

Canon

Service Manual

ENGLISH EDITION

EOS 10QD

C12-8133

EOS 10s

C12-8135

EOS 10

C12-8132



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CY8-1200-062

PREFACE

This service manual covers three nearly identical products, the **EOS 10**, **EOS 10s**, and **EOS 10QD**. In addition to the product name, and therefore the front cover, differences are as follows:

- Only the **EOS 10QD** has the actual date imprinting function, but all three have the interval timer function usually associated with the date function.
- The **EOS 10QD** and **EOS 10** have automatic flash activation in certain modes. The **EOS 10s** has a warning indication, but activation is not automatic.

This manual is based on the **EOS 10QD**, the model which has all the features.

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I. GENERAL INFORMATION

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FEATURES

The EOS 10 cameras (EOS 10 for general markets, EOS10s for North American markets, and the EOS 10QD for the Japanese market) are the leaders of the second generation of EOS cameras as the replacement for the EOS650/620. It includes new technology developed since the introduction of the EOS cameras in AF, AE, film transport, ergonomics and cybernetics

AF

- Multi-BASIS Focusing (Switchable Four sensor system)
- Automatic or manual switching between three focusing points gives wide area focusing.
- Automatic switching between One-shot and AI Servo autofocus.
- Integral AF Auxiliary lamp cover all three focusing areas.
- Great performance even with subject contrast as low as 90:80.

AE

- Factor 8 SPD gives evaluative metering a new meaning. The metering program adjusts to be compatible with the AF focusing point in use.
- New three section TTL sensor adjusts to the AF focusing point in use.
- Ten different AE modes including new "Camera-shake Alert" AE.

Film Transport

- Built-in 5f/s motor drive
- Simultaneous AF and diaphragm operation gives 3f/s AI Servo AF operation.

Custom Functions

- Fourteen different user-selectable functions (15 for EOS 10QD)

Flash

- Automatic pop-up TTL sensor automatic flash (manual activation for EOS 10s)
- Automatic rapid recycle charging (about two seconds)
- Automatic operation in low light or back-lit situations (except EOS 10s)

Date

- Dynamic 7 segment LED prints data on emulsion side of film (EOS 10QD only)

Miscellaneous

- Built-in remote control receiver: Immediate and two second delay modes
- Bar-code programmable: Bar code input selects AF, AE, and transport modes.
- Built-in interval timer

SPECIFICATIONS


Specifications listed are for all three EOS 10 models unless noted.

[Y] indicates the alternate, user selectable, function and [N] indicates the normal setting of any custom function ("Y" or "N" is displayed on the top deck LCD panel). (All functions are set to [N] at the factory.)

1. Type Classification

- | | | |
|-----|-------------------|--|
| 1-1 | Type | 35mm single-lens reflex electronically controlled focal plane (vertical travel) shuttered automatic exposure and focusing camera with built-in motor drive, flash and dating mechanism (10QD only -- see separate specifications). |
| 1-2 | Format | 24mm x 36mm |
| 1-3 | Compatible lenses | Canon EF lenses (full aperture metering) |
| 1-4 | Lens mount | Canon EF mount (bayonet mount) |

2. Autofocus

- | | | |
|-----|--------------------------|--|
| 2-1 | Type | TTL-SIR* system (TTL secondary image-formation phase shift detection) (* SIR: Secondary Image Registration) |
| 2-2 | Focusing modes | <p>The following four modes can be selected:</p> <p>(1) One-shot AF mode: Focus locks once in-focus; shutter cannot be released until unless focus is correct.</p> <p>(2) Predictive AI Servo AF mode: The lens continually focus to stay on the subject.</p> <p>(3) AI Focus mode: This 'mode' is actually a combination of both (1) and (2) and automatic focus sensor selection used only in the Full Auto (green ) mode. (Once the camera automatically switches from One-shot to AF Servo AF, it will not switch back until the shutter button is releases once.)</p> <p>(4) Manual focusing</p> <p>CF-7 [N]: Switching from AF to Manual is carried out by the lens AF/M switch.</p> <p>CF-7 [Y]: When a USM L lens is used with the camera in One-shot AF mode, manual focusing is possible after AF in-focus completion using the electronic focusing ring.</p> |
| 2-3 | Focusing point switching | (1) One-shot AF and AI Servo AF modes: The active focusing sensor can be selected by pressing the Focus Mark Button and turning the electronic input dial. Any one of the three, or automatic selection can be set. |

- In Camera Shake Alert mode, the center focusing point is automatically set.

(2) AI Focus: In Full Auto, Programmed Image Control, or Bar-code Program mode, the focusing point is automatically set according to the shooting mode.

2-4	AF operation	CF-4 [N]: Activated when the shutter button is pressed halfway. CF-4 [Y]: Activated when the partial metering button is pressed.
2-5	AF operation speed	Approx. 0.5 seconds (from ∞ to closest shooting distance) with EF 35-135mm f/4-5.6 lens.
2-6	AF in-focus indication	Indicated on the LCD inside the viewfinder, by the flashing red focus mark and by a beeper tone, both of which can be canceled if desired.
2-7	AF working range	EV 0 - 18 (ISO 100), measured using Canon standard test conditions.
2-8	AF auxiliary light	(1) Built-in AF auxiliary light CF-8 [N]: The AF auxiliary light fires automatically and covers all three focusing points. Effective for focal lengths ranging from 35mm to 135mm. Effective within a distance range of 1-10m in the central area, and within a range of 1-5m for surrounding areas. • The built-in AF auxiliary light operates even when a separate EOS flash unit is used; the AF auxiliary light on the flash unit does not fire. CF-8 [Y]: The built-in AF auxiliary light function is deactivated. (The AF auxiliary light on an external flash unit will not fire either.)

3. Viewfinder

3-1	Type	Eye-level pentaprism single lens reflex (without condenser lens)
3-2	Focusing screen	Fixed, all-matte screen with indications for superimposed display.
3-3	Power	-1 dpt (eye point: 19 mm)
3-4	Field of view	92% vertical and horizontal
3-5	Magnification	0.74X (with 50mm lens at infinity)
3-6	Information	Within image area (1) Three etched AF Focusing Marks indicate positions of focus sensors (2) CF-10 [N]: Superimposed display using 3- focusing frame. In manual focusing point selection mode, the selected focusing point lights in the image area. (All 3 points light in automatic focusing point selection mode.) The selected focusing point blinks once at SW-1 ON, and blinks once again when subject is focused.

	(3) CF-10 [Y]: The superimposed display function is canceled. (Only automatic focusing point switching can be carried out.)	
	Below viewing area: Alphanumeric display via seven-segment LCD (yellow-green).	
	(a) Shutter speed (Blinks at 2Hz to give out-of-coupling-range warning)	
	(b) Aperture value (Blinks at 2Hz to give out-of-coupling-range warning)	
	(c) Depth-of-Field AE mode ($\text{d} \text{E} \text{P}$, $\text{d} \text{E} \text{P} \text{2}$)	
	Below viewing area: Masked LED Symbol display (yellow-green)	
	(a) A : Camera Shake Alert AE indicator	
	(b) * : AE lock indicator [N]: Partial metering [Y]: Evaluative metering	
	(c) \pm : Manual indicator ("+" : overexposure; "-" : underexposure; \pm : proper exposure)	—
	(d) +/- : Exposure compensation indicator	
	(e) F : Flash charge completion indicator (Blinks at 2Hz during back-lit and low-light situations when the flash is turned off)	
	(f) \bullet : AF in-focus indicator (Blinks at 8Hz when AF is not possible) It is not possible to turn the bottom viewfinder display off.	—
3-7	Mirror	Quick-return full-surface half mirror
3-8	Mirror up function	CF-13 [N]: None CF-13 [Y]: (a) In Self-timer mode, the mirror moves up at SW-2 ON and exposure occurs 10 seconds later. (b) When using the remote control in two second delay release mode, the mirror moves up when the remote control signal is received and exposure occurs 2 seconds later.
3-9	Mirror blockage	None with EF 600mm f/4 L
3-10	Depth of field check	CF-11 [N]: None CF-11 [Y]: Activated by AE lock button
3-11	Eyepiece shutter	None (the strap is provided with an eyepiece cover)
3-12	Other	Optional angle finder, magnifier, or dioptic adjustment lens E can be attached to the eyepiece. A removable eyecup is standard (common to EOS 750 and 850).

4. Exposure control

4-1 Metering system

TTL maximum aperture metering using an 8-section SPD. The following two metering modes can be selected:

(1) New Evaluative metering (Coupled with the AF focusing points)

(2) Custom Functions

CF-12 [N]: Partial metering is activated by the AE Lock Button (Coupled with the AF focusing points, the partial metering area can be freely selected from among 3 points; metering area: 8 x 8mm, covering approx. 8.5% of the field of view)

CF-12 [Y]: New Evaluative metering with AE Lock (activated by AE Lock button)

4-2 AE modes

Ten AE modes and Manual can be selected:

- (1) Intelligent Program AE (shiftable)
- (2) Shutter-priority AE (without safety shift function)
- (3) Aperture-priority AE (without safety shift function)
- (4) Depth-of-Field AE (shiftable)
- (5) Image Stabilized Program AE
- (6) Full Auto mode Intelligent Program AE (shiftable)
- (7) Bar-code Program mode
- (8) Programmed Image Control mode
 - [(a) Portrait (b) Landscape (c) Close-up (d) Sports]
- (9) A-TTL flash program AE
- (10) TTL flash program AE
- (11) Manual (metered manual)

4-3 Metering range

EV -1 to 20 (at normal temperature; conversion with 50mm f1.4 lens at ISO 100)

4-4 Out of metering coupling range warning

LCD digital indicator blinks at 2Hz in the external and viewfinder displays.

4-5 Exposure preview

Displayed when shutter button is pressed halfway. A six-second metering timer is activated when the shutter button is released from the halfway position.

4-6 Film speed

ISO 6-6400, set in 1/3-stop increments as described below.

CF-3 [N]: Film speed set automatically via the DX code on the film cartridge.

CF-3 [Y]: Manual setting only.

4-7 Exposure compensation

(1) AEB: Auto exposure bracketing

(a) Operation Possible in all of the modes listed in the table below.

(b) Bracketing range: ± 5 stops in 1/2-stop increments

(c) Exposure sequence: Three continuous exposures: under-exposure, correct exposure, and overexposure.

(d) The compensated value (shutter speed or aperture) is related to the exposure mode, as shown below:

(e) Cancellation: Can only be canceled manually (automatic cancellation not provided).

Mode	Shutter Speed	Aperture
Intelligent Program AE	•	•
Shutter-priority AE	—	•
Aperture-priority AE	•	—
Depth Mode	•	—
Camera-shake Alert AE	—	•
Manual	•	—

(2) Manual setting: ± 5 stops in half stop increments

- The AEB function (1) and the manual compensation function (2) can be combined.

(3) When the 430EZ is used, the A-TTL automatic flash fill-in ratio can be controlled on the flash in 1/3-stop increments within a \pm three stop range.

4-8 AE lock

Activated by AE lock button

CF-12 [N]: AE lock carried out using partial metering. (When evaluative metering is used, AE lock occurs automatically when AF is locked.)

CF-12 [Y]: AE lock carried out using evaluative metering.

4-9 Multiple exposure operation

Number of exposures is preset before shooting. Up to nine exposures can be preset at one time (can be canceled or reset during operation). Multiple exposure mode is reset automatically after the specified number of exposures has been shot.

5. Shutter

5-1 Type

Vertical-travel focal plane shutter with all speeds electronically controlled. Curtain operation controlled by attraction electromagnet (Curtain travel time: approx. 4.8ms/24mm)

5-2 Shutter speed

30 to 1/4000s in half stop increments, indicated on top deck LCD panel. X-sync speed is 1/125s. Shutter speed can be set in half stop increments in either shutter-priority AE mode or manual mode. There is no elapsed time display in bulb mode.

5-3 Shutter release system

Soft-touch electromagnetic release system (no cable release socket provided)

5-4 Release time lag

Release time lag excluding AF operation time:

(1) Following a pause after SW-1 is switched ON, from SW-2 ON to beginning of exposure 90ms

(2) From simultaneous pressing of SW-1 and SW-2 ON to beginning of exposure 215ms

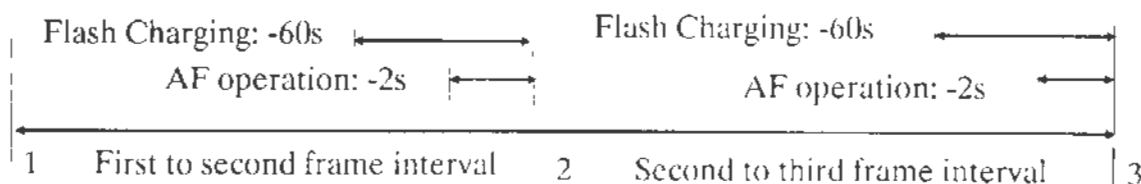
5-5 Self-timer

Electronically controlled 10 second timer (can be canceled after activation by setting the main dial to "L"): Self-timer operation is indicated by an electronic beeper and the AF auxiliary light (which flashes at 2Hz for the first eight seconds, then at 8Hz for the remaining two seconds).

CF-13 [N]: Self-timer starts at SW-2 ON

(a) In One-shot AF mode: Starts when AF operation is completed (AE lock) and SW-2 is switched ON (self-timer will not start until AF operation is completed, even if shutter button is pressed to the second stop).

(b) In Predictive AI Servo AF mode: Starts at SW-2 ON (AE lock), regardless of AF operation.



CF-13 [Y]: Mirror moves up at SW-2 ON and exposure occurs 10 seconds later.

5-6 Interval timer

Interval time setting range: 1 second to 23 hours, 59 minutes, 59 seconds; Frame setting range: 2 to 36 frames.

Interval timer starts at SW-2 ON after interval time and frame number have been set.

Interval timer operation is canceled: (1) at end of film; (2) when main switch is set to OFF; (3) when back cover is opened; (4) when battery is replaced; or (5) when interval time is changed.

External indication: During interval timer operation, the interval timer indicator blinks on the LCD panel.

- Shutter release has priority during interval timer operation; the shutter is released at the designated time even if the subject is not in focus.

5-7 Camera shake warning

(1) Most modes

CF-6 [N]: Beeper mode: Camera shake warning is provided in Intelligent Program AE, Aperture-priority AE, Depth-of-Field AE, Programmed Image Control, and Bar-code Program modes. Beeper sounds when the shutter speed falls below $1/f$ (of the lens in use) minus 0 to 0.5 stops.

CF-6 [Y]: No camera shake warning is provided even in beeper mode.

(2) Camera Shake Alert AE: The "A" symbol blinks inside the viewfinder to provide a camera shake warning. When the camera pictogram "A" lights steadily, the shutter speed is set at a safe hand holdable shutter speed. When the camera "A" lights steadily but the 'rockers' "A" blink, the shutter speed is set slower than a safe shutter speed by up to two stops. When both the camera and rockers "A" blink, the shutter speed is far too slow (more than 2 stops) slower than a safe hand-holdable shutter speed. This does not prevent camera shake, but it gives the user fair warning.

6. Film transport

6-1 Film loading and advancing

Film is automatically loaded using electronic film metering doing away completely with the conventional sprocket. Film advance begins after the film is installed and the back cover is closed. The film is advanced until the frame counter reads "1", at which point film advance stops. This operation requires approx. 0.5 seconds. (This operation is separated from shutter and mirror charge operations.)

6-2 Film winding system

Film is advanced automatically by a dedicated, miniature coreless motor.

6-3 Film winding modes

(1) Single-frame mode (2) Continuous mode

6-4 Start of film winding

Film winding begins when the exposure completion signal is received.

6-5 Winding speed

AF mode	Continuous speed
One-shot AF	approx. 5f/s (Aperture stopped down)
AI Servo AF	Approx. 3f/s (Simultaneous AF and stop down operation)
Manual	approx. 5f/s (Aperture stopped down)

6-6 Film transport confirmation

By frame counter (no floating bar mark provided)

6-7 Shooting capacity

The number of 24-exp. rolls which can be shot using a new 2CR5 battery and an EF 50mm f1.8 lens under various conditions is shown in the table below.

Temperature	No flash use	50% flash use	100% flash use
Normal (20C)	60 rolls	25 rolls	13 rolls
Low (-20C)	15 rolls	8 rolls	4 rolls

6-8 Film rewind system

Automatic rewind using a miniature coreless motor.

6-9 Start of film rewinding

(1) Automatic rewind

CF-1 [N]: Film is automatically rewound according to the following conditions:

(a) After the number of frames designated by the DX code have been shot, the film is advanced by one more frame to allow date imprinting, and then automatic rewind begins. If the date imprinting function is turned OFF, the film is automatically rewound immediately after the number of frames designated by the DX code have been shot. *EOS 10s: Film is automatically rewound immediately after the number of frames designated by the DX code have been shot.*

(b) With non-DX-coded film: (1) automatic rewind begins when the end-of-film is detected (by an increase in tension), or (2) after 36 frames have been shot, the film is advanced by one more frame to allow date imprinting, and then automatic rewind begins (if the date imprinting function is turned OFF, the film is automatically rewound immediately after 36 frames have been shot). *EOS 10s: Film is automatically rewound when the end-of-film is detected or after 36 frames have been shot.*

CF-1 [Y]: Film is automatically rewound when the film rewind button is pressed after the end-of-film is reached.

(2) Mid-roll rewind: Film can be rewound at any time by pressing the film rewind button.

6-10 Film rewind confirmation

Rewind is confirmed by the frame counter counting down.

6-11 Rewind time

8 seconds or less for 24 exposure roll of film (12 seconds or less for 36-exp. roll) (at normal temperature)

6-12 Rewind completion

CF-2 [N]: Rewind automatically stops after film leader is fully wound into the cartridge.

CF-2 [Y]: Rewind automatically stops leaving the film leader outside the cartridge.

6-13 Rewind completion indicator

Cartridge symbol on LCD panel blinks at 2Hz.

6-14 Film-loaded confirmation

(1) Indicated at all times by cartridge symbol on LCD panel.

(2) Visual check using film check window.

6-15 Frame counter

Additive frame counter displayed on LCD panel (counts down during rewind)

7. Built-in Flash

7-1 Type

Retractable TTL automatic flash housed above the pentaprism.

7-2 Guide number

12 (ISO 100; in meters)

7-3 Flash recycling time

Approximately two seconds

7-4 Flash coverage angle

Equivalent to angle of a 35mm lens,
Parallax correction: 2° downward

7-5	Flash firing conditions	In Full Auto mode or certain Programmed Image Control and Bar-code Program modes: (1) Flash automatically fires in back-lit situations. (2) Flash automatically fires in low-light situations. <i>EOS 10s: No automatic flash function is provided.</i>
7-6	Aperture during flash shooting	(1) Program mode: Flash aperture value is automatically set according to TTL program. (2) Aperture-priority AE or manual mode: Aperture value freely set by user. (3) Shutter-priority AE mode: Aperture value is automatically set according to selected shutter speed and ambient light level.
7-7	Synchronized shutter speeds	(1) Program mode: Automatically set to 1/60- 1/125s (2) Shutter-priority AE or manual mode: Freely set (in 1/2-stop increments) by user to 1/125 s or slower. (3) Aperture-priority AE mode: CF-9 [N]: Automatically set to 30-1/125 s according to selected aperture value and ambient light level. CF-9 [Y]: Set to 1/125s regardless of ambient light level.
7-8	Flash system	TTL evaluative flash metering of light reflected off the film surface (coupled to AF focusing points)
7-9	Flash exposure level control	Automatic reduction of output during bright daylight fill-in flash.
7-10	Flash coupling range	1-4.3m (ISO 100)
7-11	Out of coupling-range warning	None. However, when the EF 35-135mm f4-5.6 or EF 100-300mm f4-5.6 lens is used, the flash is not fired if the exposure level at the far distance side will be underexposed by 3 stops or more.
7-12	Flash firing indication	None.
7-13	Flash charge completion indication	Flash charge completion confirmed when "⚡" symbol lights in viewfinder. (Shutter release is locked while flash is charging.)
7-14	Flash Synchronization	First curtain X sync
7-15	Flash duration	1.0ms or less
7-16	Flash color temperature	Equivalent to daylight
7-17	Flash switch	Flash pops up when switch is pressed once, and goes back down when switch is pressed again.
7-18	Automatic flash operation	SW-1 ON, flash charge → AF, metering → flash pops up → fires → pops back down • During continuous shooting, the flash stays in the popped up position until SW-1 OFF, at which time it pops back down. <i>EOS 10: Flash does not pop up or down automatically.</i>
7-19	Flash vertical offset amount	70.8mm (lens optical axis to center of flash tube)
7-20	Power source	Camera battery
7-21	Other	The built-in flash cannot be used together with an external flash. When an external flash is attached, the built-in flash will not pop up regardless of the charge condition of the external flash.

8. Remote control

8.1 Type

Dedicated remote control system using infrared light, consisting of a remote control transmitter and a receiver built into the camera body.

8-2 Channels / Modes

Single channel, 2 modes
(1) Immediate release mode
(2) 2-second delay release mode

8-3 Transmission

By pressing the transmit button. Minimum interval: 0.5s (Emits pulsed infrared with a peak wavelength of 950nm; emission angle: approx. $\pm 20^\circ$)


8-4 Reception

Activated when the Remote Control Receive button on camera body is pressed ON. Remote control signals are received by a photodiode.

8-5 Operating range

Alignment		Maximum distance
Direct Alignment	(0° V and H)	5m
18° off Vertically;	25° off Horizontally	3.5m

8-6 Operation indication

The  mark is displayed on the external LCD panel. Signal reception in immediate release mode: The AF auxiliary light blinks once at the time of exposure. Signal reception in 2-second delay release mode: The AF auxiliary light blinks at 8Hz for 2 seconds and then exposure occurs. Sequence: Remote control signal reception → AF → Metering → (2 second timer) → exposure.

8-7 Operation prevention

Camera enters remote control signal reception prevention mode after a time period of 4 minutes. Remote control signal reception mode can be reset by pressing the Remote Control Receive button again.

8-8 Other

The remote control transmitter is housed in a remote control holder on the camera strap. With the shutter set to bulb, the exposure begins when the remote signal is received, and ends when the second signal is received. This is true for the two second delay mode as well as immediate release (In bulb mode, the camera does not prevent remote signal reception even when the four minute limit is exceeded.)

9. Bar-code input

9-1 Type

External bar-code reader and bar-code input device located in the camera body.

9-2 Bar code contents

Ten data items are contained in the bar code. (1) Program number (2) AE mode (3) Film transport mode (4) AF mode (5) Flash mode (6) Metering mode (7) Exposure compensation value (8) Flash fill-in ratio value (9) Shutter speed (10) Aperture value

9-3 Bar code reading

By pressing the button on the bar-code reader and then moving the reader over the bar code from the left to right. A single beep is emitted to indicate that the bar code has been read.

9-4 Bar code input

By setting the camera to Bar-code Program mode, placing the output of the bar-code reader to the input of the camera body, and

pressing the button on the bar-code reader to transmit the bar code to the camera. A double beep is emitted to indicate that the bar code has been input.

- If a bar-code program is not input into the camera, the camera operates in Full Auto mode and the **|||||** indicator blinks on the LCD panel.

9-5 Operation indication

When the camera is set to Bar-code Program mode, the **|||||** indicator lights on the LCD panel. After a bar code is input into the camera, the bar code's program number (01-99) is displayed on the LCD panel.

9-6 Other

Power to the bar-code reader is turned on by means of the button switch. The power is automatically turned off after one minute if the button is in the ON position or eight seconds after the button is set to OFF.

10. Camera body

10-1 Custom functions

14 user selectable custom functions are built-in. Selected by simultaneously pressing the Function Selector button and the AF Mode Selector button.

10-2 Back cover

Can be opened via the back-cover opening lever (equipped with safety lock). Cannot be removed. Provided with film-loaded check window (but not provided with memo holder).

10-3 Flash contacts

X-sync contact; Accessory shoe equipped with directly coupled contacts and provided with lock-pin receiving hole to prevent accidental removal of flash unit.

10-4 Automatic flash

With the camera set to Program AE mode: (1) A-TTL automatic flash (A: Advanced) The shutter speed is automatically set to a flash sync speed (1/125-sec) upon flash charge completion. The optimum aperture is then set automatically according to shooting distance and subject conditions (luminance), which are determined by the camera's A-TTL program and a near-infrared pre-performed by the flash unit. A warning is given before exposure if the subject is not within the flash coupling range. Flash output is controlled automatically via measurement of the light reflected off the film plane. Automatic fill-in flash is also possible.

(2) TTL automatic flash: The shutter speed is automatically set to a flash sync speed (1/125- sec) upon flash charge completion. The optimum aperture is then set automatically, determined by the camera's TTL program. Flash output is controlled automatically via measurement of the light reflected off the film plane. Automatic fill-in flash is also possible.

- In both (1) and (2) above, it is possible for the photographer to optionally select a shutter speed of 1/125 sec or slower (in 1/2-stop increments) in shutter-priority mode, or to optionally select an aperture in aperture-priority mode.

(3) Other:

- 1) T and A series flash units should be used in manual mode.

- Shutter speed: Must be manually set to 1/125-30 s
- Aperture: Aperture value on camera body must be manually set to match the aperture value designated on the flash unit.

2) Other manufacturers' flash units General-use compact flash units: Synchronization is possible at speeds of 1/125 sec or slower. Large-sized studio-use flash units: Synchronization is possible at speeds of 1/125 sec or slower (however, this should be verified to conform with flash duration).

10-5 Power source	One 2CR5 6V lithium battery pack.
10-6 Main switch	Camera is OFF when the mode selector is set to "L" (Lock).
10-7 Battery check	Battery condition is checked automatically and indicated by a 4-stop display on the LCD panel. Battery check operation is canceled when mode selector dial is set to "L".
10-8 External display	Large LCD panel (no illumination function provided)
10-9 Tripod socket	CU-1/4" 20 pitch
10-10 Remote control	Possible using remote control unit.
10-11 Grip replacement	N/A. A grip extension with a padded strap can be attached.
10-12 Body material	Glass-fiber reinforced polycarbonate resin.
10-13 Body color	Matte black finish.
10-14 Dimensions	158 (W) x 106 (H) x 70 (D)mm (Body thickness: 50.8mm)
10-15 Weight	580 grams (battery adds 40g to total weight)
10-16 Other	When the EF 35-80mm/f:4-5.6 lens is used, the lens is automatically set to ∞ and WIDE when the mode selector dial is set to "L" to allow the camera to fit in its case.

11. Main accessories

11-1 EOS 10 dedicated accessories	<ul style="list-style-type: none"> (1) Remote control transmitter (2) Bar-code reader (with EOS Book) (3) Semi-hard case (4) Neckstrap (5) Grip extension (with padded strap)
11-2 EOS system accessories	<ul style="list-style-type: none"> (1) EF lenses (2) Speedlites xxxEZ and 160E (3) Macro Ring Lite ML-3 (4) Eyecup Eb (for EOS 750, 850) (5) Rubber frame Eb (for EOS 750, 850 dioptic adjustment lenses)
11-3 Other accessories	See the accessory compatibility chart for details on compatibility with existing system accessories.

EOS 10QD Specifications

• The design specifications listed below are for the quartz date and imprinting function only. All other specifications are the same as those for the EOS 10.

1. Type Classification

1-1	Type	Same as EOS 10, but with integral automatic date imprinting function
1-2	Construction	Consists of auto date control IC, external LCD display, 7-dot imprinting LED, and imprinting optics

2. Auto calendar

2-1	Type	Automatic calendar programmed from 1990 to 2099
2-2	Clock precision	Time variation of ± 30 seconds or less per month at normal temperature (20°C)

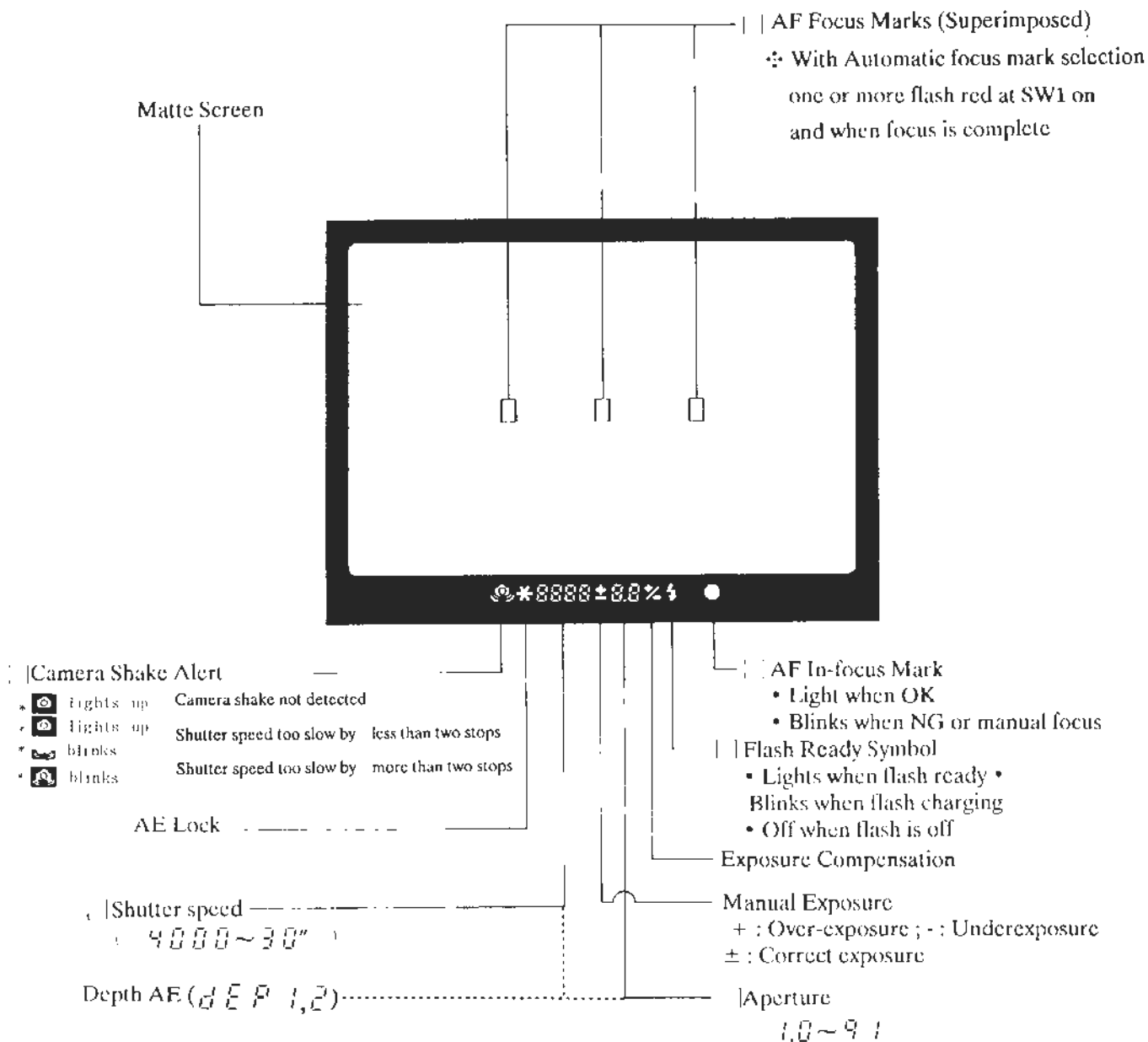
3. Date imprinting

3-1	Date imprinting options: Options switch sequentially, Only numerals are used.	<p>CF-15 [N]:</p> <p>(1) Year - Month - Day</p> <p>(2) Month - Day - Year</p> <p>(3) Day - Month - Year</p> <p>(4) Day - Hour - Minute</p> <p>(5) Printing off</p> <p>CF-15 [Y]:</p> <p>(1) Year - Month Day - Hour - Minute</p> <p>(2) Month - Day - Year - Hour - Minute</p> <p>(3) Day - Month - Year - Hour - Minute</p> <p>(4) Day - Hour - Minute</p> <p>(5) Printing off</p>
3-2	External display	Displayed on top deck LCD panel [Hour and minute are not displayed for CF-15 options [Y] (1) through (3)]
3-3	Imprint position	Lower left corner of photograph; Character height: approx. 0.72mm on negative
3-4	Character formation	5 x 7 dot matrix
3-5	Imprint method	Coupled to film winding, a vertical 7-dot yellow LED flashes as the film is wound. The light passes through image formation optics and the date is imprinted on the emulsion side.
3-6	Imprint color	Yellow to yellow-orange
3-7	Imprint confirmation	None
3-8	Continuous imprinting speed	Imprinting can be carried out at up to 5 frames/s

3-9	Exposure adjustment	Exposure (LED on time) is automatically set according to the film speed (ISO 80-1600 in 1/3-stop increments).
4.	Power source	Uses the camera power source
5.	Dimensions	Unlike previous 'Data Backs', the mechanism is in the body. There is no change in dimensions from base EOS 10 body.
6.	Weight	580g (add 40g for battery)
7.	Other	Camera case is the same as for the EOS 10.

FINDER & LCD INFORMATION

Viewfinder Information

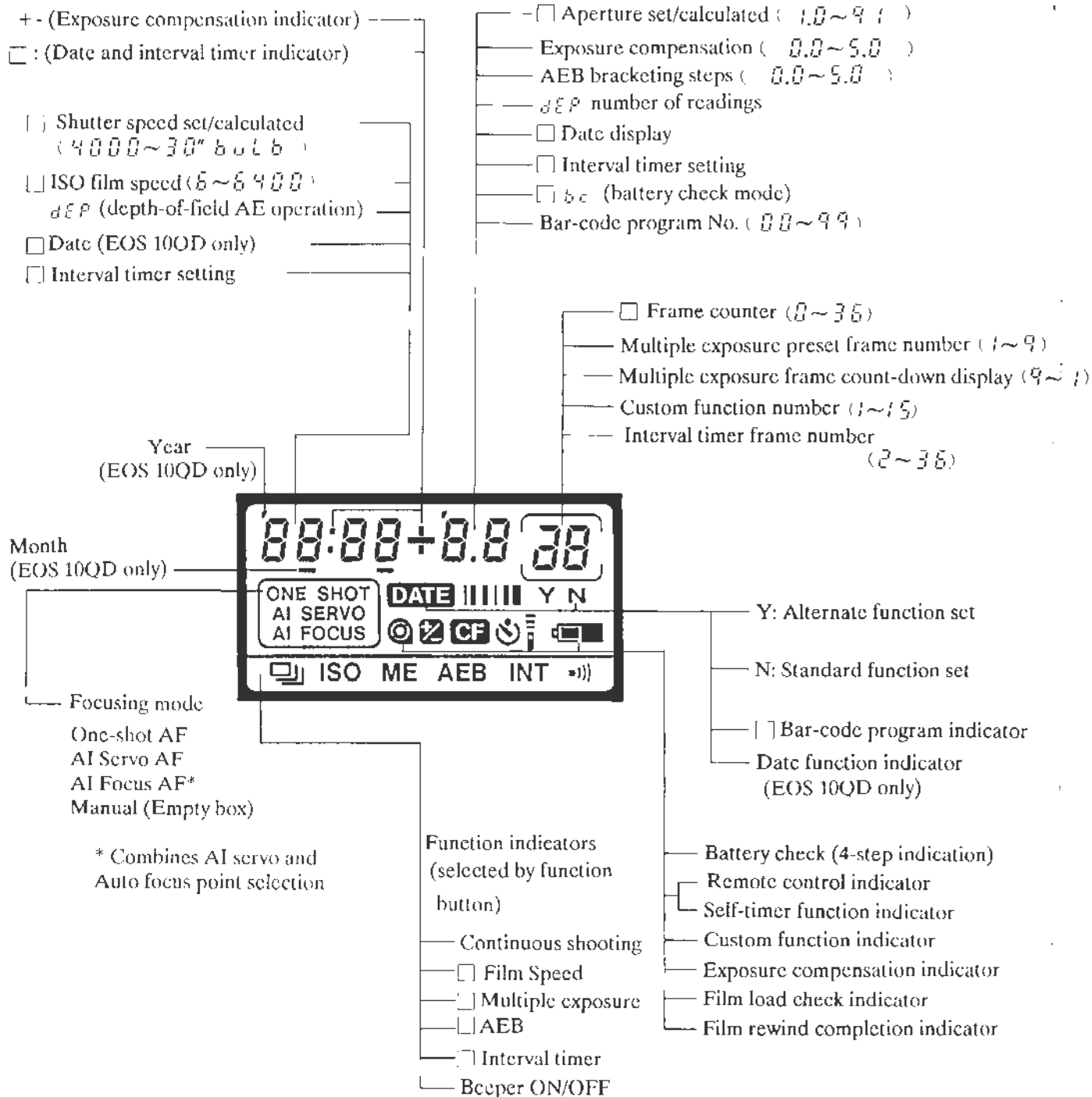


Top deck LCD Information

■ : Blinking

□ : Both steadily lit and blinking

No mark : Steadily lit



FINDER AND LCD WARNINGS

- Items in # box blink at 2 Hz.
- AVO = lens maximum aperture; AVmin = lens minimum aperture.
- TVset, AVset = manually set shutter speed, aperture.
- TVauto, AVauto = automatically set shutter speed, aperture.
- * = all modes.

1. Viewfinder Warning Table (See following page for flash warnings)

Warning	Mode	Viewfinder Indication		Signal	Remarks
AF Failure	*	AF/Mark Blinking (6Hz)			①
Out of Coupling Range - Low		● Shutter Speed	Aperture		
	P or DEPTH Mode	[300]	[AV0]		②
	Shutter Priority	TVset	[AV0]		③
	Aperture Priority	[300]	AVset		④
	Manual	TVset	300		⑤
Out of Coupling Range - High	P or DEPTH Mode	[2000]	[AVmin]		⑥
	Shutter Priority	TVset	AVmin		⑦
	Aperture Priority	[2000]	AVset		⑧
	Manual	TVset	f1		⑨
DEPTH	DEP	<0>	[AV auto]		⑩
Camera Shake	P, TV or DEPTH Mode			Beeper	⑪
	Camera Shake Alert	A <>	AVauto	Beeper	⑫
Flash OFF & Low or backlight	*	Mark Blinking (2 Hz)			⑬

2. LCD Warning Table

Warning	Mode	Viewfinder Indication	Signal	Remarks
Autoloading NG	*	Cartridge ☉ Mark Blinking (2 Hz)		⑬
Rewind completed	*	Cartridge ☉ Mark Blinking (2 Hz)		
Winding NG	*	Faulty frame # flashes		⑭
Multi-exposure	*	ME mark Blinking (2 Hz)		
AEB in use	*	AEB mark lit		
Interval timer in use	*	INT mark blinking (2 Hz)		
Battery exhausted	*	mark blinking (2 Hz)		⑮
System Fault	*	Mark Blinking (2 Hz)		⑯

- ① Focus on an alternate subject at the same distance, or use manual focus.
- ② Use flash, add illumination, or use a faster film.
- ③ Reduce shutter speed until aperture stops flashing.
- ④ Open aperture until shutter speed stops flashing.
- ⑤ Reduce shutter speed or open aperture until correct exposure□□ is indicated.
- ⑥ Use ND filter or slower film.
- ⑦ Increase shutter speed until aperture stops flashing.
- ⑧ Close aperture until shutter speed stops flashing.
- ⑨ Close aperture or increase shutter speed until correct exposure□□ is indicated.
- ⑩ The requested depth of field is impossible. Use faster film or reconsider the depth of field requirements.
- ⑪ Use a tripod or flash.
- ⑫ Use a tripod or add additional light.
- ⑬ Reinstall the film correctly.
- ⑭ Indicates film transport fault. Contact Service Facility.
- ⑮ Change the battery.
- ⑯ Indicates system fault. If it does not clear, contact Service Facility.

3. Viewfinder Warnings when Using Flash

● A-TTL Automatic Flash Exposure Mode (SPEEDLITE 430EZ, EF50 mm f/1.8)

Peripheral Metering Exposure	Subject Brightness	Shooting Mode	Ⓐ Out-Of-Limit Warning		Ⓑ TTL Correct Exposure		Notes.	
							Ⓐ	Ⓑ
Underexposure Warning	Low Brightness (ISO 100 EV5)	ATTL-Tv Priority	TVset 125	AVauto 1.8	TVset 125	AVauto 1.8	(1)	(2)
		ATTL-Av Priority	TVauto f	AVset 5.6	TVauto f	AVset 5.6	(1)	!!1
		ATTL-Program	TVauto 60	AVauto 1.8	TVauto 60	AVauto 1.8~2.2	(1)	!!2
Correct	Normal Brightness (Synchro -sunlight) (ISO 100 EV12)	ATTL-Tv Priority	TVset 125	AVauto 5.6	TVset 125	AVauto 5.6	(1)	
		ATTL-Av Priority	TVauto 125	AVset 5.6	TVauto 125	AVset 5.6	(1)	
		ATTL-Program	TVauto 125	AVauto 5.6	TVauto 125	AVauto 5.6	(1)	
Overexposure Warning	High Brightness (Synchro -sunlight) (ISO 100 EV18)	ATTL-Tv Priority	TVset 125	AVauto 2.2	TVset 125	AVauto 2.2	(1)	(3) (4)
		ATTL-Av Priority	TVauto 125	AVset 5.6	TVauto 125	AVset 5.6	(1)	(5)
		ATTL-Program	TVauto 125	AVauto 2.2	TVauto 125	AVauto 2.2	(1)	(3)

● TTL Automatic Flash Exposure Mode (SPEEDLITE 430EZ, EF50 mm f/1.8)

Peripheral Metering Exposure	Subject Brightness	Shooting Mode	Out-Of-Limit Warning		Notes.
Underexposure Warning	Low Brightness (ISO 100 EV5)	TTL-Tv Priority	TVset 125	AVauto 1.8	(2)
		TTL-Av Priority	TVauto f	AVset 5.6	!!1
		TTL-Program	TVauto 60	AVauto 2.0	
Overexposure Warning	High Brightness (Synchro -sunlight) (ISO 100 EV18)	TTL-Tv Priority	TVset 60	AVauto 2.2	(3) (4)
		TTL-Av Priority	TVauto 125	AVset 5.6	(5)
		TTL-Program	TVauto 125	AVauto 2.2	(3)

Notes:

Items in box blink at 2Hz.

TTL Flash Out-of-Coupling Range Warning (A) is for too distant subjects only. There is no "too near" warning.

The "Correct Exposure Display" (B) column indicates the "warning" when the flash exposure will be correct but the background may not be.

!!1: Slow sync photography – if required shutter speed exceeds 30 seconds 30" flashes.

!!2: Display for general indoor photography. No underexposure warning.

Remarks:

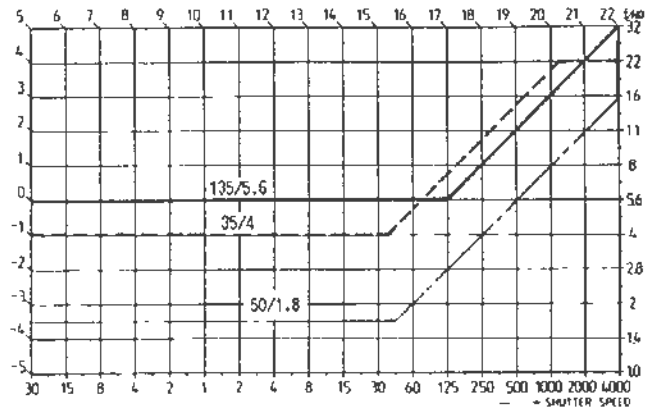
1. Subject is too distant. Move closer.
2. Reduce shutter speed until aperture stops flashing.
3. Use ND filter or slower film.
4. Increase shutter speed until aperture stops flashing.
5. Stop down aperture until shutter speed stops blinking.

PROGRAM DIAGRAMS

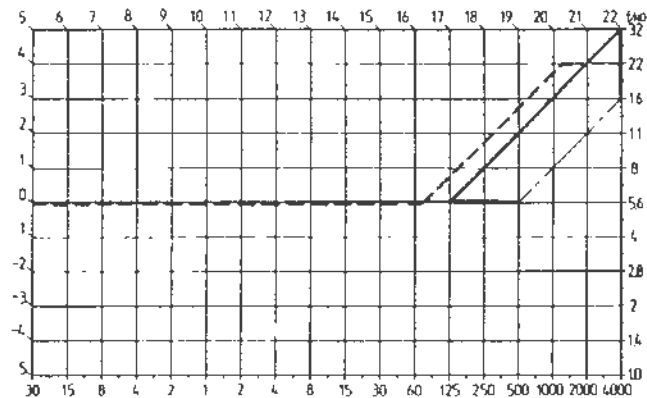
※ LENSES: EF 50mm / 1.8

EF 35-135mm / 4-5.6USM

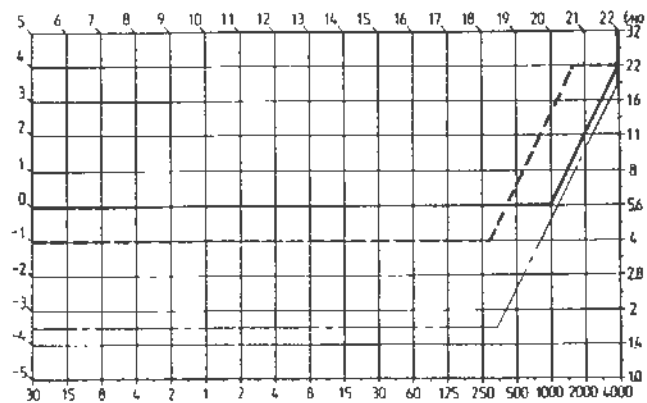
● PS (Full Auto Mode)



● PL (Landscape)

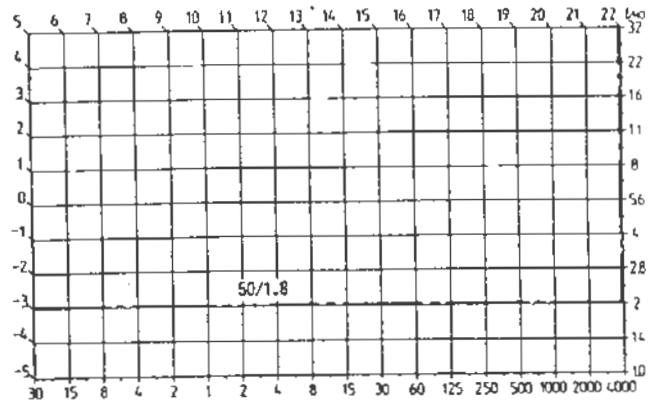


● PH-1 (Sports)



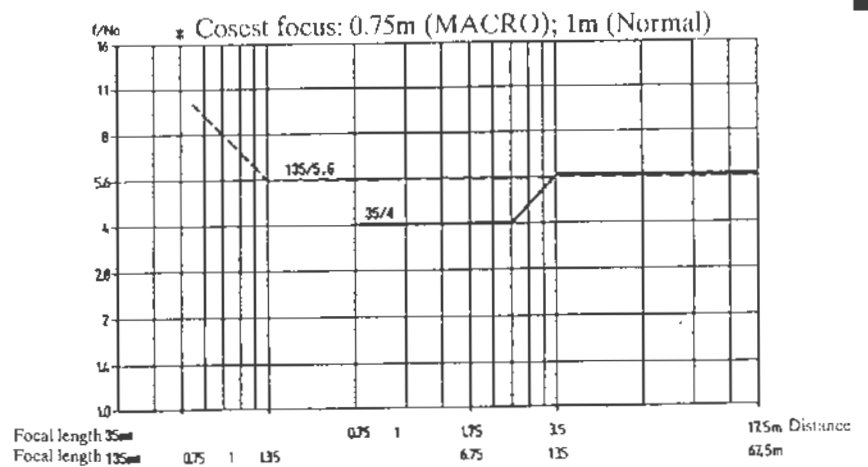
● PH-2
(Portrait)

✧ [Lenses not providing
magnification (distance)
information]



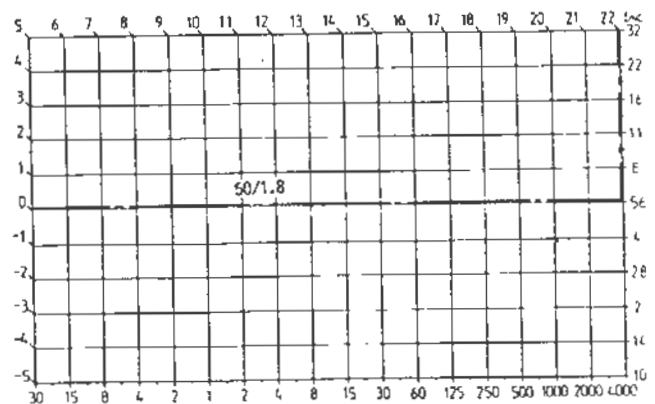
● P-AV1
(Portrait)

✧ [Lenses providing
magnification (distance)
information]



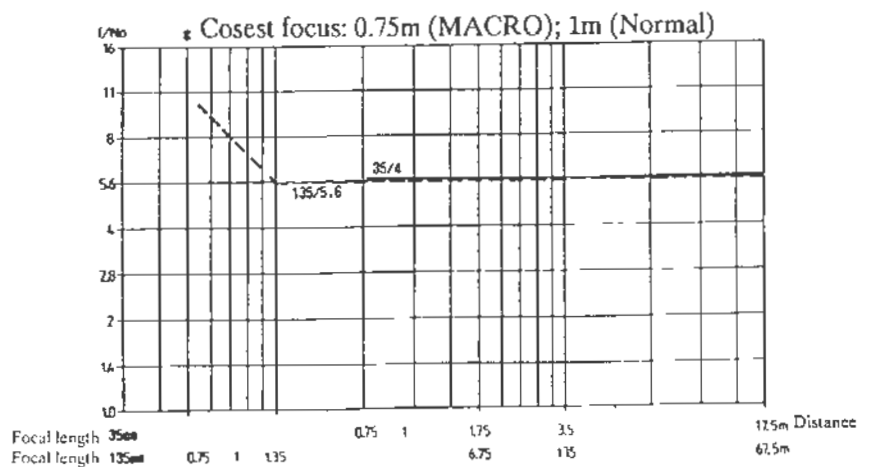
● PH-3
(Close-up)

✧ [Lenses not providing
magnification (distance)
information]



● P-AV2
(Close-up)

✧ [Lenses providing
magnification (distance)
information]

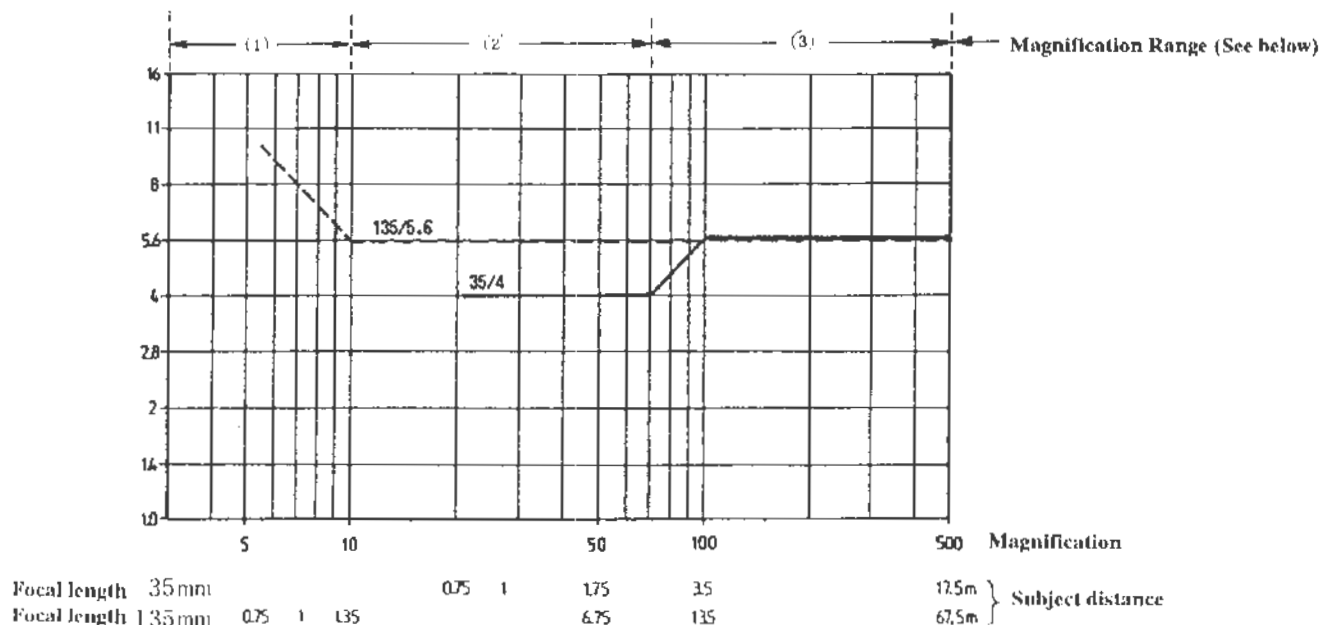


♣ Program P-AV1 Details

This program is set when *PORTRAIT* mode is selected and a lens which provides magnification (focal length and subject distance) information. This information is used to determine the aperture.

P-AV1 Program with EF 35 ~ 135mm $f/4 \sim 5.6$ USM Lens

P AV1 (EF 35 -- 135 / 4 5.6 USM)



Magnification Ranges

1. Close ups (1:10 magnification or greater)

In this range, depth of field is at a premium, so the program picks a small aperture to give as much depth as possible.

2. Head and Shoulders Portraits (1:10 to 1:70 magnification)

This is the portrait range where where a blurred background is desirable, so the lens' maximum aperture is set.

3. Group Pictures

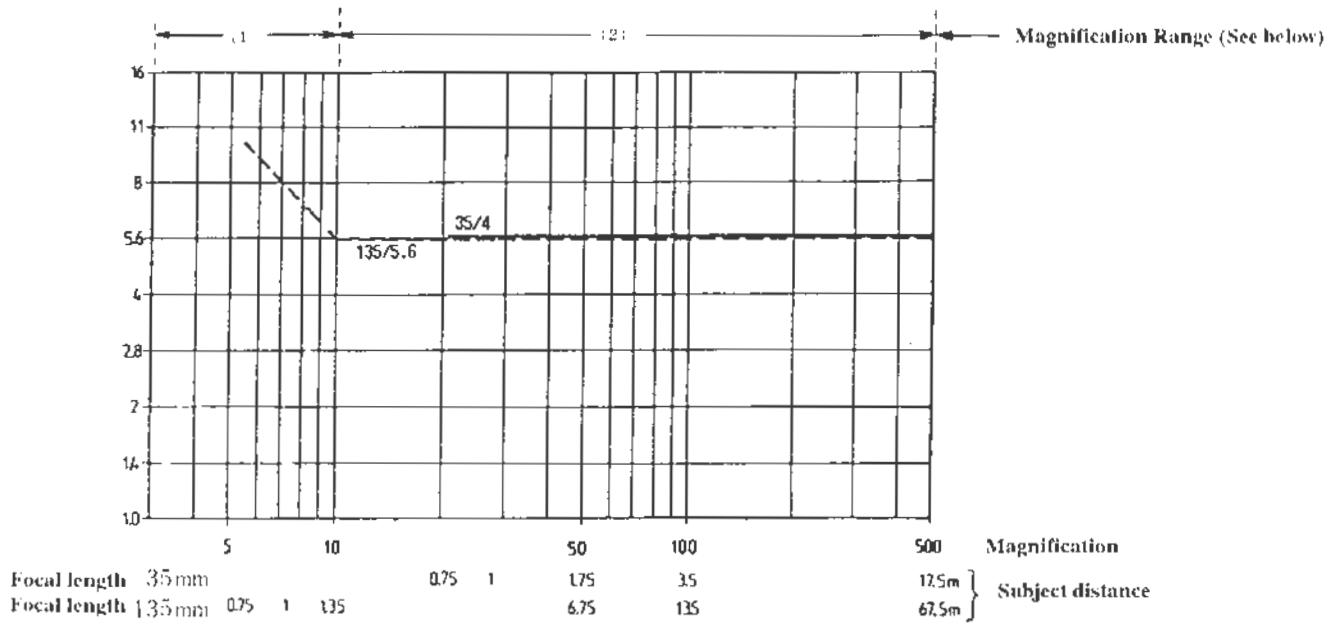
If the *PORTRAIT* mode is selected, but the magnification is less than 1:70, the person is probably taking a group picture instead of a portrait. To insure enough depth and prevent camera shake from becoming a major problem, $f/5.6$ is selected.

♣ Program P-AV2 Details

This program is set when *CLOSE UP* mode is selected and a lens which provides magnification (focal length and subject distance) information. This information is used to determine the aperture.

P-AV2 Program with EF 35 ~ 135mm $f/4 \sim 5.6$ USM Lens

P_AV2 EF35_135/4_5.6 USM)



Magnification Ranges

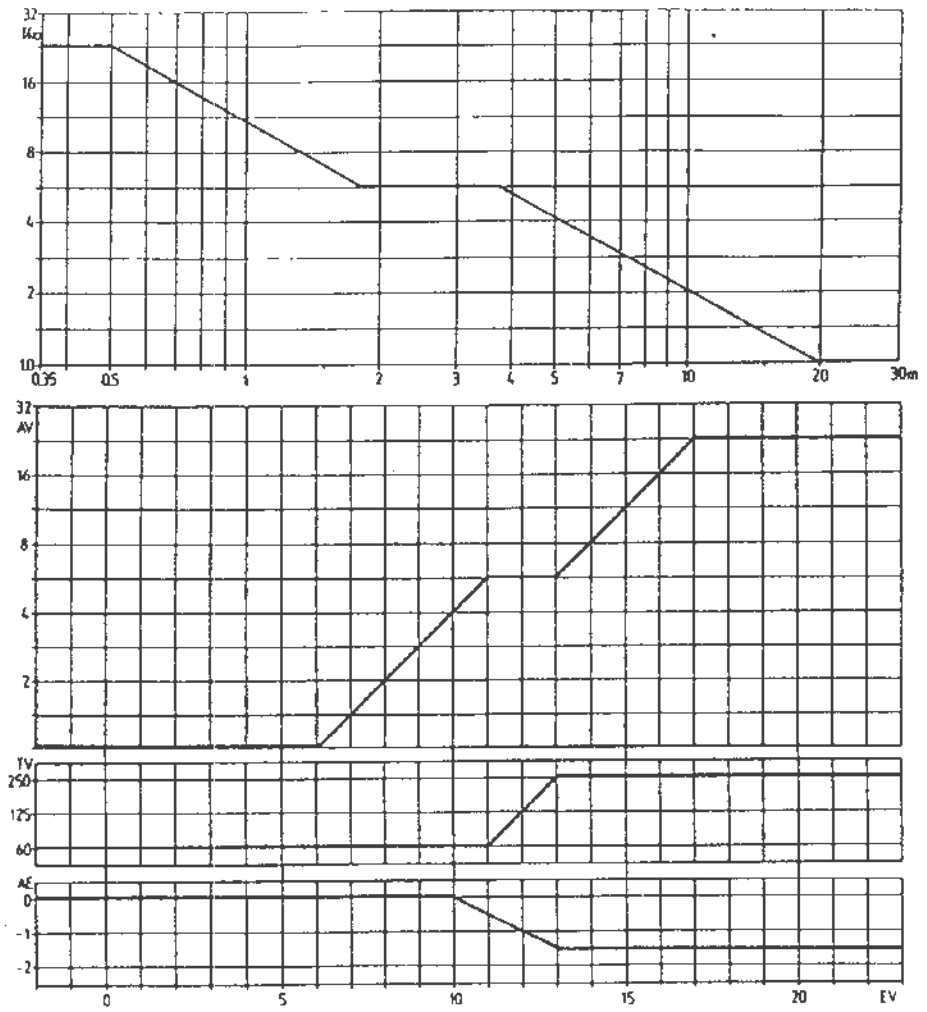
1. Close ups (1:10 magnification or greater)

In this range, the subject is quite close and depth of field is at a premium, so the program picks a small aperture to give as much depth as possible.

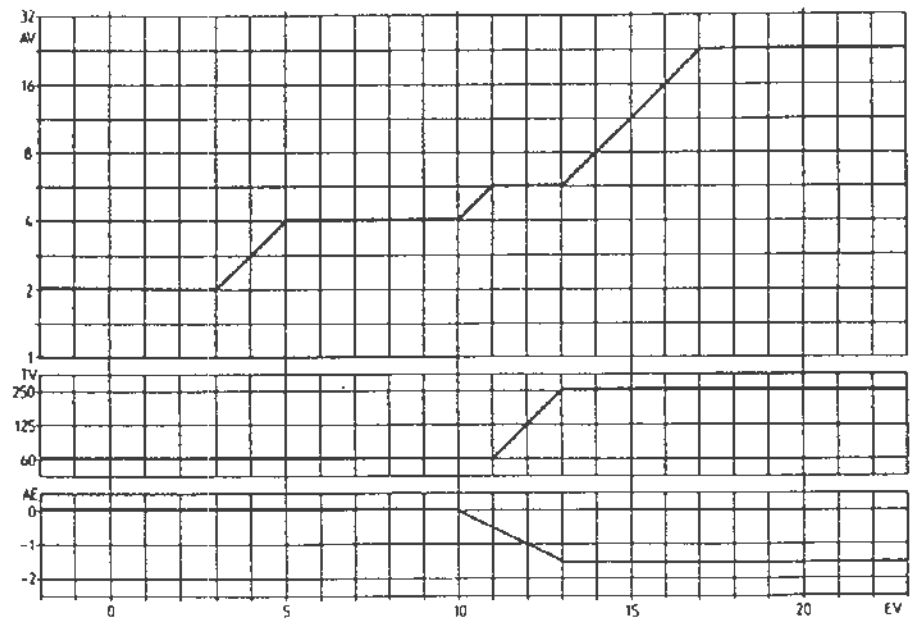
2. Normal distances (not close ups)

This is normal photographic distances, so $f/5.6$ is chosen for normal results.

● A-TTL Program



● TTL Program



BAR CODE PROGRAMS

The Bar Code Reader used with the *EOS PHOTO FILES* booklet provides even more advanced automation. The camera automatically sets up the exposure, focusing and transport functions to give the desired results.

Photograph	Prog. No.		Exposure mode	Focus Mode	Metering (Exp. Comp.)	Flash Mode (Comp.)	Transport Mode	Perferred Focal Lengths	Remarks
Portraits	1	P01	P	ONE SHOT	Evaluative	ON (−1.0)	S	7~300mm	
	2	P02	P	ONE SHOT	Highlight (+2.0)	ON (±0)	S	35~105mm	
	3	P03	AV (AV = 2.8)	ONE SHOT	Evaluative	OFF	S	50~300mm	
	4	P04	AV (AV = 16)	ONE SHOT	Evaluative	OFF	S	28~70mm	
	5	P05	AV (AV = 4.0)	ONE SHOT	Highlight (+4.0)	ON (±0)	S	28~105mm	Use tripod ISO400 ~
Kid Pictures	1	P06	P	ONE SHOT	Evaluative (+1.0)	ON (±0)	S	35~135mm	
	2	P07	P	ONE SHOT	Evaluative (+0.5)	OFF	S	28~105mm	Use tripod ISO400 ~
	3	P08	M TV = 1/2 AV = 5.6	ONE SHOT	Evaluative	OFF	S	28~105mm	Use tripod
	4	P09	M TV = 2* AV = 5.6	ONE SHOT	Evaluative	ON (±0)	S	28~105mm	Use tripod
	5	P10	P	ONE SHOT	Evaluative (−1.0)	ON (±0)	S	35~300mm	
	6	P11	TV (TV = 1/350)	AI SERVO	Evaluative	OFF	C	135~300mm	ISO400 ~
Wedings, etc. *EOS10QD - *EOS10,EOS10S -	1	P12	P	ONE SHOT	Evaluative	AUTO	S	35~135mm	
	2	P13	P	ONE SHOT	Evaluative	ON (−1.0)	S	35~135mm	ISO400 ~
	2	P13	P	ONE SHOT	Evaluative (+1.0)	OFF	S	35~135 mm	ISO400 ~
	3	P14	P	ONE SHOT	Evaluative	AUTO	S	35~135mm	
Close-ups	1	P15	AV (AV = 4.0)	ONE SHOT	Partial	OFF	S	50~135mm	
	2	P16	AV (AV = 5.6)	ONE SHOT	Partial	OFF	S	(50 or 100mm)	
Scenery	1	P17	P	ONE SHOT	Highlight (+2.0)	OFF	S	70~300mm	
	2	P18	AV (AV = 5.6)	ONE SHOT	Evaluative (−0.5)	OFF	S	20~35mm	Use tripod
	3	P19	TV (TV = 1/500)	ONE SHOT	Evaluative	OFF	S	28~135mm	ISO400 ~
	4	P20	TV (TV = 1/8)	ONE SHOT	Evaluative	OFF	S	28~135mm	Use tripod
Stained Glass (full frame)	1	P21	P	ONE SHOT	Highlight (+2.0)	OFF	S	35~135mm	
Stained Glass (in background)	2	P22	P	ONE SHOT	Evaluative (+0.5)	OFF	S	28~135mm	
High Key (white on white)	3	P23	P	ONE SHOT	Evaluative (−1.0)	OFF	S	28~70mm	Use tripod ISO400 ~

* "Highlight" metering uses data from the brightest sensor of the 8-section sensor.

Full Auto & Image Control Modes


In the Full Auto (green [I]) mode or any of the P.I.C. modes, the camera automatically sets six different parameters.

Shooting mode Basic Function		Full Auto mode	Image Control mode			
			Portrait	Landscape	Close-up	Sports
AF mode	ONE SHOT		●	●	●	
	AI SERVO					●
	AI FOCUS	●				
Focusing point	Auto	●	●	●		●
	Center				●	
Film winding	S (single)	●		●	●	
	C (Continuous)		●			●
Metering mode	Evaluative	●	●	●		●
	Partial				●	
Built-in flash	AUTO	●	●		●	
	OFF			●		●
AE control program (See "Program Diagram")	PS	●				
	PL			●		
	PH-1					●
	PH-2		●			
	PH-3				●	
	P-AV1		●			
	P-AV2				●	

- P-AV1, 2 Modes: These programs are used with lenses that can provide magnification (distance and focal length) information. This information is used to select an appropriate aperture. If the lens does not provide magnification information, PH-2 is used in Portrait mode and PH-3 in Close-up mode.

- As of March, 1990, these lenses provide magnification information: EF35 ~ 135mm f/4 ~ 5.6USM, EF 70 ~ 210mm f/3.5 ~ 4.5USM, EF 100 ~ 300 f/4.5 ~ 5.6USM, and the EF100mm f/2.8 MACRO.

- In AI Focus mode, once the mode has switched from One-shot to AF Servo, it will not switch back until SW1 goes off.

- The EOS 10s built-in flash does not pop up automatically. If it is up it will fire when necessary in these modes. (if it is not up, the lightning mark  will blink if flash is required).

Recommended Lenses for Programmed Image Control

● These Lenses are recommended for the maked Programmed Image Control modes.

Mode Lens (EF)	Portrait	Landscape	Close-up	Sports
15 mm / 2.8 FE		●		
24 mm / 2.8		●		
28 mm / 2.8		●		
50 mm / 1.0 L				
50 mm / 1.8		●	●	
50 mm / 2.5 M			●	
85 mm / 1.2 L	●			
100 mm / 2.8 M			● * 4	
135 mm / 2.8 SF	● * 3			●
200 mm / 1.8 L	●			●
300 mm / 2.8 L	●			●
600 mm / 4.0 L				●
20 - 35 mm / 2.8 L		●		
28 - 70 mm / 3.5 - 4.5	● * 2,3	● * 1	●	
28 - 80 mm / 2.8 - 4.0 L	● * 2,3	● * 1	●	
35 - 70 mm / 3.5 - 4.5	● * 2,3	● * 1	●	
35 - 70 mm / 3.5 - 4.5 A	● * 2,3	● * 1	●	
35 - 80 mm / 4.0 - 5.6 PZ	● * 2,3	● * 1	●	
35 - 105 mm / 3.5 - 4.5	● * 2,3	● * 1	●	●
35 - 135 mm / 3.5 - 4.5	● * 2,3	● * 1	● * 4	●
35 - 135 mm / 4.0 - 5.6 U	● * 2,3	● * 1	● * 4	●
50 - 200 mm / 3.5 - 4.5	● * 2,3	● * 1	● * 4	●
50 - 200 mm / 3.5 - 4.5 L	● * 2,3	● * 1	● * 4	●
70 - 210 mm / 4.0	●		● * 4	●
70 - 210 mm / 3.5 - 4.5 U	●		● * 4	●
80 - 200 mm / 2.8 L	●			●
100 - 200 mm / 4.5 A	●			●
100 - 300 mm / 4.5 - 5.6 U	●		● * 4	●
100 - 300 mm / 5.6	●		● * 4	●
100 - 300 mm / 5.6 L	●		● * 4	●

*1: Use wide-angle settings for maximum depth of field.

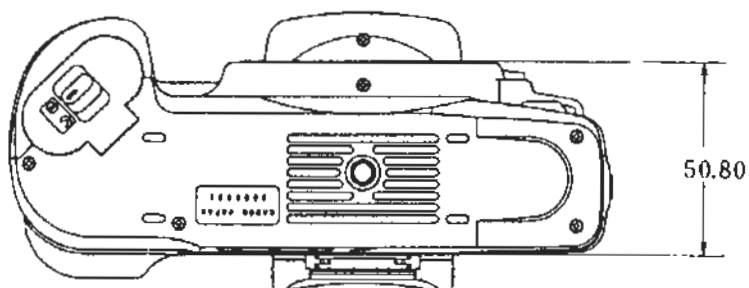
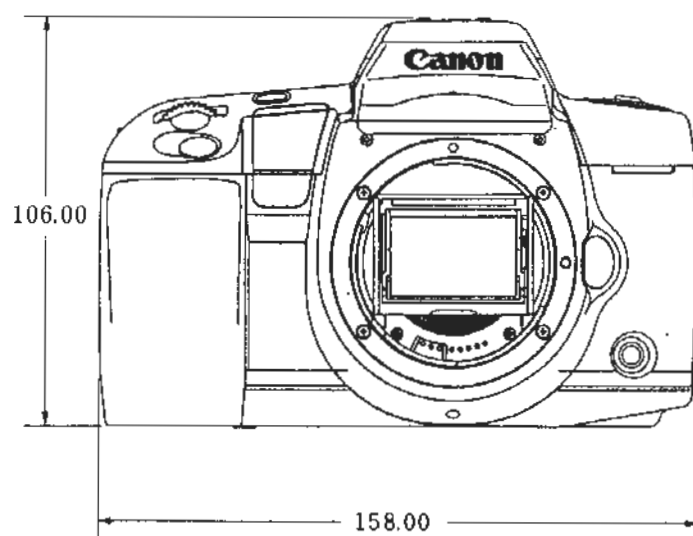
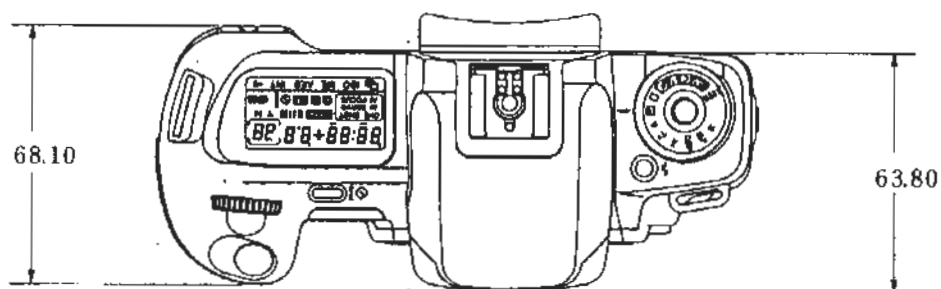
*2: Use telephoto (70 mm or longer) settings for a shallow depth of field and a blurred background.

*3: Separate the main subject from the background by a fair distance.

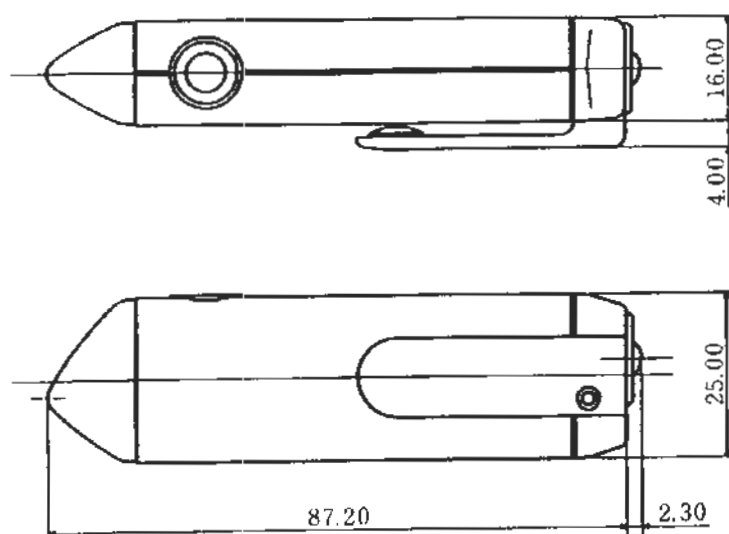
*4: Be careful of camera shake.

EXTERIOR

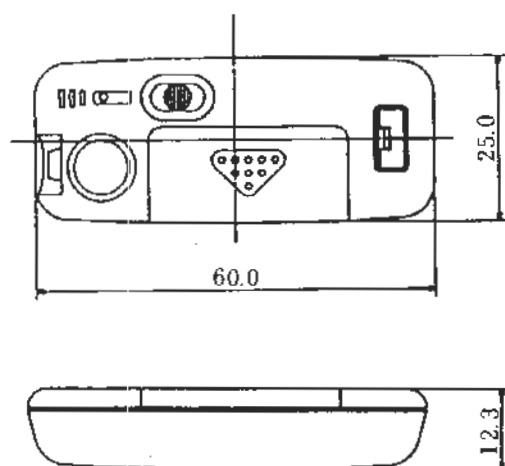
EOS10QD



Bar Code Reader E

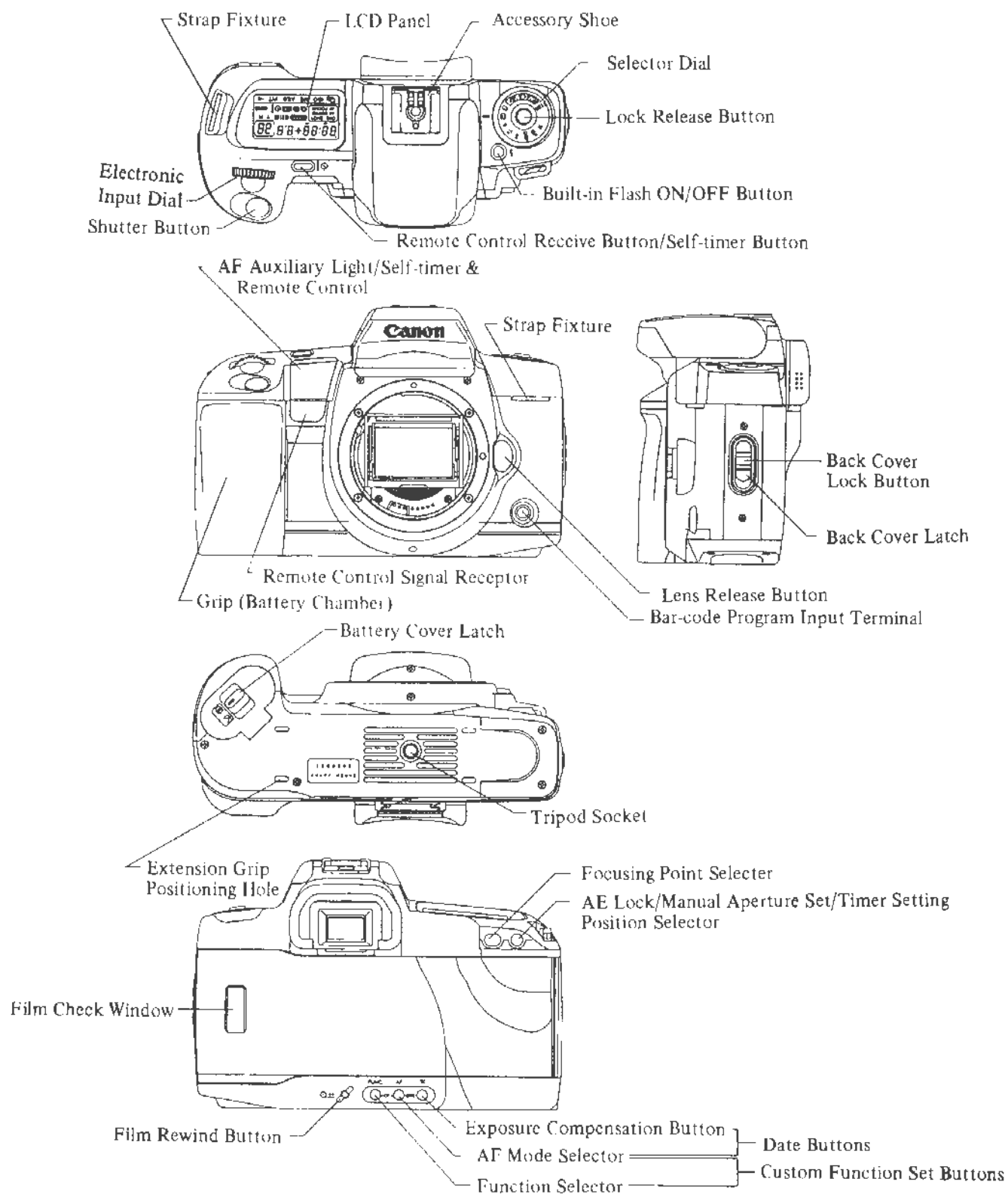


Remote Controller
RC-1

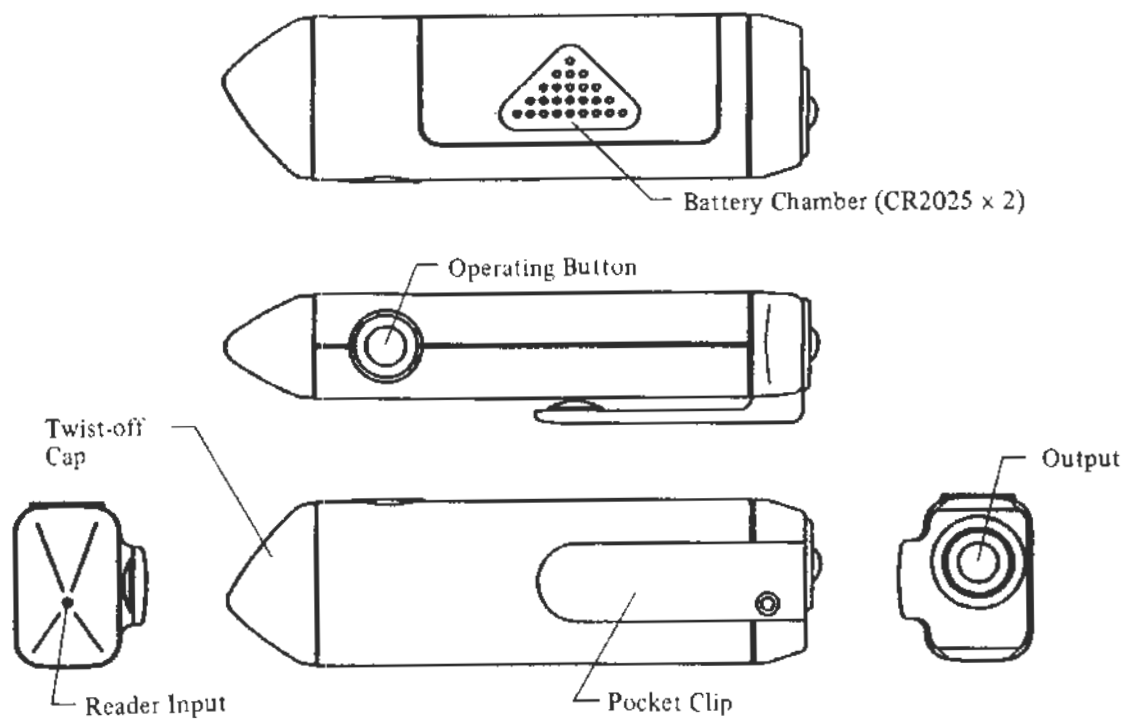


NOMENCLATURE

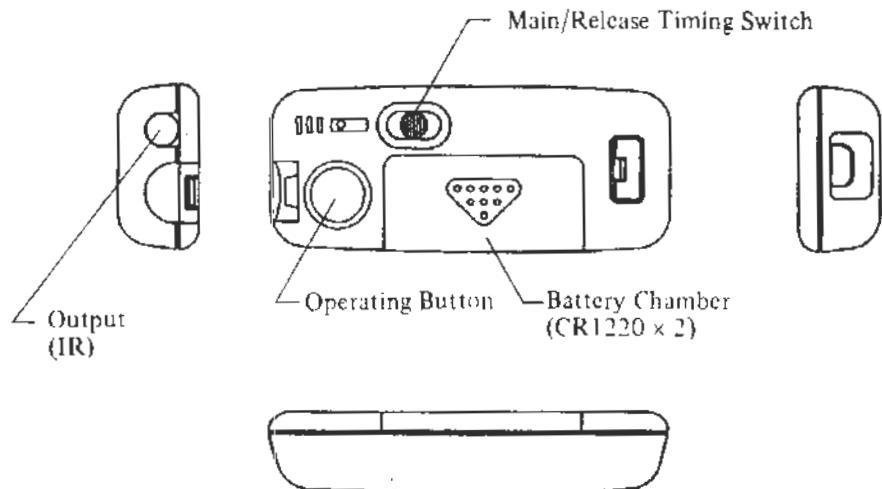
EOS 10QD



Bar Code Reader E



Remote Controller RC-1



Custom Function Table

CF-x	Item	[N] Normal function	[Y] Alternate function
1	Film Rewind Cancellation	Automatic rewind at end of film.	Operation stops and the counter blinks the last frame number exposed. DX coded film on specified frame (12, 24, 36). Manual rewind button initiates rewind.
2	Film leader	Leader winds completely into cartridge.	Leader tongue protrudes from cartridge.
3	Film speed setting	Set automatically by DX code.	Set manually. (Shutter automatically set to 1/4000s when back cover open. ~)
4	AF operating control	Shutter button first stroke	AE lock button, not by shutter button.
5	Manual exposure setting Aperture	AE Lock button + Elec. input dDial	Electronic input dial
	Shutter speed	Electronic input dial	AE Lock button + Elec. input dial
6	Camera shake warning	Beeper operates in Full Auto, Programmed Image Control, and Bar-code Program modes.	No camera-shake warning beeper (beeper indicates in-focus only)
7	Manual focusing with compatible USM lenses	Switched manually using lens AF/M switch	Switched automatically after focus completion or failure with compatible USM lenses.
8	AF auxiliary light	Fired automatically	Off (Integral and external flashes)
9	Sync speed lock in aperture-priority AE	Shutter speed determined by peripheral luminance	Shutter speed fixed at 1/125s
10	Red focus marks in automatic focusing point selection mode	Displayed	Not displayed (In-focus beep is also canceled)
11	Depth-of-field check	None	AF an AE lock and aperture stops down when AE lock button is pressed. (When CF-4 [Y] is set, the aperture does not stopped down in AI Servo AF mode.
12	AE lock	AE lock with partial metering	AE lock with evaluative metering
13	Mirror up	Not possible	In self-timer mode, mirror goes up at SW-2 ON

CF-x	Item	[N] Normal function	[Y] Alternate function ¹⁴
	Camera Shake Alert AE Speed limiter (prevents speeds lower than 1/f seconds from being set)	Operational	If camera shake is not detected, the speed limiter is canceled.
15	Date imprinting (OD only)	Data is imprinted in one of the following sequences: Year/Month/Day Day/Month/Year Month/Day/Year Day/Hour/Minute (or nothing at all).	Data is imprinted in one of the following sequences: Y/M/D/Hour/Minute D/M/Y/Hour/Minute M/D/Y/Hour/Minute Day/Hour/Minute (or nothing at all).

NOTES CONCERNING USE

No.	Cautions	Explanations
1.	Any lens hood should be removed when using the built-in flash.	If the built-in flash while a lens hood is attached to the lens, the hood blocks part of the light emitted from the flash. Although the extent of blockage varies depending on the lens/hood combination, flash blockage occurs with all len/hood combinations. Use an externally-attached flash unit.
2.	The intervals between frames may be situated over perforations.	This may occur since the sprocketless film transport system does not detect perforations.
3.	When the automatic focusing point selection and AI Servo AF functions are used at the same time, the center focusing point should be placed on the main subject at the start of focusing.	Automatic focusing point selection during AI Servo AF operation places top priority on the center focusing point.
4.	When a lens larger than the EF 35-135 mm 1/4.-5.6 Ultrasonic is mounted, the left-side (when facing the subject) AF auxiliary light is blocked by the lens barrel.	Focus with the center or right-side focusing point.
5.	In Camera-shake Prevention AE mode, a blurred image may result if camera shake or subject movement increases during exposure.	Since the Camera-shake Prevention AE program determines the "no camera-shake" shutter speed based on camera-shake and subject movement data detected immediately before exposure begins, increased camera-shake or subject movement occurring during exposure cannot be countered.
6.	Since the intended effect cannot be obtained if an external flash unit is used in Programmed Image Control or Bar-code Program modes, the use of an external flash unit in these modes is not recommended.	When an external flash unit is used in Programmed Image Control mode, the flash will always fire based on the A-TTL or TTL automatic flash program. (The image effect will be the same regardless of the selected mode.) In Bar-code Program mode, the flash will always fire based on the A-TTL or TTL automatic flash program, and functions such as flash exposure compensation cannot be carried out. (Second curtain sync is not possible.)
7.	When using the built-in flash, manual focusing using the manual focusing ring of a USM lens is not possible while SW-1 is ON or during flash recycling.	Design specifications make it impossible for power to be supplied to both the flash and the lens at the same time. Carry out manual focusing before pressing SW-1.
8.	If another object in the scene is close to the camera than the main subject when the automatic focusing point selection function is activated, the camera will focus on the near object and the main subject will be out of focus.	The focusing system is designed to automatically select the focusing point located on the object closest to the camera.

9.	When using the automatic focusing point selection, AI Servo AF, and continuous shooting functions at the same time, the continuous shooting speed may become irregular if the subject moves from one focusing point to another during shooting.	This occurs since subject movement from one focusing point to another during focusing causes focusing to become impossible for an instant, and shooting is interrupted momentarily until focus is obtained using the new point.
10	When using the built-in flash with the interval timer, the timer's interval is lengthened by the flash charging time.	Design considerations
11	The red focusing marks do not light in AI Servo or AI Focus modes.	Priority is given to following the subject, so the time-consuming sequence to light the mark is deleted.

EOS 10QD only

12	If shorter rolls of non-DX film are used, the final frame's data may not be correctly printed.	The date is printed after exposure during winding. If the film ends before enough film has been advanced, the date will not be printed correctly.
13	If the film has a long leader section, the fogged area may intrude into the first exposure.	In order to insure proper data printing on the final frame of film, a shorted (2.2 ~ 2.7 frames) loading sequence is used in the EOS 10QD. -- Advise users not to pull excess leader out of the cartridge before loading.

II. TECHNICAL INFORMATION

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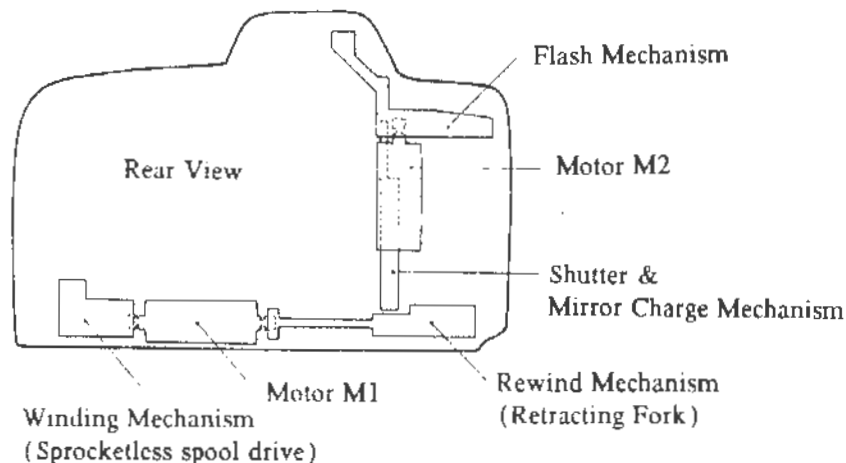
TECHNICAL SECTION - MECHANICAL

TWO MOTOR DRIVE SYSTEM

The EOS-10 dual motor system uses two bi-directional motors to perform all movement related operations: film advance, film rewind, shutter and mirror mechanism charging, and flash extension and retraction.

Motor Task Allocation

- **Motor M1**
 - Forward Rotation: Film winding
 - Reverse Rotation: Film rewinding
- **Motor M2**
 - Forward Rotation: Shutter and Mirror Mechanism charging
 - Reverse Rotation: Flash extension and retraction



Operation with reduced battery power (Battery mark flashing)

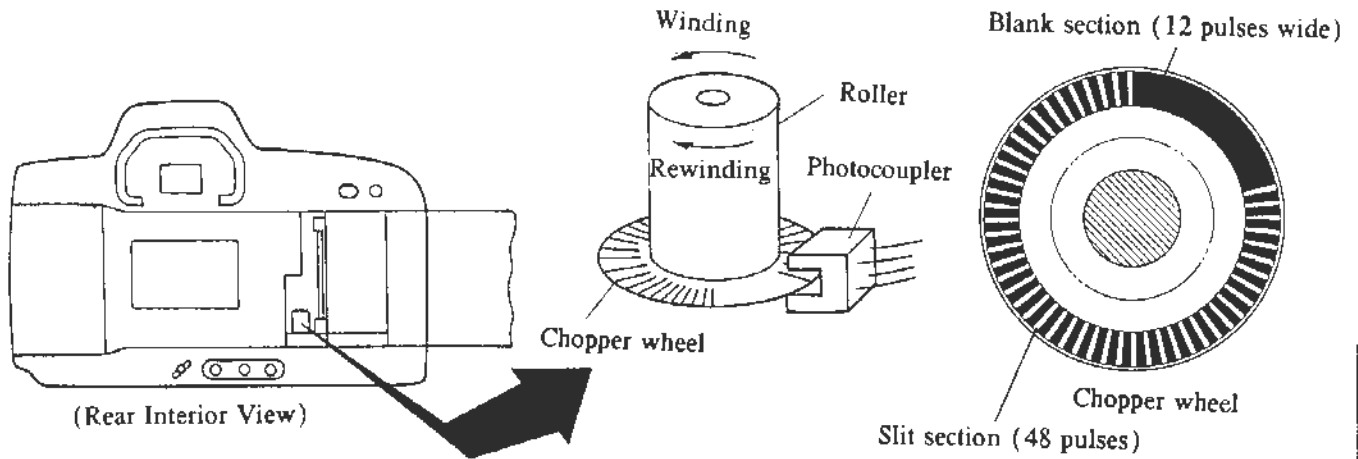
The EOS-10 is designed to give stable operation even when the battery power is marginal by shifting to a lower speed, and therefore lower drain mode.

Normally, after exposure is complete both motors operate simultaneously, M1 winding the film and M2 recharging the shutter and mirror.

But, in the low-power mode the motor operation is sequential with M2 operating first and then M1 winding the film after the shutter and mirror have been charged. This requires more time but it lowers the instantaneous drain on the battery.

• Film Frame Metering

The sprocket provided a mechanical means of metering 38mm of film to position each new frame in the aperture and stop the film at the correct position. This system has gradually been replaced by photocouplers and chopper wheels in modern cameras. With the EOS-10 the redundant sprocket has been deleted completely and replaced by a rubber roller driving a chopper wheel.

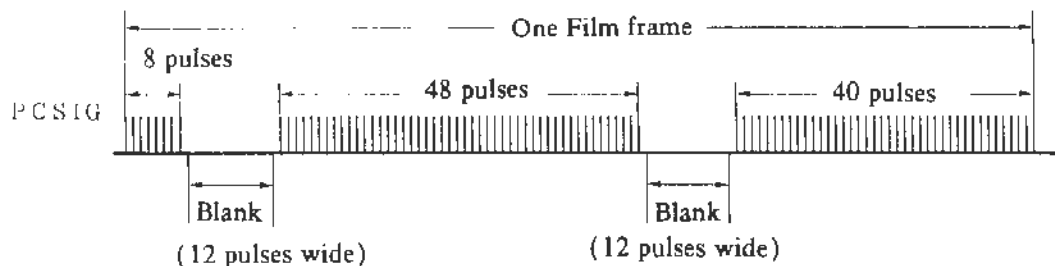


• Advancing one frame

As the film is pulled by the spool it rides across the rubber roller. This causes the roller, and chopper wheel fixed to it, to turn.

The chopper wheel, which contains an opaque area and a slit pattern area, turns through the photocoupler creating a pulse train with pulse sections of 48 pulses and blank sections with the width of 12 pulses.

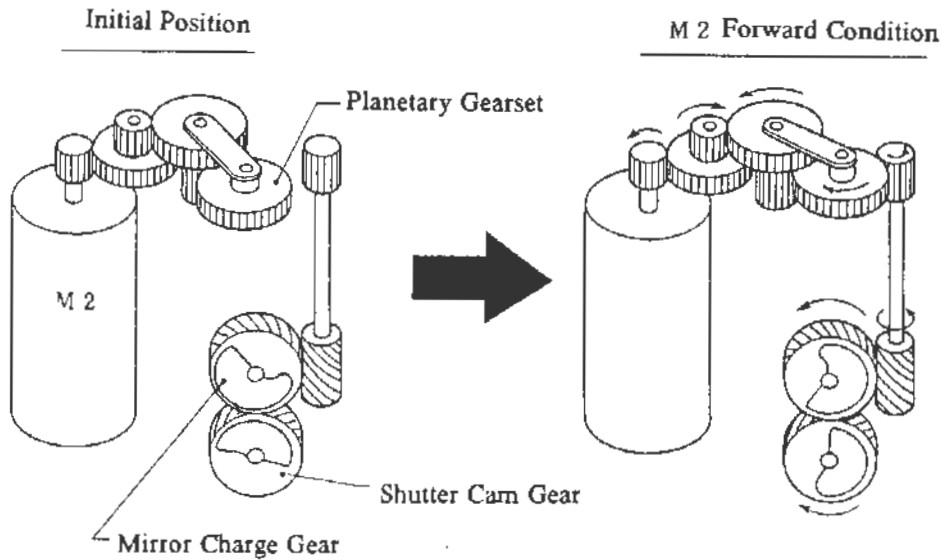
After two blank sections are registered, 40 more pulses are counted and the film is stopped. This advances one frame (38mm) of film.



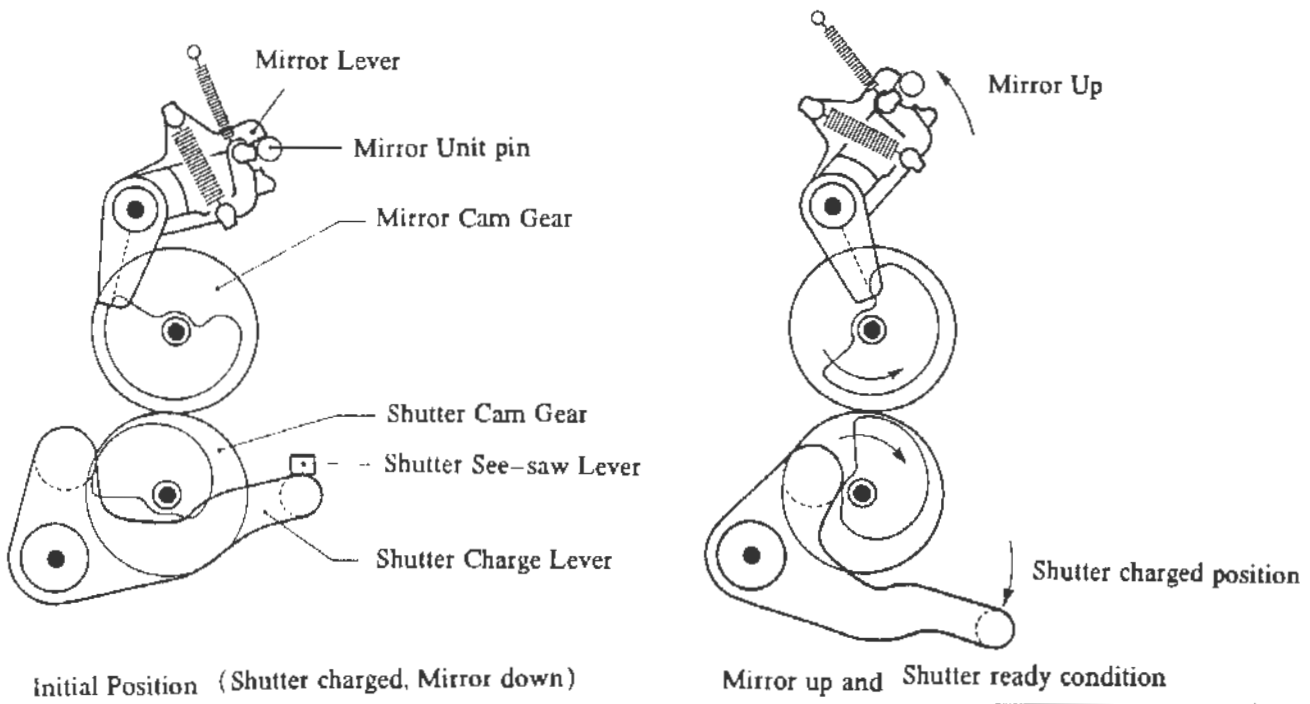
◆ If 15ms pass without a pulse, an opaque area is assumed. If 210ms elapse without a pulse, film end is assumed and the rewind sequence begins.

- **Shutter Charge and Mirror Operation (Motor M2)**

Shutter charge and mirror operation are functions of Motor M2.



When normal polarity voltage is applied to M2, forward current flows and the planetary gearset engages as shown.

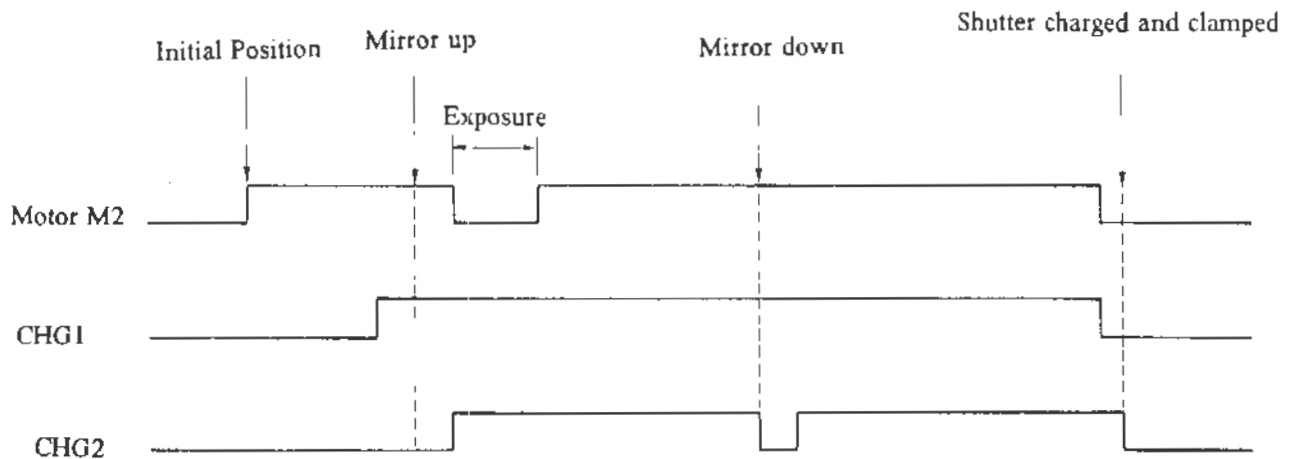
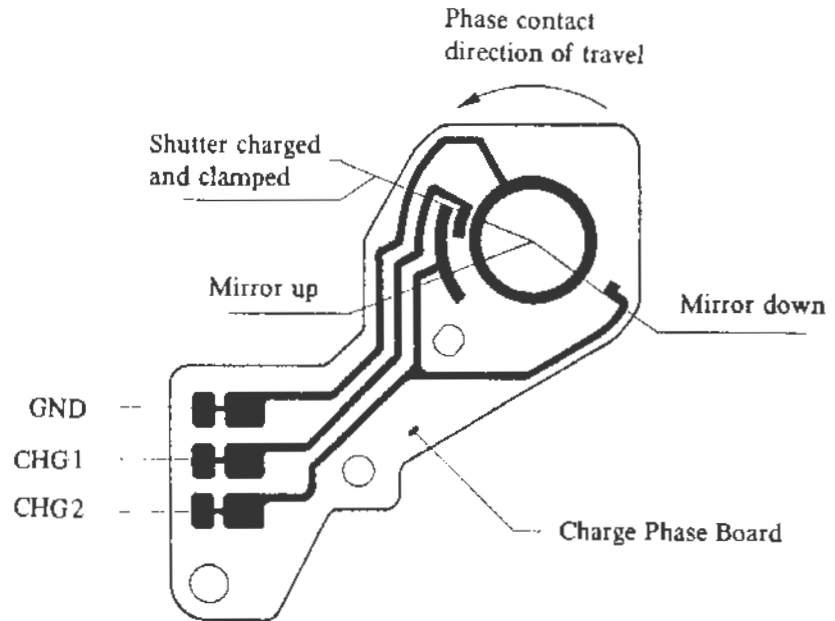


Shifting of the planetary gearset couples the motor to the shutter and mirror cam gears. When M2 turns in the forward direction, it drives the shutter charge and mirror cams.

- **Motor M2 Operational Control (Forward)**

Power application to M2 is controlled by the charge phase board (shown at right).

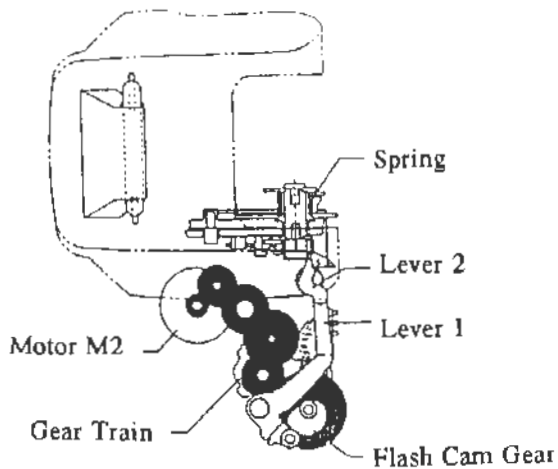
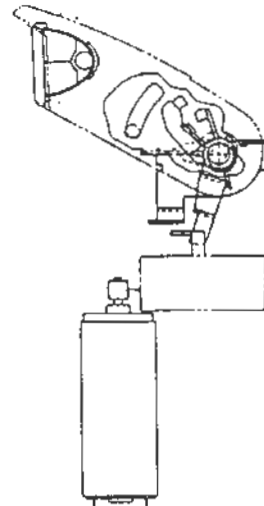
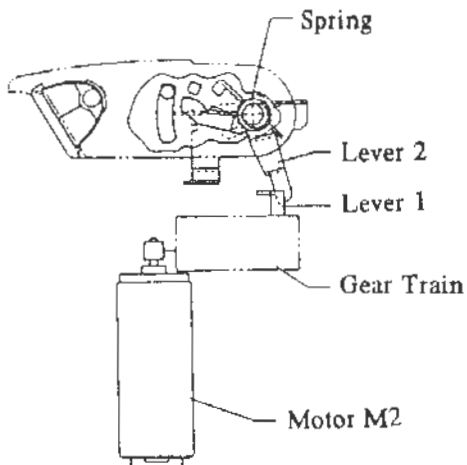
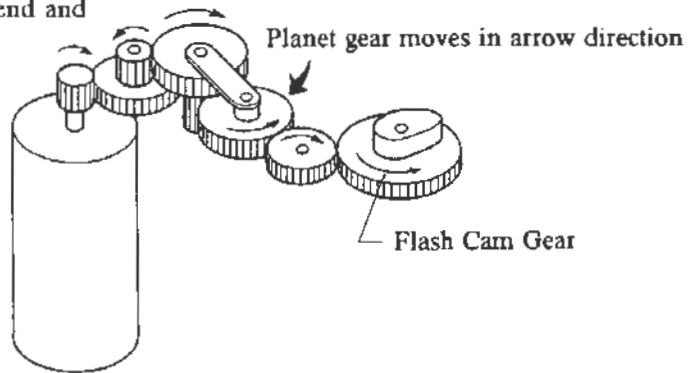
When M2 turns in the forward direction, the phase contacts, attached to the mirror cam gear, run around the charge phase board in the counterclockwise ← direction contacting the patterns on the phase board. This generates signals CHG1 and CHG2 to control power application to M2.



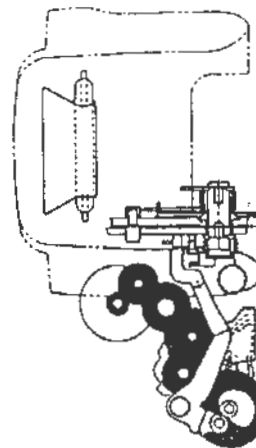
Flash Mechanical Operation

- Flash "pop-up" and "pop-down" are operated by reverse operation of Motor M2.

When reverse polarity voltage is applied to M2, the planetary gearset engages with the flash gear train as shown. As the flash cam gear turns it drives levers 1 and 2 to extend and retract the built-in flash.



Flash Retracted Position

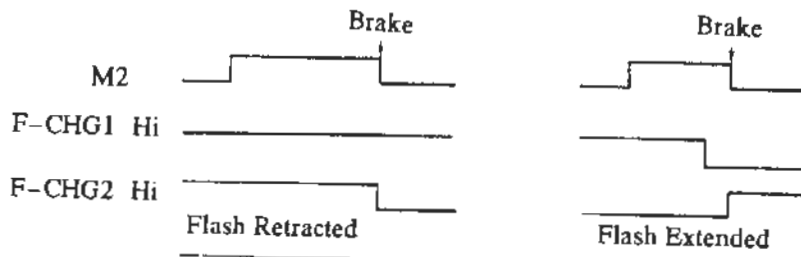
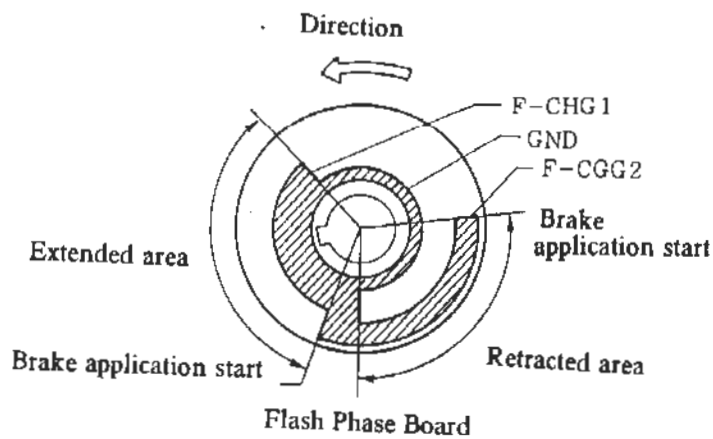


Flash Extended Position

• Motor M2 Operational Control (Reverse)

Power application to M2 is controlled by the flash phase board (shown at right).

Unlike shutter and mirror operation in the forward direction, the flash phase board is attached to the flash cam gear and runs over fixed phase contacts in the direction of the arrow; but the result is the same. In this case the signals generated to control power application to M2 are called F-CHG1 and F-CHG2.



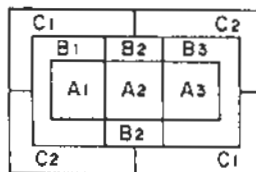
When the flash is extended or retracted and the brake applied, the actual position where the phase board stops will overrun slightly due to inertia. The actual amount depends on power supply voltage. To deal with this, an acceptable area has been established. If the board does not stop within this area, power is reapplied to cycle once more.

- Conditions for activating the built-in flash (Full Auto, Image Select, and some Bar Code modes)

When SW1 is turned on and exposure metered, the flash will automatically extend and flash if the illumination is low, or if back lighting is sensed by the factor 8 exposure sensor.

Low Light - - If the shutter speed determined by the program is $1/f$ of the focal length in use, the MPU determines that the light level is low (For focal lengths of 125mm or longer the critical point is always 1/125 seconds).

Backlight - - If the output of the central sensor (A1,2 or 3) which corresponds to the selected AF sensor is greater than a set level less than the highest output of the other sensors, backlight is determined.

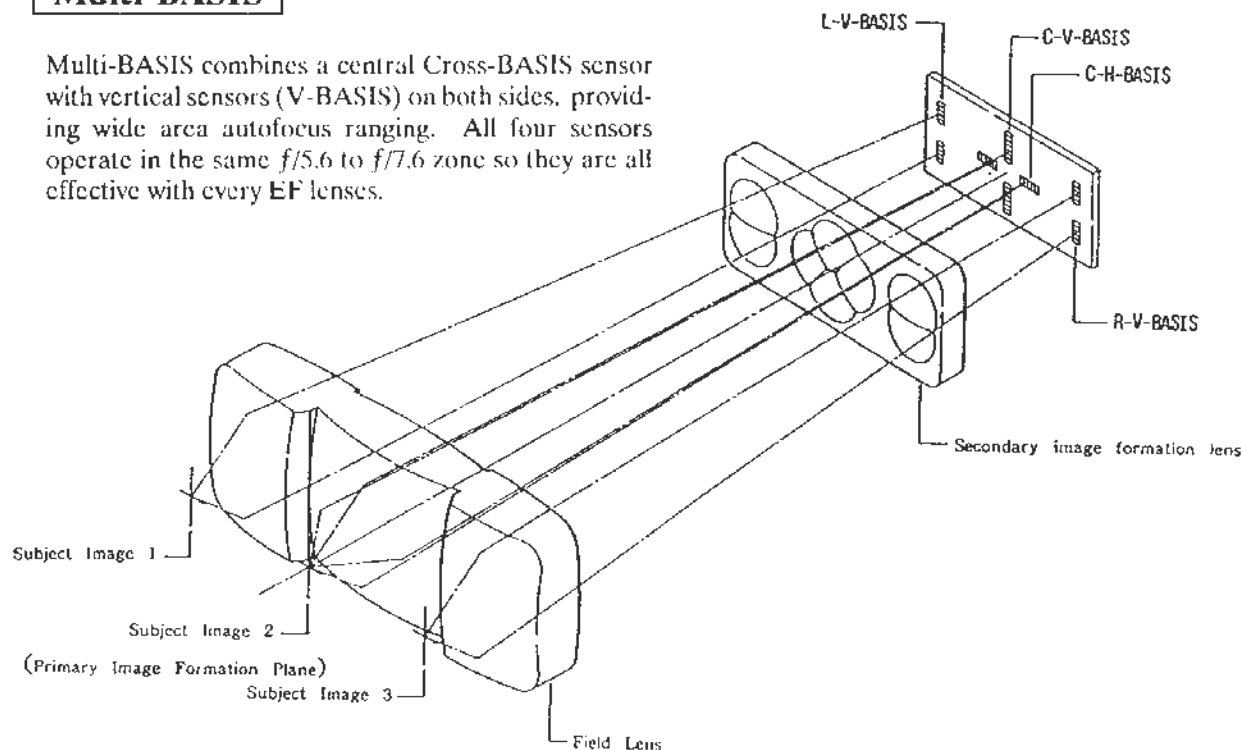


AF SYSTEM

The AF System of the EOS 10, called Multi-BASIS, combines a central cross-BASIS sensor similar to the EOS-1's with two outboard sensors. This evolutionary systems incorporates new technology and functions such as automatic focusing point selection, AI Focus, simultaneous AI Servo AF and diaphragm operation and others to the photographers work even easier.

Multi-BASIS

Multi-BASIS combines a central Cross-BASIS sensor with vertical sensors (V-BASIS) on both sides, providing wide area autofocus ranging. All four sensors operate in the same $f/5.6$ to $f/7.6$ zone so they are all effective with every EF lenses.

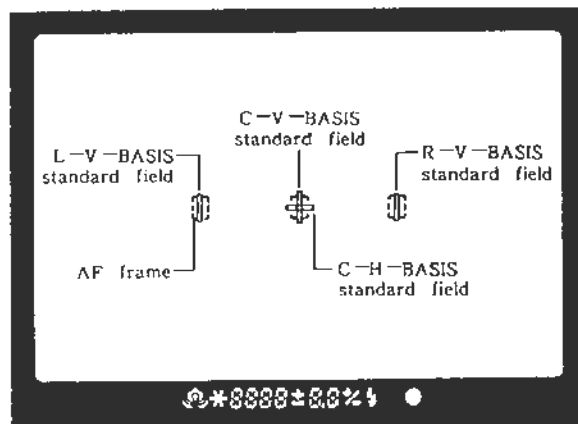


Automatic Focusing Point Selection


The automatic focusing point selection operates with a pre-programmed set of rules to determine which focusing point is most likely to be the point which the photographer wishes to be in focus. It then uses the data from that point to actually focus the lens.

Basic Rules

1. If only one point provides usable data, that point is selected.
2. If more than one point provides usable data, the nearer point is selected.

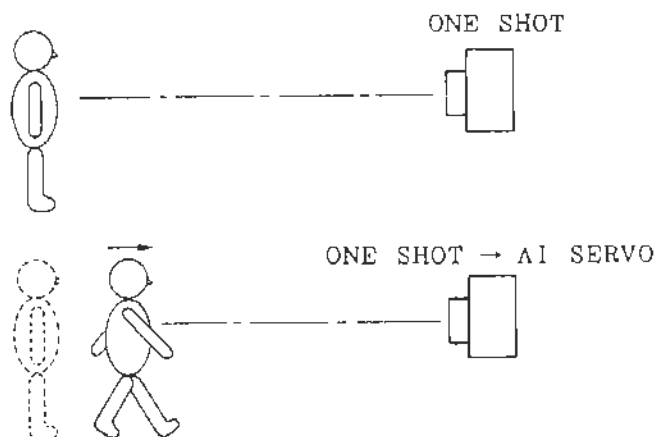


AI FOCUS

AI FOCUS is the name given to the combination of automatic focusing point selection and automatic ONE-SHOT to AI SERVO AF switching. AI FOCUS is an integral part of the full automatic (green ) mode. (Automatic focusing point switching has already been explained, so only ONE-SHOT to AI SERVO AF will be covered in detail here.)

• ONE-SHOT to AI SERVO AF automatic switching

ONE-SHOT is used for still subjects, AI SERVO AF for subjects in motion. If a subject is still when focusing starts, but begins to move while focusing is in progress, the system will switch automatically from ONE-SHOT to AI SERVO AF.



Basic Rules

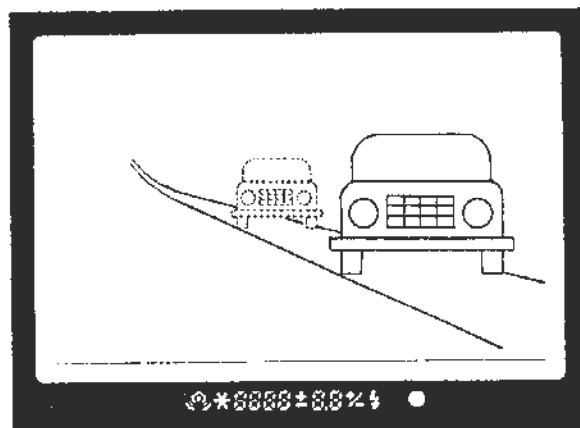
1. Switching from ONE-SHOT to AI SERVO AF is the function. Once the system has switched from ONE-SHOT to AI SERVO AF, it will not switch back until SW1 goes off.
2. If the main subject changes (composition is changed), or if the main subject moves very rapidly, the system remains in ONE-SHOT mode.

AI SERVO AF Automatic Focusing Point Selection

With previous EOS cameras with a single focusing point, it was difficult to take full advantage of predictive focus because it was difficult to keep the focusing point on the subject as it moved. But, by combining predictive focus with automatic focus point selection the horizons of predictive focus have truly been broadened.

Even when one point has been selected automatically, the other two continue ranging. If the subject moves from one to the other, the new point will be selected automatically.

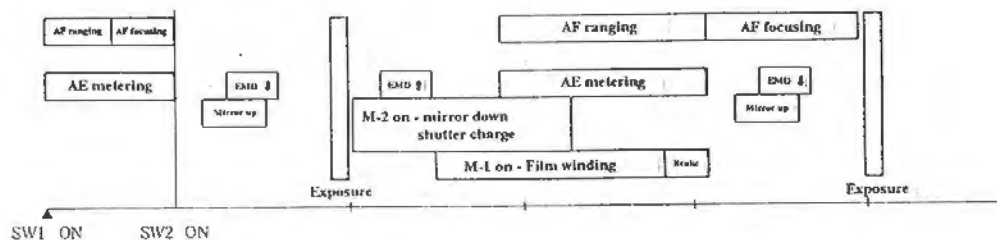
(The center point is preferred as a starting point because its data receives preferential treatment.)



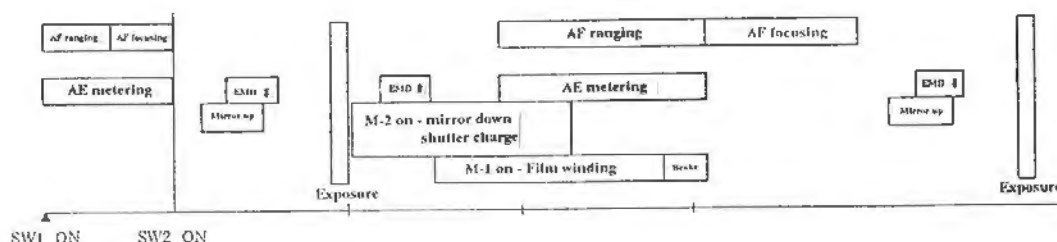
AI SERVO AF with Simultaneous Diaphragm (EMD) Drive

The EOS 10 provides simultaneous AF and diaphragm drive with compatible EF lenses as the EOS-1 and Power Drive Booster E-1 do. With this feature, it gives AI Servo AF at up to 3 frames per second as opposed to 2.5 for the EOS 630(600).

1. Simultaneous Drive (with compatible lens)



2. Series Drive (with non-compatible lens)

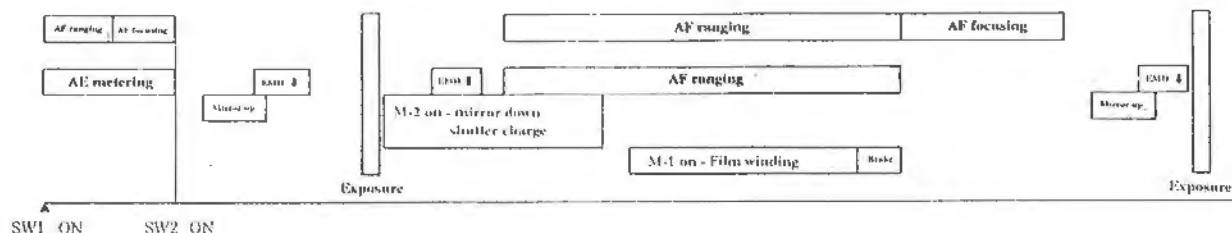


To further improve simultaneous AF / EMD drive, the mirror up function in the EOS 10 is spring powered rather than motor driven reducing current requirements for mirror operation freeing up capacity for the AF / EMD drive. (The motor (M2) is used only to release the mirror latch in this design.)

Compatible lenses

USM Lenses		AFD Lenses
EF50mm / 1.0L	EF 28 - 80mm / 2.8 - 4L	EF100mm / 2.8M
EF85mm / 1.2L	EF35 - 135mm / 4 - 5.6	EF20-35mm / 2.8L
EF200mm / 1.8L	EF70 - 210mm / 3.5 - 4.5	EF80-200mm / 2.8L
EF300mm / 2.8L	EF100 - 300 / 4.5 - 5.6	
EF600mm / 4.0L		

• AI SERVO AF with low battery (flashing)



When the battery voltage drops, first priority is given to insuring correct operation. For this reason, all operations revert to series operation.

Exposure Control

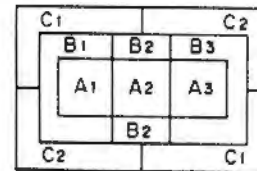
Metering options in the EOS 10 include "New Evaluative" metering, partial metering, External flash metering, internal flash metering and TTL flash metering (OTF). To match the three focusing points of the new AF sensor, the six section SPD has been replaced by an eight section one, and the TTL sensor has been replaced by an in-line three section sensor.

Theory

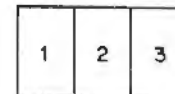
Previous EOS cameras were designed with the assumption that the main subject would usually be near the center of the picture. In the EOS 10, there are three focusing sensors instead of one, so the central "A" section of the six section has been replaced by the three "A" sections of the new eight section sensor. The algorithm (program) has been modified to match the active focusing sensor also.

Evaluative metering

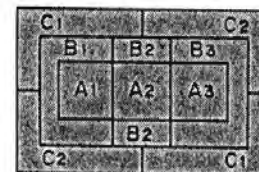
The evaluative metering system uses all eight sections, thus avoiding the problem encountered with the six section when the camera was aimed between the heads of two subjects. This is accomplished by adjusting the algorithm in accordance with the focusing sensor in use.



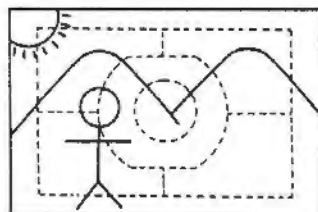
8-section sensor



3-section sensor

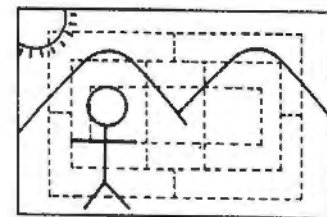


Example: Original EOS 6-section sensor



If a backlit scene with an off-center subject is taken, the main subject will be underexposed.

EOS 10 8-section sensor



With the new evaluative metering system, the subject will not be underexposed.

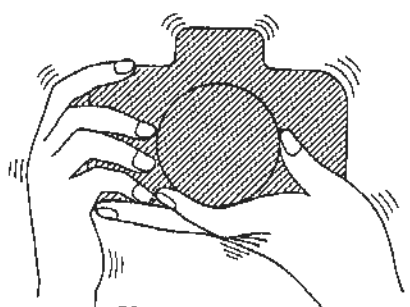
CAMERA SHAKE ALERT AE

Camera Shake Alert AE is a program where the AF sensor detects camera shake and automatically shifts the shutter speed to a safe speed.

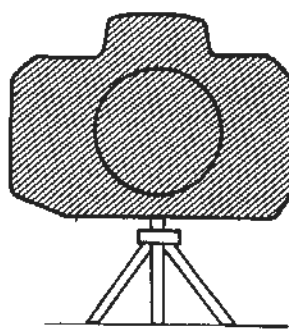
In most AE modes, the camera's program sets the shutter speed and aperture are set according to existing conditions. In this new mode, the camera senses the amount of camera shake when SW1 is pressed and sets the shutter speed accordingly. If the camera is rock steady on a tripod a slow speed is chosen, but if it is hand held by a hungover person, a fast shutter speed is set.

Example: EF 50mm f/1.8; EV = 12 ♠ Std. Program AE = 1/250s, f/4

Camera Shake Theory



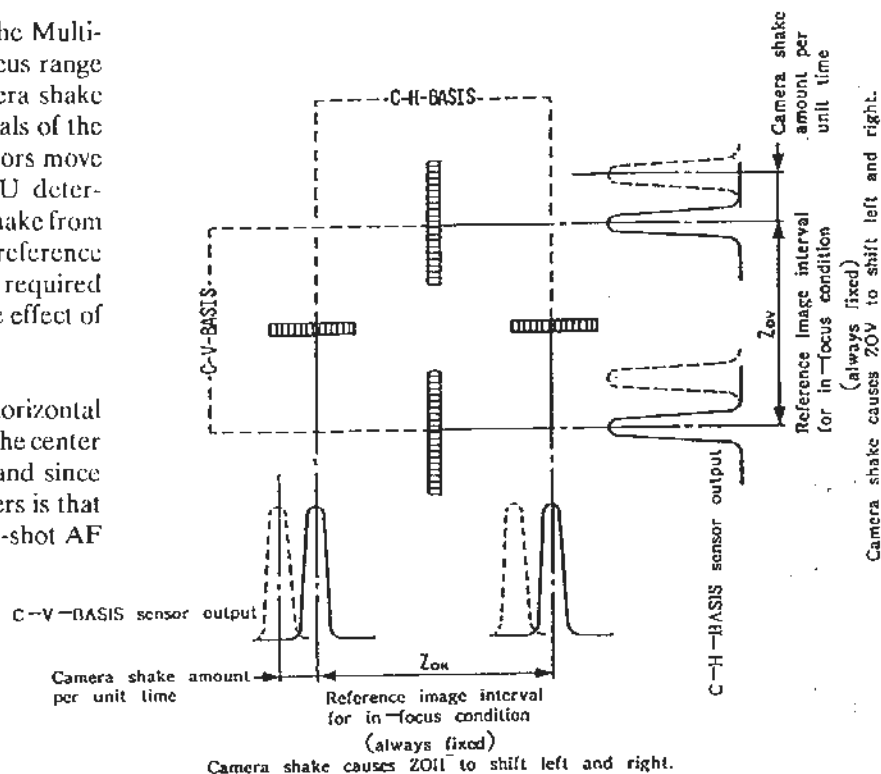
TV = 1/1000
AV = F2



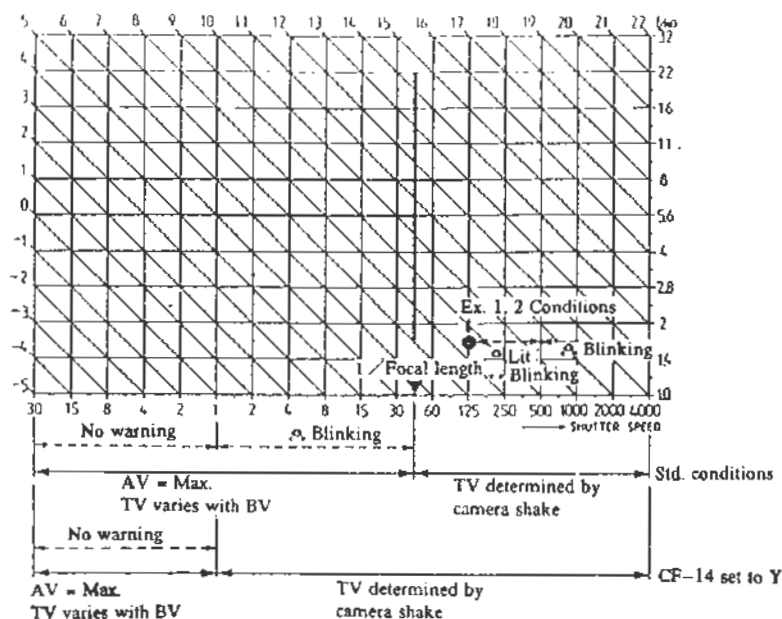
TV = 1/60
AV = F8

Camera shake is sensed by the Multi-BASIS AF sensor. After focus range has been established, if camera shake is present, the reference signals of the V-BASIS and H-BASIS sensors move slightly in unison. The MPU determines the amount of camera shake from the rate of movement of the reference signals. It then calculates the required shutter speed to eliminate the effect of the camera shake.

♣ Since both vertical and horizontal movement must be detected, the center focusing point only is used, and since one of the assumed parameters is that the subject is stationary, One-shot AF is fixed.



Program Diagram



Program Details

Normal Operation	Custom Function CF-14 = Y
Normal Operation: Safe shutter speed between $1/f$ and $1/4000s$ is determined and set by the camera shake program, then the correct aperture speed is set. (Even if no camera shake is detected, the limiter restricts the minimum speed to $1/f$).	Normal Operation: Safe shutter speed between one second and $1/4000s$ is determined and set by the camera shake program, then the correct aperture speed is set for the existing light. (In this case, if no camera shake is detected, the limiter is inoperative and the minimum speed is one second).
Bright conditions: If correct exposure cannot be achieved at minimum with the selected shutter speed, the shutter speed is increased (safety shift).	Bright conditions: Operation is the same as at left.
Low light: If correct exposure cannot be achieved at maximum aperture and $1/f$ shutter speed, the shutter speed is decreased and the viewfinder warning blinks between $1/f$ and one second. If the speed falls below one second, the warning stops. The shutter speed slows to a maximum of 30s.	Low light: If correct exposure cannot be achieved at maximum aperture and one second shutter speed, the shutter speed continues to slow to the maximum 30s. There is no viewfinder warning.

Warnings

If a safe shutter speed cannot be set with the lens at maximum aperture, there are two different warnings. For speeds within two stops of $1/f$ shutter speed, the camera mark is lit and the rocker mark blinks (EX. 1). If the speed falls more than two stops lower than $1/f$ shutter speed, both marks blink (Ex. 2).

Example 1:

If the brightness is EV 8.5, the correct shutter speed is $1/125s$.
If the safe shutter speed is $1/250s$, the camera mark would light, and the rockers blink.

Example 2:

If the conditions were the same (EV 8.5, $f/1.8$), but $1/1000s$ was the safe speed, both the camera and rockers would blink.

BAR CODE SYSTEM

By reading a bar code accompanying a sample photograph in the EOS PHOTO FILES booklet, and then transferring it to the camera all of the photo variables will be set automatically.

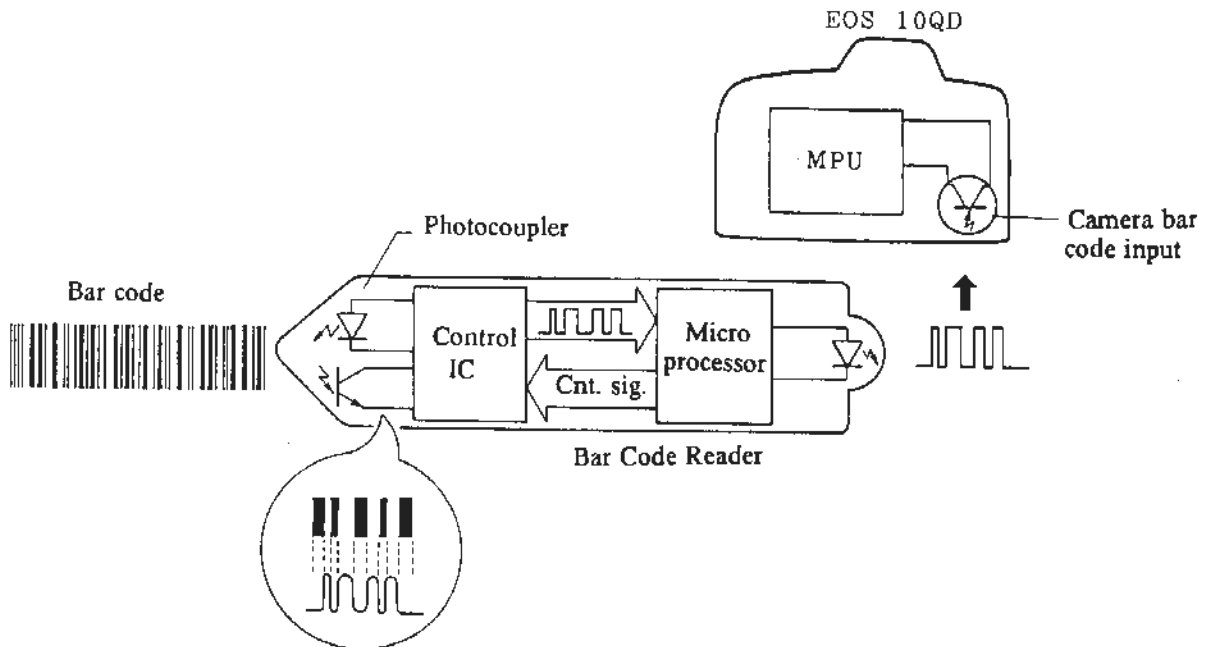
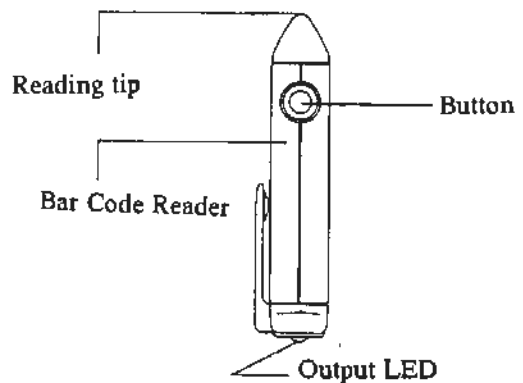
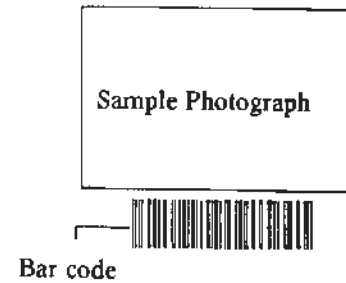
Variables

Ten different variables can be programmed by the bar code. The variables are:

- | | |
|---------------------------|------------------------|
| (1) Program No. | (2) AE mode |
| (3) Film transport mode | (4) AF mode |
| (5) Flash mode | (6) Exposure mode |
| (7) Exposure compensation | (8) Flash compensation |
| (9) Shutter speed | (10) Aperture. |

Operation

1. Place the bar code reader in the box at the left end of the code. Press the button and draw the reader straight across the code. The photocoupler will read the code.
2. Set the camera in bar code mode. Place the rear, output section, of the reader to the input on the camera and press the button. The LED will flash the code into the camera for storage in the MPU.

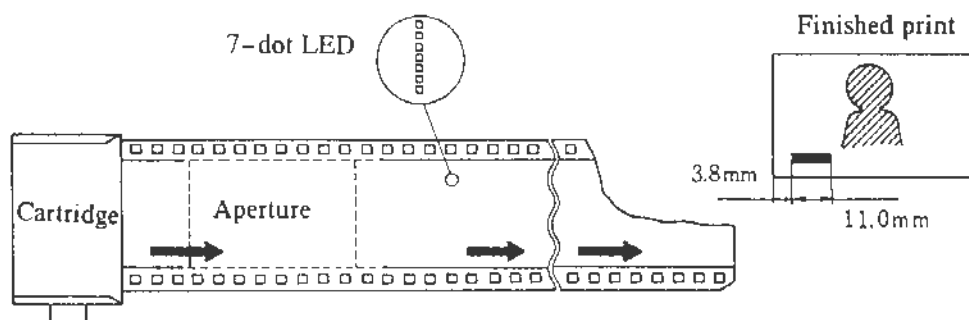


DATA IMPRINTING

[EOS 10QD only]

This camera uses a dynamic imprinting system which imprints the date or time with a vertical 7-dot LED array exposing the film on the front (emulsion) side as the film winds to the next frame.

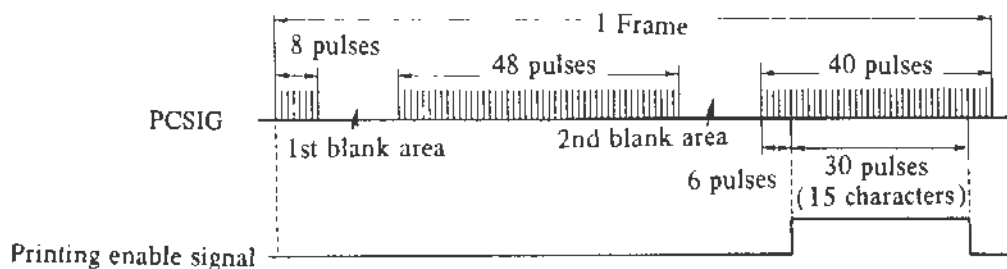
Operation



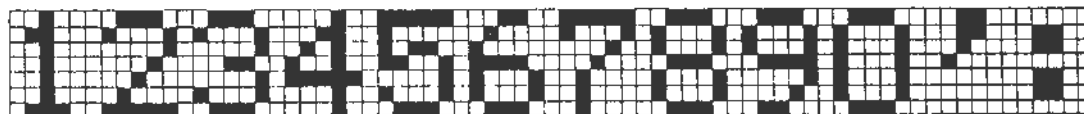
The 7-dot LED array is focused on the film by a lens. The information is printed in the lower left quadrant of the print, in an 11.0mm area starting 3.8mm from the edge of the frame.

Timing

Timing is determined by the same chopper wheel explained in the film transport section. Printing starts six pulses after the second blank area and continues for 30 pulses with five dots for each two pulses printed, giving a total of 15 characters possible per line. Within this time the LED's flash on command forming the numbers. Exposure, or LED flash time, varies with the film speed set.

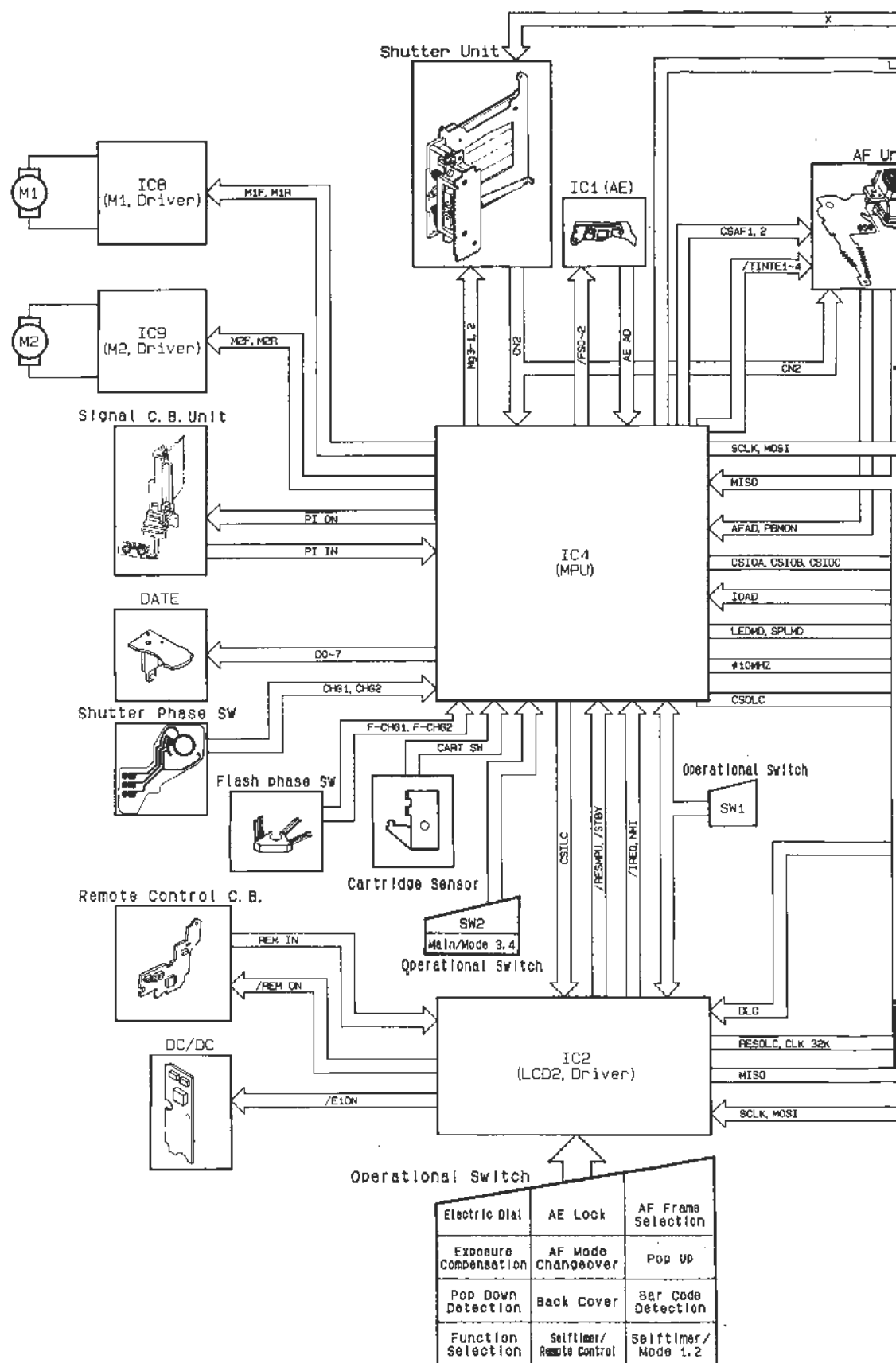


Characters



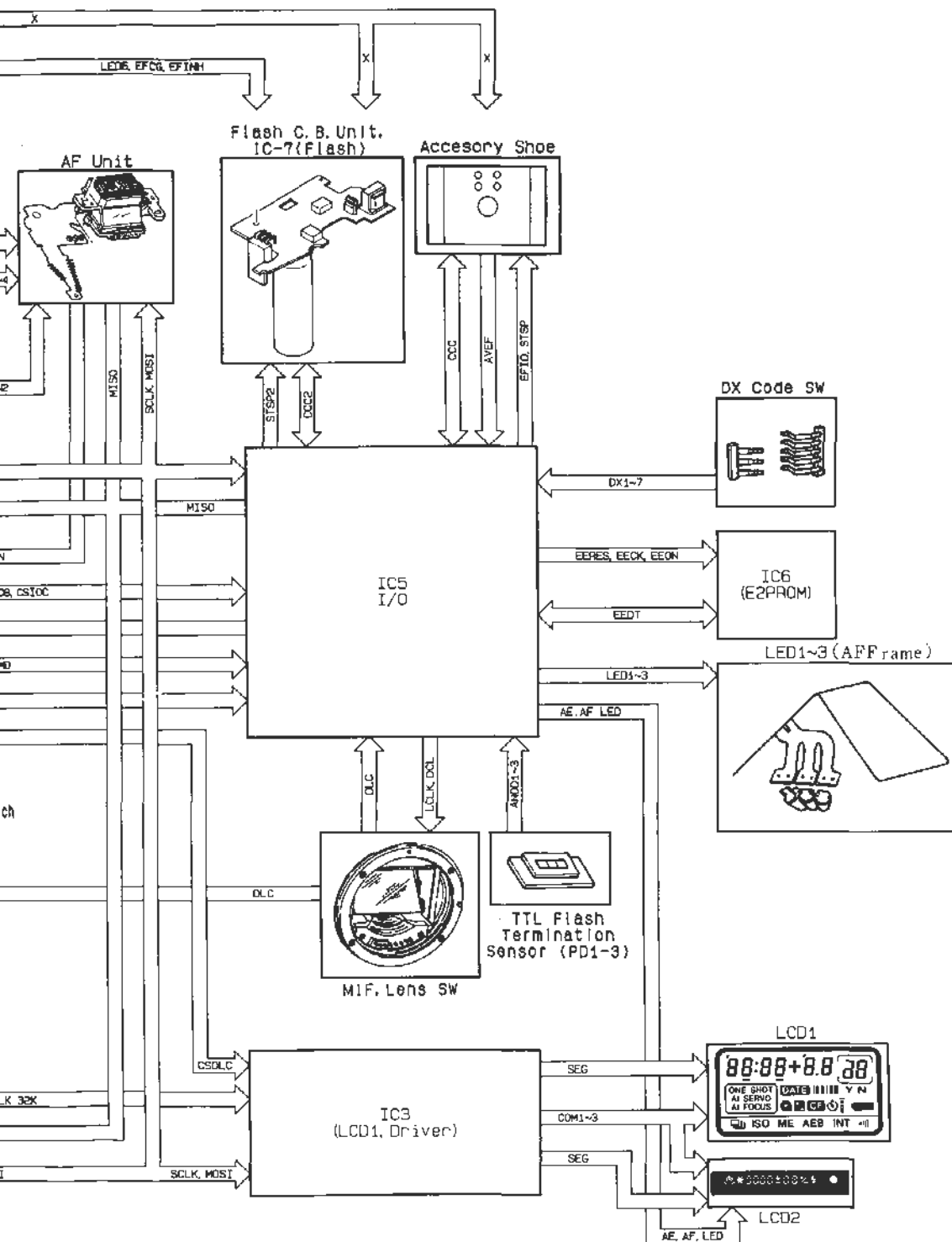
(Electric Section)

BLOCK DIAGRAM



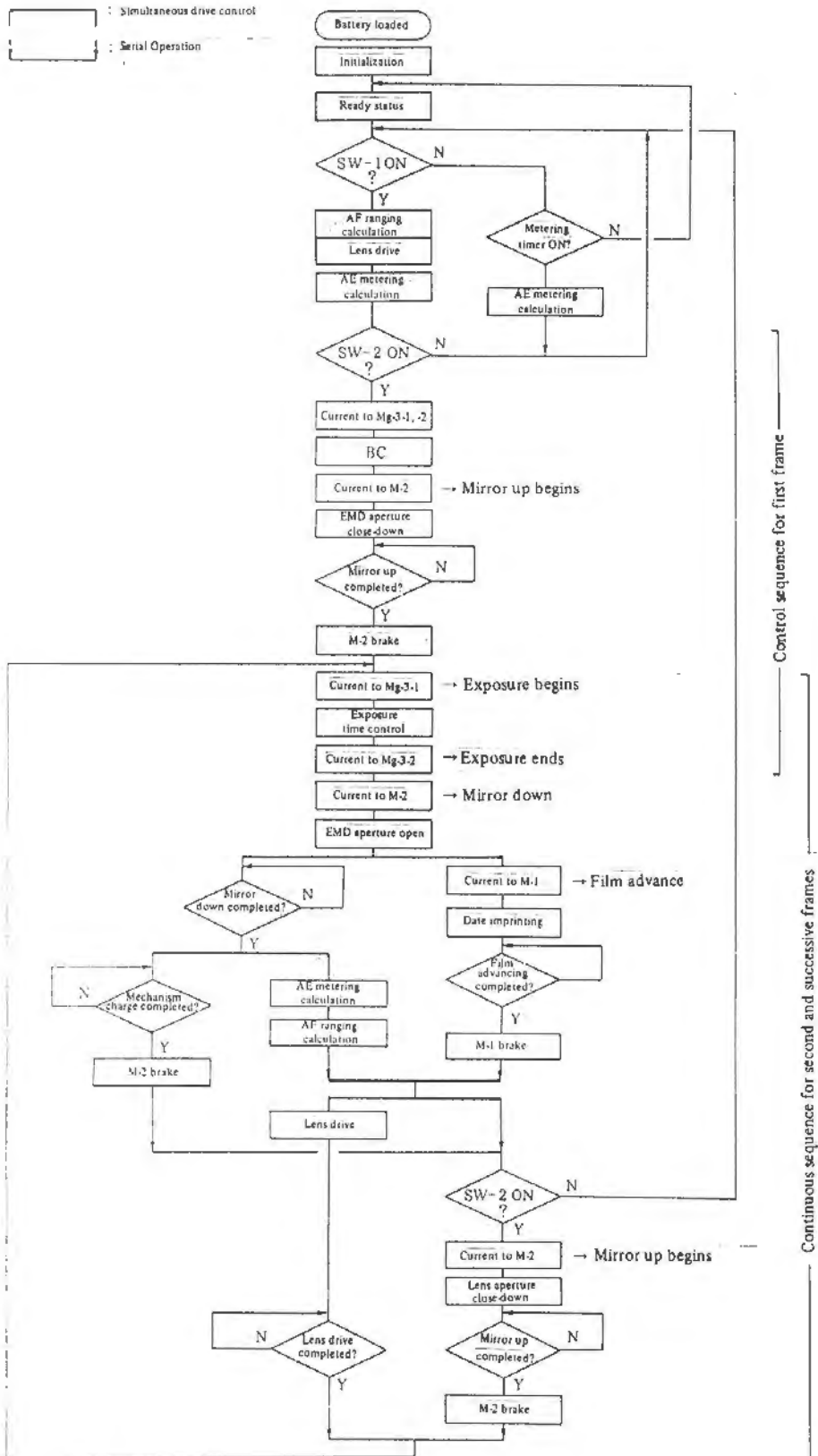
BLOCK DIAGRAM






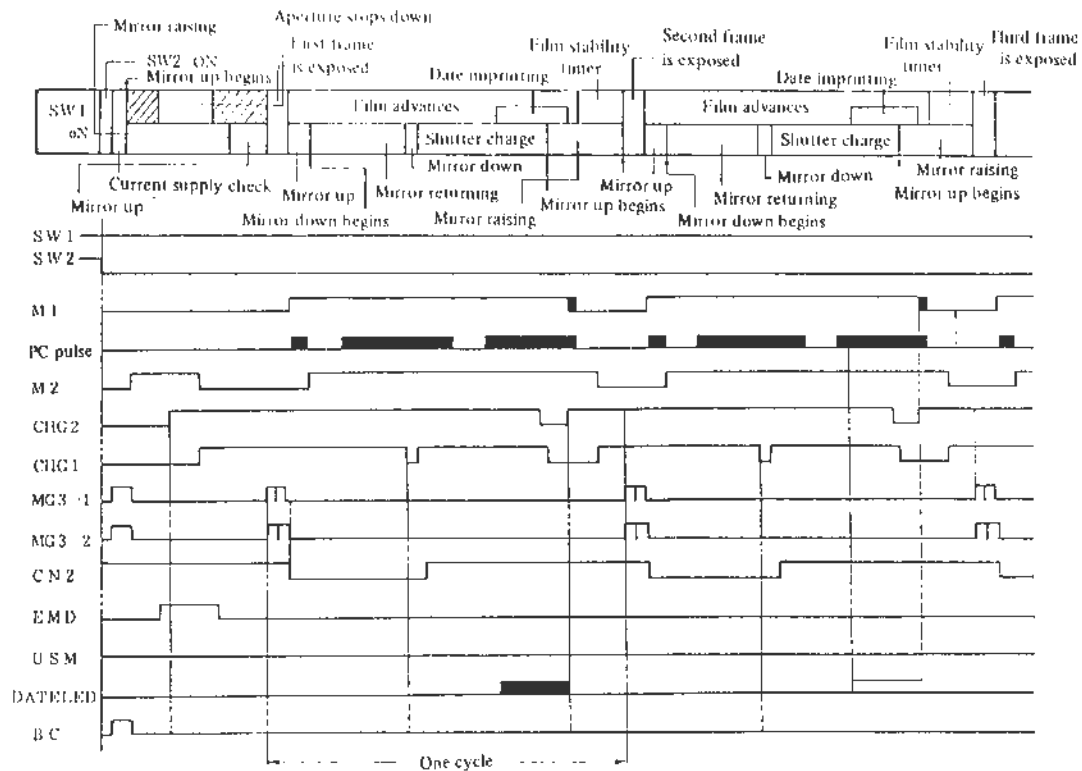
OPERATIONAL SEQUENCE FLOW CHART

※ Conditions: EOS 10QD + USM lens, AI

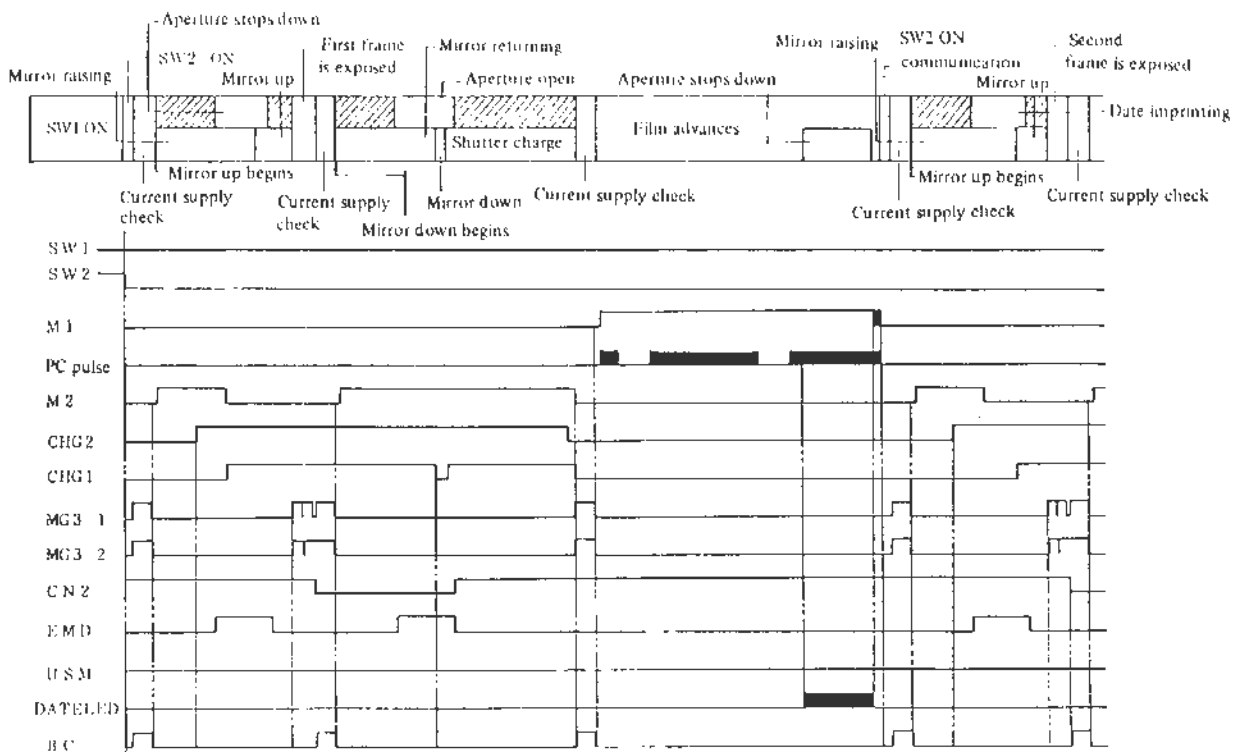


OPERATIONAL SEQUENCE TIMING CHART

Standard Continuous Exposure (ONE SHOT + )











Slow Speed Continuous Exposure (ONE SHOT + ) + reduction of power voltage) Refer to Page 36.



SWITCH FUNCTIONS

* = Operational Switch

No.	Symbol	Switch Name	Function
*1	SW1	Ranging & Metering Switch	Exposure metering & automatic focusing
*2	SW2	Release Switch	Shutter Release
*3	Main/Mode SW	Main/Mode Switch	Photographic mode inclusive "L" changes with the operation of the dial.
4	Back SW	Back Cover Switch	Closed (grounded) when back cover is open, open when cover is closed. When switch opens and film is detected by DX switches, film loading begins.
*5	REW SW	Manual Rewind Switch	Film is rewound when pushed.
*6	AF Mode SW	AF Mode Switch	Mode changes in the following order. ONE SHOT → AI SERVO When the photographic mode is [] automatic, then AI focus is fixed.
*7	Function SW	Function Switch	Function changes in the following order everytime the switch is set to on. <div style="border: 1px solid black; padding: 5px; display: inline-block;">  → ISO → ME → AEB → INT →  </div> When the switch is operated after the function has been selected, the function content can be set. <div style="display: flex; justify-content: space-between;"> <div>  ↔  • ISO (6~6400) • ME (1~9) </div> <div>  (0.0~5.0) 1/2 stop steps  (00:00:00~23:59:59) 1 - 36 exp. •  (Y↔N) </div> </div> The AE lock should be used together when INT is set.
*8	E-Comp SW	Exposure Compensation Switch	AE compensation value can be set. Setting is possible in 1/2 step increments.
*9	AF Select SW	AF Frame Switch	AF frame changes in the following order. <div style="border: 1px solid black; padding: 5px; display: inline-block;">  [] [] ↔ [] [] ↔ [] [] [] ↔ [] [] [] </div>
*10	AEL SW	AE Lock Switch	AE lock is activated for six seconds when pushed. When CF-12 (custom function) is at "Y", the lock is activated after the evaluative exposure measurement.
*11	Pop Up SW	Flash "Pop Up" Switch	The built-in flash pops up or down everytime the switch is operated (except EOS 10S).
*12	Self/RM SW	Self-timer/Remote Control Switch	Self-timer and remote control become available. (When the switch is set to on, the self-timer and remote-control are cancelled out.)

No.	Symbol	Switch Name	Function
*13	Dial SW	Dial Switch	Following items can be set when used with other switches. Exposure metering & program shift, Exposure compensation, AF mode, Shutter speed, Aperture, Winding mode, ISO speed, Multiple exposure frame, Auto Exposure Bracketing value, Interval timer, Beeper, Custom functions, (Date imprinting 10QD only)
14	Lens SW	Lens Switch	Turns on when lens is attached.
15	Reset SW	Reset Switch	Turns off when the battery is installed.
16	CART SW	Cartridge Switch	Turns off when the cartridge is in.
*17	Bar-Code	Bar-Code Sensor	Turns on when the bar-code reader is pressed.
*18	Pop Down SW	Flash "Pop down" Switch	When the built-in flash is depressed, the switch turns on (ground) and current is supplied to the M2 motor to make the flash retract.
19	Flash SW	Ext. Flash Sensor	Turns on when the external flash is mounted, and on when the flash is removed.
20	CN2 SW	Second Curtain Switch	Turns on when shutter second curtain run completed.
21	X SW	Flash firing Switch	Flash fired when the switch is on (grounded).
22	CHG1 SW CHG2 SW	Shutter Phase Switch	Detects the shutter charge and mirror up/down condition. Refer to Pg. 38.
23	F-CHG1 SW F-CHG2 SW	Flash Phase Switch	Detects the flash up/down condition. Refer to Pg. 40.
24	DX1 SW DX2 SW DX3 SW DX4 SW DX5 SW	DX code Switch	Switches DX1 through DX5 read film speed from DX code.
25	DX6 SW DX7 SW		Switches DX6 and DX7 detect the number of exposures from the DX code.

CIRCUIT EXPLANATIONS

Power Supply

1) Battery Supply

- VBAT: Power Circuits (6.0V)
- SBAT: Flash Circuits (6.0V)

2) DC/DC Convertor Supply

- E1: IC drive (5.3V)
- E2: Analog Circuits
- (5.3V) VDD Digital Circuits (5.3V)

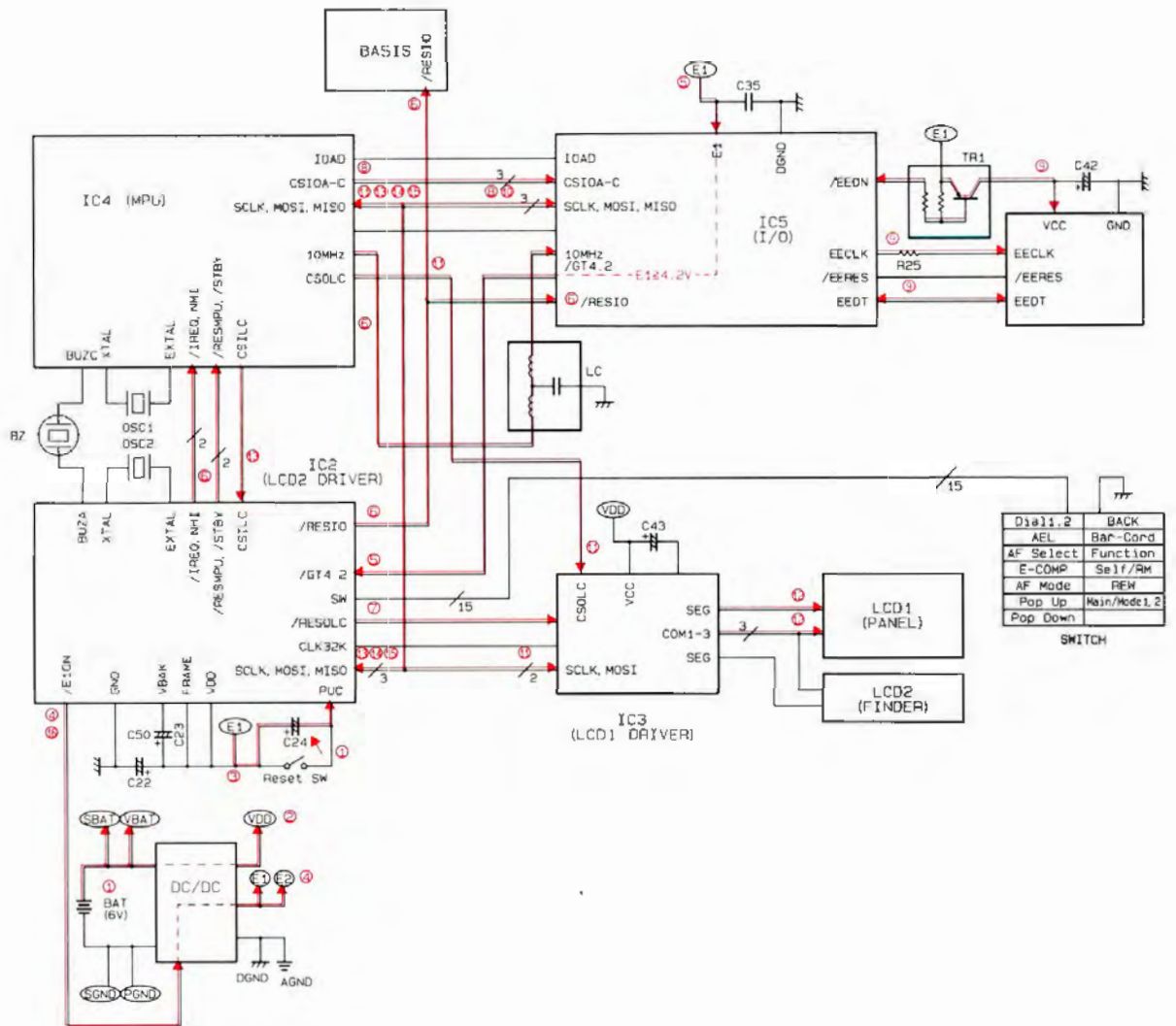
3) IC5 (I/O) Supply

- VC: Camera Reference Voltage (1.22V)
- VRH: TTL Flash sensor (PD1 ~ 3) reference voltage (3.2V)

Battery Loading

- [1] When the batteries are loaded in the camera, power is supplied from VBAT to DC/DC, IC8,9 (M1,2 driver), IC11 (DATE) and from SBAT to IC7 (FLASH).
- [2] VDD (5.5V) is output at a fixed rate from the DC/DC and supplied to IC2 (LCD2 Driver), IC3 (LCD1 Driver) and IC4 (MPU).
- [3] Several milliseconds after the loading of batteries, the PUC (p58) of the IC2 (LCD2 Driver) changes from low to high, and activates the IC2 (LCD2, driver).
- [4] E10N (p60) of the IC2 (LCD2 Driver) changes from high to low, and activates DC/DC, and then supplies E1 and E2 to each IC.
- [5] When E1 is supplied to IC5 (I/O) and E1 becomes equal to or greater than 4.2V, the GT4.2 (p42) changes from high to low and low is output to IC2 (LCD2 driver).
- [6] IC2 (LCD2 driver) activates IC4 (MPU) through NMI (p25), STBY (p26) and RESMPU (p27). Then IC4 (MPU) 20MHz clock is generated. This is then divided and 10MHz is supplied to IC5(I/O). Almost simultaneously, IC2 makes RESIO (p30) to change from high to low, and activates IC5(I/O) and BASIS.
- [7] IC2 (LCD2 Driver) changes $\overline{\text{RESOLC}}$ (p51) from low to high, and initializes IC3 (LCD1 Driver).
- [8] IC4 (MPU) selects IC5 (I/O) through CSIO A - CSIO C (p43 - p45), and commands IC5 to activate IC6 (E2PROM) and to read various data through p66 MOSI (p66) and SCLK (p68).
- [9] IC5 (I/O) changes $\overline{\text{EEON}}$ (p13) from high to low, activates IC6 (EEPROM) and reads various data through EECLK (p9) and EEDT (p15).
- [10] IC5 (I/O) transmits data of IC6 (EEPROM) to IC4 (MPU) through SCLK (p22) and MISO (p24).
- [11] IC4 (MPU) selects IC3 (LSD1 Driver) through CSOLC (p80), and commands IC3 to display data (photographic mode, etc.) through MOSI (p66) and SCLK (p68).
- [12] IC3 (LSD1 Driver) displays through SEGs (p34 - p68) and COM3 - COM1 (p34 - p36).
- [13] IC4 (MPU) selects IC2 (LCD2 Driver) by CSILC (p61) and checks the input condition of the switch by MOSI (p66) and SCLK (p68).
- [14] IC2 (LCD2 Driver) transmits the present switch condition to IC4 (MPU) by MISO (p20) and SCLK (p21). (No information is given for SWON this time).
- [15] IC4 (MPU) selects IC2 (LCD2 Driver) by the CSILC (p61), and commands IC2 to set DC/DC to OFF by MOSI (p66) and SCLK (p68).
- [16] IC2 (LCD Driver) changes the $\overline{\text{E10N}}$ (p60) from low to high and turns off the DC/DC convertor.

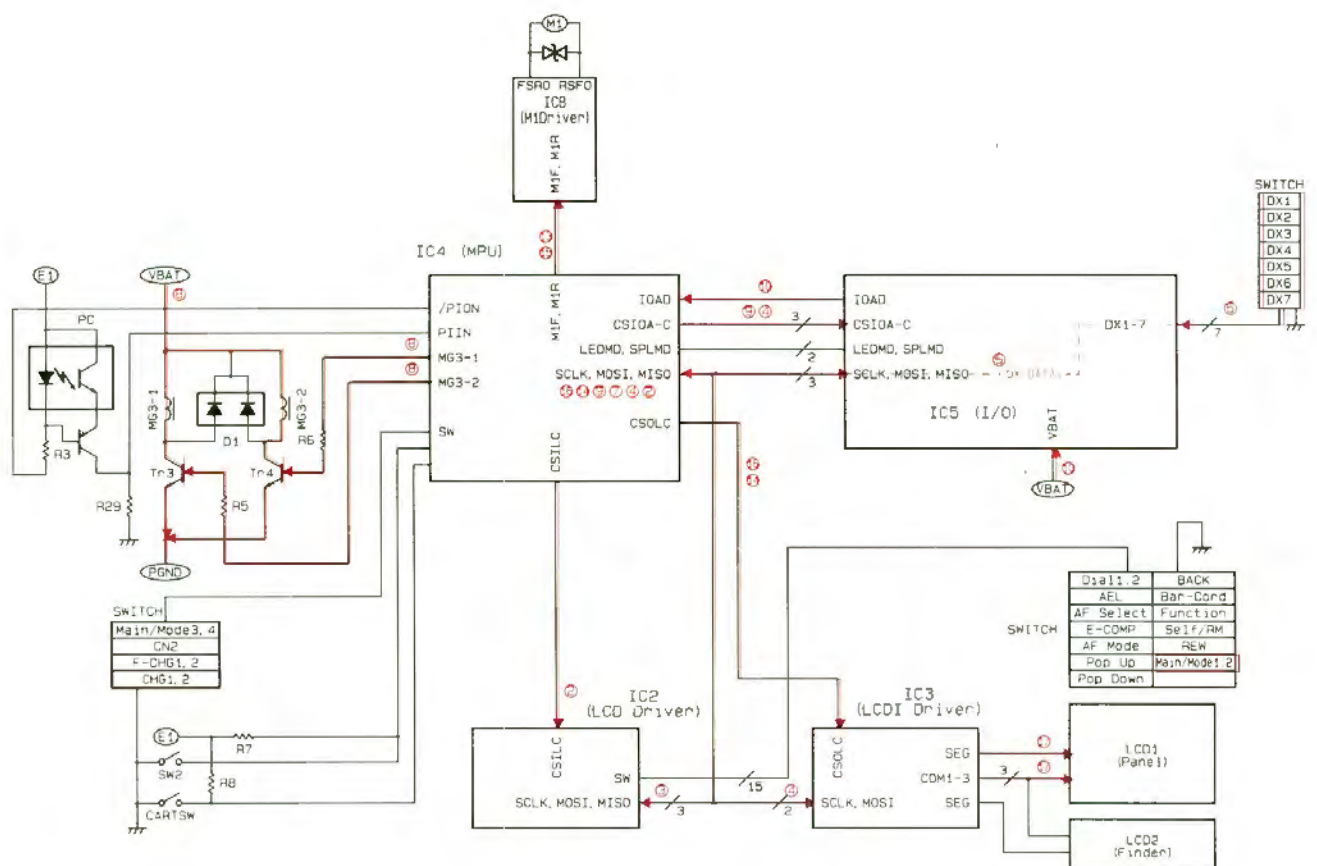
----- Battery Loading -----



Auto Loading

- [1] DC/DC is activated by turning on Main/Mode SW, CART SW (cartridge switch), and Back SW (back cover switch).
- [2] IC4 (MPU) selects IC2 (LCD2 Driver) through CSILC (p61), and checks the switch input condition by MOSI (p66) and SCLK (p68).
- [3] IC2 informs IC4 (MPU) through MISO (p20) and SCLK (p21) that the Main/Mode SW, CART SW (cartridge switch), Back SW (back cover switch) are ON.
- [4] IC4 (MPU) selects IC5 (I/O) through CSIO A - CSIO C (p43 - p45), and commands IC5 to read the DX film speed code through MOSI (p66) and SCLK (p68).
- [5] IC5 (I/O) runs a weak current to the DX contacts, detects non-conductive and conductive sections, and reads the ISO speed and the number of exposures.
- [6] IC5 (I/O) sends data to IC4 (MPU) through SCLK (p22) and MISO (p24). IC4 (MPU) converts and memorizes the ISO speed and the DX number of exposures.
- [8] IC4 (MPU) checks the battery level to see if there is enough voltage for auto loading after 10ms. IC4 (MPU) changes Mg3-2 (p47) and Mg3-1 (p59) from low to high and supplies the current to the shutter magnets.
- [9] IC4 (MPU) selects the communication mode with IC5(I/O) through CSIO A - CSIO C (p43 - p45), and commands IC5 to change the IOAD (p55) output of IC5(I/O) to VBAT through MOSI (p66) and SCLK (p68).
- [10] IC5 (I/O) divides the voltage detected from VBAT (p56) terminals to 1/2 VBAT internally, and outputs the voltage to IC4 (MPU) through IOAD (p55).
- [11] IC4 converts the voltage input from IOAD (p52) to A/D internally, and measures the voltage.
- [12] When the measured value is 4.0V or above, then proceed to the following sequence. If the voltage is under 4.0V, release is prohibited, and the bc lamp on the LCD (display panel) flickers.
- [13] IC4 (MPU) causes M1F (p62) to become high and M1R (p63) to become low, causes M1 to rotate in the normal direction, changes the planet gear from the rewinding side to the winding side, and commences winding.
- [14] The PC (photo coupler) in the signal unit detects film winding. IC4 (MPU) selects IC3 (LACD1 driver) through CSOLC (p80), and commands LCD1 through MOSI (p66) and SCLK (p68) to display the cartridge mark.
- [15] After winding 2.5 frames for the EOS 10QD, or 3 frames for the EOS 10/10s, IC4 (MPU) causes M1F (p62) and M1R (p63) to go high stopping the M1 motor.
- [16] IC4 selects IC3 (LSD1 Driver) through CSOLC (p80), and commands LCD1 to display the ISO speed and the DX number of exposures through MOSI (p66) and SCLK (p68).
- [17] IC3 (LCD1 Driver) causes LCD1 to display the film counter "1" through SEGs (p34 - p68) and COM3 - COM1 (p34 - p36). When the auto loading fails, the cartridge mark flickers and informs the operator of the failure.

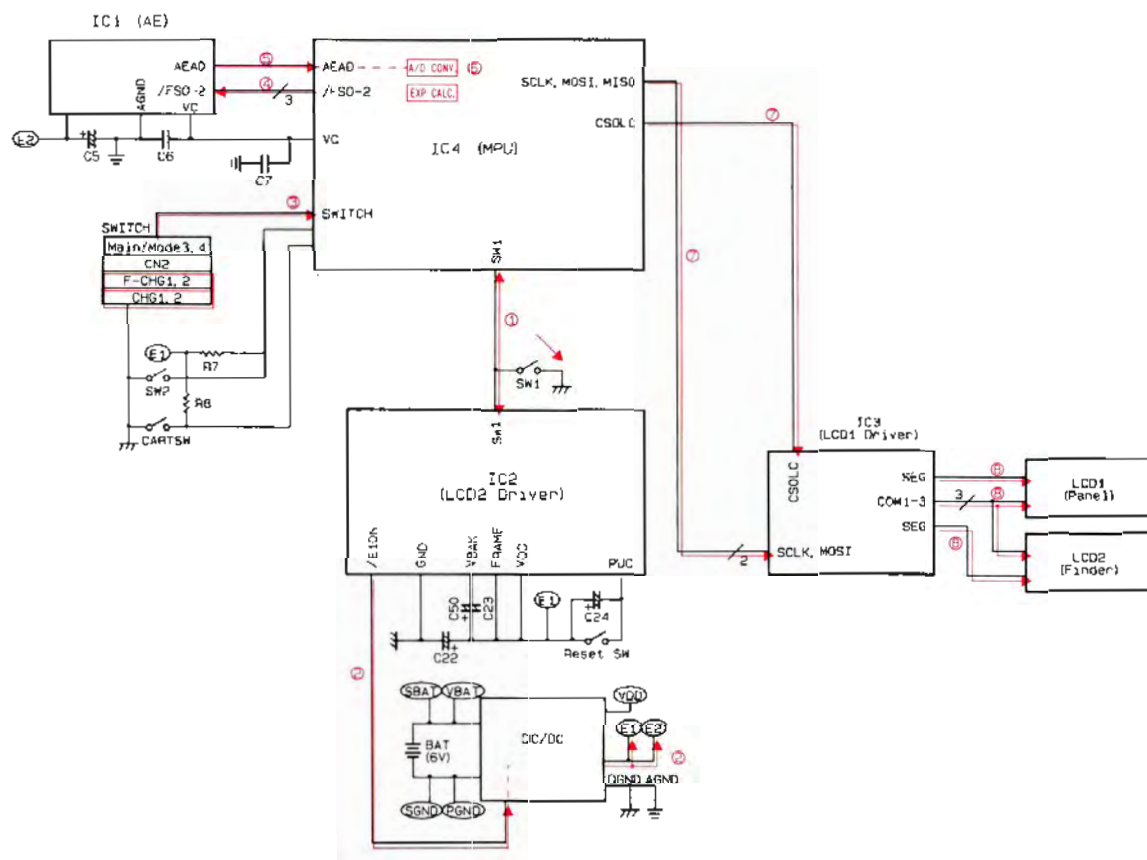
----- Auto Loading -----



SW1 ON (AE Operation)

- [1] SW1 ON information is input to the IC2 (LCD2 Driver) and IC4 (MPU).
- [2] DC/DC becomes activated and supplies E1 and E2 to each IC.
- [3] The position of the shutter charge phase switches (CHG1 → LCD, and CHG2 → L) and the flash phase switches (F-CHG1 → H, and F-CHG2 → L) are correct (initialization). If not, they are recharged. The state of charge of the built-in flash is also checked, and if it is not charged, it is charged.
- [4] IC4 (MPU) selects the metering area through FS0 - FS2 (p21 - p23) (metering sensor signals). (Based on selection of the AF focusing point, MPU change the metering area of the evaluation metering and partial metering according to the appropriate algorithm).
- [5] IC1 (AE) gathers the metering data of each area to AEAD (p5), and outputs the data to IC4 (MPU).
- [6] IC4 (MPU) conducts A/D conversion on the metering data internally, and calculates the exposure.
- [7] IC4 selects IC3 (LCD1 Driver) through CSOLC (p80), and commands IC3 to display the metering value to LCD1 through MOSI (p66) and SCLK (p68).
- [8] IC3 (LCD1 Driver) displays the metering values through SEGs (p34 - p48) and COM3 - COM1 (P34 - p36).

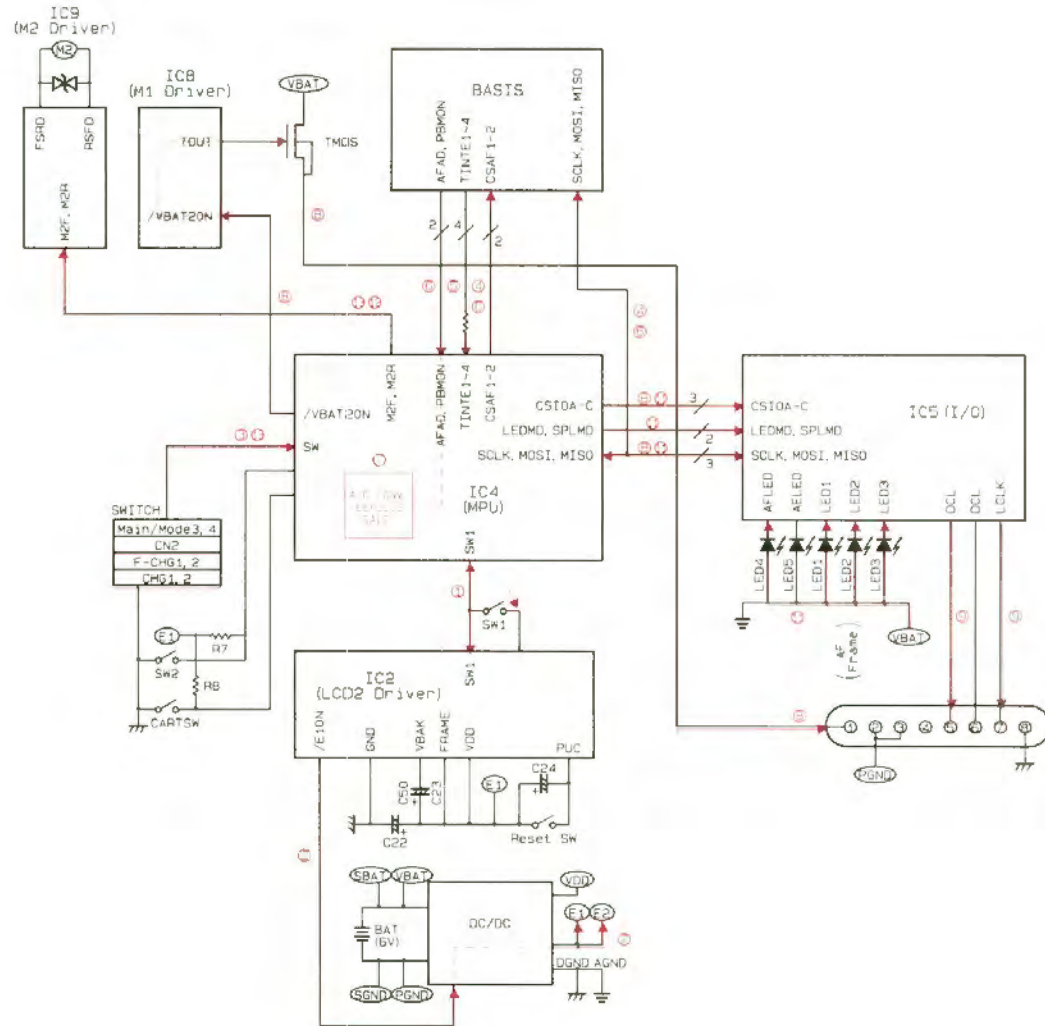
----- SW1 ON (AE Operation) -----



SW1 ON (AF Operation)

- [1] SW1 ON information is input to the IC2 (LCD2 Driver) and IC4 (MPU).
- [2] DC/DC becomes activated and supplies E1 and E2 to each IC.
- [3] The position of the shutter charge phase switches (CHG1 → LCD, and CHG2 → L) and the flash phase switches (F-CHG1 → H, and F-CHG2 → L) are correct (initialization). If not, they are recharged. The state of charge of the built-in flash is also checked, and if it is not charged, it is charged.
- [4] IC4 (MPU) selects BASIS through CSAF1 (p48) and CSAF2 (p49) and commands all of the ranging points to start ranging through MOSI (p66) and SCLK (p68). BASIS commences the accumulation.
- [5] When the metering data reaches a certain threshold, BASIS stops accumulation, and sends an accumulation completion signal to IC4 (MPU) through TINT E1 - 4 of p8, p9, p10 and p11.
- [6] When IC4 (MPU) receives the 'accumulation complete' signal from the BASIS, the focusing point is selected through CSAF1 (p48) and CSAF2 (p49) to BASIS and through MOSI (p66) and SCLK (p68) request BASIS selection and image data. IC4 (MPU) then transmits the sync clock through MOSI (p66) and SCLK (p68). BASIS then syncs its data with the clock and sends metering image data to IC4 (MPU) through AFAD (p15).
- [7] IC4 (MPU) conducts A/D conversion of the transmitted metering image data internally, calculates the defocus, and adjusts the lens according to the amount of defocus.
- [8] IC4 (MPU) changes VB20N (p26) from high to low, turns on T-MOS, and supplies the power source (VBAT2) to the lens. IC4 (MPU) selects IC5 (I/O) through CSIO A - CSIO C (p43 - p45), and commands IC5 (I/O) to communicate with the lens through MOSI (p66) and SCLK (p68).
- [9] IC5 (I/O) sends the amount of focus dislocation to the lens through LCLK (p31) and DCL (p33). The lens moves according to the amount of lens drive dislocation.
- [10] If the lens does not focus, [4] to [9] are repeated.
- [11] To make AFLED to light and flicker, IC4 (MPU) selects IC5 (I/O) through CSIO A - CSIO C (p43 - p45), and gives the command to light and flicker through MOSI (p66) and SCLK (p68). When the focus is adjusted, then the lighting command is given. The drive signal is output from LEDMD (p65) to light the LED, and IC5 (I/O) lights LED4 (AFLED).
IC4 (MPU) selects IC5 (I/O) through CSIO A - CSIO C (p43 - p45), and commands IC5 to indicate the lighting locations through MOSI (p66) and SCLK (p68) to light the AF frame, which is manually or automatically selected, at almost the same time as when the lighting of LED4 (AFLED). The drive signal (modulation signal) is output from SPLMD (p79) to light LED, and IC5 (I/O) lights either of LED1 - LED3 (p6 - p8) according to the command.
- [12] When in full auto mode [] and the camera needs flash, IC4 (MPU) causes the M2F (p27) to become low and M2R (p28) to become high, making the M2 motor to rotate in reverse, and make the flash pop up.
- [13] When F-CMG2 of the flash charge positions changes from low to high and E-CHG1 changes from high to low, popping up of the flash is completed. When the flash pops up, then M2F (p27) and M2R (p28) are made to become high and the M2 motor stops.

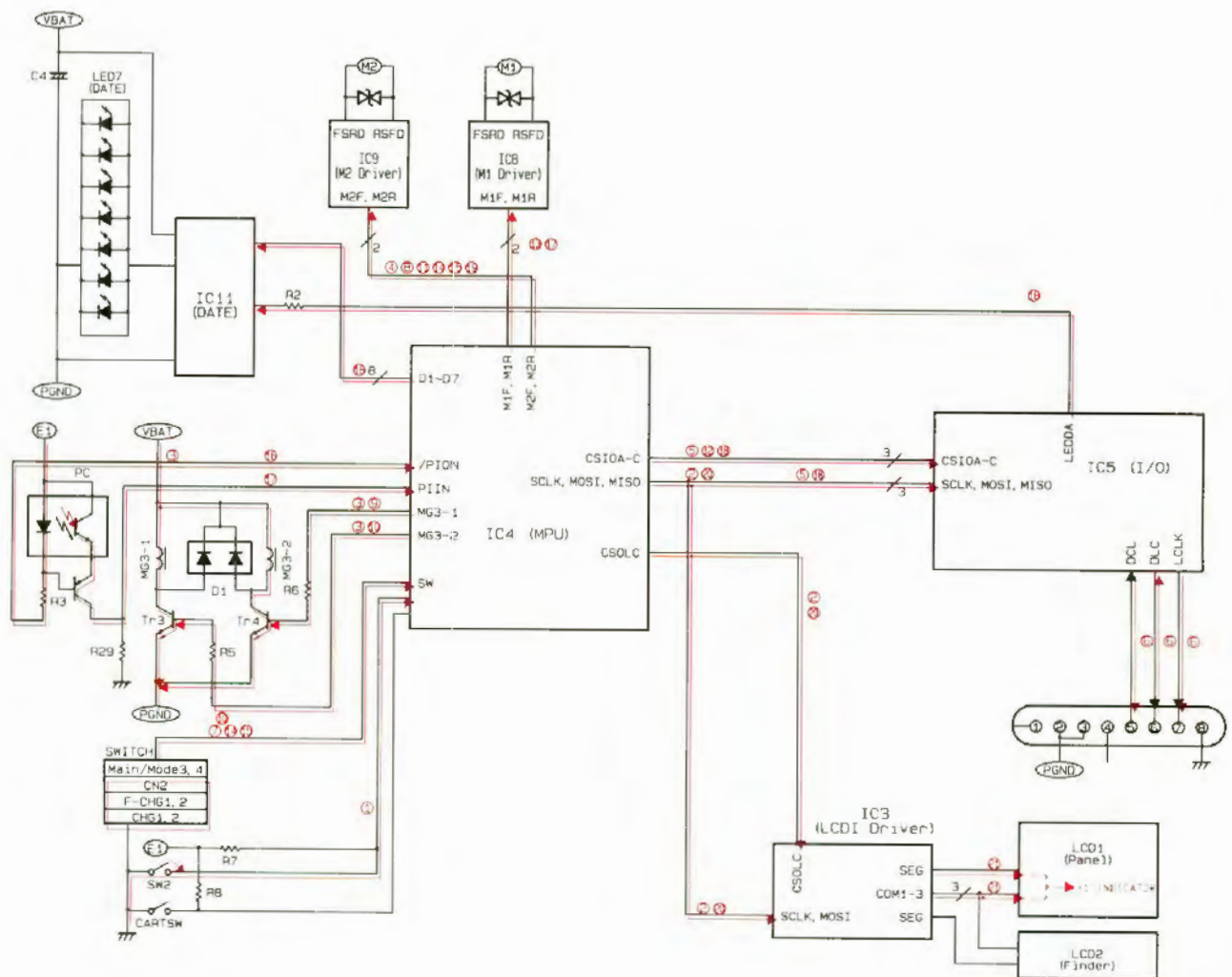
----- SW1 ON (AF Operation) -----



SW2 ON (Release)

- [1] SW2 ON information is input to IC4 (MPU).
- [2] IC4 (MPU) selects IC3 (LCD1 Driver) through CSOLC (p80), and commands IC3 to turn off LCD2 display through MOSI (p66) and SCLK (p68).
- [3] IC4 (MPU) causes Mg3-2 (p47) and Mg3-1 (p50) to change from L to H, supplies the current to the shutter magnet and checks the battery. If the battery is under 4.0V, the system goes N.G. and the bc flickers.
- [4] IC4 (MPU) causes M2F (p27) to become high and M3R (p28) to become low, which makes the M2 motor to rotate in the normal direction, and makes the mirror go up.
- [5] IC4 (MPU) selects communication with the lens through CSIOA - CASIOC (p43 - p45), and commands to see the lens condition through MOSI (p66) and SCLK (p68).
- [6] IC5 (I/O) communicates with the lens through LCLK (p31), DLC (p32) and DCL (p33), and checks if the EMD is open. If EMD is not open, the system becomes N.G., and bc flickers, and the aperture is stopped down to the required value.
- [7] When both CHG1 and CHG2 of the shutter phase switch changes from low to high, then the mirror up is completed.
- [8] IC4 (MPU) sets M2F (p27) and M2R (p28) to "H", and stops the M2 motor.
- [9] IC4 (MPU) makes Mg3 (p50) to change from low to high and makes the first curtain to run and commence exposure. When the internal or external flash is in a ready condition for firing, the X contact closes, firing the shutter.
- [10] After a specified time, IC4 (MPU) makes Mg3-2 (p47) to change from low to high, and runs the second curtain. When the second curtain completes its run CN2 is turned on. If CN2 does not turn on, the system is N.G., and bc will flicker).
- [11] When CN2 is input to IC4 (MPU), M2F (p27) becomes high and M2R (p28) becomes low, making the M2 motor rotate normally, and the mirror down and shutter charge begin.
- [12] IC4 (MPU) selects IC5 (I/O) through CSIOA - CASIOC (p43 - p45), and commands IC5 to release the EMD of the lens.
- [13] When the release of EMD is confirmed through the communication between IC5 (I/O) and the lens, IC4 (MPU) causes M1F (p62) to become high and M1R (p63) to become low, turning the M1 motor in a normal direction, and winding the film.
- [14] When both CHG1 and CHG2 of the shutter phase switch are changed from high to low, the mirror down and shutter charge are completed, then IC4 (MPU) changes both M2F (p27) and M2R (p28) to high, and stops the M2 motor.
- [15] When F-CHG1 of the flash charge position changes from low to high and F-CHG2 from high to low, the flash pop down is completed, then IC4 (MPU) makes (p27) and M2R (p28) high and stops the M2 motor.
- [16] At the same time when the M1 motor rotates normally, IC4 (MPU) makes PION (p25) change from high to low, and lights the photo diode of the PC (photo coupler).
- [17] The photo transistor of the photo coupler detects the supply quantity, and one frame portion of photocoupler signal (PCSIG) is input to p46 (PIIN) of IC4 (MPU). IC4 (MPU) causes M1F (p62) and M1R (p63) to be high and stops the M1 motor.
- [18] If the date is ON (EOS100D), IC4 (MPU) selects IC5 (I/O) through CSIOA - CASIOC (p43 - p45) and commands IC5 to output the LED lighting voltage for date insertion through MOSI (p66) and SCLK (p68). IC5 (I/O) outputs the lighting voltage, synchronized with the PCSIG, to IC11 (DATE) through LEDDA (p43). IC4 (MPU) then outputs date insertion LED drive signal to IC11 (DATE) through D1 - D7 (p14 - p20), which causes IC11 (DATE) to light specific LED, and insert the date on film.
- [19] If the flash is up, the IC4 (MPU) makes M2F to become low and M2R to become high, turning the motor in reverse, making the flash flash pop down.
- [20] After one frame has been transported, detected by the PCSIG, IC4 (MPU) selects IC3 (LCD1 Driver) through CSOLS (p80) and sends the film counter advance one frame signal through MOSI (p66) and SCLK (p68).
- [21] IC3 (LCD1 Driver) indicates the number of frames through SEGs (p34 - p68) and COM3 - COM1 (p34 - p36).

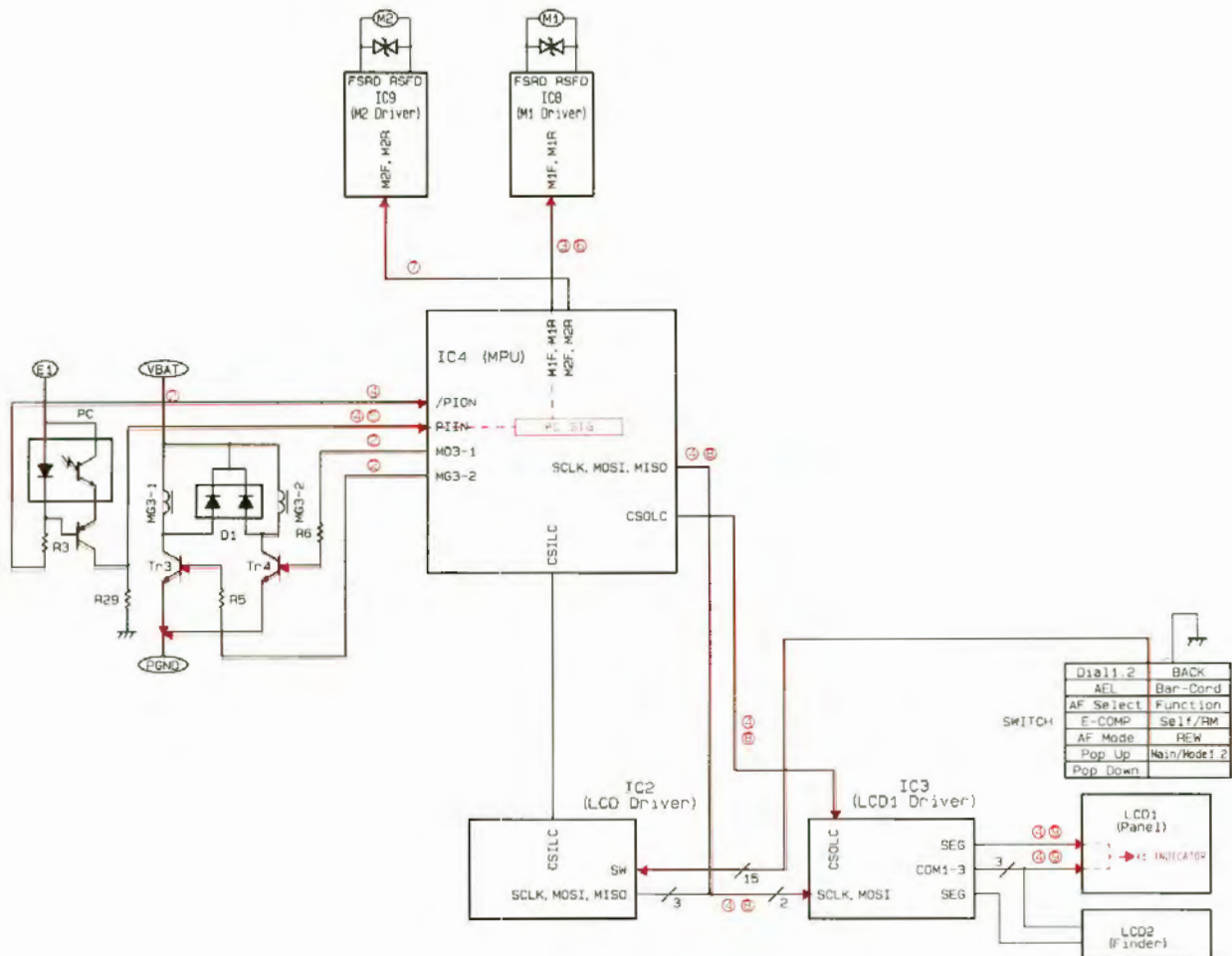
----- SW2 ON (Release) -----



REWINDING

- [1] The conditions necessary for film rewind are:
 - (a) the manual rewind switch is on,
 - (b) the film has reached the end and is under tension, or
 - (c) the number of frames indicated by the DX code have been exposed.Rewinding information is input to IC4 (MPU).
- [2] IC4 (MPU) causes Mg3-2 (p47) and Mg3-1 (p50) to change from low to high, supplies a current to the shutter magnet, and checks the battery.
- [3] IC4 (MPU) causes M1F (p62) to become low and M1R (p63) to become high, which causes the M1 motor to rotate in reverse. The planet gear changes from the winding side to the rewinding side, the fork comes out and the film begins rewinding.
- [4] $\overline{\text{PION}}$ (p25) of IC4 (MPU) changes from high to low, the photo diode is lit, and signal detected by the photo transistor is input to PIIN (p46) of IC4 (MPU). IC4 (MPU) selects the IC3 (LCD1 Driver) through CSOLC (p80), and sends the film counter count down information -1 to IC3 through MOSI (p66) and SCLK (p68) until the rewinding is completed. IC3 (LCD1 Driver) subtracts the number of frames through SEGs (p34 - p68) and COM3 - COM1 (p34 - p36).
- [5] IC4 (MPU) compares the number of frames and signal quantity internally. When the signal quantity becomes larger than the number of frames, rewinding is completed.
- [6] IC4 (MPU) sets M1F (p62) and M1R (p63) to "H", and stops the M1 motor.
- [7] IC4 (MPU) causes M2F (p27) to become high and M2R (p28) to become low to make the M2 rotate normally until the shutter charge is completed, and then causes M2F (p27) and M2R (p28) to become high to stop the M2 motor.
- [8] IC4 (MPU) selects IC3 (LCD1 Driver) through CSOLC (p80), and commands IC3 to flash the cartridge mark for completion of rewinding through MOSI (p66) and SCLK (p68).
- [9] IC3 (LCD1 driver) causes the cartridge mark to flicker through SEGs (p34 - p68) and COM1 - COM3 (p34 - p36).

----- Rewinding -----



Battery Check

There are two different branches to the battery check sequence:

- (a) Battery check within the normal sequence
 - (b) Battery check when the selector dial is removed from the "LOCK" position and
 - (c) When battery is installed.
- [1] Battery check condition is input to IC4 (MPU).
 - [2] IC4 (MPU) causes Mg3-2 (p47) and Mg3-1 (p50) to change from low to high which supplies current to the shutter magnet for 10ms and checks the battery.
 - [3] IC4 (MPU) selects the communication mode with IC5 (I/O) through CSIOA - CSIOC (p43 - p45).
 - [4] IC4 (MPU) sends battery check mode to p66 (MOSI) and p68 (SCLK), and commands the output of IOAD (p55) of IC5 (I/O) to VBAT to be changed.
 - [5] IC5 (I/O) divides the voltage detected by the VBAT (p56) to 1/2 VBAT internally, and outputs the voltage to IC4 (MPU) from IOAD (p55).
 - [6] IC4 (MPU) conducts the A/D conversion of the input voltage internally, and measures the voltage.

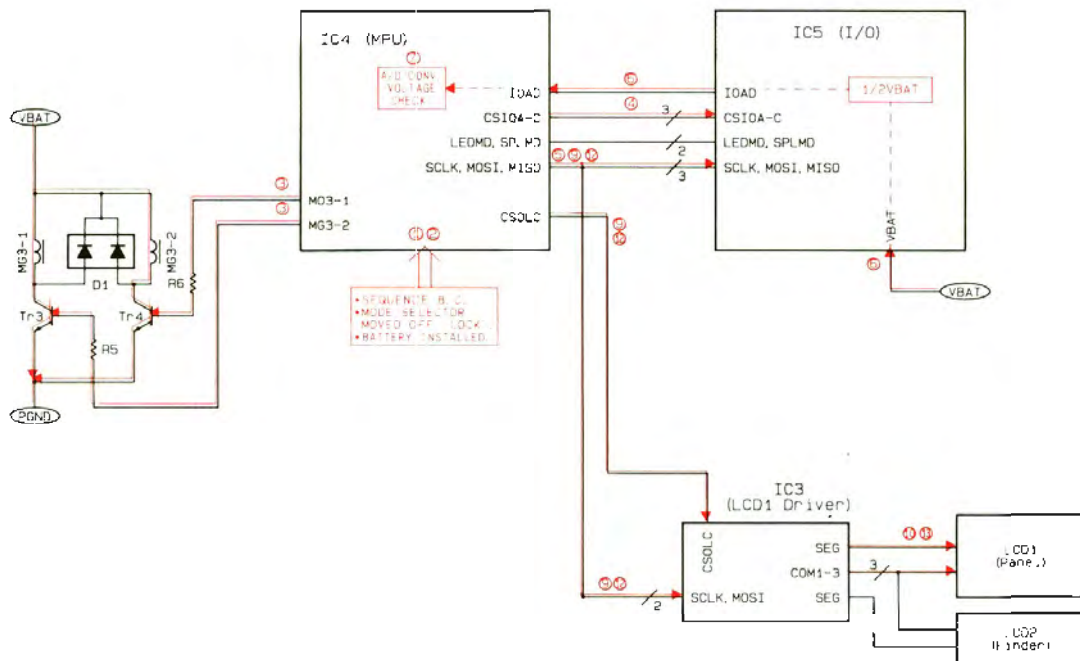
(a) During Sequence

- [7] When the power source voltage is under 4.0V, release is prohibited.
- [8] IC4 (MPU) selects IC3 (LCD1 Driver) through CSOLC (p80), and commands IC3 to flicker bc through MOSI (p66) and SCLK (p68).
- [9] IC3 (LCD1 driver) flickers bc through SEGs (p34 - p68) and (COM3 - COM1 (p34 - p36).



(b) Selector dial removed from "LOCK" & (c) When battery is installed

- [10] Battery mark is selected based on the voltage side fixed value.
- [11] IC4 (MPU) selects IC3 (LCD1 driver) through SCOLC (p80), and commands IC3 to light and to flicker the selected battery mark through MOSI (p66) and SCLK (p68).
- [12] IC3 (LCD1 driver) causes the battery mark to light and flicker through SEGs (p34 - p68) and COM3 - COM1 (p34 - p36).

----- Battery Check -----



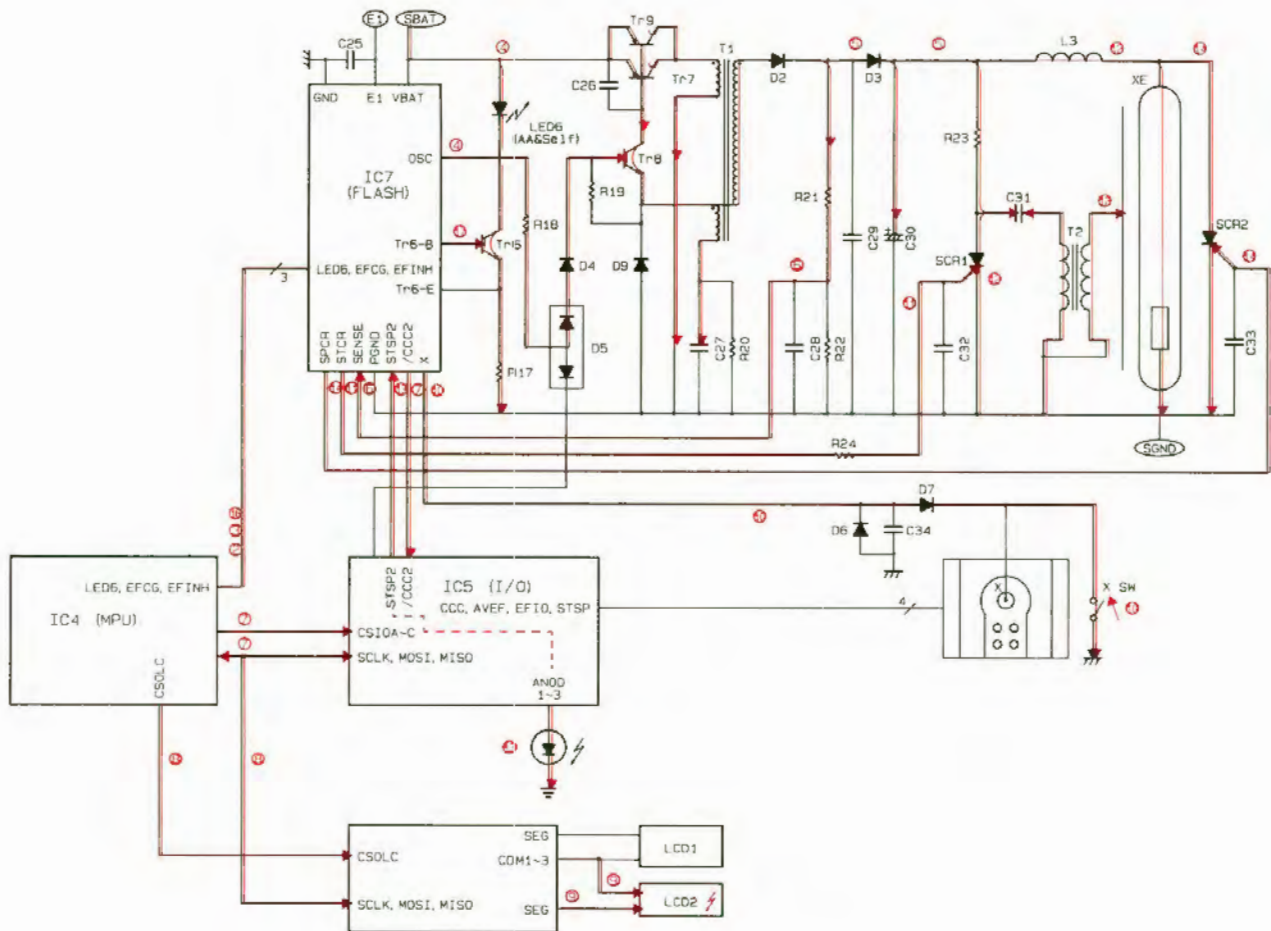
Built-in Flash Operation

- [1] Conditions that require flash are input into IC4 (MPU).
- [2] EFINH (p24) of IC4 (MPU) changes from high to low, and flash is enabled.
- [3] IC4 (MPU) outputs the built-in flash charge start signal to IC7 (FLASH) through EFCG (p30).
- [4] IC7 (FLASH) makes OSC (p5) to change from low to high, and Tr8, Tr7 and Tr9 turn ON.
- [5] When Tr7 and Tr9 turns ON, T1 oscillates, and C30 (the main capacitor) and C31 (trigger capacitor) are charged.
- [6] When C30 and C31 are fully charged, the voltage, which is divided at R3 and R4 is input to SENSE (p9) of IC7 (FLASH) and charging is completed.
- [7] IC7 (FLASH) outputs the charging completion signal to IC5 (I/O) through CCC2 (p10). IC4 (MPU) selects IC5 (I/O) through (CSIOA - CSIOC (p43 - p45), and detects that the charging is completed through MOSI (p66), MISO (p67) and SCLK (p68).
- [8] IC4 (MPU) selects CSOLC (p80), and commands CSOLK to light the charge completion mark  through MOSI (p66) and SCLK (p68).
- [9] IC3 (LCD1 driver) causes the charge completion mark  to light through SEGs (p50 - p72) and COM3 - COM1 (p34 - p36).
- [10] When X of the shutter is turned ON, SW X is turned ON, and X (p11) of IC7 (FLASH) becomes low.
- [11] STCR (p13) of IC7 (FLASH) changes from low to high, and is impressed to the SCR1 gate, and SCR1 is turned ON.
- [12] As SCR1 is turned ON, the T2 (trigger coil) oscillates triggering the flash.
- [13] IC5 (I/O) causes STSP2 (p1), a flash stop signal, to change from low to high and sends the signal to IC7 (FLASH) when exposure becomes appropriate based on the information detected by IC5 ANOD1 - ANOD3 (p46 - p48) light adjusting sensors).
- [14] IC7 (FLASH) causes SPCR (p15) to change from low to high, turns SCR2 to ON, and stops flashing.
- [15] After the flashing stops, pre-charging is conducted until DC/DC is turned OFF.

AF Illuminator firing

- [16] IC4 (MPU) causes LED6 p64, (AF auxiliary light flashing start signal) to change from low to high, and outputs the signal to IC7 (FLASH).
- [17] IC7 (FLASH) causes Tr6-B (p19) to change from low to high, turns Tr6 to ON, and causes the AF auxiliary light to flash.
- [18] [1] and [2] are repeated every time SW1 is turned ON until metering is completed.

----- Built-in Flash Operation -----



ELECTRICAL PARTS

Main Flex Unit

Symbol	Spec./Mgf.#	Function
IC4 (MPU)	H8/532	Sequence control of entire system
IC6 (E2PROM)	HD65901	Storing of various data (mode, film counter adjusting data, etc.)
IC5 (I/O)	TIA29F	Storage is protected even when the battery is removed.
IC2 (LCD2 Driver)	T7A77	Controlled by MPU as the main function for interface between MPU with the lens, strobe, etc.
IC8, 9 (M1,2 Driver)	MPC1710	Switch detection, LCD2 drive
IC1 (AE)	LC3068	Drive of motors 1 and 2
TMOS	SFX-10	Metering (factor eight section)
OSC2	32.768KHz	Generates VBAT2 (power source for lens)
OSC1	20MHz	Crystal oscillator
Tr3	2SD1946	Calculation clock for MPU
Tr4	2SD1946	ON/OFF control of first curtain magnet
LC		ON/OFF control of second curtain magnet
		Interference Noise filter

LCD Flex Unit

Symbol	Spec./Mgf.#	Function
IC3 (LCD1 Driver)	SN288998	Drive of LCD1 and LCD2

BASIS Flex Unit

Symbol	Spec./Mgf.#	Function
BASIS	IC4061	Multiple BASIS for wide view ranging

Signal Board Unit (Signal Flex)

Symbol	Spec./Mgf.#	Function
PC (Photo coupler)	P3784	Detection of frame number
Tr2	2SA-1182	Control of photo coupler

Remote Control Circuit Board

Symbol	Spec./Mgf.#	Function
IC10 (Remote IC)	T8554F	Control of remote control reception circuit
PD4	PD410PIJ	Reception of remote control transmission signal

Flash Circuit Board

Symbol	Spec./Mgf.#	Function
IC7 (FLASH.IC)	LC4067A	Control of strobe circuit and lighting of AF auxiliary light
Tr6	2SC2982	For starting of AF auxiliary light lighting
Tr7, 9	2SB1307M	Control of start/stop of strobe charging
Tr8	2SC3440BF	Control of start/stop of strobe charging
T1	S-550	Transformer for strobe charging
C30	200uF, 330V	Main amplifier for strobe lighting
SCR1	CR08AS8	For starting built-in strobe lighting
L3	CH-530	For xenon tube protection
SCR2	CR6AM-8	For flash termination

AF Illuminator Unit

Symbol	Spec./Mgf.#	Function
LED6	S7960	AF auxiliary light and self-timer display

DX Unit

Symbol	Spec./Mgf.#	Function
PTR1	S2829	For bar code light reception

IC PIN CONNECTIONS

IC1 (AE)

Pin	Symbol	I/O	Function
1	/FS2	I	Exposure sensor select
2	/FS1	I	Exposure sensor select
3	/FS0	I	Exposure sensor select
4	AGND	V	Analog ground
5	AEAD	O	Analog voltage output terminal of exposure sensor
6	VC	V	Reference voltage (1.22V)
7	E2	V	Power source (5.3V)
8-14	NC	-	Unused

IC2 (LCD2 Driver)

Pin	Symbol	I/O	Function
1	DIAL1	I	Switch sense (dial SW)
2	DIAL2	I	Switch sense (dial SW)
3	DLC	I	Switch sense (communication request from lens)
4	MIF	I	Switch sense (lens SW)
5	AEL	I	Switch sense (AE lock SW)
6	AFSELECT	I	Switch sense (AF frame select SW)
7	AFMODE	I	Switch sense (AF mode change-over SW)
8	E-COMP	I	Switch sense (exposure compensation SW)
9	POP UP	I	Switch sense (pop up SW)
10	POP DOWN	I	Switch sense (pop down SW)
11	MAIN1	I	Switch sense (main/mode SW)
12	MAIN2	I	Switch sense (main/mode SW)
13	BACK	I	Switch sense (Back cover SW)
14	BAR-CODE	I	Switch sense (bar code detect SW)
15	FUNCTION	I	Switch sense (function select SW)
16	SELF/RM	I	Switch sense (self / remote control SW)
17	SW1	I	Switch sense (ranging & metering SW)
18	REW	I	Switch sense (manual rewind SW)
19	MOSI	I	Serial communication
20	MISO	O	Serial communication
21	SCLK	I	Serial communication
22	CSILC	I	Chip select IC2
23	VDD	V	Digital system power supply (+) 5.3V
24	/IREQ	O	Interrupt request
25	NMI	O	Interrupt signal
26	/STBY	O	Restores low power consumption condition
27	/RESMPU	O	MPU rest signal
28	BUZA	O	Beeper drive terminal
29	N.C	-	Unused
30	/RESIO	O	IC5 reset signal
31	/CT4.2	I	Power supply (4.2V) detect
32	REMIN	I	Input terminal of signal from IC10
33	/REMON	I	Activation of IC10
34-50	N.C	-	Unused
51	RESOLC	O	IC3 reset signal
52	CLK32K	-	Clock 32 (kHz)
53	VDD	V	Digital system power supply (+) 5.3V
54	FRAME	-	
55	VBAK	V	Power supply back-up for maintaining clock function
56	EXTAL	V	Crystal oscillator
57	XTAL	V	Crystal oscillator
58	PUC	I	System reset terminal
59	GND	V	Ground
60	/E10N	O	DC/DC converter

IC3 (LCD1 Driver)

Pin	Symbol	I/O	Function
1	GND	V	Ground
2	N.C	-	Unused
3	CSOLC	I	Chip select IC3
4	SCLK	I	Serial communication clock
5	N.C	-	Unused
6	MOSI	O	Serial communication input terminal
7-12	N.C	-	Unused
13	SWBZ	I	Beeper inhibit
14	N.C	-	Unused
15	/BATSW	I	Display reset SW detect /RESOLC
16-20	N.C	-	Unused
21		I	System reset input terminal
22	TEST3	I	Setting of external clock operation
23	N.C	-	Unused
24	CLK32K	V	External clock 32 [kHz]
25,26	N.C	-	Unused
27	CAP1	I	Voltage amplifier connection terminal
28	CAP2	I	Voltage amplifier connection terminal
29	CAP3	I	Voltage amplifier connection terminal
30	V3	O	3X step-up voltage
31	V2	O	2X step-up voltage
32	V1	O	Crystal drive reference voltage
33	VDD	V	Power supply (+) 5.3V
34	COM3	O	Crystal drive common terminal
35	COM2	O	Crystal drive common terminal
36	COM1	O	Crystal drive common terminal
37-70	SEG34-1	O	Crystal drive common terminal
71-80	SEG35-44	O	Crystal drive common terminal

IC4 (MPU. IC)

Pin	Symbol	I/O	Function
1	BUZC	I/O	Beeper drive output terminal
2,3,4	NC	-	Unused
5	VDD	V	Power supply (VDD) 5.3V
6	MD0	I	Mode set terminal
7	MD1	I	Mode set terminal
8	MD2	I	Mode set terminal
9	/STBY	I	Input signal for low consumption current condition
10	/RESMPU	I	Reset terminal
11	NMI	I	Interrupt signal
12	D.GND	V	Digital ground
13	N.C	-	Unused
14	D1	O	Date LED light signal output terminal
15	D2	O	Date LED light signal output terminal
16	D3	O	Date LED light signal output terminal
17	D4	O	Date LED light signal output terminal
18	D5	O	Date LED light signal output terminal
19	D6	O	Date LED light signal output terminal
20	D7	O	Date LED light signal output terminal

IC4 (MPU. IC)

Pin	Symbol	I/O	Function
21	/FS0	0	Exposure sensor select
22	/FS1	0	Exposure sensor select
23	/FS2	0	Exposure sensor select
24	EFINH	0	Flash firing prohibit signal
25	/PION	0	ON/OFF control signal of photo coupler
26	/VB2ON	0	ON/OFF control signal of lens drive power supply VBAT2
27	M2F	0	M2 motor normal rotation signal
28	M2R	0	M2 motor reverse rotation signal
29	D.GND	V	Digital ground
30	EFCG	0	Built-in strobe charge signal
31	MAIN3	I	Switch sensor (main/mode SW)
32	MAIN4	I	Switch sensor (main/mode SW)
33	CN2	I	Switch sensor (second curtain SW)
34	F-CHG2	I	For (strobe) brake start phase detection
35	F-CHG1	I	For (strobe) over-line detection
36	CHG1	I	Mirror up completion, shutter charge completion (B.C.=H)
37	CHG2	I	Shutter charge completion (B.C.=L)
38	/TENTE1	I/O	Accumulation time (Line 1)
39	/TENTE2	I/O	Accumulation time (Line 2)
40	/TENTE3	I/O	Accumulation time (Line 3)
41	/TENTE4	I/O	Accumulation time (Line 4)
42	VDO	V	Power supply 5.3V
43	CSIOA	0	Chip select IC5
44	CSIOB	0	Chip select IC5
45	CSIOC	0	Chip select IC5
46	PI1N	I	Photo coupler signal input terminal
47	MG3-2	0	Second curtain current supply signal
48	CSAF1	0	Chip select BASIS
49	CSAF2	0	Chip select BASIS
50	MG3-1	0	First curtain current supply signal
51	A.VSS	V	Analog ground
52	LOAD	I	Analog voltage input terminal from IC5
53	AEAD	I	Analog voltage input terminal of metering sensor
54	AFAD	I	Analog voltage input terminal of BASIS
55	PBMON	I	AGC signal input terminal
56	VC	V	Reference voltage 1.22V
57	NC	-	Unused
58	CART	I	Switch sensor (cartridge SW)
59	/EXTREQ	I	Made low during the tool communication monitor mode
60	AVCC	V	A/D converter reference voltage
61	CSILC	0	Chip select IC2
62	M1F	0	M1 motor normal rotation signal
63	M1R	0	M1 motor reverse rotation signal
64	LED6	0	AF auxiliary light lighting signal
65	LEDMD	0	AELED and AFLED drive signal
66	MOSI	0	Serial communication output terminal
67	MISO	I	Serial communication input terminal
68	SCLK	0	Serial communication clock
69	EXTAL	V	Crystal oscillator (20MHz)
70	XTAL	V	Crystal oscillator (20MHz)

IC4 (MPU. IC)

Pin	Symbol	I/O	Function
71	D.GND	V	Digital ground
72	10MHz	V	Clock (10MHz) output terminal
73,74	NC	-	Unused
75	CSEXT	-	Tool communication setting terminal
76	SW1	I	Switch sensor (ranging and metering SW)
77	/IREQ	I	Interruption signal enables to mask
78	SW2	I	Switch sensor (release SW)
79	SPLMD	O	AF frame LED drive signal (modulation signal)
80	/CSOLC	O	Chip select IC3

IC5 (I/O)

Pin	Symbol	I/O	Function
1	STSP2	O	Built-in flash termination
2	CCC	I/O	Current detection input terminal for external flash charging completion detection
3	AVEF	I	Flash communication input terminal (detection of external flash, input of serial data)
4	EFID	O	Flash communication output terminal
5	STSP	O	Flash communication clock and external flash termination
6	LED1	O	Ranging point changeover LED output (right)
7	LED2	O	Ranging point changeover LED output (center)
8	LED3	O	Ranging point changeover LED output (left)
9	EECLK	O	EEPROM clock output terminal (5MHz)
10	10MHz	I	Clock 10 [MHz] input terminal
11	AELED	O	AELED output
12	AFLED	O	AFLED output
13	/EEON	O	Controls power supply Y/N of EEPROM
14	/EERES	O	EEPROM reset terminal
15	EEDT	I/O	EEPROM communication data input/output terminal
16-18	N.C.	-	Unused
19	DAC	I	Bar-code communication input terminal
20	/ABUSY	I	External flash installation detection
21	E1	V	Digital system power supply (+) 5.3V
22	SCLK	I	Serial communication clock
23	D.GND	V	Digital ground
24	MISO	O	Serial communication output terminal
25	MOSI	I	Serial communication input terminal
26	LEDMD	I	AE and AFLED drive signal input terminal
27	SPLMD	I	AF frame LED drive signal input terminal
28	CSIOC	I	Chip select IC5
29	CSIOB	I	Chip select IC5
30	CSIOA	I	Chip select IC5
31	LCLK	O	Lens communication clock
32	DLC	I	Lens communication input terminal
33	DLC	O	Lens communication output terminal
34	DX1	I	DX code detect
35	DX2	I	DX code detect

IC5 (I/O)

Pin	Symbol	I/O	Function
36	DX3	I	DX code detect
37	DX4	I	DX code detect
38	DX5	I	DX code detect
39	DX6	I	DX code detect
40	DX7	I	DX code detect
41	/RESIO	I	IC5 reset signal
42	/GT4.2	O	Power supply 4.2[V] detect
43	LEDDA	O	Date LED lighting voltage (3/4VC - 5/4VC)
44	BASDA	O	BASIS reference voltage (3/4VC - 5/4VC)
45	VC	V	VC = 1.22V reference voltage
46	ANOD1	I	Exposure sensor (center)
47	ANOD2	I	Exposure sensor (right)
48	ANOD3	I	Exposure sensor (left)
49	VRE	V	VRH=3.2V exposure sensor reference voltage
50	CT1	I	Exposure amplifier connection terminal
51	CT2	I	Exposure amplifier connection terminal
52	CT3	I	Exposure amplifier connection terminal
53	A GND	V	Analog ground
54	E2	V	Analog system power supply (+)
55	IOAD	O	Analog voltage output (3/4VC - 5/4VC)
56	VBAT	V	Battery voltage
57	/PWR	O	Motor current supply prohibition (VTH=2.4V \pm 0.15V)
58	IREF	I	Reference voltage
59	TEMP	I	Temperature measurement diode connection terminal
60	/CCC2	I	Built-in strobe charging completion detection signal input

IC6 (E2PROM)

Pin	Symbol	I/O	Function
1	NC	-	Unused
2	GND	V	Ground
3	NC	-	Unused
4	EEDT	I/O	Communication terminal
5,6	NC	-	Unused
7	VCC	V	Power supply (+) 5.5V
8	/EERES	I	Reset terminal
9	EECLK	I	Clock 5[MHz]
10	NC	-	Unused

IC7 (FLASH)

Pin	Symbol	I/O	Function
1	Tr6-E	I	AF illuminator lighting signal
2	NC	-	Unused
3	GND	V	Ground
4	NC	-	Unused
5	OSC	O	Control of oscillation start and stop
6	EFCG	I	Built-in flash charging start signal
7,8	NC	-	Unused
9	SENSE	I	Charging voltage detect
10	/CCC2	I/O	Built-in flash charge complete detect output

IC6 (E2PROM)

Pin	Symbol	I/O	Function
10	/CCC2	I/O	Built-in flash charge complete detect output
11	X	I	X signal
12	EFINH	I	Built-in flash inhibit (prohibits when "H")
13	STCR	O	Built-in flash discharge start signal output terminal
14	PGND	V	Power ground
15	SPCR	O	Built-in flash discharge stop signal output terminal
16	VBAT	V	Power supply
17	STSP2	I	Built-in flash discharge stop signal
18	E1	V	Digital system power supply, 5.3V
19	Tr6-B	O	AF illuminator start signal output terminal
20	LED6	I	AF illuminator start signal input terminal

IC8 (M1 Driver)

Pin	Symbol	I/O	Function
1	C2L	V	For driving IC8, TMOS
2	C1H	V	For driving IC8, TMOS
3	C1L	V	For driving IC8, TMOS
4	VBAT	V	Motor 2 drive power supply
5	E1	V	IC8 drive power supply 5.3V
6	M1F	I	Motor 2 drive signal input
7	M1R	I	Motor 2 drive signal input
8	/PWR	I	Reset signal input
9	DGND	V	Digital ground
10	/VBAT2ON	I	TMOS ON signal input
11	FSRD	O	Motor 1 drive signal output
12	PGND	V	Power ground
13	RSFD	O	Motor 1 drive signal output
14	TOUT	O	Output lens drive voltage VBAT2
15	VPP	V	
16	C2H	V	For driving IC8, TMOS

IC9 (M2 Driver)

Pin	Symbol	I/O	Function
1-3	NC	-	Unused
4	VBAT	V	Motor 2 drive power supply
5	E1	V	IC9 drive power supply 5.3V
6	M2F	I	Motor 2 drive signal input
7	M2R	I	Motor 2 drive signal input
8	/PWR	I	Reset signal input
9	DGND	V	Digital ground
10	NC	-	Unused
11	FARD	O	Motor 2 drive signal output
12	PGND	V	Power ground
13	RSFD	O	Motor 2 drive signal output
14	NC	-	Unused
15	VPP	V	
16	NC	-	Unused

IC10 (Remote IC)

Pin	Symbol	I/O	Function
1	BP	I	Limits input signal frequency
2	BPOUT	O	DC cut amplifier connection terminal
3	AC	I	DC cut amplifier connection terminal
4	AGND	V	Analog ground
5	NC	-	Unused
6	CMP	O	Input signal level setting amplifier connection terminal
7	CMPOUT	O	Outputs input signal to MPU
8	VCC	V	Power supply 5.5V
9	PD4	I	Inputs transmitting signal
10	VC	V	Reference voltage 1.22V

BASIS

Pin	Symbol	I/O	Function
1	GND	V	Ground
2	SCLK	I	Serial communication clock
3	CSAF2	I	Chip select BASIS
4	MOSI	I	Serial communication input
5	CSAF1	I	Chip select BASIS
6	/RESIO	O	BASIS reset signal
7	MISO	O	Serial communication output
8	/TINTE1	I/O	Accumulation time (Line 1)
9	/TINTE2	I/O	Accumulation time (Line 2)
10	/TINTE4	I/O	Accumulation time (Line 4)
11	/TINTE3	I/O	Accumulation time (Line 3)
12	VCC	V	Power supply (+) 5.5V
13	VCC	V	Power supply (+) 5.5V
14	BASDA	V	Reference voltage input terminal (3/4VC - 5/4VC)
15	AFAD	O	Gained image signal
16	GND	V	Ground
17	VCC	V	Power supply (+) 5.5V
18	A.GND	V	BASIS reference voltage approx. 1.17V
19	N.C	-	Unused
20	AREF	V	VAREF=1/2VC
21	IREF	I	Makes reference current based on connected resistance
22	RTN	I	
23-26	N.C	-	Unused
27	PBMON	O	AGC signal output terminal
28	N.C	-	Unused
29	CN2	I	AGC signal line change over
30	REFLD	-	Makes reference current based on connected resistance
31	VC	V	Reference voltage VC=1.22V
32	VCC	V	Power supply (+) 5.5V

III, REPAIR INFORMATION

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PREPARATIONS for REPAIR

WARNING!! HIGH VOLTAGE

The main capacitor of the built-in flash unit is almost always at least partially charged. After removing the battery and the top cover, drain any remaining charge with a low resistance, high wattage resistor across the points shown.

Main Flex Replacement

The replacement main flex unit supplied is the EOS 10QD unit and contains only information for that model in its ROM. When it is installed in either of the other models (EOS 10 or 10s), the following steps must be taken.

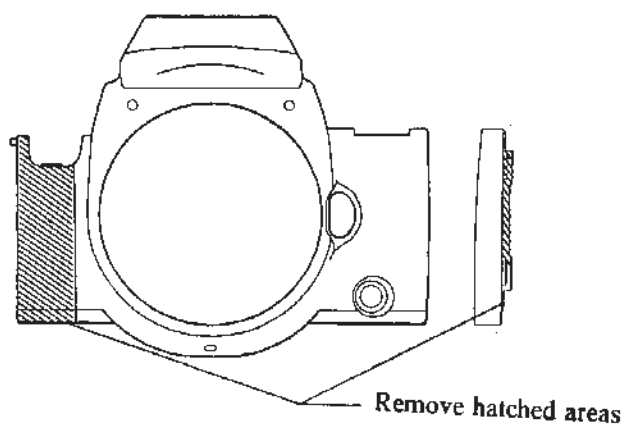
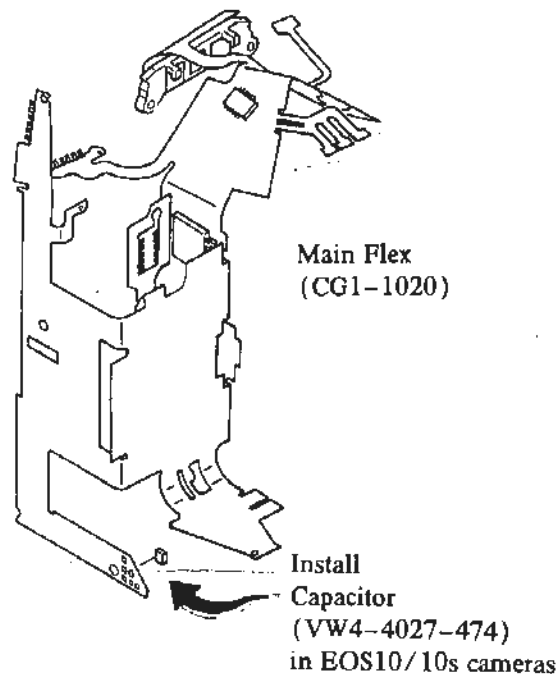
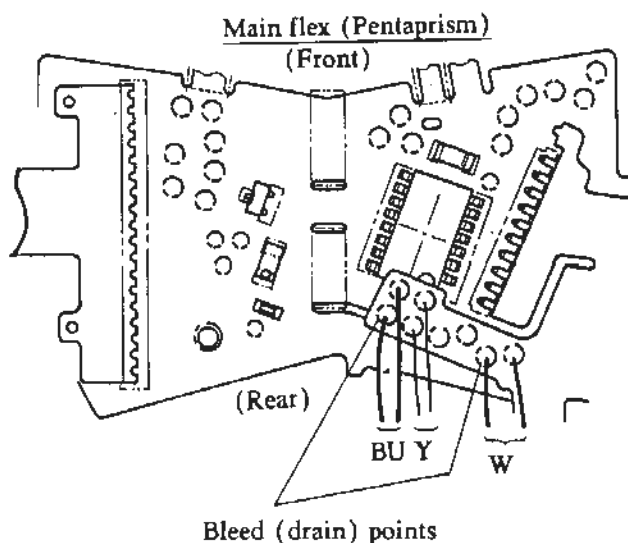
1. Install Capacitor (VW4-4027-474) at the point shown. This replaces a larger back-up capacitor used in the QD model.
2. After installing the replacement flex before starting the adjustments, attach the camera to the multiple tool and call up the Data Transfer Menu. You will find an item [EOS10/10s]. Follow the instructions and read the data for the model being repaired into the ROM.

Main Mirror 45 Angle

The parts of this camera are of such high precision that there is no need for a mirror angle adjustment for the main mirror.

Dummy Front Cover

The front cover must be in place when making adjustments but it cannot be attached when the Multiple Tool is connected to the camera. Cut off the hatched areas of a front cover as shown to used during adjustment.



TOOLS and EXPENDABLES LIST

Tools

TEST EQUIPMENT (New equipment)	Part No.	Adjustment
Optical Flat	CY9-1001-003	FFD & AF focus
Dial Gage	CY9-1001-006	
44.14mm Block Gage	CY9-1001-007	
2mm Adaptor Ring (Dial gage)	CY9-1001-008	
AF Reflectance Paper		
2% (Black)	CY9-1066-000	AF
64% (Light Gray)	CY9-1067-000	AF
90% (White)	CY9-7076-000	AF
18% (Gray)	Local Purchase	Exposure
Focusing Rail	CY9-1071-000	Fine positioning
AF Standard Tool Lens	CY9-1072-000	
Regulated Power Supply (532C)	CY9-7038-000	
1.3mm Hex Key (Mirror Angle)	CY9-7059-000	Sub-mirror
Multiple Tool	CY9-7072-000	Electrical adjustment
EOS 10 Communications Adaptor	CY9-7072-002	Electrical adjustment
Multi-camera Tester EF 8000AC or	CY9-7073-000	Shutter SPD position AE accuracy AE Shift Light Metering AF Std.
Multi-camera Tester EF 500AC and FS- 5300 Shutter Tester	CY9-7020-000 CY9-7066-000	
TTL-OTF Photoreceptor DIR-201	CY9-7067-000	
Universal 90° Collimator -3	CY9-7077-000	Sub-mirror
Sub-mirror Gage (41.5°)	CY9-7077-004	
600mm Rangefinder Collimator	CY9-7057-000	Viewfinder focus

Expendables (Adhesives/Lubricants/etc)

Name	Part No.	Use
Bond G103	CY9-8002-000	Plastic foam light shields Bar code sensor, hot shoe spring and screws, trigger coil
Aron Alpha 201	CY9-8007-000	IC-1 bonding
Three Bond 1401B	CY9-8012-000	Mount screws, Motor M2 screws Illumination prism, flash spring hanger screw
PL015JG	CY9-8073-000	Film Guide Roller, Winding Unit
ED-16	CY9-8075-000	Flash pin in top cover
H26	CY9-8079-000	Shafts, collars, levers,
IF-10	CY9-8088-000	Mount coupling
NF-33 oil retardant	CY9-8090-000	Stop oil spread

OPERATING CURRENTS

• Parameters

Lens: EF50mm f/1.8

Power Source: Regulated power supply with 0.7 Ω current limiter or new Lithium battery 2CR5

Film: Tri-X (36 exp.)

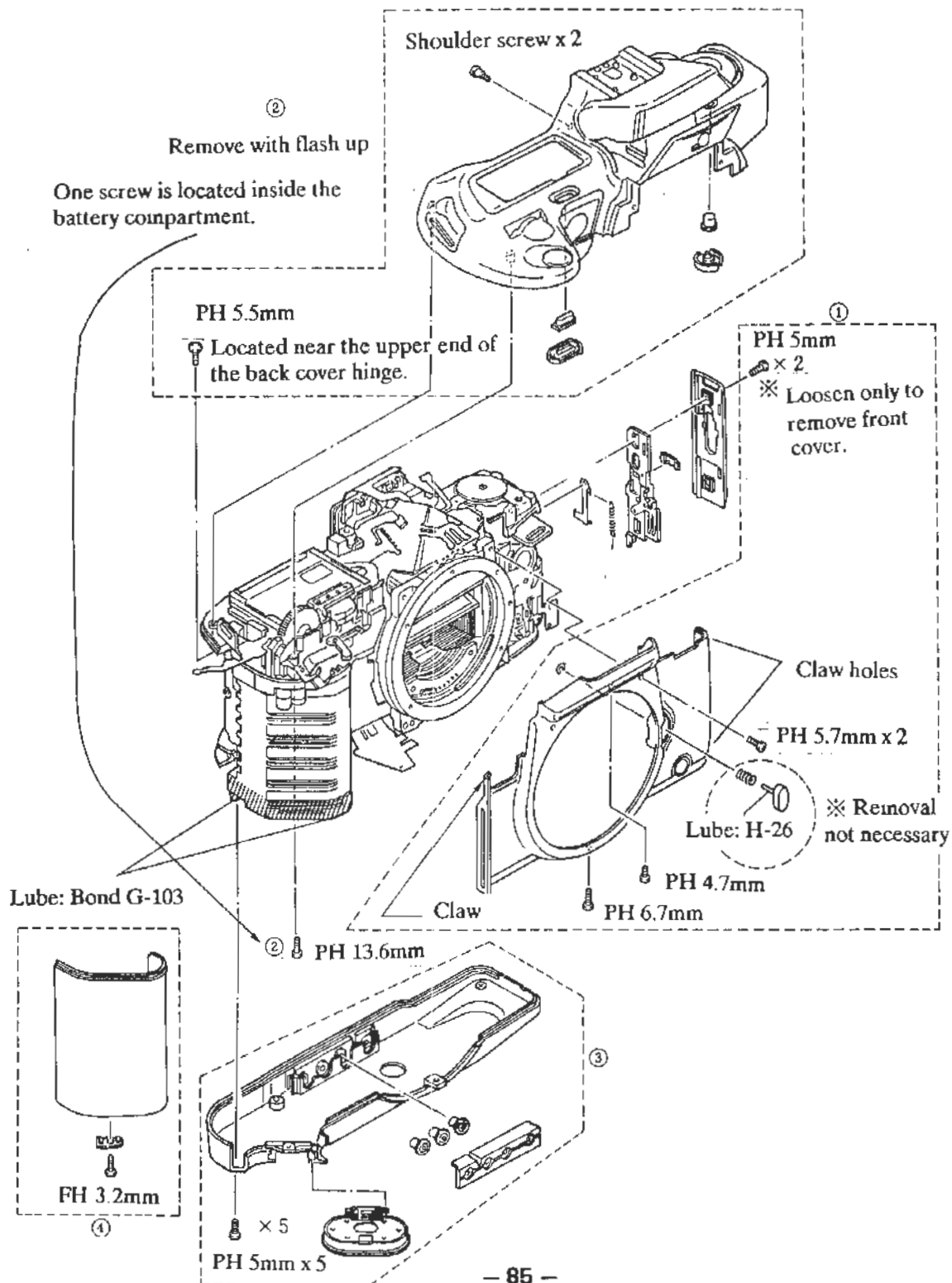
CONDITIONS	DESIGN STD.	MEASURED VALUES
Standby (including "L")	$\leq 50\text{mA}$	40 ~ 43mA
SW1 on	$\leq 400\text{mA}$	140 ~ 145mA
Battery check	1350 \pm 150mA	1170 ~ 1250mA
Self timer or Remote standby	$\leq 5\text{mA}$	2 ~ 3mA
Winding (excluding initial 100ms)	$\leq 1500\text{mA}$	790 ~ 890mA
Rewind (excluding initial 3s)	$\leq 800\text{mA}$	450 ~ 700mA

External Parts Removal

As an added convenience, the head design and overall length of screws are indicated on the drawing.

PH: pan head FH: flat head
FCH: flat countersunk head

○ The numbers indicate the order of removal.



External Parts Removal

Disassembly Notes

Removal order

1.

Front cover End cover

 4 screws
2 screws (loosen only)
2.

* Top cover

 4 screws (2 Shoulder) Leads: 10 - flex, 2 - top cover
3.

Bottom cover Battery cover

 5 screws
4.

Grip cover Grip stopper

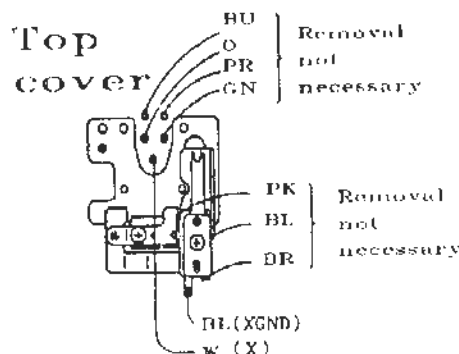
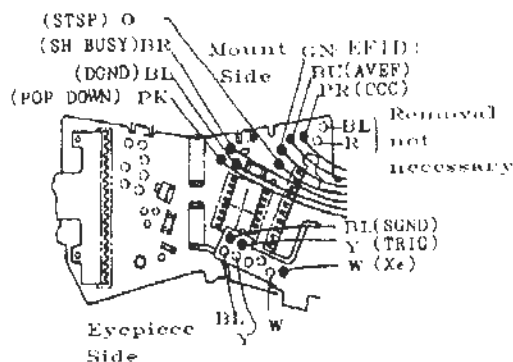
 1 screw
Bond G-103

Top Cover Removal

Removal is easier with flash in the up position.

Desoldering Points

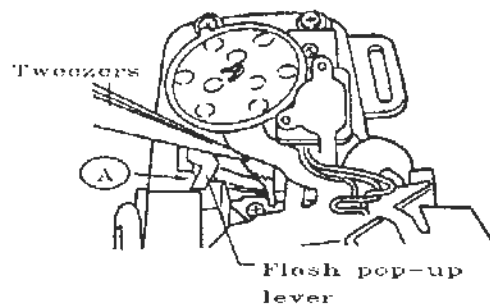
1. Body (above pentaprism)



-- Assembly Notes

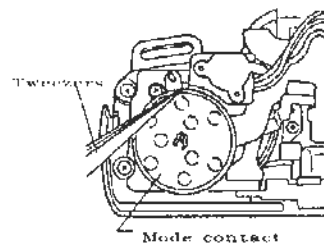
* Top Cover Installation

- Set the flash pop-up lever in the body in the popped up position before installing the top cover, as illustrated below.



Push the flash pop-up lever the the (A) → direction, and turn the gear (indicated my the tweezers) in the CCW direction. The pop-up lever will move farther in the (A) direction. Continue until it is at the end of its travel.

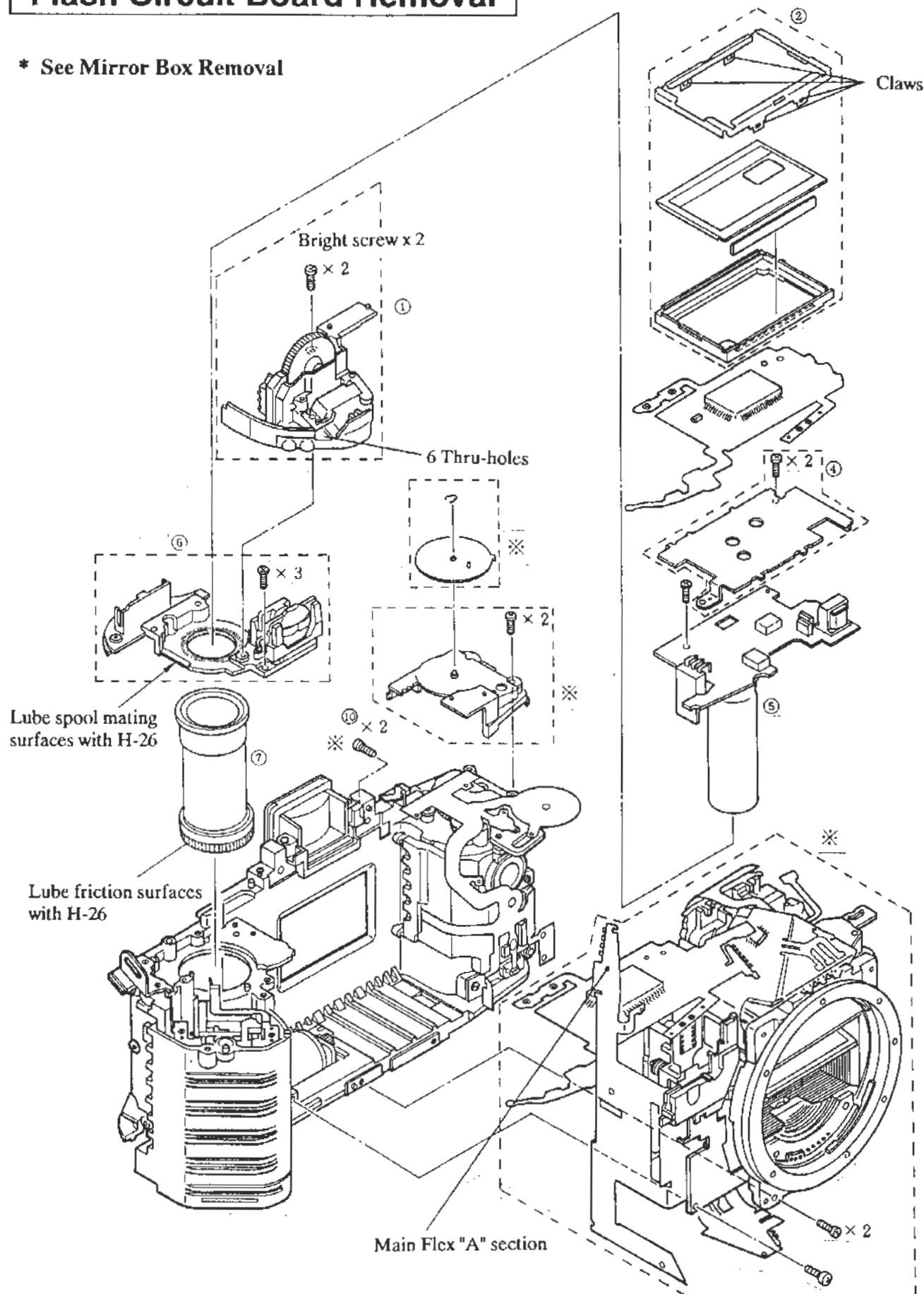
- Set the top cover and body mode dials to the same position (see below).



Turn the mode dial pin (indicated by the tweezers in the drawing) CCW until it is against its stop. Set the top cover mode dial to the "M" position. They are now aligned.

Flash Circuit Board Removal

* See Mirror Box Removal



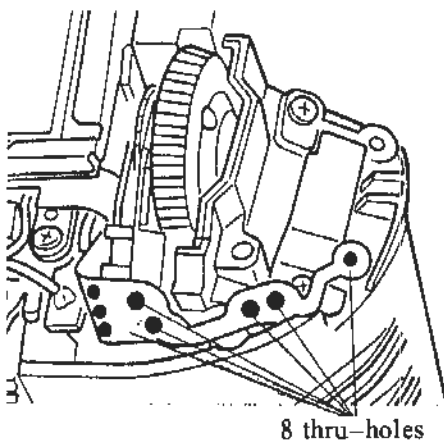
Flash Circuit Board Removal

Disassembly Notes

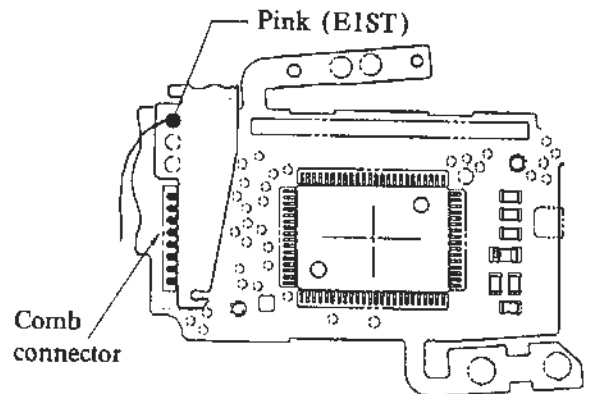
	Removal order	Remarks
1.	Electronic Dial Unit	8 thru-holes 2 bright screws
2.	Holder, LCD, Case	5 claws
3.	Main flex (A)	1 lead 1 Comb cont.
4.	LCD base	2 screws
5.	Flash C.B.	10 leads Comb connector 1 pt. 2 thru-holes 1 screw
6.	AF Illuminator Unit	3 bright screws
7.	Spool	

Desoldering Points

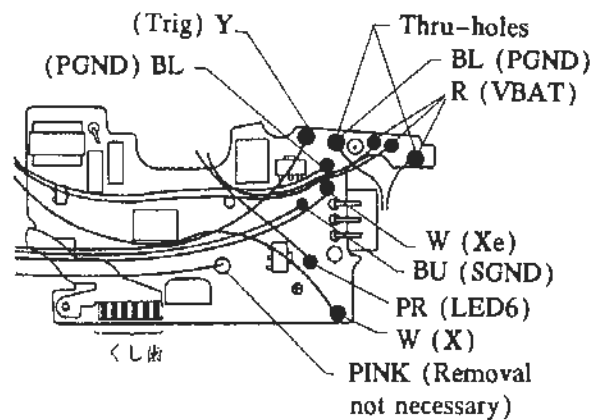
- Electronic Input Dial



- Main Flex (A)



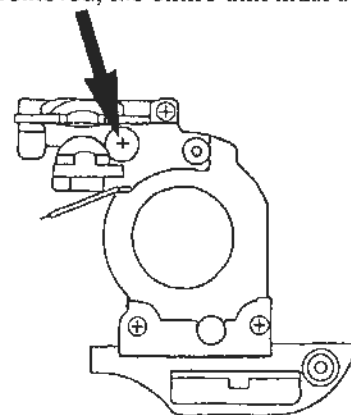
- Flash C.B.



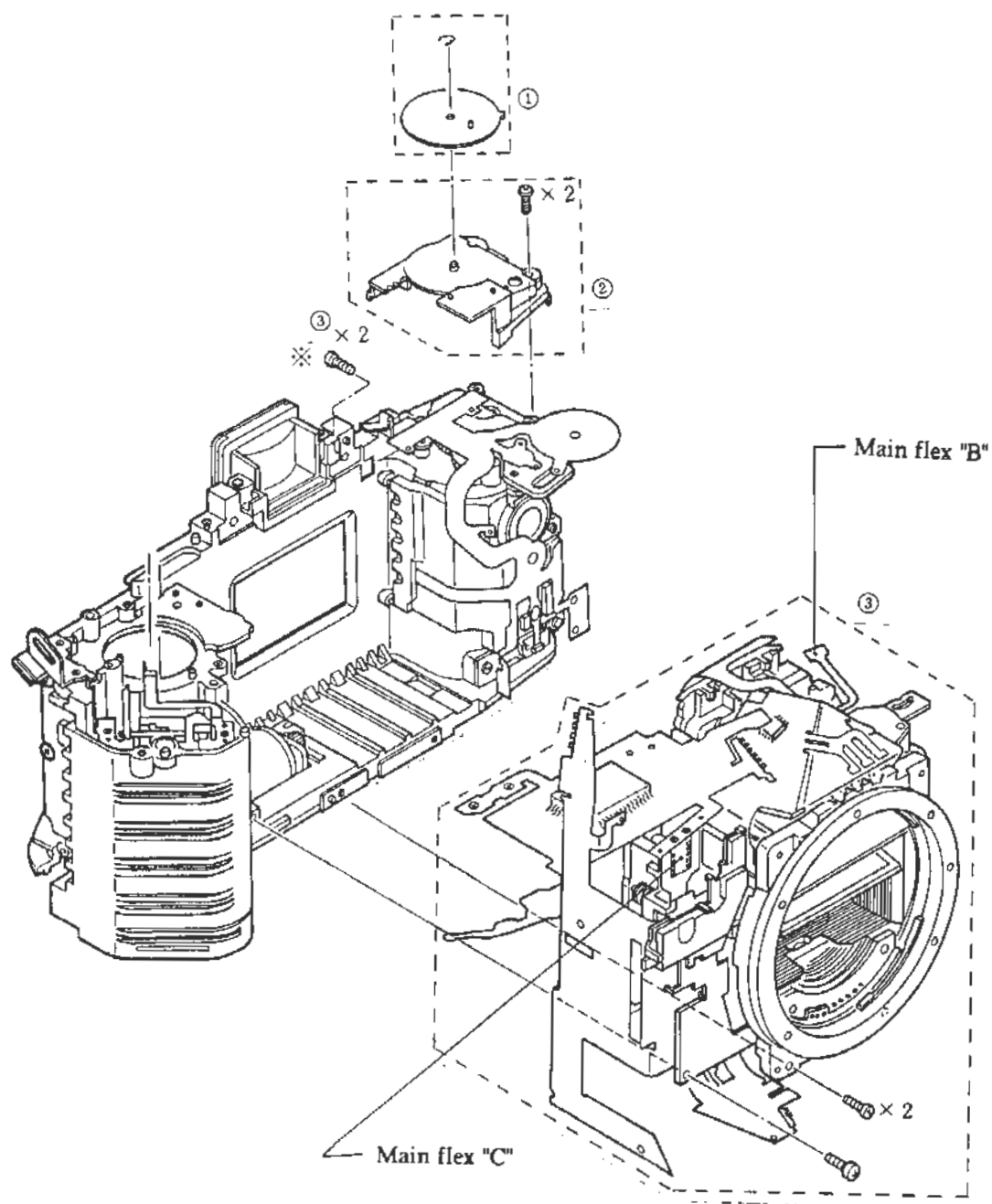
- AF Illuminator Unit

DO NOT REMOVE!

This screw is the factory illuminator aiming adjustment. If removed, the entire unit must be replaced.



Mirror Box Removal



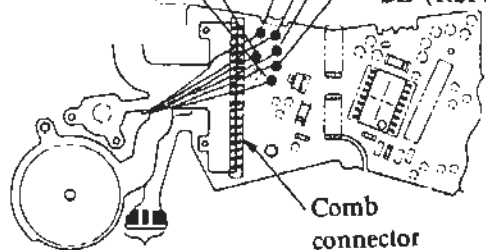
Mirror Box Removal

Disassembly Notes

	Removal order	Remarks
1.	Mode Dial	G ring
	* Main flex (B)	3 thru-holes
2.	* Main flex (pentaprism)	6 leads 1 Comb cont.
	* Main flex (C)	1 Comb cont.
	* Main flex (near grip)	2 leads
	* Main flex (bottom)	4 leads (6 for QD) 1 Comb cont.
	* DX flex	1 lead
3.	* Mirror box unit	5 screws

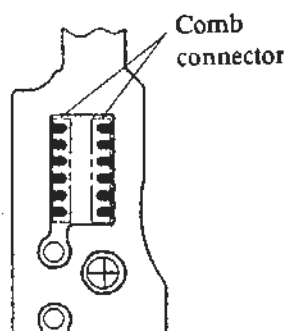
• Main flex (B) • Main flex (penta)

Y (BZA)
Y (BZC)
(CHG1) PR
(FSRD) R
W (CHG2)
BL (RSFD)

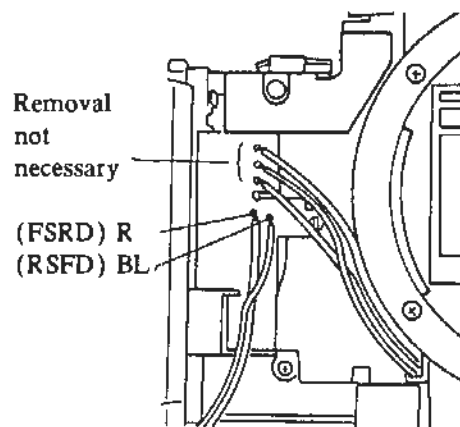


• Main flex (C)

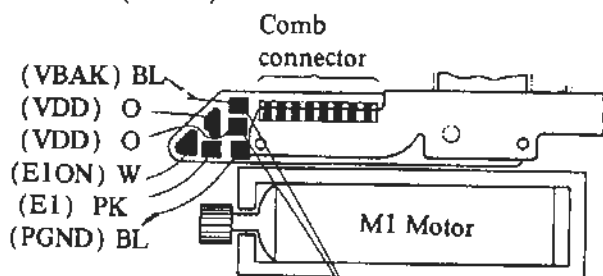
Thru-holes
(Main flex B)



• Main flex (near grip)

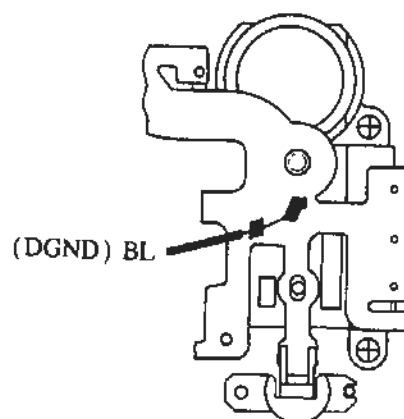


• Main flex (bottom)

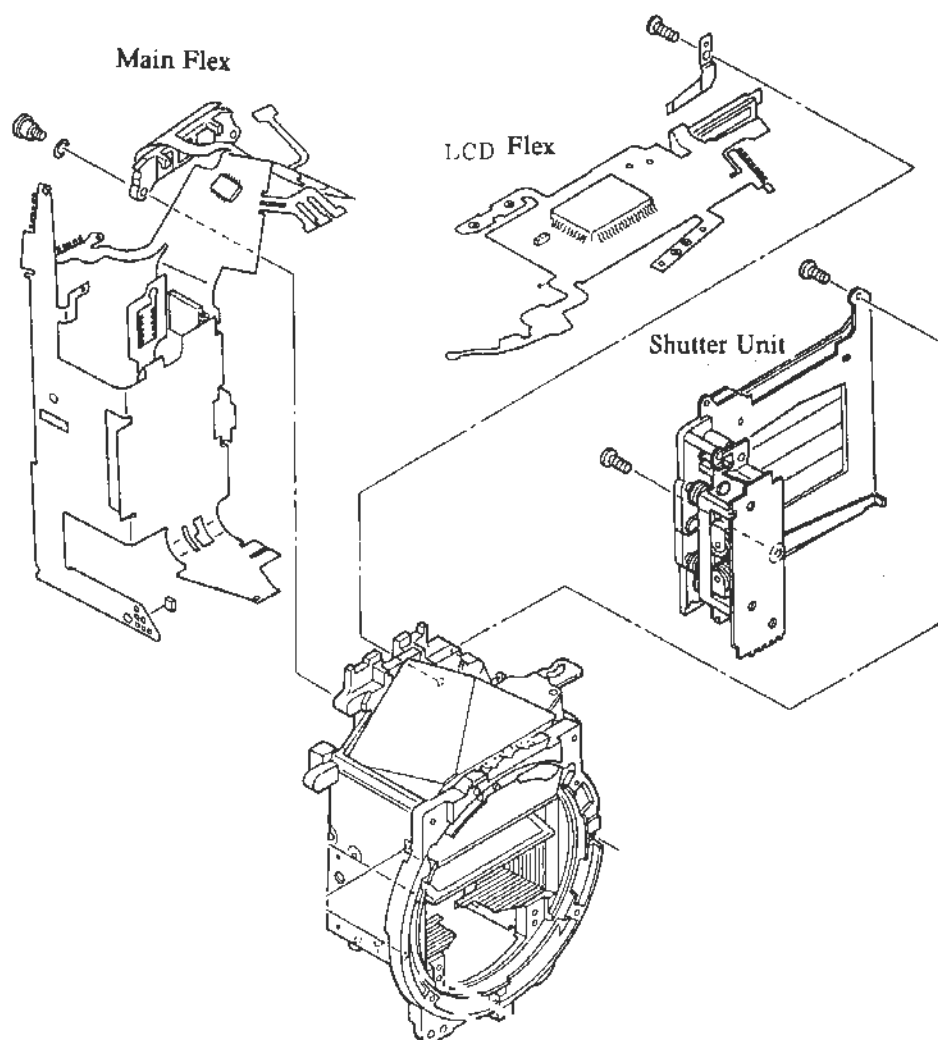


EOS 10/10S have chip capacitor here. EOS 10QD does not.

• DX flex



Main and LCD Flex Removal



If any of the following parts are disturbed or replaced, adjustment is necessary as outlined below.

Parts	Adjustments
Main flex (if replaced)	Electrical adjustments (See EOS System Electrical Adjustments)
Shutter Unit (if replaced)	Shutter overcharge adjustment (See pg. 99)

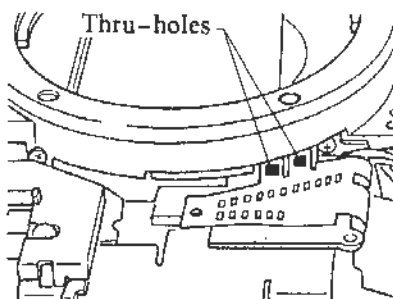
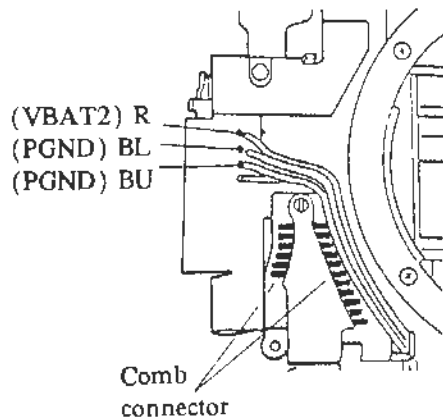
Main Flex and LCD Flex Removal

Disassembly Notes

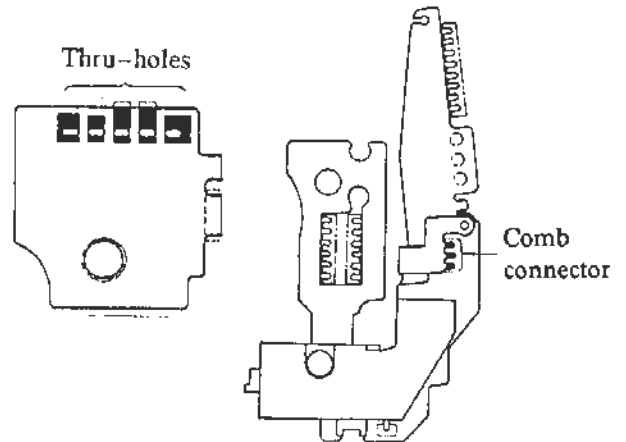
Removal order

- | | Removal order | Remarks [* See details] |
|----|------------------|--|
| 1. | Near grip | 3 leads Comb connector, 2 pts. (BASIS flex) 2 thru-holes (Lens SW) |
| 2. | Shutter Unit | 5 thru-holes (bottom, below BASIS flex) 3 screws |
| 3. | Remote C.B. | Comb connector 1 pt. |
| 4. | Above pentaprism | Comb connector 1 pt (LCD flex) 6 thru-holes |
| 5. | Main flex | 4 positioning holes 1 double stick tape 2 screws (SPD IC) |
| 6. | LCD flex | 1 screw (plate spring) |

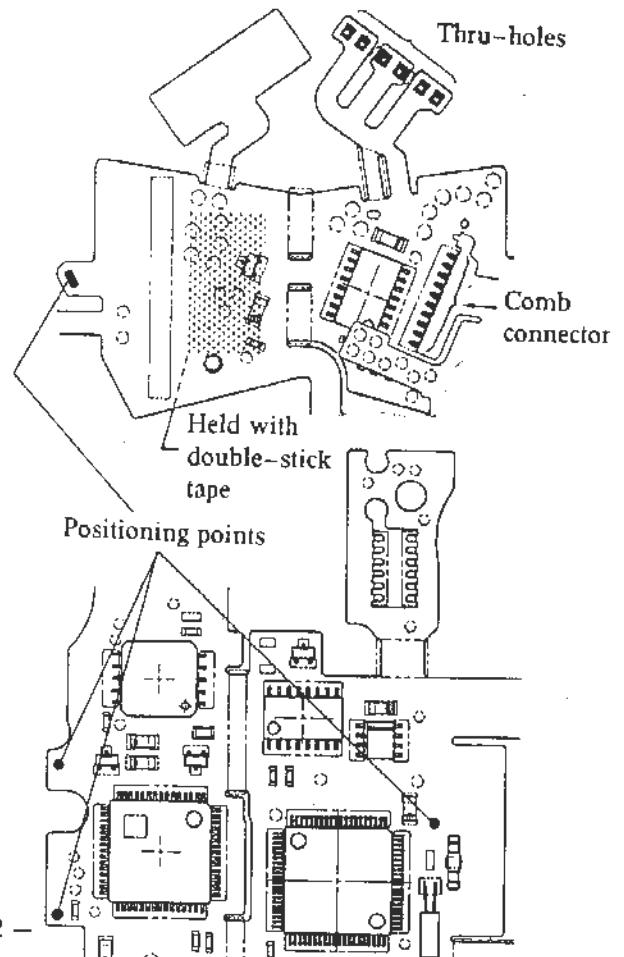
1. Near grip



2. Shutter Unit 3. Remote C.B. (Bottom, below BASIS flex) thru-holes



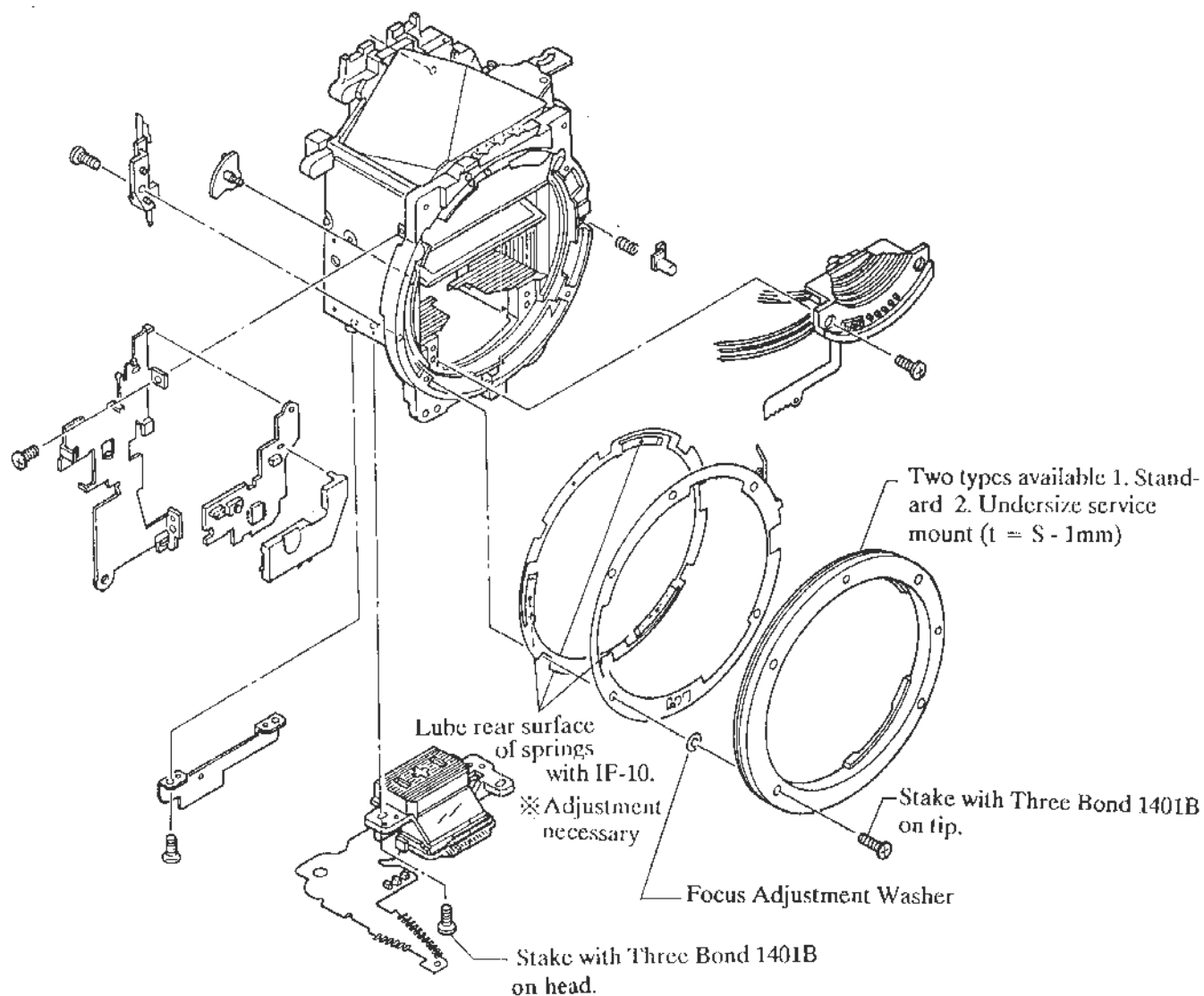
4. Above pentaprism 5. Main flex positioning holes



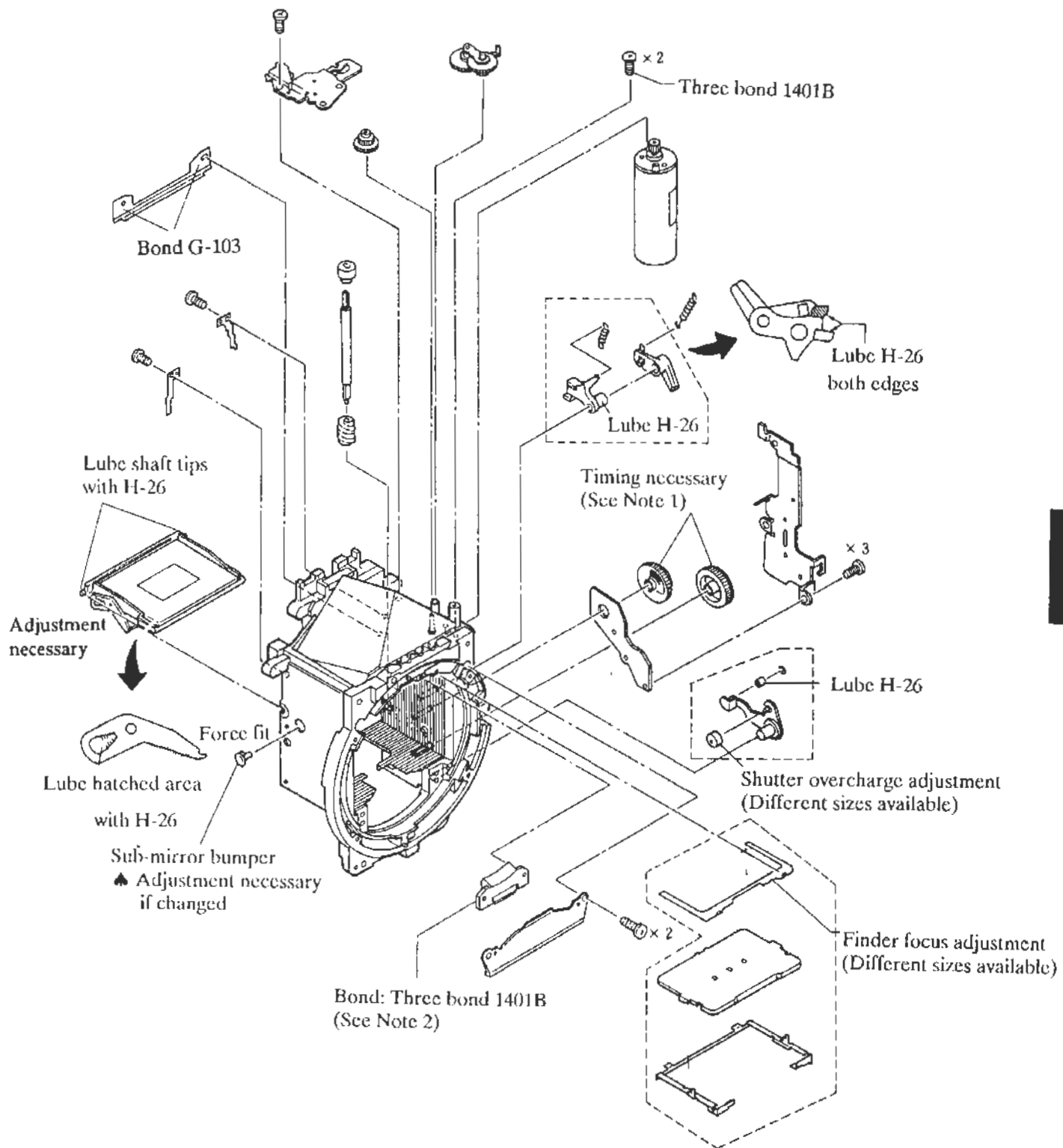
Mirror Box Disassembly (1)

♣ If any of the following parts are disturbed or replaced, adjustment is necessary as outlined below.

Parts	Adjustments
AF Unit	<ul style="list-style-type: none"> • AF Sensor Positioning (Pg. xx)
Mount (if replaced)	<ul style="list-style-type: none"> • FFD Adjustment (Pg. xx) • Finder focus adjustment (Pg. xx)



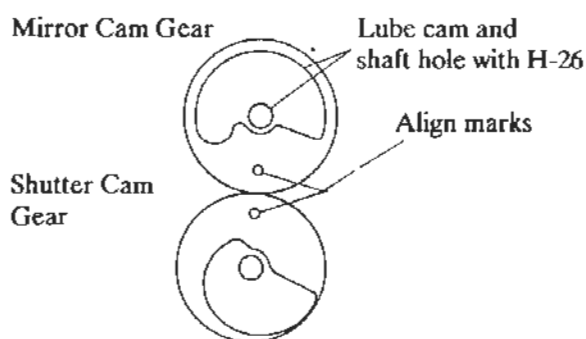
Mirror Box Disassembly (2)



Mirror Box Disassembly (2)

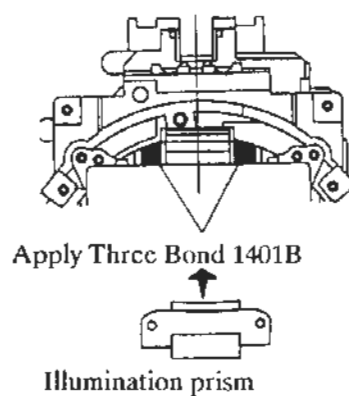
Assembly Notes

Note 1.: Mirror Cam Gear / Shutter Cam Gear Timing



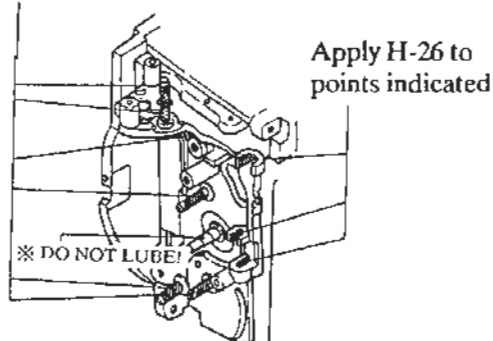
Note 2.: Illumination Prism Bonding

Top front of mirror box

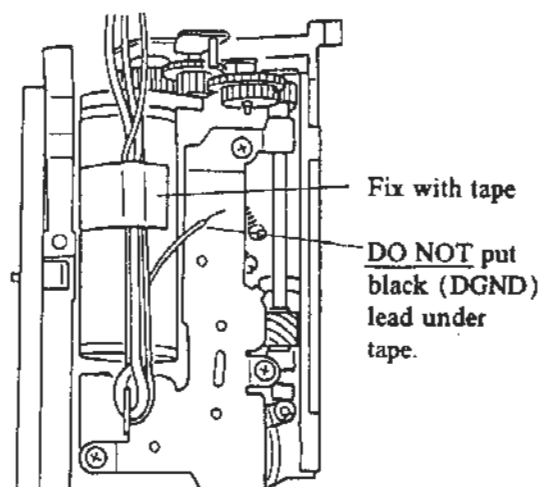


• Lubrication Points (H-26)

Apply H-26 to pinions



• M2 motor & Phase board lead dress



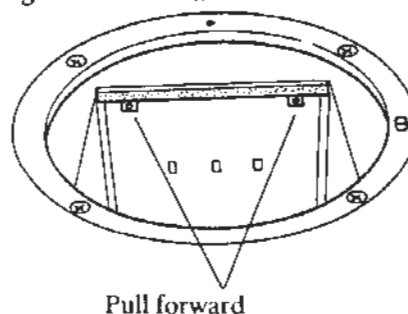
Disassembly Notes

♠ If any of the following parts are disturbed or replaced, adjustment is necessary as outlined below.

Parts	Adjustments
Mirror unit (if replaced)	• Sub-mirror 41.5° adjustment (Pg. xx)

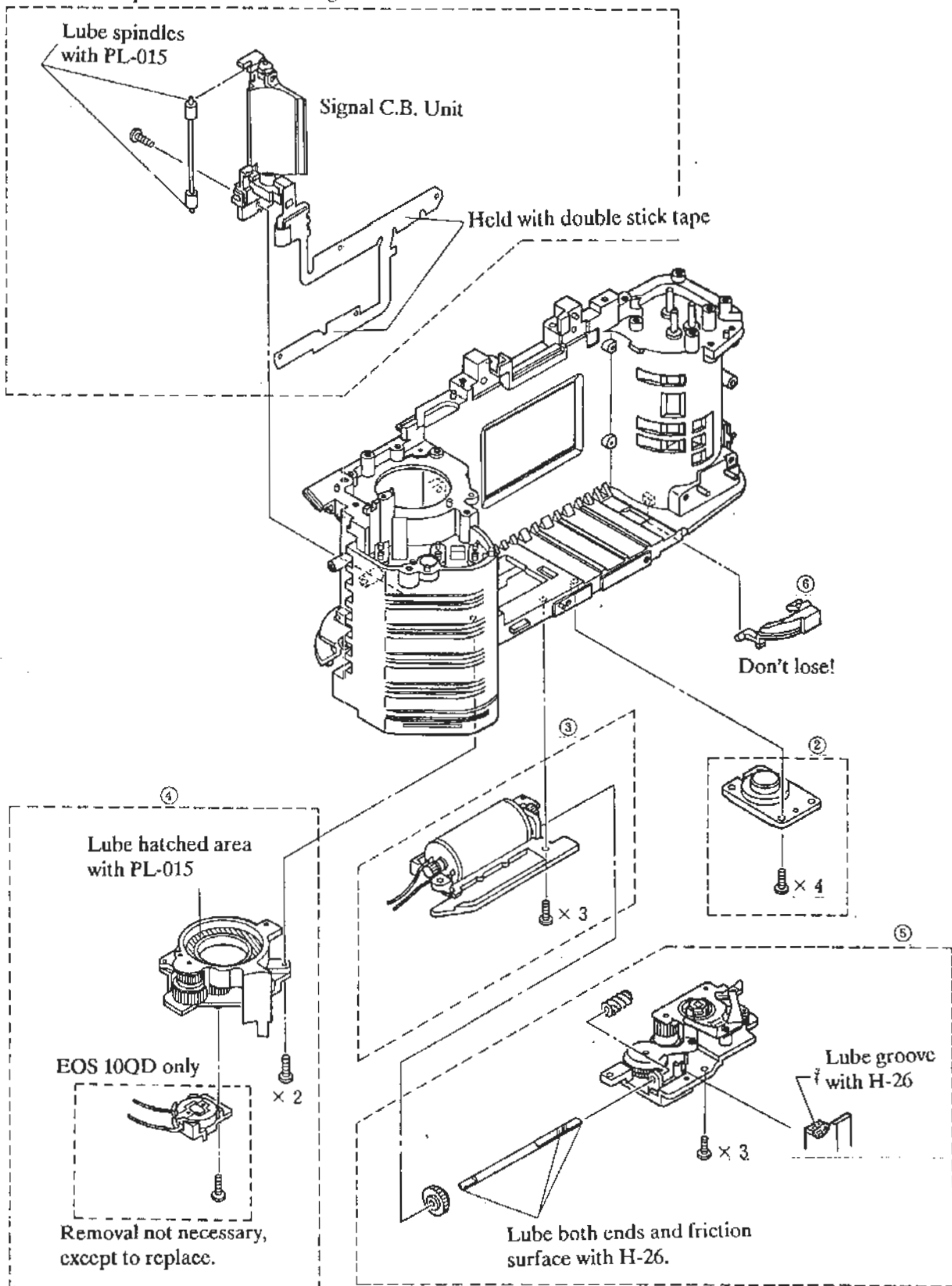
Sub-mirror bumper
(if replaced)

• Focusing screen removal

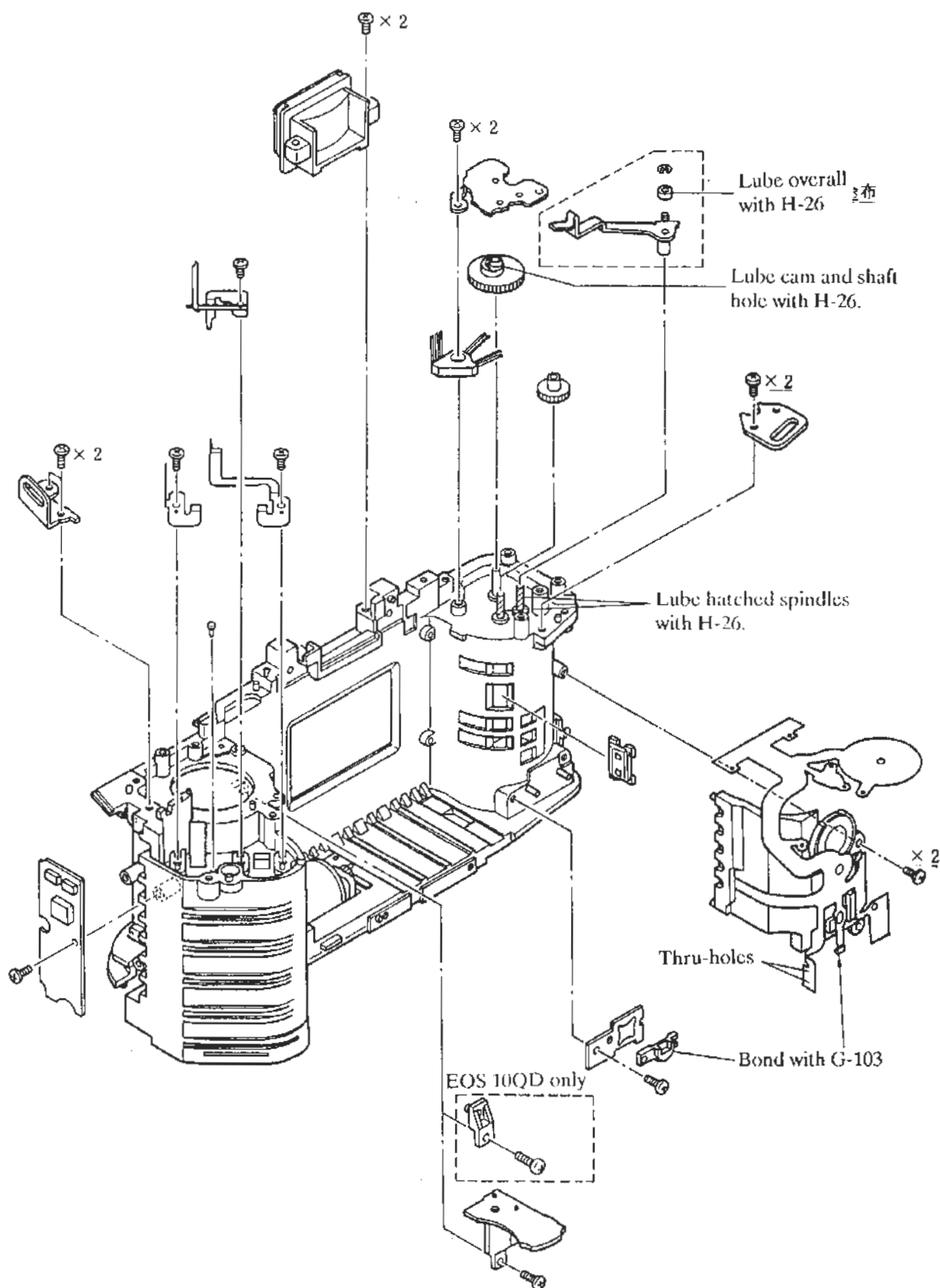


Transport Parts Removal

♣ Removal is possible after removing bottom cover.

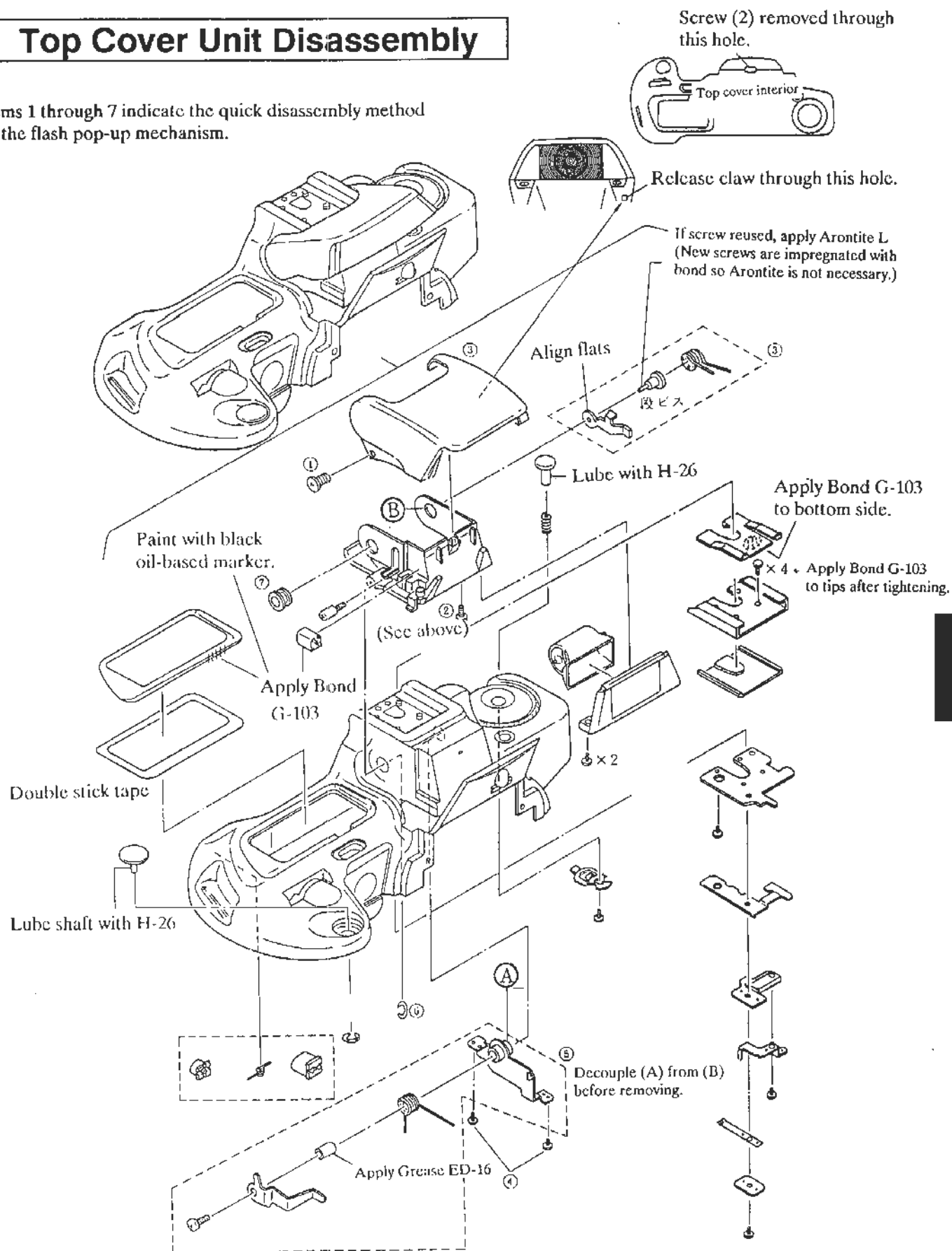


Miscellaneous Disassembly



Top Cover Unit Disassembly

♣ Items 1 through 7 indicate the quick disassembly method for the flash pop-up mechanism.



[Adjustments]

SHUTTER OVERCHARGE

♣ Adjustment is necessary if shutter is replaced.

Purpose

Shutter overcharge is adjusted to insure positive charging of the shutter.

Adjustment

1. Attach the shutter to the mirror box. Push the see-saw lever to the limit of its travel as shown in figure 1. Mark the position of the 2nd curtain drive lever pin at its maximum travel position.
2. Release the see-saw lever and mark the position of the 2nd curtain drive lever pin again.
3. Hook the power leads from the power supply to the unit as shown and apply two to three volts.
4. Note the movement of the pin under motor power. The shutter should charge when the pin is between the two marks, preferably as close as possible to the first (maximum travel) mark. Adjust by replacing the charge collar.

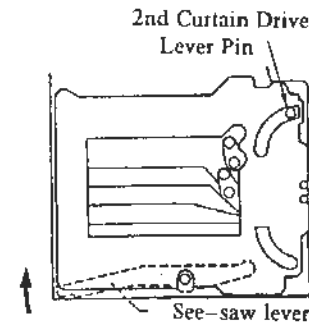
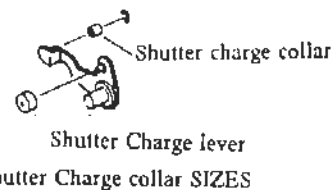


Fig. 1 Shutter Unit
(Rear View)



Shutter Charge collar SIZES

A	SIZE
2.00mm (200)	
2.20mm (220)	
2.40mm (240)	
2.60mm (260)	
2.80mm (280)	
3.00mm (300)	
3.20mm (320)	
3.40mm (340)	

Fig. 3 Drive Lever Pin Detail

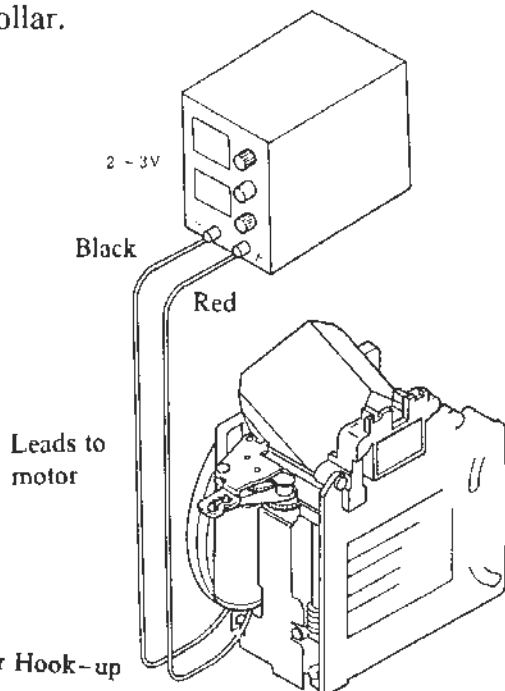
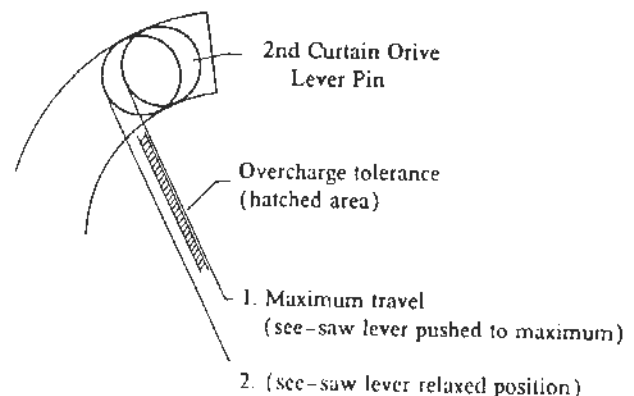


Fig. 2 Power Hook-up

SUB MIRROR (41.5°) ADJUSTMENT

◆ This adjustment is necessary if the mirror box, Sub-mirror bumper, either hinge plate or the mirror unit is disassembled or replaced. (In this model, main mirror angle adjustment is not required.)

Purpose

To insure that the sub-mirror is correctly aligned. The vertical adjustment is required. Horizontal position need only be checked.

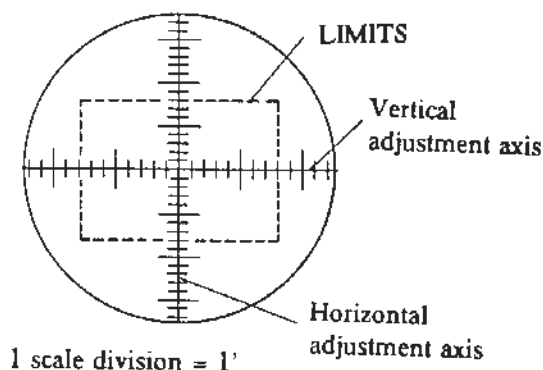
Tools

90° Collimator - 3
1.3mm Allen (hex key) wrench
Sub-mirror gage (41.5°)

Standard

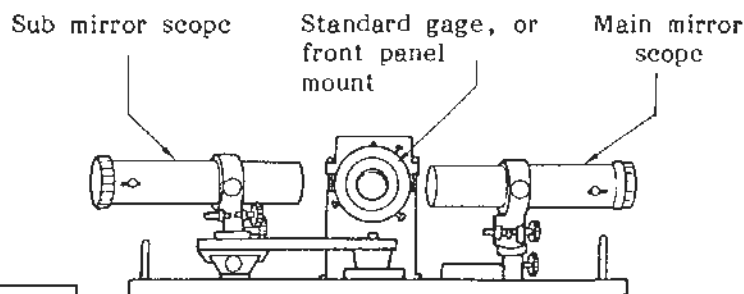
- Vertical: $41.5^\circ \pm 8'$
- Horizontal: $41.5^\circ \pm 8'$

Horizontal alignment is checked only. If out of tolerance, either change the mirror unit or the sub-mirror bumper.



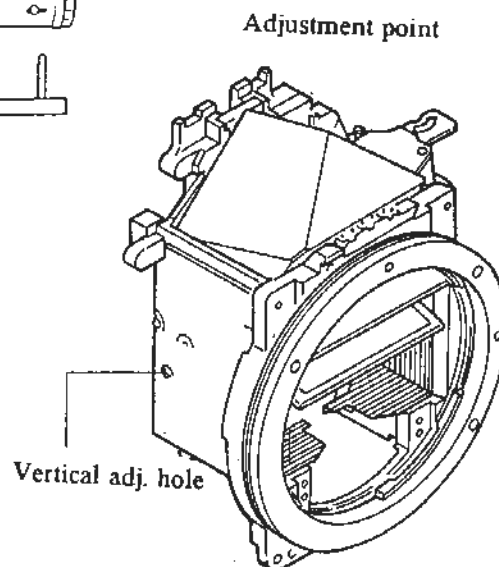
Preparations

Attach the sub-mirror gage (41.5°) and align the collimator as outlined in the collimator instructions.



Adjustment

1. Attach the mirror box, with the AF sensor removed, but the mirror unit in place, to the collimator.
2. Insert the allen wrench into the access hole and adjust the sub mirror.
3. Hook the power leads from the power supply to the unit as shown in figure 2 on the preceding page and apply two to three volts for several seconds so the mirror cycles up and down once. Check the adjustment, and repeat if necessary.



AF SENSOR Positioning (Horizontal)

♣ This adjustment is necessary if the AF sensor is disturbed. Except for being on the opposite axis, the adjustment is similar to the previous EOS cameras.

Purpose

To insure that the AF sensor is correctly aligned to the optical axis. This is a horizontal adjustment only. The vertical position is determined by parts fit.

Tools

EF50mm *f*/1.8 production lens
Point light source (penlight, etc.)

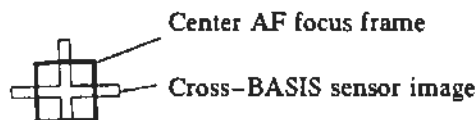


Fig. 1 Adjust

Standard

Adjust so the image of the central cross-BASIS sensor is as close to centered in the center focus frame as possible. It must fall within the frame.

Preparations

- Use one of the listed EOS bodies to stop down the EF lens to *f*/8.
 - EOS 10: Set custom function CF-11 to 'Y'. Set manual mode and set the aperture to *f*/8. Hold the AE lock button down and remove the lens from the camera.
 - EOS-1/EOS 600 series: Set camera in manual mode and the aperture to *f*/8. Hold the depth-of-field button down and remove the lens from the camera.
- Set the lens to manual and the focusing ring to ∞ for the clearest image of the focus frame.

Adjustment


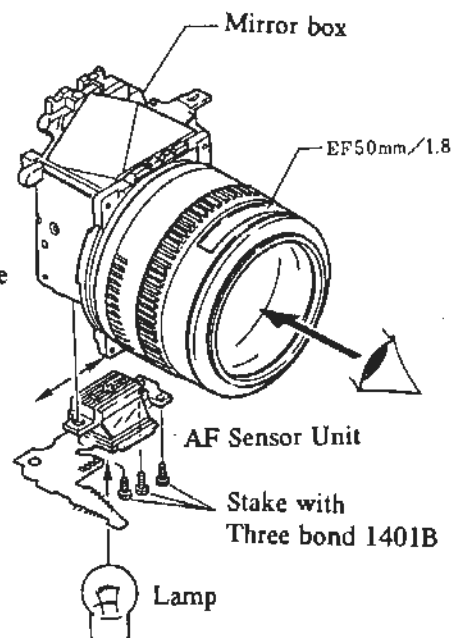
- Install the AF sensor on the mirror box, with mirror and focusing screen installed. Lightly tighten the sensor mounting screws. Install the lens on the mirror box.
- Shine the light source through the AF sensor. Look through the lens and the image should look like figure 1.
 
- If necessary, adjust the sensor position so the cross sensor is centered in the focus frame.
- Cinch down the screws a little more, but not too much, and stake their heads with Three bond 1401B. (Tightening the screws too much can deform the sensor.)

Fig. 2 Adjustment set-up



FLANGE to FOCAL PLANE DISTANCE ADJUSTMENT

♣ This adjustment is necessary if the mirror box or mount has been changed. Always follow this adjustment with the flange to focusing screen distance adjustment,

Purpose

To adjust the flange to pressure plate distance to the system standard to insure lens interchangeability.

Tools

90° Dial gage set (44.14mm or 42.14 set plus 2mm adaptor ring)

Standard

44.14 ± 0.03mm to outer rails with optical flat

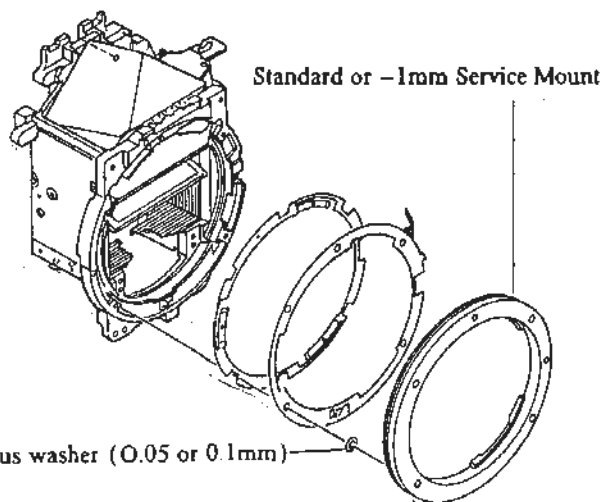
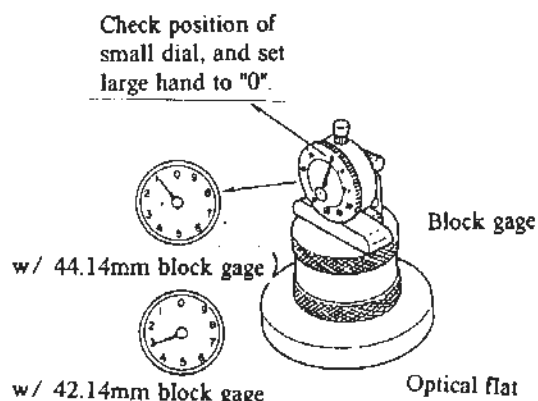
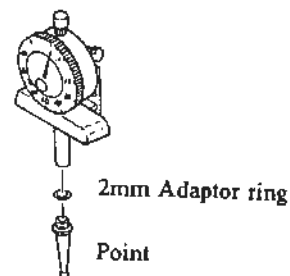
42.14 ± 0.03mm to center of pressure plate
(This data is used for AF accuracy adjustment in the electrical adjustments.)

Preparations

1. Install the 2mm adaptor between the dial gage and point as shown in figure one (the same point is used for both FD and EF lensed bodies).
2. Use the 44.14mm block gage if available. If not, use the 42.14mm gage, but remember the different "zero" point (Fig. 2). Check the position of the needle on the small dial and set the large dial to '0'.

Adjustment

1. Set the camera to 'bulb', open the shutter and remove the battery. The shutter will remain over.
2. Place the dial gage on the mount and measure the FFD.
3. Adjust by adding or removing focus washers. If the error is positive and there are no washers installed, install the special -1mm service mount and add washers to adjust,



FLANGE to FOCUSING SCREEN DISTANCE ADJUSTMENT

♣ This adjustment is necessary if the flange to focal plane distance adjustment has been performed.

Purpose

To insure that the FFD and FFS distances correspond.

Tools

- Production EF50mm f/1.8 lens
- Magnifier AD-S
- 600mm Rangefinder collimator

Adjustment

1. Install the magnifier on the cyclopiece and adjust it to your eyesight. (The lens should not be installed at this point.)

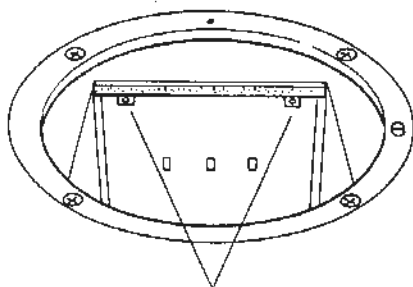
• Procedure

Aim the camera at a bright subject (white wall or light box) about EV 12 and turn the ring until the focusing frame is as sharp as possible.

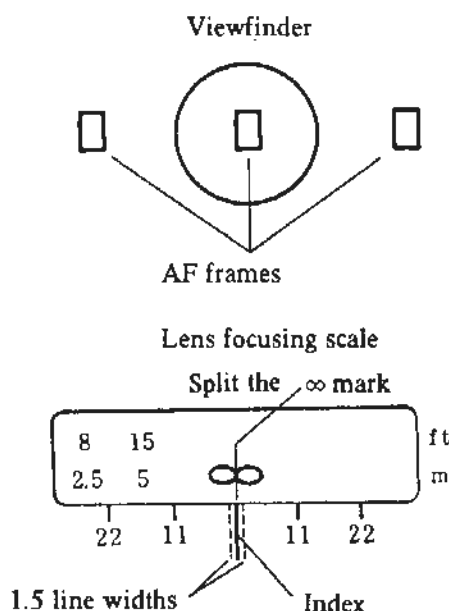
2. Install the lens, set to manual, and set it to infinity. The Place the dial gage on the mount and measure the FFD. (Up to ± 0.75 index line width is acceptable.)
3. Find a sharp edged target at least 250 meters distant. Change finder focus washers so the target is as sharp as possible.

If the collimator is used, the scale should be as sharp as possible.

• Focus Washer Replacement

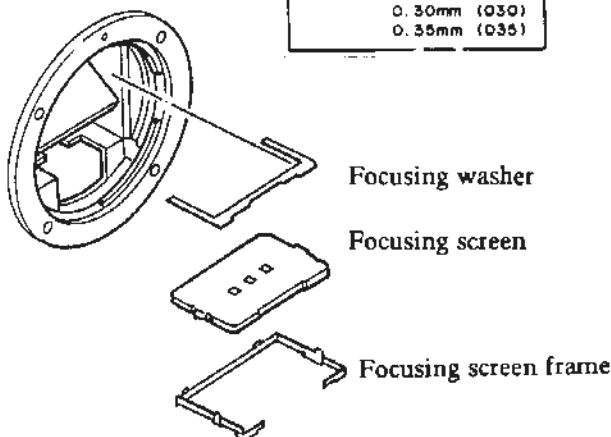


Pull the focusing screen down and the focus washer will come out with the screen.



Focusing washers

A	SIZE
0.05mm (005)	
0.10mm (010)	
0.15mm (015)	
0.20mm (020)	
0.25mm (025)	
0.30mm (030)	
0.35mm (035)	



IV. ADDITIONAL INFORMATION

Contents

<i>Camera Case / Lens Compatibility</i>	<i>104</i>
<i>EOS System Compatibility.....</i>	<i>105</i>
<i>SLR System Accessories other than EOS.....</i>	<i>106</i>
<i>Comperitor Comparison Table</i>	<i>107</i>
<i>Parts Illustrations</i>	

CAMERA CASE / LENS COMPATIBILITY

◎ : Best Fit (cap, filter, and hood O.K.)

○ : Loose Fit

△ : Restrictions apply as noted

X : Will not fit

	Lens (mm / f No.)	Semi-hard case (EH3)		Remarks
		L	LL	
Wide angle	EF15mm/2.8FE	○	△	LL: Quite large
	EF24mm/2.8	○	△	
	EF28mm/2.8	○	△	
	EF50mm/1.8	○	△	
Standard	EF50mm/1.0L	X	△	LL: Somewhat tight with cap and filter, hood will not fit
Telephoto	EF85mm/1.2L	X	△	LL: Somewhat tight with cap, filter and hood will not fit
	EF135mm/2.8SF	X	△	LL: Filter will not fit, cap and hood O.K.
	EF200mm/1.8L	X	X	
	EF300mm/2.8L	X	X	
	EF600mm/4L	X	X	
Standard Zoom	EF20-35mm/2.8I	X	△	LL: Hood will not fit, cap and filter O.K.
	EF28-70mm/3.5-4.5	◎	△	LL: Quite large
	EF28-70mm/3.5-4.5II	◎	△	
	EF28-80mm/2.8-4.0L	X	X	
	EF35-70mm/3.5-4.5	◎	△	LL: Quite large
	EF35-70mm/3.5-4.5A	◎	△	
	EF35-80mm/4.0-5.6PZ	◎	○	
	EF35-105mm/3.5-4.5	X	○	
Telephoto zoom	EF35-135mm/3.5-4.5	X	△	LL: Filter will not fit, cap and hood O.K.
	EF35-135mm/4.0-5.6USM	X	◎	
	EF50-200mm/3.5-4.5	X	X	
	EF50-200mm/3.5-4.5L	X	X	
	EF70-210mm/4.0	X	X	
	EF70-210mm/3.5-4.5USM	X	X	
	EF80-200mm/2.8I	X	X	
	EF100-200mm/4.5A	X	X	
	EF100-300mm/4.5-5.6USM	X	X	
	EF100-300mm/5.6	X	X	
	EF100-300mm/5.6L	X	X	
Special purpose	EF50mm/2.5M	○	△	LL: Quite large
	EF50mm/2.5M+ LIFE SIZE CONVERTER EF	X	△	LL: Quite large
	EF100mm/2.8M	X	△	

EOS SYSTEM COMPATIBILITY

- ◎ Fully compatible
 ● Limited compatibility as indicated
 × Not compatible

1. Interchangeable Lenses

No.	Product name	Com- patibility
1	EF 15 mm f/2.8FE	◎
2	EF 24 mm f/2.8	◎
3	EF 28 mm f/2.8	◎
4	EF 50 mm f/1.0L	◎
5	EF 50 mm f/1.8	◎
6	EF 50 mm f/2.8 MACRO	◎
7	EF 85 mm f/1.2L	◎
8	EF 100 mm f/2.8 MACRO	◎
9	EF 135 mm f/2.8SF	◎
10	EF 200 mm f/1.8L	◎
11	EF 300 mm f/2.8L	◎
12	EF 600 mm f/4.0L	◎
13	EF 20 mm f/2.8L	◎
14	EF 28~70 mm f/3.5-4.5	◎
15	EF 28~60 mm f/2.8-4.0L	◎
16	EF 35~70 mm f/3.5-4.5	◎
17	EF 35~70 mm f/3.5-4.5	◎
18	EF 35~80 mm f/4-5.6PZ	◎
19	EF 35~105 mm f/3.5-4.5	◎
20	EF 35~135 mm f/3.5-4.5	◎
21	EF 35~135 mm f/4-5.6 (USM)	◎
22	EF 50~200 mm f/3.6-4.6	◎
23	EF 50~200 mm f/3.6-4.6 L	◎
24	EF 70~210 mm f/3.6-4.5 (USM)	◎
25	EF 70~210 mm f/4.0	◎
26	EF 60~200 mm f/2.8L	◎
27	EF 100~200 mm f/4.5	◎
28	EF 100~200 mm f/4.5A	◎
29	EF 100~300 mm f/5.6	◎
30	EF 100~300 mm f/5.6L	◎
31	EF 100~300 mm f/4-5.6 (USM)	◎
32	1.1X SIZE CONVERTER EF	◎
33	EXT EF 2 ×	◎
34	EXT EF 1.4 ×	◎
35	LENS CONVERTER FD EOS	● *

*: To avoid overexposure use at f/5.6 or larger.

Lens Converter FD-EOS Exposure Variance

f/No	1.8	2.8	4	5.6	8	11	16
Evaluative	0	-0.15	-0.1	+0.2	+0.5	+0.7	+0.8
Partial	-0.3	-0.2	0.2	+0.1	+0.6	+0.8	+0.9

2. Speedlites

No.	Product name	Com- patibility
1	420EZ	◎
2	430EZ	◎
3	300EZ	◎
4	160E	◎
5	ML-3 set	◎
6	Multi-flash system	◎

3. Grips and Motor Drives

No.	Product name	Com- patibility
1	GR-E1	×
2	GR10	×
3	GR20	×
4	GR30	×
5	GR40	×
6	GR50	×
7	GR60 (EOS10 extension)	◎
8	Power Drive Booster E1	×
9	Hand Strap E1 (for PDB E1) (for PDB E1)	×

4. Viewfinder Accessories

No.	Product name	Com- patibility
1	Eyecup Ec	×
2	Eyecup E	×
3	Eyecup Eb	◎
4	Dioptic compensation lenses E (10 types)	◎
5	Focusing screens E (7types)	×
6	Focusing screens Ec (7types)	×

5. Data Backs

No.	Product name	Com- patibility
1	Command Back E1	×
2	Quartz Date Back E	×
3	Technical Back E	×
	Keyboard Unit TB	
	Interface Unit TB	

6. Filters

No.	Product name	Com- patibility
1	Circular PL-C48 mm	◎
2	polarizing PL-C52 mm	◎
3	filters PL-C58 mm	◎
4	PL-C72 mm	◎

7. General Purpose EOS Cases

No.	Product name	Com- patibility
1	Snap Case SA-4	◎
2	Snap Case SB-4	◎
3	EOS 600 series cases	×
4	EOS-1 cases	×
5	EOS 10 series cases	◎
6	EOS 700 series cases	×

SLR SYSTEM ACCESSORIES OTHER THAN EOS SYSTEM

1. Lens Mount Accessories:
No FD, AC or special lenses, or accessories which attach to the lens mount, for earlier SLRs (F-1, T & A-series, etc.) are usable.
2. Motor Drives, Power Winders:
No drives for earlier SLRs are usable.
3. Interchangeable Backs:
No interchangeable backs from earlier system are usable.
4. Remote Control Units:

Product Name	Compatibility	Notes
W. Controller LC-1	●	1, 6
I. Timer TM-1QD	●	1
Remote Switch 60 T3	⊙	
Remote Switch AD T3	⊙	
Cable Release AD T3	⊙	
Remote Switch 60	●	1
Remote Switch 60MF	●	1
Remote Switch 3	●	1
Ext. Cord E1000	●	1
Ext. Cord 1000 T3	⊙	
W. Controller LC-2	●	6

5. Flash Units:

Product Name	Compatibility	Notes
Speedlite 577G	●	2, 3
Speedlite 533G	●	2, 3
Speedlite 199A	●	3
Speedlite 188A	●	3
Speedlite 166A	●	3
Speedlite 244T	●	3
Speedlite 277T	●	3
Speedlite 299T	●	3
Speedlite 300TL	●	4
Speedlite 300TL Acc.	x	
Macro Ring Lite ML-1	x	
Macro Ring Lite ML-2	x	
Synco Cord A	x	

6. Viewfinder Accessories:

Product Name	Compatibility	Notes
F-1 (old) Finders	x	
F-1 (new) Finders	x	
Angle Finder A2	⊙	
Angle Finder B	⊙	
Rubber Eyepiece RG	x	
Eye Cup 3R	x	
Eye Cup 4S	⊙	
Eye Cup T	x	
Magnifier R	x	
Magnifier S	⊙	
Magnifier Adp. R	x	
Magnifier Adp. S	⊙	
F-1 Flash Couplers	x	
Dioptric Lenses R	x	
Dioptric Lenses S	⊙	
Focusing Screens F-1	x	
Focusing Screens NF-1	x	
Focusing Screens A-1	x	
Focusing Screens AE-1P	x	

7. Close-up, Macro:

Product Name	Compatibility	Notes
Close-up Lenses	●	8
Canon Release 30, 50	●	5
Copy Stand 4, 5	⊙	
Copy Light CL-1	⊙	
Camera Holder F4	⊙	
Tripod Adaptor A	⊙	

(In general, earlier close-up and macro accessories are not usable. Only usable ones are listed.)

8. Filters:

Product Name	Compatibility	Notes
34mm Drop-in (8 types)	x	
Filter 48mm (17 types)	●	7
Filter 52mm (15 types)	●	7
Filter 55mm (17 types)	●	7
Filter 58mm (17 types)	●	7
Filter 72mm (17 types)	●	7
Filter Series IX	x	
Softmat #1 52mm	⊙	
Softmat #1 55mm	⊙	
Softmat #1 58mm	⊙	
Softmat #2 52mm	⊙	
Softmat #2 55mm	⊙	
Softmat #2 58mm	⊙	
PL-L Filter 52mm	x	
PL-L Filter 55mm	x	
PL-L Filter 58mm	x	
PL-L Filter 72mm	x	
Step-up 52 - 55mm	⊙	
Gelatin F. Holder	x	
Drop-in 34mm, 48mm	●	7, 9
Gelatin F. Holder	●	

Notes:

1. Remote Switch Adaptor T3 is necessary.
2. Camera bracket is not completely stable (only one guide engages).
3. Aperture must be set manually.
4. Only TTL auto mode is usable.
5. Cable Release Adaptor T3 is necessary.
6. Only AI Servo or Manual focus modes usable. One shot may not release.
7. Autofocus is possible with Skylight, UV and ND filters. The maximum number of filters usable is shown in lens charts. Use manual focusing with colored or special effects filters. In-focus indicator is not always reliable.
8. Autofocus should not be used because the additional weight of the close-up lenses is too great a load for the focusing mechanism. Use manual focusing.
9. Use the 'Regular IX' filter. Do not use 34mm gelatine filter holder.

COMPETITIVE PRODUCTS COMPARISON CHART

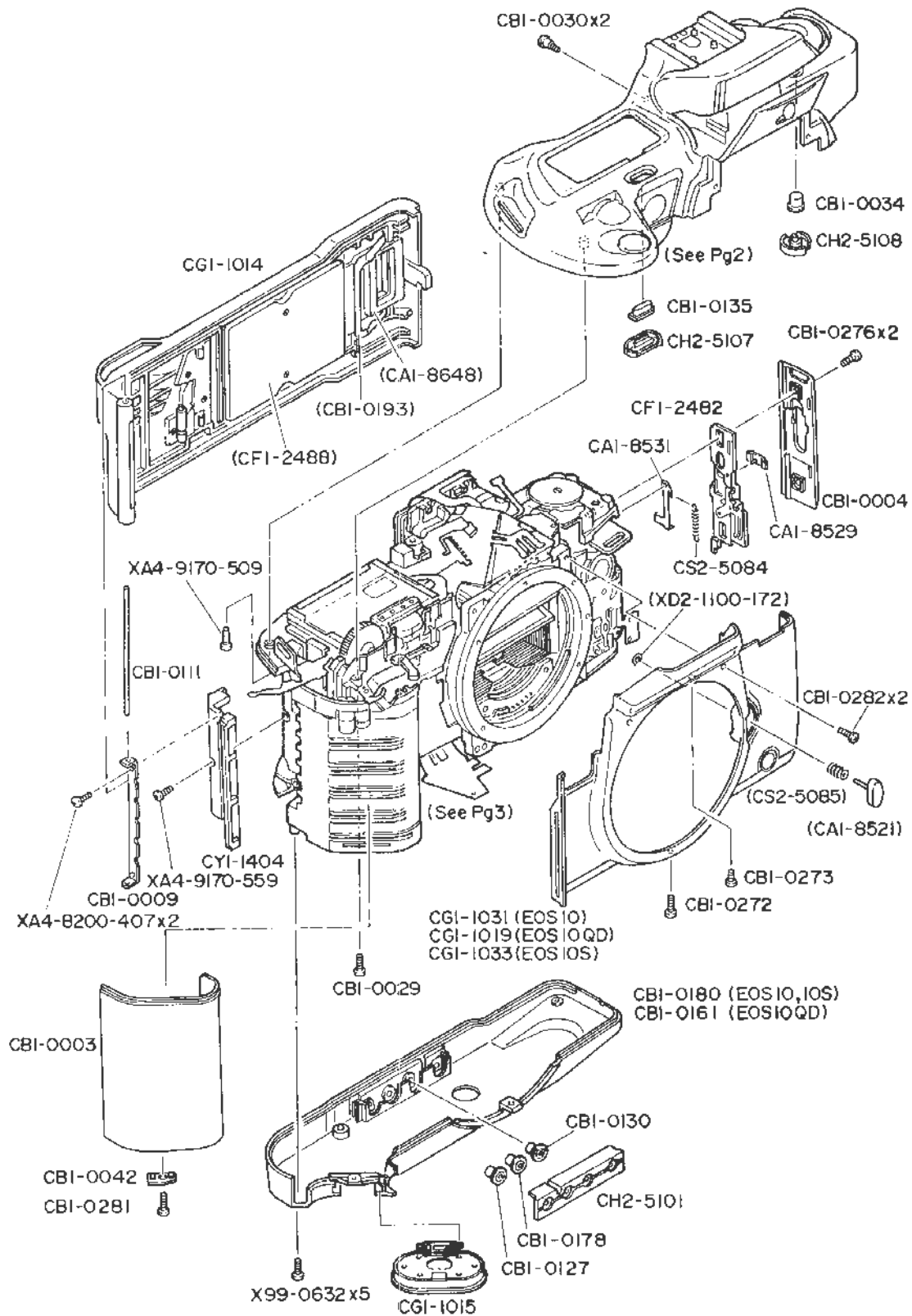
		→ Maker	CANON	CANON	MINOLTA	NIKON
↓ Item		→ Model	EOS 10 (Japan)	EOS 630	7000i	N8008
AF	Wide-area focusing		● [I+I]	- [-]	● [I-I]	- [-]
	3-Point selective focusing		●	-	-	-
	One-shot		●	●	●	●
	Servo/Predictive focusing		-/●	-/●	-/●	●/-
	Manual		●	●	●	●/-
	Indication LED/beeper		●/●	●/●	●/●	●
	Focusing speed		★★★★	★★★★	★★★	★★
	Working range (EV)		0~18	+1~18	0~18	-1~18
	AF auxiliary light		● (3)	-	● (1)	-
Viewfinder	Magnification (50mm/infinity)		0.74×	0.8×	0.84×	0.75×
	Interchangeable screens (type)		-	● (7)	● (3)	● (3)
	Superimposed AF frame		●	-	-	-
	Information display		LCD	LCD	LCD/LED	LCD
	Depth-of-field check		●	●	-	●
Full Auto mode	① Standard		●	●	▲	-
	② Snapshot		-	●	-	-
	③ Portrait		●	●	○ Card	-
	④ Landscape		●	●	-	-
	⑤ Close-up		●	●	○ Card	-
	⑥ Sports		●	●	○ Card	-
	⑦ Indoor party		-	●	-	-
	⑧ Input by Bar-code		●	-	-	-
	⑨ Input by Card		-	-	●	-
Metering	Evaluative		● 8-zone	● 6-zone	● 6-zone	● 5-zone
	AF point-coupled evaluative		●	-	●	-
	Partial		●	●/-	Spot ●/-	-
	Metering range (normal temp.)		-1~20	-1~20	0 (s.3)~20	0~20
	ISO film speed		6~6400	6~6400	25~6400	6~6400
Exposure control	Shutter-priority AE		●	●	●	●
	Aperture-priority AE		●	●	●	●
	Depth-of-field AE		●	●	△ Card	-
	Program	Intelligent	●	●	●	MP-3 types
		M-Shift	●	●	●	●
		Bar-code	●	-	-	-
	Camera shake prevention AE		●	-	-	-
	Manual		●	●	●	●
	Flash	Partial metering	●	-	-	-
		A-TTL	●	●	-	-
		TTL	●	●	●	●
	Exposure compensation	AEB	●	●	○ Card	○ DB
		Manual	●	●	●	●
	AE lock A/M		●/●	●/●	●/●	●/●
Multiple exposure (preset)			●	●	-	●
Shutter	Speed range (sec)		1/4000~30	1/2000~30	1/4000~30	1/8000~30
	X-sync speed (sec)		1/125	1/125	1/125	1/125
Film transport (24EX film)	Fully automatic		●	●	●	▲
	Winding speed (f/s)		max 5	max 5	max 3	max 3.3
	Rewind speed (sec)		8	6	8	11
	Shooting capacity (rolls)		60/25	75/-	65/-	180/-

		→ Maker	CANON	CANON	MINOLTA	NIKON
↓ Item		→ Model	EOS 10 (Japan)	EOS 630	7000i	N8008
Flash	Built-in/externally attached		●/●	-/●	-/●	-/●
	Backlight/low-light auto firing		● [●/-]	-	-	-
	Pop-up/ retraction	Automatic	● [●/-]	-	-	-
		Forced ON	●	-	-	-
		Forced OFF	●	-	-	-
	GNo. (ISO 100 m/ft)		12	-	-	-
Recycle time			2	-	-	-
External indications			LCD dial	LCD	LCD	LCD
Custom functions (types)			● (14)	● (7)	(9) Card	-
Power source			2CR5×1	2CR5×1	2CR5×1	LR6×4
Wireless remote control			●	-	-	-
Dimensions (W × H × D) mm			158×106×70	148-108.3-67.5	153×93×69	153.5-102.5-67.5
Weight (without battery) gr			585 [580/580]	680 (QD)	590	695
Release date			(1990.03.01)	1989.04.07	1988.05.29	1988.06.01
Price (Japan)			¥ 90,000 (QD)	¥ 85,000 (QD)	¥ 80,000	¥ 104,000

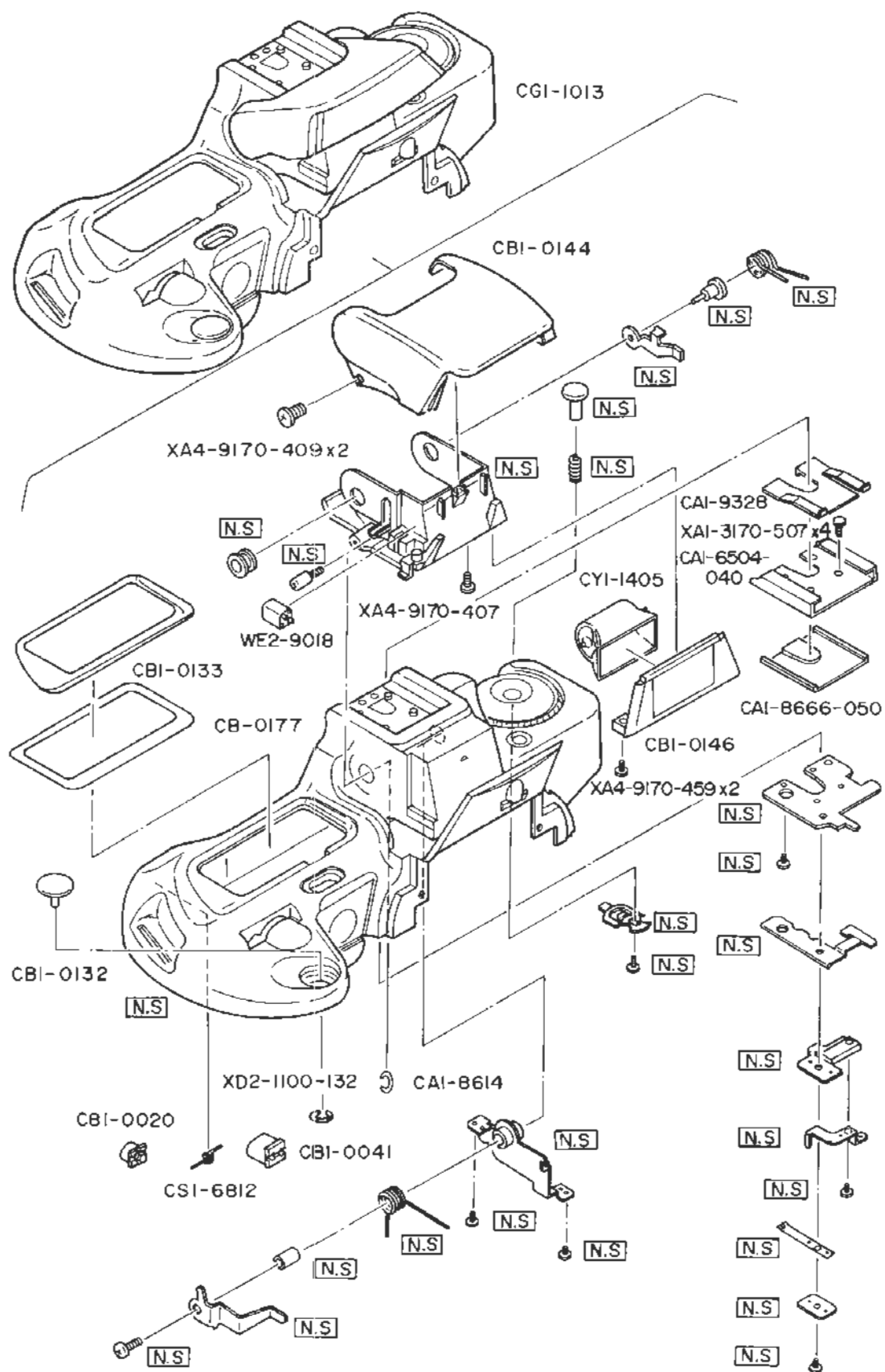
* Shooting capacity Left: Without flash
 Right: Flash used 50% of time

* CF: Custom Function S: Spot metering DB: Data back

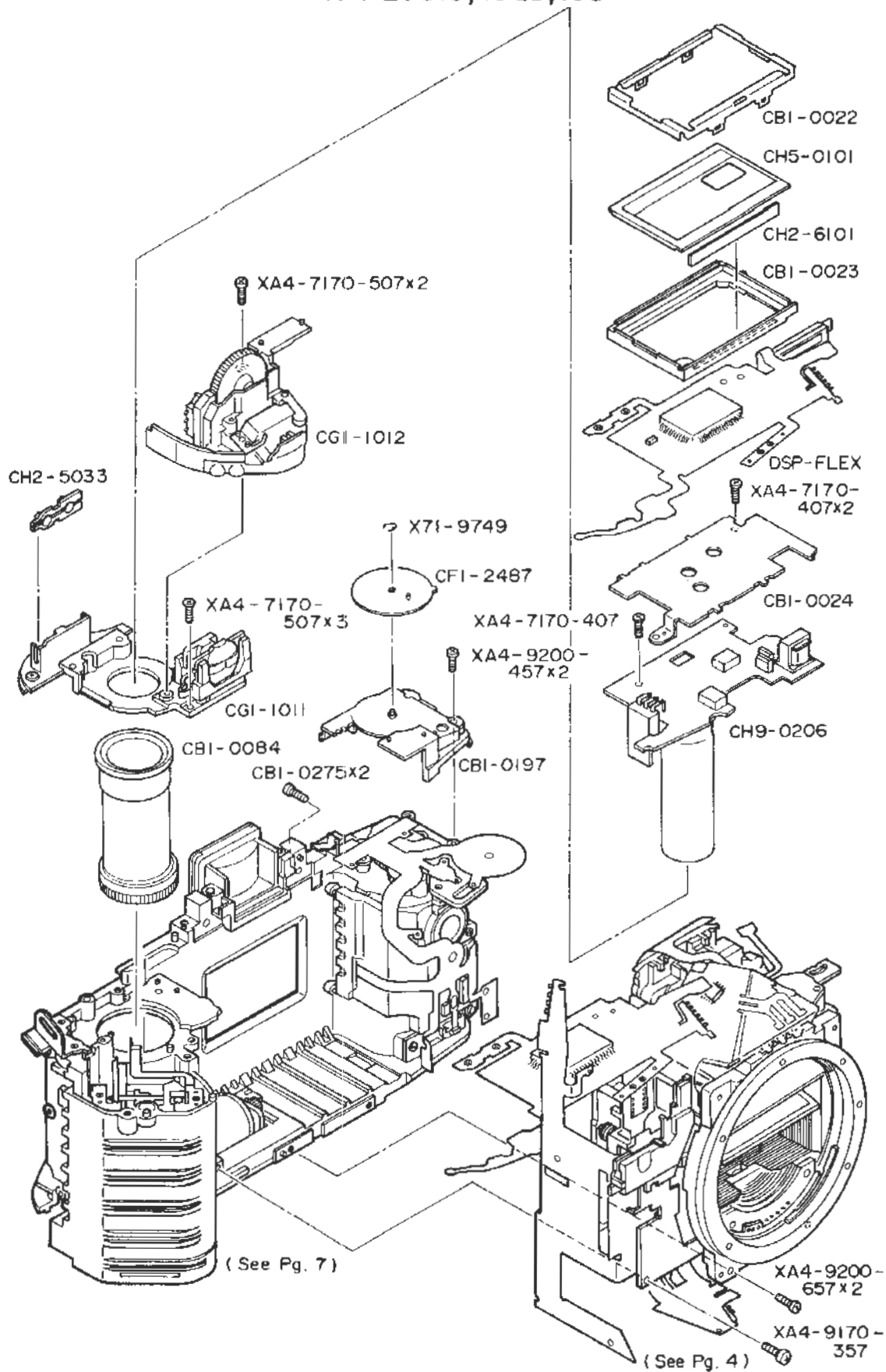
CANON EOS 10, 10QD, 10S



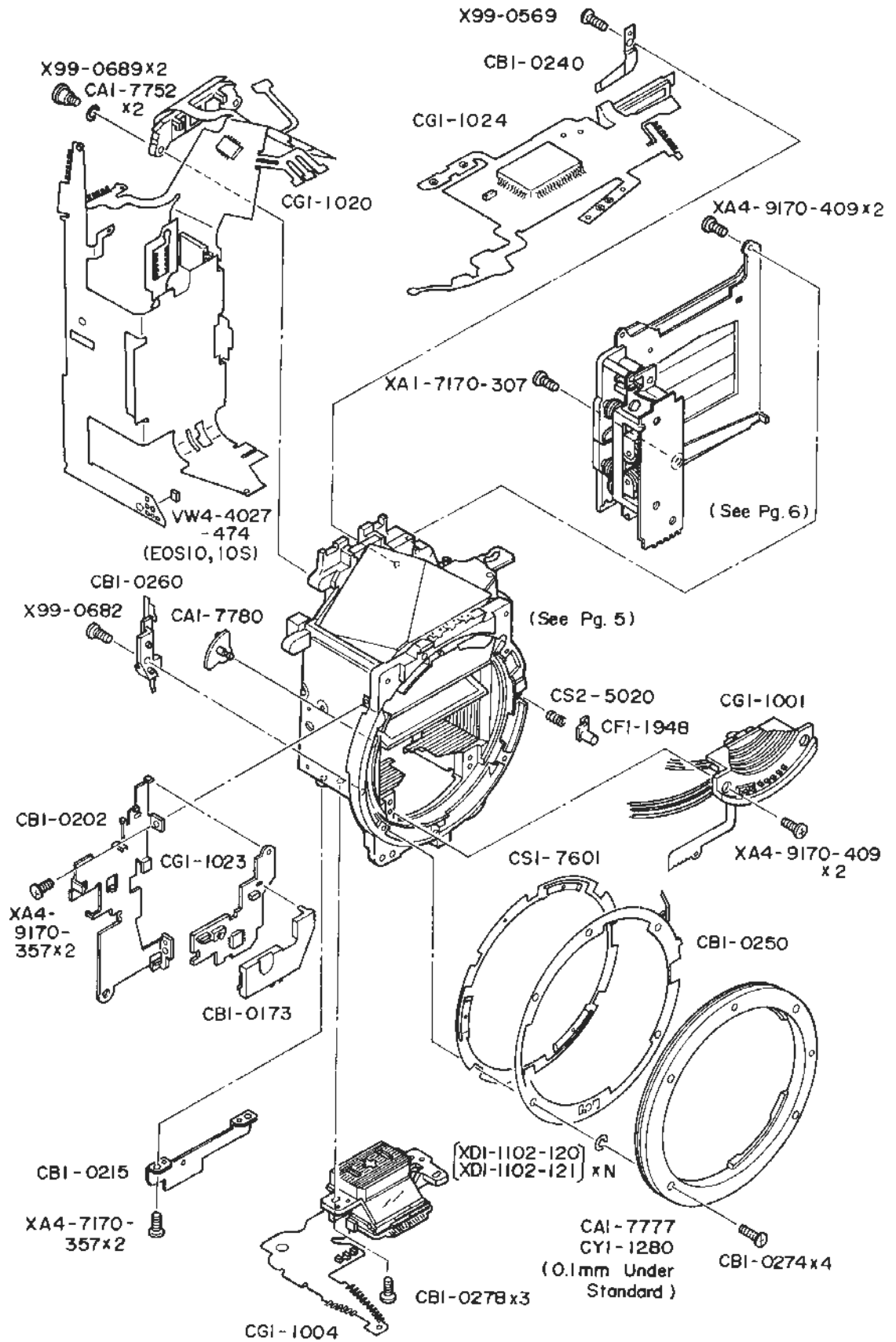
CANON EOS 10, 10QD, 10S



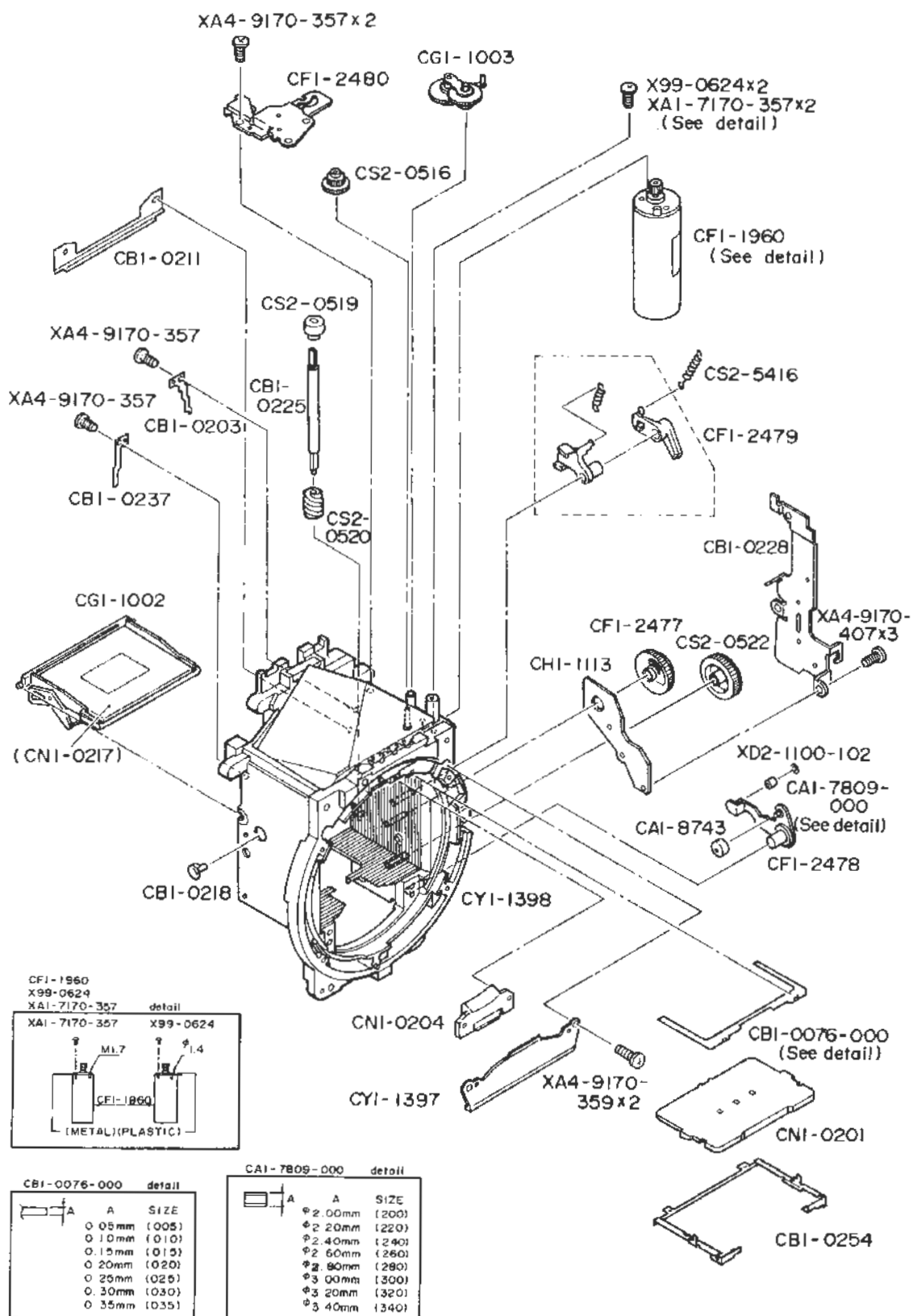
CANON EOS10, 10QD, 10S



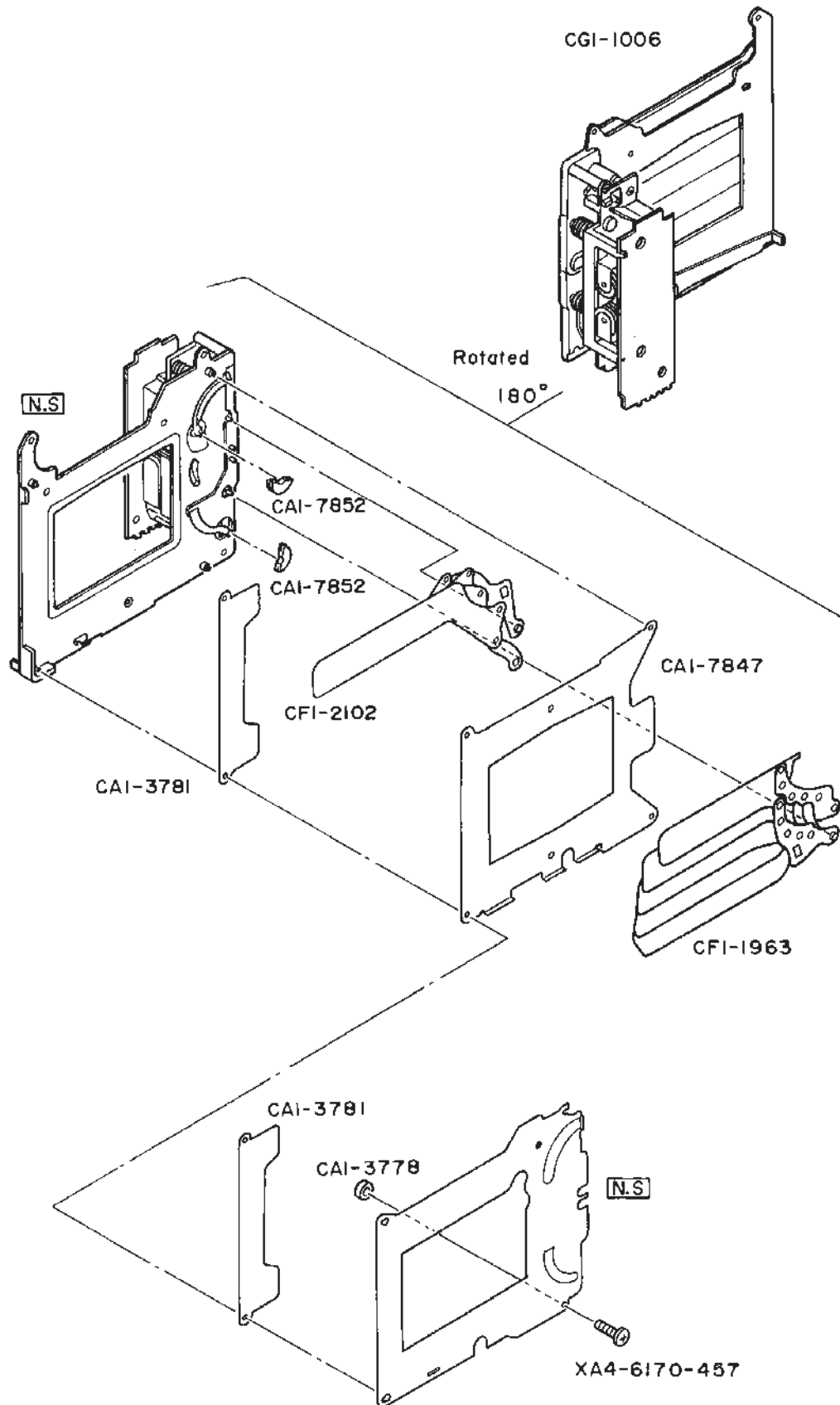
CANON EOS10, 10QD, 10S



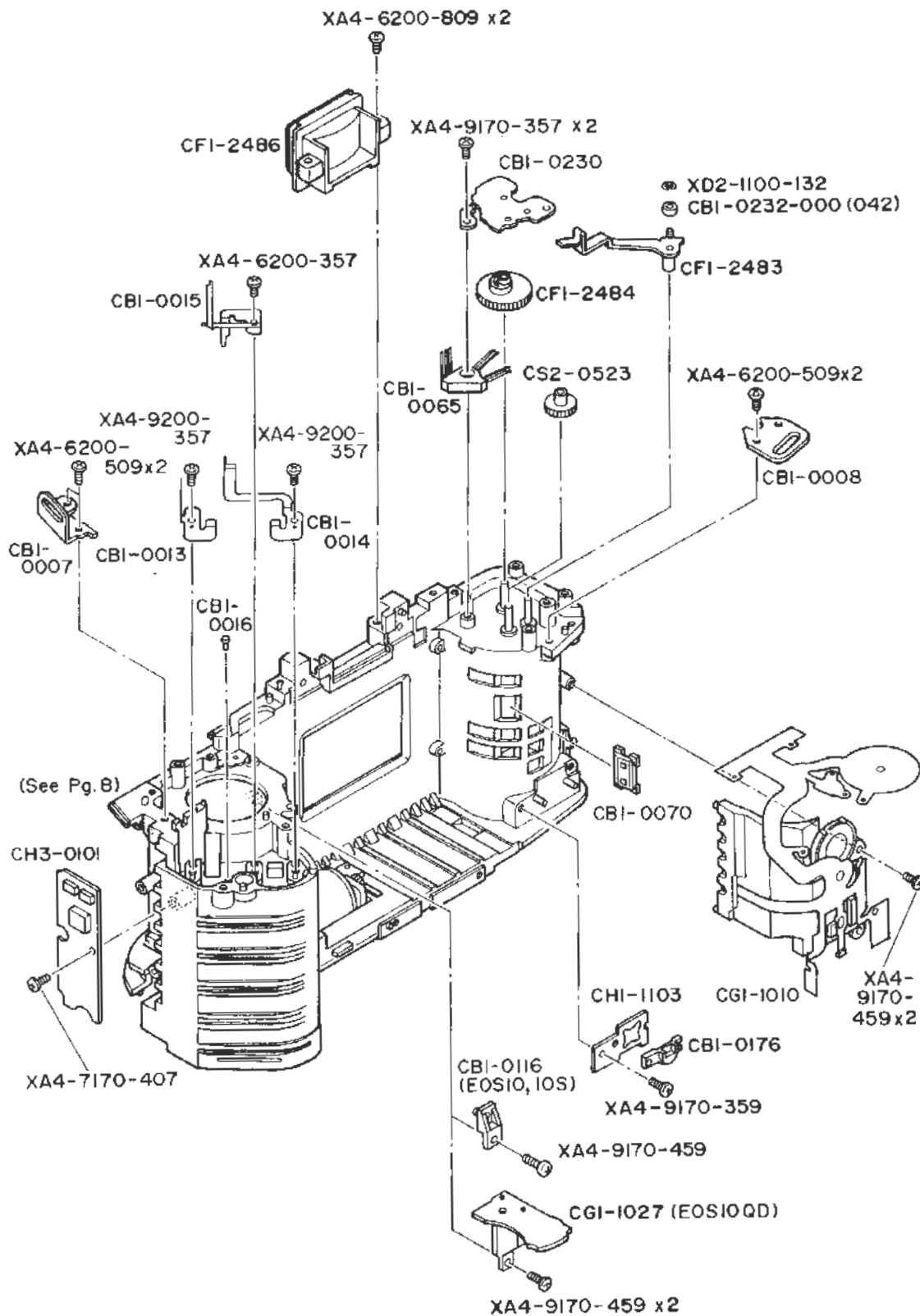
CANON EOS 10, 10QD, 10S



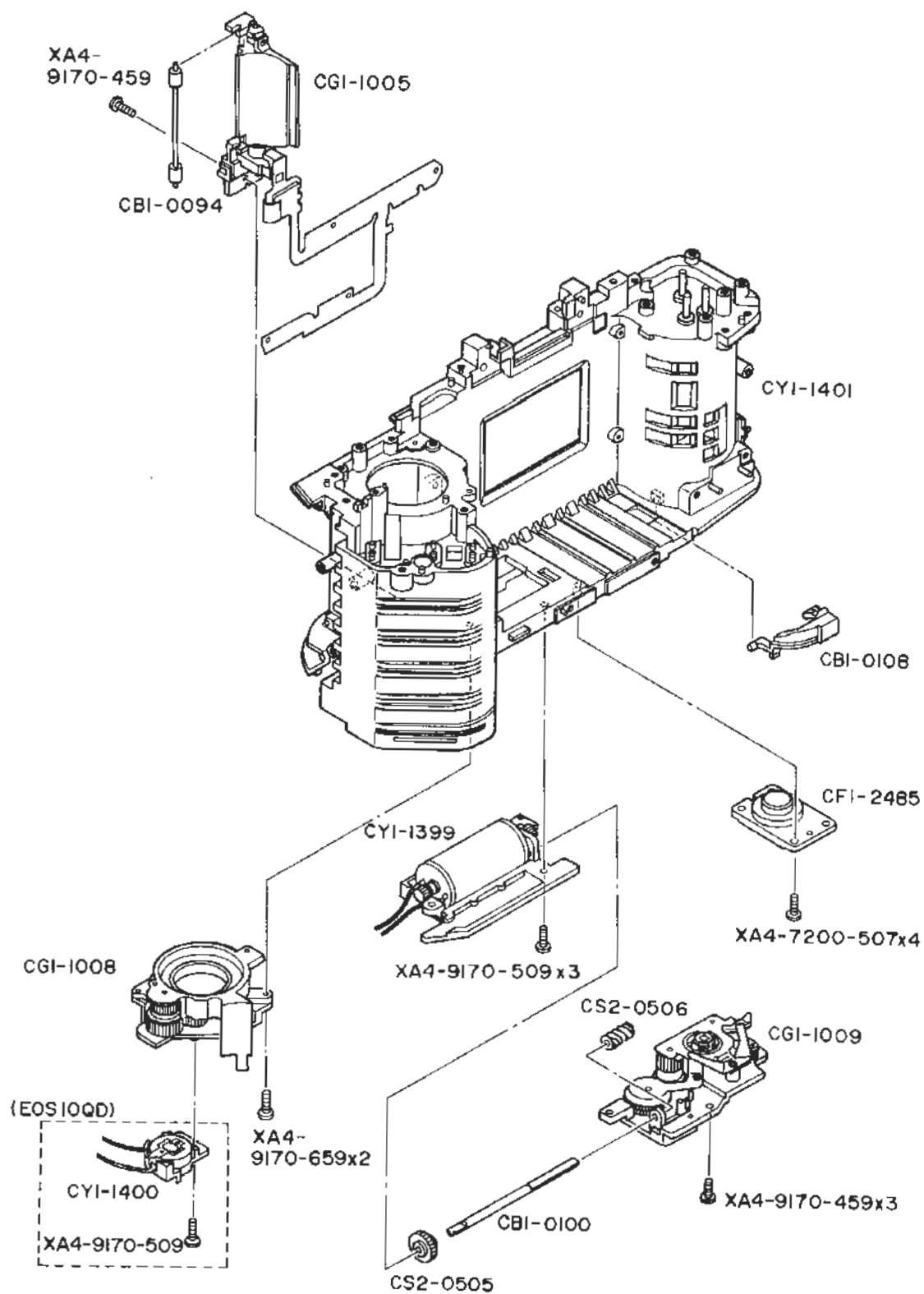
CANON EOS 10, 10QD, 10S



CANON EOS10, 10QD, 10S

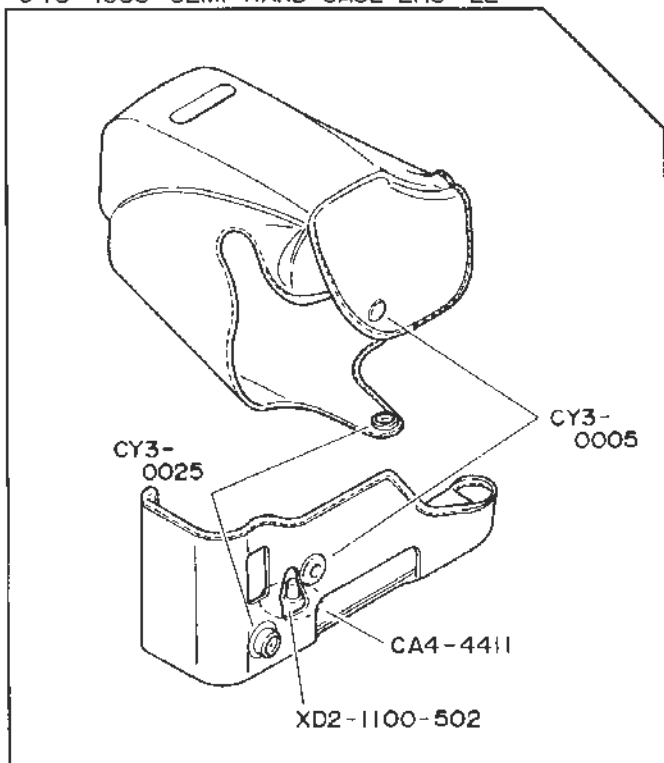


CANON EOS10, 10QD, 10S

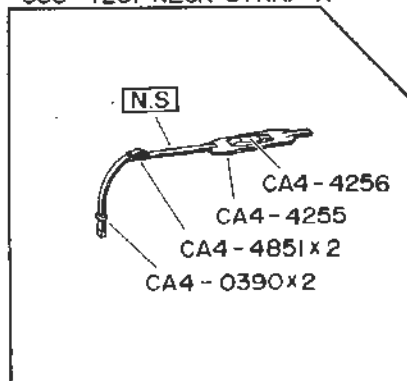


CANON EOS10, 10QD, 10S (ACC)

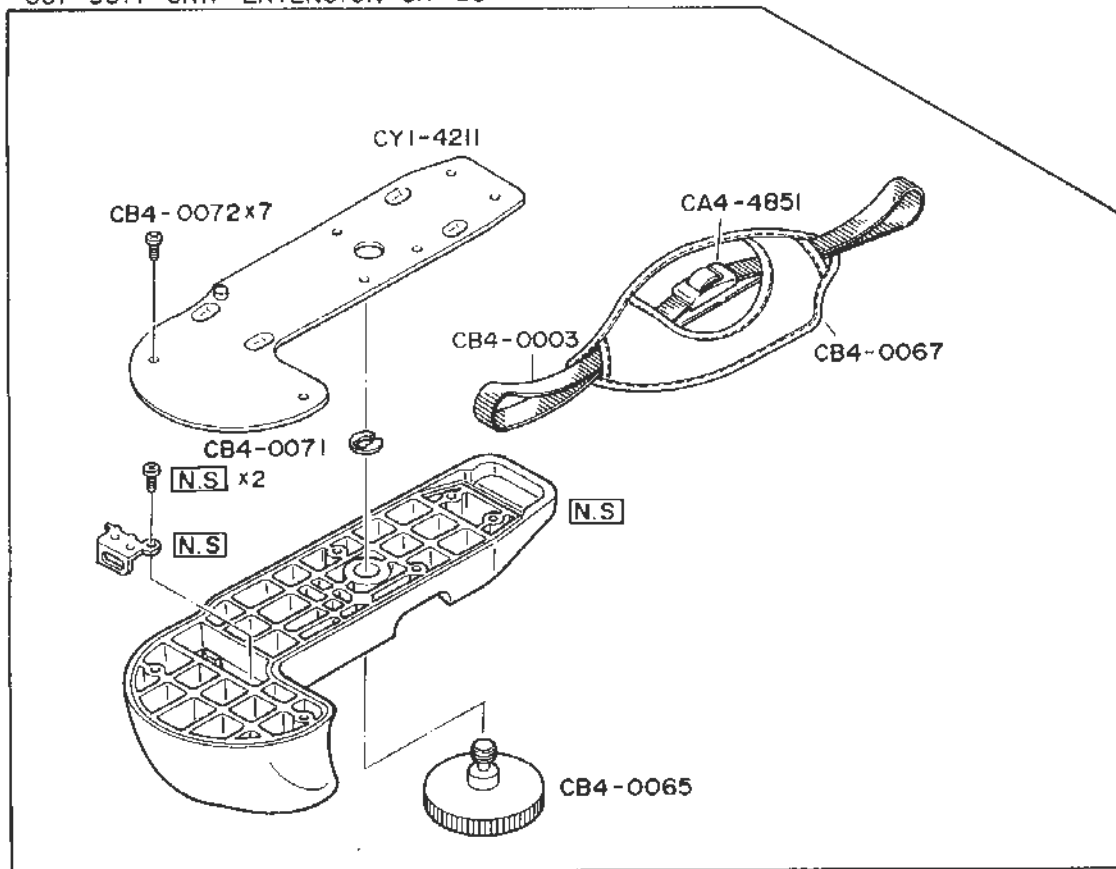
C46-1582 SEMI HARD CASE EH3-L
 C46-1583 SEMI HARD CASE EH3-LL



C56-1291 NECK STRAP 17



C51-9971 GRIP EXTENSION GR-60



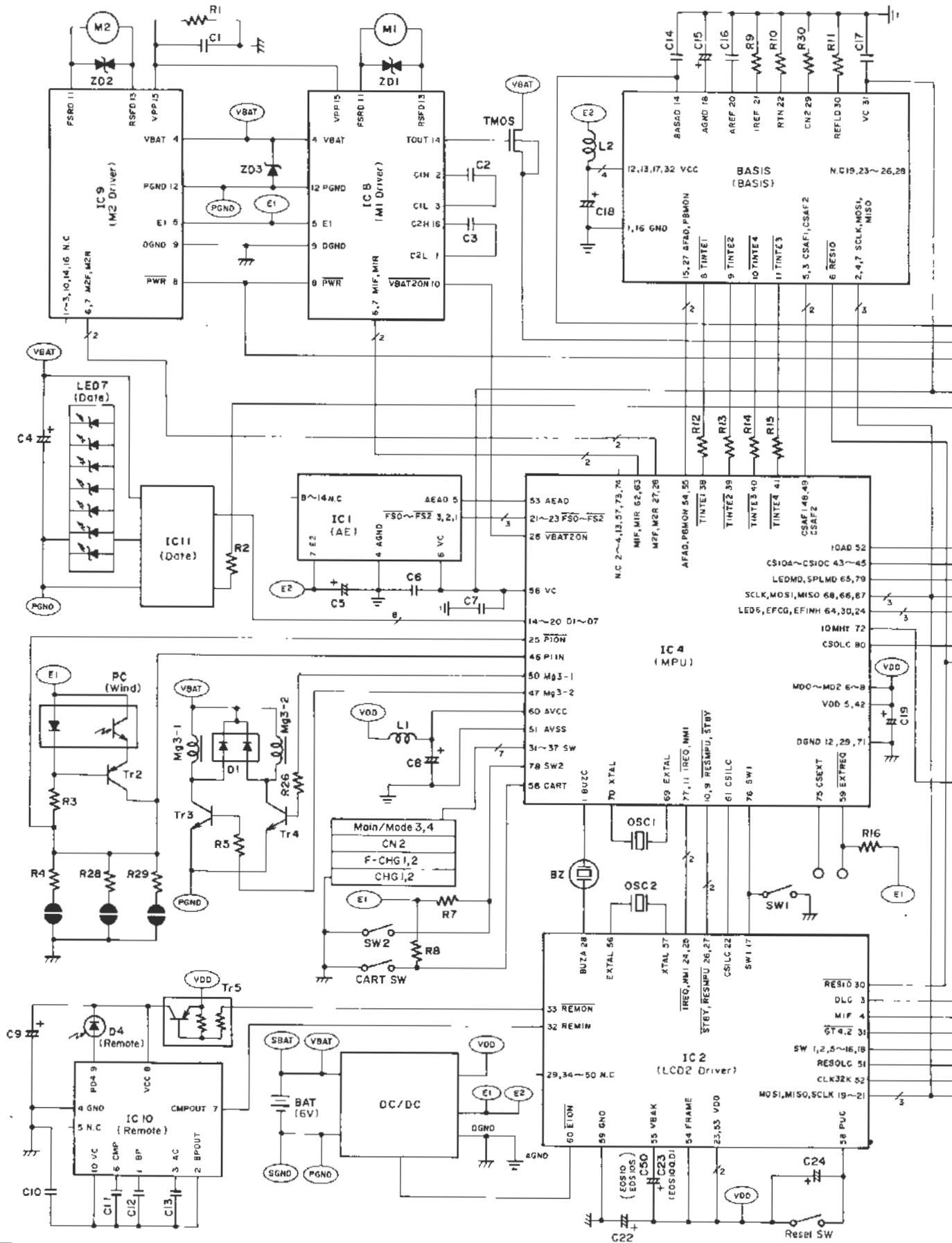
V. ELECTRICAL DIAGRAMS

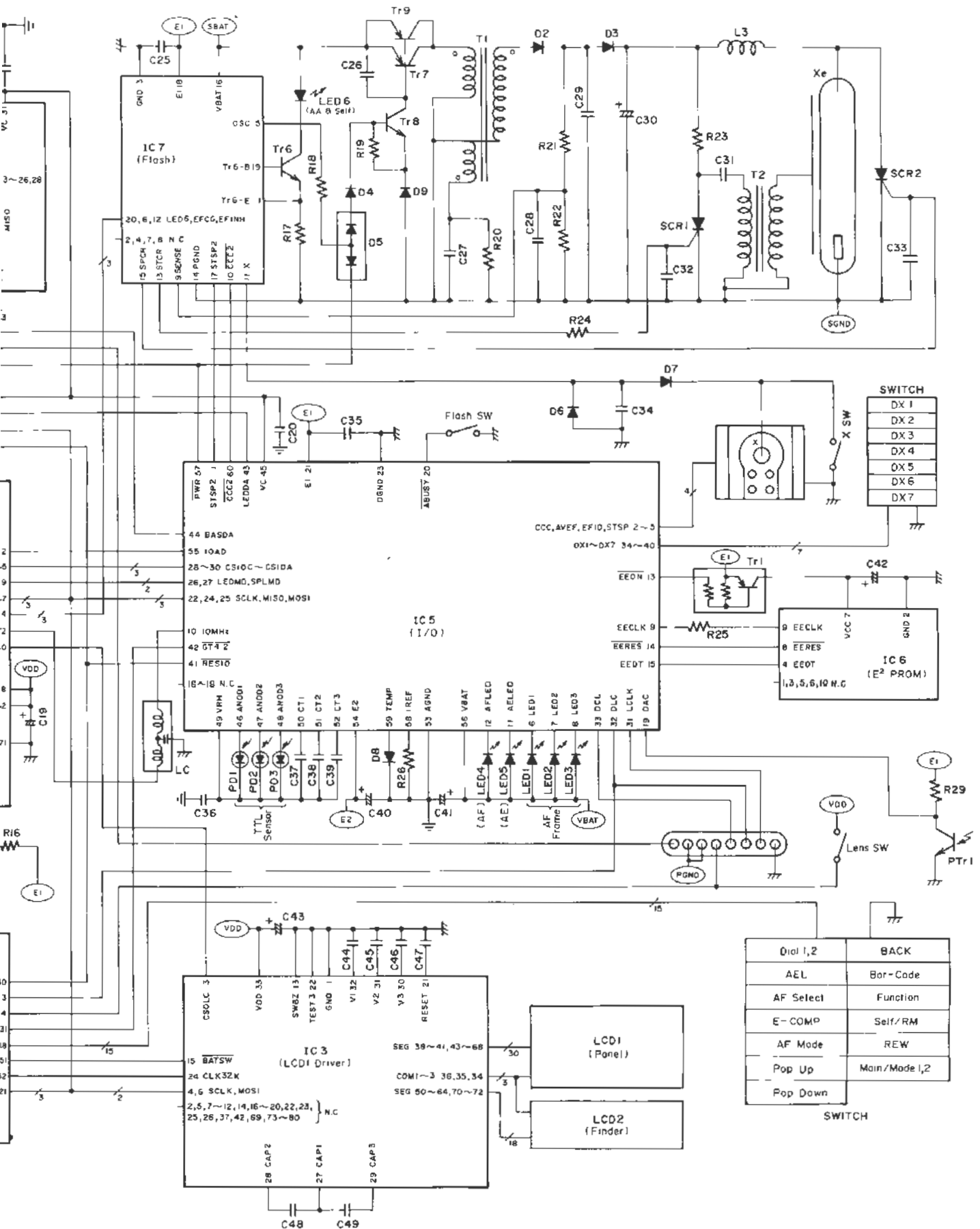
Schematic Diagram

Wiring Diagram

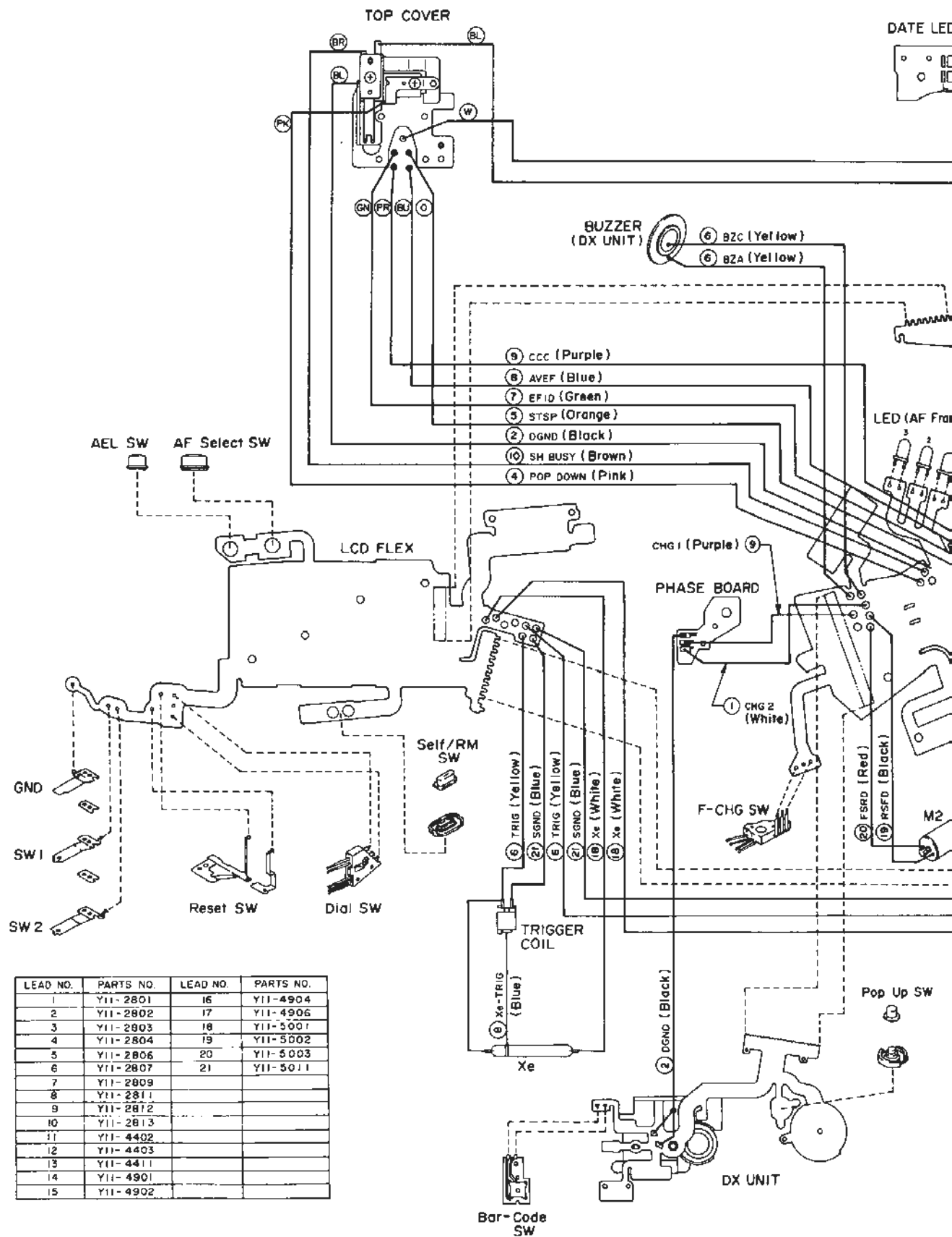
Pattern Diagrams

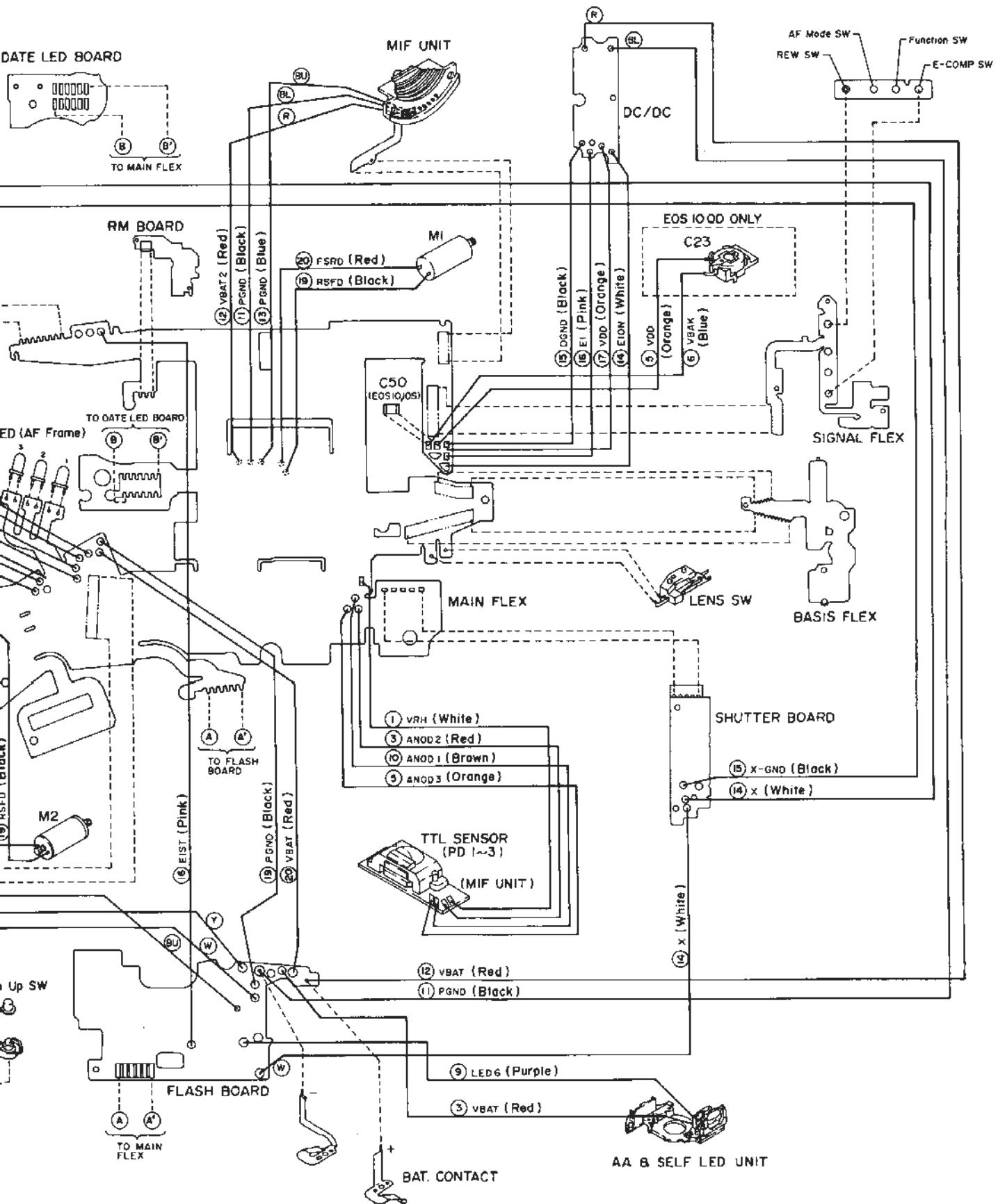
SCHEMATIC DIAGRAM



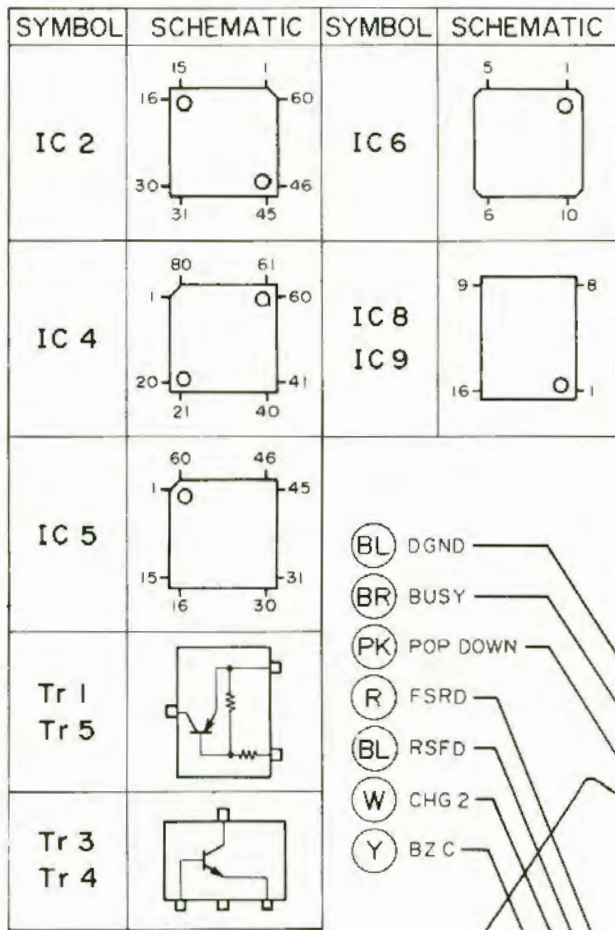


WIRING DIAGRAM





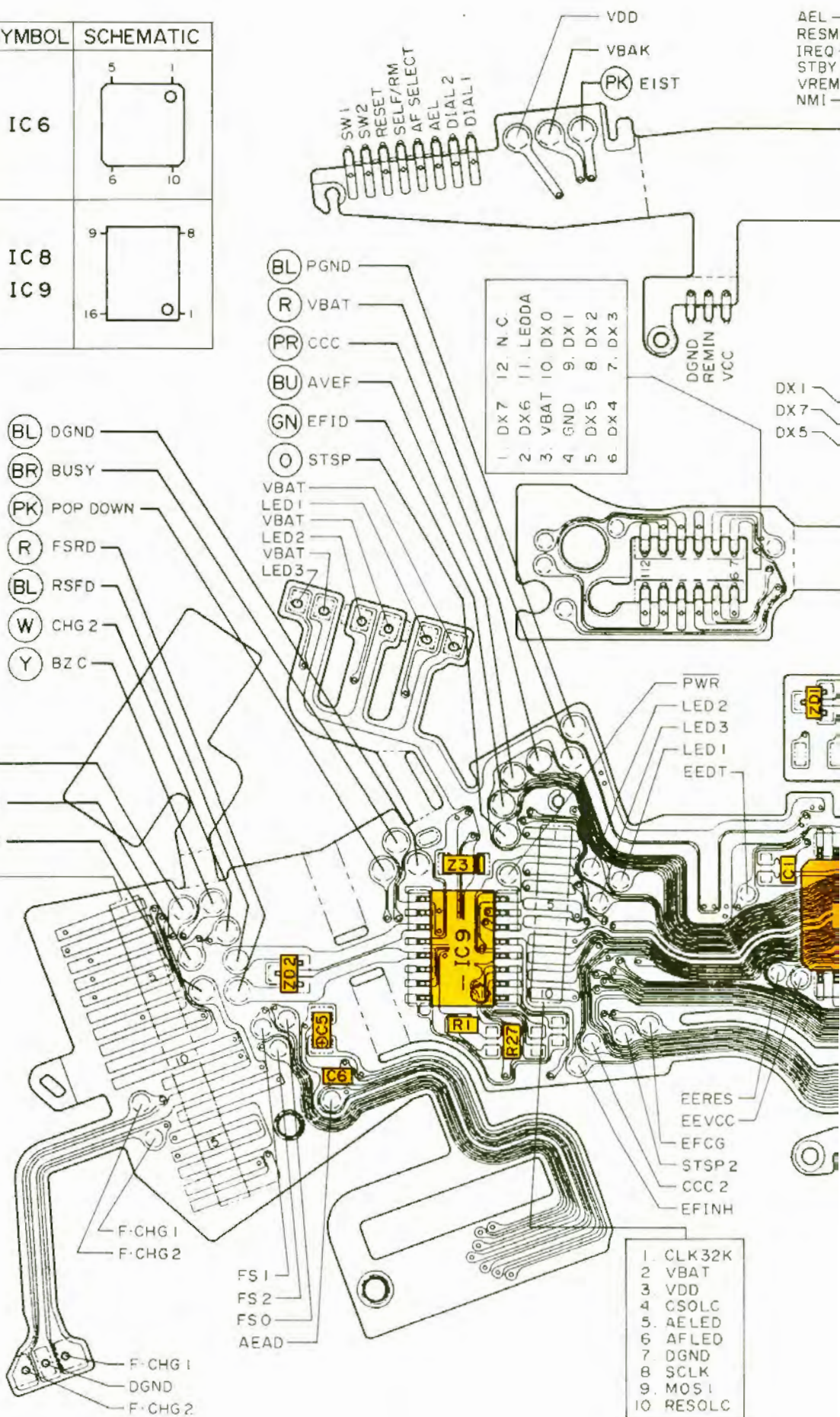
P.C.B. DIAGRAM (MAIN FLEX A)

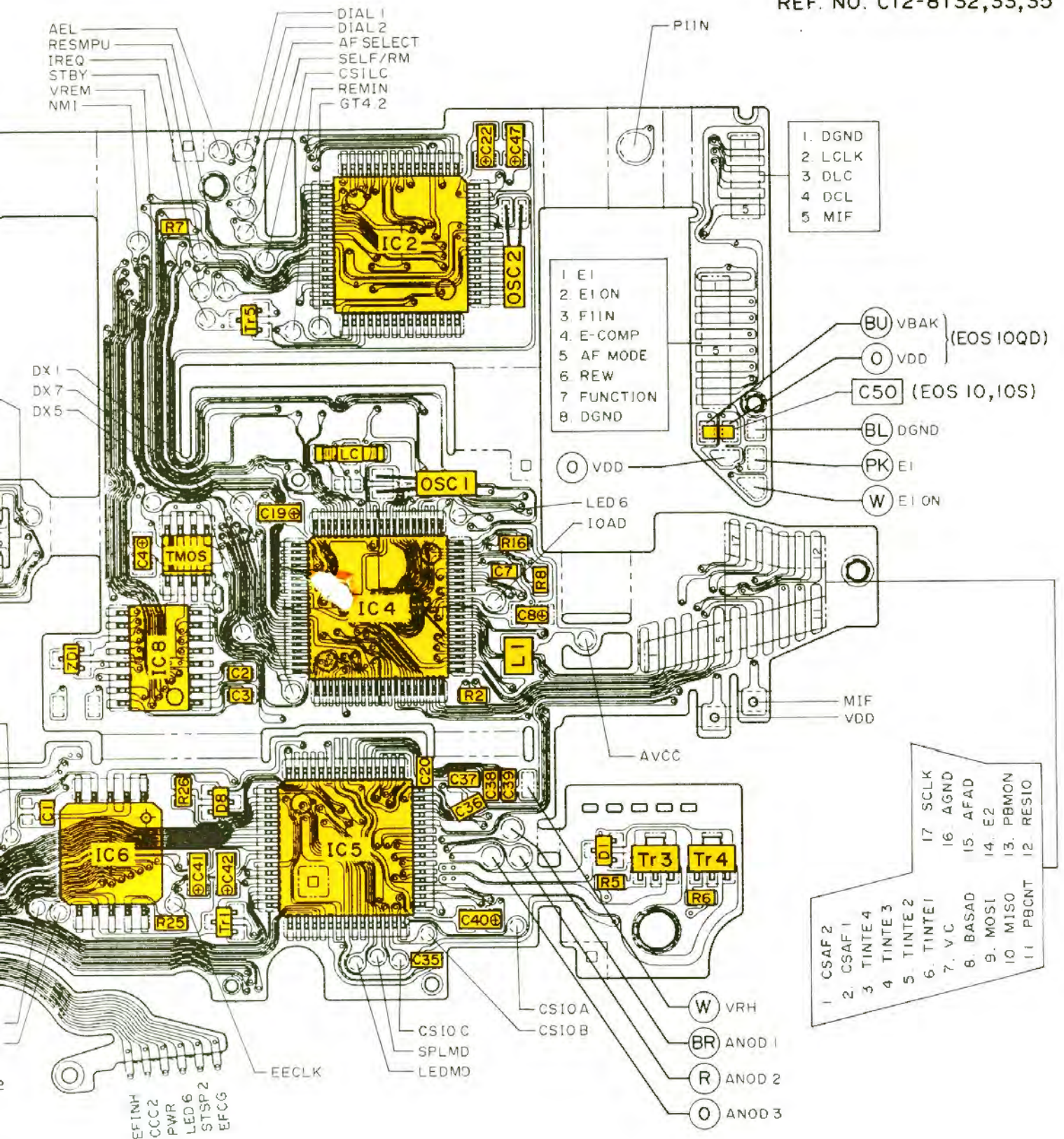


- (BL) DGND
- (BR) BUSY
- (PK) POP DOWN
- (R) FSRD
- (BL) RSFD
- (W) CHG 2
- (Y) BZ C

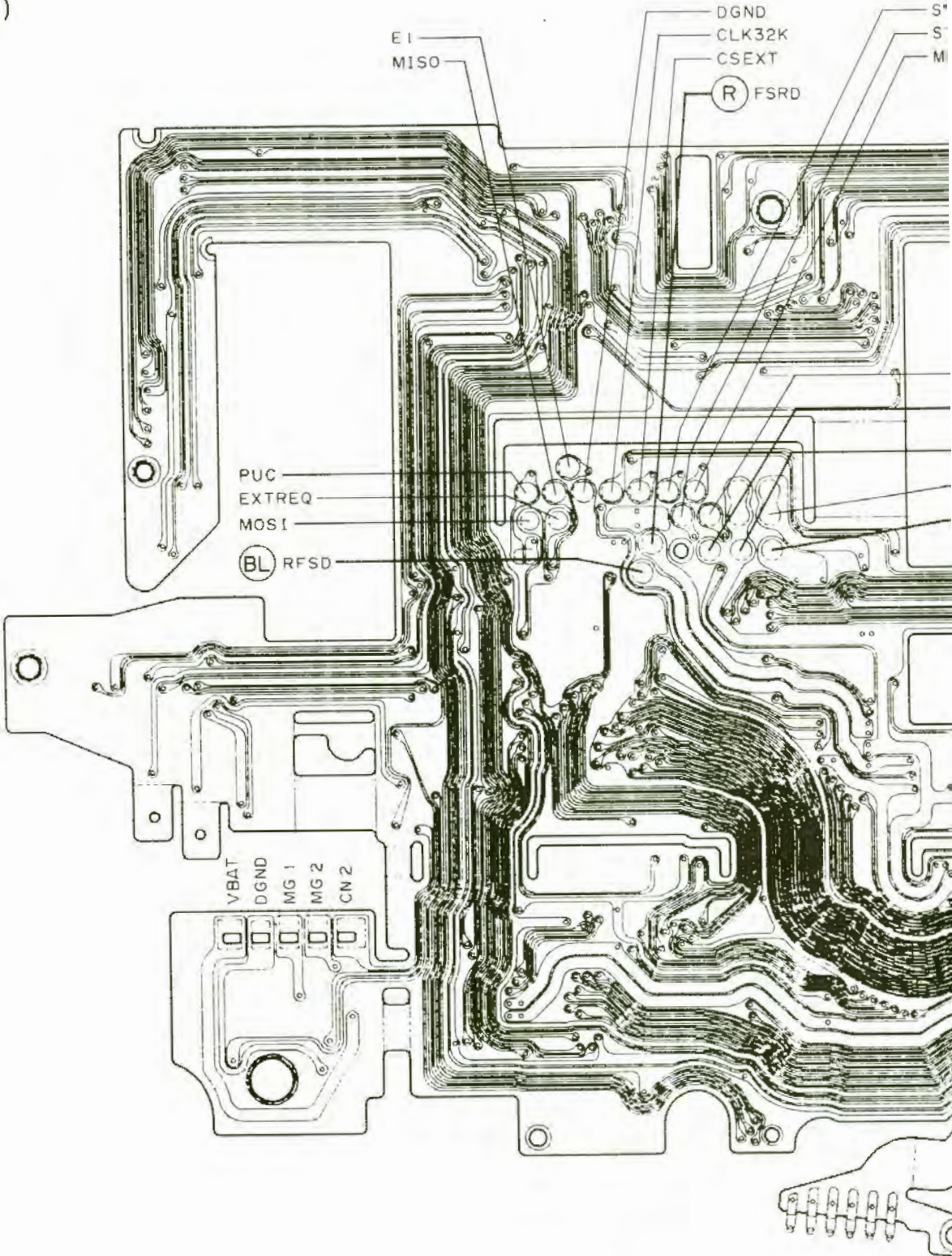
- (Y) BZ A
- (PR) CHG 1
- DGND

- 1. DX 2
- 2. DX 1
- 3. DX 5
- 4. DX 4
- 5. DX 3
- 6. BAR CODE
- 7. CART
- 8. DAC
- 9. BACK
- 10. DX 6
- 11. DX 7
- 12. DGND
- 13. POP UP
- 14. MAIN/MODE 1
- 15. MAIN/MODE 2
- 16. MAIN/MODE 3
- 17. MAIN/MODE 4
- 18. MAIN/MODE 5

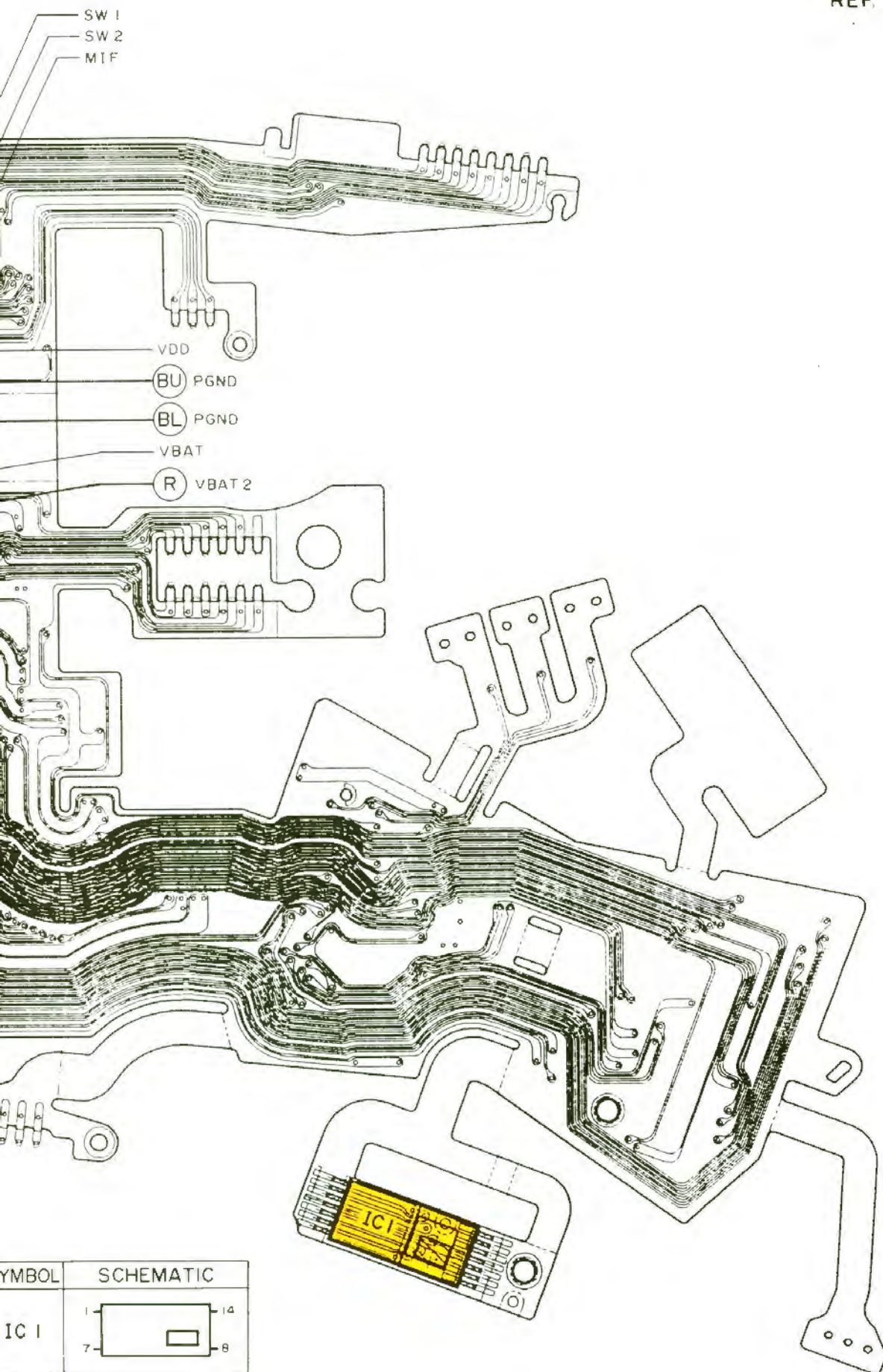




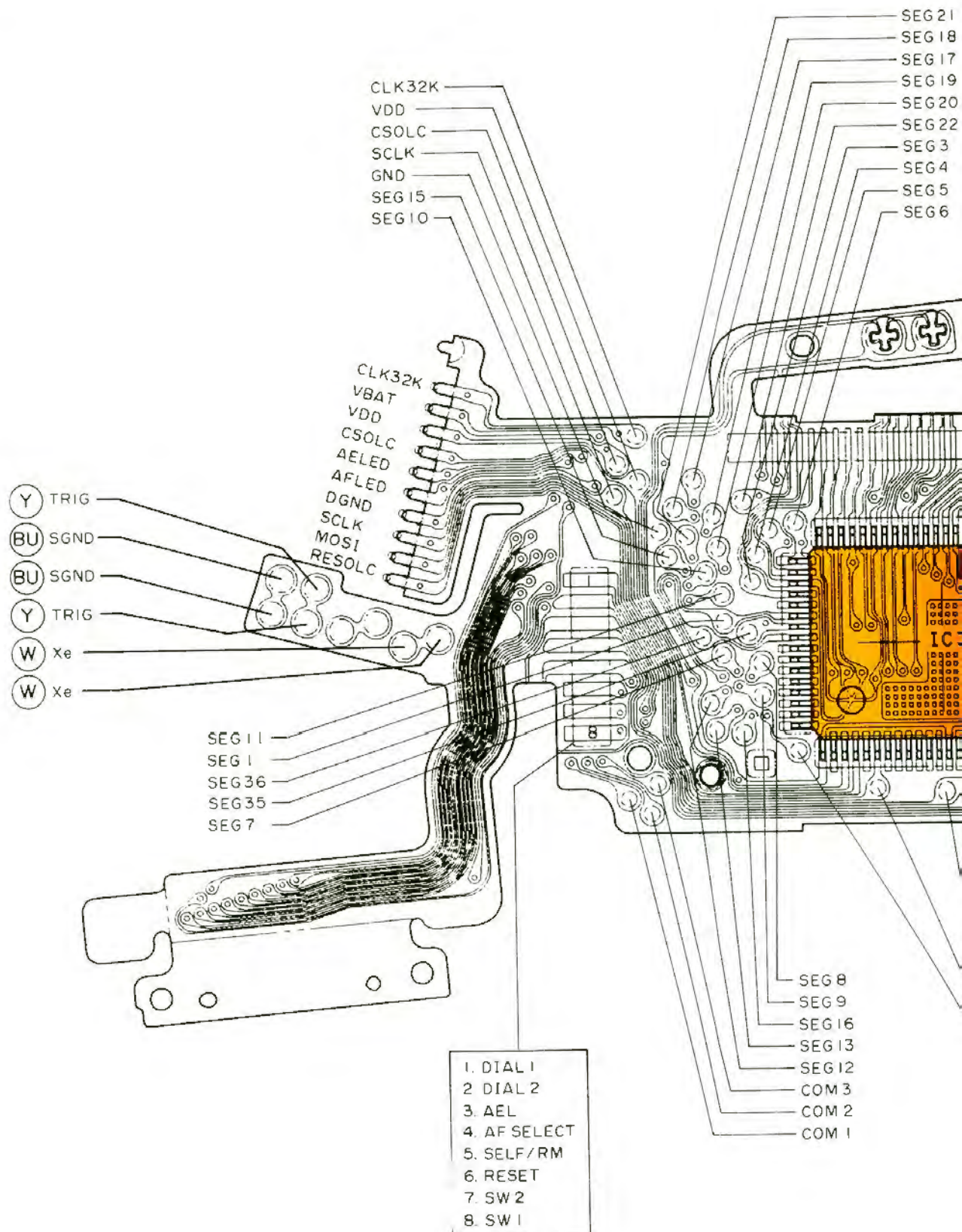
P.C.B. DIAGRAM
(MAIN FLEX B)

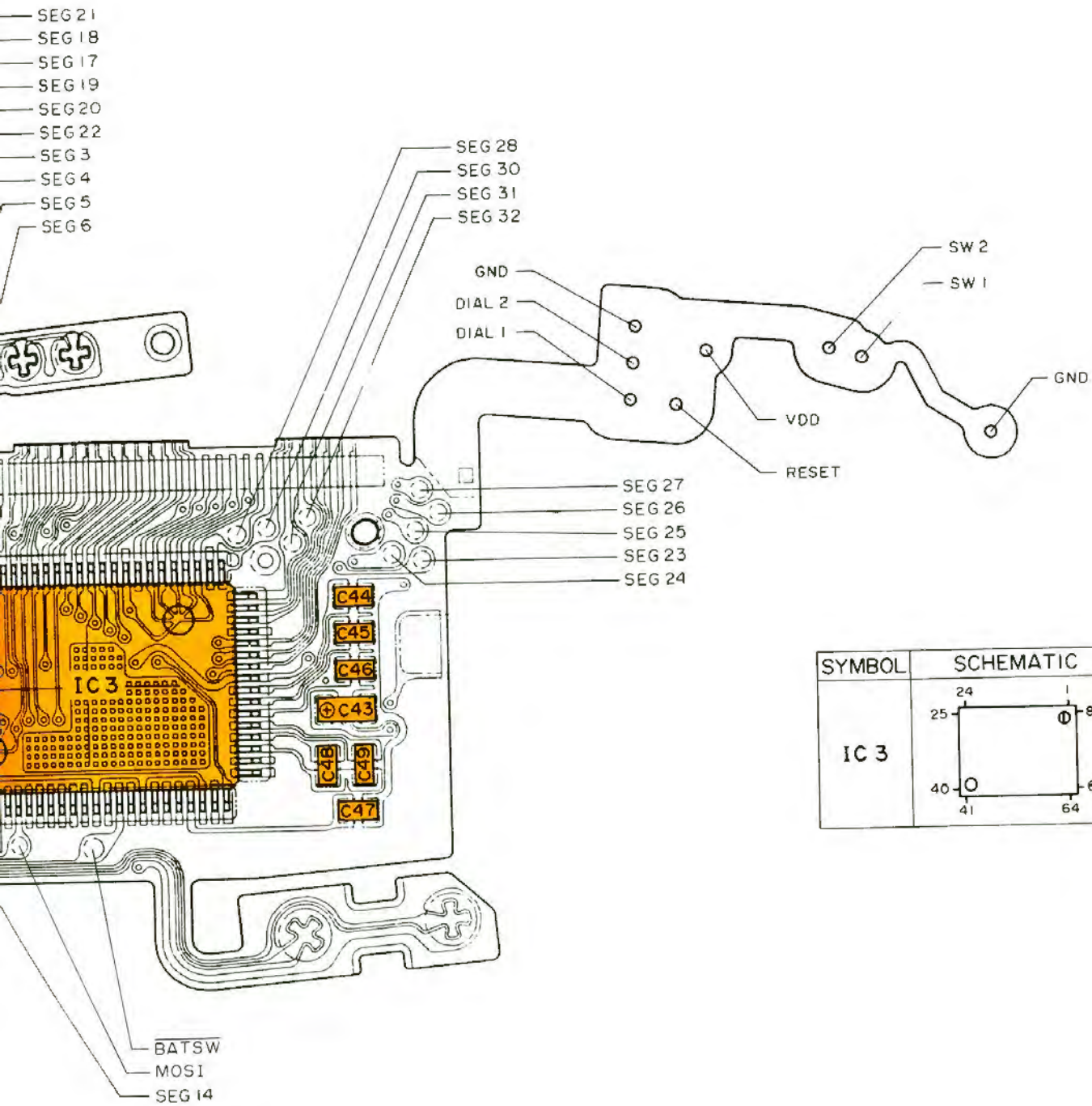


SYMBOL	
IC 1	14 7



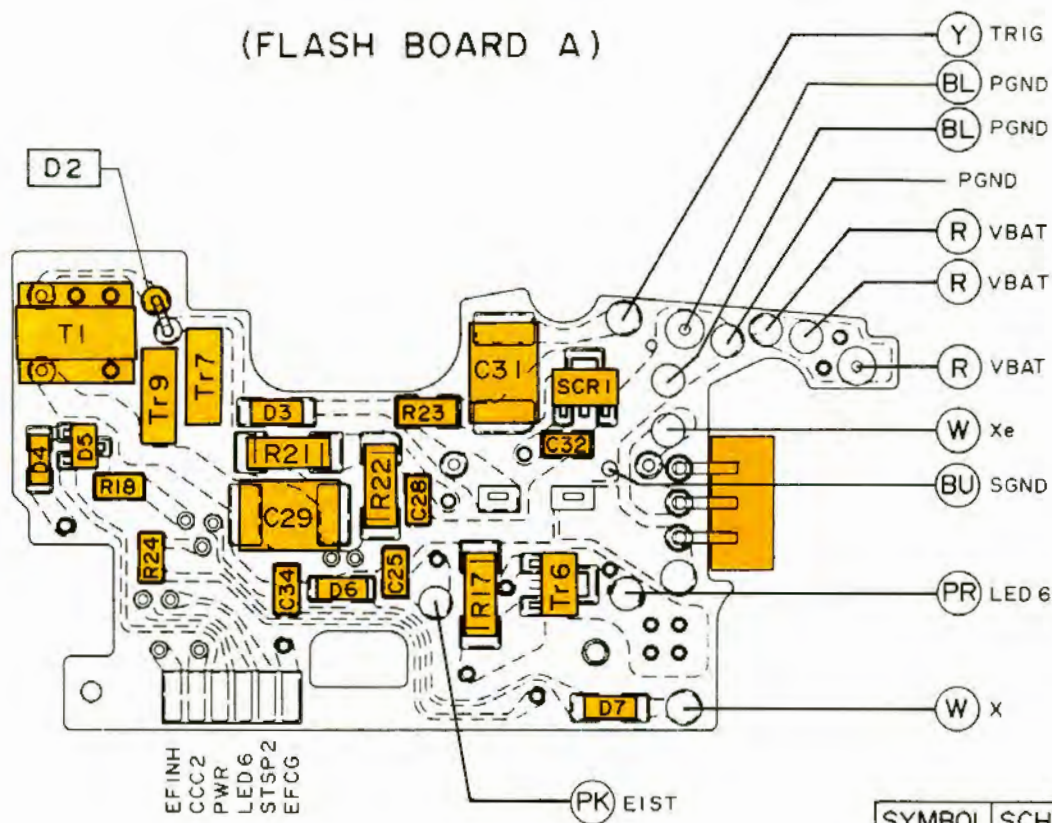
P.C.B. DIAGRAM (LCD FLEX)



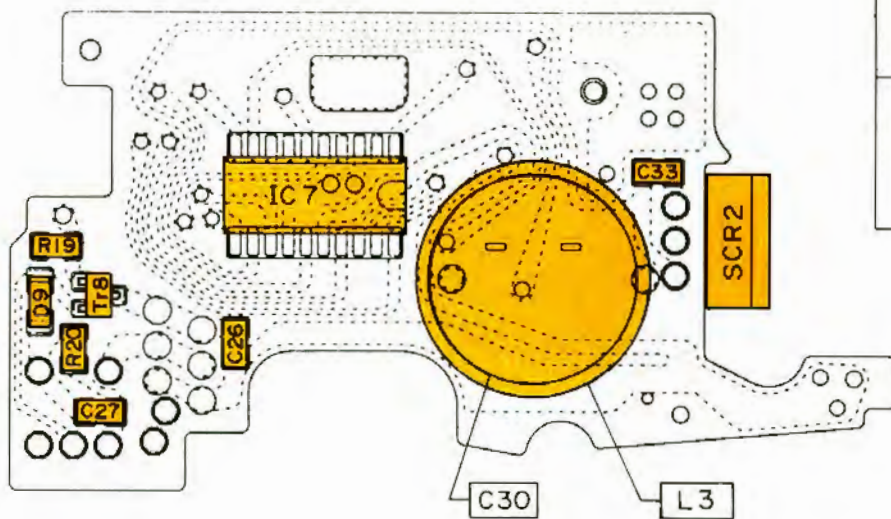


SYMBOL	SCHEMATIC
IC 3	

(FLASH BOARD A)

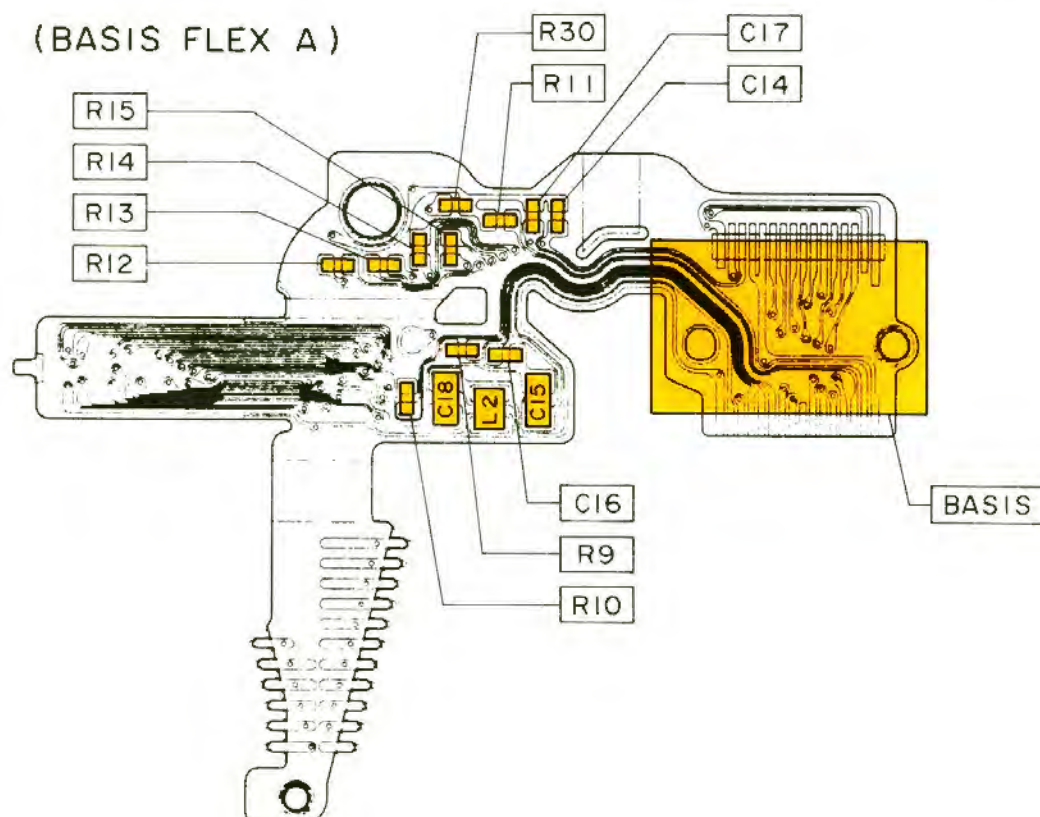


(FLASH BOARD B)

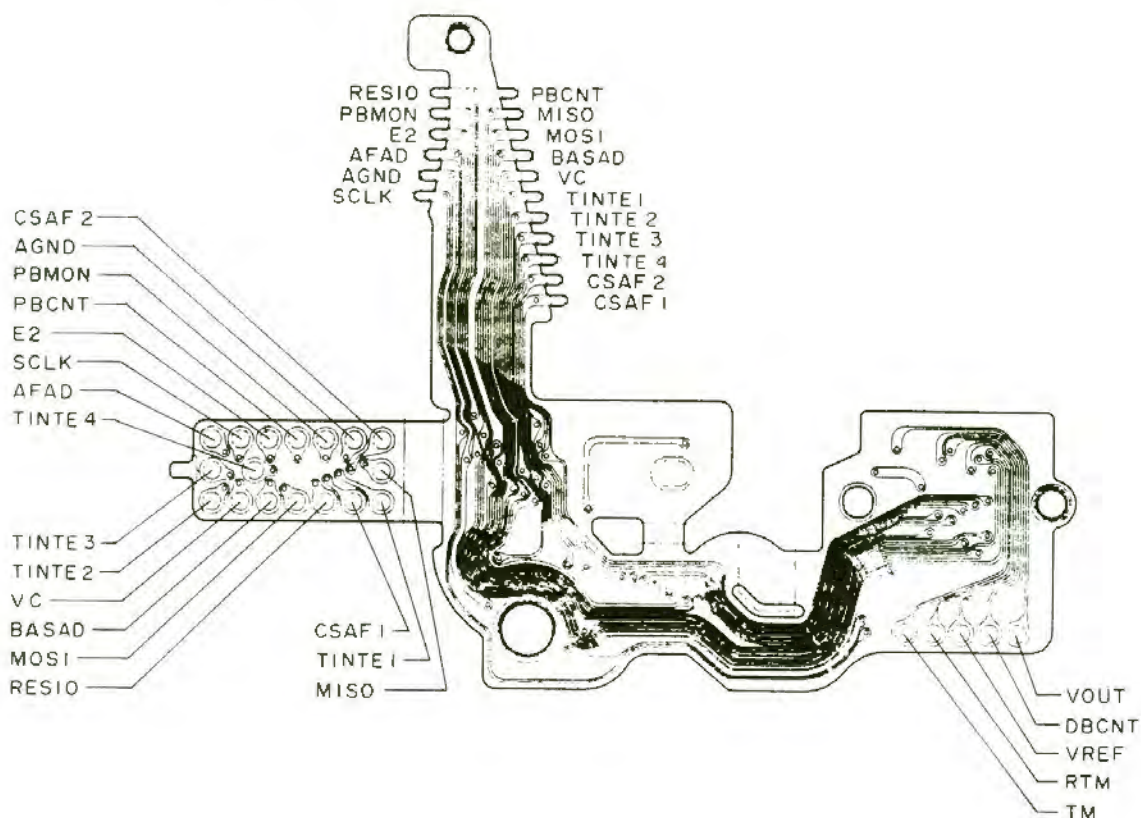


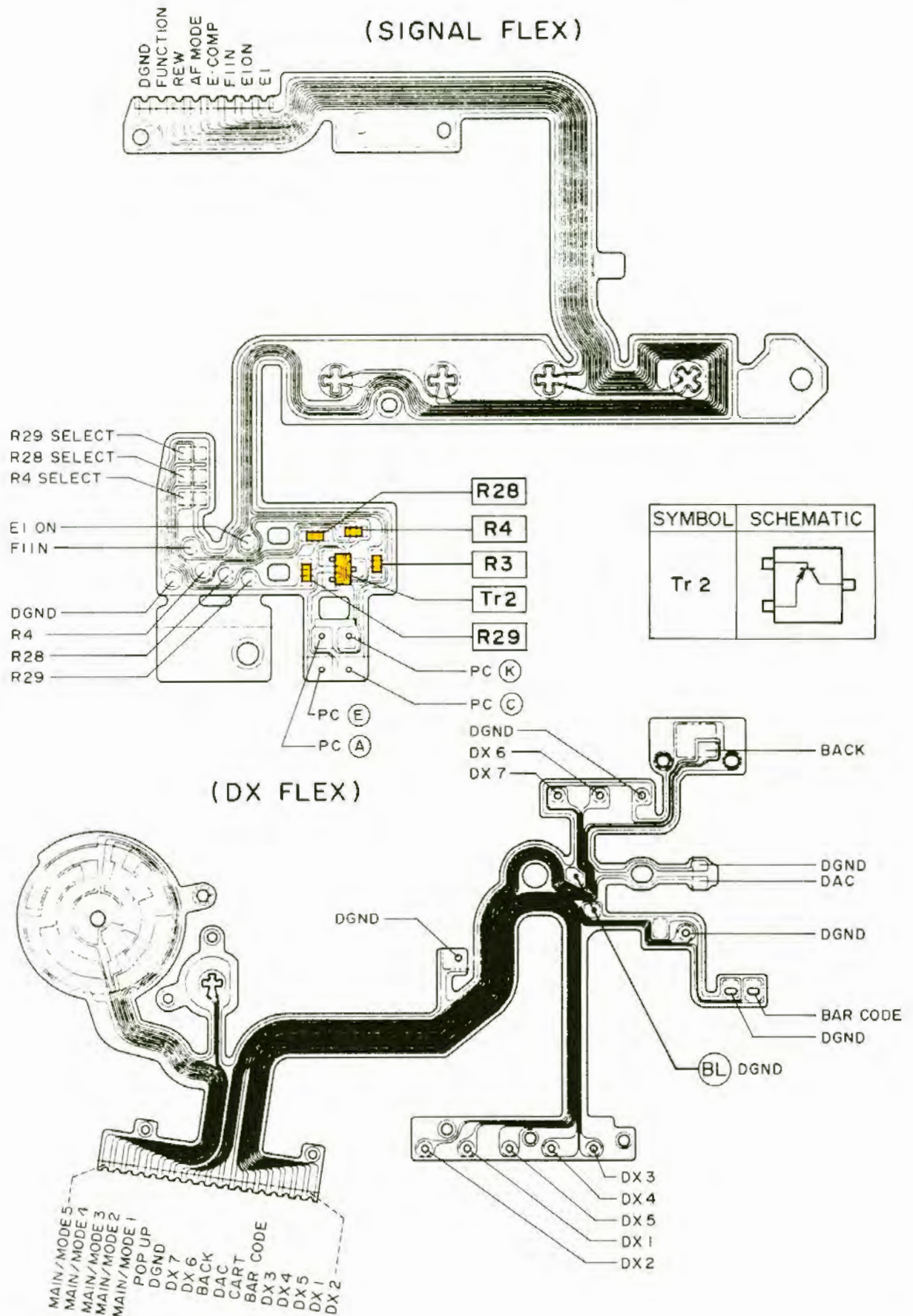
SYMBOL	SCHEMATIC
IC 7	
Tr 6 Tr 8	
Tr 7 Tr 9	

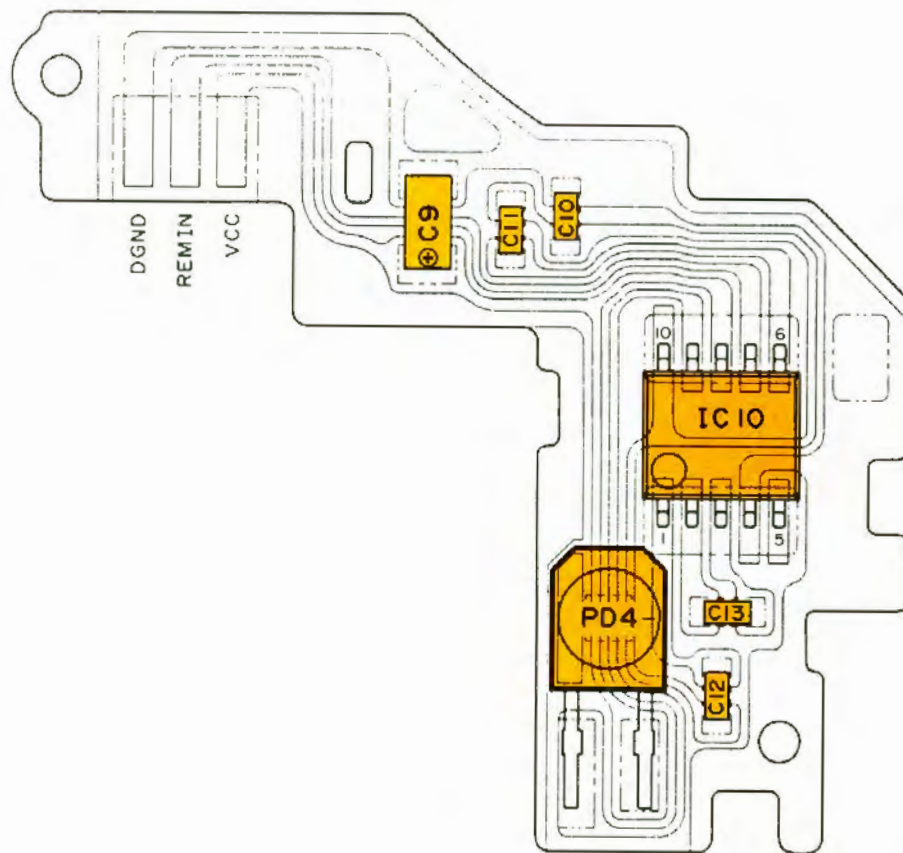
(BASIS FLEX A)



(BASIS FLEX B)







Canon

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