113	0.0131	0.0171	0.0216	0.0267	0.0267	0.2401	0.2732	0.3269	0.3853	0.4269
10.0	0.0070	0.0101	0.0119	0.0138	0.0180	0.0228	0.0282	0.0282	0.2535	0.2884	0.3450	0.4067	0.4506
11.0	0.0078	0.0112	0.0132	0.0153	0.0199	0.0252	0.0311	0.0311	0.2803	0.3190	0.3816	0.4500	0.4984
12.0	0.0085	0.0123	0.0144	0.0167	0.0219	0.0277	0.0342	0.0342	0.3075	0.3499	0.4186	0.4934	0.5467
13.0	0.0093	0.0134	0.0157	0.0182	0.0238	0.0301	0.0372	0.0372	0.3350	0.3811	0.4560	0.5375	0.5955
14.0	0.0101	0.0145	0.0170	0.0198	0.0256	0.0326	0.0403	0.0403	0.3628	0.4127	0.4938	0.5820	0.6449
15.0	0.0109	0.0156	0.0183	0.0213	0.0278	0.0352	0.0434	0.0434	0.3909	0.4447	0.5320	0.6271	0.6949
16.0	0.0116	0.0168	0.0197	0.0228	0.0298	0.0377	0.0466	0.0466	0.4193	0.4770	0.5707	0.6727	0.7454
17.0	0.0124	0.0179	0.0210	0.0244	0.0319	0.0403	0.0498	0.0498	0.4480	0.5097	0.6098	0.7188	0.7964
18.0	0.0133	0.0191	0.0224	0.0260	0.0339	0.0429	0.0530	0.0530	0.4770	0.5428	0.6493	0.7654	0.8481
19.0	0.0141	0.0203	0.0238	0.0276	0.0360	0.0456	0.0563	0.0563	0.5064	0.5762	0.6893	0.8125	0.9003
20.0	0.0149	0.0214	0.0252	0.0295	0.0381	0.0483	0.0596	0.0596	0.5362	0.6100	0.7298	0.8602	0.9532

D: Travel of objective lens of collimator

f: Focal distance of checking lens

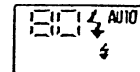
2. Temperature adjustment (Address \$27)

The temperature at shutter operation is detected because of the temperature dependence property of the shutter. Shift adjustment, however, must be made to compensate for the variation of the temperature detecting thermistors. Be sure to make this adjustment before starting AE related adjustments (shutter rise, delay, exposure value adjustment).

Measuring instrument: Thermometer

- 1) Set the camera to adjusting mode and then turn on the Rewind Switch twice to set the temperature compensation value display mode.

Temperature
compensation value
display mode



- 2) The data on the LCD is the current temperature code value A-D converted from the thermistor.
(Every 500 ms, the measured data is A-D converted and display in HEX.)
- 3) Measure the temperature (°C) in a place as close to the camera as possible and calculate the shift from the theoretical A-D converted value.

Theoretical A-D
converted values

T [°C]	A / D [HEX]
1 0	5 8
1 1	5 B
1 2	5 D
1 3	6 0
1 4	6 3
1 5	6 5
1 6	6 8
1 7	6 B
1 8	6 D
1 9	7 0
2 0	7 3
2 1	7 5
2 2	7 8
2 3	7 B
2 4	7 D
2 5	8 0
2 6	8 2
2 7	8 5
2 8	8 7
2 9	8 A
3 0	8 D

Adjusting value = Theoretical A-D converted
value at current temperature
[HEX] - Data on LCD [HEX]

- 4) Write the adjusting value of calculated shift at address \$27 in the adjusting value correction mode and then turn off the Main Switch.

Example:

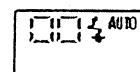
- ① If the measured room temperature is 20°C, find the theoretical A-D converted value (HEX) for 20°C.
20°C = \$73
- ② Suppose the data displayed on the LCD in the temperature compensation display mode is "80".
- ③ Find DEC for \$73 and \$80 from the HEXA Table.
\$73 = 115, \$80 = 128
- ④ Adjusting value
Adjusting value = 115 - 128 = -13 (DEC)
- ⑤ Find HEX for -13 from the HEXA Table.
-13 = \$F3
- ⑥ Write \$F3 on EEPROM in the adjusting value correction mode.

3. Shutter rise time adjustment (Address \$28)

Adjust the voltage (D-A converted output) applied to the shutter so that the shutter rise time (time from pinhole timing to "full-open" timing) will be constant. Make this adjustment in an environment of 10 to 30°C.

- 1) Set the adjusting mode. In the adjusting value correction mode, make sure that the adjusting value for, shutter D-A converted temperature compensation constant is "00" at addresses \$39 to \$3F.
- 2) Set the adjusting value correction mode again by turning on the Rewind Switch. Then turn on the Rewind Switch again to set the shutter rise time display mode.

Shutter rise
time display
mode



- 3) Turn on the Release in this mode, and the camera will drive the shutter at a shutter time of 1/60 or faster (shutter is kept open during press of the Release). Measure the time from the pinhole timing to the "full-open" timing and display the result on the LCD in HEX.

Output time : \$00 (0)~\$FF (16.320) ms

Minimum resolution: 61 μ s

- 4) Adjust the displayed time to \$5F to \$69 (5.795 to 6.405 ms) by changing the voltage adjustment for shutter rise time.
(Center value \$64 = 6.1 ms)

D-A converted output resolution: 1LSB -----11.7 mv

Change in rise time per LSB : 0.2 ± 0.05 ms

Let the measured time by T1 and the change in rise time per LSB be T2.
Then adjusting value = (T1 ms - 6.1 ms) / T2.

* The adjusting value is represented in two's complement of 8 bits.

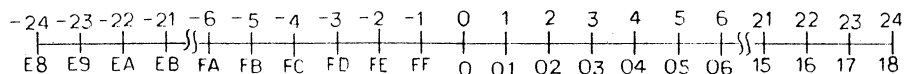
Example:

When measured time is \$52 ms

$$\$52 = 82\text{DEC} \quad 82 \times 61 \mu\text{s} = 5.002 \text{ ms} = T1 \quad (5 - 6.1 \text{ ms}) / 0.2 = -5$$

This value is represented in two's complement from and \$FB is treated as the adjusting value.

Adjusting
value



- 5) Write the calculated adjusting value at address \$28 in the adjusting value correction mode and then turn off the Main Switch.
- 6) Repeat the adjustment above and make sure that the shutter rise time is within \$5F to \$69 (6.1 ± 0.3 ms).

4. Light metering adjustment (Address \$2A to \$2C)

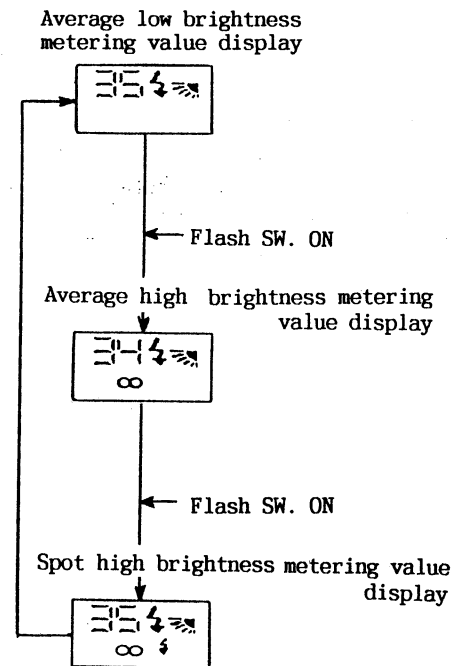
Adjust the light metering value to absorb the variation of the SPDs and integration capacitors. Make this adjustment so that the light metering time is adjusted to the reference value by changing the reference potential for light metering.

Make adjustment for each of average high brightness, average low brightness and spot high brightness.

Measuring instrument: AE multi-tester

- 1) Set the adjusting mode. In this adjusting value correction mode, set the exposure adjusting value to "00" at address \$20. The light metering value display data, incorporating the exposure adjusting value, is not displayed correctly if this value is not "00".
- 2) After that, turn on the Rewind Switch three times to set the light metering value display mode.
- 3) Then the camera performs light metering every 500 ms and displays the average low brightness metering value code on the LCD continuously.
(This light metering value code is represented at 1 / 8 EV steps with EV17 as \$10.)
- 4) Set the brightness of the AE multi-tester to EV8.
- 5) Have the camera face the light source of the AE multi-tester. And make adjustment so that the data on the LCD becomes "57".
Set the adjusting value correction mode by turning on the Rewind Switch three times, rewrite the compensation value at address \$2A and turn off the Main Switch.
(Make adjustment by changing the adjusting value of the reference voltage for light metering average low brightness.)
- 6) Set the adjusting mode. Turn on the Rewind Switch three times to set the light metering display mode.
- 7) Have the camera face the light source of the AE multi-tester again and make sure that the data on the LCD is "57". If it is not "57", repeat step5).
- 8) If "57" is displayed, set the brightness of the AE multi-tester to EV15.
- 9) Turn on the Flash Mode Switch of the camera to display the average high brightness metering value.

Light metering data display mode



- 10) Have the camera face the light source of the AE multi-tester. Then make adjustment so that the data on the LCD becomes "20". Set the adjusting value correction mode by turning on the Rewind Switch three times, rewrite the compensation value at address \$2B and turn off the Main Switch.
- 11) Set the adjusting mode. Turn on the Rewind Switch three times to set the light metering value display mode.
- 12) Turn on the Flash Mode Switch of the camera to display the average high brightness metering value.
- 13) Have the camera face the light source of the AE multi-tester and make sure that the display on the LCD is "20". If it is not "20", repeat step 10).
- 14) If "20" is displayed, turn on the Flash Mode Switch of the camera to display the spot high brightness metering value.
- 15) With the brightness of AE multi-tester kept at EV15, have the camera face the light source. Then make adjustment so that the data on the LCD becomes "20". Set the adjusting value correction mode by turning on the Rewind Switch three times, rewrite the compensation value at address \$2C and turn off the Main Switch.
- 16) Set the adjusting mode. Turn on the Rewind Switch three times to set the light metering value display mode.
- 17) Turn on the Flash Mode Switch of the camera twice to display the spot high brightness metering value.
- 18) Have the camera face the light source of the AE multi-tester and make sure that the data on the LCD is "20". If it is not "20", repeat step 15).

Notes:

- a) If the brightness of EV8 is not provided by the AE multi-tester, make adjustment so that the data on the LCD becomes "4F" at EV9.

- b) Although the designed EV conversion code at EV8 is \$58, adjust to \$57 to reduce the difference at switching between low brightness and high brightness.

Δ EV value	High brightness	Low brightness	When Δ EV = 0	Adjusting value
	EV conversion code (EV15)	EV conversion code (EV8)	Reference potential	
+ 0.875	\$19	\$51	EB	6B
+ 0.75	\$1A	\$52	D8	58
+ 0.625	\$1B	\$53	C5	45
+ 0.5	\$1C	\$54	B5	35
+ 0.375	\$1D	\$55	A6	26
+ 0.25	\$1E	\$56	98	18
+ 0.125	\$1F	\$57	8B	0B
+ 0	\$20	\$58	80	00
- 0.125	\$21	\$59	76	F6
- 0.25	\$22	\$5A	6B	EB
- 0.375	\$23	\$5B	63	E3
- 0.5	\$24	\$5C	5A	DA
- 0.625	\$25	\$5D	53	D3
- 0.75	\$26	\$5E	4C	CC
- 0.875	\$27	\$5F	46	C6
- 1	\$28	\$60	40	C0

* The light measuring time at EV15 is the same as that at EV8.
That is, the basic designed value of the reference potential is \$80 at each of average low brightness, average high brightness and spot high brightness.

* Δ EV is the difference from the reference in EV conversion code.

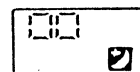
5. Exposure adjustment (Address \$2D)

Adjust the final exposure including light metering, shutter and lens by changing the light metering value. The change per step is 1/8 EV (0.125EV).

- 1) Set the camera to night-scene mode for normal shooting. (Turn on the Flash Switch three times.)

Night-scene mode

- 2) Set the brightness of the AE multi-tester to EV8, release the shutter normally and check the error of exposure value.



- 3) Set the brightness of the AE multi-tester to EV15, release the shutter normally and check the error of exposure value.
At this point, use the exposure adjusting value written on EEPROM.

- 4) Calculate a compensation value so that the error of exposure value becomes within 0.2EV at the two brightnesses.
- 5) Set the adjusting mode. In the adjusting value correction mode, make adjustment by changing the compensation value at address \$2D.
Turn off the Main Switch for writing.
- 6) Make sure that the errors of exposure value at EV8, 12 and 15 are within respective specification ranges.

Exposure standard

Brightness EV	
EV 8	-0.8 ~ +0.8 EV
EV12	-0.8 ~ +0.8 EV
EV15	-0.9 ~ +1.0 EV

Reference value

Error Δ EV of exposure value and corresponding adjusting value

Δ EV value	Adjusting value
+ 2	\$ F 0
.	.
.	.
+ 0.8 7 5	F 9
+ 0.7 5	F A
+ 0.6 2 5	F B
+ 0.5	F C
+ 0.3 7 5	F D
+ 0.2 5	F E
+ 0.1 2 5	F F
\pm 0	0 0
- 0.1 2 5	0 1
- 0.2 5	0 2
- 0.3 7 5	0 3
- 0.5	0 4
- 0.6 2 5	0 5
- 0.7 5	0 6
- 0.8 7 5	0 7
- 1	0 8
.	.
.	.
- 1.8 7 5	0 F

6. Shutter delay adjustment (Address \$29)

Adjust the time from trigger timing to shutter time code timing.
Make this adjustment at the same time as exposure adjustment.

- 1) Set the brightness of the AE multi-tester to EV15, ISO400.
- 2) Measure the exposure value then. Adjust the Shutter delay value by changing the compensation value at address \$29.
- 3) Repeat 2) until the average of five successive correction values become within $0 \pm 0.3\text{EV}$.

* Calculate the adjusting value from the change of about 0.15EV per LSB.

Adjusting value (HEX)	F 1	F 2	F 3 . . F E	F F	0 0	0 1	0 2 . . 0 D	0 E	0 F
Delay setting value (HEX)	0 1	0 2	0 3 . . 0 E	0 F	1 0	1 1	1 2 . . 1 D	1 E	1 F
Setting time (μ s)	61	122	183 . . 854	915	976	1037	1098 . . 1769	1830	1891

7. AF adjustment (Address \$2E to \$38)

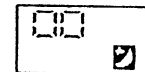
Each camera has AF pulse data for the camera-to-subject distances of 0.3m, 0.45m, 0.6m, 1m and 3m. Measure the actual AF pulse data of each camera and write the difference between the data and the basic designed value on EEPROM as the shift.

Adjusting tools:

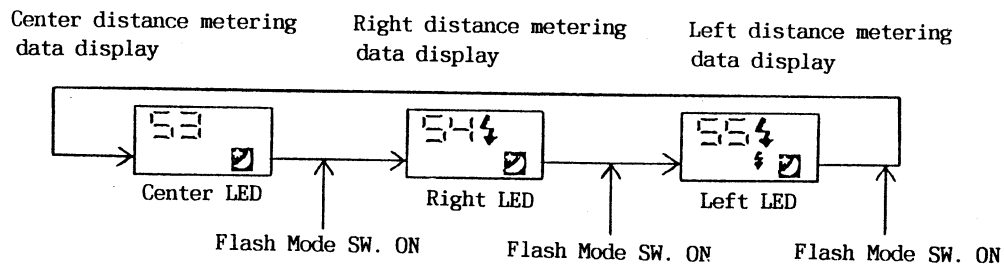
- 18% gray chart (minimum dimensions 395mm x 1200mm)
or white paper (same dimensions)
- Measure (capable of measuring up to 3m)
- Tripod

- 1) Set the camera to the adjusting mode and then turn on the Rewind Switch four times to set the AF data display mode.

AF data display
mode



- 2) Lock the camera on the tripod.
- 3) Adjust the distance between the gray chart and the film surface of the camera to 3m, 1m, 0.6m, 0.45m and 0.3m and record the AF pulse data displayed on the LCD for the respective distances.
- 4) Turn on the Flash Mode Switch to display the right distance metering data.
- 5) Adjust the distance between the gray chart and the film surface of the camera to 3m, 1m and 0.6m and record the AF pulse data displayed on the LCD for the respective distances.
- 6) Turn on the Flash Mode Switch to display the left distance metering data.
- 7) Adjust the distance between the gray chart and the film surface of the camera to 3m, 1m and 0.6m and record the AF pulse data displayed on the LCD for the respective distances.



- 8) Calculate the difference between each AF pulse data measured and the basic designed value.

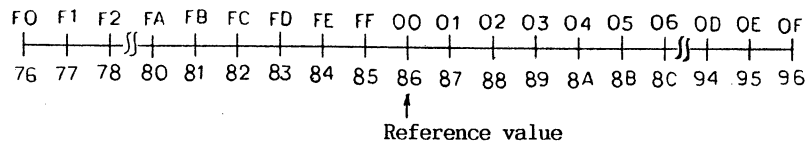
Contents and reference values at addresses

Address	Reference value	Initial value	Content
\$ 2 E	\$ 8 6	\$ 0 0	AF pulse data for 2.9466m (Center LED)
\$ 2 F	\$ 9 7	\$ 0 0	AF pulse data for 1.0094m (Center LED)
\$ 3 0	\$ A 9	\$ 0 0	AF pulse data for 0.5987m (Center LED)
\$ 3 1	\$ B 7	\$ 0 0	AF pulse data for 0.4519m (Center LED)
\$ 3 2	\$ C 9	\$ 0 0	AF pulse data for 0.3494m (Center LED)
\$ 3 3	\$ 4 A	\$ 0 0	AF pulse data for 2.9466m (Right LED)
\$ 3 4	\$ 5 A	\$ 0 0	AF pulse data for 1.0094m (Right LED)
\$ 3 5	\$ 6 C	\$ 0 0	AF pulse data for 0.5987m (Right LED)
\$ 3 6	\$ C 3	\$ 0 0	AF pulse data for 2.9466m (Left LED)
\$ 3 7	\$ D 3	\$ 0 0	AF pulse data for 1.0094m (Left LED)
\$ 3 8	\$ E 5	\$ 0 0	AF pulse data for 0.5987m (Left LED)

Example 1: When the AF pulse data for 3m of the center LED is \$8A, the data at address \$2E is \$04 ($\$8A - \$86 = \$04$).

Adjusting value (HEX)

No. of pulses for
2.9466m

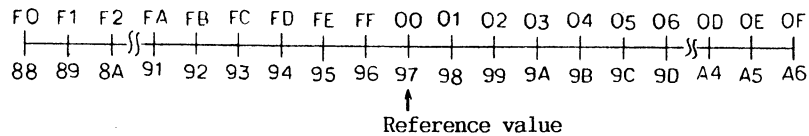


Set the adjusting value correction mode and write the adjusting value of \$04 at address \$24.

Example 2: When the AF pulse data for 1m of the center LED is \$9C, the data at address \$2F is \$05 ($\$9C - \$97 = \$05$).

Adjusting value (HEX)

No. of pulses for
1.0094m



Set the adjusting value correction mode and write the adjusting value of \$05 at address \$2F.

Example 3: When the AF pulse data for 0.6m of the center LED is \$AF, the data at address \$30 is \$06 ($\$AF - \$A9 = \$06$).

Adjusting value (HEX) FO F1 F2 FA FB FC FD FE FF 00 01 02 03 04 05 06 OD OE OF
 No. of pulses for 9A 9B 9C A3 A4 A5 A6 A7 A8 A9 AA AB AC AD AE AF B6 B7 B8
 0.5987m
 ↑
 Reference value

Set the adjusting value correction mode and write the adjusting value of \$06 at address \$30.

Example 4: When the AF pulse data for 0.45m of the center LED is \$BD, the data at address \$31 is \$06 (\$BD - \$AF = \$06).

Adjusting value (HEX) FO F1 F2 FA FB FC FD FE FF 00 01 02 03 04 05 06 OD OE OF
 No. of pulses for A8 A9 AA B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD C4 C5 C6
 0.4519m
 ↑
 Reference value

Set the adjusting value correction mode and write the adjusting value of \$06 at address \$31.

Example 5: When the AF pulse data for 0.3m of the center LED is \$CD, the data at address \$32 is \$04 (\$CD - \$C9 = \$04).

Adjusting value (HEX) FO F1 F2 FA FB FC FD FE FF 00 01 02 03 04 05 06 OD OE OF
 No. of pulses for BA BB BC C3 C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF D6 D7 D8
 0.3494m
 ↑
 Reference value

Set the adjusting value correction mode and write the adjusting value of \$04 at address \$32.

Notes: In the adjustment of the right LED (Addresses \$33, \$34 and \$35), please add \$78 to the adjusting value respectively.

Example 6: When the AF pulse data for 3m of the right LED is \$4C, the data at address \$33 is \$02 (\$4C - \$4A = \$02).
 \$78 must be added to the data \$02 (\$02 + \$78 = \$7A)

Adjusting value (HEX) FO F1 F2 FA FB FC FD FE FF 00 01 02 03 04 05 06 OD OE OF
 No. of pulses for 3B 3C 3D 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 57 58 59
 2.9466m
 ↑
 Reference value

Set the adjusting value correction mode and write the adjusting value of \$7A at address \$33.

Example 7: When the AF pulse data for 1m of the right LED is \$5F, the data at address \$34 is \$05 ($\$5F - \$5A = \$05$).
\$78 must be added to the data \$05 ($\$05 + \$78 = \$7D$)

Adjusting value (HEX)	FO	F1	F2	FA	FB	FC	FD	FE	FF	00	01	02	03	04	05	06	0D	0E	0F
No. of pulses for	4B	4C	4D	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F	60	67	68	69
1.0094m										↑									
										Reference value									

Set the adjusting value correction mode and write the adjusting value of \$7D at address \$34.

Example 8: When the AF pulse data for 0.6m of the right LED is \$6A, the data at address \$35 is \$FE ($\$6A - \$6C = -\$02$).
\$78 must be added to the data -\$02 ($-\$02 + \$78 = \76)

Adjusting value (HEX)	FO	F1	F2	FA	FB	FC	FD	FE	FF	00	01	02	03	04	05	06	0D	0E	0F
No. of pulses for	5D	5E	5F	66	67	68	69	6A	6B	6C	6D	6E	6F	70	71	72	79	7A	7B
0.5987m										↑									
										Reference value									

Set the adjusting value correction mode and write the adjusting value of \$76 at address \$35.

Example 9: When the AF pulse data for 3m of the left LED is \$C2, the data at address \$36 is \$FF ($\$C2 - \$C3 = -\$01 = \FF).

Adjusting value (HEX)	FO	F1	F2	FA	FB	FC	FD	FE	FF	00	01	02	03	04	05	06	0D	0E	0F
No. of pulses for	B4	B5	B6	BD	BE	BF	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	D0	D1	D2
2.9466m										↑									
										Reference value									

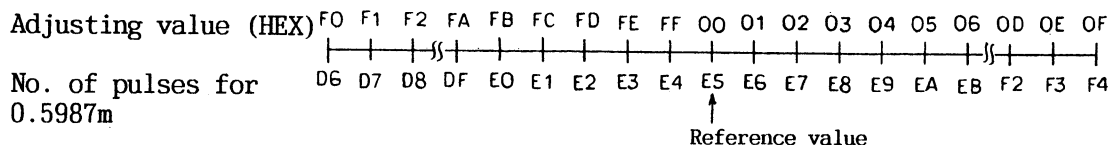
Set the adjusting value correction mode and write the adjusting value of \$FF at address \$36.

Example 10: When the AF pulse data for 1m of the left LED is \$D6, the data at address \$37 is \$03 ($\$D6 - \$D3 = \$03$).

Adjusting value (HEX)	FO	F1	F2	FA	FB	FC	FD	FE	FF	00	01	02	03	04	05	06	0D	0E	0F
No. of pulses for	C4	C5	C6	CD	CE	CF	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	E0	E1	E2
1.0094m										↑									
										Reference value									

Set the adjusting value correction mode and write the adjusting value of \$03 at address \$37.

Example 11: When the AF pulse data for 0.6m of the left LED is \$EA, the data at address \$38 is \$05 (\$EA - \$E5 = \$05).



Set the adjusting value correction mode and write the adjusting value of \$05 at address \$38.

8. Other adjusting values

(1) Battery check level (Address \$24, \$25)

This value is not adjustable. Write \$0B at address \$24 and 00 at \$25.

(2) In the adjustable constant value area at address \$39 and above, write the initial setting values specified in "Backup Data constituents".

The Main FPC Ass'y prepared as a service part has initial setting values already written. Therefore, do not write any other values on it.

(3) Address currently used (Address \$1F)

This value indicates the address of EEPROM storing the film counter value. Which is the first address of the backup data of the film counter value, status information and winding threshold value.

This address is used in such a way that verify check is always performed at storage of these backup data and transition to the next block is performed at the detection of an error. The values to be entered here are multiples of four in the range of \$04 to \$3C. Do not write any other values.

(4) Film counter value (Address \$20)

This value indicates the current film counter value. Count is possible in the range of \$00 (0) to \$63 (99). At writing of any other values, error display appears.

(5) Status information (Address \$21)

This value indicates the status code representing the current status of the camera.

Status	Status code	Cause of error	Recovery motion
Rewinding	\$01	Battery down during rewinding	Rewinding resumed
Rewinding end Blank shots advance failure	\$02	Battery down at rewinding end or blank shots advance failure	Rewinding end or blank shots advance failure resumed
Shutter error	\$03	Shutter photo coupler signal faulty Battery down during shutter drive	Drive to current Main Switch status position
Main ON/OFF AF set drive error	\$04	Retract barrel code, AF photo coupler pulse faulty Battery down during drive	Drive to current Main Switch status position
AF reset drive error	\$05	Retract barrel code, AF photo coupler pulse faulty Battery down during drive	Drive to current Main Switch status position then winding by one frame
Winding	\$06	Battery down during winding	Another winding by one frame
Normal status	\$0F		

At writing of any values other than the status codes above,
processing is made the same way as at a shutter error.

(6) Winding threshold level (Address \$22, \$23)

This input boundary value is used to check the input of the film perforation
signal determined at blank shots advance.

"H" level is set at \$22 and "L" level at \$23.

Do not any other values than normal values for "H" and "L" levels.

(Previous data is held. Initial value \$00)

The level is 11.7mV per LSB.

Backup Data constituents

NAME	ADDRESS (HEX)	Initial Adjusting Value (HEX)	Basic Designed Value (HEX)	b7	b6	b5	b4	b3	b2	b1	b0
Backup Data Area											
Data Address	1F	04	None	Address currently used							
Backup Data (4 bytes) ↓	20	00	None	Film counter							
	21	0F	None	Not used		Status information					
	22	-	None	Winding threshold level, "H" level							
	23	-	None	Winding threshold level, "H" level							
Adjusting Value Area											
Battery Level 1	24	00	99	Battery check B1 level,A-D converted adjusting value							
Battery Level 2	25	00	75	Battery check B2 level, A-D converted adjusting value							
P2 Pulse	26	00	4E	Pulse count adjusting value for infinity position (P2)							
Temperature Adjusting Value	27	00	00	Temperature adjusting Value							
Shutter D-A Value	28	00	49	Shutter rise time voltage adjusting value (D-A converted value)							
Shutter Delay	29	00	00	Shutter delay adjusting value, 8 bits with sign, 61 μs per step, 32 steps							
Light metering Adjusting Value	2A	00	80	Light metering adjusting value, Average low brightness reference potential Average high brightness reference potential Spot high brightness reference potential							
	2B	00	80								
	2C	00	80								
Exposure Adjusting Value	2D	00	00	Exposure adjusting value, 8 bits with sign, 1/8 EV step b0~b5							

NAME	ADDRESS (HEX)	Initial Adjusting Value (HEX)	Basic Designed Value (HEX)								
				b7	b6	b5	b4	b3	b2	b1	b0
AF Adjusting Value	2E	00	86	2.9466m AF-IC (Center LED) output pulse count							
	2F	00	97	1.0094m AF-IC (Center LED) output pulse count							
	30	00	A9	0.5987m AF-IC (Center LED) output pulse count							
	31	00	B7	0.4519m AF-IC (Center LED) output pulse count							
	32	00	C9	0.3494m AF-IC (Center LED) output pulse count							
AF Adjusting Value	33	00	4A	2.9466m AF-IC (Right LED) output pulse count							
	34	00	5A	1.0094m AF-IC (Right LED) output pulse count							
	35	00	6C	0.5987m AF-IC (Right LED) output pulse count							
AF Adjusting Value	36	00	C3	2.9466m AF-IC (Left LED) output pulse count							
	37	00	D3	1.0094m AF-IC (Left LED) output pulse count							
	38	00	E5	0.5987m AF-IC (Left LED) output pulse count							
Adjusting Value Area											
Shutter D-A Temperature Compensation Constant	39	00	05	Shutter temperature D-A converted compensation value							
	3A	00	04	50°C (\$B9) or above							
	3B	00	03	45°C (\$AF) ~ 50°C (\$B9)							
	3C	00	02	40°C (\$A5) ~ 45°C (\$AF)							
	3D	00	01	35°C (\$99) ~ 40°C (\$A5)							
	3E	00	00	30°C (\$8D) ~ 35°C (\$99)							
	3F	00	FF	10°C (\$58) ~ 30°C (\$8D) 10°C (\$58) or below							
FM Constant	40	FD	FC	FM delay adjusting value 8 bits with sign, 122 μs per step, 16 steps							
Multi Constant	41	00	43	Multi distance metering allowable range, 0.7m lens drive pulse count							
	42	00	0B	Multi distance metering allowable range, 4.0m lens drive pulse count							
Multi Constant	43	00	08	Main subject judge pulse (comparison between center data and closest area data)							

NAME	ADDRESS (HEX)	Initial Adjusting Value (HEX)	Basic Designed Value (HEX)	b7 b6 b5 b4 b3 b2 b1 b0
Charge Level Constant	44	04	A4	Flash charge level (completion voltage) A-D converted value
Blank Shots Advance / Winding Constant	45	00	F6	Reversing brake time at blank shots advance
	46	00	FC	Delay time from 8-pulse detection to reversing brake 1
	47	00	F9	Delay time from 8-pulse detection to reversing brake 2
AF Set Pulse Drive Constant	48	02	E0	Motor OFF time of pulse drive at AF set drive
	49	03	02	Reversing brake time at AF set drive, 1 ms per step
AF Reset / Main ON	4A	05	0A	Reversing brake time at AF reset / Main ON drive, 1 ms per step
AF Set Constant	4B	1E	30	Pulse drive start remaining pulses at AF set drive
Automatic Adjustment Area				
	4C	00		* This area is not used. Do not change the data, however.
	4D	00		
	4E	00		
	4F	00		
	50	00		
	51	00		
	52	00		
	53	00		
	54	00		
	55	00		
	56	00		
	57	00		

DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	
1	01	36	24	71	47	106	6A	141	8D	176	B0	211	D3	246	F6	281	1B	316	14	351	23	386	26	421	31	456	36	501	41	546
2	02	37	25	72	48	107	6B	142	8E	177	B1	212	D4	247	F7	282	1C	317	15	352	24	387	27	422	32	457	37	502	42	547
3	03	38	26	73	49	108	6C	143	8F	178	B2	213	D5	248	F8	283	1D	318	16	353	25	388	28	423	33	458	38	503	43	548
4	04	39	27	74	4A	109	6D	144	90	179	B3	214	D6	249	F9	284	1E	319	17	354	26	389	29	424	34	459	39	504	44	549
5	05	40	28	75	4B	110	6E	145	91	180	B4	215	D7	250	FA	285	1F	320	18	355	27	390	30	425	35	460	40	505	45	550
6	06	41	29	76	4C	111	6F	146	92	181	B5	216	D8	251	FB	286	20	321	19	356	28	391	31	426	36	461	41	506	46	551
7	07	42	2A	77	4D	112	70	147	93	182	B6	217	D9	252	FC	287	21	322	20	357	29	392	32	427	37	462	42	507	47	552
8	08	43	2B	78	4E	113	71	148	94	183	B7	218	DA	253	FD	288	22	323	21	358	30	393	33	428	38	463	43	508	48	553
9	09	44	2C	79	4F	114	72	149	95	184	B8	219	DB	254	FE	289	23	324	22	359	31	394	34	429	39	464	44	509	49	554
10	0A	45	2D	80	50	115	73	150	96	185	B9	220	DC	255	FF	290	24	325	23	360	32	395	35	430	40	465	45	510	50	555
11	0B	46	2E	81	51	116	74	151	97	186	BA	221	DD			291	25	326	24	361	33	396	36	431	41	466	46	511	51	556
12	0C	47	2F	82	52	117	75	152	98	187	BB	222	DE			292	26	327	25	362	34	397	37	432	42	467	47	512	52	557
13	0D	48	30	83	53	118	76	153	99	188	BC	223	DF			293	27	328	26	363	35	398	38	433	43	468	48	513	53	558
14	0E	49	31	84	54	119	77	154	9A	189	BD	224	E0			294	28	329	27	364	36	399	39	434	44	469	49	514	54	559
15	0F	50	32	85	55	120	78	155	9B	190	BE	225	E1			295	29	330	28	365	37	400	40	435	45	470	50	515	55	560
16	10	51	33	86	56	121	79	156	9C	191	BF	226	E2			296	30	331	29	366	38	401	41	436	46	471	51	516	56	561
17	11	52	34	87	57	122	7A	157	9D	192	C0	227	E3			297	31	332	30	367	39	402	42	437	47	472	52	517	57	562
18	12	5																												

C-2 Others

C-2-1 Current Consumption

- Stand-by current 20 μ A or less (Main Switch "OFF, Back Cover close)
- Depress the Release Button
 halfway (check SW ON) 50 μ A or less
- Winding 500 mA or less
- Rewinding 500 mA or less
- Retract barrel operation 500 mA or less
- Stop winding the film 1A or less

* Check current consumption with the voltage regulator set to 3.0V.

C-2-2 Battery Check Voltage

B1 level: Battery mark lighting 2.3V \pm 0.1V

B2 level: LCD out 2.2V \pm 0.1V

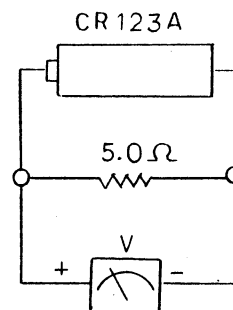
The difference between B1 and B2 must be 0.1V or more.

(Measurement of Battery Voltage)

Load the battery with a resistance of 5.0 Ω and measure the voltage 30 ms later.

Note:

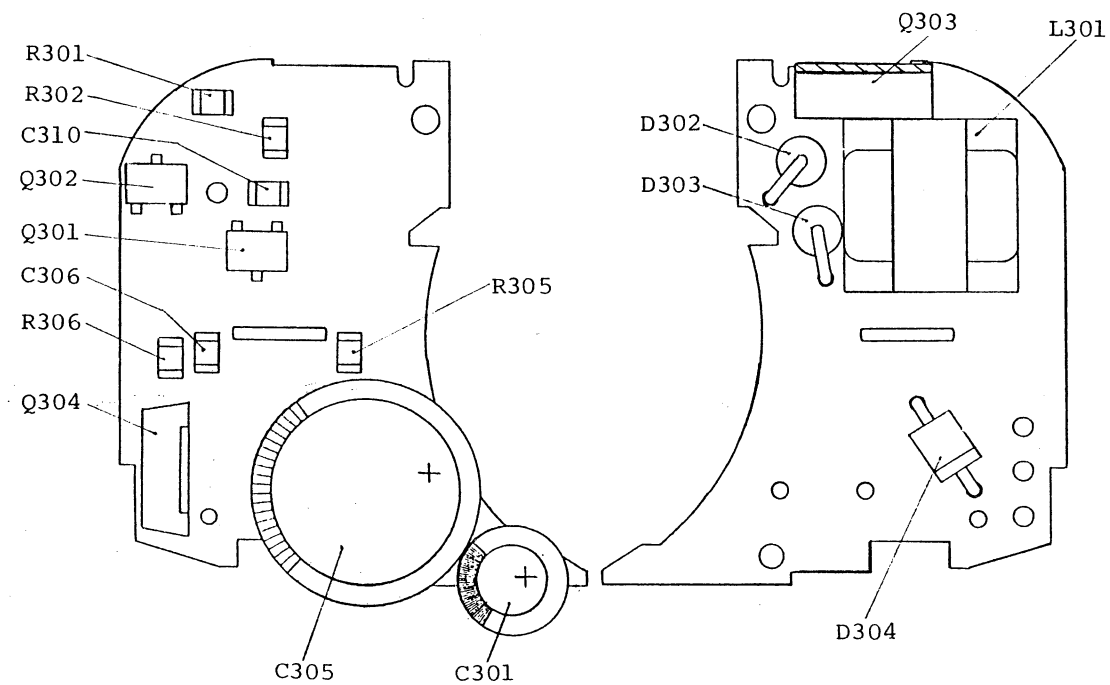
- a) Do not measure the battery voltage for a long time; otherwise, the battery is consumed.



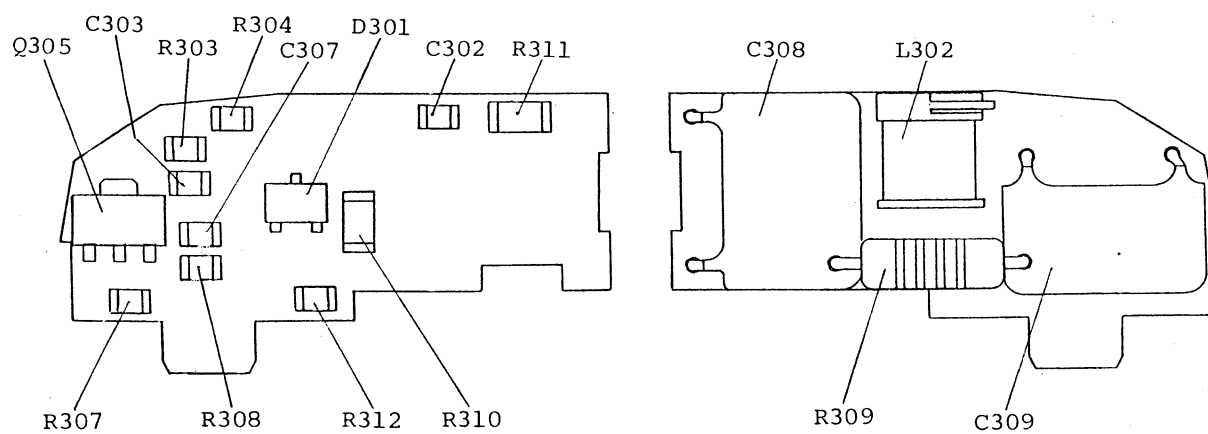
C-2-3 Electric Parts Mounting Drawing

Flash Board

Flash Board (1)



Flash Board (2)





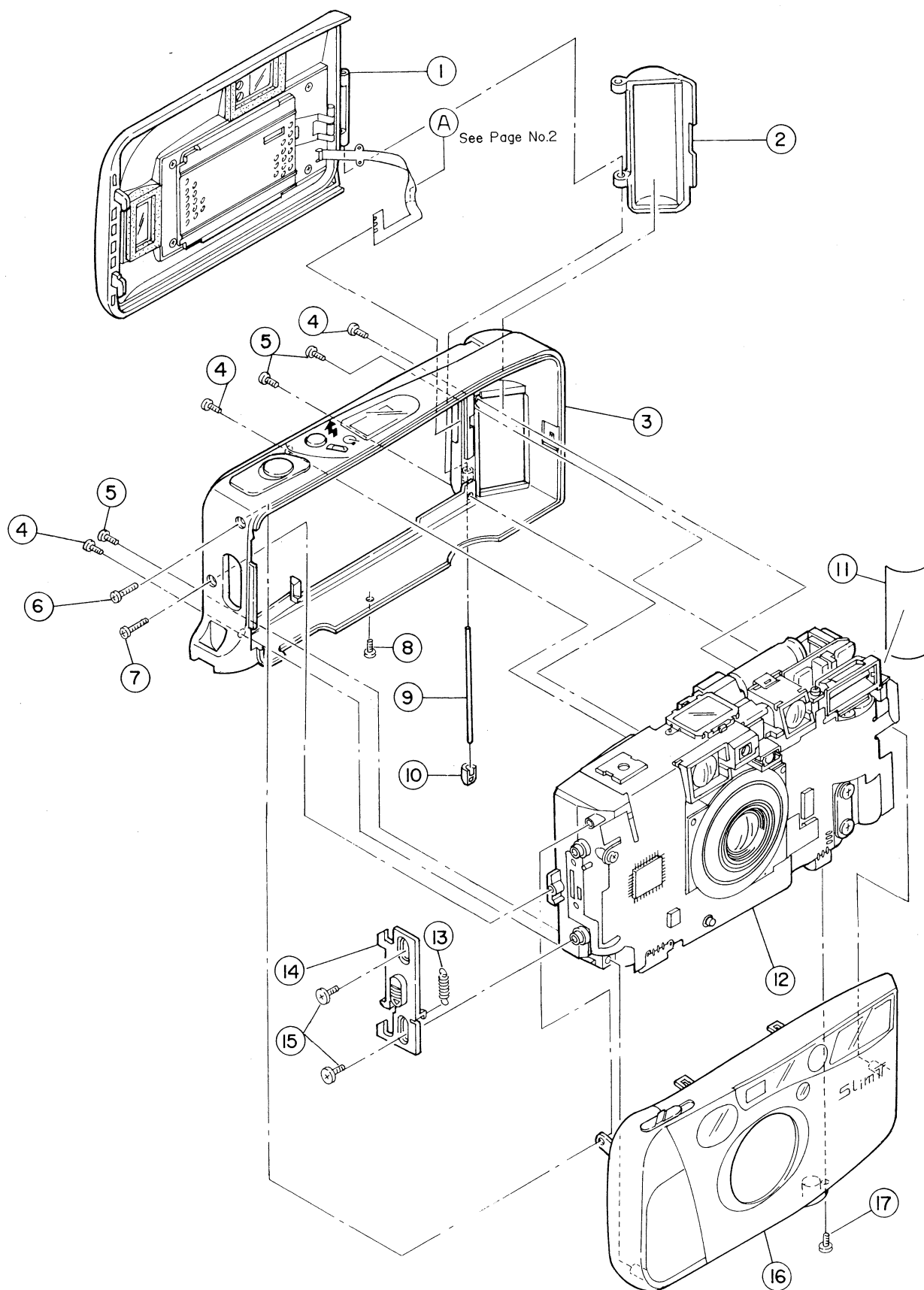
YASHICA T4 Slim T

ASSEMBLING CHART



KYOCERA CORPORATION
Optical Equipments Group

SERVICE 920610

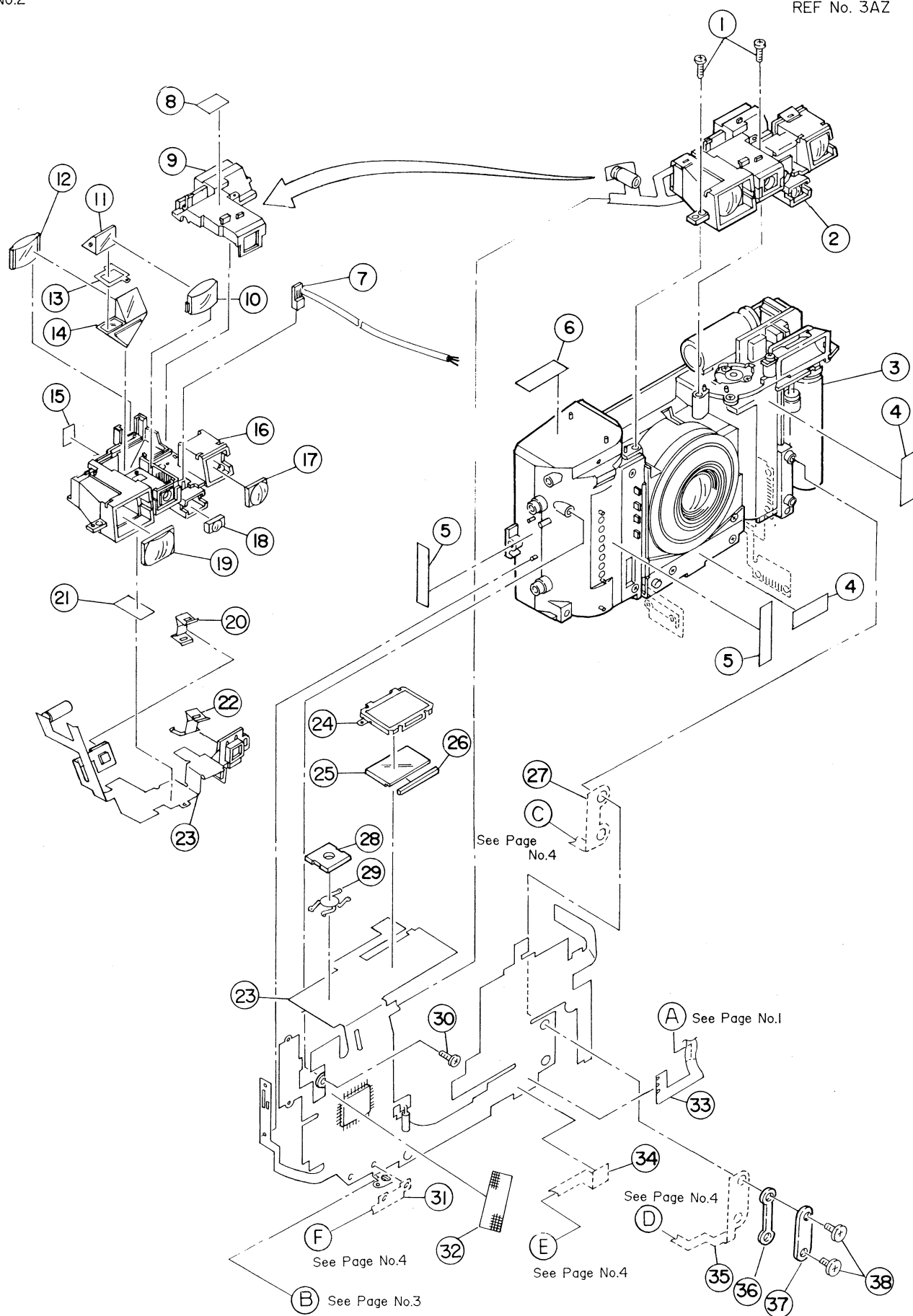


	PARTS NO.	DESCRIPTION	Q'TY
1	3AZAD000	BACK COVER (D) ASS'Y	1
2	3AQ32710	BATTERY COVER	1
3	3AZA0300	REAR COVER ASS'Y	1
	3AZA030Y	REAR COVER ASS'Y (Y-T4)	1
	3AZA03YD	REAR COVER ASS'Y (Y-T4D)	1
4	69114076	REAR COVER S.S	4
5	69114576	FRONT COVER S.S	2
6	69215079	FRONT COVER S.S	1
7	69214079	REAR COVER S.S	1
8	69114579	FRONT COVER S.S	1
9	3AZ15500	HINGE SHAFT	1
10	3AZ15401	HINGE SHAFT COVER	1
11	3AZ10500	BATTERY LABEL	1
12	*	BODY	1
13	3AZ32300	BC LOCK PLATE SPRING	1
14	3AZA1100	BC LOCK PLATE ASS'Y	1
15	66001152	BC LOCK PLATE S.S	2
16	3AZA0100	FRONT COVER ASS'Y (Slim-T)	1
	3AZA010Y	FRONT COVER ASS'Y (Y-T4)	1
17	66001158	FRONT COVER S.S	1

NOTE : Parts marked * is not available.

: Slim-T ----- For Domestic.

: Y-T4, Y-T4D----For Export.



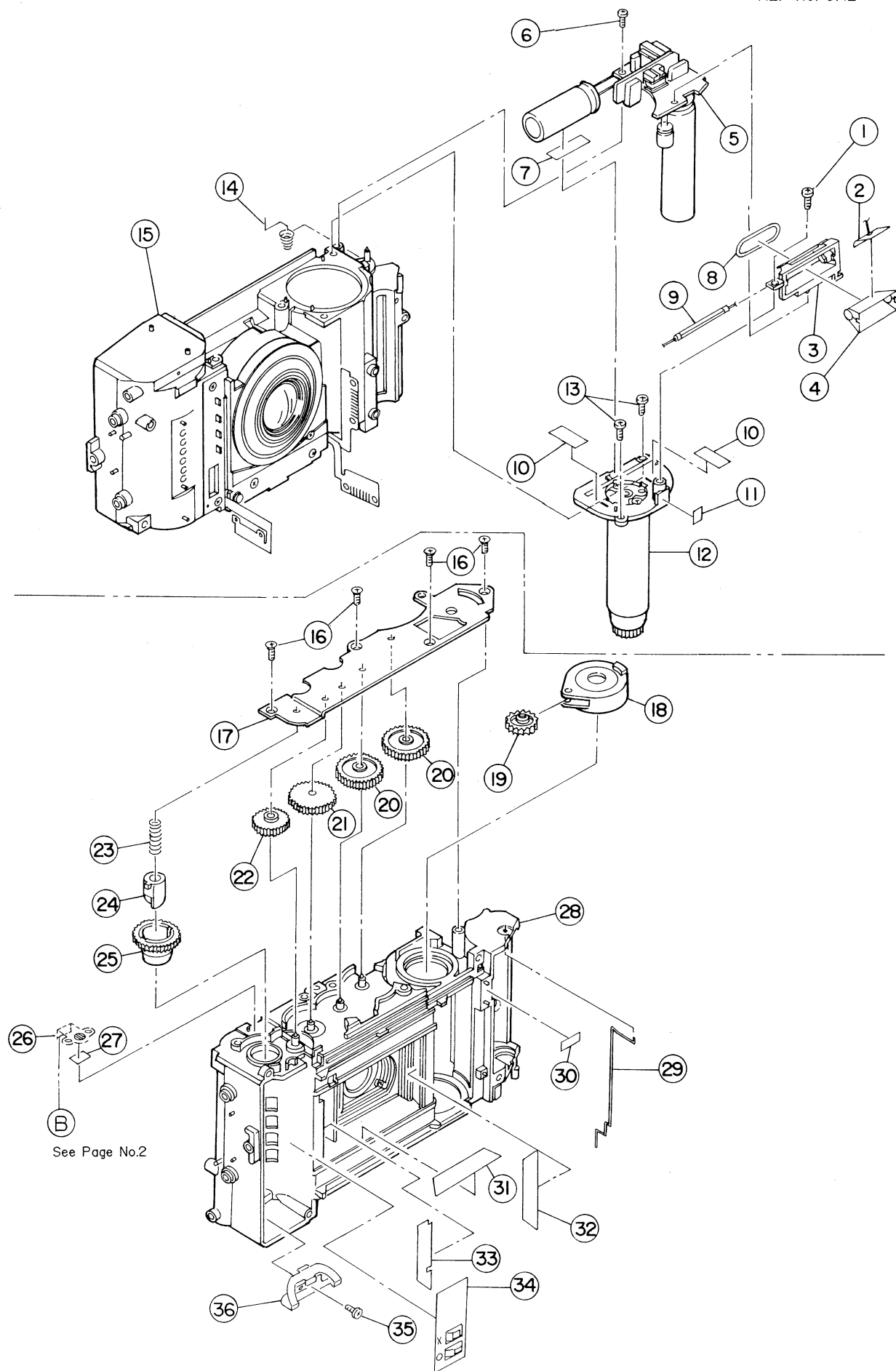
PARTS NO.	DESCRIPTION	Q'TY
1 69214076	VIEWFINDER S.S	2
2 *	VIEWFINDER W/MAIN FPC ASS'Y	1
3 *	BODY	1
4 *	DOUBLE STICK TAPE	2
5 *	DOUBLE STICK TAPE	2
6 3AZ12800	RELEASE TAPE	1
7 3AZAF100	SPD BOARD ASS'Y	1
8 *	DOUBLE STICK TAPE	1
9 3AZ80211	FINDER COVER	1
10 3AZ80302	OBJECTIVE LENS	1
11 3AZ80502	PRISM (1)	1
12 3AZ80402	EYE-PIECE LENS	1
13 3AZ80700	FINDER FRAME	1
14 3AZ80601	PRISM (2)	1
15 *	DOUBLE STICK TAPE	1
16 *	VIEWFINDER BASE	1
17 3AZ82310	LIGHT RECEPTOR LENS	1
18 3AZ83001	LIGHT SENSOR LENS	1
19 26610200	FOCUSING LENS	1
20 3AZ82100	PROJECTOR SPRING	1
21 *	DOUBLE STICK TAPE	1
22 3AZ82400	LIGHT PECEPTOR SPRING	1
23 3AZAE000	MAIN FPC ASS'Y	1
24 3AZ34502	LCD HOLDER	1
25 3AZ53100	C-LCD	1
26 3AZ53200	LCD CONNECTOR	1
27 *	SHUTTER FPC (See Page No.4)	1
28 3AZ31600	RELEASE SWITCH COVER	1
29 38412500	RELEASE SWITCH	1
30 69213076	MAIN FPC S.S	1
31 *	PI. WI-FPC (See Page No.4)	
32 *	ACETATE CLOTH TAPE	1
33 *	DATE FPC (See Page No.1 or 6)	
34 *	LENS BARREL FPC (See Page No.4)	
35 *	PI. AF-FPC (See Page No.4)	
36 3AZ51700	FPC FIXER RUBBER	1
37 3AZ51600	FPC FIXER	1
38 66001148	FPC FIXER S.S	2

7, 9-14, 16-19,	3AZAF000	VIEWFINDER ASS'Y	1
7, 9-14, 16-23,	3AZAEF00	AF BASE W/M-FPC ASS'Y	1

Note : Parts marked * are not available.

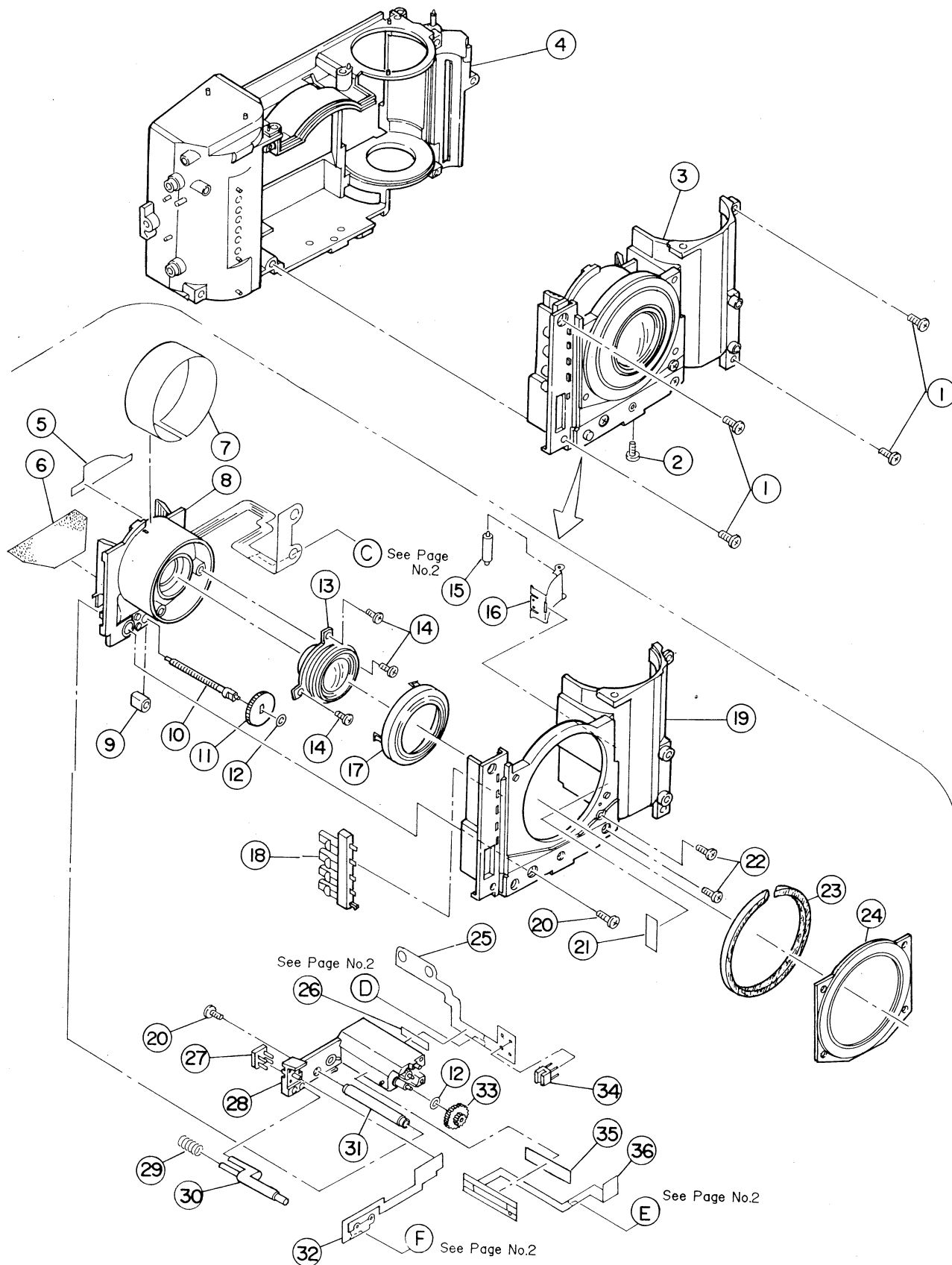
: In case the inspection equipment(CCD Camera) for adjustment of the infrared LED position is not installed, please do not piroceed with procedures to dismantle, replace and repair (2).

In case of replacement, please use the Set Unit consisting of 7, 9-14, 16-23, 3AZAEF00, AF Base w/M-FPC Ass'y.



PARTS NO.	DESCRIPTION	Q'TY
1 69213076	FLASH BASE S.S	1
2 3AZ18300	TRIGGER ELECTRODE	1
3 3AZ18100	FLASH BASE	1
4 3AZ18000	REFLECTOR	1
5 *	FLASH BOARD	1
6 69103076	FLASH BOARD S.S	1
7 *	DOUBLE STICK TAPE	1
8 3AZ18210	FLASH TUBE FIXER	1
9 3AZ53500	FLASH TUBE	1
10 3AZ61500	BASE LIGHT-PROOF TAPE	2
11 *	DOUBLE STICK TAPE	1
12 3AZ60111	WINDING UNIT	1
13 69113576	WINDING UNIT S.S	2
14 3AZ10421	BATTERY CONTACT (-)	1
15 *	BODY	1
16 69313576	MM BASE PLATE S.S	4
17 3AZ61310	MM BASE PLATE	1
18 3AZ60400	EPICYCLIC LEVER	1
19 3AZ60600	EPICYCLIC GEAR	1
20 3AZ60900	MM GEAR (1)	2
21 3AZ61000	MM GEAR (2)	1
22 3AZ61100	MM GEAR (3)	1
23 38462300	R. SHAFT SPRING	1
24 38462220	REWIND FURK	1
25 38462110	REWIND GEAR	1
26 *	MAIN FPC (See Page No.2)	1
27 *	DOUBLE STICK TAPE	1
28 *	BODY	1
29 3AZ10320	BATTERY CONTACT (+)	1
30 *	DOUBLE STICK TAPE	1
31 3AZ12700	BODY LIGHT-PROOF TAPE	1
32 3AZ12500	BODY LIGHT-PROOF PAPER (1)	1
33 3AZ12600	BODY LIGHT-PROOF PAPER (2)	1
34 38411900	EXPLANATION SEAL	1
35 69112576	CARTRIDGE LIFTER S.S	1
36 3AZ10200	CARTRIDGE LIFTER	1
2-5, 8-9, 3AZAE300	FLASH ASS'Y	1

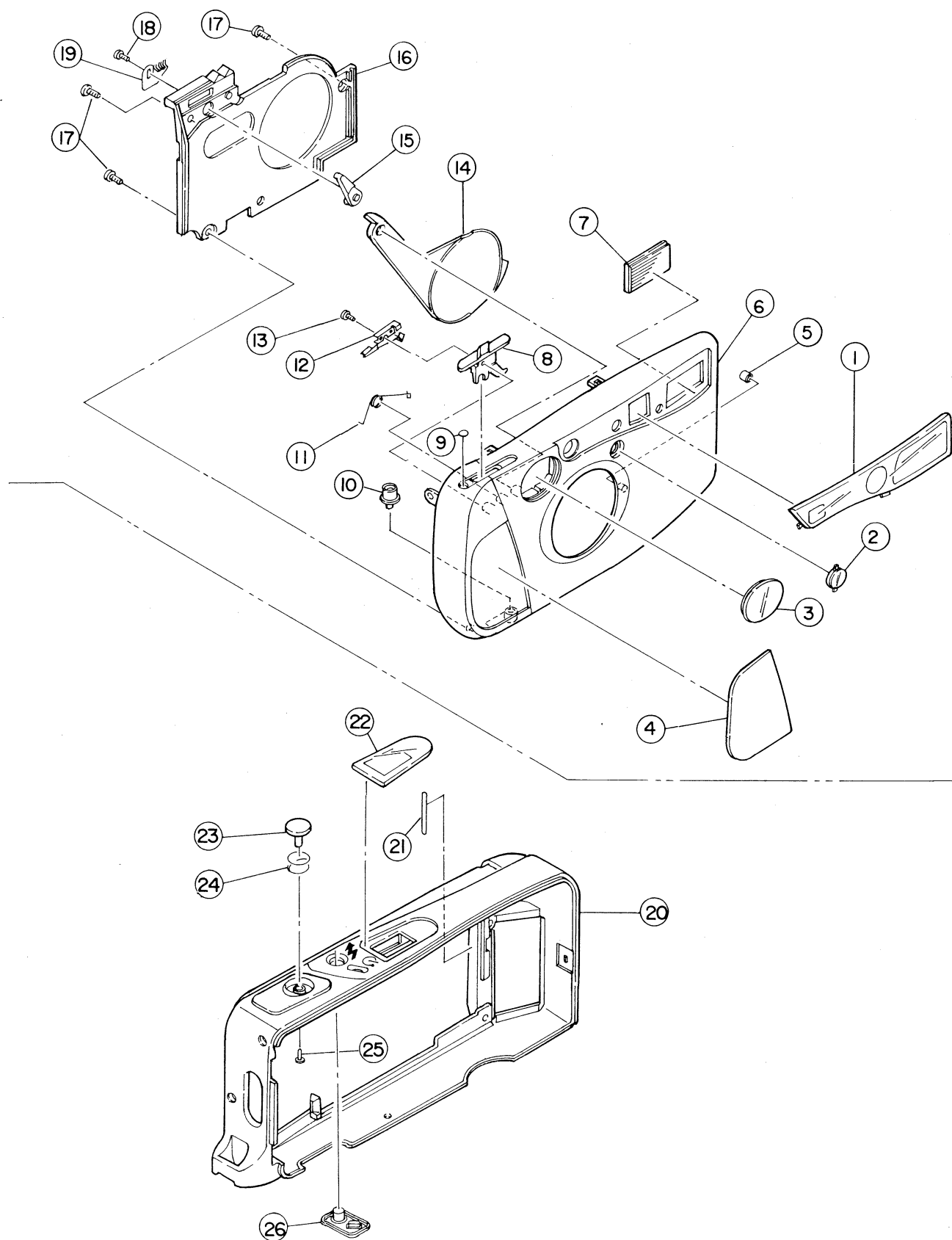
Note : Parts marked * are not available.



PARTS NO.	DESCRIPTION	Q'TY
1 69113576	COLLAPSIBIE MOUNT ASS'Y S.S	4
2 69112576	COLLAPSIBIE MOUNT ASS'Y S.S	1
3 3AZAL000	COLLAPSIBIE MOUNT ASS'Y	1
4 *	BODY	1
5 3AZ22700	BARREL LIGHT-PROOF PAPER	1
6 3AZ22500	SHUTTER LIGHT-PROOF PAPER	1
7 3AZ22410	BARREL DECORATING TAPE	1
8 3AZ22000	SHUTTER UNIT	1
9 3AZ20920	LEAD SCREW NUT	1
10 3AZ20510	LEAD SCREW	1
11 3AZ20400	LEAD SCREW GEAR	1
12 60311510	WASHER	2
13 3AZ23000	TAKING LENS UNIT	1
14 69113576	TAKING LENS UNIT S.S	3
15 39662500	AL ROLLER	1
16 39662600	AL ROLLER HOLDER	1
17 3AZ22140	SHUTTER FRONT COVER	1
18 3AZ12101	DX-SW	1
19 3AZ20120	AF FRONT PLATE	1
20 66001029	GUIDE SHAFT S.S	2
21 *	DOUBLE STICK TAPE	1
22 69115576	AF FRONT PLATE S.S	2
23 3AZ22310	BARREL LIGHT-PROOF CLOTH	1
24 3AZ22200	LIGHT-PROOF BARREL PLATE	1
25 3AZ50801	PI. AF-FPC	1
26 *	DOUBLE STICK TAPE	1
27 5ENC5G105F***01	PHOTO-INTERRUPTER (WINDING)	1
28 *	AF MOTOR HOLDER	1
29 3AZ23600	BARRIER LOCK SPRING	1
30 3AZ23500	BARRIER LOCK SHAFT	1
31 3AZ20610	GUIDE SHAFT	1
32 3AZ50901	PI. WI-FPC	1
33 3AZ20300	AF GEAR (1)	1
34 5ENCINT105M4*01	PHOTO-INTERRUPTER (COLLAPSIBIE MOUNT)	1
35 3AZ21501	LENS BARREL FPC TAPE	1
36 3AZ51101	LENS BARREL FPC	1

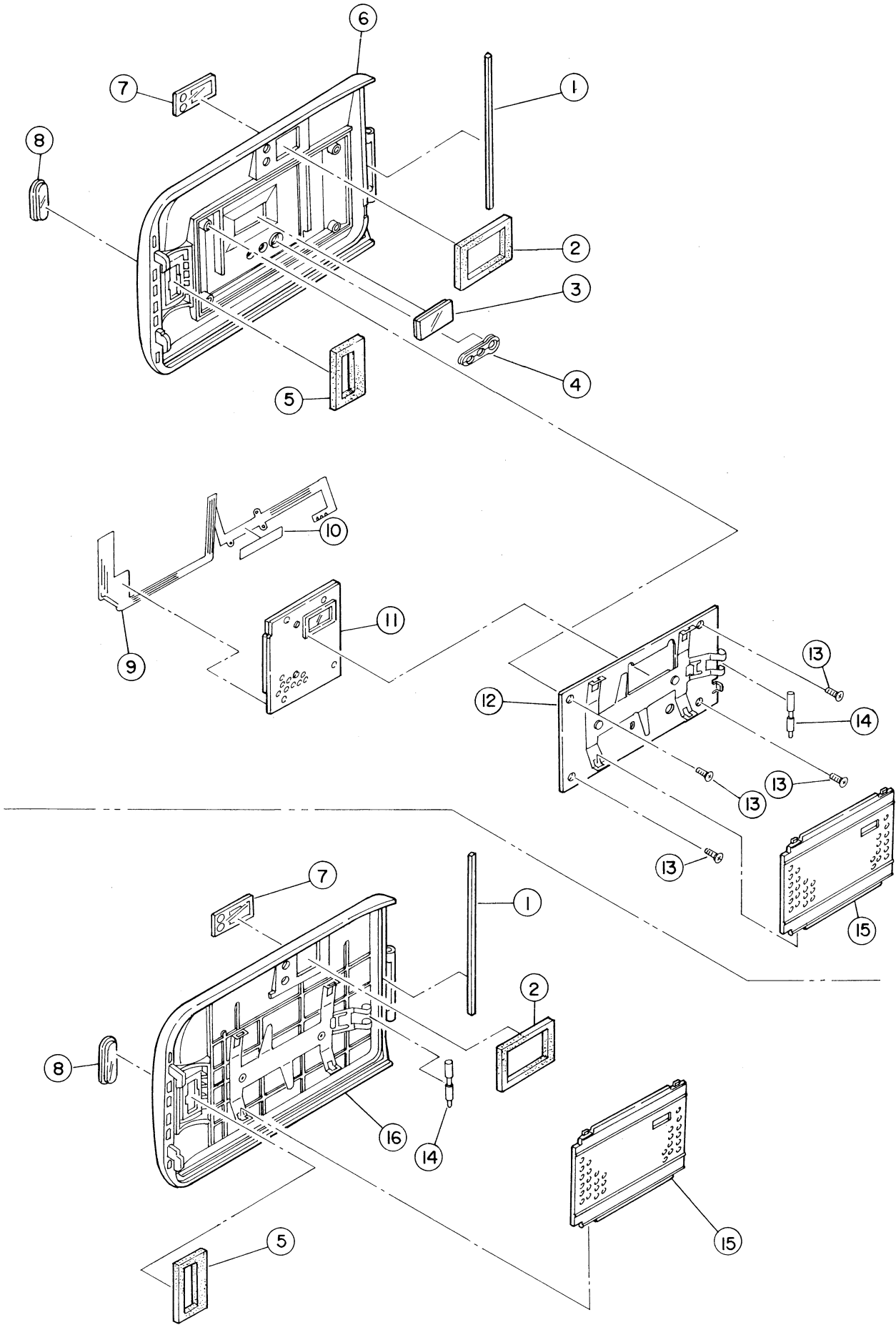
27, 28, 32, 35, 36, 3AZAL100 AF MOTOR HOLDER ASS'Y 1

Note : Parts marked * are not available.



PARTS NO.	DESCRIPTION	Q'TY
1 3AZ30701	F. WINDOW	1
2 3AZ31902	LIGHT SENSOR WINDOW	1
3 3AZ30800	AF WINDOW	1
4 3AZ34800	GRIP RUBBER	1
5 3AZ30600	BARRIER STOPPER	1
6 *	FRONT COVER (See Page No.1)	1
7 3AZ31020	DIFFUSER	1
8 3AZ31100	MAIN SWITCH KNOB	1
9 3AZ32900	MAIN SWITCH MARK	1
10 38432200	R. BUTTON	1
11 3AZ30430	BARRIER SPRING	1
12 3AZ31820	CLICK PLATE	1
13 61902026	CLICK PLATE S.S	1
14 3AZ30201	BARRIER	1
15 3AZ30311	BARRIER LEVER	1
16 3AZ30920	COVER (2)	1
17 69113576	COVER (2) S.S	3
18 66001154	BARRIER SWITCH S.S	1
19 3AZ30500	BARRIER SWITCH	1
20 *	REAR COVER (See Page No.1)	1
21 38411610	FILM MARK	1
22 3AZ31201	LCD. WINDOW	1
23 3AZ31410	RELEASE BUTTON	1
24 3AZ31700	RELEASE SPRING	1
25 3AZ31500	RELEASE BUTTON STOP PIN	1
26 3AZ31320	MS BUTTON	1

Note : Parts marked * are not available.



For Data Back.

Back Cover (D) Ass'Y (3AZAD000)

PARTS NO.	DESCRIPTION	Q'TY
1 3AZ17000	BACK COVER MOQUETTE	1
2 3AZ15710	EYE-PIECE MOQUETTE	1
3 3AZ40300	DATE WINDOW	1
4 3AZ40400	MODE BUTTON	1
5 3AZ16220	CARTRIDGE WINDOW MOQUETTE	1
6 *	BACK COVER (D)	1
7 3AZ15601	EYE-PIECE WINDOW	1
8 3AZ16300	CARTRIDGE WINDOW	1
9 3AZADE00	DATE FPC ASS'Y	1
10 3AZ40800	DATE FPC TAPE	1
11 3AZ40500	AUTO DATE MODULE	1
12 3AZAD100	BACK COVER BASE PLATE ASS'Y	1
13 69313076	BACK COVER BASE PLATE S.S	4
14 37834700	GUIDE ROLLER	1
15 3AZ16040	PRESSURE PLATE	1

For Non-Data Back

Back Cover (N) Ass'Y (3AZA0200)

PARTS NO.	DESCRIPTION	Q'TY
1 3AZ17000	BACK COVER MOQUETTE	1
2 3AZ15710	EYE-PIECE MOQUETTE	1
5 3AZ16220	CARTRIDGE WINDOW MOQUETTE	1
7 3AZ15601	EYE-PIECE WINDOW	1
8 3AZ16300	CARTRIDGE WINDOW	1
14 37834700	GUIDE ROLLER	1
15 3AZ16040	PRESSURE PLATE	1
16 *	BACK COVER (N)	1

Note : Parts marked * are not available.