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TK BRISTOLL

INSTRUCTIONS

Canon EF

English Edition

INTRODUCTION

Congratulations! You have purchased one of the finest automatic 35mm SLR cameras available today. The Canon EF is a complex instrument having a multitude of advanced features, yet it is incredibly simple to use. Just select a shutter speed and the camera adjusts its own diaphragm for you automatically under all kinds of lighting situations, from bright sunlight at the beach to dim candlelight. You are assured of perfect exposures every time. Now you can concentrate on picture taking and stop worrying about mechanics. But before you actually load any film into your new camera, familiarize yourself thoroughly with the Canon EF and this instruction manual. Handle the camera, practice focusing, and use the winding lever. And, by all means, refer to the instructions often during this orientation period. When used correctly, the Canon EF will provide you with perfectly exposed photographs for years to come. We at Canon hope you receive as much enjoyment in using the EF as we had in designing it. And we hope your involvement in photography continues to grow.

TABLE OF CONTENTS

I. PICTORIAL OUTLINE FOR USING THE CAMERA 6-7
II. MAIN FEATURES 8
III. VIEWFINDER INFORMATION 9
IV. TECHNICAL EXPLANATION OF THE CAMERA 10-15
A. Electro-Mechanical Shutter 10-11
B. Variable Aperture AE Control Method 12-13
C. Silicon Photocell 13-14
D. Central Emphasis Metering 15
V. CAMERA HANDLING 16-18
A. Carrying the Camera 16
B. Holding the Camera 16-17
C. Bracing Yourself and the Camera 18
D. Releasing the Shutter 18
VI. BASIC OPERATION 19-53
A. Loading the Mercury Batteries 19
B. Checking the Batteries 20-21
C. Turning the Camera On and Advancing the Film 21
D. Loading the Film 22-24
E. Setting the ASA 25
F. Setting the Aperture Ring and the CAT Switch 26-27
G. Selecting a Shutter Speed 27-29
H. Viewing and Focusing (including notes on Infrared Photography) 30-31
I. Locking-In an Exposure Reading 32-34
J. Releasing the Shutter 35
K. Making Multiple Exposures 36-38
L. Taking Pictures by Flash 39-42
M. Changing Lenses 43-44
N. Using the Self-Timer 45
O. Previewing Depth-of-Field 46-48
P. Taking a Stopped-Down Meter Reading 49-50
Q. Locking the Mirror Upward 51
R. Rewinding the Film 52
S. Turning the Camera Off 53
VII. INTERCHANGEABLE LENSES 54-57
VIII. ACCESSORIES 58-61
IX. SPECIFICATIONS 62-63
X. PROPER CARE OF THE CAMERA 64
A. Cleaning the Camera 64
B. Storing the Camera 64
C. Using the Camera in Extremely Cold Conditions 64
D. Having the Camera Serviced 64

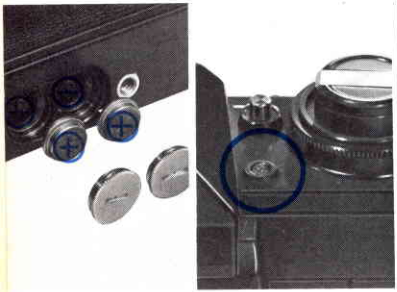
Fold out both front and back nomenclature pages for easy reference when reading the instructions.

NOMENCLATURE

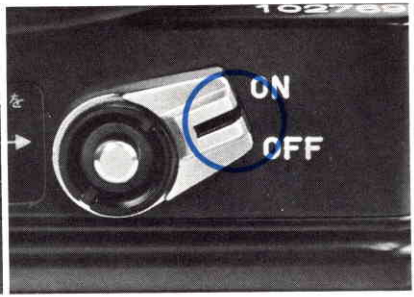
1. Frame Counter
2. Shutter Button
3. Shutter Speed Dial
4. Shutter Speed Index Mark
5. Winding Lever
6. Flash Hot Shoe
7. Eye-Level Pentaprism
8. Film Plane Indicator
9. AE Memory Lock Button
10. Light Emitting Diode (LED)
11. Film Rewind Knob with Crank
12. ASA Ring
13. Sync Terminal with Cover
14. Self-Timer Lock Button
15. Multi-Purpose Lever (Self-Timer/Depth-of-Field Preview/ Stopped-down Metering Lever)
16. L—M Lock Lever
17. CAT System Pin
18. AE Lock Pin
19. Focusing Index Mark with Depth-of-Field Scale
20. Distance Scale (in feet and meters)
21. Aperture Ring
22. Front Bayonet
23. Focusing Ring
24. Canon Breech-Lock Ring
25. Neckstrap Eyelet

I PICTORIAL OUTLINE FOR USING THE CAMERA

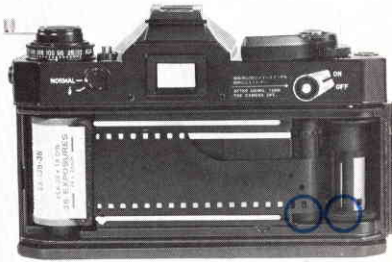
A Load the batteries and check their power level.



B Turn the camera on.



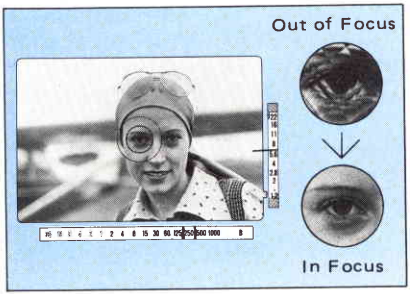
C Load the film and advance it to the first frame.



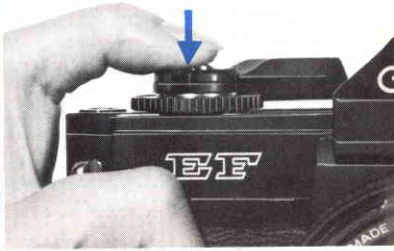
G Select a shutter speed.

Look into the viewfinder.

H Compose, focus, and check the meter needle.

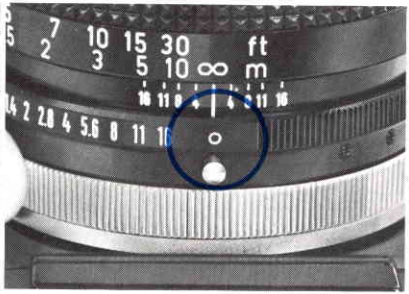


I Press the shutter button gently.

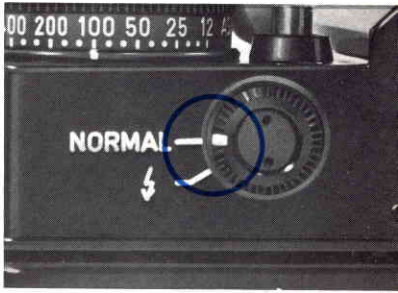


D Set the ASA film speed.

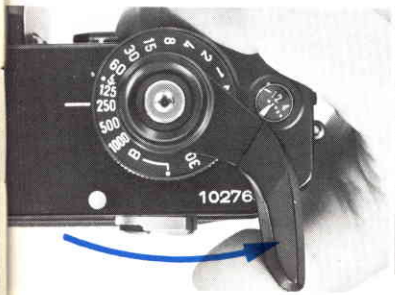
E Set the aperture ring of the lens to the green "O."



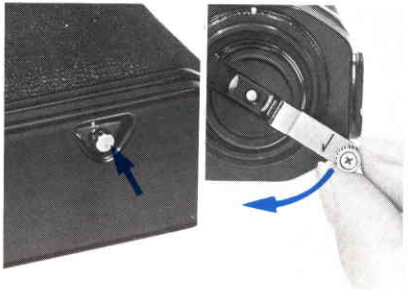
F Set the CAT switch to "NORMAL."



J Advance the film to the next frame.



K Rewind the film after all frames are exposed.



L Turn the camera off.

Note: To avoid unnecessary current drain, the camera must be turned off after use.

II MAIN FEATURES

A **Variable Apeture AE (Automatic Exposure).** Simply select a shutter speed and the aperture is set for you automatically.

B **Extremely wide range of shutter speeds** using an Electro-Mechanical Shutter. Accurate electronic control from one second down to a full 30 seconds; foolproof mechanical control from one-half second to 1/1000 second (including B) even if the batteries fail.

C **Incredible meter sensitivity** and rapid response to changing light levels by using a Silicon Photocell. At ASA 100, EV – 2 (8 sec. at f/1.4) to EV 18 (1/1000 sec. at f/16)

D **Wide range of FD lenses** from 15mm full-frame fish-eye to 300mm telephoto for AE photography. Other Canon lenses available from 7.5mm circular fish-eye to 1200mm super-telephoto. 2000mm and 5200mm mirror lenses available by special order.

E **Multiple exposures** possible simply by pushing a button while operating the winding lever. Exact registration is possible,and the frame counter does not advance during the procedure.

F **Full-information viewfinder** displaying large scales for both shutter speeds and f/stops.

G **Automatic electronic flash.** When using the Canon Speedlite 133D and a Flash-Auto Ring, the aperture is set automatically according to the focused distance of the lens with synchronization at 1/125 sec.

H **AE memory lock** for locking-in exposure readings.

I **Wide film speed range** from ASA 12 to ASA 3200.

J **Fast-action winding lever** with a short 120° throw and comfortable plastic tip.

K **Short-stroke, feather-touch shutter button.**

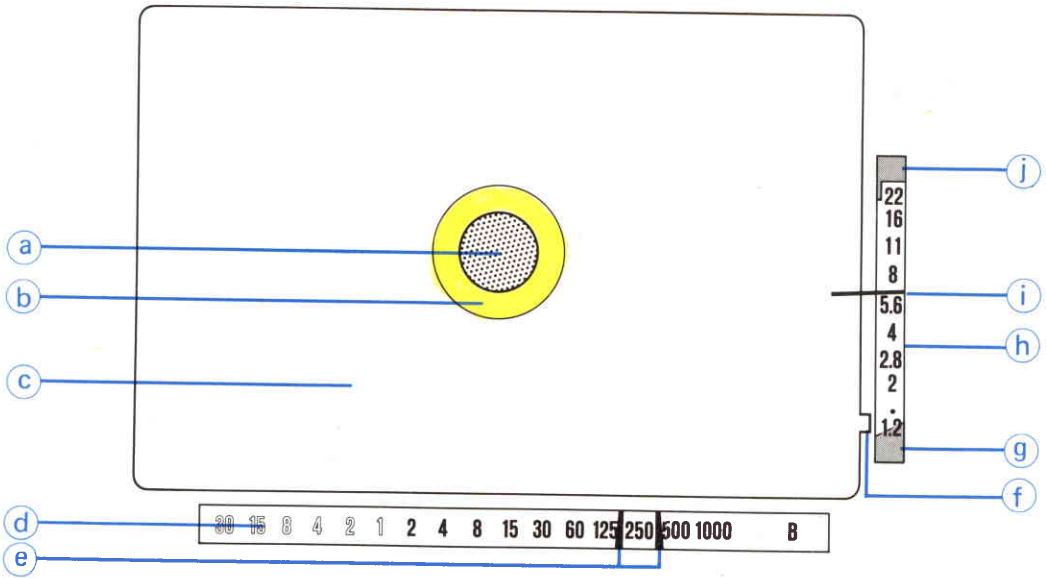
L **Huge shutter speed dial** overhangs the front edge of the camera making a change of shutter speeds quicker than ever.

M **Automatic blank shot mechanism.** Advancing film to frame one is possible without using the shutter button.

N **Cold weather performance** assured down to –20° degrees C. (–4 degrees F.)

O **Easy battery replacement** using two readily available, inexpensive 1.3 volt mercury batteries.

III VIEWFINDER INFORMATION



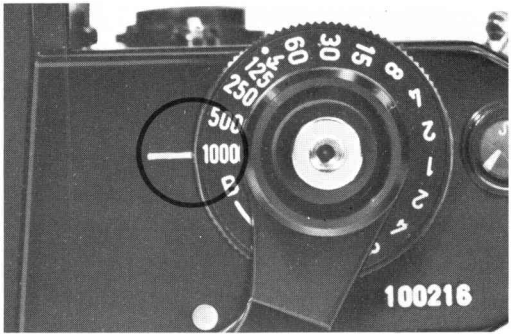
a. Center Spot Microprism Rangefinder
b. Plain Ground Glass Focusing Collar
c. Ground Glass with Fresnel Screen
d. Shutter Speed Scale
e. Shutter Speed Indicator
f. Stopped-Down Metering Index Mark
g. Underexposure Warning Mark (maximum lens aperture is automatically set)
h. Aperture Scale
i. Meter Needle
j. Overexposure Warning Mark

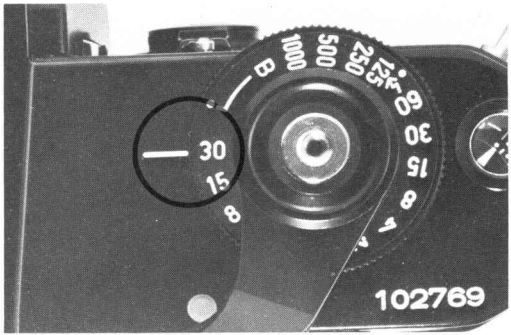
IV TECHNICAL EXPLANATION OF THE CAMERA

The Canon EF is a 35mm single-lens-reflex AE (automatic exposure) camera which is designed for fast handling and precise exposure control. Being modularly constructed, it contains many advanced electronic circuits to make picture-taking easier than ever before.

A Electro-Mechanical Shutter

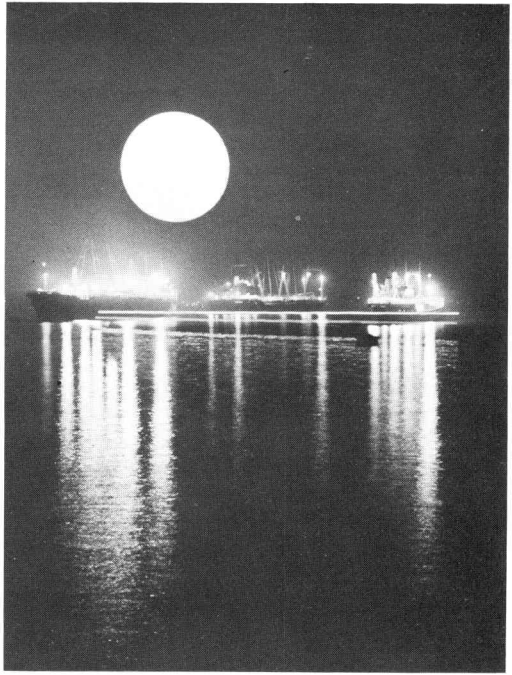
The vertically moving metal focal plane shutter in the EF has speeds from 1/1000 sec. down to a full 30 seconds, plus a "B" (Bulb) setting for manual time exposures. The shutter is electronically controlled in its slow range from 1—30 sec in six discrete steps (1, 2, 4, 8, 15, and 30). The red Light Emitting Diode (LED), just to the left of the pentaprism, blinks on and off to indicate when the shutter is open. In the normal range in which most photography will be performed, the shutter is mechanically controlled from 1/2—1/1000 sec., plus B, in eleven steps (1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/125, 1/500, 1/1000, and B). Electronic control of the shutter in the slow range insures high accuracy for long shutter speeds, whereas mechanical control in the normal range permits manual operation of the





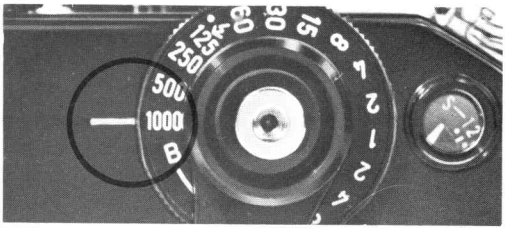
camera over a wide range of shutter speeds even if the batteries fail. Another benefit of using mechanical control for the majority of speeds is that the Canon EF uses only two inexpensive 1.3 volt mercury batteries which are available almost anywhere in the world.

Canon FD 300mm f/5.6 S.C., 30 sec., AE, ASA 400.



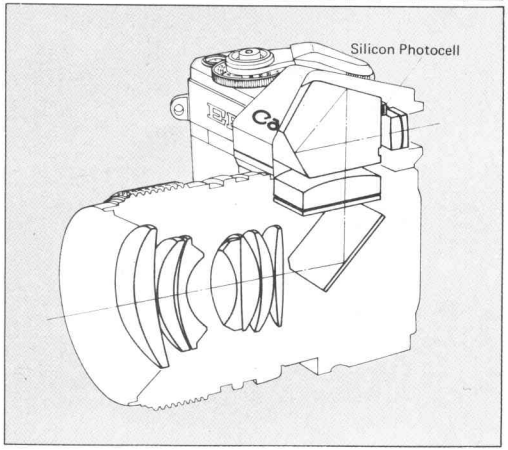
B Variable Aperture AE Control Method

Commonly known as "shutter priority EE," the Variable Aperture AE control method gives the photographer absolute control over the shutter speed to prevent camera shake. You select a shutter speed appropriate to the action and/or the lens you are using, and the camera automatically adjusts the aperture of the lens to precisely the proper f/stop or fraction thereof.



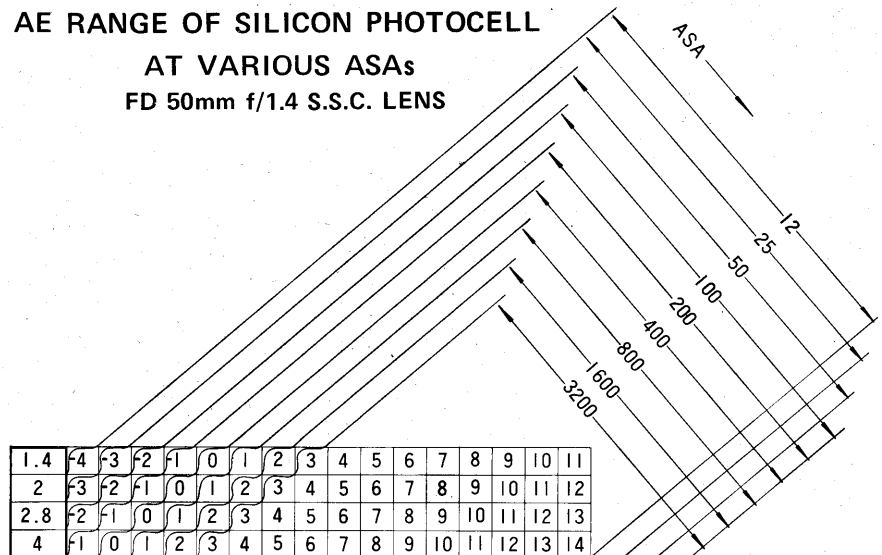
C Silicon Photocell

The Silicon Photocell is a highly accurate and extremely stable light measuring cell having a wider range of sensitivity and much faster response to rapidly changing light levels than the conventional CdS cell. At ASA 100, the metering range of the Silicon Photocell is from EV 18 (1/1000 sec. at f/16) down to EV −2 (8 sec. at f/1.4), which is five f/stops more sensitive than the normal CdS cell. At ASA 25, the range is from 1/1000 sec. at f/8 down to 30 sec. at f/1.4. This increased sensitivity range is made possible by the development of a special logarithmic amplifier to intensify the low amount of current generated by the photocell in very dim light conditions.



AE RANGE OF SILICON PHOTOCELL AT VARIOUS ASAs

FD 50mm f/1.4 S.S.C. LENS



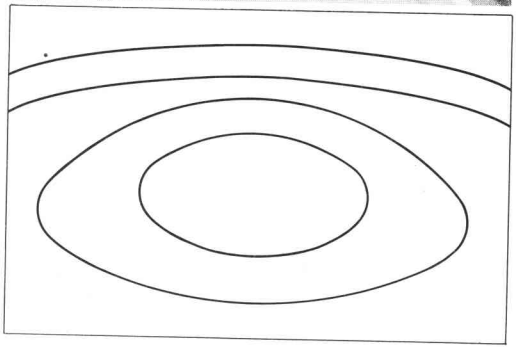
f/stop \ EV Values	30	15	8	4	2	1	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500	1/1000
1.4	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11
2	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12
2.8	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13
4	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
5.6	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
11	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
16	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

Shutter speed (sec)

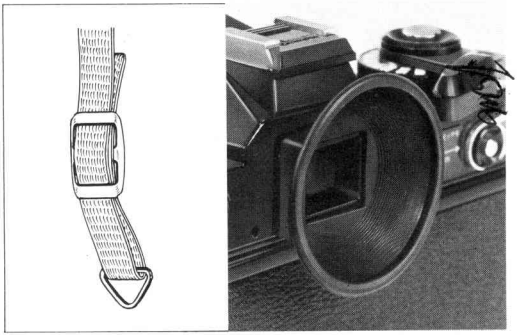
ASA	EV RANGE
12	−4 ~ 15
25	−4 ~ 16
50	−3 ~ 17
100	−2 ~ 18
200	−1 ~ 18
400	0 ~ 18
800	1 ~ 18
1600	2 ~ 18
3200	3 ~ 18

D Central Emphasis Metering

After extensive experimentation, it was determined that the Central Emphasis Metering method of exposure measurement used in the Canon EF is the most reliable way of obtaining proper exposures in fast moving AE photography. The entire viewfinder screen is read by the Silicon Photocell with more emphasis given to the center portion, where the main subject is likely to be located. In a typical landscape, even a normal center-weighted system can produce underexposure because of the influence of the bright sky in the upper part of the picture area. The following is a diagram of Canon EF's Central Emphasis Metering method which also minimizes the effect of skylight when the camera is used horizontally.

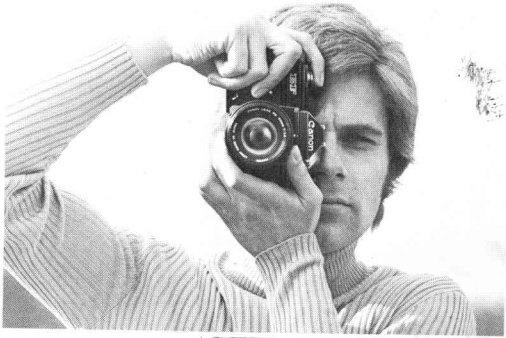


Proper handling of your Canon EF is a very important technique in picture taking. Probably more pictures are lost through poor handling than for any other reason. To take full advantage of the EF's fast operation, you must learn where each control is instinctively. Before loading film into the camera, practice focusing, releasing the shutter and using the winding lever. A few minutes of practice now will pay off later in fewer missed shots.



A Carrying the Camera

Attach the Canon EF's neckstrap and adjust it to a length which feels "right" to you when the camera is around your neck. To avoid dropping the camera accidentally, you should always carry the camera by its strap. Carry the EF around your neck, hang it over your shoulder, or wrap the neckstrap around your hand. For comfortable viewing and to keep extraneous light from the viewfinder, the rubber eyecup should be attached and kept on the eyepiece permanently. Use a lens hood at all times to prevent ghost images and flare. Also, you can protect the front surface of the lens from dust or fingerprints by attaching a UV (Ultraviolet) filter. When you are taking pictures, it is a good idea to take the camera



out of its case, so that it will always be ready to use. Between shooting sessions, the camera should be put back into its case to protect it from dust.

B Holding the Camera

The suggested procedure for holding the camera horizontally is as follows: Place the camera across your left palm and grasp the underside of the lens focusing ring between your thumb and first one or two fingers. Hold the right end of the camera firmly, so that your right thumb is behind the tip of the winding lever and your forefinger is on the shutter

button. Press the camera to your forehead while sighting with either your right or left eye. To hold the camera vertically, rotate the camera 90° so that the shutter button is near the top, place the left end of the camera in your left palm and grasp the focusing ring of the lens from the underside. Hold the camera with your right hand in exactly the same manner as in horizontal shooting. The advantage of this method is that it permits rapid changing of positions from horizontal to vertical with a minimum of fumbling.

C Bracing Yourself and the Camera

To reduce camera shake, brace your elbows against your body and stand flat on your feet. Spread them apart with one foot a little bit in front of the other, and bend your knees slightly. If there is a sturdy support near by, such as a telephone pole, a tree, a door jamb, or wall, lean against it. This is particularly necessary, when you are using shutter speeds of 1/30 sec. and below with the standard 50mm lens on the camera. At shutter speeds of 1/15 sec. and below, it is almost impossible to produce shots free of camera movement without the use of a tripod or some other camera supporting device. When you change to a lens of different focal length, the above suggestions are not necessarily valid. A good rule of thumb in determining the slowest shutter speed you can safely hand-hold the camera with a particular lens is to make a fraction representing this "safe" shutter speed by putting a "one" over the focal length of the lens. For example, when a 135mm telephoto lens is mounted on the camera, the slowest hand-holdable shutter speed you can use to achieve sharp photographs is 1/135 sec. (135mm = 1/135 sec.). Set the shutter speed dial at 1/125 sec., which is closest to 1/135 sec. This rule can be applied to all lenses, from moderate wide-angle to super-telephoto.

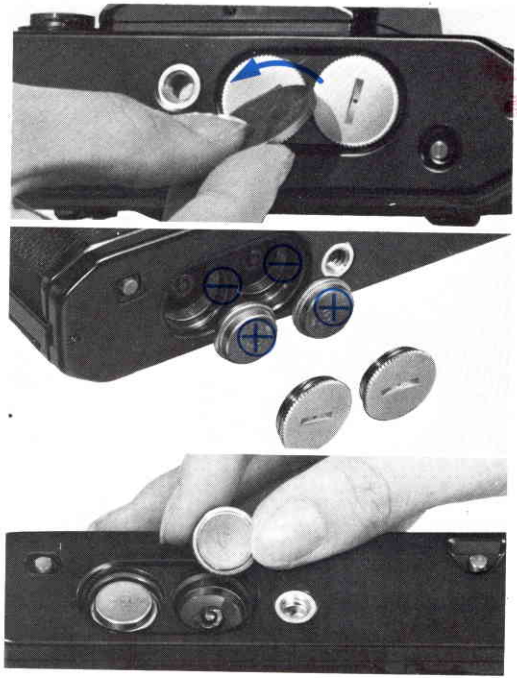
D Releasing the Shutter

Squeeze the shutter button gently, instead of punching it. Also, try to coordinate your breathing with the release of the shutter. A good time is the instant between exhaling and inhaling (or vice versa) when your diaphragm is at rest. Of course, when shooting fast action, this coordination is not always possible or even desirable. It is more important to concentrate on capturing the action rather than on the position of your diaphragm.

A Loading the Mercury Batteries

Since the Canon EF's Variable Aperture AE control and the electronic control of slow shutter speeds depend on battery power for their operation, two 1.3 volt mercury batteries (Mallory PX 625 or Eveready EPX 625) must be loaded into the battery compartments located in the bottom of the camera. Turn the camera upside down and unscrew both battery compartment covers with a coin. Load one battery into each compartment making certain that the "+" side of the battery is up. Then replace both covers and screw them back on tightly.

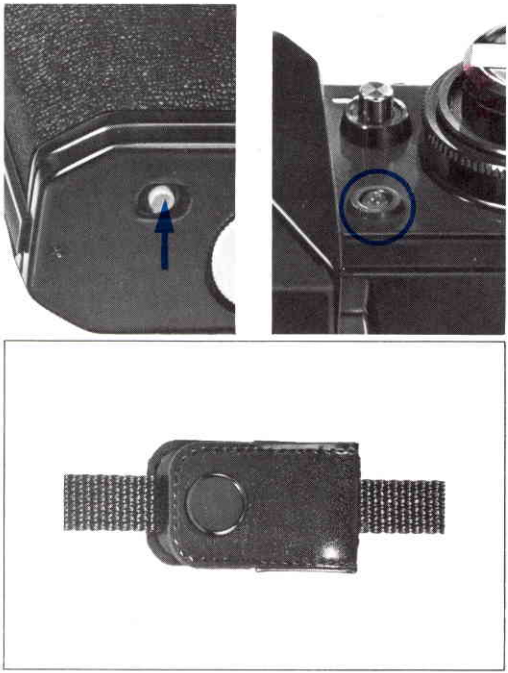
- To insure good electrical contact, clean both surfaces of each mercury battery with a clean dry cloth and handle each by its edges only.
- Be careful to load the batteries properly. Improper loading (with the "—" side up) might cause damage to the camera's electrical circuits.
- If the camera will not be used for a long period of time, the batteries should be taken out of the battery compartments to prevent possible damage to the terminals from battery corrosion.



B Checking the Batteries

After loading the batteries, you should check their power level. This is a simple procedure on the EF. Just hold the red battery check button on the bottom of the camera in for two or three seconds. Watch the LED on the top of the camera. If the LED blinks on and off rapidly, then the power level of the batteries is sufficient. If the LED blinks only once or does not blink at all, then the power level is insufficient. If this is the case, replace **both** batteries with two new ones of the same type.

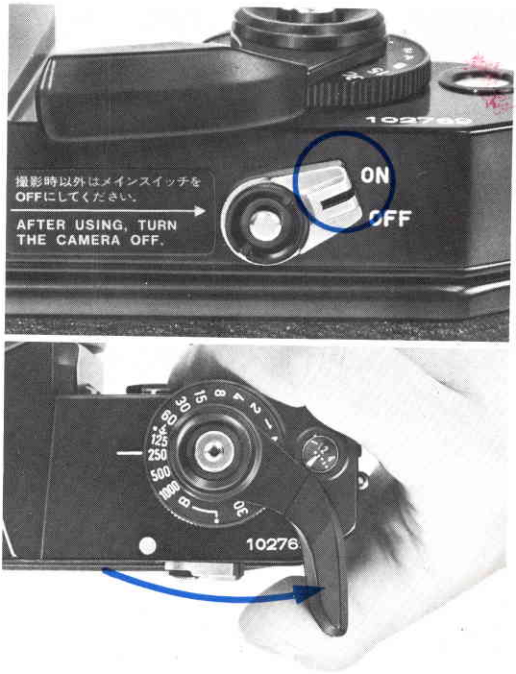
- Since the Canon EF relies heavily on battery power for its operation, check the batteries each time you plan to use the camera and carry spare batteries with you at all times in case of battery failure. Attach the small battery case to the camera strap and carry extra batteries in it.
- If the batteries do fail, the EF can still be used manually from 1/2—1/1000 sec. The Variable Aperture AE control will not operate, but you can manually adjust the aperture ring of the lens. A basic exposure guide to follow for bright sunlight (with distinct shadows) is to make a fraction representing the shutter speed needed at f/16 by putting a "one" over the film's ASA rating. With a film of ASA 100, use 1/100 sec. at f/16. Choose the nearest click-stop



setting, in this case, 1/125 sec. For hazy sunlight (with weak shadows), use f/11. In cloudy bright conditions (with no shadows), try f/8. On heavily overcast days or in open shade, f/5.6 is required.

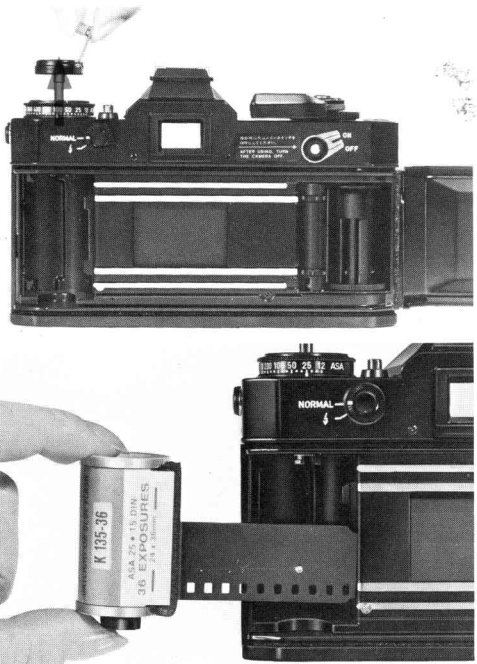
C Turning the Camera On and Advancing the Film

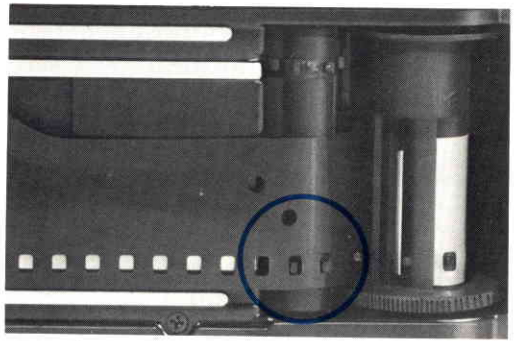
The ON/OFF switch, located on the back of the camera just below the winding lever, controls the operation of the Variable Aperture AE control, the electronically controlled portion of the Electro-Mechanical Shutter (from 1—30 sec.), the winding lever, and shutter button. To turn the camera on, push the switch up. This activates the camera's electric circuit and makes the winding lever spring out to its stand-off position 15° away from the camera body. Now the winding lever can be operated easily with the tip of your thumb. Advancing the film and recocking the shutter for the next shot are accomplished in a single, short 120° throw to the right.

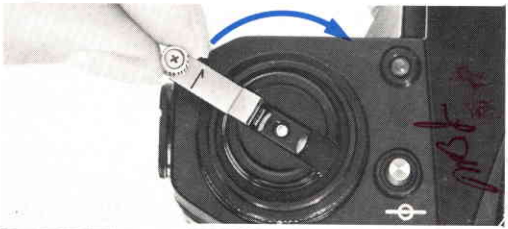


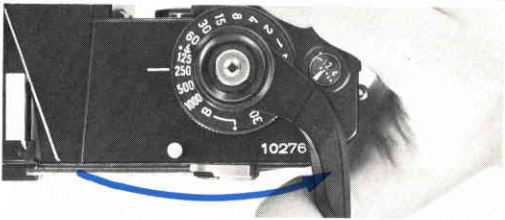
D Loading the Film

The Canon EF uses color or black and white film in standard 35mm cartridges. To load a cartridge into the camera, first open the camera's back cover. Fold out the rewind crank, grasp it and pull the rewind knob up sharply. The back cover will pop open. Put the cartridge into the film cartridge chamber, push down and rotate the rewind knob until it drops into its fully-seated position. Pull the film leader across the camera and push the tip into one slot of the multi-slot take-up spool. Advance the film once, making certain the sprocket holes of the film are engaged in the teeth of the film transport sprocket. Close the back cover until it snaps shut. Gently turn the rewind crank clockwise to take up the slack in the film and then fold the rewind crank back in. Operate the winding lever two more times while watching the rewind knob. If it rotates, the film is loaded properly. If the knob fails to rotate, then open the back cover and reload the film.





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NORMAL
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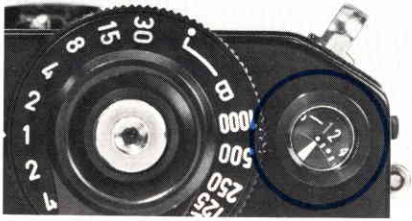
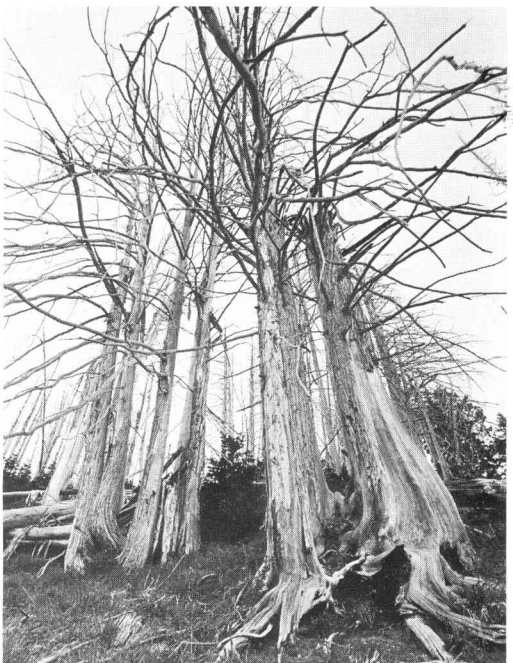


- The Canon EF has an Automatic Blank Shot Mechanism which frees the photographer from using the shutter button during film loading. The winding lever works independently of the shutter button until frame number one is reached.
- Avoid direct sunlight when loading or unloading the film. If no other shade is available, then turn your back on the sun and use the shadow of your body to shield the camera while loading.
- Commercially available cartridges come in 12, 20 and 36 exposure rolls. One way to save money on the cost of film is to bulk load your own cassettes. Bulk film in 50 or 100-foot rolls, a bulk film loader and some reloadable cassettes are all you need. A darkroom is not necessary. For more information, contact your local camera dealer.

Canon FD 17mm f/4 S.S.C., 1/500 sec., AE, ASA 400

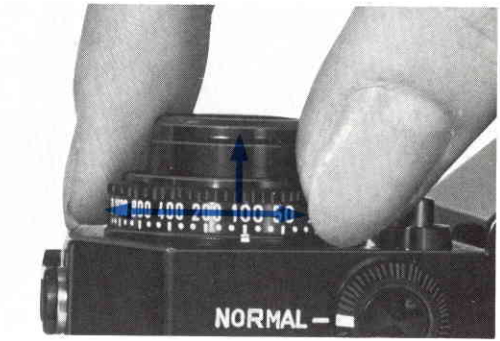


E Setting the ASA

The ASA is a numerical rating of a film's sensitivity to light. A higher ASA number indicates a faster film which is more sensitive to a given amount of light; a lower ASA number indicates a slower film which is less sensitive to the same amount of light. The relationship between ASA numbers is such that a film of ASA 100 is twice as fast as one rated at ASA 50. The film manufacturer's recommended ASA rating can be found in the data sheet packed with the film or printed directly on the cartridge itself. To set the ASA, lift up the ASA ring, located underneath the rewind knob, and rotate it in either direction until the proper number is aligned with the white index mark. When the ring is released, it automatically locks into position. The table below indicates the ASA and their corresponding DIN numbers.

● Setting the correct ASA is essential to the proper operation of the camera, since the ASA is one of the three bits of information (the other two are the shutter speed setting and the brightness of the scene) which helps the Variable Aperture AE control determine the proper exposure.

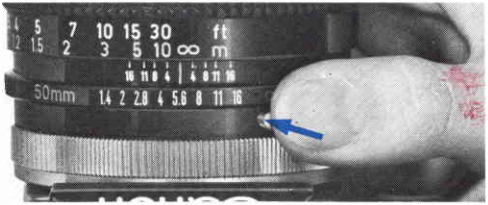
● When changing to a film of a different ASA, do not forget to reset the ASA ring. Otherwise, your film will be improperly exposed.

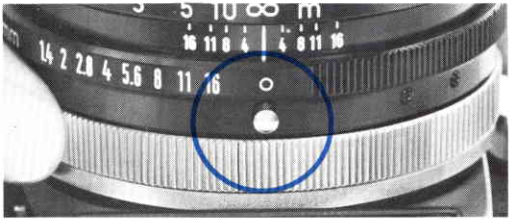


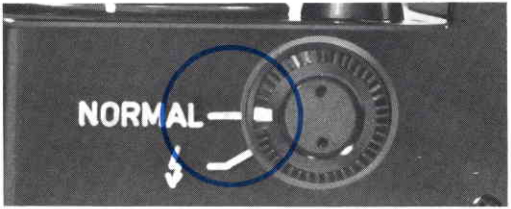
ASA	12			25			50			100			200			400			800			1600			3200										
	(16)	(20)		(32)	(40)		(64)	(80)		(123)	(160)		(250)	(320)		(500)	(650)		(1000)	(1250)		(2000)	(2500)											
DIN	12			15			18			21			24			27			30			33			36										
	(13)	(14)		(16)	(17)		(18)	(20)		(22)	(23)		(25)	(26)		(28)	(29)		(31)	(32)		(34)	(33)											

F Setting the Aperture Ring and the CAT Switch

The amount of light that is allowed to strike the film is determined by the lens diaphragm. This amount of light is represented by "f" numbers or f/stops engraved on the aperture ring which clicks into place as it is rotated. The f/stop designations indicate the opening formed by the diaphragm, and this opening is called the aperture. On the standard 50mm lens, the engraved f/stops are 1.4, 2, 2.8, 4, 5.6, 8, 11, and 16. At f/1.4, the lens is at its maximum aperture with the diaphragm wide open. For this reason, f/1.4 is said to be a large f/stop even though it is small in numerical value. And conversely, f/16 is the minimum aperture of the lens and is a small f/stop. The relationship between successive f/stops is arithmetic: as you close down the diaphragm, each f/stop indicates half as much light as the preceeding one. When operating the aperture ring manually, you may use any aperture setting. For normal AE operation, the aperture ring must be set at the green mark. Hold in the AE lock pin while turning the aperture ring from f/16 (or f/22 on some lenses) to the green "O." At this special setting, the aperture ring is disengaged, allowing the camera to adjust the lens diaphragm automatically to any f/stop setting. Also, to make sure that the camera selects the proper f/stop, the CAT switch must be set







at the "NORMAL" position.

- If the preceeding discussion seems complex, keep in mind the following definitions:

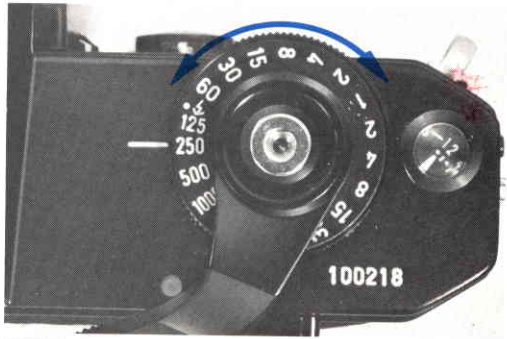
An f/stop is a number used to represent the amount of light which is allowed to pass through the lens.

The diaphragm is the mechanical iris inside the lens which is opened or closed according to the setting of the aperture ring.

The aperture is the hole or opening formed by the diaphragm blades.

G Selecting a Shutter Speed

The **amount** of light striking the film is controlled by the lens diaphram, whereas the **length of time** that light is allowed to strike the film is controlled by the focal plane shutter. The shutter consists of two opaque "curtains" which travel over the opening and allow the light coming through the lens to reach the film. The length of time the curtains remain open determines the exposure time for your picture. On the shutter speed dial, shutter speeds from 1/1000 – 1 sec., and B, are marked in white (with the exception of the orange "125" for electronic flash synchronization), while the speeds from 2 – 30 seconds are marked in yellow. To set the shutter speed, rotate the dial in either direction until the



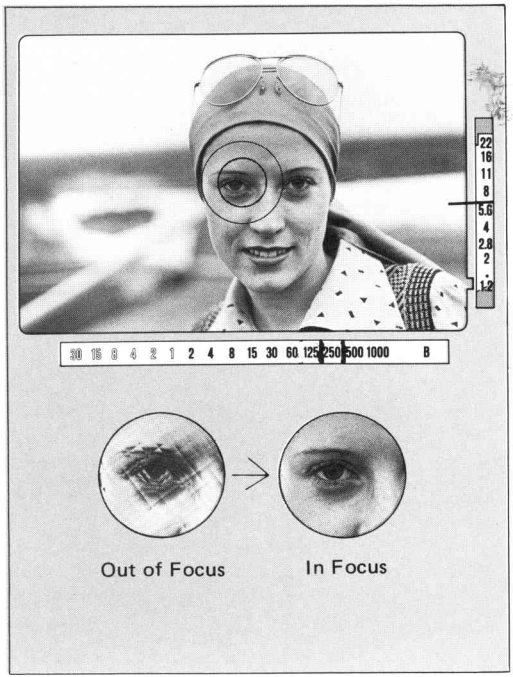
desired number clicks into place next to the white index mark. An in-between setting should not be used. When changing shutter speeds, there is no need to remove your eye from the eyepiece, because the selected shutter speed is automatically indicated on the large scale in the viewfinder. With a total of 17 click-stop settings to choose from, the question you might ask is: "How do I select the right shutter speed?" First of all, you must select a shutter speed which keeps the meter needle somewhere within the white portion of the aperture scale. If you take a picture when the needle is touching either of the red warning marks (underexposure at the bottom of the scale and overexposure at the top), then your photograph will be improperly exposed. Depending on the brightness of the scene, the film's ASA, and your photographic intentions, you can use the following general guidelines to help you select an appropriate shutter speed when using the standard 50mm lens: When you are shooting outdoors in the open or want to freeze action, choose fast shutter speeds (1/125 — 1/1000 sec.). When photographing in the shade or indoors without a flash, then select slower speeds (1/30 or 1/60 sec.). To take pictures at night (without a flash), use slow shutter speeds (30 — 1/15 sec.), with the camera mounted on a tripod.

- At the "B" setting, the shutter will remain open as long as the shutter button is depressed. A cable release is a handy device for holding the shutter button in for long periods of time. Also, it allows the shutter to be opened without the photographer touching the camera or button directly, and therefore keeps camera shake to a minimum, thus insuring a clear picture. At "B," the aperture ring must be set manually.
- Intentional blur oftentimes can give your photographs a convincing feeling of action. Two types of intentional blur are (1) subject blur and (2) background blur created by panning. Subject blur (1) is created by keeping the camera still while the subject moves across the field of view. The subject becomes blurred while the background remains sharp. Background blur (2) can be created by panning, or following the subject with the camera, keeping the subject basically at the same position in the viewfinder. The subject remains relatively sharp while the background blurs into a streaky effect. Experiment by using slow shutter speeds of 1 — 1/60 sec. A neutral density filter (ND4 or ND8) over the lens will permit using slow shutter speeds even with fast films.

Canon FD 100mm f/2.8 S.S.C., 1/15 sec, AE, ASA 400, ND-8 filter.

H Viewing and Focusing

The Canon EF is a single-lens-reflex (SLR) camera. This means that you view the subject through the same lens as is used to take the photograph. Continuous viewing (except at the moment of exposure) is made possible by the use of an instant-return mirror located inside the body just below the pentaprism. Since the picture you see in the viewfinder is the same as the one recorded on the film, parallax is completely eliminated. The viewfinder remains bright during AE operation, because through-the-lens metering (TTL) is performed with the lens at maximum aperture. Focusing is made easier by a center spot microprism rangefinder. This small round area in the center of the viewfinder exaggerates the difference between the "in focus" and "out of focus" image. By rotating the focusing ring on the lens barrel until the center spot microprism seems to disappear, the image is brought into focus. For subjects with indistinct outlines, or when using certain lenses (such as macro or super-telephoto lenses), the entire ground glass area of the viewfinder may be used for focusing. With the exception of infrared film, when the image appears sharp in the viewinder, it will be sharp on the film.

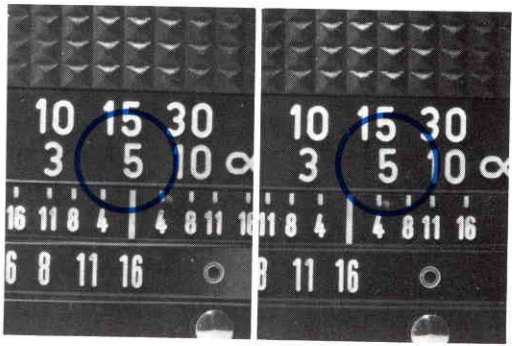


● In fast-breaking situations, or in candid shooting, you can prefocus the lens by using the distance scale engraved on top of the lens barrel. Estimate the distance between you and the subject. Then turn the focusing ring until this distance (in feet or meters) is aligned with the focusing index mark. This method is especially useful when there is not enough time for through-the-lens focusing, or when you do not want to draw attention to yourself by lifting the camera to eye level.

● Film Plane Indicator — the ⊖ mark engraved on the camera just to the left of the pentaprism indicates the exact position of the film plane. This is an aid when actually measuring the film-to-subject distance in macrophotography.

● Black and White Infrared Photography: Because infrared light rays focus on a plane slightly behind that of ordinary light rays, it is necessary to modify slightly the normal method of focusing the lens. First, focus on the main subject as usual. Next, take note of the focused distance (in feet or meters) which appears opposite the focusing index mark. Then, turn the focusing ring slightly, so that the focused distance is aligned with the tiny red dot engraved on the lens barrel just to the right of the focusing index mark. Use a red filter (R1) over the lens and set the aperture ring manually following the film manufacture's suggestion for exposure settings.

● Color Infrared Photography: In color infrared film, two of the film's layers are sensitive only to visible light, while the third layer is sensitive only to infrared. Therefore, it is not necessary to readjust the focused distance. However, f/stops of f/5.6–16 are recommended to produce sharp pictures. Use either a dark yellow (Y3) or orange (O1) filter and set the aperture ring manually following the film data sheet.



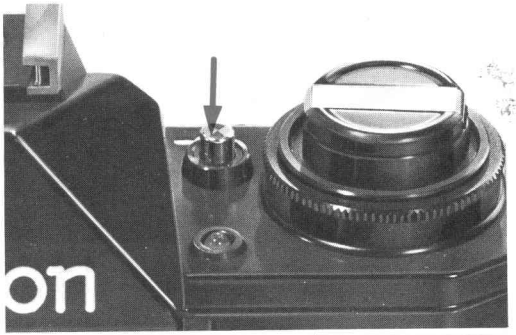
I Locking-In an Exposure Reading

In the majority of cases, Canon EF's Central Emphasis Metering system will give correct exposure readings in AE photography. However, occasionally you will encounter picture-taking situations which require a departure from normal AE operation. For example:

(1) Your subject is strongly backlighted or contrasts sharply with the background and will not appear in the center of the picture.

(2) The entire scene is either extremely light, such as a light colored subject in snow; or it is very dark, such as a dark colored subject in deep shade or against a dark background.

In the above cases, it is necessary to modify the automatic exposure reading which the camera normally sets by itself. The Canon EF provides a convenient way to do this by incorporating an AE memory lock button on the left side of the camera between the pentaprism and the ASA ring. By holding in this button, you can lock the meter needle of the camera at a particular f/stop while you change the position of the camera (and hence the view in the viewfinder). To produce a good exposure in the first situation (1) described above, focus on your main subject and center it in the viewfinder. If



the subject appears small, move in closer until it occupies about one-third of the total viewfinder area. Push the AE memory lock button and hold it in. Then you may step back and/or change the position of the subject in the viewfinder to suit your compositional taste, while the correct exposure reading is locked into the camera's Variable Aperture AE control. Releasing the shutter will produce a properly exposed photograph.

In the second situation (2) above, the scene cannot be metered directly. Most scenes are composed of both light and dark areas which usually average out to a medium gray. Because all TTL exposure meters are calibrated to give proper exposure when reading a neutral gray card (of 18% reflectance), they give correct exposure for most scenes. In extreme cases in which the scene is predominantly light or predominantly dark, the Variable Aperture AE control must be fooled into providing the correct exposure. One readily available alternate subject is the **palm** of your own hand held out a foot or so in front of the lens and placed in the same light as your original subject. Focus on your subject normally. Then fill the viewfinder with the out of focus image of your right palm making absolutely sure that it is in exactly the

same light as your main subject. Push in and hold the AE memory lock button with your left thumb. Return your right hand to the camera body and release the shutter. The exposure you locked in will be close to the proper exposure needed for a very light or very dark subject.

- In practical terms, the exposure latitude of both black and white and color **negative** film (from which prints are made) is inherently large enough to overcome almost all AE maladjustments which occur in day-to-day shooting. Therefore, it is **not** mandatory to use the AE meory lock button at all. However, color **transparency** film has extremely small exposure latitude and requires near perfect exposure to produce good results. When taking color slides, the use of the AE memory lock button in the special situations previously described is strongly recommended.
- A standard 18% reflectance gray card is a much more accurate surface to meter than the palm of your hand. It may be purchased very inexpensively from your local camera dealer and carried with you for situations requiring nothing less than perfect exposure.

J Releasing the Shutter

The Canon EF's shutter button is conveniently located on the right side of the camera and is coaxial with the winding lever and shutter speed dial. The shutter button stroke is very light and short for a Variable Aperture AE camera. As a built-in safety feature, the shutter button is locked automatically when the camera is turned off.