Canon Speedlite 300TL

E

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 P (Program) Mode provides fully automatic flash photography by merely setting the mode selector and pressing the shutter button.
2. The A-TTL mode provides simple, fully automatic operation under any conditions from total darkness to fill-in flash.
3. The FE Lock mode incorporates the AE lock concept into flash photography using spot metering.
4. Two manual modes, Hi and Lo, can be selected in accordance with the exposure conditions.

The 300TL is also equipped with the built-in zoom mechanism that covers the focal length of the lens down to 24mm without a wide panel, and a bounce flash mechanism, plus automatic slow-sync flash mechanism.

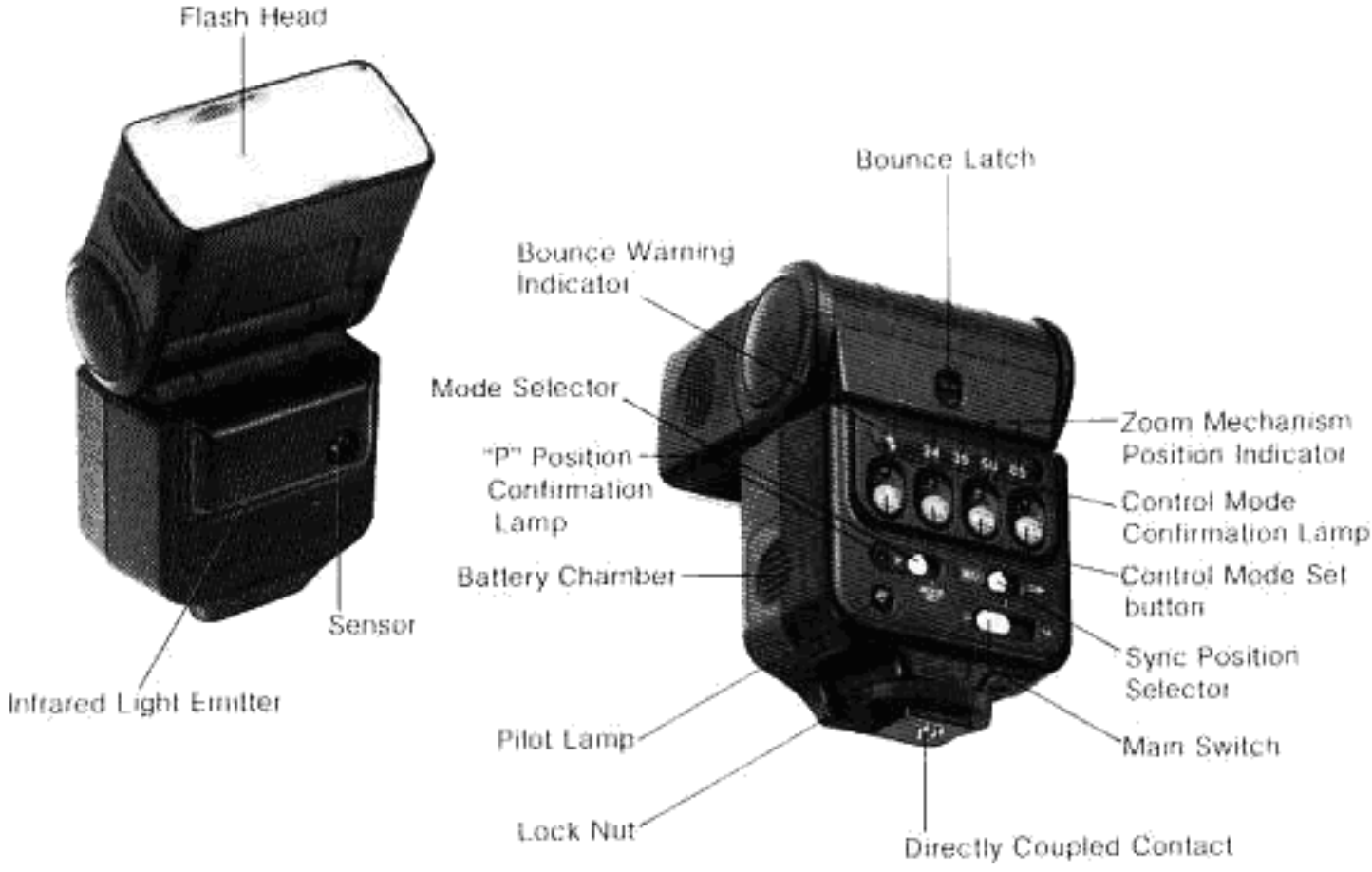
In addition, fully automatic TTL multiple flash photography using up to four Canon Speedlite 300TL or Canon Macro Ring Lite ML-2 units and the second curtain sync flash photography are also possible.

For a full understanding of the 300TL, please read this instruction booklet carefully before using the flash.

TTL Control System

The sensor inside the camera body measures the light reflected from the film surface and cuts off flash emission automatically when the subject has been properly exposed. Since only the light which has passed through the lens is measured it is not necessary to make any exposure compensation, and more accurate exposure can be obtained.

NOMENCLATURE



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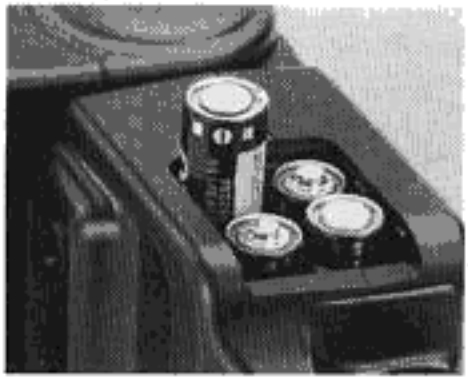
Operation Summary (In the Full Auto Mode)

○ Preparation



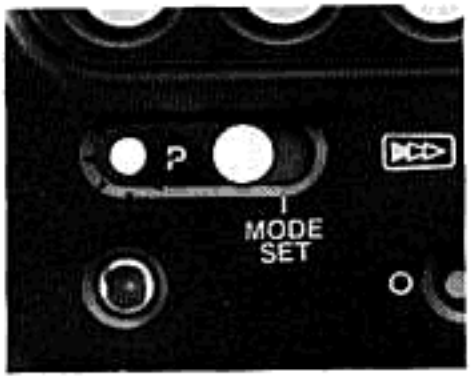
1 Load the batteries as indicated by the diagram inside the battery chamber.

2 Mount the 300TL on the Canon T90.

○ Procedure

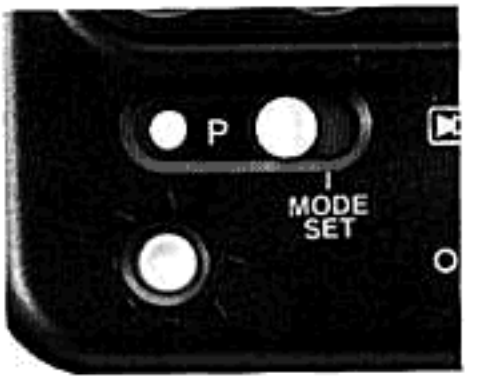
1 Set the lens to the "A" mark. T90's shooting and metering modes may be on any setting.

2 Turn the main switch ON. (" | " mark)



3 Set the mode selector to "P" and make sure that the P position confirmation lamp lights up.

4 Set the zoom head of the flash in accordance with the lens in use.



5 Make sure the pilot lamp lights up.

6 Compose the picture and focus the subject.

7 Press the shutter button halfway to activate the viewfinder information display.

8 If the shutter speed and aperture do not blink in the viewfinder, press the shutter button to take the picture.

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) Slide the battery chamber cover off.
3) Load the batteries so that their terminals face in the directions indicated by the diagram inside the battery chamber.
4) Once the batteries are loaded, slide the battery chamber cover back on while pressing the batteries down. Make sure the cover's tabs fit into the corresponding grooves on the flash body.

Notes

- When the batteries become exhausted, replace all four at the same time with four new ones of the same brand.
- Remove the batteries if you do not expect to use the 300TL for about three weeks or longer.
- The performance of the batteries deteriorates in cold temperatures so please 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)].
- When using Ni-Cd batteries, please note that different 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.

Mounting the 300TL on the Camera

1) 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.
2) Tighten the lock nut.

Main Switch and Pilot Lamp

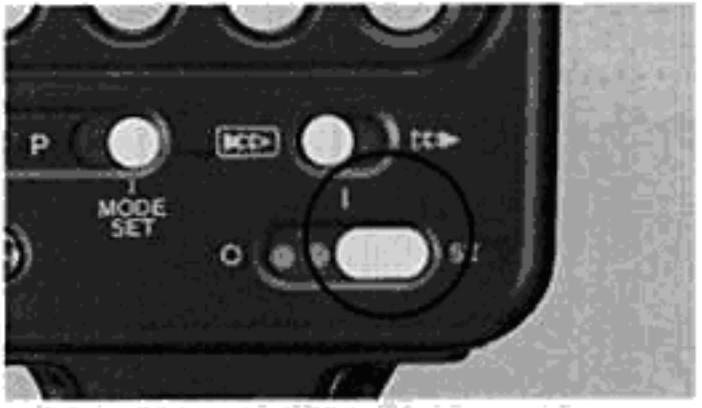
If the pilot lamp lights up when the main switch is turned on ("I" mark), the flash is ready for use. It is also possible to confirm whether the flash is charged by looking in the viewfinder.

- There is no need to set the film speed because it is transmitted from the camera body.

Test Firing

To test the functioning of the flash, press the pilot lamp after it has lit. If the flash fires, it is in proper working order.

The SE (Save-Energy) Function

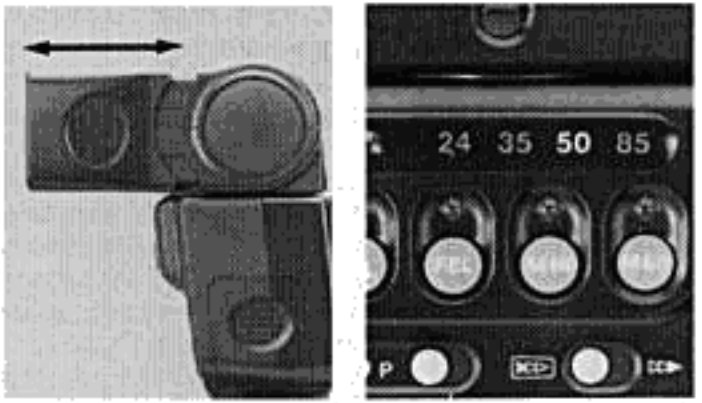


Turn the main switch OFF ("O" mark) when flash photography is finished to prevent unnecessary battery consumption. The Canon Speedlite 300TL has a built-in SE (Save-Energy) function that automatically turns off the power when the flash is not used for approx. 5 minutes. To use this function, slide the 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.
When the flash head is is pushed all the way in, it is set at 24mm position. When you are using a longer focal length lens, pull the flash head out and set it to one of the three click-stop positions according to the lens in use. When the flash head is set correctly at one of the four click-stop positions, a zoom position setting of 24, 35, 50, or 85mm will be illuminated in the zoom mechanism position indicator on the back of the flash.

Note

Do not choose a zoom position setting larger than the focal length of the lens in use. Always be sure to set the flash to a position equal to or smaller than the lens focal length. Otherwise, exposure will not be uniform.

Focal length of the lens in use	Zoom position setting
24mm	24
35mm	35 or 24
50mm	50, 35 or 24
85mm	85, 50, 35 or 24

[1] Full Auto Mode

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 the advanced techniques such as fill-in flash without fear of failure.

[2] A-TTL Mode

This mode is advantageous for general flash photography. Operation is fully automatic, under conditions ranging from total darkness to fill-in flash. The shutter speed and the aperture are set automatically with the aid of near-infrared rays, etc., and the flash output is controlled by directly measuring the light coming through the lens and being reflected from the film surface. In cases such as fill-in flash, this A (Advanced)-TTL mode balances the exposure between the main subject and the background to prevent unnatural effects. The light is measured through the lens so exposure is automatically compensated even in bounce flash photography and multiple flash photography.

[redacted]

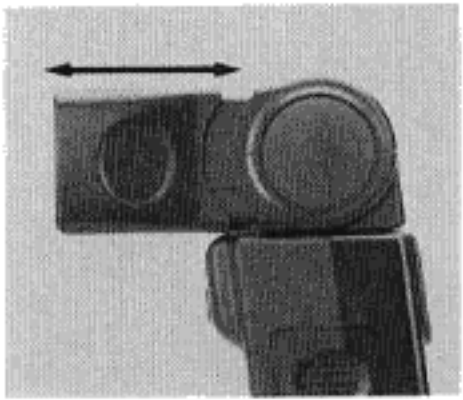
With the world's first spot metering for flash photography, using the principle of spot metering, this mode gives correct exposure even when the main subject is not in the center of the viewfinder.
Before an exposure is made, the pre-flash is made by a 1/20th power. The light reflected from the main subject is spot-metered by the camera and the exposure level is stored into memory (effective for 30 seconds). When the actual exposure is made, the flash output is determined by this value. 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.
It is also possible to independently control the exposure level for the main subject with the flash and the exposure level for the background with the ambient light, if the H/S control of the T90 is used with the FE lock mode.

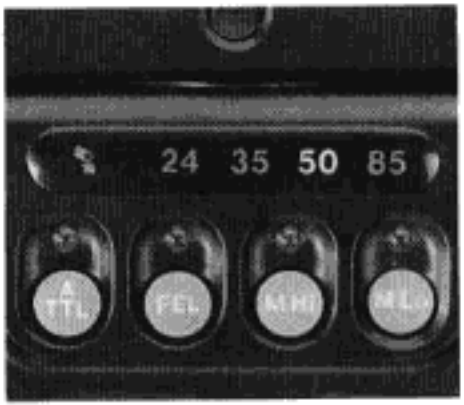
[redacted]

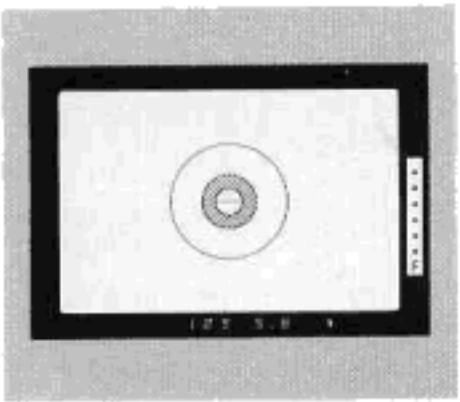
In some cases, automatic flash may not be suitable for your subject. If, for instance, the subject's surroundings are bright white with strong reflections or if the main subject is small with a dark or distant background, the automatic flash exposure may be affected by the contrasting background. Incorrect exposure can be avoided by using the Manual Hi mode.
While the Manual Hi mode gives full flash intensity, the Manual Lo mode is used for fill-flash or 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] Full Auto Mode

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.





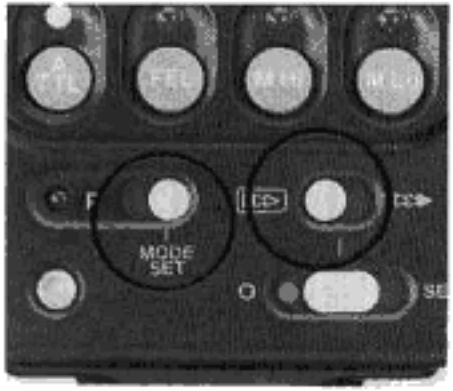


4) Compose the picture and focus the subject.
5) Make sure the pilot lamp lights up. The "⚡" mark in the viewfinder will come on at the same time as the pilot lamp.
6) Press the shutter button halfway to activate the viewfinder information display.
7) Press the shutter button all the way to take the picture.

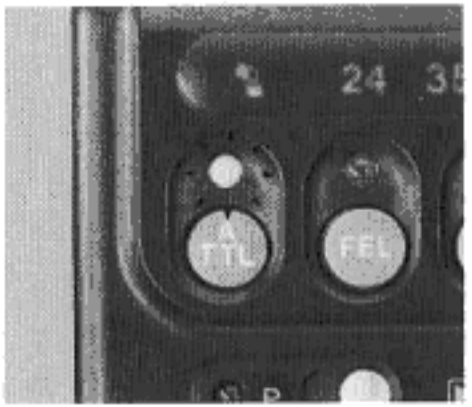
Note

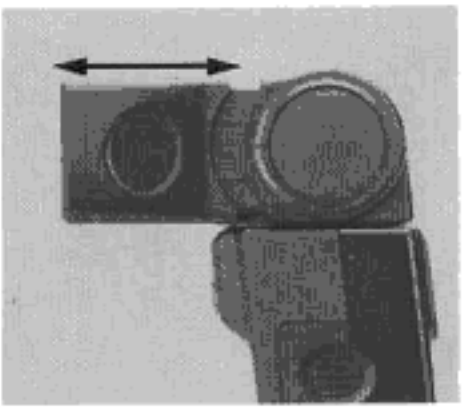
If the subject is too far away, both the shutter speed and the aperture will blink in the viewfinder. In this case remove your finger from the shutter button and move closer to the subject, until when the shutter button is pressed again, both the shutter speed and the aperture value light up steadily. 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.

[2] A-TTL Mode



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. (" | " mark)
3) Set the mode selector to the Mode Set position. Set the sync position selector to the first curtain sync position.

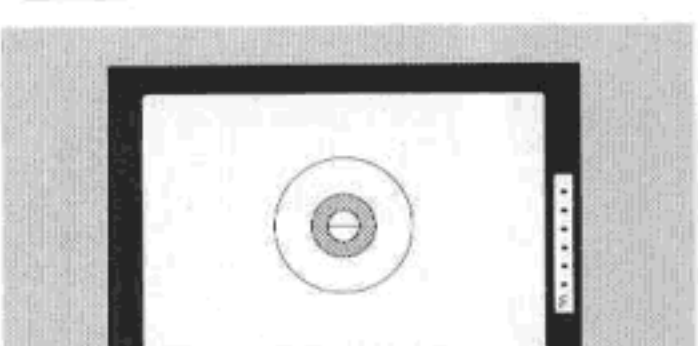




4) Set the control mode set button to the A-TTL mode and make sure the control mode confirmation lamp lights up.
5) Compose the picture and focus the subject.

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 and the flash output is determined by measuring the light reflected from the film surface.

a) With the T90 in the Program AE Modes

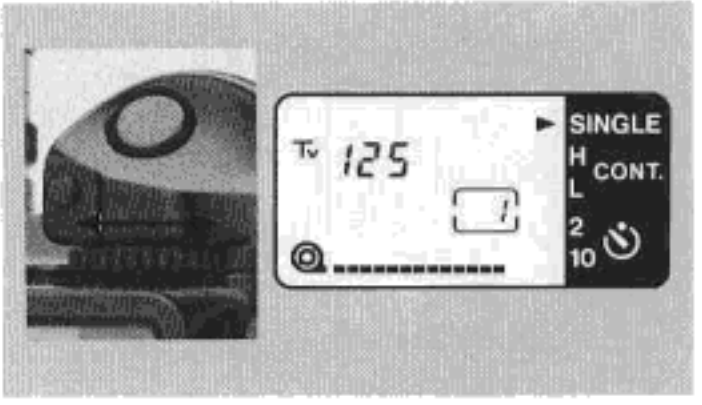


6) Make sure the pilot lamp lights up.
7) Press the shutter button halfway to activate the viewfinder information.
8) Press the shutter button all the way to take the picture.

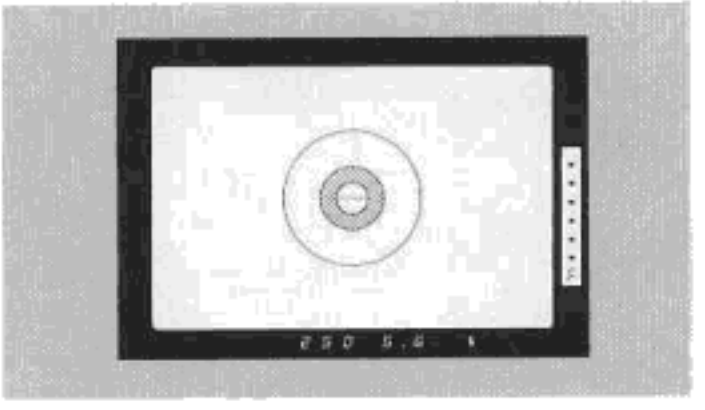
Note

If the subject is too far away, both the shutter and the aperture will blink in the viewfinder. In this case, follow the note mentioned in the Full Auto Mode.

b) With the T90 in the Shutter-Priority AE Mode



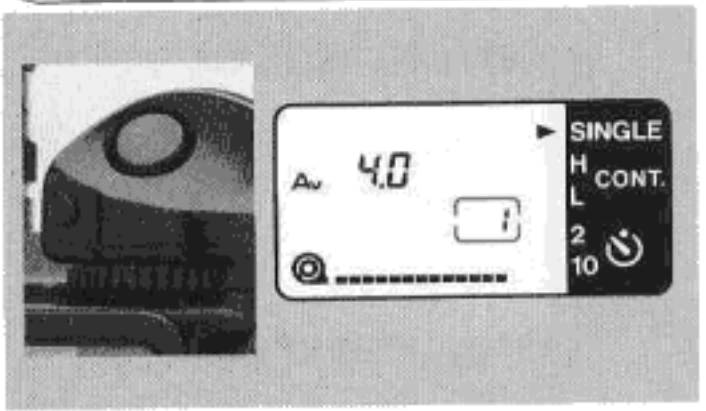
6) Use the electronic input dial of the T90 to set the shutter speed between 30 and 1/250 sec. after considering what photographic effect is desired.
   - The shutter speed will be set to 1/250 sec. automatically if set at a higher value.
7) Make sure the pilot lamp lights up.
8) Press the shutter button halfway to activate the viewfinder information.
9) Press the shutter button all the way to take the picture.



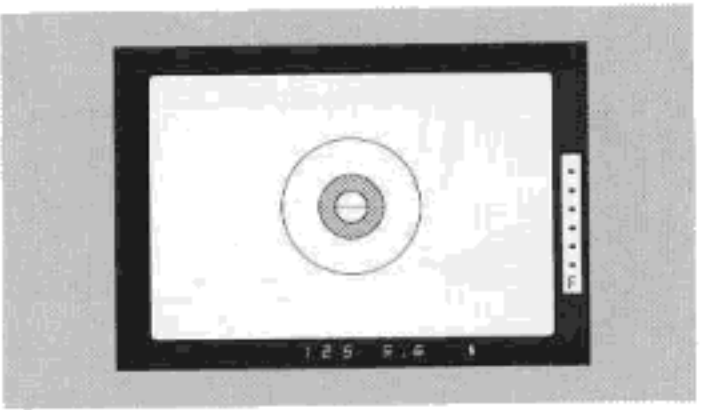
Note

If the aperture and/or the shutter speed blink in the viewfinder, exposure will be incorrect. When the aperture value starts blinking, change the shutter speed. When both the aperture and the shutter speed are blinking, follow the note mentioned in the Full Auto Mode.

c) With the T90 in the Aperture-Priority AE Mode



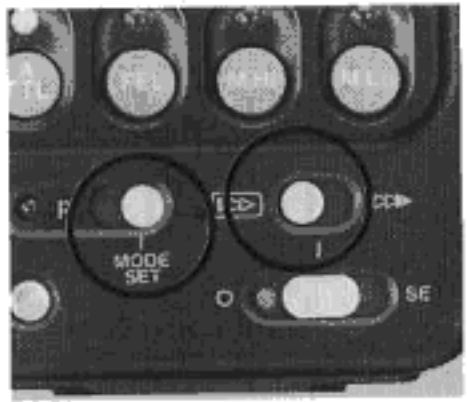
6) After considering which photographic effect is desired, set the lens aperture between the maximum and the minimum aperture using the electronic input dial of the T90.
7) Make sure the pilot lamp lights up.
8) Press the shutter button halfway to activate the viewfinder information.
9) Press the shutter button all the way to take the picture.
   - The camera will automatically set the shutter speed between 30 and 1/250 sec.



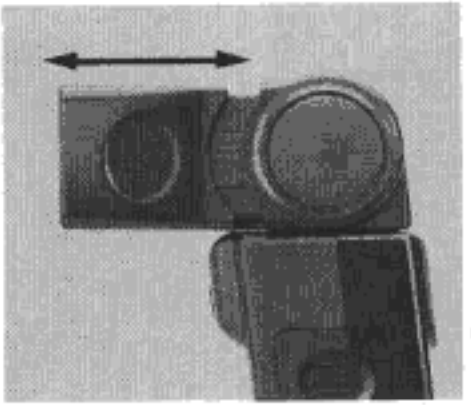
Note

If the aperture and/or the shutter speed blink in the viewfinder, exposure will be incorrect. When the shutter speed starts blinking, change the aperture. When both the aperture value and the shutter speed are blinking, follow the note mentioned in the Full Auto Mode.

[3] FEL Mode



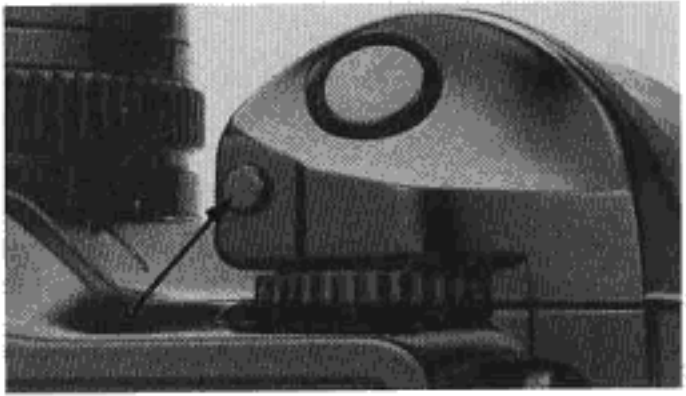
1) Make sure the aperture ring of the lens is set to the "A" mark.
2) Turn the main switch ON. (" | " mark)
3) Set the mode selector to the Mode Set position. Set the sync position selector to the first curtain sync position.



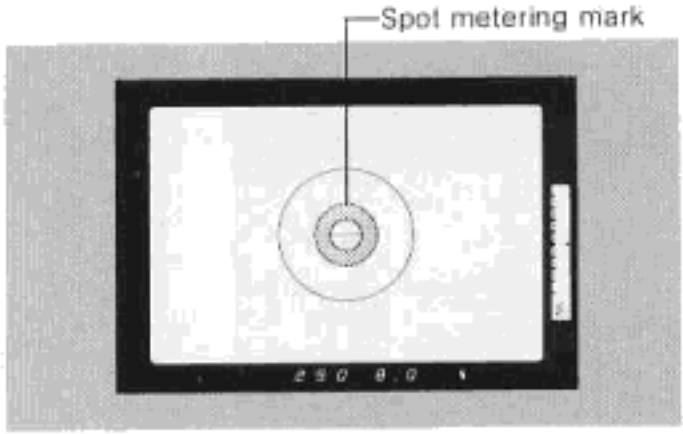
4) Set the control mode set button to the FEL mode and make sure the control mode confirmation lamp lights up.

5) Compose the picture and focus the subject.

a) With the T90 in the Program AE Mode

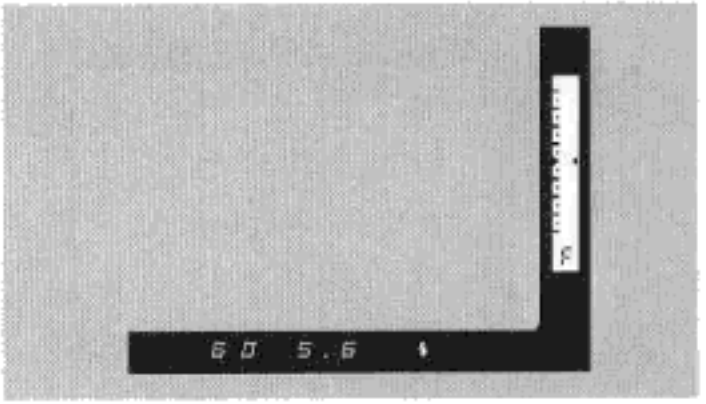


6) Make sure the pilot lamp lights up.
7) Center the main subject in the spot metering mark and press the spot metering button.
   - The shutter speed (between 1/60 and 1/250 sec.) and aperture are set automatically.
   - Next, a pre-flash is emitted from the main flash head and the correct flash output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



   - The correct flash output value is stored into memory for 30 seconds so you can remove your finger from the spot metering button.
   - The FE Lock is cleared under the following conditions.

a. When the shutter is released after an exposure is made and the finger is removed from the shutter button.
b. When more than 30 seconds have elapsed without pressing the shutter button after the spot metering button has been pressed.
c. When the metering mode selector of the T90 is pressed.

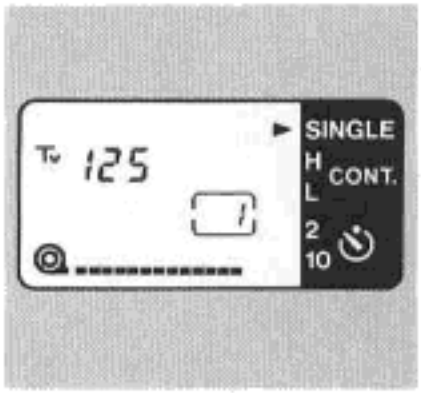


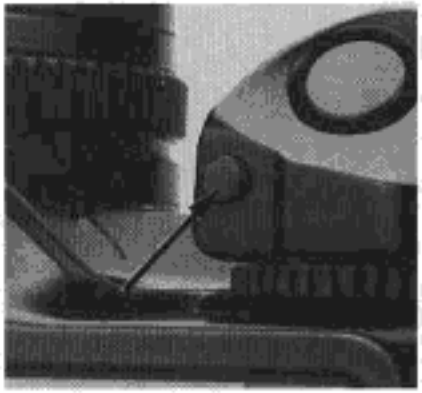
8) Make sure the fixed dot (■) is aligned with the triangle index on the right of the viewfinder.
   - When the fixed dot is not aligned with the triangle index, exposure will not be correct. In this case, move closer to the subject and press the spot metering button again.
   - When the aperture value of either 27 or 32 blinks in the viewfinder, exposure will not be correct. In this case, use a ND filter.

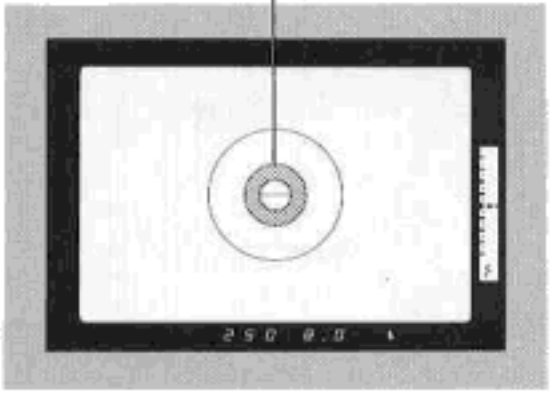
9) Recompose the picture if necessary, focus the subject and press the shutter button all the way to take the picture.

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 output is determined by metering the light reflected from the film surface.

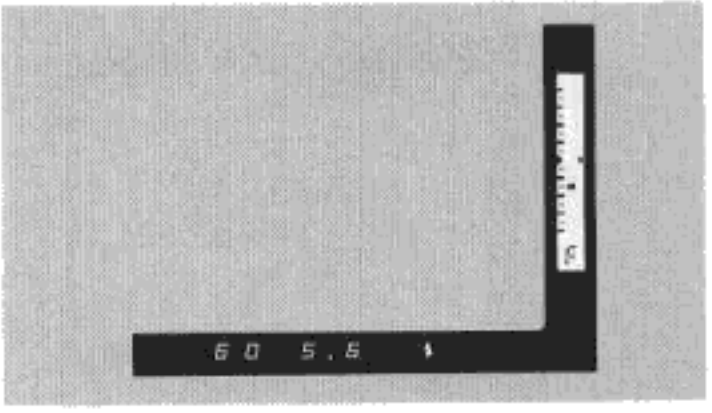
b) With the T90 in the Shutter-Priority AE Mode







6) Use the electronic input dial of the T90 to set the shutter speed between 30 and 1/250 sec., according to the desired photographic effect.
   - The shutter speed will automatically be set to 1/250 sec. if set to a higher value.
7) Set the desired metering mode on the T90.
8) Make sure the pilot lamp lights up.
9) 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.
   - Next, 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 output value is stored into memory for 30 seconds so you can remove your finger from the spot metering button.



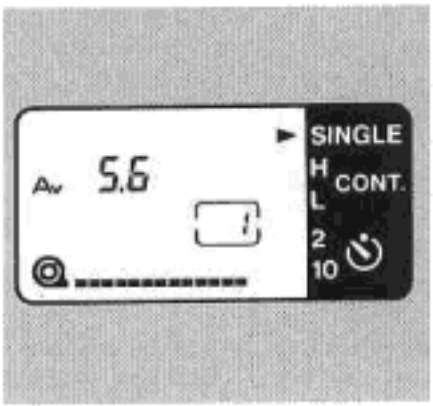
- The FE Lock is cleared under the following conditions.

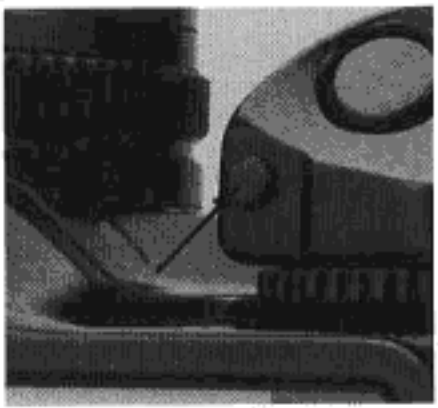
a. When the shutter is released after an exposure is made and the finger is removed from the shutter button.
b. When more than 30 seconds have elapsed without releasing the shutter after the spot metering button has been pressed.
c. When the metering mode selector of the T90 was pressed.

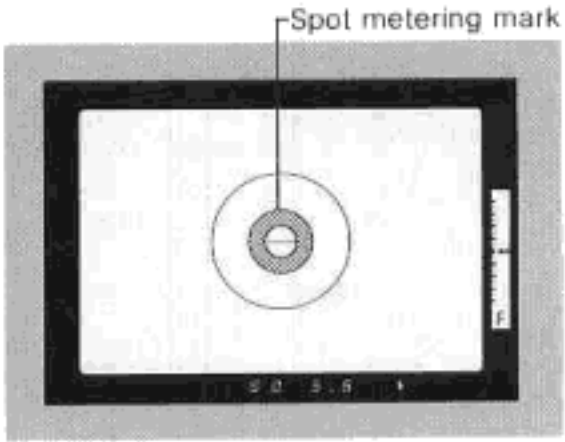
10) Make sure the fixed dot (■) is aligned with the triangle index on the right of the viewfinder.
    - When the fixed dot is aligned with the triangle index, the exposure is correct for the main subject. The background exposure is metered in real time so exposure is correct when the free dot (■) is aligned with the index.
    - When the fixed dot is not aligned with the triangle index, exposure will not be correct. In this case, either move closer to the subject and press the spot metering button again or change the shutter speed.
11) Recompose the picture if necessary, focus the subject and press the shutter button all the way to take the picture.

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 output is determined by metering the light reflected from the film surface.

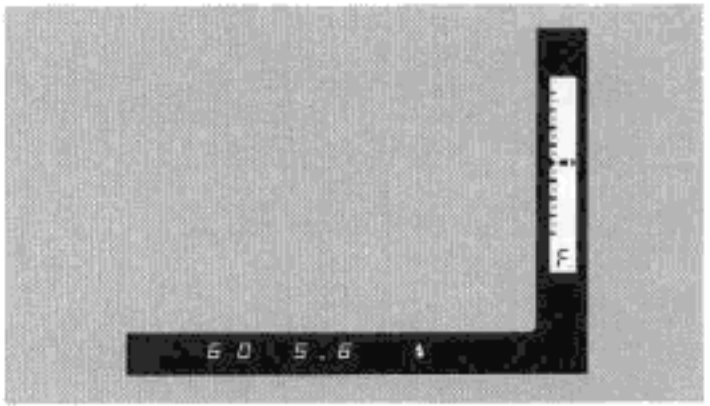
c) With the T90 in the Aperture-Priority AE Mode







6) After choosing the desired photographic effect, set the lens aperture between the maximum and the minimum aperture using the electronic input dial of the T90.
7) Set the desired metering mode on the T90.
8) Make sure the pilot lamp lights up.
9) Center the main subject in the spot metering mark and press the spot metering button.
   - The shutter speed 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.
   - Next, exposure metering is performed in accordance with the metering mode of the T90 and the background exposure is displayed in real time by a free dot (■).
   - The correct flash output value is stored into memory for 30 seconds so you can remove your finger from the spot metering button.



- The FE Lock is cleared under the following conditions.

a. When the shutter is released after an exposure is made and the finger is removed from the shutter button.
b. When more than 30 seconds have elapsed without releasing the shutter after the spot metering button has been used.
c. When the metering mode selector of the T90 is pressed.

10) Make sure the fixed dot (▮) is aligned with the triangle index on the righ of the viewfinder.
- When the fixed dot is aligned with the triangle index, the exposure is correct for the main subject. The background exposure is metered in real time so exposure is correct when the free dot (■) is aligned with the index.
- When the fixed dot is not aligned with the triangle index, exposure will not be correct. In this case, either move closer to the subject and press the spot metering button again or change the aperture.
- If exposure is controlled as on page 33, both the main subject and background will be correctly and independently exposed.

11) Recompose the picture if necessary and press the shutter button all the way to take the picture.

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 output is determined by metering the light reflected from the film surface.

[4] Manual 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. 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

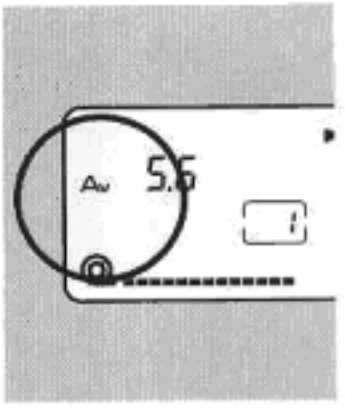
G.No. (MANUAL Lo) = G.No. (MANUAL Hi) ÷ 4

GUIDE NUMBER TABLE (ft.)

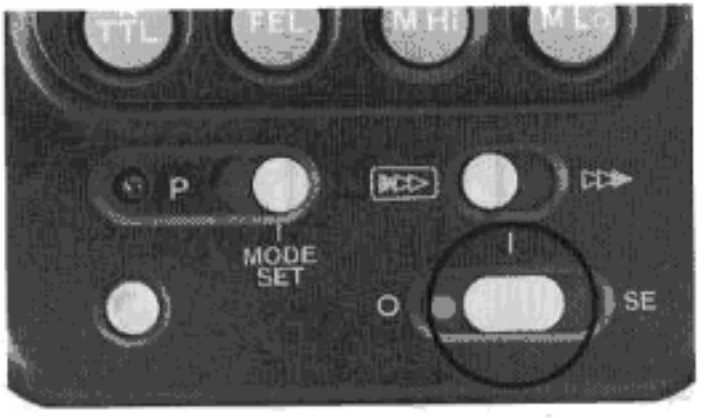
G.No. (MANUAL Hi)

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

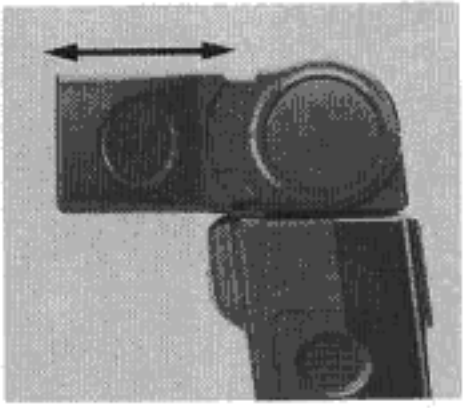
G.No. (MANUAL Lo) = G.No. (MANUAL Hi) ÷ 4



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.30 to determine the aperture value and set the aperture on the T90 by turning its electronic input dial.

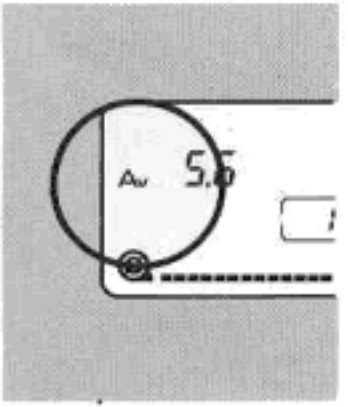
Notes

- 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.

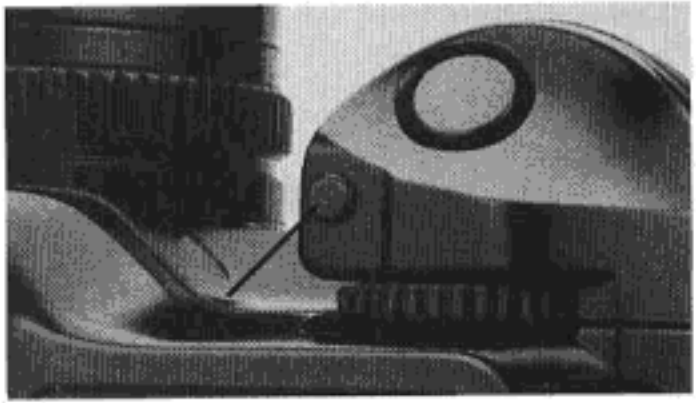
FEL mode + H/S Control

Just as exposure compensation is necessary under certain conditions during normal photography, exposure compensation is also sometimes necessary during flash photography.
With the Canon Speedlite 300TL, exposure can be effectively controlled by using the FEL Mode with the H/S control.

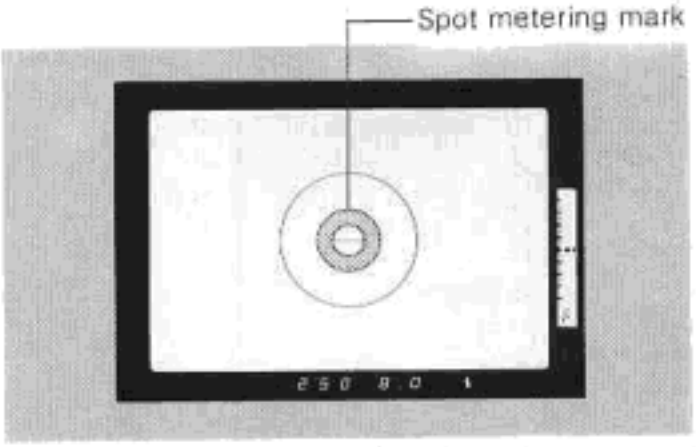
Operation



1) Set the flash to the FEL Mode.
2) Set the T90 to the aperture-priority AE mode.



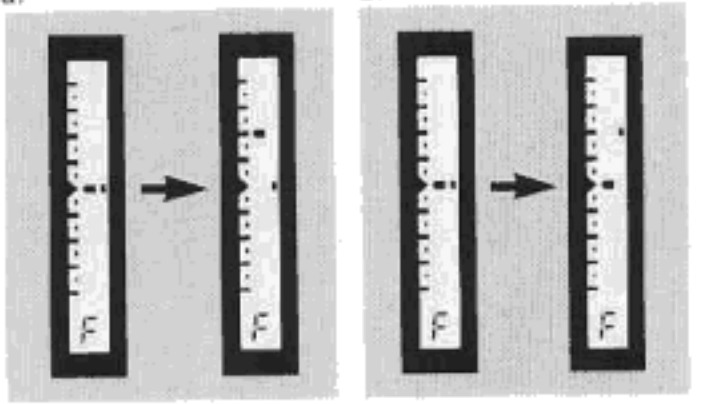
3) Center the main subject in the spot metering mark, press the spot metering button and activate the FE lock.
4) Check the viewfinder information.
   a. The fixed dot (▮) displayed at the triangle index in the viewfinder indicates the exposure level for the main subject.
   b. The free dot (▬) displayed next to the fixed dot indicates the exposure level for the background relative to the exposure level for the main subject.



5) 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.

a.

b.



6) If the fixed and free dots are not aligned with the triangle index, they can be moved as follows to balance the exposure:
   a. Pressing the H/S control button moves the free dot up and down for the background exposure.
   b. Operating the electronic input dial moves the fixed dot up and down to control the exposure for the main subject.

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.
When the T90 is in the shutter-priority AE mode, the shutter speed can be set to as long as 30 seconds. In the aperture-priority AE mode, the aperture is set automatically between 1/250 and 30 seconds. The 300TL can be set to either A-TTL or FEL mode.

Note

- If the shutter is set to a speed faster than 1/250 sec., the setting will be changed to 1/250 sec. automatically.
- Slow-sync flash cannot be used with the program AE modes of the T90.

Normal Flash Photography

Slow-sync Flash Photography

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.

First Curtain Sync Flash Photography

Second Curtain Sync Flash Photography

Fill-in Flash Photography

With the 300TL, automatic fill-in flash photography is possible in the Full Auto, A-TTL or FEL mode. When used in situations such as backlit subjects, subjects near bright windows, strong contrast on faces due to bright sunlight, portraits in the shade or at dawn or dusk, etc., photographs can be taken capturing bright expressions, even catch lights in the eyes, with both subject and background correctly exposed.

Without Flash

With Flash

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 the rotate the flash head left or right.

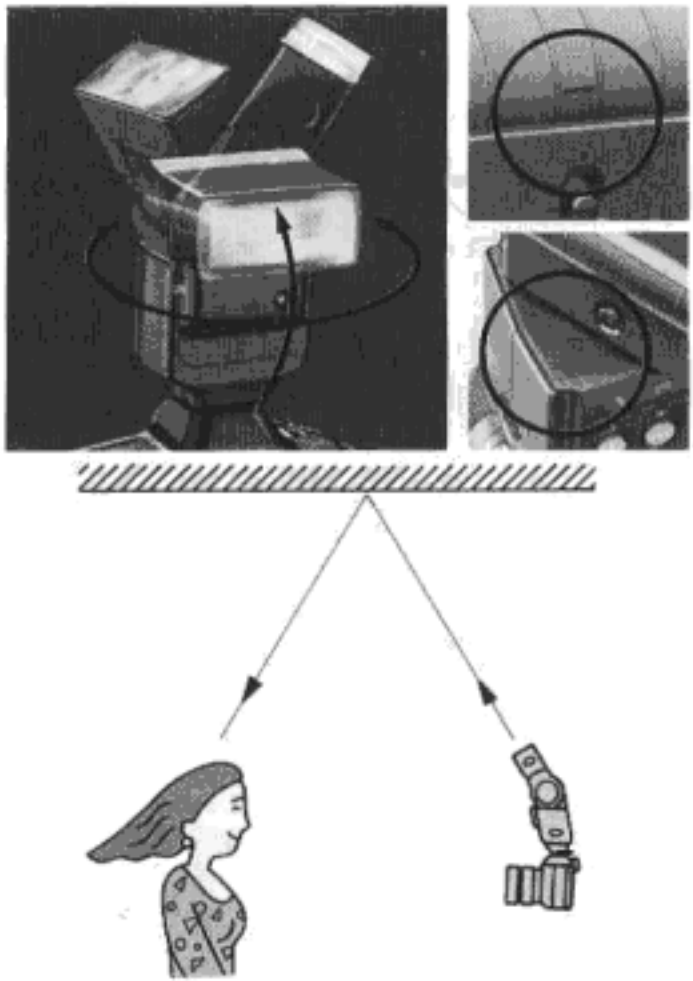
With bounce flash photography, it is necessary to set the flash head so that the subject is not illuminated directly by the flash. If you only tilt the flash up a few degrees, exposure will not be uniform. The easiest way to use bounce flash is to tilt the flash head up 90° and bounce the flash off the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

Direct Flash Photography

Bounce Flash Photography

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.



Multiple Flash Photography

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

- TTL Hot Shoe Adapter
- Off-camera Shoe Adapter
- TTL Distributor
- 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.
2. Try bouncing and diffusing.

- The combination of the automatic TTL multiple flash is as follows:
  1. With only the Speedlite 300TL (up to 4 units)
  2. With only the Macro Ring Lite ML-2 up to 4 units)
  3. In combination with the both (up to 4 units)
- Set each Speedlite 300TL to "A-TTL", "FEL", or the "P" position.
- Set each Macro Ring Lite ML-2 to "TTL AUTO."
- Be sure to confirm that the pilot lamp of each flash lights up.
- The number of the Connecting Cords in use must be up to three and the total length must be within 9m. (approx. 29.5 ft.)
- Be sure to check the battery of the TTL Hot Shoe Adapter. The multiple flash photography is not possible if the battery is exhausted.
- The sync position selector may be on either setting.
- When using multiple flash in the manual modes, the "M" does not appear in the viewfinder.
- It is also possible to use a slave unit, but make sure it can be used with the flash units before buying it.

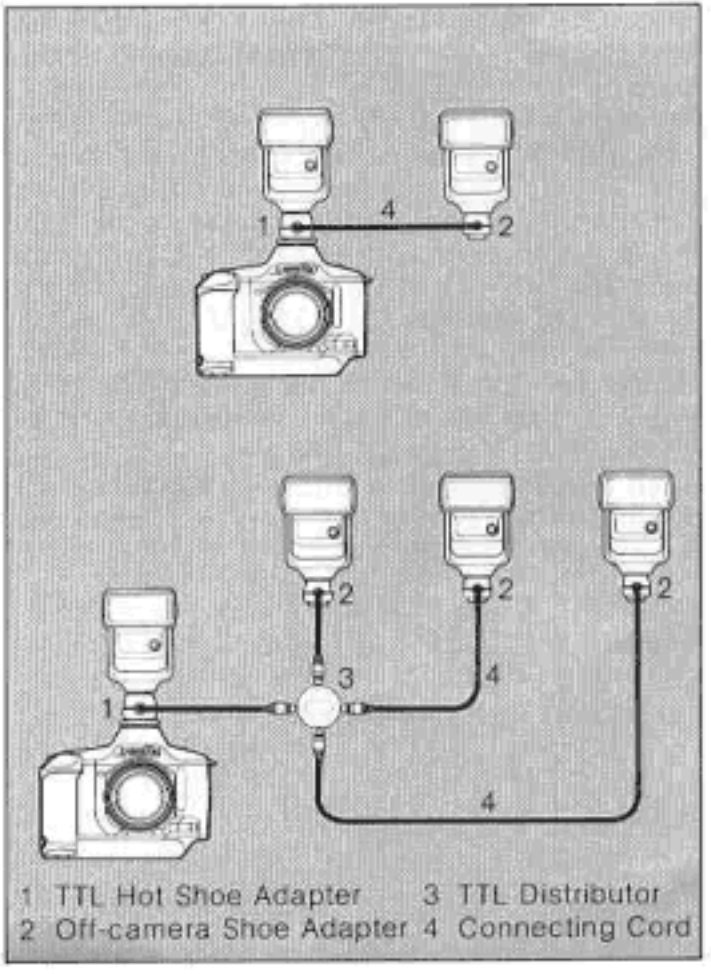
Multiple Flash Accessories

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

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.

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.

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



1 TTL Hot Shoe Adapter
2 Off-camera Shoe Adapter
3 TTL Distributor
4 Connecting Cord

1. This device contains high-voltage circuitry so never disassemble it by 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. In case of rain or snow fall 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.

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 10·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.

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—41 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.

Subject to change without notice.