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PUB. C-IE-122J
1086N9

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CY8-6512-002

PRINTED IN JAPAN



Canon Speedlite 300TL


INSTRUCTIONS English Edition

INTRODUCTION

Exclusively designed for the Canon T90, the Canon Speedlite 300TL is a high-performance, automatic TTL control flash unit with the following modes.

1. The A-TTL mode provides simple, fully automatic operation under any conditions from total darkness to fill-in flash.
2. The FE Lock mode incorporates the AE lock concept into flash photography using spot metering.

The 300TL is specially equipped with FULL AUTO MODE, a fully automatic flash photography mechanism. By merely setting the mode selector and pressing the shutter button beginners can easily enjoy fill-in flash photography of high technical operation.

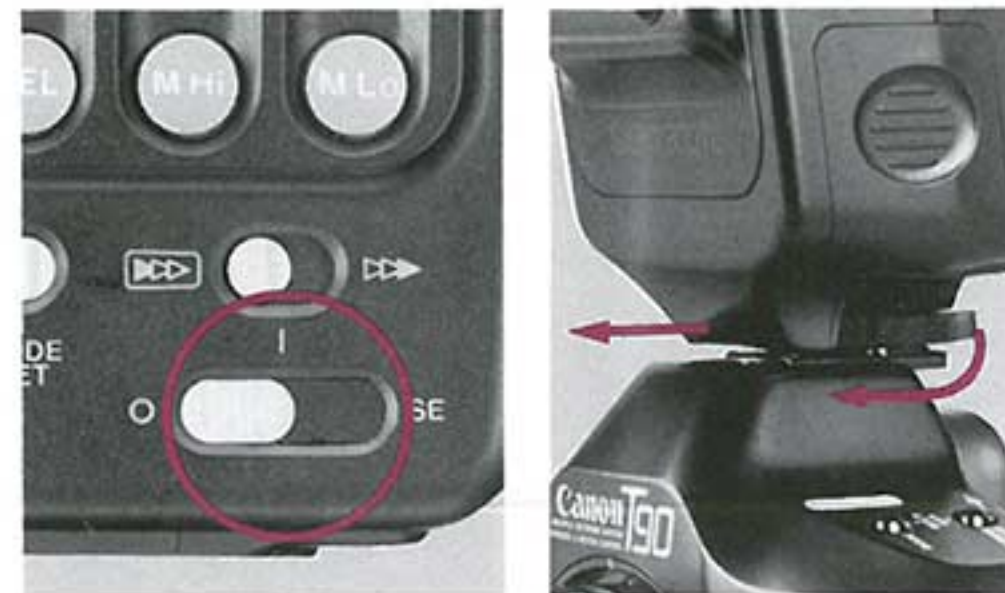


For easy reference to the camera's parts, please unfold the front flap of this booklet.

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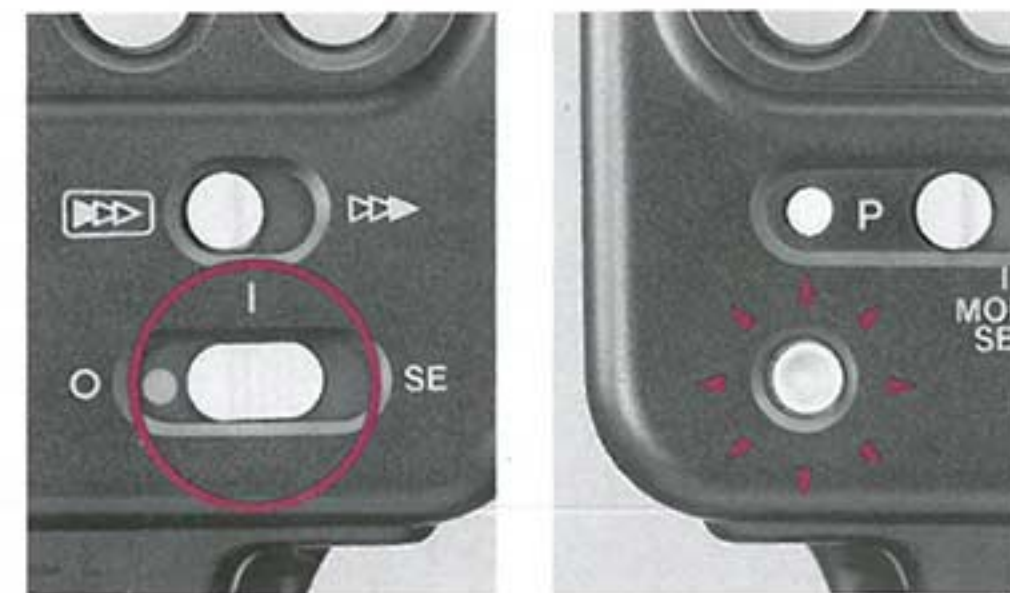
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Mounting the 300TL on the Camera



- 1) Turn the main switch OFF ("O" mark).
- 2) Loosen the lock nut and slide the 300TL into the T90's accessory shoe. To insure correct electrical contact, make sure it is pushed in all the way.
- 3) Tighten the lock nut.

Main Switch and Pilot Lamp



- If the pilot lamp lights up when the main switch is turned on ("I" mark), the flash is ready for use. It is also possible to confirm whether the flash is charged by looking "⚡" mark in the viewfinder.
- There is no need to set the film speed because it is transmitted from the camera body.

Test Firing

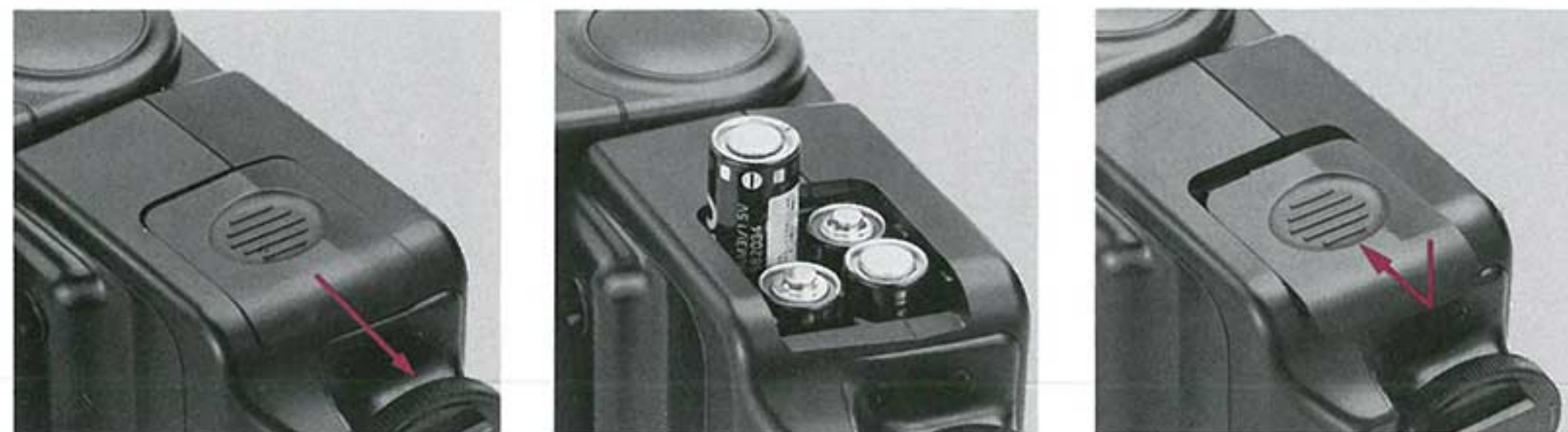
Press the pilot lamp after it has lit to test the flash. If the flash fires, it is in proper working order.

NOMENCLATURE



Preliminary Preparations

Loading the batteries



Use four new size-AA alkaline-manganese (LR6) or Ni-Cd batteries. Carbon-zinc batteries may also be used, but their life is shorter.

- 1) Wipe the battery terminals with a clean, dry cloth to ensure proper contact.
- 2) Push the battery chamber cover down lightly and lift off.

Notes

- Remove the batteries if you do not expect to use the 300TL for about three weeks or longer.
- Battery performance deteriorates in cold temperatures so keep the batteries warm until just before use. For best results, use fully charged Ni-Cd batteries in especially cold temperatures [below 0°C (32°F)].

- 3) Load the batteries so that their terminals face in the directions indicated by the diagram inside the battery chamber.

- 4) To replace, insert the cover leaving a small space as shown above. Then, push down lightly and slowly slide forward to close. Do not force the cover on and, be careful not to break the small notches near the inside edge.

- When using Ni-Cd batteries, please note that various brands have different types of terminals. Be sure to use a type which is suitable for this flash. Recharge Ni-Cd batteries according to the manufacturer's instructions.

The SE (Save-Energy) Function



Turn the main switch OFF ("O" mark) when flash photography is finished to prevent unnecessary battery consumption. The Canon Speedlite 300TL has a built-in SE (Save-Energy) function that automatically turns off the power when the flash is not used for approx. 5 minutes. To use this function, slide the main switch to the "SE" position.

To use the flash after it has turned off automatically, either press the shutter button halfway or set the main switch to the "I" position and then again to the "SE" position.

Interval flash photography is possible if the Command Back 90 is used with the 300TL. Set the Command Back 90 to the interval timer or self-timer mode and set the 300TL to the "SE" position. (The flash charge will start one minute before the shutter release.)

Zoom Mechanism



The 300TL offers a zoom mechanism which adjusts the flash coverage angle in order to use flash energy more effectively.

Pull the flash head out and set it to one of the four-click-stop positions accordingly. A zoom position setting of 24, 35, 50, or 85mm will be illuminated in the indicator on the back of the flash.

Do not choose a zoom position setting larger than the focal length of the lens in use.

Lens in-use	Zoom setting
24mm	24
35mm	35 or 24
50mm	50, 35 or 24
85mm	85, 50, 35 or 24

A-TTL Mode (Advanced-TTL)

Use this mode in fill-in flash photography to correct the lighting of the main subject and its background outdoors.

The A-TTL Mode works by first measuring the brightness of the subject and its background. Next, the distance to the main subject is measured by the 300TL's near-infrared rays. The appropriate shutter speed and aperture are then set automatically. Flash output is controlled by directly measuring the light coming through the lens and reflected from the film surface.

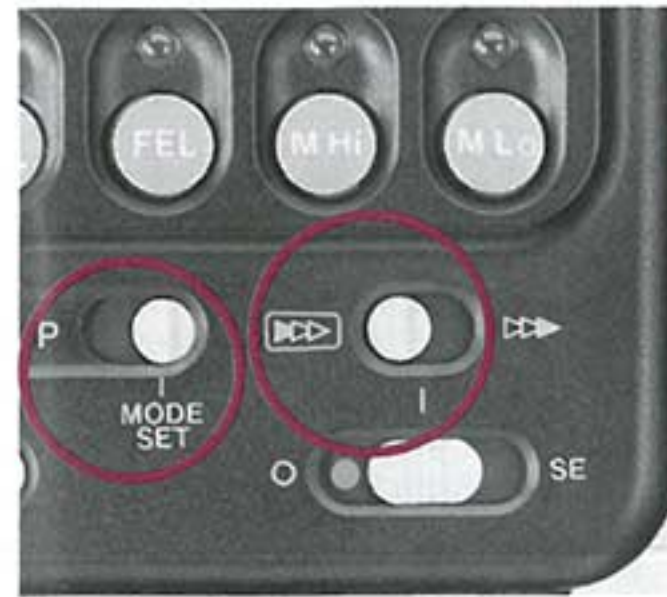
When using fill-in flash in brighter settings, this advance feature balances the exposure between the main subject and its background to prevent unnatural effects by automatically reducing flash output (ref. P.38 Flash Exposure Level Control Characteristics).

For special photographic techniques, it is possible to select any T90 shooting mode, (Program AE, Shutter-Priority AE, and Aperture-Priority AE).

We recommend using the program AE mode in dark settings.



- 1) Make sure the aperture ring of the lens is set to the "A" mark. The metering mode of the T90 may be on any setting.
- 2) Turn the main switch ON. ("I" mark).



- 3) Set the mode selector to the Mode Set position. Set the sync position selector to the first curtain sync position.

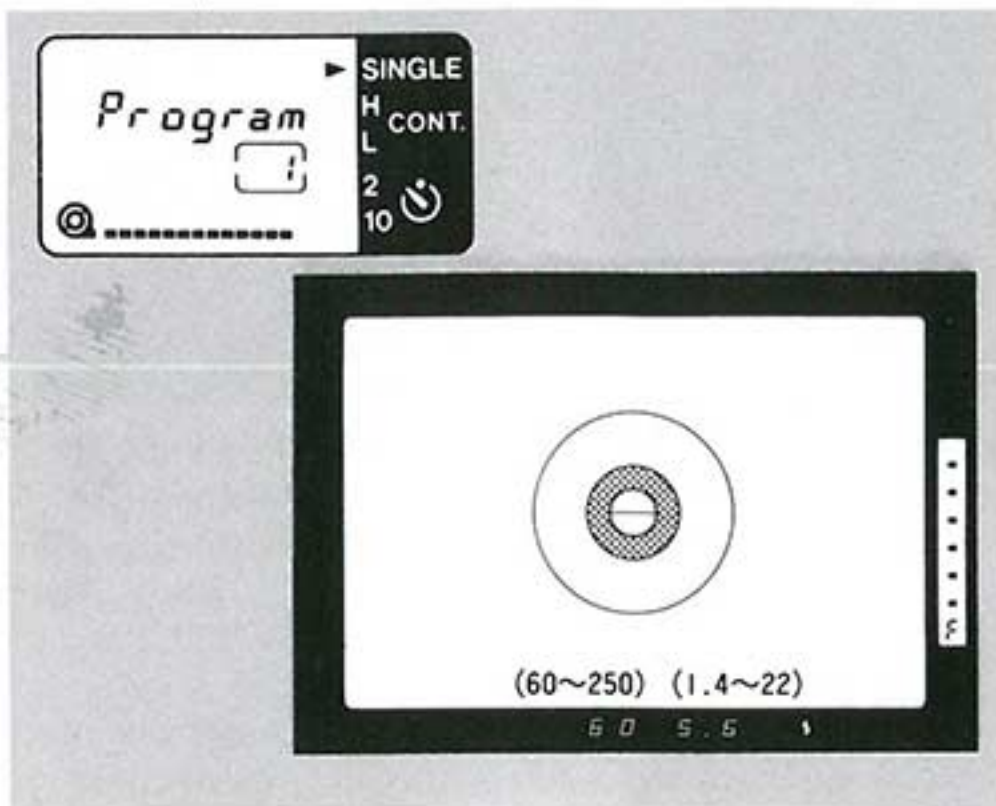


- 4) Set the control mode set button to A-TTL and make sure the confirmation lamp lights up.
- 5) Pull the flash head out to set the proper zoom position according to the lens.
- 6) Make sure the pilot lamp lights up. The "⚡" mark in the viewfinder will come on at the same time as the pilot lamp. Compose the picture and focus the subject.

- Even when an exposure is made without pressing the control mode set button with the mode selector at the Mode Set position, the shutter speed and aperture are set automatically. The flash output is determined by measuring the light reflected from the film surface.
- The T90 metering mode sets to Center-weighted average metering automatically in any position.

[a] T90 Program AE Mode

This is a fully automatic program flash mode, and easy to enjoy even when using fill-in flash in daylight for advanced techniques.

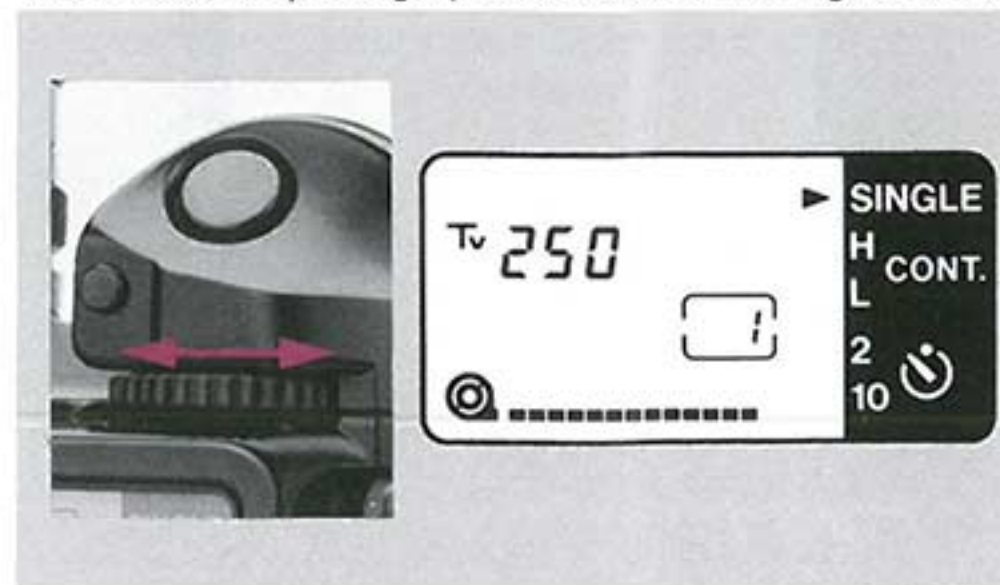


- 7) Press the shutter button halfway to activate the viewfinder information.
- 8) Press the shutter button all the way to take the picture.

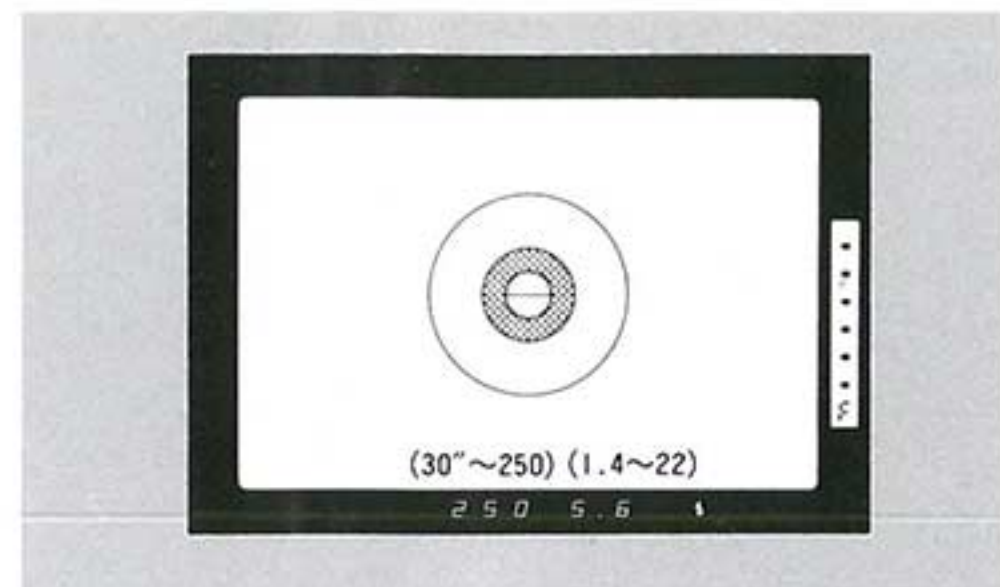
- If the subject is out of shooting distance range, both the shutter speed and the aperture will blink in the viewfinder. In this case remove your finger from the shutter button and move closer to the subject, until both the shutter speed and the aperture value light up steadily when the shutter button is pressed again. If you do not remove your finger from the shutter button, exposure will be incorrect. (Exposure is set and held on each time the shutter button is pressed halfway.)
- A blinking aperture value of 27 or 32 warns of overexposure in the background.

[b] T90 Shutter-Priority AE Mode

It is possible to set the shutter speed between 30 and 1/250 sec., for photographic effects of moving subjects.



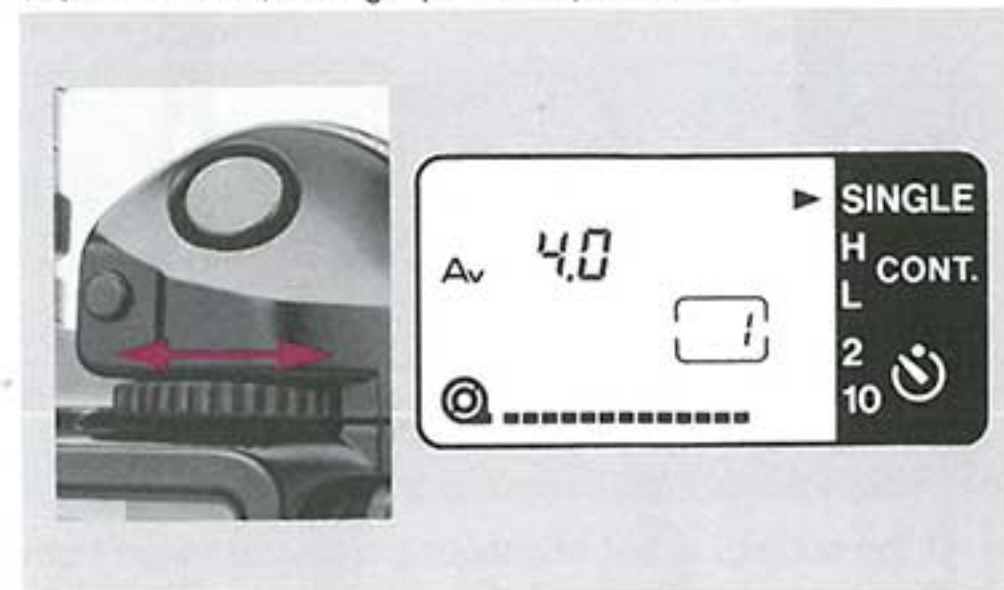
- 7) Use the electronic input dial of the T90 to set the shutter speed.
 - The shutter speed will be set to 1/250 sec. automatically if set at a higher value.
- 8) Press the shutter button halfway to activate the viewfinder information.
- 9) Press the shutter button all the way to take the picture.



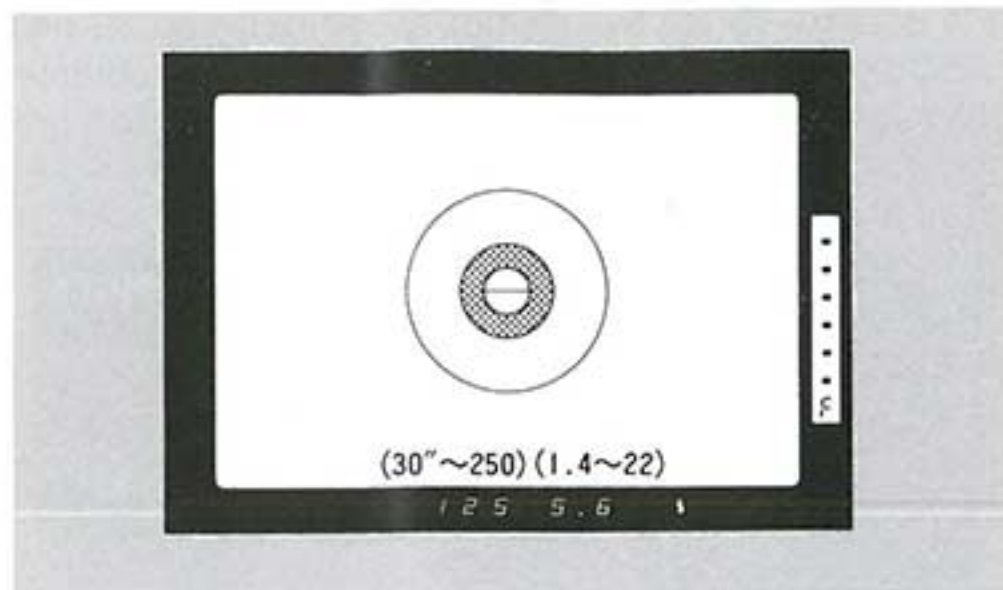
- If the subject is out of shooting distance range both the shutter speed and the aperture value will blink in the viewfinder. In this case, follow the note mentioned in the Program AE Mode.
- A blinking aperture value of 27 or 32 warns of overexposure in the background.
- In darkness, a blinking aperture value of 1.4 or 1.8 warns of impossible fill-in flash photography. When a picture is taken the main subject is correct in exposure and the background is underexposed.
- When you set the shutter speed slower than 1/60 sec., be careful of camera shake.

[c] T90 Aperture-Priority AE Mode

Use this mode to set the aperture value in advance for depth-of-field photographs like portraits.



- 7) Use the electronic input dial of the T90 to set the lens aperture between the maximum and the minimum aperture.
 - The camera will automatically set the shutter speed between 30 and 1/250 sec.
- 8) Press the shutter button halfway to activate the viewfinder information.
- 9) Press the shutter button all the way to take the picture.



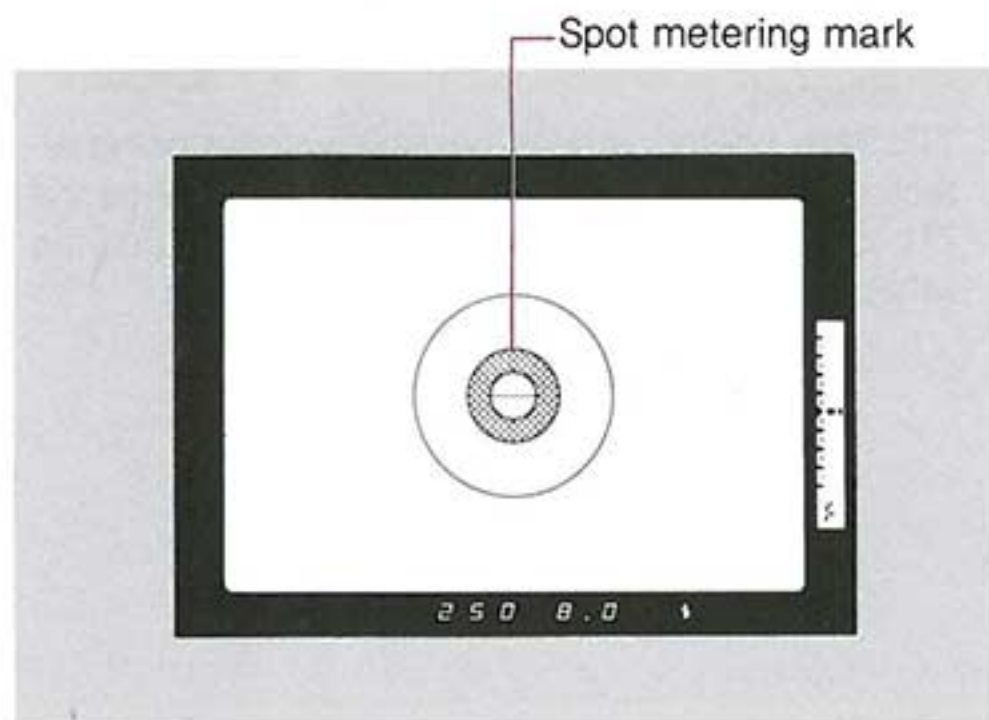
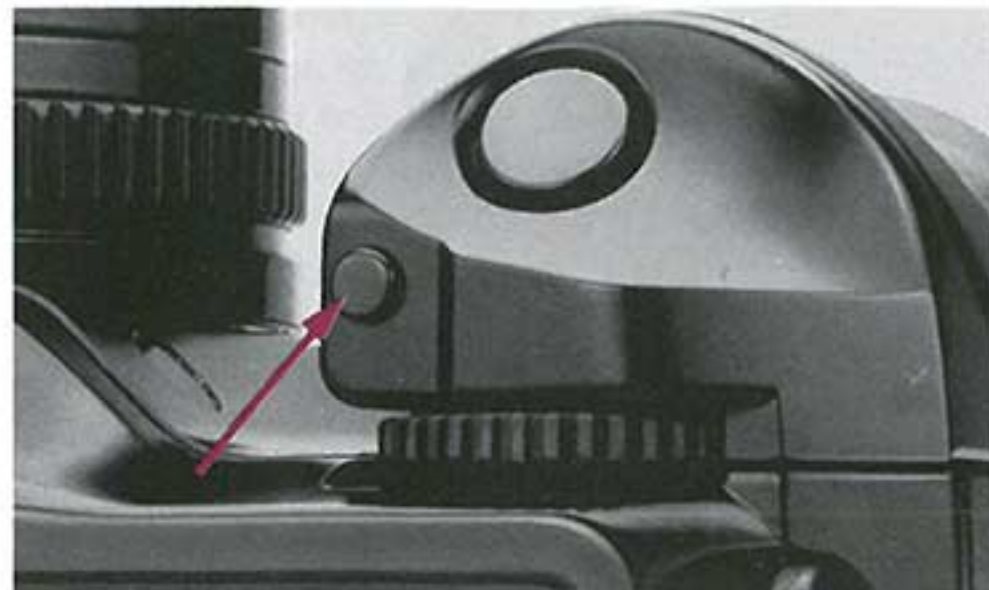
- If the subject is out of shooting distance range, both the shutter speed and the aperture will blink in the viewfinder. In this case, follow the note mentioned in the Program AE Mode.
- A blinking shutter speed of 1/250 sec. warns overexposure in the background.
- In a dark setting, a blinking shutter speed indicates that fill-in flash photography is impossible. An exposure taken in these values will result in the main subject in correct exposure and the background underexposed.
- When the shutter speed is slower than 1/60 sec., be careful of camera shake.

FEL (Flash Exposure Lock) Mode

With the world's first spot metering for flash photography using the principle of AE Lock, this mode gives correct exposure even when the main subject is not in the center of the viewfinder.

Before an exposure is made, a pre-flash is made by 1/20th power, the light reflected from the main subject is spot-metered by the camera and the exposure level is stored into memory (effective for 30 seconds). When the actual exposure is taken, the flash output is determined by this value.

It is possible to select any shooting mode of the T90 (Program AE, Shutter-Priority AE and Aperture-Priority AE mode), for photographic effects.



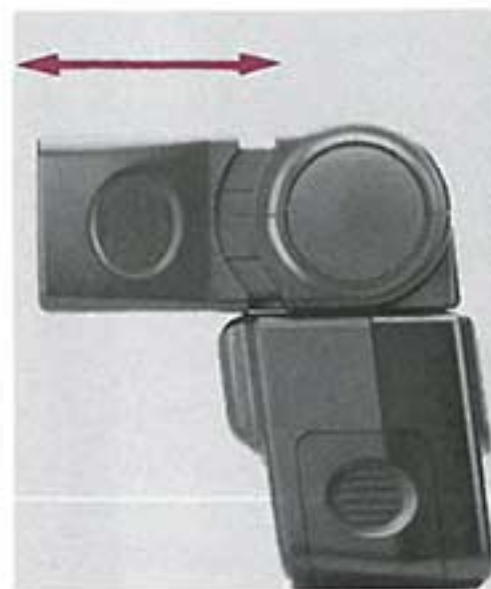
- In Shutter-Priority AE and Aperture-Priority AE mode, exposure metering is performed in accordance with the metering mode of the T90 and background exposure is displayed in real time by a free dot (●).
- The correct flash value is stored into memory for 30 seconds so you can remove your finger from the spot metering button.
- The FE Lock clears in the following conditions.
 - a. When the shutter is released after an exposure is made and finger removed from the shutter button.
 - b. When more than 30 seconds have elapsed without releasing the shutter after the spot metering button has been pressed.
 - c. When the metering mode selector of the T90 was pressed.
- TTL flash photography is possible without being affected by the reflectivity of the film in use since the TTL control system of this mode does not use the reflection from the film surface.

- When the shutter button is pressed to take the picture without pressing the spot metering button, both the shutter speed and aperture are set automatically and the flash value is determined by metering the light reflected from the film surface.
- It is also possible to independently control the exposure level for the main subject with the flash and the exposure level for background with the ambient light, if the electronic input dial and H/S control of the T90 are used with the FE Lock Mode (page 27).



- 1) Make sure the aperture ring of the lens is set to the "A" mark. If not, the pre-flash will not fire.
- 2) Turn the main switch ON. ("I" mark)

- 3) Set the mode selector to the Mode Set position. Set the sync position selector to the first curtain sync position.

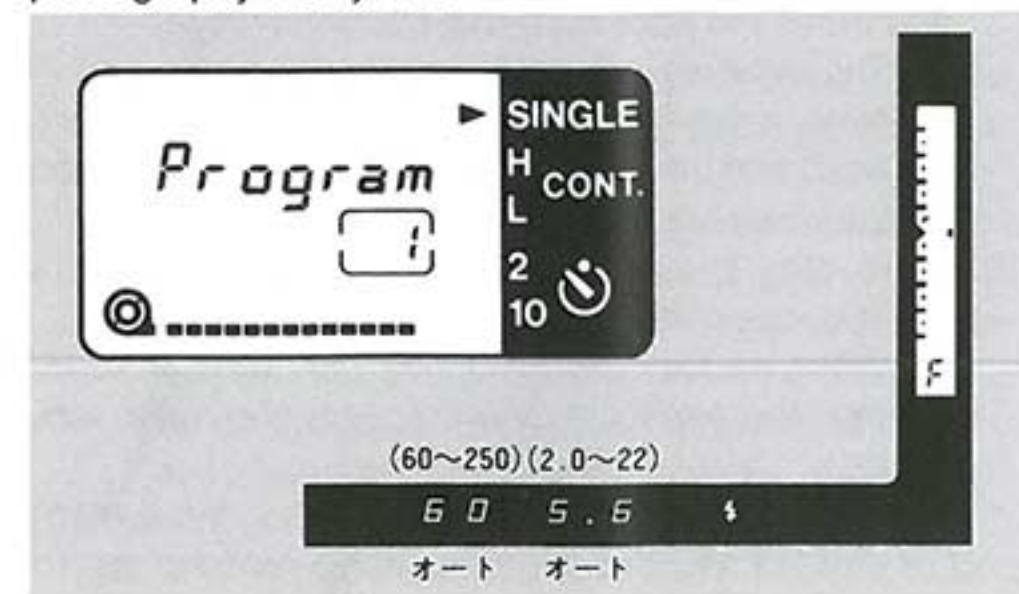


- 4) Set the control mode set button to the FEL mode and make sure the control mode confirmation lamp lights up.
- 5) Pull the flash head out to set at the proper zoom position according to the lens.
- 6) Make sure the pilot lamp lights up. The "⚡" mark in the viewfinder will come on at the same time as the pilot lamp. Compose the picture and focus the subject.

- Even when an exposure is made without pressing the control mode set button with the mode selector at the Mode Set position, the shutter speed and aperture are set automatically. The flash output is determined by measuring the light reflected from the film surface.

[a] T90 Program AE Mode

Both the shutter speed and aperture are automatically set, so it is easy to enjoy the Flash Exposure Lock photography worry-free.

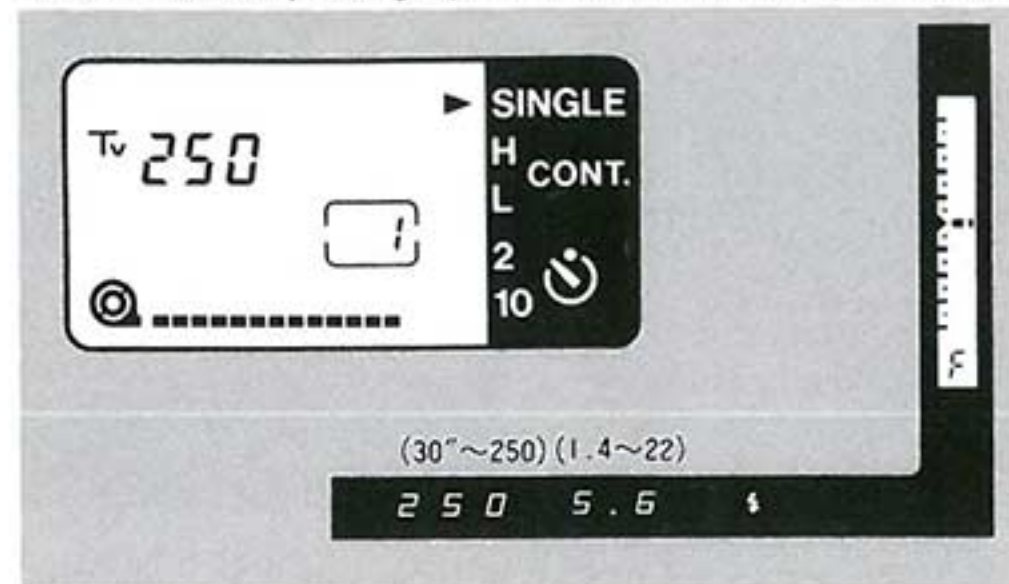


- 7) Center the main subject in the spot metering mark and press the spot metering button.
 - The shutter speed (between 1/60 and 1/250 sec.) and aperture are set automatically.
 - Next, a pre-flash is emitted from the main flash head and the correct flash output value is stored into memory for 30 seconds.

- 8) Make sure the fixed dot (■) is aligned with the triangle index on the right of the viewfinder.
 - When the fixed dot is not aligned with the triangle index, the subject is out of shooting distance range. In this case, move closer to the subject and press the spot metering button again.
 - When the aperture value of either 27 or 32 blinks in the viewfinder, background over exposure exists. Use a ND filter.
- 9) Recompose the picture if necessary, focus the subject and press the shutter button all the way to take the picture.

[b] T90 Shutter-Priority AE Mode

Use this mode to set the shutter speed between 30 and 1/250 sec., for photographic effects of moving subjects



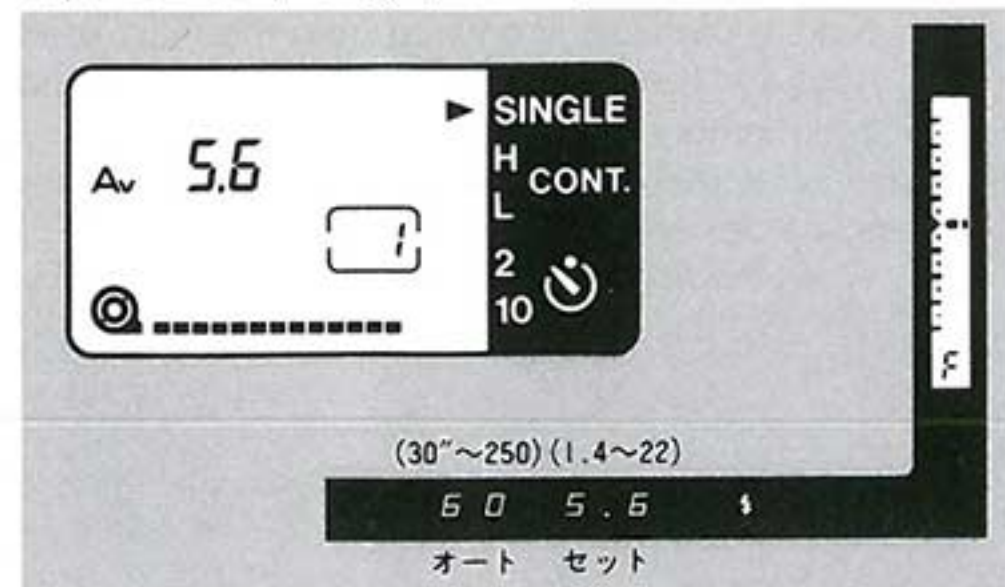
- 7) Use the electronic input dial of the T90 to set the shutter speed.
- The shutter speed will be set to 1/250 sec. automatically if set at a higher value.

- 8) Center the main subject in the spot metering mark and press the spot metering button.
- The aperture is set automatically.
 - Next, a pre-flash is emitted from the main flash head and the correct flash output value is stored into memory for 30 seconds.
- 9) Make sure the fixed dot (■) is aligned with the triangle index on the right of the viewfinder.
- When the fixed dot is aligned with the triangle index, the exposure is correct for the main subject. If not aligned with the triangle index, the subject is out of shooting distance range. Move closer to the subject and press the spot metering button again.

- Background exposure is displayed in real time by a free dot (●). When the free dot (●) is aligned with the index, exposure is correct.
 - When the aperture value of either 27 or 32 blinks in the viewfinder, background over exposure exists. Use a ND filter.
 - When the aperture value of 1.4 or 1.8 blinks, the background is underexposed. If you press the shutter button, the main subject exposure is correct but the background is underexposed.
 - When the shutter speed is set slower than 1/60 sec., be careful of camera shake.
- 10) Recompose the picture if necessary, focus the subject and press the shutter button all the way to take the picture.

[c] T90 Aperture-Priority AE Mode

Use this mode to set the aperture value in advance, for depth of field photographs like portraits.



- 7) Use the electronic input dial of the T90 to set the lens aperture between the maximum and the minimum aperture.
- The camera will automatically set the shutter speed between 30 and 1/250 sec.

Full Auto Mode (P-Position Mode)

- 8) Center the main subject in the spot metering mark and press the spot metering button.
 - Next, a pre-flash is emitted from the main flash head and the correct flash output value is stored into memory for 30 seconds.
- 9) Make sure the fixed dot (■) is aligned with the triangle index on the right of the viewfinder.
 - When the fixed dot is aligned with the triangle index, the exposure is correct for the main subject. If not aligned with the triangle index, the subject is out of shooting distance range. Move closer to the subject and press the spot metering button again.

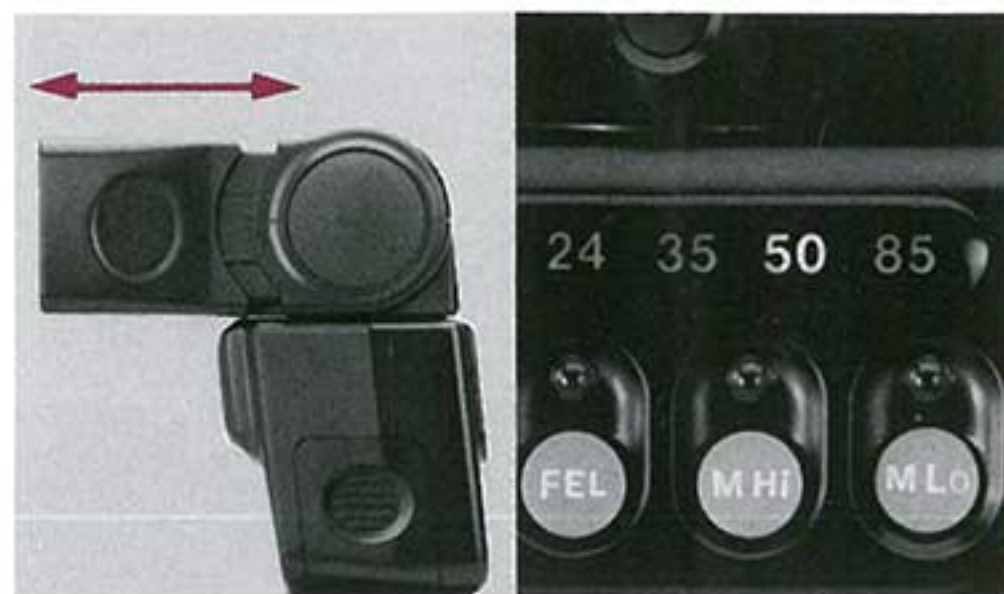
- Background exposure is displayed in real time by a free dot (●). When the free dot (●) is aligned with the index, exposure is correct.
- When the shutter speed of 1/250 sec. blinks in the viewfinder, the background is over exposed. Use a ND filter.
- When the shutter speed of 30 sec. blinks, the background is under exposed. If you press the shutter button, the main subject exposure is correct and the background under exposed.
- When the shutter speed is set slower than 1/60 sec., be careful of camera shake.

Flash photography is now as easy as program photography with the camera alone is. Just set the flash mode selector to "P" (Program). No matter what mode the camera is set for, it will automatically switch to the program mode and the flash will switch to the A-TTL mode. Even beginners can use advanced techniques such as fill-in flash without fear of failure.

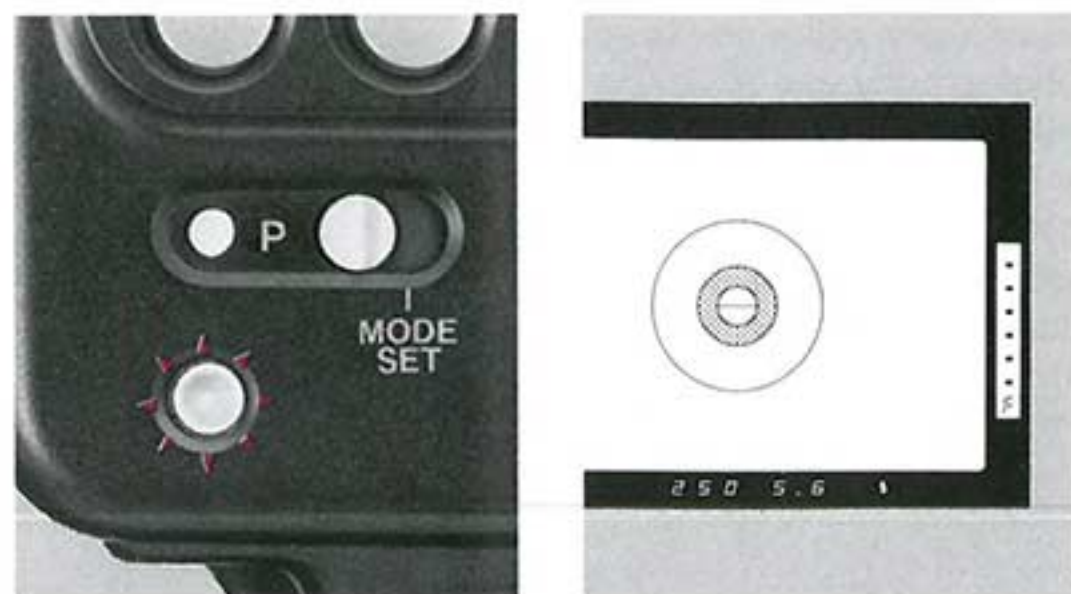


- 1) Make sure the aperture ring of the lens is set to the "A" mark. The shooting mode and the metering mode of the T90 may be on any setting.
- 2) Turn the main switch ON. ("I" mark)

- 3) Set the mode selector to the "P" position and make sure the P position confirmation lamp lights up.
 - In the Full Auto Mode the first curtain sync mode is automatically set.



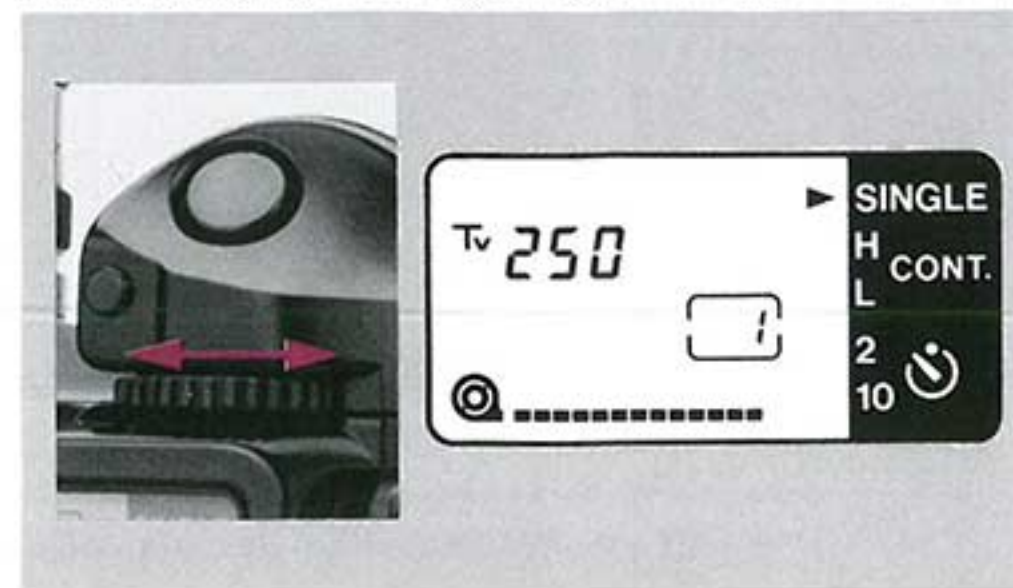
- 4) Pull the flash head out to set at the proper zoom position according to the lens.
- 5) Make sure the pilot lamp lights up. The "⚡" mark in the viewfinder will come on at the same time as the pilot lamp.
Compose the picture and focus the subject.
- 6) Press the shutter button halfway to activate the viewfinder information display.
- 7) Press the shutter button all the way to take the picture.



- If the subject is too far away, both the shutter speed and the aperture will blink in the viewfinder. In this case remove your finger from the shutter button and move closer to the subject, until both the shutter speed and the aperture value light up steadily when you press the shutter button again. If you do not remove your finger from the shutter button, exposure will be incorrect since exposure is set and held on each time the shutter button is pressed halfway.

TTL Manual Mode

The Canon Speedlite 300TL is an automatic TTL control flash. You can choose the desired shutter speed and aperture value, while the flash output is determined automatically by metering the light from the film surface.



- 1) Select any mode of A-TTL, FEL and FULL AUTO (P), and reset your desired aperture value to the aperture ring of the lens from the "A" mark.
- 2) In the Shutter-Priority AE Mode of the T90, use the electronic input dial of the T90 to set the shutter speed between 30 and 1/250 sec.
 - The shutter speed will be set to 1/250 sec. automatically if set at a higher value.
- 3) Press the shutter button halfway to activate the viewfinder information.



- 4) Press the shutter button all the way to take the picture. The main subject exposure is correct.
 - Even when the subject is too far away, neither the shutter speed or the aperture will blink in the viewfinder. Please find the automatic distance range on the sticker.

Manual Mode (M Hi/M Lo)

In some cases, automatic flash may not be suitable for your subject. If, for instance, the subject's surroundings are bright white with strong reflections or if the main subject is small with a dark or distant background, the automatic flash exposure may be affected by the contrasting background. Incorrect exposure can be avoided by using the Manual Hi mode.

In the manual modes, the aperture must be calculated from the guide number. The aperture is then set using the electronic input dial of the T90 in the Aperture-Priority AE Mode. The shutter speed is automatically set to 1/250 sec.

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

- To find the correct aperture, the same unit must be used for the guide number and the subject distance. For example, meters and meters or feet and feet.

Since the guide number changes depending on film speed and the position of the flash head, the 300TL has two stickers giving the guide numbers in both feet and meters for various film speeds and flash head positions. The sticker should be attached to a convenient place on the flash unit.

GUIDE NUMBER TABLE (m)

G.No. (MANUAL Hi)

f \ ISO	25	50	64	100	200	400	800	1000	1600
24 mm	12.5	17.5	20	25	35	50	70	79	100
35 mm	15	21	24	30	42	60	84	94	120
50 mm	17.5	24	28	35	49	70	99	110	140
85 mm	20	28	32	40	56	80	113	126	160

G.No. (MANUAL Lo)=G.No. (MANUAL Hi)÷4

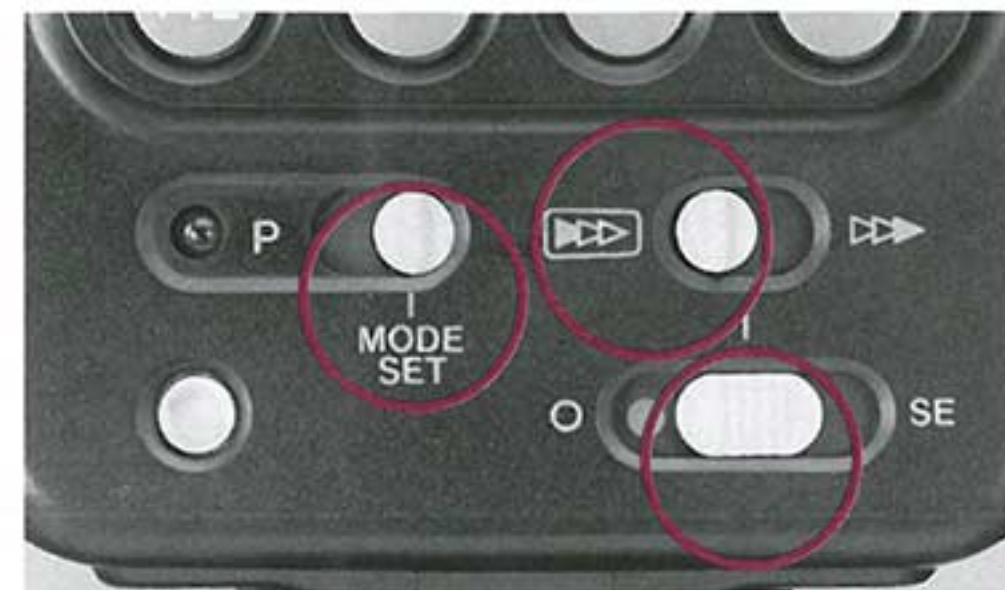
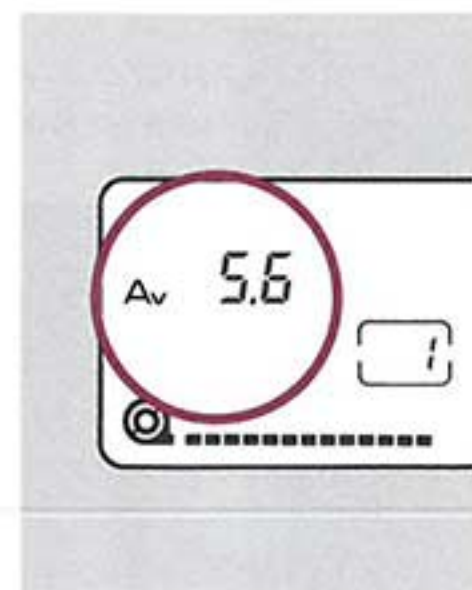
GUIDE NUMBER TABLE (ft.)

G.No. (MANUAL Hi)

f \ ISO	25	50	64	100	200	400	800	1000	1600
24 mm	41	58	65	82	116	164	232	259	328
35 mm	49	69	78	98	138	196	277	310	392
50 mm	57	80	91	114	161	228	322	360	456
85 mm	65	92	104	131	185	262	370	414	524

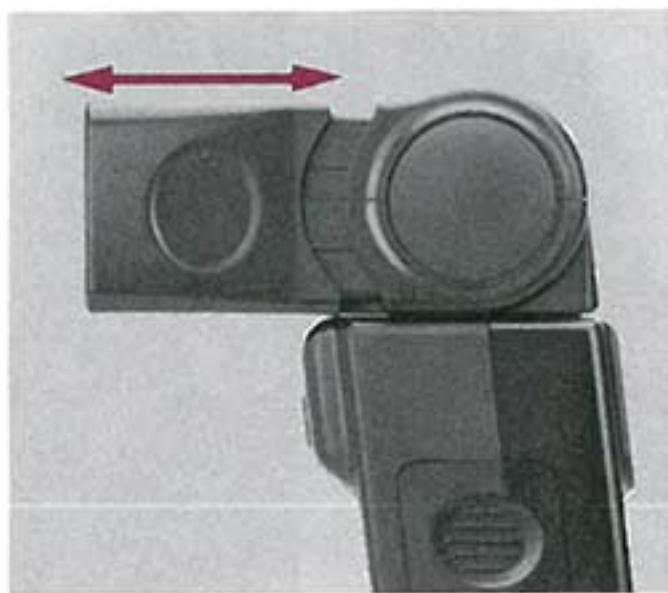
G.No. (MANUAL Lo)=G.No. (MANUAL Hi)÷4

While the Manual Hi mode gives full flash intensity, the Manual Lo mode is used when you need a smaller guide number or want to make the flash recycling time as short as possible. Flash intensity is 1/16th that of full flash and the guide number of the flash becomes 1/4th that of full flash.



- 1) Make sure the aperture ring of the lens is set to the "A" mark.
- 2) Set the T90 to the aperture-priority AE mode.

- 3) Turn the main switch ON. ("I" mark)
- 4) Set the mode selector to Mode Set position, and set the sync position selector switch to first curtain sync.



- 5) Set the control mode set button to either Manual Hi or Manual Lo and make sure the control mode confirmation lamp lights up.
- 6) Focus the subject and read the shooting distance from the lens' distance scale.
- 7) Use the guide number formula on p.24 to determine the aperture value and set the aperture on the T90 by turning its electronic input dial.

Notes

- Immediately after the pilot lamp lights, the flash is not yet fully charged. If you want to take a picture at that time, open the aperture by a half or a whole f/stop to make up for the weakened flash power.
- If the calculated aperture value is in between two values on the aperture ring, set the larger aperture of the two.

Intermediate Operation

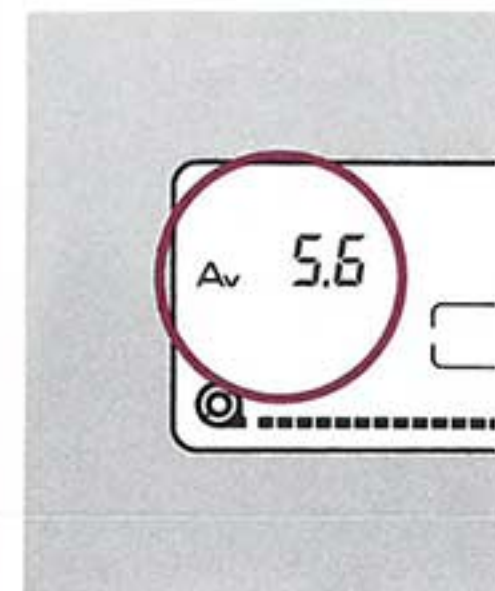
FEL Mode + H/S Control

With Canon Speedlite 300TL each exposure of the main subject and its background is individually controlled by using the FEL Mode with the H/S control in the T90 aperture-priority AE Mode.

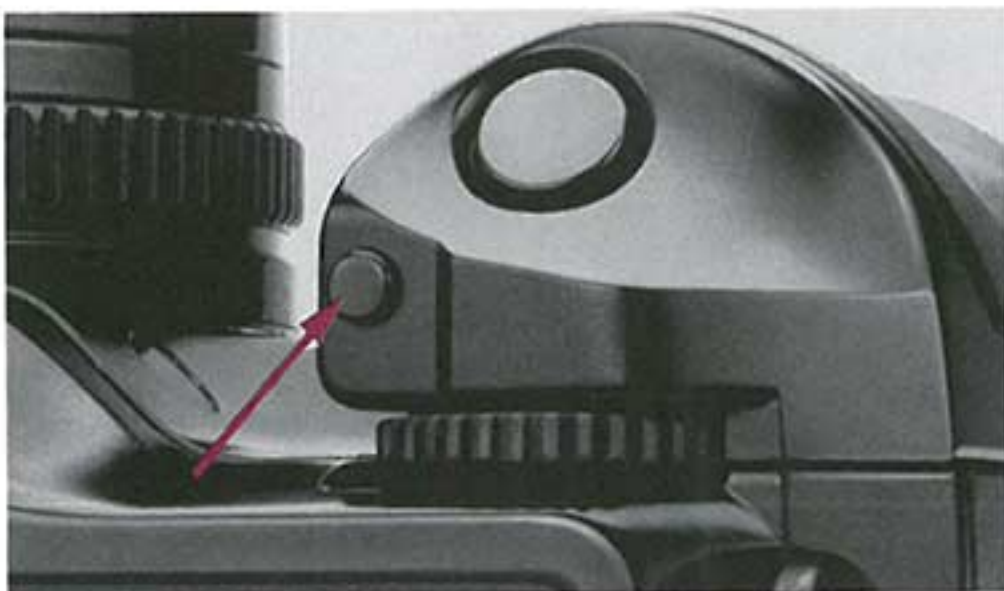


FEL Program
1/60 sec.f/4
FD85mmF1.2L

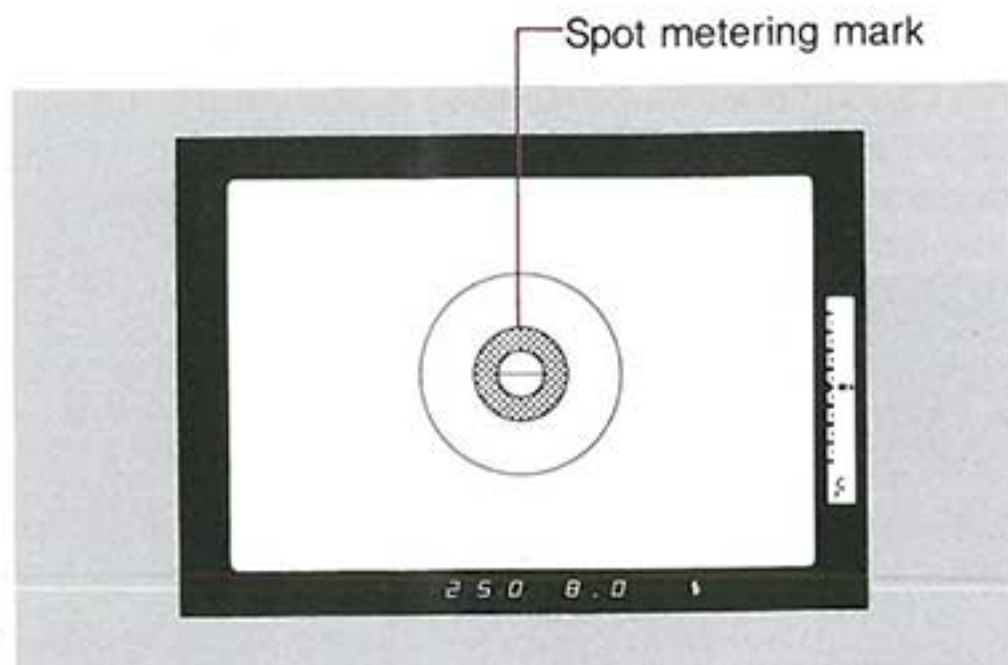
FEL Aperture-
Priority H/S+2
1/15sec.f/4
FD85mmF1.2L



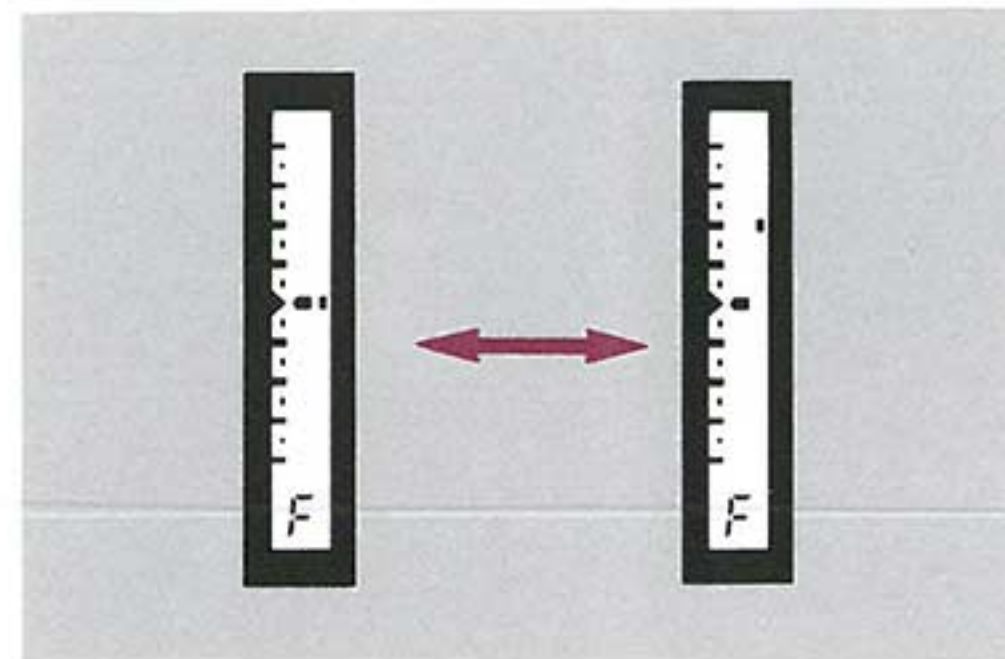
- 1) Set the flash to the FEL Mode.
- 2) Set the T90 to the aperture-priority AE mode.
- 3) Set the desired metering mode on the T90 for the background exposure.
- 4) Set the lens aperture between the maximum and the minimum aperture using the T90 electronic input dial.



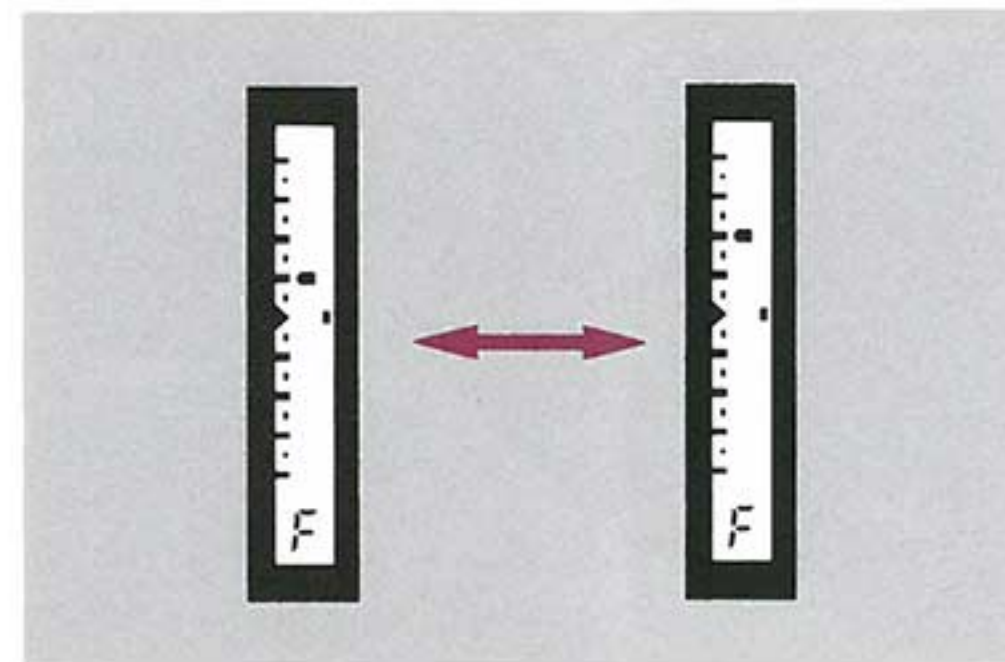
- 5) Center the main subject in the spot metering mark, press the spot metering button and activate the FE lock.
- The fixed dot (■) displayed at the triangle index in the viewfinder indicates the exposure level for the main subject. The free dot (●) displayed next to the fixed dot indicates the exposure level for the background relative to the exposure level for the main subject. If both the fixed dot (■) and the free dot (●) are aligned with the triangle index, both the main subject and the background will be correctly exposed.



- When the fixed dot is not aligned with the triangle index, exposure will not be correct. In this case, move closer to the subject and press the spot metering button again.



- (a) Main subject exposure control
The electronic input dial moves the fixed dot (■) up and down to control the exposure for the main subject.



- (b) Background exposure control
Pressing the H/S control button moves the free dot (●) up and down for the background exposure.

Slow-Sync Flash Photography

If a photograph is taken of a subject in front of a dark background, the background will normally appear black. In such cases, the background exposure can be easily adjusted using the following procedure.

In the aperture-priority AE mode, the shutter speed is set automatically between 1/250 and 30 seconds. The 300TL can be set to either A-TTL or FEL mode.

Note

- In many cases the slow shutter speed will be set automatically, so use a tripod.
- When the shutter speed of 30 sec. blinks, the background exposure is under exposed.
- The main subject is better when it is not moving.
- In the Aperture-Priority AE Mode and the FE Lock mode it is possible to control the background exposure, using T90 H/S control buttons.



FEL Program 1/60sec./f/2.8 FD35mmF2



FEL Aperture-Priority 1/4sec./f/2.8 FD35mmF2

Second Curtain Sync Flash Photography

With focal plane shutters, flash synchronization is made when the first curtain is fully open.

With the combination of the T90 and the 300TL, however, it is also possible to make the flash synchronization immediately before the second curtain starts running. This is called second curtain flash sync and is effective when a slow shutter speed is used.

To use this function, set the sync position selector to the right side, as shown in the photo.



When second curtain flash sync is used with a moving subject and a slow shutter speed, the light from the flash clearly illuminated the subject for a sharp image but there is also a trailing image created by the exposure from ambient light for a flowing effect.

Note

The second curtain sync flash photography is not possible in the Full Auto mode.

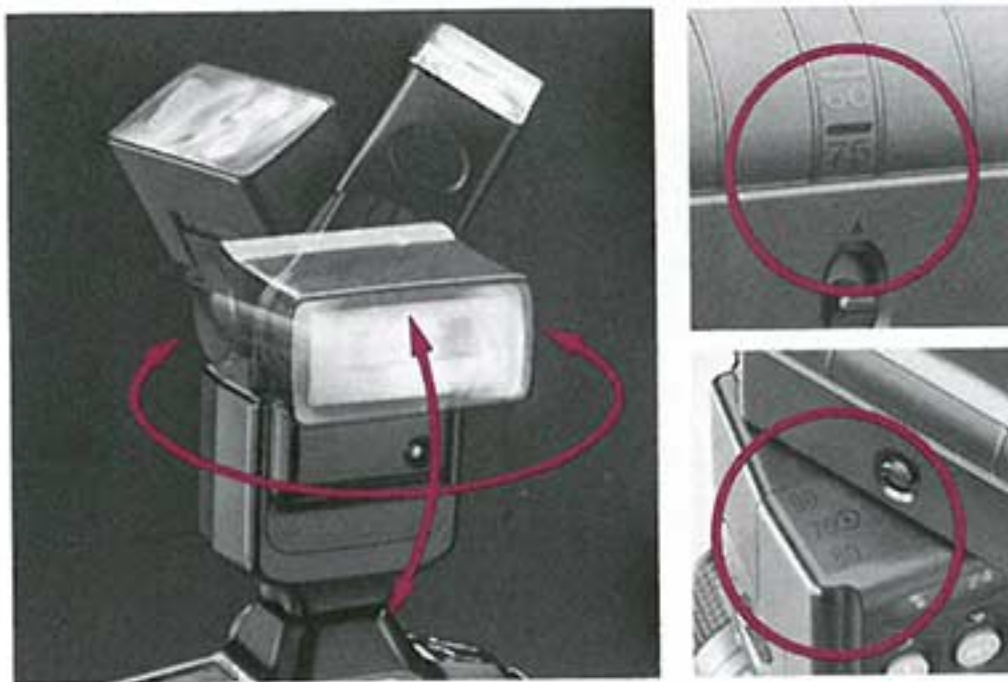
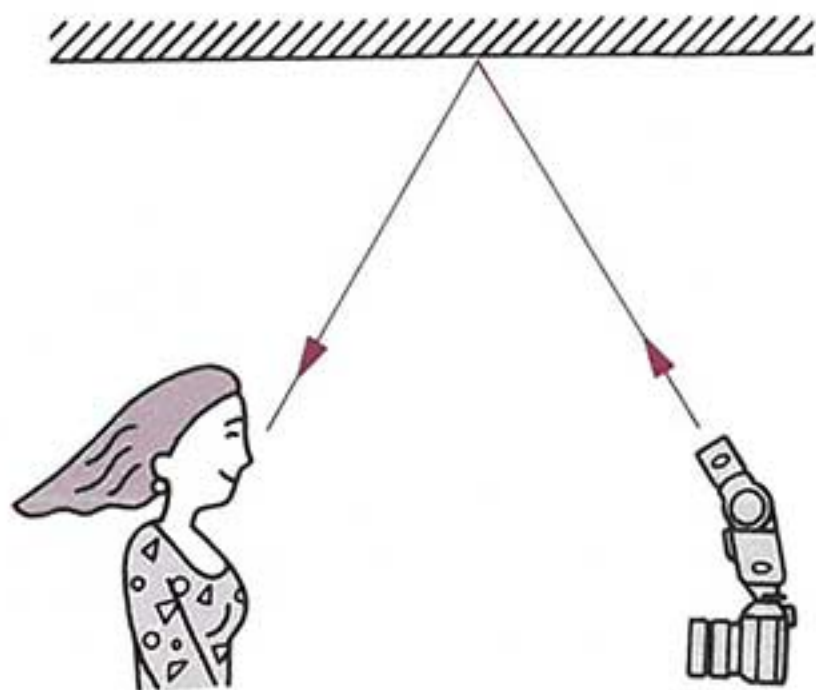


A-TTL First Curatin Sync Shutter Priority 2sec./f/5.6 FD35mmF2



A-TTL Second Curtain Sync Shutter Priority 2sec./f/5.6 FD35mmF2

Bounce Flash Photography



Pointing the flash head towards a wall or ceiling and illuminating the subject with light reflected off of that surface is called bounce flash. Because the light is reflected, a loss of light volume is unavoidable. On the other hand, there will be no dark shadows and a soft, less contrasty illumination is possible.

This flash features TTL automatic output control so there is no need for difficult exposure calculations for bounce flash photography in the Full Auto or A-TTL modes.

When the A-TTL mode is used for bounce flash photography, the main flash head outputs 1/20th that of normal output instead of near-infrared rays for the pre-flash. If the viewfinder display is not blinking, automatic bounce flash photography is possible.

- The zoom head swivels 90° upward, 180° to the left and 90° to the right in any combination. Click stops are provided for extra convenience. To swing the flash horizontally, first slide the bounce latch upwards and then rotate the flash head left or right.

With bounce flash photography, it is necessary to set the flash head so that the subject is not illuminated directly by the flash. If you only tilt the flash up a few degrees, exposure will not be uniform. The easiest way to use bounce flash is to tilt the flash head up 90° and bounce the flash off the ceiling.

The surface off of which the flash is bounced should preferably be white or nearly white, fairly large and highly reflective. If the reflecting surface is colored, the subject may turn out tinted that color. The color may also be disappointing if the surface is a poor reflector. A very high ceiling does not make a good surface for bounce flash; a better solution would be to bounce the flash off a white card reflector.

Generally, the closer the flash is to the surface, the brighter and higher in contrast the picture will be.

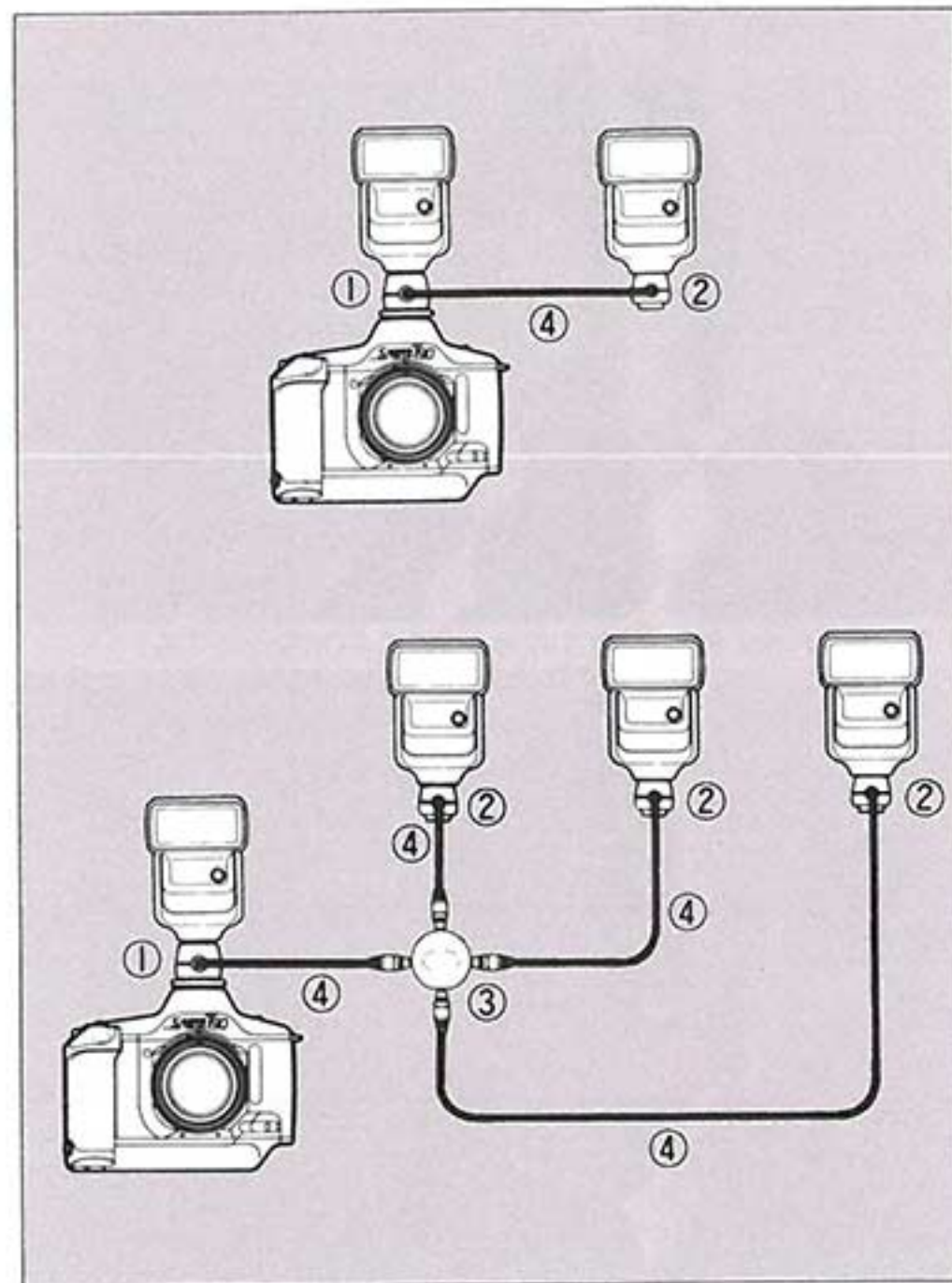


P-Mode Direct Program 1/60sec./f5.6 FD85mmF1.8



P-Mode Bounce Upward Program 1/60sec./f4 FD85mmF1.8

Multiple Flash Photography



The 300TL can be used together with the following multiple flash accessories.

- ① TTL Hot Shoe Adapter
- ② Off-camera Shoe Adapter
- ③ TTL Distributor
- ④ Connecting Cords 300/60

Automatic TTL multiple flash photography is possible using up to 4 units of the Canon Speedlite 300TL and Canon Macro Ring Lite ML-2. The light from all of the flash units is metered through the lens so there are no bothersome, complex calculations (except in the manual mode).

To create effective multiple flash photographs, you must position each flash and adjust their angles in accordance with the results desired. The knack of producing a memorable shot lies in balancing the light coming from main and secondary flash units, rather than flooding the whole subject in uniform light. We have two practical suggestions to make:

1. Vary the distance of the secondary light sources from the subject.
 - Set each Speedlite 300TL to "A-TTL", or the "P" position.
 - Be sure to confirm that the pilot lamp of each flash lights up.
 - Be sure to check the battery of the TTL Hot Shoe Adapter.
2. Try bouncing and diffusing.

Multiple Flash Accessories



TTL Hot Shoe Adapter — Attached to the T90's accessory shoe. One lithium battery (CR-2025) is necessary.



TTL Distributor — Used to connect the TTL Hot Shoe Adapter to several Off-camera Shoe Adapters through several Connecting Cords. Necessary when flash units are used away from the T90, and when three or four flash units are used for multiple flash photography.

- The number of the Connecting Cords in use for each flash unit must not be more than three and its total length must be within 9m. (approx. 29.5 ft.)
- The first curtain sync is automatically set.
- When using multiple flash in the manual modes, the "M" does not appear in the viewfinder.

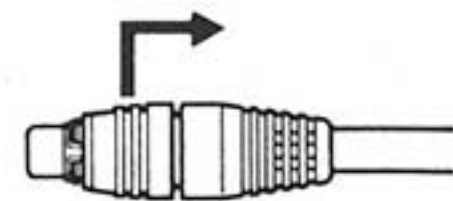


Off-camera Shoe Adapter — Necessary when the flash is used away from the T90. Connected to the TTL Hot Shoe Adapter through the Connecting Cord.



Connecting Cord 60/300 — Extension cords with the length of 0.6m (2 ft.) and 3m (9.8 ft.) respectively to connect each accessory.

- It is also possible to use a slave unit, but make sure it can be used with the flash units before buying it.



SPECIFICATIONS

Type: Energy-saving, automatic electronic flash unit with pre-flash function, TTL metering function measuring light reflected from the film surface, and an automatic flash output control function using spot metering. Exclusive use for the T90 camera. Clip-on type with directly coupled contacts.

Guide number:

	Flash head position			
	24mm	35mm	50mm	85mm
M Hi	25 (ISO 100·m)	30 (ISO 100·m)	35 (ISO 100·m)	40 (ISO 100·m)
	82 (ISO 100·ft)	98 (ISO 100·ft)	114 (ISO 100·ft)	131 (ISO 100·ft)
M Lo	6.2 (ISO 100·m)	7.5 (ISO 100·m)	8.7 (ISO 100·m)	10 (ISO 100·m)
	20.5 (ISO 100·ft)	24.5 (ISO 100·ft)	29 (ISO 100·ft)	32.7 (ISO 100·ft)

The above figures are at full charge, i.e. 30 secs after pilot lamp glows with new alkaline or fully charged Ni-Cd batteries.

Flash Coverage Angle: Covers more than the fields of view of 24mm, 35mm, 50mm and 85mm lenses.

Recycling Time: Alkaline-manganese batteries: Auto: approx. 0.2 to 13 secs. M Hi: approx. 13 secs. Ni-Cd batteries: Auto: approx. 0.2 to 6 secs. M Hi: approx. 6 secs. (Interval between firing of the flash and relighting of pilot

lamp with new alkaline or fully charged Ni-Cd batteries.)

Number of flashes: Alkaline-manganese batteries: approx. 100–700 times. Ni-Cd batteries: approx. 45–300 times. (Counted when flash is fired in 30 sec. intervals with new alkaline or fully charged Ni-Cd batteries.)

Flash duration: Approx. 1/700–1/20000 sec.

Flash Control System: TTL series control system with pre-flash function.

For Both the A-TTL and FEL Modes

	Shutter speed	Aperture value
Shutter-priority AE	Set between 30 and 1/250 sec.	Automatic setting (between the maximum and minimum aperture of the lens)
Aperture-priority AE	Automatic setting (30–1/250 sec.)	Set between the maximum and minimum aperture.
Program AE	Automatic setting (1/60–1/250 sec.)	Automatic setting* (between the maximum and minimum aperture of the lens)

* In the FEL Mode, between either f/2 or the maximum and minimum settings of the lens.

EXPOSURE WARNING DISPLAYS IN THE VIEWFINDER

	AE Mode of the T90	Main subject too far away	Background underexposure	Background overexposure
A-TTL	Program AE	Both shutter speed and aperture blinking	—	Aperture of 27 or 32 blinking
	Shutter-Priority AE		Fully open aperture blinking	
	Aperture-Priority AE		Shutter speed of 30 sec. blinking	Shutter speed of 1/250 sec. blinking
FEL	Program AE	Fixed dot down	—	Of 27 or 32 blinking
	Shutter-Priority AE		Free dot down	Free dot up/aperture of 27 or 32 blinking
	Aperture-Priority AE		Free dot down	Free dot up/shutter speed of 1/250sec. blinking
Full Auto Mode (P)	—	Both shutter speed and aperture blinking	—	Aperture of 27 or 32 blinking
TTL Manual	Shutter-Priority AE, setting "A" mark off	—	—	—

CAUTIONS

Flash Exposure Level Control: A maximum of 1.5 BV steps in the A-TTL or FEL mode when subject illuminance is more than BV5 according to the center-weighted average metering system of the T90.

Automatic Shooting Distance Range (in program mode at ISO 100)

Zoom head at 24mm: 0.5–12.5m (1.6–4.1 ft)
 at 35mm: 0.5–15m (1.6–49 ft)
 at 50mm: 0.5–17.5m (1.6–57.4 ft)
 at 85mm: 0.5–20m (1.6–65 ft)

Film speed setting: Automatically set by the camera

Bounce angle: Upward: 0–90° (click stop positions: 0, 60, 75, 90)

Left side: 0–180° (click stop position: 0, 60, 75, 90, 120, 150, 180).

Right side: 0–90° (click stop position: 0, 60, 75, 90).

Power Source: Four, size-AA (LR6) alkaline-manganese or Ni-Cd batteries. SE (Save-Energy) mechanism: Power is automatically turned off after 5 minutes of non-use when the main switch is left on.

Pilot Lamp: Lights when the flash is ready for use and automatically switches to flash photography. Also used as a test button.

Size: 81mm (W) × 119.4mm (H) × 94mm (D).
 (3-3/16" × 4-11/16" × 3-11/16")

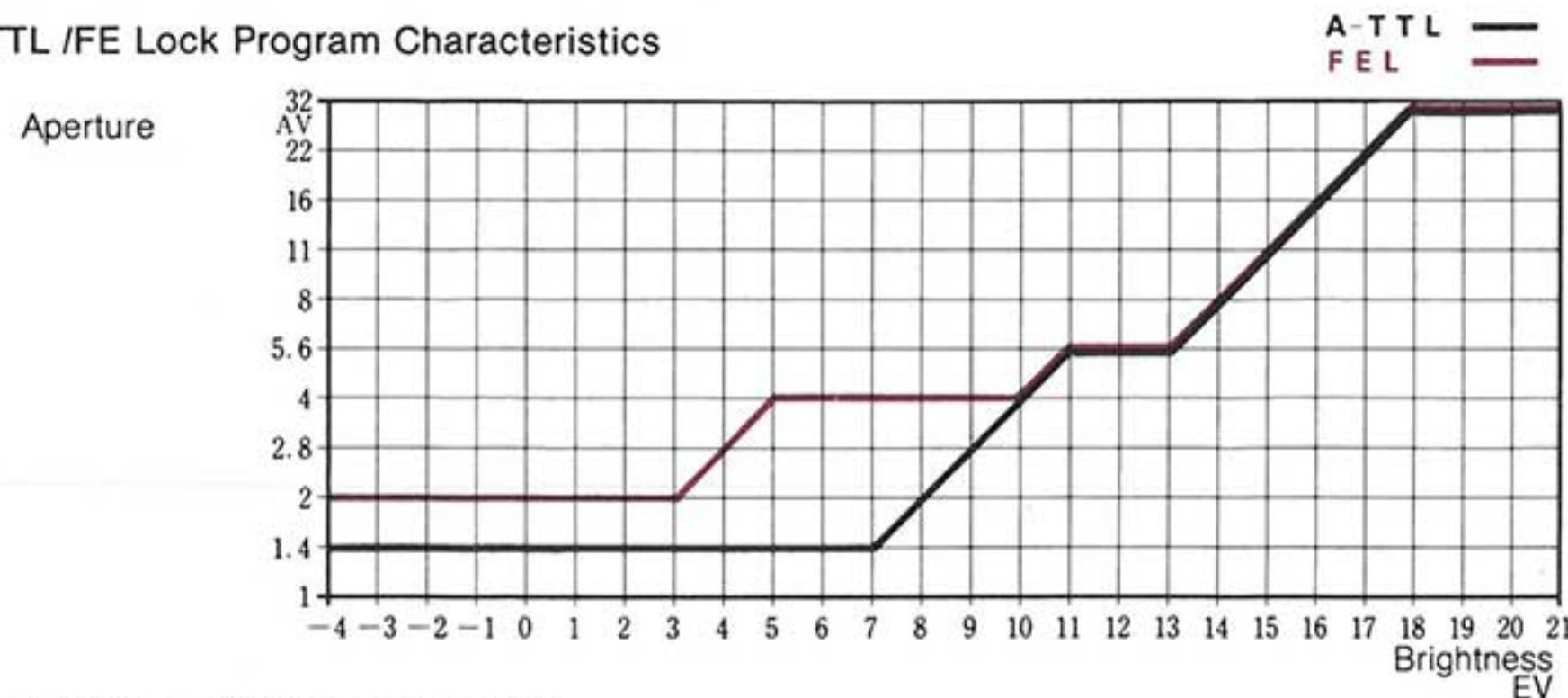
Weight: 395 g (13-15/16 ozs) without batteries.

1. This device contains high-voltage circuitry so never disassemble it yourself. For repairs, always take the unit to the nearest Canon Service facility.
2. Do not allow this unit to come into contact with water. If rain or snow gets on the flash, immediately wipe it with a dry cloth.
3. Never leave this unit in the trunk or rear window of a car, or any other hot place since this can cause malfunctions.

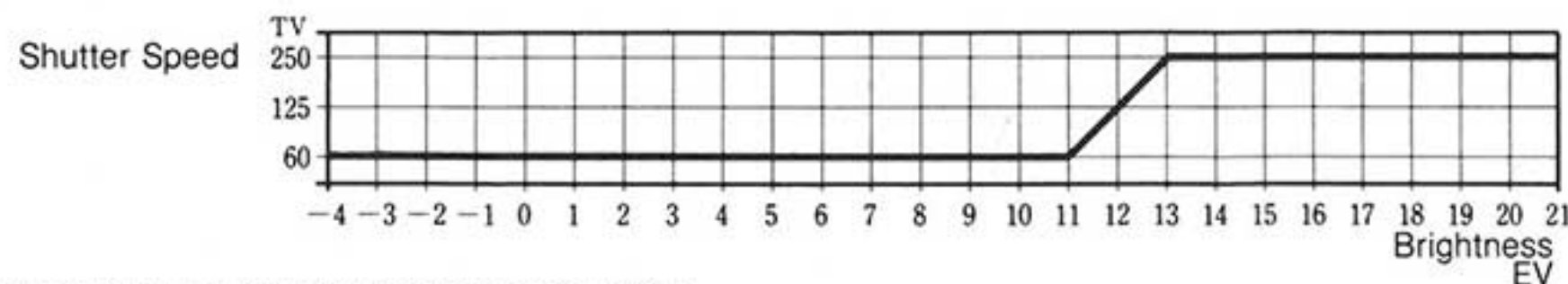
Subject to change without notice.

PROGRAM CHARACTERISTIC

A-TTL /FE Lock Program Characteristics



X-sync Speed Setting Characteristics



Flash Exposure Level Control Characteristics

