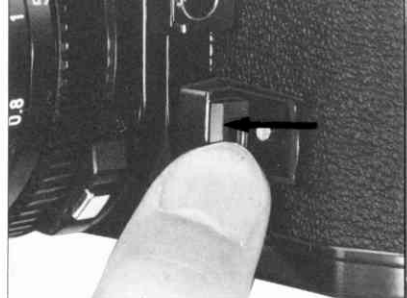


# **Specialized Procedures**



## Stopped-down AE Photography

There are basically two cases which require stopped-down AE photography (unless you wish to operate in manual override). It is necessary when you use any lens which is not FD, such as FL or R lenses or the Reflex Lens 500mm f/8. With the exceptions of the FD-U extension tubes or Extenders, it is also necessary whenever any accessory is inserted between the camera and any lens for increasing the lens' focal length or for increasing lens extension for higher magnifications in close-ups or photomacrography. It is, of course, also necessary in photomicrography. It is possible, but not necessary, to use the stopped-down AE mode when an FD lens is mounted directly onto the camera with no accessory in-between. In the stopped-down AE mode, exposure metering will be done not at full aperture as usual but, rather, at the same aperture that the picture will actually be taken.

To set the camera in the stopped-down AE mode when using a non-FD lens, simply fold and push in the A-1's stop-down lever.

**When using an FD lens, first advance the film and then disengage the lens aperture ring from the "A" mark before you push in the stop-down lever.** If the film is not advanced before turning the aperture ring from the "A" mark, the lens will stop down only as far as the aperture set for the previous exposure. It is impossible to push in the stop-down lever when an FD lens is set at "A".

When in the stopped-down AE mode, it does not matter whether the AE mode selector is set to Tv or Av. The camera will behave as if it was in the aperture priority AE mode. You must select the aperture by turning the lens aperture ring while the camera will automatically select a shutter speed. When you preview the exposure, only the shutter speed

data will be displayed in the viewfinder. Unless the shutter speed data is flashing on and off, simply press the shutter button for an accurately exposed image. Exposure warnings are exactly like those in aperture priority AE. Set the aperture ring to a larger aperture if a shutter speed of the slow range flashes on and off in the viewfinder. The shutter speed value that flashes to indicate underexposure depends on the ISO film speed. Set it to a smaller aperture if the highest shutter speed of "1000" flashes on and off. When the shutter speed flashes on and off even when the aperture ring is turned to the extreme limits, you are outside the meter coupling range. Change the light level or switch to a more appropriate film.



Since you can determine correct exposure simply by watching the shutter speed data in the viewfinder, you need not keep an eye on the lens aperture ring as you turn it. However, for good depth of field when using accessories for close-up photography, it is best to close the lens to a relatively small aperture. More details are given in the instruction booklets for the various accessories involved.

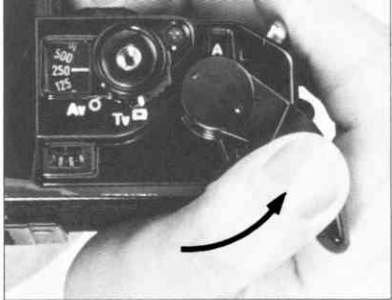
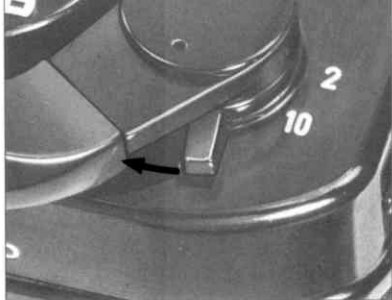
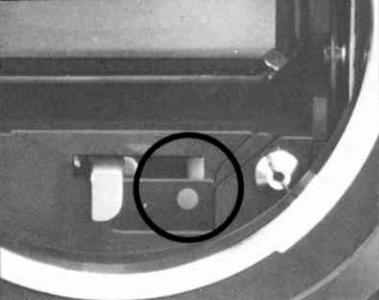
You will find that your A-1 is unusually effective in photomacrography and photomicrography. Even though the amount of

light reaching the film plane is greatly reduced due to attached accessories, the A-1 is capable of metering as low a light level as EV-2 (with ISO 100 film) in the stopped-down AE mode. Furthermore, since the A-1 employs a through-the-lens meter, no exposure correction is necessary when accessories are inserted between camera and lens. When you are finished operating in the stopped-down AE mode, unfold and press down on the stop-down lever. It will pop out and the camera will be reset for full aperture metering. With an FD lens, you can now return the lens aperture ring to the "A" mark if you wish to use the A-1 in a full aperture metering AE mode.

If you return the aperture ring to "A" but leave the stop-down lever pushed in, the camera will remain in the stopped-down AE mode and all subsequent exposures will be made at the lens minimum aperture. Though exposure will be correct, this situation severely strains camera mechanisms and is not recommended.

When performing stopped-down metering, you also have the advantage of being able to confirm depth of field directly in the viewfinder. See Checking the Depth of Field.

It is not possible to shoot sequentially with the Power Winder A or A2 or Motor Drive MA when in the stopped-down AE mode using an FD lens. In this situation, only single-frame power winding is possible.



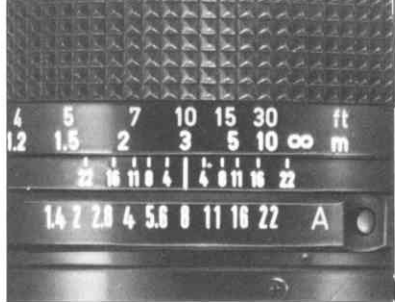
## Warnings of Incorrect Operation in Stopped-down Photography

Two problems can arise if you use the camera incorrectly in the stopped-down mode. The first problem occurs if the stop-down lever of the camera is locked in before you mount the lens. If you expose a frame in this situation, it will be incorrectly exposed due to incorrect coupling of the aperture ring. To prevent this, before you mount a lens, make sure there is no red dot beside the stop-down coupling lever inside the camera body. The red dot is very conspicuous and appears only when the stop-down lever is pushed in.

The second problem arises if you push in the camera's stop-down lever and, before taking a shot, release the stop-down lever and return the lens aperture ring to the "A" mark. If you then try to press the shutter

button, you will notice that neither it nor the film advance lever will operate. What's more, this is when the "EEEE EE" mark will flash in the viewfinder whether the viewfinder display switch is turned off or not. This appears to be a distressing situation, but it is very easily corrected. Push the film advance lever into its retracted position close to the camera body. The multiple exposure lever is underneath. Push it to the left. Now turn the film advance lever. With this operation, the camera will work in the normal way.





## Manual Override

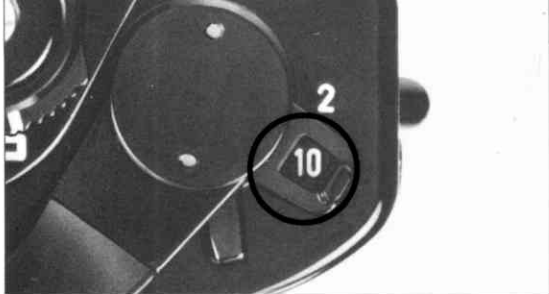
You may have occasion to wish to cancel the A-1's AE capabilities to control exposure, both aperture and shutter speed, by yourself. This will be the case if you are using a separate exposure meter, if you wish to correct exposure in unusual lighting conditions or in flash photography, or if you want to control exposure for creative effects.

With the A-1, this is a simple process. Using an FD lens, first disengage the aperture ring from the "A" mark. Set the AE mode selector to Tv. The Av setting is useless. Set the aperture by turning the lens aperture ring, and set the shutter speed by turning the AT dial. When you press the exposure preview switch or the shutter button halfway to preview the exposure, the data displayed in the viewfinder will be the same as if the camera was in shutter priority AE.

You will see the shutter speed you have set on the AT dial. The aperture displayed is that the camera would select on Auto. Although the aperture you have manually set on the aperture ring is not displayed, it is at that aperture that your picture will be exposed when you press the shutter button. You will also see the red "M" inside the viewfinder to indicate that you are in the manual mode.

To operate the camera manually using an FL lens or any other lens without a full aperture signal pin, set the AE mode selector to Tv. With these lenses you must always set the aperture by turning the lens aperture ring. In the case of these lenses, the digital readout is unreliable, and it is better to cut it out altogether by switching off the viewfinder display lever. You must rely on your own experience for setting the exposure.

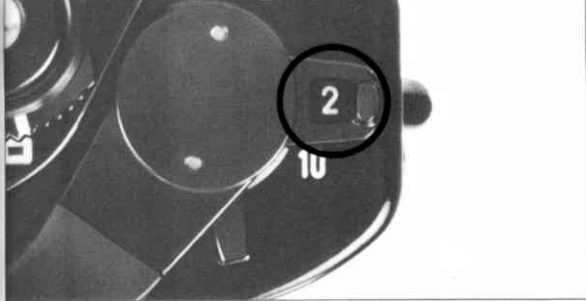
*With an FD lens, if you set the AE selector to Av instead of Tv while the lens is away from the "A" mark, the digital readout will show the aperture you have set on the AT dial plus the corresponding camera-selected shutter speed as in aperture priority AE along with "M" for manual aperture setting. Although you are no longer in manual override, it is possible to make an exposure correction by setting the lens aperture ring to a different aperture than that on the AT dial. Exposure will be made at the aperture set on the lens aperture ring and the camera-selected shutter speed.*



### **Self-Timer**

The self-timer is usually used either so that you can include yourself in a picture or as an alternative to a cable release for the softest possible shutter release in delicate photography, such as photomacrography and photomicrography, or on other occasions when long exposures are necessary. This particular self-timer allows a time-lag of either two or ten seconds.

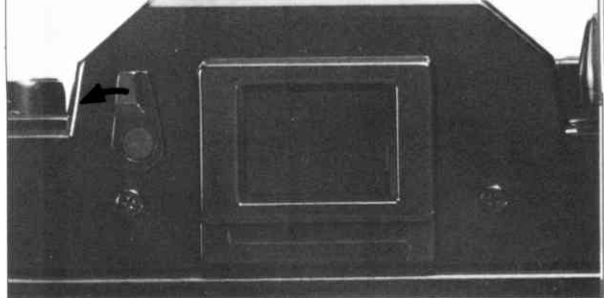
To use the self-timer, first make sure the film is wound and that the shutter speed is not at "B". If the film is not wound, the shutter and the self-timer will not act. The self-timer will not function normally at "B". Now set the main switch to 2 or 10. Focus and compose your picture. You may press the exposure preview switch to check the exposure. However, remember that, since the A-1 is designed to reflect any last-second changes in exposure when in an AE mode,



it will not set the exposure until a split second before the shutter itself is actually released. Once you have completed these preparations, flick the eyepiece shutter lever to close the eyepiece shutter so that no light comes through the eyepiece to affect the exposure. Now press the shutter button and run into place if your purpose is to include yourself in the picture. The shutter will be released automatically following the time interval you have set.

The moment you press the shutter button, the self-timer lamp starts to flash at the rate of two flashes per second. At two seconds before shutter release, it starts to flash eight times per second to warn you of impending shutter release.

If you wish to cancel the self-timer before shutter release, either turn the main switch to the "L" position or press the battery check button.

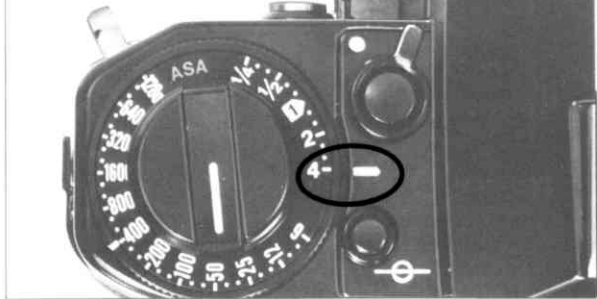


You may repeat the self-timer process as many times as you wish. After completing self-timer photography, return the main switch to either "A" or "L".

Please note that the eyepiece shutter should be closed whenever exposure is to be determined when your eye is not to the eyepiece. This is applicable to self-timer photography, remote control photography and often to tripod or copy stand photography and is especially important in night photography.







## EXPOSURE COMPENSATION

You can, of course, make exposure corrections by operating the camera manually, but the A-1 is also equipped with other devices which allow you to correct the exposure while in an AE mode.

Unusual lighting conditions which necessitate exposure correction include those instances when light takes up the major part of the viewing area, such as in beach or snow scenes, and contre-jour or backlit situations in which light is shining behind the subject, such as when your subject is in front of a window or when a lamp or the sun is shining behind him/her. In such situations, the camera might be fooled into giving a reading which would underexpose your subject, so you must give it more exposure than the camera shows in AE. This also applies to high-key or intentionally overexposed shots. On the other hand, it is necessary to reduce the exposure for a low-key shot. Some correction may also be necessary if your sub-

ject is not located in the central part of the viewing screen.

### Exposure Compensation Dial

One device for correcting exposure in the AE mode is the exposure compensation dial. To make the correction, simply hold in the exposure compensation lock button while turning the outer knurled edge of the ISO setting dial until the compensation dial index is aligned with the desired correction. The exposure compensation scale covers a full  $\pm 2$  f/stop range in indications of 1/4 (underexposure by 2 f/stops), 1/2 (underexposure by one f/stop), 1 (normal AE exposure), 2 (overexposure by one f/stop) and 4 (overexposure by two f/stops). The scale is engraved in 1/3 f/stop increments so that intermediate settings may be used. The latter may come in handy for bracketing the exposure.

Since the digital readout is in only 1/2 f/stop increments, depending on the situation, the readout will not necessarily change to indi-

cate an exposure adjustment of only 1/3 f/stop, but your picture will be exposed in the 1/3 f/stop increment you set on the dial.

Generally, exposure should be corrected whenever the high-key (light) or low-key area occupies more than half of the total viewing area. How much more or less exposure should be given depends on the lighting condition as roughly described below. However, these are only general guidelines meant to help you while experimenting.

*Some situations require special measures. For instance, when shooting a subject against the sun or some other exceptionally strong light source, requiring drastic exposure correction, or when you shoot a subject in an unvarying lighting condition such as under photolamps in a studio, it*

*may be better to use the exposure memory switch as explained on the next page or manual override.*

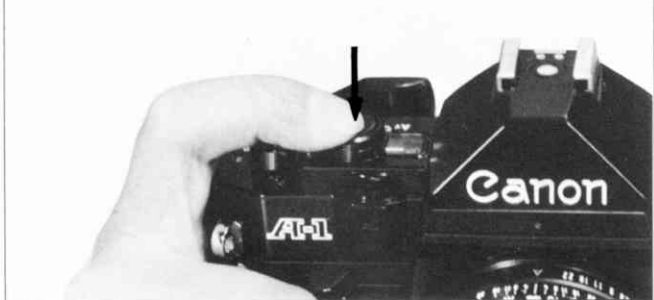
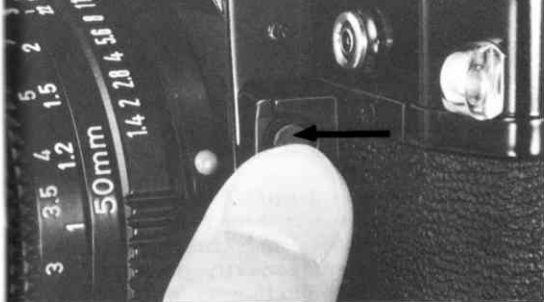
*The exposure compensation dial can also be used to correct exposure in multiple exposures as explained later.*

#### Usable Range of Exposure Compensation Dial According to ISO Rating

ISO 6:	1/4·1/2·1
ISO 12:	1/4·1/2·1·2
ISO 25-3200:	1/4·1/2·1·2·4
ISO 6400:	1/2·1·2·4
ISO 12800:	1·2·4

Once you have made an exposure correction on a specific frame using the exposure compensation dial, do not forget to reset the dial to its original setting. Otherwise, all following frames will be incorrectly exposed.

Scale	Exposure Correction	Application
1/4	2 f/stops underexposure	Black background
:		Spot lighting
1/2	1 f/stop underexposure	Black background occupying half of viewing area
:		
1	Normal	Overhead interior lighting
:		Subject by a window
2	1 f/stop overexposure	Blue sky or sea backgrounds occupying half of viewing area
:		Contre-jour portrait, white background, snow scene or blue sky background
4	2 f/stops overexposure	



### Exposure Memory Switch

The A-1 also offers an exposure memory switch for correcting the exposure in the AE mode. Essentially, this switch assures correct exposure by exposing the picture for your subject no matter what the surroundings are. When you press in the exposure memory switch, it locks the exposure value (EV) for whatever you are metering. You can then compose the picture as you wish, and it will come out correctly exposed for whatever you metered. An extra advantage in this is that, depending upon whether you are in the shutter priority or aperture priority AE mode, you can change either one and the camera will automatically select the other to arrive at the same locked-in exposure value.

For instance, suppose you want to take a portrait of a subject against the sun. First move in closer to your subject until it is centered in and taking up about one-third of

the total viewing area. Push and hold in the exposure memory switch to lock the exposure value metered for your subject. Now step back and compose the picture as you like. Change the aperture or shutter speed, depending upon which priority you are in, if necessary. Continuing to hold in the exposure memory switch, press the shutter button. Your subject will be correctly exposed.

Of course, you have a problem if you cannot approach your subject to meter it directly. Then try to find an approachable subject which you think would give the same exposure value as your subject. Meter it, push in and hold the exposure memory switch. Compose your subject and shoot for correct exposure.

Please note that you must hold in the exposure memory switch until after you press the shutter button. It does not lock.



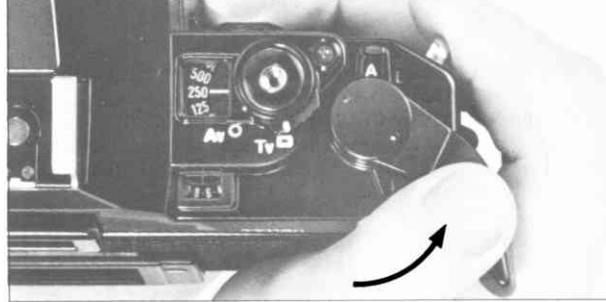
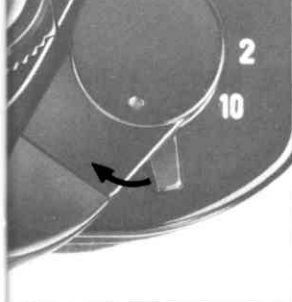
### Changing the ISO Setting

There is another way to correct exposure which can be used whether you are in the manual or the AE mode. That is to change the ISO film speed setting on the camera. A film with an ISO rating twice that of another film requires only half the amount of light for correct exposure as compared with the other film. For instance, if you have an ISO 200 film loaded, you can make an exposure correction equal to closing the aperture one f/stop or raising the shutter speed one step by changing the ISO setting on the camera to ISO 400.

*Other useful tricks can be performed by changing the ISO setting. You may be stuck, for instance, indoors without flash. Even with ISO 400 film loaded in your camera, you may be forced to use undesirably slow shutter speeds. You may solve this by "pushing" the ISO setting on the camera to*

*a higher value. Usually this is done by multiplying the normal ISO rating by some multiple of two, say by two or four. In this case, the whole roll of film must be shot at the "pushed" ISO or you will have to sacrifice one or the other of a whole series of frames. Also, do not forget to inform your developing lab of the change or the whole film will be incorrectly developed. This is only an introduction to this technique. Not all films can be "pushed" and not all developing labs will handle them. Read more about "pushing" the ISO in photographic literature and know what you're doing before you try it.*

**This trick should not be confused with the above which involves intentional exposure correction for only one frame after which the ISO dial should be reset to its original value.**



## Multiple Exposures

Making two or more exposures on the same frame is an exciting technique which is very simple to perform with the A-1. After making the first exposure, do not turn the film advance lever but return it to its retracted position close to the camera body. Switch the multiple exposure lever underneath the film advance lever to the left. A red dot will appear indicating that the camera is set for a multiple exposure. Now turn the film advance lever. The film will remain stationary, holding its exact position. At the same time the shutter will be re-cocked, and the multiple exposure lever will automatically return to its original position over the red dot. When you press the shutter button, your second shot will be in exact registration over the first. If you turn the film advance lever, the camera will be set for the next frame.

You can make any number of exposures on the same frame simply by repeating the above procedure before turning the film advance lever. There is a possibility of a slight movement of the frame if you make an excessive number of exposures on the same frame, if you turn the film advance lever too forcefully or if there is film slack. The frame counter is stopped until you actually advance the film to the next frame.

Once you have set the camera for a multiple exposure, there is no way to cancel the process before actually making it. If you suddenly decide you don't want a multiple exposure but still want to preserve the one or several shots you have already made on the frame, you have the best chance of doing that if you manually set the lens aperture ring to the minimum aperture, the shutter speed to 1/1000 sec., cover the lens with the lens cap and then release the shutter.

Multiple exposures are not possible when the Motor Drive MA or Power Winder A or A2 is mounted on the A-1 and in operation. They are possible even when these accessories are mounted if you switch them off and advance the film manually.

*There are some situations which seem to call for a multiple exposure but which are better handled in another way. One of these is recording multiple bursts of fireworks on the same frame. Rather than using the multiple exposure lever, mount the camera on a tripod, set the shutter speed at "B", and set the aperture ring manually to the appropriate f/stop according to the following table. Hold the shutter open with a cable release until several bursts are registered on the frame.*

ISO/ASA	25	50	100	200	400
f/stop	5.6	8	11	16	22

## Exposure in Multiple Exposures

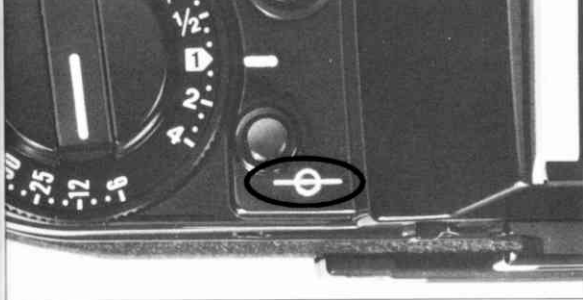
Generally, the first exposure of a multiple exposure should be of a relatively dark subject so that the image in the next exposure will show up clearly. For best results in multiple exposures, it is also advisable to decrease the exposure for each shot. Depending on the situation, there are several ways to do this. One way is to change the

ISO to a higher value as described earlier. In this method, you must first decide how many exposures you want to make on the same frame. If a double exposure, make both exposures at twice the normal ISO; if a triple exposure, make all three exposures at three times the normal ISO; if a quadruple exposure, make all four exposures at four times the normal ISO, etc.

Another way to correct exposure is to use the exposure compensation dial at the settings outlined in the table below.

Number of Multiple Exposures	Exposure Compensation Scale
Double	1/2
Triple	Between 1/2 and 1/4
Quadruple	1/4

The method when using the exposure compensation dial for this purpose is the same as that of changing the ISO. That is, for a double exposure, the dial should be set to 1/2 for both exposures and so on. Actually, both methods described above are only general guidelines, and your technique will benefit greatly from experience.



### Film Plane Indicator

This mark is engraved on the top of the camera beside the film rewind knob, just to the left of the pentaprism, to indicate the exact position of the film plane. It is not used in general photography, but it is helpful in close-up photography and photomacrography for obtaining the exact shooting distance from film to subject.

### Distance Scale

The distances on the scale are calibrated from the film plane to indicate the focused distance from film plane to subject.

The scale is not generally used except when confirming depth of field, performing guide number calculations in flash photography, or using infrared film.

Read one-digit distances in the middle of the number marked on the scale. Two-digit distances should be read at the point between the two digits.



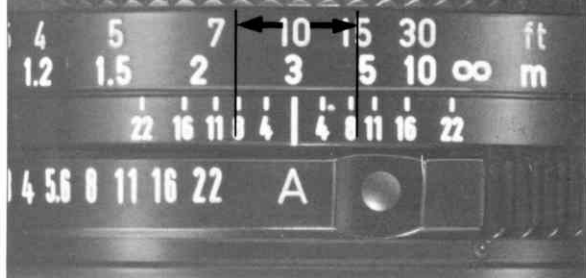
### Infrared Index Mark

Since infrared light rays have longer wavelengths which focus on a plane slightly behind that of ordinary visible light rays, it is necessary to slightly adjust the focus of the lens when using black and white infrared film. The infrared index mark engraved on the lens barrel is used for this purpose. After focusing the same as usual, note the tiny red dot engraved on the lens barrel just to the right of the distance index, and turn the focusing ring to align the focused distance with this red dot. For instance, if the focus is at 5m on the distance scale, turn the focusing ring to align the 5m mark with the red dot. After that focusing correction, you can release the shutter.

When using infrared black and white film, visible light rays must be kept out by means of a deep red filter (R1) over the lens. When using infrared color film, there is no need to

make a focusing correction. Follow the detailed instructions of the film manufacturer.

*The position of the infrared index mark has been computed for the use of infrared film with peak sensitivity at 800nm (such as Kodak IR 135) and a red filter such as Wratten 87.*

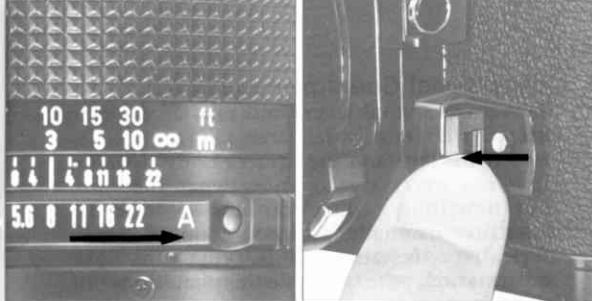


### Checking the Depth of Field

There are two ways to find out what the depth of field is. One is by using the depth of field scale which is a series of f/stops repeated on each side of the distance index mark on the lens barrel. The scale differs according to the lens. First focus your subject. Find the two f/stops on the depth of field scale which correspond to the aperture you or the camera have set for the exposure. Draw imaginary lines from these two f/stops to the distance scale. The effective depth of field extends between those two distances. For example, using a standard 50mm lens focused at 3m with the aperture set at f/8, depth of field extends from 2.4m to 4.5m. Any subject from 2.4m to 4.5m away will be in reasonably sharp focus in the image.

You can also visually check the depth of





field looking at the image through the viewfinder by pushing in the stop-down lever just as in stopped-down AE photography and setting the lens to the working aperture. This will probably be one of those occasions when you will release the stop-down lever and return the lens to "A" before taking a shot. You will have to operate the multiple exposure lever as explained earlier before the camera will properly operate. See WARNINGS OF INCORRECT OPERATION IN STOPPED-DOWN PHOTOGRAPHY, p. 64.



Small Aperture



Large Aperture

## Lens Signal Coupling

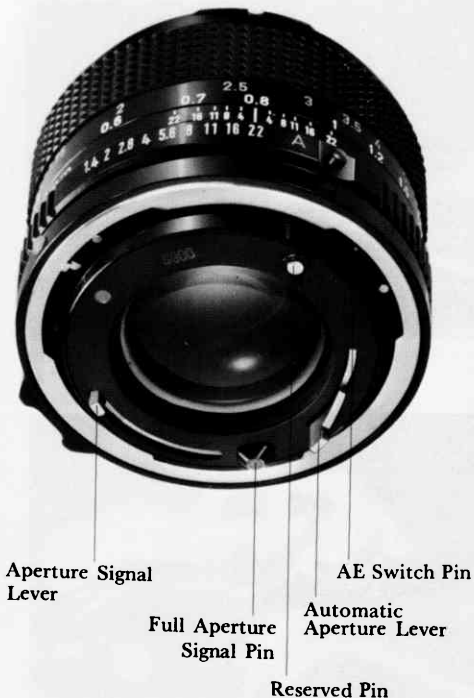
There are several levers and pins at the rear of an FD lens which transmit signals between the lens and the camera body. Usually it is not necessary to know what they are, but sometimes, when you must operate the aperture manually for non-coupled accessories for instance, it is. Just for your information, we include explanations of them here.

### 1. Aperture Signal Lever

With an FD lens, exposure metering is performed through the lens at full aperture. This is nice for you since you have a bright viewfinder to focus and compose, but to determine correct exposure, the camera must know the effective aperture. For most cameras, such as the Canon F-1, this lever transmits the preset aperture on the lens aperture ring to the exposure meter. It is coupled to the lens aperture ring and moves in proportion to its rotation. In AE photography, however, the exposure meter receives a signal directly from the camera.

### 2. Automatic Aperture Lever

This lever couples to the camera body to stop the diaphragm down to the preset aperture just before the shutter releases. This is the lever that must be locked for manual diaphragm control with a non-coupled accessory.



### 3. Full Aperture Signal Pin

This pin transmits the maximum aperture of the lens to the exposure meter to set the meter coupling range automatically.

### 4. AE Switch Pin

When the "A" mark of the aperture ring is set to the aperture index, the AE switch pin comes out to insure that the lens, at this setting, can be mounted only on cameras designed for AE photography.

### 5. Reserved Pin

This pin is designed for use with additions to Canon's camera system that may be developed in the future.

## Unusable Lenses

Out of the several series of Canon lenses, there are a few older individual lenses which cannot be used on the A-1. Do not attempt to mount the following five lenses:

FL 19mm f/3.5

FL 58mm f/1.2

R 58mm f/1.2

R 100mm f/3.5

FLP 38mm f/2.8



### **Automatic Diaphragm Control**

When the A-1 is directly coupled with an FD lens, diaphragm control is totally automatic. Exposure metering is performed at full aperture whether the lens aperture ring is at the "A" mark or set to a specific aperture. At shutter release, the diaphragm automatically closes down to the aperture set by the camera or by you with the AT dial or the aperture ring. Following shutter release, the lens automatically returns to maximum aperture.

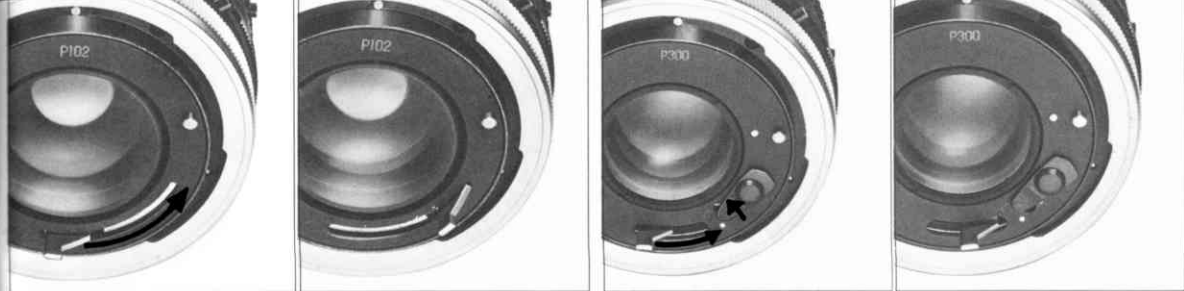
### **Manual Diaphragm Control**

The insertion of manual accessories or a macrophoto coupler between the camera and an FD lens requires setting the lens for manual diaphragm control before stopped-down metering is possible. The instructions for the various accessories involved will tell you whether or not this is necessary.

All FD lenses which lack a Breech-lock mount ring, with the exception of the Macro lenses, are set for manual diaphragm control as follows:

1. Before mounting the lens, insert the hole of the accessory manual diaphragm adapter over the tip of the automatic aperture lever at the rear of the lens. Push the lever to the right and lower the adapter into the groove to lock the lever in that position.
2. Mount the lens onto the accessory. The diaphragm will now open and close as the aperture ring is rotated.

When the manual diaphragm adapter is attached on the rear of one of these lenses, never mount the lens directly on the camera or directly on accessories designed for automatic diaphragm control, such as the Auto Bellows.



All FD lenses with a chrome Breech-lock mount ring and FD Macro lenses are set for manual diaphragm control as follows:

1. Before mounting the lens, push the automatic aperture lever at the rear of the lens to the right where it automatically locks.
2. Mount the lens onto the accessory as usual. The diaphragm will now open and close as the aperture ring is rotated.

Some of these lenses have an additional lock lever. With these lenses, the automatic aperture lever must be pushed fully to the right and the lock lever pushed to "L" to hold the automatic aperture lever in that position.

When using a macrophoto coupler, the Macro Hood must also be mounted onto the rear of the lens.

You may avoid setting the lens for manual diaphragm control when using manual accessories or a macrophoto coupler by attaching the Canon Macro Auto Ring and/or Double Cable Release.

Be sure to reset the automatic aperture lever to its normal position before using the lens once more in direct contact with the camera. In the case of a lens with a lock lever, switch it back to the position of the white dot.

To meter when the lens is set for manual diaphragm control, use the stopped-down AE procedure.



## FLASH PHOTOGRAPHY WITH THE A-1

### AE Flash Photography (Full Auto-flash Photography)

There are nine special automatic flash units, the Canon Speedlites 577G, 533G, 199A, 188A, 166A, 155A and 277T, 299T, which make AE flash photography possible with the A-1. Just slip the Speedlite 577G's or 533G's sensor unit or the 199A, 188A, 166A, 155A or 277T, 299T into the accessory shoe, switch on the flash, focus and shoot. It does not matter whether the AE mode selector is set to Av or Tv. Except for "B", whatever the shutter speed set, as soon as the pilot lamp of the Speedlite comes on, the A-1 switches to the X synchronization speed of 1/60 sec. — automatically. The speedlite's sensor controls the light output for perfect automatic exposure within auto working ranges. And just as automatically, the camera switches back to the shutter speed actually set on the dial as soon as the pilot lamps goes out. The viewfinder offers you full information needed for flash photography. Moreover, when the main switch of the Speedlite is turned off, the flash circuitry is completely cut off and the A-1 switches over to function as an AE control camera without detaching the Speedlite or sensor unit from the accessory shoe.

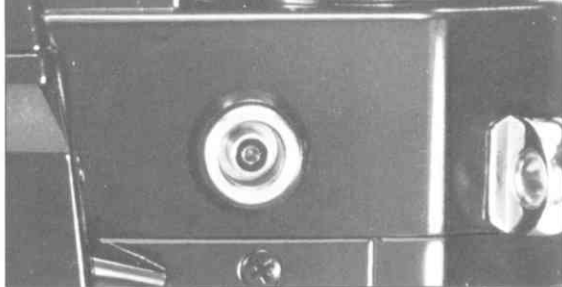
Of course, with the flash still on Auto you can set the aperture manually should you wish to use an FL lens. Even then, however, the camera will automatically switch to 1/60 sec. as soon as the Speedlite is ready for firing.

These Speedlites employ a unique light sensing system, separate in the case of the 577G and 533G, which reduces excessive reflection from the central area to give better overall exposure.

With the Speedlites 577G, 533G and 199A, shutter speeds slower than 1/60 sec. — with the 299T, slower than 1/30 sec. — can be selected resulting in a lighter background. To control depth of field, you can choose among three working aperture that are automatically preset by the camera. The 577G, 533G, 199A and 299T also allow bounce flash. With their corresponding wide angle adapter, flash coverage of a 24mm lens field with the 199A and of a 20mm lens field with the 577G and 533G are possible. A thyristor circuit assures continuous flash shooting at close distances.

### General Flash Photography

When you use the A-1 with flash units other than the Speedlites 577G, 533G, 199A, 188A, 166A, 155A and 277T, 299T, set the AE mode selector to Tv and the shutter speed to 1/60 sec. or slower. With this setting on the camera, other types of e-



lectronic flash units can be synchronized with your A-1 either through the hot shoe or via the PC socket on the front of the camera body. These allow two separate flash units to be fired simultaneously.

Aperture should be manually set on the aperture ring to the working apertures specified for an automatic electronic flash or be determined through a guide number calculation using the following formula.

$$\text{Aperture} = \frac{\text{Guide Number}}{\text{Shooting Distance}}$$

When doing the math, make sure that the guide number and shooting distance are both in the same unit, whether meters or feet.

The fastest shutter speed for use with electronic flash is 1/60 sec., for use with M or FP bulbs, 1/30 sec.

It is recommended to use a Canon flash unit on this camera. Using a flash or flash accessory of another make may cause the camera

to work improperly or even possibly damage the camera itself.

## Digital Readout in Flash Photography

When you preview exposure in flash photography, the digital readout will differ depending on the type of flash photography.

### 1. AE flash with Canon Speedlite 155A, 166A, 188A, 199A, 533G, 577G or 277T, 299T, and an FD Lens

The flash is on Auto while the lens is set to the "A" mark. The digital readout will display a shutter speed of 1/60 sec., the flash signal "F" and the auto working aperture set on the flash as follows: 60 F 2.8. The A-1 automatically switches to 1/60 sec. when the flash is charged regardless of the shutter speed set as long as it is not set to "B". The "F" flash signal appears in the viewfinder only when the flash pilot lamp lights up to indicate that the flash is charged. Thus, you will know the flash is ready simply by looking in the viewfinder. The aperture value displayed is the auto working aperture you have set on the flash depending on the film speed. (The aperture displayed in the readout may be 1/2 f/stop larger or smaller than the auto working aperture set on the flash though the auto working aperture is the effective aperture). The auto working aperture value is automatically set on the camera.

Exposure warnings are very similar to those in shutter priority AE. If you have set an auto working aperture larger than the maximum aperture of the lens, the maximum aperture of the lens will flash on and off to indicate underexposure. If you have set an auto working aperture smaller than f/16, the set auto working aperture will flash on and off. If the minimum aperture of the lens is equal to or smaller than the flashing aperture, exposure will be correct. If larger, the image will be overexposed.

*If, with Speedlite 199A, you want to use a shutter speed of 1/30 sec. or slower, set the AE mode selector to Tv and the AT dial to the desired shutter speed and set the shutter speed selector switch on the 199A to the MANU position. In this case, the shutter speed on the AT dial will be displayed in the readout.*

60 F 2.8

### 2. Automatic Shutter Setting Autoflash Control with Canon Speedlite 155A, 166A, 188A, 199A, 533G, 577G or 277T, 299T

The flash is on Auto but the aperture is manually set by turning the lens aperture ring. This type of automatic flash control is necessary with an FL lens and other non-FD lenses and possible with an FD lens when it is not set to "A".



The digital readout will be the same as in AE flash control but will also include the "M" signal for manual aperture control. Though the set flash auto working aperture value is displayed in the readout, it is not automatically set as in AE flash control. The same aperture value as set on the flash must be manually set on the lens aperture ring. As in AE flash control, the shutter speed is automatically set at 1/60 sec. as long as the AT dial is not at "B".

When using an FD lens, exposure warnings are the same as those for AE flash control. Since FL lenses lack a full aperture signal pin, you cannot always rely on the digital readout of apertures and exposure warnings. It is, therefore, advisable to switch off the viewfinder display lever.

E 0 F 2.8 M

### 3. Manual Flash Control with Canon Speedlite 155A, 166A, 188A, 199A, 577G or 299T

The flash is on Manual and the aperture is determined by a guide number calculation and then set manually on the lens aperture ring. The digital readout will include shutter speed, "F" flash signal and the "M" signal for manual aperture control. No aperture data will be displayed. *When the flash is set to Manual, the viewfinder will display "M" even if an FD lens is at the "A" mark.*

E 0 F M

### 4. Long Exposures with Canon Speedlites 155A, 166A, 188A, 199A, 533G, 577G and 299T

When the shutter speed is at "B", the shutter speed data in the digital readout will be replaced by "bu" for "buLb". The remaining information as well as exposure warnings remain the same as in each of the above three cases.

For example:

1) AE Flash

bu F 2.8

## 2) Automatic Shutter Setting Autoflash

b	u	F	2.8	M
---	---	---	-----	---

## 3) Manual Flash

b	u	F		M
---	---	---	--	---

The "B" setting is useful in flash photography for lightening the subject's background. At this setting, the flash of the Speedlite synchronizes with the opening of the first shutter curtain.

## 5. General Flash Photography with Flashes other than the Canon Speedlites

When flashes other than the nine special Canon Speedlites are used with the A-1, the digital readout will include the same information as in manual override. See p. 65. However, since the aperture displayed has no meaning in this case, it might cause less confusion to switch off the viewfinder display lever.





## MOTORIZED FILM WINDING

There remains one last mechanical operation in the A-1 that could possibly distract your attention from your subject: you have to wind the film. Canon has solved that problem for you too. The Canon Power Winder A, the Power Winder A2, and the Motor Drive MA automatically wind the film and recock the shutter without your ever having to touch the film advance lever, all even when you are using the A-1 in an AE mode (except for stopped-down AE). The Motor Drive MA is a compact, high-performance device, offering a selection of three speed settings: H(max. 5fps), L(max. 3.5fps) and S(single frame). With the Battery Pack MA, the unusually high speed (H) is instantly accessible for those fast-breaking situations. For maximum ease of operation, there is a selection of three shutter buttons depending on how the camera is hand-held.

Both the Motor Drive MA and the Power Winder A2 feature remote control with the Remote Switch (3 or 60), the Wireless Controller LC-1, Interval Timer TM-1 Quartz.

All three accessories stop automatically at the end of the film at which time an LED glows steadily to tell you that the roll is completed. They mount onto the A-1 with ease, and, even when mounted, can simply be switched off to wind the film manually.



## DATA BACK A

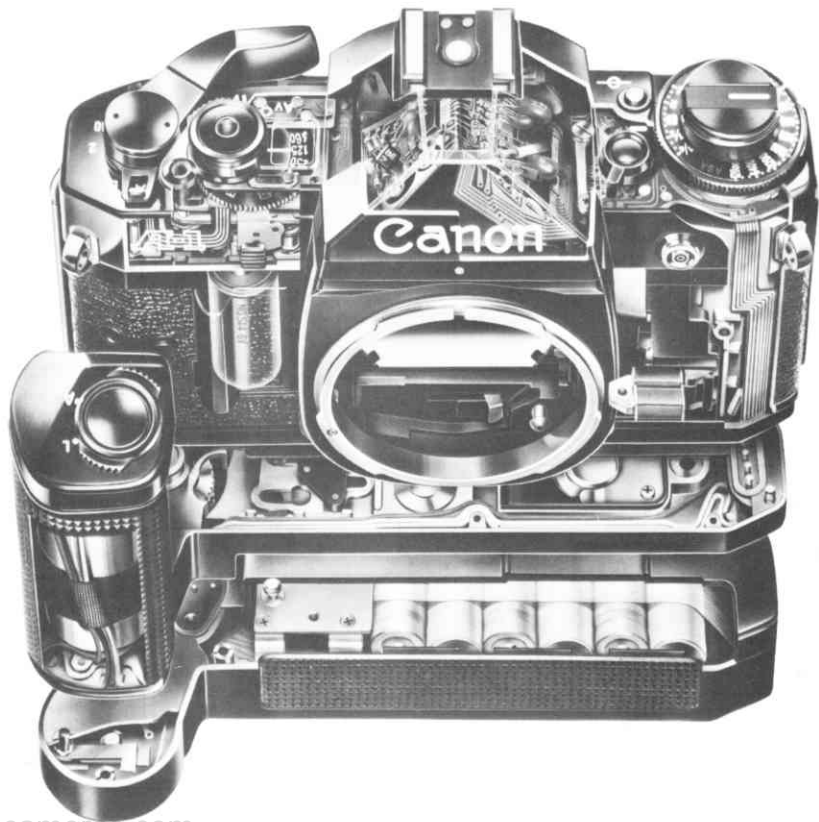
Within seconds, the A-1's back cover can be exchanged for the Data Back A, which, again, becomes an integral part of the camera's electronic system. As you press the shutter release, the day, month and year will be recorded clearly but unobtrusively in the lower right hand corner of every picture, i.e., unless you decide to leave it blank. Since letters and Roman numerals are also available, the Data Back can serve as a convenient coding system as well.



## Various Accessories for Close-ups and Photomacrography

Canon offers a whole gamut of accessories which give you unlimited possibilities in close-ups, photomacrography and photomicrography. At the center of the system stands the elegant, versatile Auto Bellows featuring a built-in focusing rail, immediate lens reversal and automatic diaphragm coupling with the Canon Double Cable Release. For higher magnifications with excellent image quality there are the specially aberration-corrected Macro and Macrophoto lenses. A Macro Stage and four duplicators provide the maximum of ease in shooting difficult subjects.

Of course, close-up lenses and reversing rings are also offered along with three sets of extension tubes. The remarkable set of extension tubes FD-U permit full-aperture metering, automatic diaphragm coupling and AE photography with the A-1. Even with manual accessories, the Macro Auto Ring and Double Cable Release preserve automatic diaphragm coupling. Canon's extra-large, ultra-stable Copy Stand 5, the smaller Copy Stand 4, a small, collapsible copy stand, camera supports, a Focusing Rail, cable releases and microscope adaptors round out Canon's up-to-date, integrated, comprehensive close-up system.





155A



166A



188A



199A



277T



299T



533G

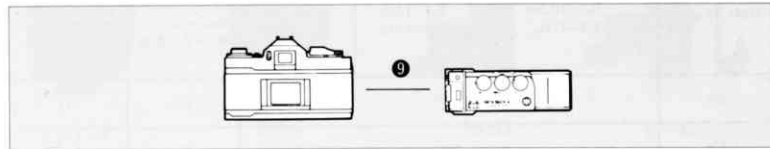
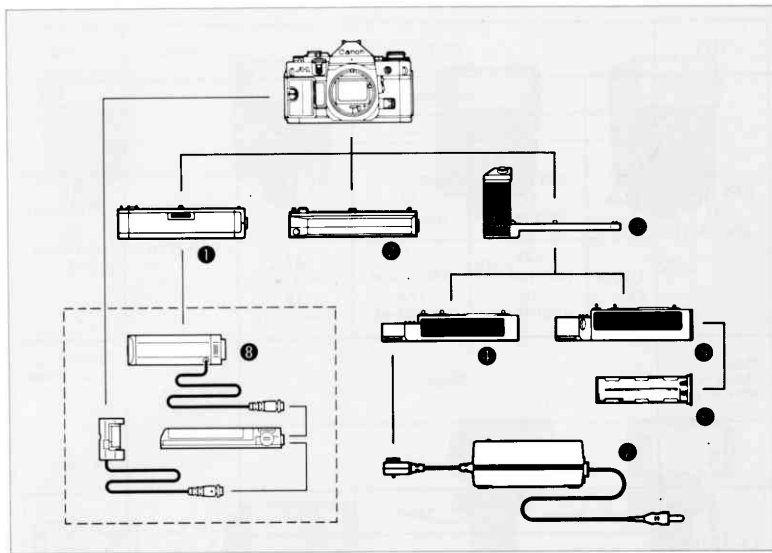


577G

Speedlite	155A
Feature	
Guide Number	17 (ISO 100-m) 28 (ISO 25-ft)
Min. Usable Lens Focal Length	35mm
Max. of Auto Apertures (Differs with ISO)	2
Auto Shooting Dist. Range, Min. to Max. (Differs with Auto Aperture)	0.5-6m 1.6-20ft.
Bounce	No
Manual Flash	Yes

166A	188A	199A	277T	299T			533G	577G	
20 (ISO 100-m) 33 (ISO 25-ft)	(w/o Adapter) 25 (ISO 100-m) 41 (ISO 25-ft)	(w/o Adapter) 30 (ISO 100-m) 50 (ISO 25-ft)	25 (ISO 100-m) 41 (ISO 25-ft)	Flash head position			(w/o Adapter) 36 (ISO 100-m) 60 (ISO 25-ft)	(w/o Adapter) 48 (ISO 100-m) 80 (ISO 25-ft)	
					28mm	35mm			85mm
				Full Flash	25 (ISO 100-m) 41 (ISO 25-ft)	30 (ISO 100-m) 50 (ISO 25-ft)			40 (ISO 100-m) 66 (ISO 25-ft)
				1/16 th Flash	6.25 (ISO 100-m) 10 (ISO 25-ft)	7.5 (ISO 100-m) 12.5 (ISO 25-ft)			10 (ISO 100-m) 16 (ISO 25-ft)
35mm	35mm; 28mm with Wide Adapter	35mm; 24mm with Wide Adapter	35mm; 28mm with Wide Adapter	28mm			35mm; 24 and 20mm with Wide Adapters	35mm; 24 and 20mm with Wide Adapters	
2	2	3	8	8			3	3	
0.5-7m 1.6-22ft	0.5-9m 1.6-30ft. less with Wide Adapter	0.5-10.6m 1.5-35ft. less with Wide Adapter	0.5-12.5m 1.6-41ft. less with Wide Adapter	28mm	35mm	85mm	1-12.8m 3.3-42ft. more with Tele-Adapter less with Wide Adapter	1-17m 3.3-56ft. more with Tele-Adapter less with Wide Adapter	
				0.7-12.5m 2.3-41ft.	0.7-15m 2.3-49ft.	0.7-20m 2.3-65.5ft.			
No	No	Yes	No	Yes			Yes	Yes	
Yes	Yes	Yes	No	Yes			No	Yes	





- ① Power Winder A
- ② Power Winder A2
- ③ Motor Drive MA
- ④ Ni-Cd Pack MA
- ⑤ Battery Pack MA
- ⑥ Battery Magazine MA
- ⑦ Ni-Cd Charger MA/FN
- ⑧ External Battery Pack A
- ⑨ Data Back A

## Proper Care of the Camera

Your A-1 is a rugged, high-quality camera. It will work properly if operated and cared for properly. Never force anything. If you have a problem that is not answered in the instructions below, follow the advice of your nearest Canon serviceman. We recommend taking the A-1 to an authorized Canon service facility at least once every three years for a complete checkup.

### Storage

The best thing you can do for your A-1 is to use it regularly, but in the event that it won't be used for quite a while, first remove it from any camera bag or soft case. Then remove the battery to prevent possible corrosion to the terminals. Recap the lens, and if the body is stored separately from the lens, put the body cap and the rear lens cap on. Wrap it in a clean, soft cloth along with silica gel or some other desiccant to keep it dry, and store it in a cool, dry, dust-free place. Avoid storing it in the rear window, glove compartment or other "hot spots" of an automobile, in a place such as a laboratory where chemicals could cause corrosion and rust, or in a dusty, damp, or hot place. Keep it out of direct sunlight. Before using the A-1 after it has been stored for a long

time, carefully check the operation of each part.

### Cleaning the Camera and Lens

Before doing anything else, clean the camera with a blower brush. It is best to have two blower brushes, one for the camera body and the lens barrel, the other for the lens surfaces, eyepiece and mirror. If the blower brush is sufficient to get the camera clean, stop there. By all means, avoid touching the lens. Should you accidentally get fingerprints or smudges on the lens or eyepiece, use lens tissue (not eyeglass tissue!) or a clean, soft, untreated cloth, after breathing on the lens surface, if necessary. Never use a handkerchief, facial tissue or any other cloth which might permanently scratch the lens, and never use a cloth treated with a chemical which might totally ruin the lens coating. Put only one or two drops of lens cleaning fluid on the tissue, not the lens, and, starting at the center of the lens, lightly wipe it while working towards the outer edges in a circular motion. Use a silicon cloth, if necessary, to wipe smudges off the camera body and lens barrel only. The mirror is another part you should never touch. A dirty mirror does not affect the image though it may impair viewing. If it is dusty, clean it very gently with the lens blower brush. If more cleaning

is necessary, do not attempt to do it yourself but take it to an authorized Canon service facility. The film compartment also requires occasional cleaning with a blower brush to remove accumulated film dust particles which might scratch the film. When doing this, take special care NEVER to exert pressure on the shutter, the rail surfaces or the pressure plate.

Salt and sand are your camera's worst enemies. After using it on a beach, clean it thoroughly. If you accidentally drop it in the water, it may be irreparable but take it immediately to an authorized Canon service facility.

### **Using the Camera in Extremely Cold Conditions**

In extremely cold conditions, always protect the camera from outside air and try to finish shooting as quickly as possible.

In temperatures below 0°C (32°F), the battery may be affected, so you may want to carry a spare. Keep the camera and spare battery close to your body or in a pocket to keep them warm until you are ready to take a picture. Although the battery may not function well in cold conditions, don't throw it away. It may work perfectly again when you use the camera in warmer temperatures.

Avoid extreme temperature changes. Condensation forming on a camera and lens taken from subzero outside temperatures into a warm room may cause corrosion. Let the camera gradually adjust to the temperature change by placing it in a completely sealed plastic bag for a while.

- Canon provides the External Battery Pack A, an optional accessory, as an external power source for the Power Winder A or the A-1 body when shooting in low temperatures.

## SPECIFICATIONS

**Type:** 35mm SLR (Single-Lens Reflex) camera with selective, electronically controlled AE (Automatic Exposure) and focal plane shutter.

**Format:** 24 x 36mm.

**Photographic Modes:** Six modes; including five AE modes: shutter priority AE, aperture priority AE, programmed AE, full AE flash photography with specified Canon electronic flashes, and stopped-down AE; and manual override.

**Interchangeable Lenses:** Canon FD series lenses (usable with four full-aperture metering AE modes and stopped-down AE); Canon FL series lenses (usable with stopped-down AE).

**Standard Lenses:** Canon FD 50mm lenses.

**Lens Mount:** Canon mount.

**Viewfinder:** Fixed eye-level pentaprism. **Field of View:** 93.4% vertical and 95.3% horizontal coverage of the actual picture area.

**Magnification:** 0.83X at infinity with a standard 50mm lens.

**Focusing Screen:** Standard split-image/microprism rangefinder.

**Viewfinder Information:** Displayed in form of LED digital readout below viewing area. Includes shutter speed (1/1000 sec.—30 sec.), aperture (f/1.2—f/32), flashing warning of incorrect exposures and settings, bulb indication, charge completion indicator for specified Canon flash units, manual aperture control signal, error indication for incorrect stopping-down operation. Shutter speed and aperture data displayed in 1/2 step increments. Viewfinder information can be cancelled by turning off viewfinder display switch.

**Dioptric Adjustment:** Built-in eyepiece is adjusted to standard -1 diopter.

**Eyepiece Attachments:** Angle Finders A2 and B, Magnifier S, 10 different Dioptric Adjustment Lenses S for eyesight correction and Eyecup 4S.

**Eyepiece Shutter:** Built-in. Keeps out extraneous light during self-timer or remote control operation.

**Mirror:** Instant-return type with shock-absorbing mechanism. No image cut-off in the viewfinder even with the FD 400mm telephoto lens.

**AE Mechanism:** Electronically controlled. Information input by means of AE mode selector and AT dial for full-aperture AE metering (FD lens at "A") and stopped-down AE metering.

Employs three LSI's with I<sup>2</sup>L, one Linear LSI and one Bi-MOS IC for light metering.

**AE Mode Selection:** By means of AE mode selector. Two settings: Tv (Time value) for shutter priority AE, Av (Aperture value) for aperture priority AE.

**Light Metering System:** Through-the-lens Central Emphasis Averaging metering by silicon photocell located just above eyepiece lens. Light reaches silicon photocell after passing through fresnel lens condenser.

**Film Speed Setting:** ISO 6/9°, 6 to ISO 12800/42°, ASA 12800 in 1/3 step increments. With lock.

**Meter Coupling Range:** EV-2 (8 sec. at f/1.4) to EV 18 (1/1000 sec. at f/16) at ISO 100 with FD 50mm f/1.4 lens.

**Exposure Compensation:** ±2 f/stop range in 1/3 f/stop increments: 1/4 .. 1/2 .. 1 .. 2 .. 4.

**Exposure Memory:** EV locked in when exposure memory switch is pressed. When pressed, the shutter-speed/aperture combination can be changed for the same

locked-in EV.

**Exposure Preview:** Viewfinder digital read-out activated by pressing shutter button halfway or by pressing exposure preview switch or exposure memory switch.

**Stop-down Lever:** Foldable. Stopping-down an FD lens is possible only when aperture ring is disengaged from "A" mark.

**Manual Override:** Possible by disengaging FD lens from "A" mark and setting AE mode selector to Tv. Aperture manually controlled with aperture ring, shutter speed with AT dial.

**Shutter:** Cloth focal plane shutter with four spindles. Electronically controlled, steplessly, from 30 sec. to 1/1000 sec. Shock and noise damper mechanisms are incorporated.

**Shutter Speed Scale:** B, 30, 15, 8, 4, 2, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500, 1000 plus P (with the AE mode selector at Tv). "P" setting is for programmed AE mode. Intermediate speeds not on the scale cannot be set.

**Aperture Scale:** · 1.4 · 2 · 2.8 · 4 · 5.6 · 8 · 11 · 16 · 22 (with the AE mode selector at Av).

**Shutter Release Button:** Oversized, two-step button with electromagnetic shutter

release. Pressing it halfway activates meter circuit, pressing it all the way sets shutter in operation. Can be locked by setting main switch to "L" to guard against accidental shutter release. With cable release socket.

**Power Source:** One 6v alkaline-manganese (Eveready [UCAR] No. A544, IEC 4LR44), silver oxide (Eveready [UCAR] No. 544, IEC 4SR44, Duracell PX 28), or lithium (Duracell PX 28L) battery. Battery lasts about one year under normal use.

**Battery Check:** A red LED on top of camera flashes on and off to indicate power level when battery check button is pressed. Flashing frequency decreases with power level.

**Main Switch:** Two positions: "A" and "L". At "L" all active circuits are off and shutter button is locked as safety feature. Doubles as self-timer lever.

**Cancellation of Camera Circuit:** Shutter and self-timer operation cancelled by setting main switch to "L" or by pressing battery check button.

**Multiple Exposure:** Possible by setting multiple exposure lever before winding film advance lever to recock shutter. Frame counter does not advance. Automatically resets. Unlimited.

**Self-Timer:** Electronically controlled. Activated by pressing shutter button. Time-lag of 2 or 10 seconds possible. Red LED flashes on and off to indicate its operation. Flashing frequency increases 2 sec. before shutter release.

**Flash Synchronization:** X-synch at 1/60 sec.; FP- and M-synch at 1/30 sec. and slower.

**Flash Coupling:** Accessory shoe has contacts for directly-coupled flash units and automatic flash control contacts for automatic exposure. JIS-B (PC) type flash terminal with shock preventive rim on front of body.

**Automatic Flash:** Full AE flash photography with Canon Speedlites 155A, 166A, 188A, 199A, 533G, 577G and 277T, 299T. (Also 1/16AE flash photography with 299T.). Shutter speed automatically set. Aperture automatically controlled according to setting of flash when flash is sufficiently charged.

**Back Cover:** Opened by pulling up rewind knob. Removable for attaching Data Back A. With memo holder.

**Film Loading:** Easy film loading with multi-slot take-up spool.

**Film Advance Lever:** Single-stroke 120° throw with 30° stand-off. Winding with several short strokes possible. Automatic

winding possible by mounting Canon Motor Drive MA, Power Winder A2, or Power Winder A.

**Frame Counter:** Additive type. Counts back frames as film rewound. Automatically resets to "S" upon opening back cover. Does not advance during multiple exposures.

**Film Rewinding:** By pressing rewind button and cranking rewind knob. Rewind button automatically resets when film advance lever turned.

**Other Safety Devices:** Camera will not function when power level insufficient. Film winding impossible while shutter is in operation. Lockable controls.

**Size:** 141 x 91.5 x 47.5mm (5-9/16" x 3-5/8" x 1-7/8") body only.

**Weight:** 640 g (22-9/16 oz.) body only, including battery.

With the 50mm f/1.8 lens. — 810 g (28-9/16 oz.)

With the 50mm f/1.4 lens. — 875 g (30-7/8 oz.)

**Subject to change without notice.**

## Interchangeable Focusing Screens for the A-1

### A. Microprism

Matte/Fresnel field with microprism rangefinder spot in the center of the screen. Suitable for general photography with most lenses.

### B. Split-image

Matte/Fresnel field with split-image rangefinder spot in center of screen. Ideal for focusing at full aperture with fast lenses. Unsuitable for photomacrography and for use with lenses having small maximum apertures or requiring stopped-down metering, because half of the rangefinder darkens.

### C. All Matte

Overall Matte/Fresnel field. Especially recommended for macro and telephoto photography, this screen enables the entire field of view to be seen without distraction. The lens is in focus when the subject can be clearly seen.

### D. Matte/Section

Similar to the C screen but with horizontal and vertical reference lines. Recommended for architectural photography and copy work in which accurate image placement is essential. Especially useful with TS 35mm (Tilt and Shift) Lens. When using this screen, set the film speed dial 1/3 step higher. The exposure compensation dial can also be used for the same purpose.

### E. Split-image/Microprism

Standard with the A-1. Please refer to p. 49 on focusing.

Similar to Focusing Screen A, but the angle of microprisms contained within the rangefinder spot is designed to work especially well with lenses having maximum apertures of  $f/3.5 - 5.6$ . Best suitable for telephoto lenses. Unsuitable for larger aperture lenses because of focusing inaccuracy.

### I. Double Cross-hair Reticle

Matte/Fresnel field with 5mm clear center spot containing double cross-hair reticle. While focusing, move your eye left to right. If cross-hairs stay in the same position on the subject, then the subject is in focus. Recommended for photomicrography, astrophotography, or other applications requiring high magnifications.



A



B



C



D



E



G



I

- Focusing screens should only be changed by an authorized Canon service facility. Do not attempt to change screens yourself.



