Canon

SPEEDLITE 177A

INSTRUCTIONS E

Introduction

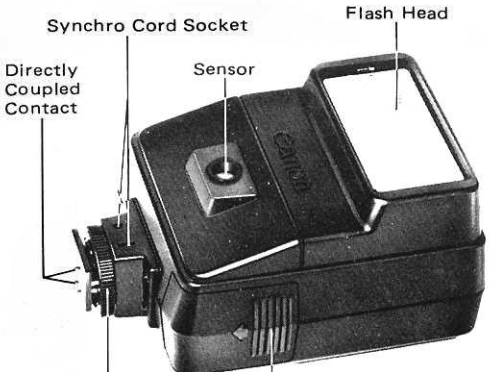
The Canon Speedlite 177A is an automatic electronic, direct contact flash designed especially for the Canon A-1, AE-1, AV-1 and AT-1 single-lens reflex cameras. It mounts directly into the accessory shoe of the cameras where it couples directly with the camera without the need for a synchronization cord.

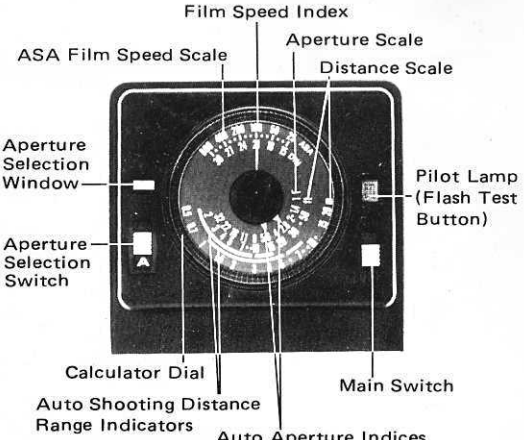
On the A-1 and AE-1, the 177A permits AE flash, which is without doubt one of the easiest forms of flash shooting in SLR photography. As soon as the pilot lamp lights, the shutter speed of these cameras is automatically set to the X-synchronization speed of 1/60 sec., and the aperture is set on the camera automatically to the same aperture which has been set with a switch on the flash. On the AV-1 and AT-1, the shutter speed is also automatically set while setting the aperture is a simple matter of turning the lens' aperture ring to the same aperture set on the flash. The A-1, AE-1 or AV-1 itself remains right on automatic. With any of these A-series cameras, the Canon Power Winder A couples with the Speedlite 177A for increased versatility. The 177A's unique averaged light sensing system regulates the sensitivity distribution of the unit's sensor for the best possible overall exposure.

An extra special feature of this flash is AE automatic switch which is possible on the A-1, AE-1, or AV-1 when they are on automatic. While the pilot lamp is out after a flash shot, one of these cameras automatically returns to normal AE photography. Provided the aperture and shutter speed are proper for correct exposure, it is possible to switch continuously between flash photography and normal AE photography as the pilot lamp comes on and goes out.

The Speedlite 177A functions as a normal automatic flash on other cameras as well.

Nomenclature





Main Features

1. (A-1, AE-1) The aperture set on the 177A is relayed by electronic signals to the camera where it is set automatically when the pilot lamp glows.
2. (A-1, AE-1, AV-1, AT-1) As soon as the pilot lamp glows, the camera's shutter speed is automatically switched to the X-synchronization speed of 1/60 sec. (provided the shutter speed is not on "B").
3. The electronic circuitry in the 177A's series control system assures the utmost in power conservation.
4. A unique averaged light measuring system suppresses peak sensitivity at the center of the picture frame for better overall exposure of the main subject.
5. When shooting with flash is no longer needed, it is only necessary to turn the 177A's power off to switch to normal photography. It is not necessary to dismount the flash.
6. Manual flash is also possible.
7. If the batteries are accidentally loaded backwards, a safety device automatically interrupts the electronic circuitry.
8. With Wide Adaptor 177A, it is possible to cover the field of a 28mm lens.

Summary for Use of the 177A

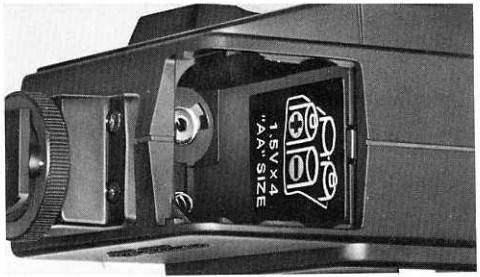
See pages 6-24 for detailed explanation.

1. Load the batteries correctly.
2. Mount the 177A on the camera.
3. Set the film speed on the flash by turning the calculator dial.
4. Select an aperture by setting the aperture selection switch to one of the "A" positions so that the color red or green appears in the aperture selection window.
5. Focus. Make sure the shooting distance is within the permissible range of distances for the chosen aperture.
6. Set the 177A's main switch ON.
7. Wait for the pilot lamp to glow.
8. Check viewfinder information.
9. Press the shutter button.

LOADING THE BATTERIES

Use four new size AA alkaline-manganese (LR6) or Ni-Cd batteries. Carbon-zinc batteries may also be used, but their battery life is shorter. Before loading the batteries, wipe their poles and the flash contacts with a clean, dry cloth to prevent poor contact from dirt.

1. Make sure the 177A's main switch is OFF.
2. Press and slide the battery chamber cover off in the direction of the arrow.
3. Load the batteries so that their poles are in the directions indicated by the diagram inside the battery chamber. For proper function of the flash, it is very important that the poles be facing in the correct directions.
4. Once the batteries are loaded, slide the battery chamber cover back on while pressing the batteries down. Make sure the cover's tab fits into the corresponding groove on the flash body.



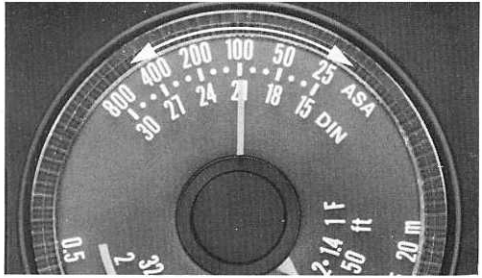
* When the batteries become worn out, replace all four at the same time with four new ones which are all of the same brand. The batteries should be removed if you do not expect to use the 177A for a long time.
* Each brand of Ni-Cd batteries has its own terminal system. Take care to use a type which is suitable for this flash. Follow the instructions of the battery manufacturer for recharging Ni-Cd batteries.
* Battery performance tends to deteriorate in low temperatures. When shooting in very low temperatures, keep the batteries warm until just before use. It is also advisable to keep a spare set of batteries warm in case they become necessary. In temperatures below 0°C (32°F), the use of fully-charged Ni-Cd batteries is recommended.

Setting the ASA Film Speed

Since the light intensity emitted by the flash depends in part on the film speed, the film speed must be set on the flash for correct exposure. At the same time, make sure the camera is set to the correct film speed.

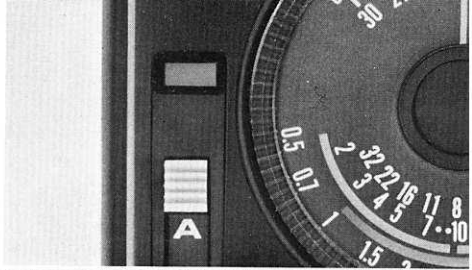
To set the film speed, simply rotate the 177A's calculator dial until the orange film speed index is aligned with the value on the ASA film speed scale which corresponds to the film speed of your film. At this time, the aperture scale on the calculator dial will also change position. It is possible to set the following ASA film speeds. Numbers in parentheses are intermediate film speeds indicated by dots on the scale.

(32)(40) (64)(80) (125)(160) (250)(320) (500)(640)
ASA 25 · · 50 · · 100 · · 200 · · 400 · · 800



Choosing an Aperture

There is a choice of two apertures for automatic



flash photography. They are indicated by the two color-coded indices above the aperture scale. The apertures to which these indices point change with film speed. At ASA 100, for instance, the green index points to f/5.6 and the red index to f/2.8.

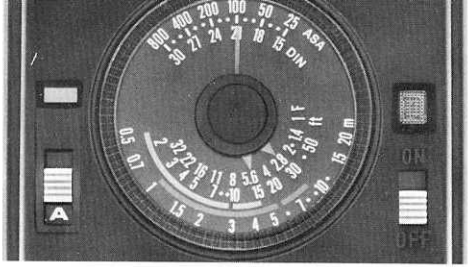
To set one of these apertures on the flash, simply switch the aperture selection switch to one of the "A" positions so that red or green appears in the aperture selection window. The colors of these "A" positions correspond to the colors of the aperture indices. If, for instance, you set the switch to the "A" position which causes green to appear in the aperture selection window, you are regulating the flash to the aperture pointed to by the green aperture index. The aperture selection switch also has an "M" position which corresponds to the color white in the aperture selection window. For automatic flash, this setting should be ignored; it is for manual flash shooting.

Limits of the Auto Shooting Distance Range

Once you have chosen an aperture by setting the aperture selection switch to the red or green "A" position, there is only a certain range of shooting distances which will give correct exposure. The correct shooting distance range for each "A" setting of the aperture selection switch is indicated by two matching color-coded curves between the feet and meter distance scales. If, for instance, you have set the aperture selection switch to the green "A" position, you should take care that the distance between you and the subject is within the range of shooting distances indicated by the green curve; confirm this by checking the lens' distance scale after focusing. The exact shooting distance range covered by each of the curves is given in the following table. Note that the auto shooting distance ranges, unlike the auto apertures, remain the same no matter what the film speed.

Aperture Selection Switch Setting	
Green "A" Position	Red "A" Position
0.5-4.5m; 2-14 ft. (0.5-2.8m; 2-9 ft.)	1-9m; 3-29 ft. (1-5.7m; 3-18 ft)

Numbers in parentheses indicate the correct range of shooting distances when Wide Adaptor 177A is attached. These are shown by the range to the left of the break in each curve.



Considerations in Choosing an Aperture

Factors which enter into the choice of an aperture include both depth of field and shooting distance. You may wish to use the following hints as guides:

Green Position: For the widest range of good focus in front of and behind the subject.

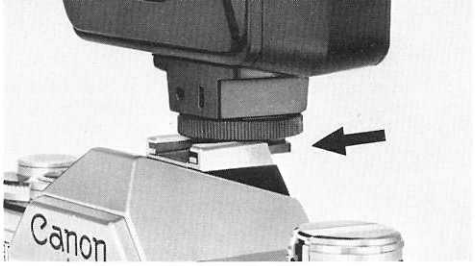
Red Position: For isolating the subject by blurring the foreground and background. Also to be used if the subject is more than 4.5m (14 ft.) away (without Wide Adaptor 177A).

Mounting on the Camera

1. Turn OFF the 177A's main switch.
2. Loosen the lock nut and insert the Speedlite into the camera's accessory shoe. For good contact, make sure it is pushed in all the way.
3. Retighten the lock nut.

* When attaching this flash to a camera that does not have a hot shoe contact, connect the Synchro Cord A first to the 177A's synchro cord socket and then to the camera's PC socket. Synchro Cord A is an optional accessory.

* When shooting with flash is no longer necessary, turn the 177A's main switch OFF to prevent battery waste.



HOW TO USE WITH THE CANON A-1, AE-1, AV-1 and AT-1

The Speedlite 177A permits three types of flash photography, in various degrees of automaticity, with these cameras. They are:

1. AE Flash Mode (A-1, AE-1 only)
2. Automatic Flash Mode
3. Manual Flash Mode

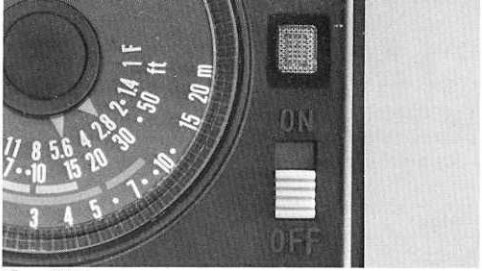
Each mode will be explained separately.

Mode	A-1	AE-1	AV-1	AT-1	Note
AE Flash	Yes. Main Mode.	Yes. Main Mode.	No.	No.	Possible only with FD lenses and only when lens is set to "A".
Automatic Flash	Yes.	Yes.	Yes. Main Mode.	Yes. Main Mode.	Shutter speed set automatically. Aperture set manually. Necessary with FL lenses on A-1, AE-1.
Manual Flash	Yes.	Yes.	Yes.	Yes.	Shutter speed set automatically. Aperture set manually. Speedlite aperture selection switch on "M".

Please refer to pages 17, 19 and 21 for detailed explanations of the respective modes. Then refer back to the following information which is common to each mode.

Main Switch and Pilot Lamp

Once the camera, lens and flash are set properly for the flash mode you are using, turn the 177A's main switch ON. Once the capacitor has reached sufficient charge, the pilot lamp glows to indicate that it is possible to shoot. At this point, no matter what mode and unless the camera is set to a shutter speed of "B", the shutter speed is switched to 1/60 sec. automatically on the A-1, AE-1, AV-1 and AT-1. In the AE flash mode with the A-1 and AE-1, the aperture is also set automatically to the aperture chosen with the 177A's aperture selection switch.



Test Firing

To test the flash for proper function, press the pilot lamp after it glows. If a flash is fired, the flash is in proper working order.

Shooting

After focusing, if the aperture selection switch is on an "A" position, check the lens' distance scale to make sure the shooting distance is within the auto

distance range indicated by the appropriate curve on the flash. If it is not, either move closer to or farther away from the subject as required or set the aperture selection switch to a more appropriate position. Then check exposure information in the viewfinder. Once the pilot lamp glows, proper flash information should be indicated depending on the camera and flash mode (see mode explanations). If everything is correct, press the shutter button. Proper flash exposure is possible only after the pilot lamp glows.

AE Automatic Switch (A-1, AE-1, AV-1 only)

When the A-1 or AE-1 is used in the AE flash mode (FD lens on "A") or when the AV-1 is used in the automatic flash mode (selector dial on [A]), a special feature of this flash called AE automatic switch is possible. This means that, if after taking a flash shot the pilot lamp goes out, making flash photography momentarily impossible, the camera automatically switches to the AE mode for which it is set (for example, shutter-speed priority AE on the AE-1, aperture priority AE on the AV-1). You can take a shot in that normal AE mode while waiting for the pilot lamp to glow again. When the pilot lamp glows again, the camera automatically switches back to flash photography. It is possible to shoot continuously, switching back and forth between flash shooting and normal AE shooting.

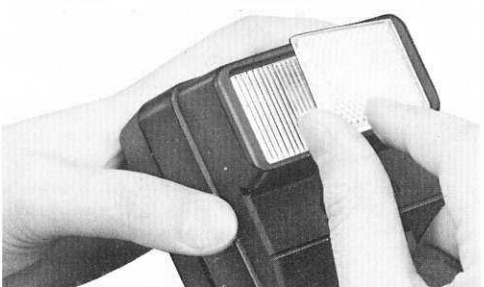
* Make sure that the aperture or shutter speed to which the camera is actually set for normal AE photography is appropriate for correct exposure.
* There is an extremely rare possibility that the pilot lamp will glow again while the shutter is in operation for a normal AE shot. If this happens, exposure for that shot will be incorrect.

Switch OFF

Once flash is no longer necessary, be sure to turn the 177A's main switch OFF to prevent battery drain. With the main switch OFF, the circuit between the camera and flash is disconnected and it is possible to shoot normally even while the flash is still attached to the camera.

Wide Adaptor 177A

This flash covers an angle of view as wide as that of a 35mm lens. When the Wide Adaptor 177A is attached, its coverage is stretched for a 28mm lens. To attach the Wide Adaptor, hook its tab into one of the grooves on either side of the flash head and push down on the other end of the Adaptor until it snaps into place. To remove the Adaptor, lift up on the protruding tab. Remember that the Wide Adaptor shortens the auto shooting distance range (see p. 10).

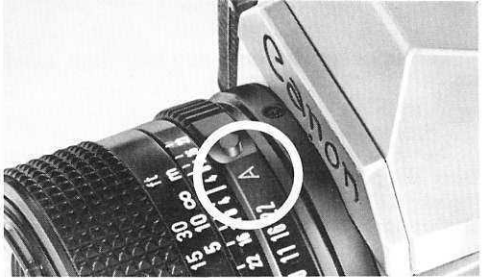


AE FLASH MODE

This mode is possible only on the A-1 or AE-1 when using an FD lens on "A". Both the shutter speed and aperture are set automatically on the camera when the pilot lamp glows.

Settings

1. Make sure the lens is set to "A". As long as the lens is at this setting, the aperture will be set automatically to the same aperture chosen with the 177A's aperture selection switch when the pilot lamp glows. The 177A's aperture selection switch must be set to one of the "A" positions.
2. If the shutter speed is set to "B", "B" will also be the shutter speed for flash photography. At any other setting, the shutter speed will be switched automatically to the X-synchronization speed of 1/60 sec. when the pilot lamp glows.



Other than "B" (unless "B" is desired), the A-1's AE mode selector and AT dial may be set to any position.

* For precautions in the AE flash mode, please see p. 20.

Viewfinder Information and Warnings in AE Flash

A-1

Once the pilot lamp glows and the shutter button is pressed halfway, the digital readout will display a shutter speed of 1/60 sec. (bu if "B" is set), the flash "F" signal and the aperture set on the flash. For example: 60 F 2.8. "F" appears only after the pilot lamp glows to indicate the flash is sufficiently charged for firing. Thus, you can tell the flash is ready without taking your eyes off the viewfinder. The aperture displayed may be 1/2 f/stop off the one selected on the flash. This is because the aperture display is in half f/stop increments; it has no effect on actual exposure. If the aperture selected on the flash is larger than the lens' maximum aperture, the latter will flash on and off to indicate underexposure; set the aperture selection switch to a smaller aperture. The aperture display may also flash on and off if the flash-selected aperture is the same as the lens' maximum aperture. In this case, exposure will be correct, but it is advisable to check the flash-selected aperture to make sure it is not larger than the lens' maximum aperture.

AE-1

Once the pilot lamp glows and the shutter button is pressed halfway, the AE-1's meter needle swings to indicate the aperture which has been set on the flash. If the flash-selected aperture is larger than the lens' maximum aperture, the underexposure lamp will blink; set the aperture selection switch to a smaller aperture.

AUTOMATIC FLASH MODE

This is the main flash mode for the AV-1 and the AT-1, whether with an FD or an FL lens. It is also the flash mode to use when an FL lens is mounted on the A-1 or AE-1. It is also useful for making exposure corrections (even with an FD lens on the A-1 or AE-1).

Settings

1. If the shutter speed is set to "B", "B" will be used for flash exposure. At any other setting, the shutter speed will be switched automatically to 1/60 sec. on the A-1, AE-1, AV-1 or AT-1 when the pilot lamp glows.
2. Set the AV-1's selector dial to Ⓐ or A Self (for self-timer flash). Other than "B" (unless "B" is desired), the A-1's AE mode selector and AT dial may be set to any position.
3. Set the 177A's aperture selection switch to one of the "A" positions.
4. Turn the lens' aperture ring to the same aperture which was chosen on the flash with the aperture selection switch. In the case of an FD lens, remove the aperture ring from "A" first. It is possible to make an exposure correction by setting the aperture ring to a different aperture from that set on the flash.

* When this flash mode is used on the A-1 or AE-1, AE automatic switch (p. 15) is not possible. It is possible on the AV-1. It is never possible on the AT-1.

Viewfinder Information and Warnings in Automatic Flash

A-1

Once the pilot lamp glows and the shutter button is pressed halfway, the digital readout will include

a shutter speed of 1/60 sec. (or bu if "B" is set), the flash "F" signal, an aperture corresponding to the flash-selected aperture and "M" for manual aperture control. For example: 60 F 2.8 M. The aperture display, as in AE flash, may be a half step off but will not affect exposure. With an FD lens, exposure warnings are the same as those in AE flash. With an FL lens, the viewfinder display is not always reliable and should be switched off.

AE-1

Viewfinder information is the same as that in the AE flash mode with the addition of the "M" LED for manual aperture control.

AV-1

Once the pilot lamp glows and the shutter button is pressed halfway, the AV-1's meter needle swings to the shutter speed of 1/60 sec. (with selector dial on 〈A〉 or A Self). (It will also swing to 1/60 sec. if the selector dial is at 60 ϟ). When the pilot lamp goes out, the meter needle points to the shutter speed for normal aperture priority AE.

AT-1

No viewfinder indication.

Precautions in AE Flash and Automatic Flash Modes

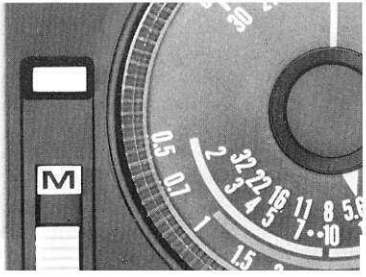
* In some cases, AE or automatic flash may not be suited to your subject. If, for instance, your main subject is small with a dark or distant background or if the subject's surroundings are bright white with strong reflections, automatic flash exposure may be affected by contrasting background, causing under or overexposure of the subject. This can be avoided by

switching to manual flash.

* In delayed flash with the camera's self-timer, do not press the shutter release button until the pilot lamp glows.
* When the shooting distance is less than one meter, the difference between the optical axes of the lens and the flash may result in uneven flash distribution.
* Since it is possible for viewfinder information in the AE-1, AV-1 or AT-1 to be the same in flash photography as in normal AE photography, it is advisable to check that the pilot lamp is glowing before shooting.
* Using the camera's "B" setting is useful for lightening the subject's background. For normal flash exposure, the shutter speed should not be set to "B".

MANUAL FLASH MODE

Setting the aperture selection switch to "M" places the 177A in the manual flash mode. Both camera and flash are switched to regular synchronized flash photography. In the case of the A-1, AE-1, AV-1 or AT-1, the shutter speed is still switched to the X-synchronization speed of 1/60 sec. automatically (unless shutter speed is set on "B") when the pilot lamp glows. The aperture, however,



must be calculated for each change in shooting distance, either by guide number formula or by the calculator dial, and then set manually on the lens' aperture ring. The correct aperture can be found with the calculator dial as follows:

1. Set the 177A's aperture selection switch to "M".
2. Make sure the proper ASA film speed is set on the flash.
3. Focus the subject.
4. Read the shooting distance from the lens' distance scale.
5. Find that distance on the calculator dial's distance scale.
6. Take note of the aperture against that distance on the dial's aperture scale and set that aperture on the lens. If the aperture seems to fall between half click-stops, set the aperture ring to the larger of the two apertures.
7. Turn the 177A's main switch ON.
8. Do not press the shutter release button until after the pilot lamp glows. If it is necessary to shoot immediately after the pilot lamp glows, open the lens 1/2 to a full f/stop. This correction is necessary because the flash is not yet fully charged when the pilot lamp glows.

If you do not use the calculator dial, find the proper aperture with the following guide number formula:

$$\text{Aperture} = \frac{\text{guide number}}{\text{shooting distance}}$$

Make sure both guide number and shooting distance are in the same unit, whether meters or feet. The guide number changes with film speed. It is 25m for ASA 100 film or 41ft. (ASA 25). With the calculator dial, the guide number is adjusted automatically when the film speed is set on the

flash. When using the flash off-camera, which is recommended in close-up shooting, use the flash-to-subject distance instead of the focused distance for figuring the aperture.
Please note that AE automatic switch (p. 15) is not possible with any camera in the manual flash mode.

Viewfinder Information in Manual Flash

The A-1's digital display will include a shutter speed of 1/60 sec. (or bu when set to "B"), the "F" flash signal and "M" for manual aperture control. There is no aperture display.
The only information in the AE-1 will be the flashing "M" signal to indicate manual aperture control. The meter needle will swing to its upper limit.
The AV-1's meter needle will swing to the shutter speed of 1/60 sec. (unless selector dial is on "B"). There is no viewfinder indication in the AT-1.

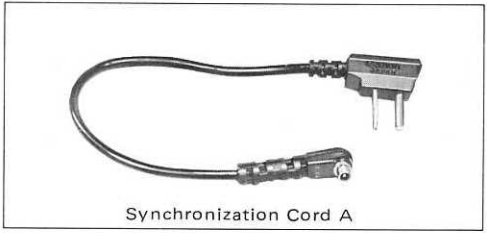
Summary of A-1 Viewfinder Displays

Flash Mode	Shutter Speed	Flash Signal	Aperture	Manual Signal
AE Flash	60 (bu)	F	2.8, for example	——
Automatic Flash	60 (bu)	F	2.8, for example	M
Manual Flash	60 (bu)	F	——	M

USE OF THE FLASH ON OTHER CAMERAS

Speedlite 177A can be used on other cameras in either the automatic flash mode or the manual flash mode. In either case, both shutter speed and aperture must be set manually.

1. Insert the flash into the camera's accessory shoe. If the accessory shoe lacks a direct flash-synch contact, attach Synchronization Cord A.
2. Set the ASA film speed on the 177A.
3. Set the shutter speed to the X-synchronization speed specified for the camera.
4. Automatic Flash (see p. 19 for further details).
   Set the 177A's aperture selection switch to the green or red "A" position. Set the aperture pointed to by the matching color-coded index on the calculator dial, manually on the lens. Provided the focused distance is within the auto shooting distance range (see p. 10), exposure will be correct.



Synchronization Cord A

4. Manual Flash (see p. 21)
   Set the aperture selection switch to "M". Find the aperture by calculation with the guide number formula or with the 177A's calculator dial. Set that aperture manually on the lens' aperture ring.

* When the 177A is used on an auto-flash, lens-shutter camera, the 177A's aperture selection switch must be set to "M". Follow the camera's instructions for camera settings.

Care of the Flash

1. If the flash is stored for a long period, make several test flashes from time to time to maintain proper function of the capacitor.
2. Since a high voltage circuit is built into the flash, it would be dangerous to try to take it apart by yourself. If repair is necessary, take it to the nearest authorized Canon service facility.
3. Do not drop the flash in water. If it is exposed to rain or snow, wipe it off with a dry cloth.
4. Do not leave the flash in direct sunlight or in hot, humid places.

Specifications

Type: Electronic computer flash unit with a series control system.

Contact: Clip-on type with direct contact and lock.

Guide Number: 25m (ASA 100) or 41ft. (ASA25), 16m (ASA 100) or 26ft. (ASA25) with Wide Adaptor 177A. Reaches full charge 30 sec. after pilot lamp glows, with new batteries.

Flash Coverage Angle: Covers a 35mm lens on the 35mm format. Covers a 28mm lens on the 35mm format when the Wide Adaptor 177A is used.

Recycling Time: (Interval between firing of flash and relighting of pilot lamp with new or fully-charged batteries):

Battery Type	Auto	Manual
Alkaline-manganese	Approx. 0.5-8 sec.	Approx. 8 sec.
Ni-Cd	Approx. 0.5-6 sec.	Approx. 6 sec.

Number of Flashes: (When the flash is fired in 30 sec. intervals with new or fully-charged batteries):

Battery Type	Auto	Manual
Alkaline-manganese	Approx. 200-2000 times	Approx. 200 times
Ni-Cd	Approx. 70-700 times	Approx. 70 times

Color Temperature: Same as daylight. Correction by special colored diffusion screen.

Flash Duration: 1/600 sec. - 1/50000 sec.

AE Flash Control System: Light reflected back from the subejct is measured and the series control system saves unneeded energy. Averaged light measuring sensitivity distribution.

Aperture Selection Switch: Three positions: red

and green "A" (AUTO) positions and "M" (MANUAL) position. With ASA 100 film, red "A" setting corresponds to f/2.8, green "A" setting to f/5.6.

Auto Shooting Distance Range:

Red "A" setting of aperture selection switch: 1.0 - 9.0m (1.0 - 5.7m with Wide Adaptor 177A).

Green "A" setting of aperture selection switch: 0.5 - 4.5m (0.5 - 2.8m with Wide Adaptor 177A).

ASA Film Speed Scale:

(32)(40) (64)(80) (125)(160) (250)(320) (500)(640)
ASA 25 · · 50 · · 100 · · 200 · · 400 · · 800

Aperture Scale: f/1-f/32.

Distance Scale: 0.5-20m (2-65 ft.).

Power Source: Four penlight (AA) alkaline-manganese (AM-3, LR6) or Ni-Cd batteries.

Pilot Lamp: Comes on when unit sufficiently charged and affects automatic switchover of camera to flash mode. No flash is fired if pilot lamp does not glow. Extinguishes when main switch OFF. Also functions as flash test button.

Dimensions: 72mm(width) x 58mm (length) x 107mm (height). (2-13/16" x 2-1/4" x 4-3/16")

Weight: 310g (10-15/16 ozs.), including batteries.

Accessories: Soft Case, Wide Adaptor 177A, Synchro Cord A (optional).

Specifications and design subject to change without notice.

Canon

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