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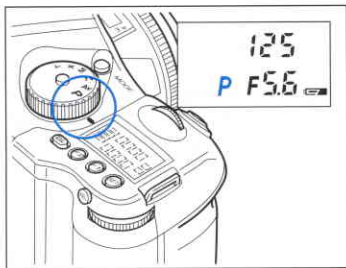


Exposure Modes

This camera offers you a selection of four exposure modes - program AE (automatic exposure), aperture priority AE, shutter priority AE and the manual mode - so you can set the exposure according to the subject and your intentions.

Program AE (P)

The aperture and shutter speed are determined automatically according to the shooting conditions, setting the camera to the optimum exposure. This mode is best suited for general photography, since it allows you to concentrate on the shooting.

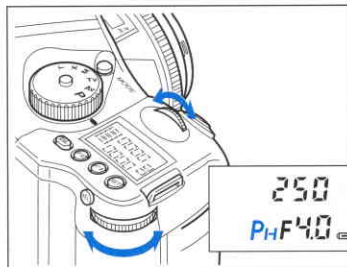


Turn the exposure mode setting dial and set it to "P" (program AE).

★ In the "X" exposure mode the lock function is activated. Press the exposure mode dial lock release button while turning the exposure mode setting dial.

Shifting the Program

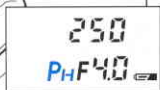
Use "PL" to take subjects with depth (landscapes, etc.), "PH" to take moving subjects with a high shutter speed.



Turn the front or rear dial to shift the shutter speed between the +1.0 EV high speed side "PH" and -1.0 EV low speed side "PL".

PL=Program Low / slower (low) shutter speeds

PH=Program High / faster (high) shutter speeds

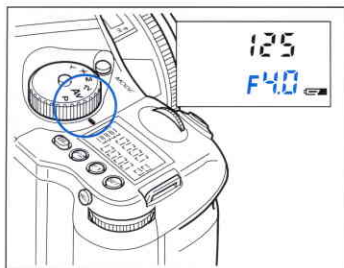


★ If the aperture flashes on the display when the program is shifted, the proper exposure cannot be achieved.

★ The aperture changes when the program is shifted.

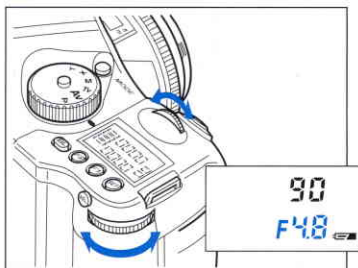
Aperture Priority AE

Set the desired aperture and the camera selects the optimum shutter speed accordingly. Use this to create effects using the aperture, for example when taking portraits or landscapes.



1. Turn the exposure mode setting dial and set it to "Av" (aperture priority AE).

★ In the "X" exposure mode the lock function is activated. Press the exposure mode dial lock release button while turning the exposure mode setting dial.



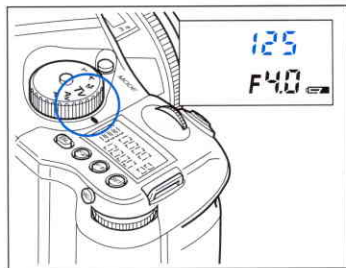
2. Turn the front or rear dial to set the desired aperture.

The value changes in 1/2 steps.

★ When photographing objects that are too bright or too dark, the shutter speed value flashes to warn you of this. The proper exposure cannot be achieved as such. Change the aperture so that the shutter speed value stops flashing, remaining lit.

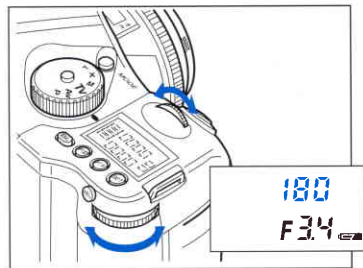
Shutter Priority AE

Set the desired shutter speed and the camera selects the optimum aperture accordingly. Use this to create effects using the shutter speed, for example when shooting sporting events.



1. Turn the exposure mode setting dial and set it to "Tv" (shutter priority AE).

★ In the "X" exposure mode the lock function is activated. Press the exposure mode dial lock release button while turning the exposure mode setting dial.

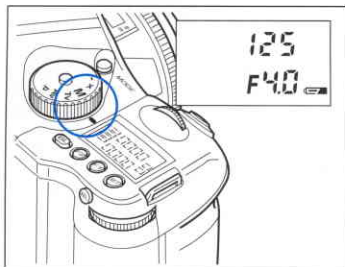


2. Turn the front or rear dial to set the desired shutter speed.
The speed changes in 1/2 steps.

★ When photographing objects that are too bright or too dark, the aperture flashes to warn you of this. The proper exposure cannot be achieved as such. Change the shutter speed so that the aperture stops flashing, remaining lit.

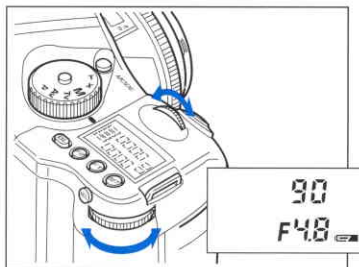
Manual Mode (M)

Set this mode when you want to use special combinations of the aperture and shutter speed and when you want to take photographs using the values measured with an independent exposure meter.



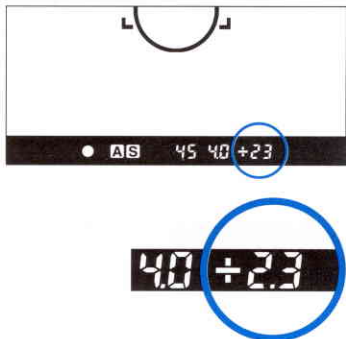
1. Turn the exposure mode setting dial and set it to "M" (manual mode).

★ In the "X" exposure mode the lock function is activated. Press the exposure mode dial lock release button while turning the exposure mode setting dial.



2. Turn the rear dial to set the desired aperture. The aperture changes in 1/2 steps.

3. Turn the front dial to set the desired shutter speed. The speed changes in 1/2 steps.



4. When the shutter release button is half-pressed, the difference between the setting and the measured value is displayed on the viewfinder's liquid crystal display panel. The value is displayed in 1/3 steps within a range of ± 6 EV.

★ For example, "+2.3" indicates $+2\frac{1}{3}$ EV, "-5.7" indicates $-5\frac{2}{3}$ EV.

★ If the setting and the measured value are the same, the difference is not displayed on the viewfinder's liquid crystal display panel.



- ★ If the difference between the setting and the measured value is greater than 6 EV, “-U-” (under) or “-O-” (over) flashes on the viewfinder’s liquid crystal display panel.
- ★ Exposure compensation cannot be used while in the manual mode.
- ★ When the difference between the setting and the measured value is displayed on the viewfinder’s liquid crystal display panel while in the manual mode and the exposure compensation dial is set to a position other than “0”, the value displayed is the difference between the setting and measured value plus the exposure compensation value.
(see page 53-54 for Time Mode “T”)



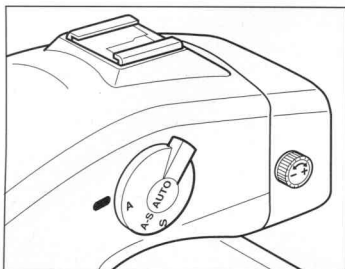


Exposure Metering Modes

There are three exposure metering modes: "A" in which the average light of the entire picture is measured with emphasis on the center of the picture, "S" in which the light in a spot at the center of the picture is measured, and "A-S" which combines these two to automatically switch the mode according to the extent of difference between the brightness of the light metered in the two modes and sets the distribution ratio of the exposure metering modes within an intermediate range.

Average Exposure Metering Mode (A)

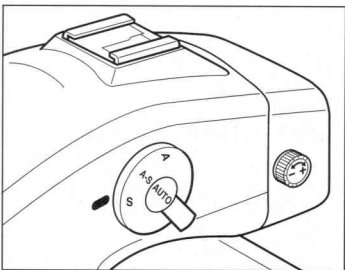
(Set the exposure metering mode selector lever to "A".)



The average light of the entire picture is measured, with emphasis on the center of the picture.

Spot Exposure Metering Mode (S)

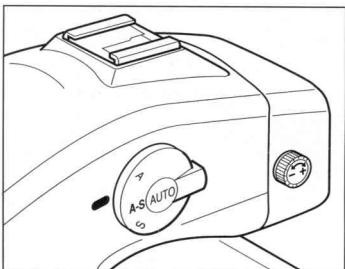
(Set the exposure metering mode selector lever to "S".)



The light in the circle at the center of the picture is measured to determine the exposure. This mode is suited for subjects in which contrasts are strong and when you want to measure the light of certain section of the picture. When the spot you want to measure is not at the center of the picture, use the AE lock function.(see page 55 AE Lock Mode)

Average/Spot Auto Switching Exposure Metering Mode (A-S AUTO)

(Set the exposure metering mode selector lever to "A-S".)



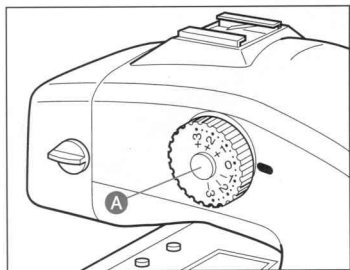
With the average/spot automatic switching exposure metering mode, average or spot exposure metering is selected automatically according to the conditions of the subject and the appropriate exposure is set accordingly.

The spot mode is selected automatically when the brightness within the measured range is lower than the brightness of the overall picture by about 1.5 EV or greater, and the average mode is selected when the spot exposure metering value is the same or brighter than the average value. When the difference between the spot value and average value is between 0.75 and 1.5 EV, the appropriate exposure is achieved at an intermediate value.

■ When using a polarizing filter, use a circular polarizing filter.

Exposure Compensation

If there is a great difference in the brightness of the subject and that of the background, the resulting photograph may be underexposed or overexposed, depending on the conditions of the subject (whether the overall picture is black or white, etc.). If this happens, use the exposure compensation function. Exposure compensation can also be used when you want to create overexposed or underexposed pictures intentionally.



Turn the exposure compensation dial while pressing the exposure compensation dial lock release button **A** located next to the viewfinder. The exposure can be adjusted within a range of ± 3 EV in 1/3 steps.

Be sure to set the exposure compensation dial back to the "0" position once you are finished taking photos with exposure compensation.

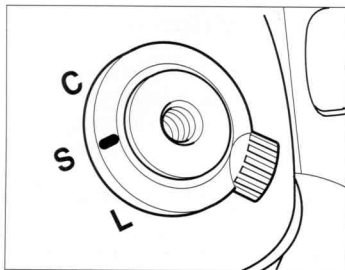
Display of the exposure compensation on the viewfinder's liquid crystal display panel

Exposure mode		Exposure compensation display
P	Program AE	The setting is displayed.
Av	Aperture priority AE	
Tv	Shutter priority AE	
M	Manual mode	The difference between the metered value and the set exposure value is displayed. The exposure compensation function cannot be used.
X	Synchro mode	Not displayed.
T	Time mode	

Single-Frame Mode/Continuous Mode

Single-Frame Mode

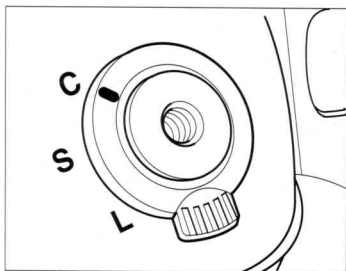
The film is advanced one frame at a time each time the shutter release button is pressed.



Set the shutter release mode selector lever to **"S"**.

Continuous Mode

Photographs are taken continuously as long as the shutter release button is pressed.



Set the shutter release mode selector lever to **"C"**. Photographs are taken continuously at a rate of about 1.2 frames per second.

If you reach the end of the film when shooting in the continuous mode, "End" flashes on the external liquid crystal display panel.



Other Shooting Modes


The mode setting button can be used to set three modes: the auto bracketing mode, the multiple exposure mode and the self timer mode.

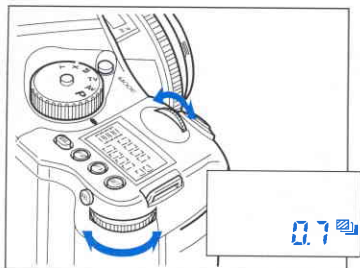
Use this mode for subjects with which it is difficult to determine the proper exposure compensation value. With auto bracketing, three frames are taken successively with different exposures set automatically (overexposure, standard and underexposure).



1. Turn the mode setting dial and select "P", "Av" or "Tv".

2. Press the mode setting button **A** once to set the auto bracketing mode.

The auto bracketing mark  and the initial setting 0.3 appear on the external liquid crystal display panel.



3. Turn the front or rear dial to set the exposure compensation steps.

When the dial is turned, the exposure compensation step switches between 1/3, 1/2, 2/3 and 1 (displayed 0.3, 0.5, 0.7 and 1.0). The setting is registered after 5 seconds or when another key is pressed.

4. Press the shutter release button. Three photos are taken successively.


The photos are taken with overexposure, standard exposure and underexposure, in that order.

★The auto bracketing mode is automatically canceled once the three photos are taken.

★When the shutter release mode selector lever is set to "L" (power off), all the settings aside from the selected mode are reset to the default values.

Automatic exposure operation in the auto bracketing mode


Exposure mode		Operation
P	Program AE	The shutter speed changes.
Av	Aperture priority AE	The shutter speed changes.
Tv	Shutter priority AE	The aperture changes.

- ★ In the auto bracketing mode, three photos are taken in succession. Be sure to fix the camera in place, for example by using a tripod.
- ★ If there are fewer than three frames left on the film, when the auto bracketing is set and the shutter release button is pressed, the shutter is not released, “-no-” flashes on the external liquid crystal display panel and the auto bracketing is automatically canceled.
- ★ When the shutter release mode is set to “C” (continuous advance mode), three photos are taken continuously as long as the shutter release button is pressed.
- ★ To cancel the auto bracketing mode, press the mode setting button **A** three times. The auto bracketing mode is canceled and the camera is reset to the normal shooting mode.

With the multiple exposure mode, the same frame of film can be exposed multiple times.

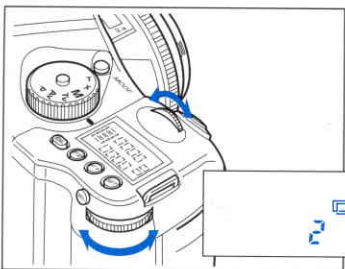


1. Press the mode setting button **A** twice to set the multiple exposure mode.

The multiple exposure mode mark  and the number of additional exposures ("1" at first) appear on the external liquid crystal display panel.

2. Turn the front or rear dial to set the number of additional exposures.


The number of additional exposures can be set between 1 and 5. The setting is registered after 5 seconds.



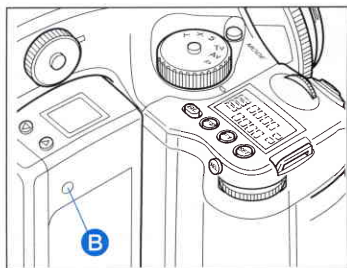
- ★ **For example, when the number of additional exposures is set to "2", the same frame of film will be exposed three times, after which the film is advanced.**

3. Press the shutter release button. The current frame is exposed multiple times.


The multiple exposure mode is canceled automatically once the set number of additional exposures have been taken.

- ★ The multiple exposure mode mark  is displayed on the external liquid crystal display panel during the multiple exposure mode.
- ★ The same frame is exposed multiple times, so exposure compensation may be required according to the subject and background.
- ★ To check the number of additional exposures remaining during the multiple exposure mode, press the mode setting button **A** once. The remaining number of additional exposures is displayed on the external liquid crystal display panel.
- ★ If you wish to make more than 5 additional exposures, the number of additional exposures can be incremented during the multiple exposure mode by pressing the mode setting button **A** and turning the front or rear dial.
- ★ When the shutter release mode is set to "C" (continuous advance mode), once the set number of additional exposures have been taken, "End" appears on the external liquid crystal display panel and the camera is reset to the normal shooting mode.
- ★ To cancel the multiple exposure mode, press the mode setting button **A** twice. The multiple exposure mode is canceled and the camera is reset to the normal shooting mode.
- ★ When the shutter release mode selector lever is set to "L" (power off), all the settings aside from the selected mode are reset to the default values.

Canceling the Multiple Exposure Mode

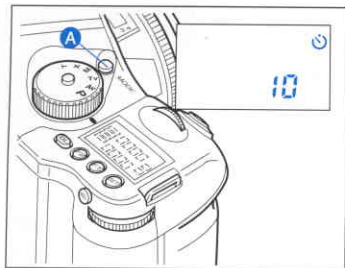


To cancel the multiple exposure mode before all the additional exposures have been taken, with the pull-out lid removed, half-press the shutter release button while pressing the roll film holder's manual film advance button **B**.

- ★ When the roll film holder is removed while in the multiple exposure mode, “-no-” flashes on the external liquid crystal display panel, the display returns to normal after 3 seconds and the multiple exposure mode is canceled, but the camera continues to be in the multiple exposure mode when the roll film holder is reattached. (The multiple exposure continue mode mark “” is displayed on the external liquid crystal display panel.)

To cancel the multiple exposure mode, with the dark slide removed, half-press the shutter release button while pressing the roll film holder's manual film advance button **B**.

With this function, the shutter is released 10 seconds after the shutter release button is pressed. The self timer lamp flashes slowly for the first 7 seconds, then flashes quickly for the last 3 seconds before the shutter is released. Use this function to take group photos or to photograph yourself.



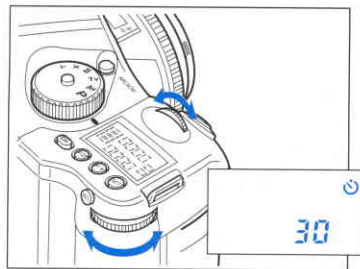
1. Fix the camera to a tripod.

2. Press the mode setting button **A** three times to set the self timer mode.

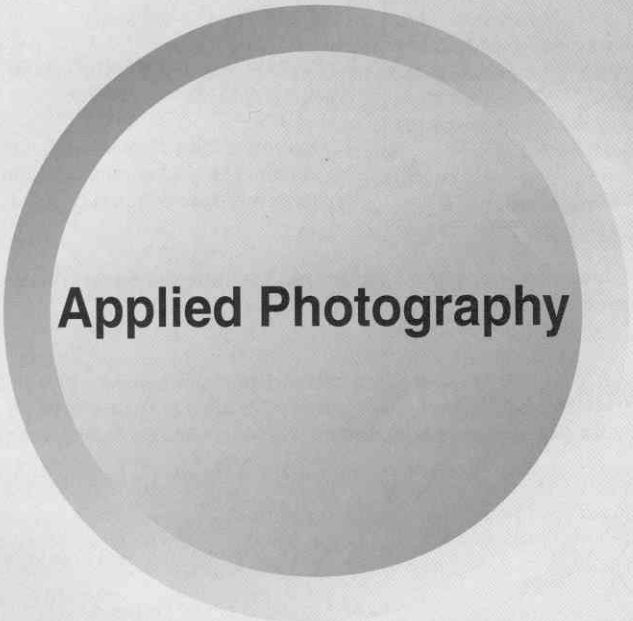
The self timer mark  and the initial setting (10 for 10 seconds) are displayed on the external liquid crystal display panel.

3. The number of seconds before the shutter is released can be changed by turning the front or rear dial. The number of seconds can be set between 3 and 60, in steps of 1 second from 3 to 10 seconds, in steps of 10 seconds from 10 to 60. The setting is registered after 5 seconds.

4. Looking through the viewfinder, determine the composition, check that the focus is set properly, then press the shutter release button. The shutter is released after the set number of seconds.



- ★ To cancel the self timer mode after pressing the shutter release button, either press the mode setting button **A** or turn the exposure mode setting dial. Changing the exposure mode does not change the set self timer operating time.
- ★ If there is a bright light source behind the camera or if the shutter release button is pressed without looking through the viewfinder, light enters the viewfinder's eyepiece, affecting exposure metering. Turn the eyepiece shutter open/close dial to close the eyepiece shutter.
- ★ When the shutter release mode is set to "C" (continuous advance mode), the self timer mode can be used to take photos at intervals of 3 to 60 seconds while the shutter release button is pressed.
- ★ To cancel the self timer mode, press the mode setting button **A** once. The self timer mode is canceled and the camera is reset to the normal shooting mode.
- ★ When the shutter release mode selector lever is set to "L" (power off), all the settings aside from the selected mode are reset to the default values.

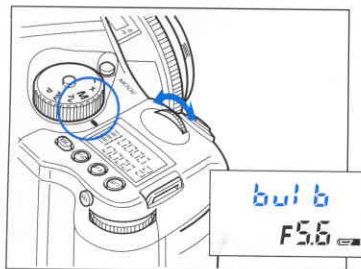


Applied Photography

Extended Exposure Modes (Bulb and Time Modes)

To expose the film for extended times (over 30 seconds), set the shutter speed to the bulb or time mode.

Bulb Mode

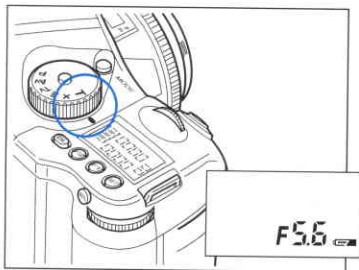


1. Turn the exposure mode setting dial and set it to "M" (manual mode).
2. Turn the front dial to select "bulb", then turn the rear dial to set the aperture.
3. Determine the composition, focus, then take the picture. The shutter remains open as long as the shutter release button is pressed.

★ The bulb mode uses electronic control, so the batteries are in constant use during the entire exposure.

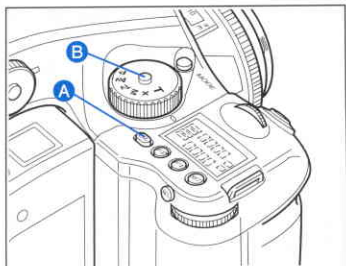
Time Mode

The time mode uses mechanical control, so it is best suited for extended exposures.



1. Turn the exposure mode setting dial and set it to "T" (time mode).
2. Turn the front or rear dial to set the aperture.
3. Press the shutter release button. Determine the composition, focus, then press the shutter release button. The shutter opens.

4. Once you have achieved the desired exposure, turn the exposure mode setting dial to "X". The time exposure mode is canceled and the shutter closes.



- ★ To prevent the camera from moving, use both an electromagnetic cable release (sold separately) and a tripod.
- ★ When the BL button **A** is pressed, the external liquid crystal display panel and the roll film holder's liquid crystal display panel light for about 10 seconds. This makes the liquid crystal display panels easier to view in dark places, for example when photographing night views.
- ★ In the "X" exposure mode the lock function is activated. To set a different mode, press the exposure mode dial lock release button **B** while turning the exposure mode setting dial.


NOTE:

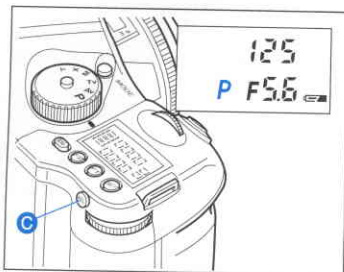
This camera is equipped with a function which turns off the external liquid crystal display panel and sets the camera to the low power consumption mode in order to prevent the batteries from wearing out when the camera is not operated for a specific amount of time.

If when shooting in the T (time) mode with a time of over 30 seconds and the external liquid crystal display panel has turned off and the low power consumption mode been set, when the exposure mode setting dial is turned to "X" to cancel the T (time) mode, only the shutter closes, the mirror remains up, and the mirror and shutter are not set.

Either set the exposure mode setting dial to "M" or set it back to "T" before setting it to "X". When this is done, the mirror and shutter are set. When the superimpose mode is set, the shooting mode is superimposed as "M" or "X".


When the T (time) shooting time has exceeded 30 seconds, the liquid crystal display has turned off and the low power consumption mode has been set, half-press the shutter release button, then press a button (**F1**, **F2**, **SET**, etc.) to turn on the external liquid crystal display panel before setting the exposure mode setting dial to "X". When the superimpose mode is set, the shooting mode is superimposed as "X".

When the AEL button  is pressed, the exposure is locked to the value metered at that time. Use this when the object you want to use for exposure metering and the object on which you want to focus are different or when you want to take continuous photographs without changing the exposure.




1. Set the shutter release mode selector lever to "S".

2. Turn the exposure mode setting dial and select "P", "Av" or "TV".


3. Focus on the object you want to use for exposure metering, then with the shutter release button half-pressed Press the AEL button  once on the rear of the grip. [] appears on the viewfinder's liquid crystal display panel, indicating that the exposure is locked.

4. With the shutter release button still half-pressed, aim the camera to achieve the desired composition, then release the shutter.

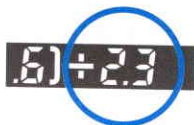
★When the shutter release mode is set to "S" (single-frame advance mode), the AE lock mode is canceled when the shutter release button is pressed. If you wish to take a series of photos using the AE lock function, switch the shutter release mode to "C" (continuous advance mode).

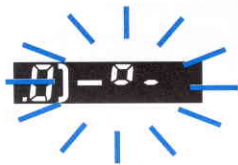
★To cancel the AE lock mode before taking a photo, press the AEL button  again.

★The focus is locked when the shutter release button is half-pressed.

★When the AEL button  is pressed in, the difference between the metered exposure and exposure with the new composition is displayed on the viewfinder's liquid crystal display panel.

★The AE lock mode is canceled 5 seconds after the AEL button  was pressed.





- ★ If the difference between the set value and the metered value exceeds 6EV, “-U-” (under) or “-O-” (over) flashes on the viewfinder’s liquid crystal display panel.

After setting the AE lock mode, the front or rear dial can be used to change the aperture and shutter speed without changing the exposure set with the AE lock function.

When the exposure mode is set to “P” (program AE), turning one of the dials shifts the program between P_H and P_L. When the exposure mode is set to “Av” (aperture priority AE) or “Tv” (shutter priority AE), turning one of the dials changes the shutter speed or aperture changes, respectively.

- ★ The exposure compensation dial also changes in the same way.

When the distance to the subject differs

1. First point the camera at the object you want to use for exposure metering, half-press the shutter release button, then press and hold in the AEL button **C**.
2. Point the camera to achieve the desired composition, half-press the shutter release button again to refocus, then release the shutter.

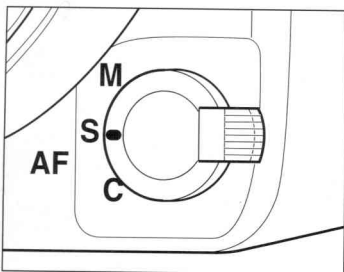
Taking Photos with the Mirror Up

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When the mirror is raised, only the shutter operates when taking photographs. Use this when you want to avoid even the slightest shocks, for example when taking photos with a slow shutter speed using a tripod, with a telescopic lens, for close-ups, reproductions, etc.

Neither the auto focus mechanism nor the exposure metering mechanism function when the mirror is raised. Set the focus and exposure compensation before raising the mirror. To prevent the camera from moving, use both an electromagnetic cable release (sold separately) and a tripod. Instructions for use of electromagnetic cable release on page 78.

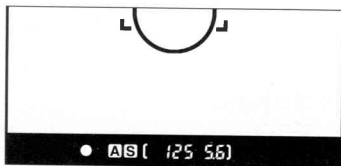
Using auto focus and auto exposure



1. Turn the focus mode selector lever and set it to "S".

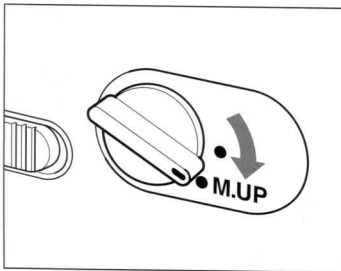
2. Turn the exposure mode setting dial and set it to "P", "Av" or "Tv".

Look through the viewfinder, determine the focus, composition and exposure, then half-press the shutter release button. (Use the electromagnetic cable release (sold separately) and cable release (to maintain the half-pressed status.)



3. Press the AEL button.

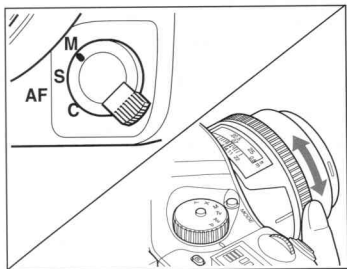
When the AEL button is pressed, the AE lock mark [] appears on the viewfinder's liquid crystal display panel. Turn the body's mirror up lever towards **M.UP** until it stops to raise the mirror.



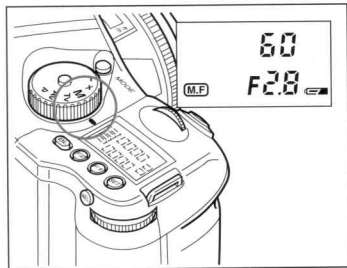
4. Press the shutter release button to take the photo.

- ★After taking a photograph with the mirror up, when the shutter release button is pressed “-no-RE” flashes on the external liquid crystal display panel and the shutter is locked.
- ★To cancel the AE lock mode, press the AEL button again.
- ★Leaving the mirror up for long periods of time can result in fogging. After taking a photograph with the mirror up, be sure to set the mirror up lever back to its original position.
- ★The mirror up lever does not work when no lens is mounted on the body.
- ★The lens cannot be removed when the mirror is up.

In the manual mode



1. Turn the focus mode selector lever, select “M”, then turn the lens distance ring to focus.

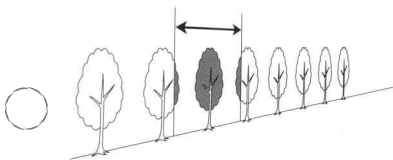


2. Set the exposure mode setting dial to “M”, then use the front and rear dials to set the measured shutter speed and aperture.
3. Turn the body's mirror up lever towards “M.UP” until it stops to raise the mirror, then press the shutter release button to take the photo.

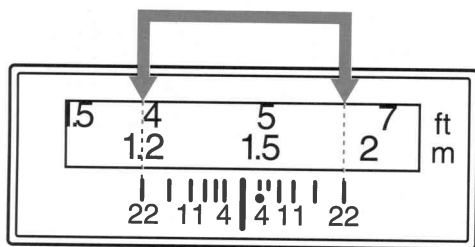
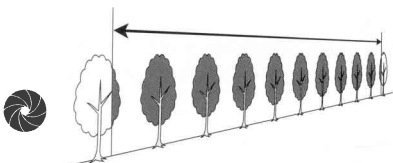
■ If the lens is pointed at the sun with the mirror turned up and left like this, the sunlight entering from the lens may focus on the shutter membrane and burn it.

Objects within a certain range of distance near the distance on which the camera is focused can also be seen clearly. This range is called the subject depth. The smaller the lens aperture, the greater the subject depth, and the greater the aperture, the smaller the subject depth. A pair of aperture values are displayed on the subject depth scale. The distance between these aperture values expresses the subject depth.

When the aperture is large
(the subject depth is small)



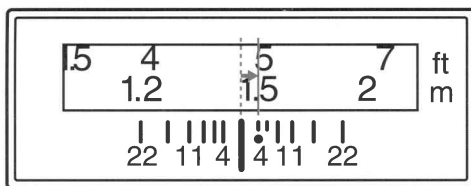
When the aperture is small
(the subject depth is large)



Infrared Photography

When taking photos using infrared film, the position at which the subject is in focus is slightly different from during normal photography. This is because the infrared rays have a longer wavelength and the image converges further back than normal. Use the procedure described below when taking photos using infrared film.

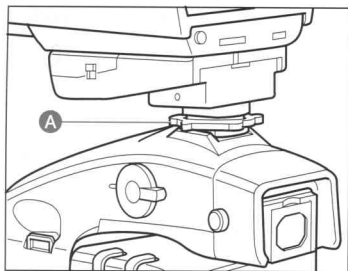
1. Set the focus as usual. Find the point on the distance scale matching the subject depth scale's central index.
2. Set the focus mode selector lever to "M" (manual focus mode). Turn the distance ring and set the distance scale to the above infrared index.



- ★ Use a red filter when taking photos using infrared film.
- ★ Be sure to read the infrared film's usage instructions.

Flash Photography

The flash TTL direct control mechanism has a function using a sensor to automatically control the intensity of the flash, and can be used in combination with a Metz flash SCA3951 adapter (sold separately). This mechanism enables various types of flash photography, including daytime synchro. The synchronizing speed is 1/125 seconds.



1. Mount the SCA3951 adapter onto the Metz flash, insert fully into the camera's hot shoe, the tighten with the fixing knob **A**.

2. Set the exposure mode, then check the shutter speed and aperture.

Exposure mode		Shutter speed	Aperture
P	Program AE	Automatically set by camera at 1/250 sec. or less	Automatically set by camera
Av	Aperture priority AE	Automatically set by camera at 1/250 sec. or less	Any aperture
Tv	Shutter priority AE	1/125 to 30 sec. (Be sure to set to under 1/125 sec.)	Automatically set by camera
M	Manual mode	1/125 to 30 sec. - bulb (Be sure to set to under 1/125 sec.)	Any aperture
X	Synchro mode	1/125 sec.	Any aperture

★ **With TTL flash photography, the reflection of the flash is metered and the intensity of the flash is adjusted automatically, so TTL flash photography is not necessarily suited to all conditions. In the cases described below, we recommend that you use a flash meter to check the intensity of the flash or to use a manual flash.**

For example:

- (1) When the size of the subject you want to light with the flash is relatively small within the picture
- (2) When the background behind the subject is extremely bright or when there is a strongly reflective object in the background
- (3) When the background behind the subject is extremely dark (outdoors at night, etc.)
- (4) For flash photography with a narrow latitude film

Metz Flash SCA3951 System Functions

Charging completed indicator in viewfinder	When charging of the flash is completed, a charging completed mark lights on the viewfinder's liquid crystal display panel.
Automatic setting of flash synchronizing speed	When the exposure mode is set to "Av" (aperture priority AE) or "P" (program AE), the shutter speed is set to 1/125 sec. or less when charging of the flash is completed.
Automatic viewfinder (functions when the flash mode is set to the TTL mode/external auto mode)	The flash charge mark $\frac{1}{2}$ flashes after the shutter is released to indicate that the flash was emitted properly.
Auto zoom control	The power zoom reflector is linked to the lens focal length. (Excluding the 32Z-2)
Emission of AF supplemental light	When the focus mode is set to "S", the supplemental light is emitted automatically when the brightness is low. (Excluding the 32Z-2)
Display of flash range (distance)	Displayed on the flash's liquid crystal display panel. (Excluding the 32MZ-3 and 32Z-2)
Program auto shooting	When the exposure mode is set to "P" (program AE) and charging of the flash is completed, a charging completed mark lights on the viewfinder's liquid crystal display panel and the shutter speed is set to 1/125 sec. or less.
Others	The film sensitivity data, exposure compensation data and aperture data is sent from the camera to the flash.

★When the flash's o.k lamp is lit, wait until the lamp turns off before taking the photo.

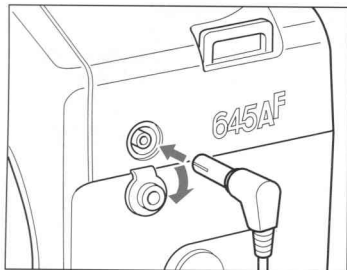
★To use the guide number indicated on the flash fully, emit the flash several seconds after the charging completed indicator lights.

★Cautions on using instant film

Instant film (Polaroid 100-600 series and Fuji FP series), has a lower reflection rate than regular film. Exposure compensation is necessary when using the flash in the TTL mode.

In general, set the exposure compensation to about 1 or 1 1/3 EV on the minus side.

Flash Photography with Flashes other than Mecablitz Flashes



1. Mount the flash onto the camera.

When connecting a flash with electric contacts other than X contacts to the flash's hot shoe or when connecting a flash other than a hot shoe type flash, connect the synchro cord to the camera's synchro terminal.

(See note below about flashes designed exclusively for other camera makes.)

- ★ Remove the rubber cover when connecting the synchro cord.

After shooting, be sure to attach the rubber cover in order to protect the synchro terminal's contacts.

2. Turn the exposure mode setting dial and set it to "X" (1/125 sec.) or "M" (manual). When "M" (manual) is selected, turn the front dial and set the shutter speed to 1/125 sec. or less.

3. Turn the rear dial to set the aperture, then take the picture.

- ★ This camera's synchro contact is an X contact.

- ★ Using flashes designed exclusively for other makes of cameras may damage the camera's internal mechanisms.

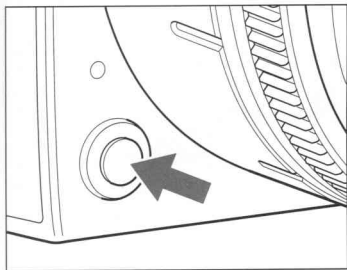
- ★ When using flashes with a flash time of 1/500 sec. or longer, set the shutter speed to 1/30 sec. or less.

- ★ When using MF or M grade flash bulbs, set the shutter speed to 1/30 sec. or less for MF grade flash bulbs, 1/15 sec. or less for M grade flash bulbs.

Preview Function/Eyepiece Shutter

Preview Function

When the preview button is pressed in, the subject depth (the range in which the picture is in focus) for the aperture set by the camera can be checked in the viewfinder.

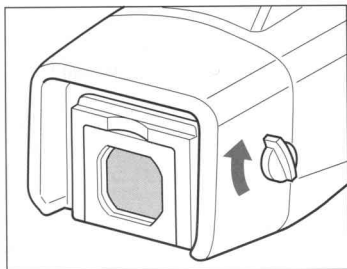


After focusing, press in the preview button.

When using auto focus, the aperture is set to the displayed aperture while the button is pressed and the focus is locked.

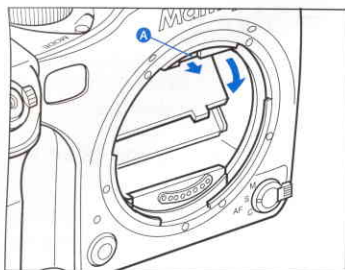
Eyepiece Shutter

Use this when there is a strong light source behind the camera or when pressing the shutter release button without looking through the viewfinder.



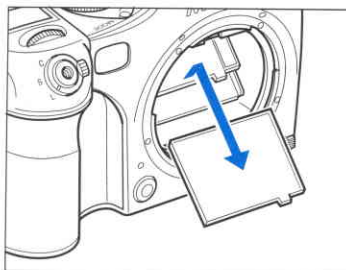
Turn the eyepiece shutter open/close dial in the direction of the arrow.

Changing The Focusing Screen

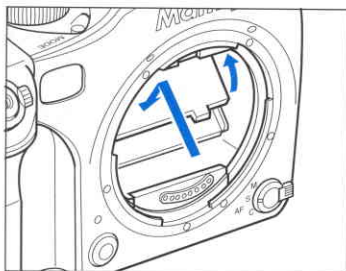


1. Remove the lens.

2. Slide the Focusing Screen Release Lever **A**, as illustrated, to the left with the tweezers to let the Focusing Screen down.



3. Remove the Focusing Screen from the Focusing Screen Frame by grasping the tab on the edge of the screen with tweezers as illustrated.



4. In case of attaching, insert your desired Focusing Screen to the Focusing Screen Frame properly and then raise the frame until it clicks.

Caution

- ★ Since the Focusing Screens' surfaces are soft and easily damaged, handle them carefully.
- ★ Never touch the surface with bare fingers. Should dust settle on it, merely blow away by using a blower.
- ★ When cleaning fingerprints on the Focusing Screen, wipe it off by using cloth with light amount of ether or benzene. Do not rub the screen. Since the Focusing Screen is made of Plastic, petroleum based solvents may damage it. Do not use solvents such as ketone and thinner.

Using the M645 Lenses

When using the M645 lenses, mount the exclusive viewfinder screen #314474 (sold separately) and set the focus mode to "M" (manual) to enable shooting with stop down metering.

1. Mount the M645 lens to the body, set the focus, then set the lens' A/M lever to "M". The focus can also be set using the focus mark.
2. Select the exposure mode and set the desired lens aperture.
3. Half-press the shutter release button. The shutter speed is displayed.

	Focus mode			Exposure metering mode			Exposure mode				
	Auto focus	Focus aid	Manual	A	S	A-S	P	Av	Tv	M	X
M645 lens	-	○	○	-	○	-	-	○	-	○	○

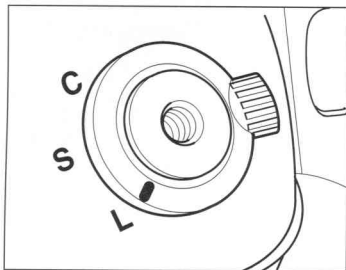
- = not an available function

○ = available function

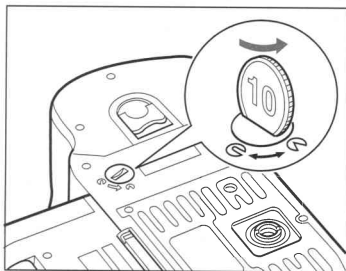
- ★With the M645 lens, adjust the exposure by using stop down metering in the Av exposure mode. The proper exposure cannot be achieved in the "P" (program AE) or "Tv" (shutter priority AE) exposure mode.
- ★When the M645 lens is mounted, the exposure metering mode is automatically set to "S" (spot exposure metering).
- ★Focusing using the focus mark is possible when the lens brightness is F5.6 or brighter.
- ★Note that when the lens' A/M lever is set to "M" after the focus mark ● lights and the aperture is stopped down beyond f/5.6, the defocus direction marks ► and ◀ flash. This is normal, and requires no adjustments.

External Power Supply

When using a heat-retaining external battery case for coldweather operation (sold separately), connect it to the external power socket.

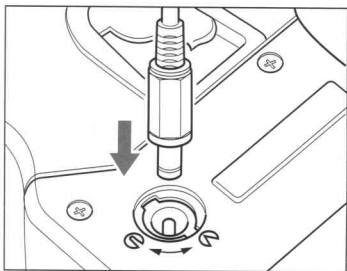


1. Set the shutter mode selector lever to "L".



2. Remove the cap.
Use a coin, etc., to remove the external power socket's cap.

3. Remove the batteries from the battery case.
Turn the battery case detach lever, remove the battery case, remove the batteries, then reattach the battery case to the body.



4. Connect the power cord from the external battery case to the external power socket.

★Be sure to attach the battery case to the body.

★The camera will operate even if the batteries are not removed from the battery case, but for safety remove them.



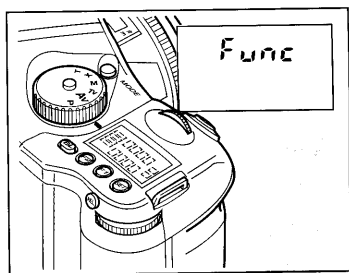
Others

Electronic Dial Operations

	Position	Front dial	Rear dial
Exposure mode	P	Program shifting (PH \leftrightarrow P \leftrightarrow PL)	Program shifting (PH \leftrightarrow P \leftrightarrow PL)
	Av	Aperture adjustment	Aperture adjustment
	Tv	Shutter speed adjustment	Shutter speed adjustment
	M	Shutter speed adjustment	Aperture adjustment
	X	Aperture adjustment	Aperture adjustment
	T	Aperture adjustment	Aperture adjustment
Mode setting button	Auto bracketing	Exposure offset (1/3 to 1 EV)	Exposure offset (1/3 to 1 EV)
	Multiple exposure	No. additional exposures (1 to 5)	No. additional exposures (1 to 5)
	Self timer	Self timer operating time (3 to 60 sec.)	Self timer operating time (3 to 60 sec.)
F1 key	When Func displayed	Func \leftrightarrow Fd \leftrightarrow dLoc	Func \leftrightarrow Fd \leftrightarrow dLoc
	When Func selected	DATA \leftrightarrow DAY \leftrightarrow OF	DATA \leftrightarrow DAY \leftrightarrow OF
	When Fd selected	On \leftrightarrow OF	On \leftrightarrow OF
	When dLoc selected	On \leftrightarrow OF	On \leftrightarrow OF
F2 key	When SEt 1 displayed	SEt 1 \leftrightarrow SEt 2	SEt 1 \leftrightarrow SEt 2
	SEt 1 DAY YEAR selected	Place shift	Object frame size adjustment
	SEt 2 displayed	SEt 1 \leftrightarrow SEt 2	SEt 1 \leftrightarrow SEt 2
	SEt 2 INDEX selected	Place shift	Object frame size adjustment

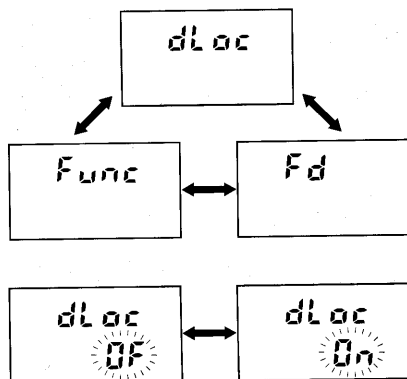
Front/Rear Dial Lock Mechanisms (select "dLoc")

These mechanisms keep the set values from changing when the front or rear dial is touched when the exposure mode is set to "Av" (aperture priority AE), "Tv" (shutter priority AE) or "M" (manual mode).



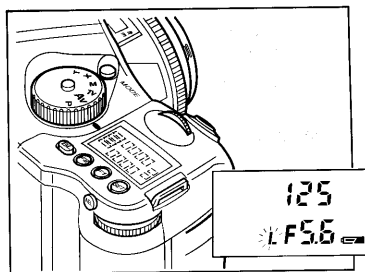
1. Set the shutter release mode selector lever to "S" (to turn the power on).

2. Press the **F1** Key for about 2 seconds. "Func" appears on the external liquid crystal display panel.



3. Turn the front or rear dial and select dLoc.

4. Press the **F1** Key again. OF or On flashes. Turn the front or rear dial to select On.



5. Press the **SET** Button for about 2 seconds to register the setting. When the dial lock is turned on, "L" is displayed on the external liquid crystal display panel.

★When a dial is turned while the electronic dial lock is on, L flashes for 3 seconds as a warning.

Turning the electronic dial lock off

★Perform steps 1 to 4 above, turn the front or rear dial to select "OF", then press the **SET** Button for about 2 seconds.

Superimposing Data (the data is superimposed on the film outside of the image area)

Display the data superimpose function on the external liquid crystal display panel to superimpose the data on the film (outside of the image area).

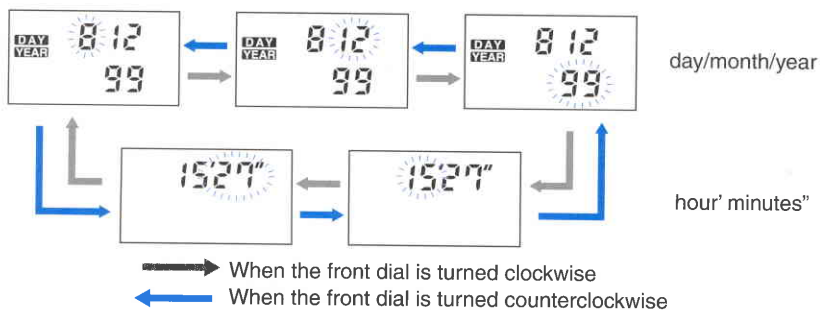
Setting the Date and Time (select "SEt 1")



1. Set the shutter release mode selector lever to "S" (to turn the power on).

2. Press the **F2** Key for about 2 seconds. "SEt 1" appears on the external liquid crystal display panel.

3. Press the **F2** Key again, then use the front and rear dials to set the date and time. When the front dial is turned clockwise, the position switches between the month, day, year, hours and minutes (the selected position flashes). Turn the rear dial to set the value.



4. After setting the date and time, press the **SET** Button for about 2 seconds to register the setting.

★ Check the date and time after replacing the batteries or using an external power supply, and adjust as necessary.

Setting the Index Number (select "SEt 2")

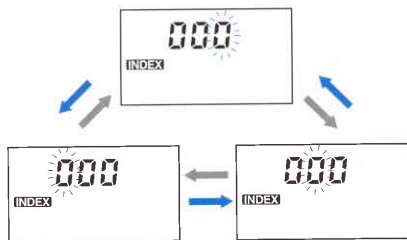


1. Set the shutter release mode selector lever to "S" (to turn the power on).

2. Press the **F2** Key for about 2 seconds, then turn the front or rear dial to display "SEt 2" on the external liquid crystal display panel.

3. Press the **F2** Key again, then use the front and rear dials to set the desired index number (3 digits).

When the front dial is turned clockwise, the position switches between the first digit, second digit and third digit (the selected position flashes). Turn the rear dial to set the value.



→ When the front dial is turned clockwise
← When the front dial is turned counter-clockwise

4. After setting the index number, press the **SET** Button for about 2 seconds to register the setting.

★ The index number is displayed as a 3-digit number. Data on the number of photos taken is stored in the camera, so the numbers of the photos continue to increment when the roll film holder is replaced. This function is convenient for managing large amounts of film.

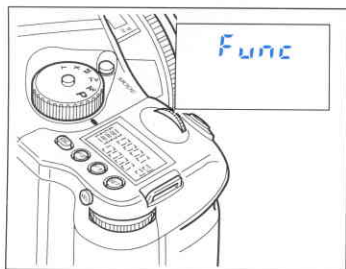
★ The starting index number can be set at will. For example, when shooting in different places or for different purposes, you can classify the photos by changing the starting number of the second or third digit.

★ Once the total number of photos taken reaches 999, counting starts over from 001. 000 can also be set using the index number setting procedure.

★ After 60 seconds or when another priority button is pressed, the index number setting mode is canceled and the setting is not registered.

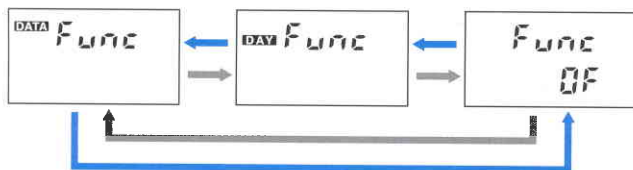
★ Custom settings remain in the memory even when the shutter release mode selector lever is set to "L" (turning the power off).

Selecting the Data to be Superimposed (select "Func")



1. Set the shutter release mode selector lever to "S" (to turn the power on).
2. Press the **F1** Key for about 2 seconds to display "Func" on the external liquid crystal display panel, then press the **F1** Key again.

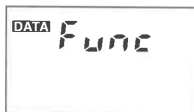
3. Use the front and rear dials to select the data to be superimposed (**DATA** or **DAY**). The data to be superimposed changes when the front or rear dial is turned clockwise.



→ When the front or rear dial is turned clockwise

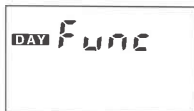
← When the front or rear dial is turned counterclockwise

Data superimpose modes



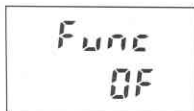
DATA:

The exposure mode, aperture, shutter speed, exposure compensation value, exposure metering mode and index number are superimposed.



DAY:

The date (year, month and day), time and index number are superimposed.



OFF:

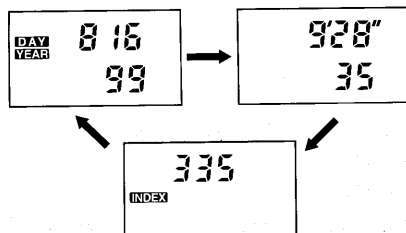
The data superimpose function is turned off.

4. Display the desired data superimpose mode on the external liquid crystal display panel, then press the **SET** Button for about 2 seconds. The setting is registered and the desired data superimpose mode is displayed on the external liquid crystal display panel

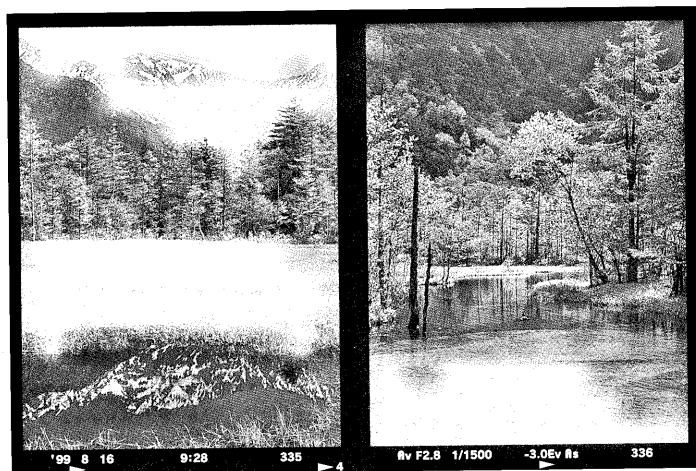
Checking the data to be superimposed

The data to be superimposed switches in the following order each time the **SET** Button is pressed:

Date (year, month and day) - Time - Index number



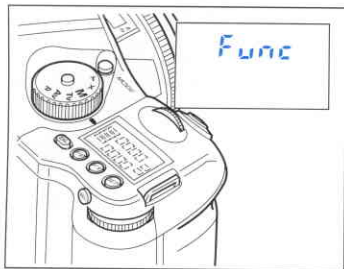
★The display on the external liquid crystal display panel returns to normal when the shutter release button is half-pressed or when another priority button is pressed.



This illustration is for explanatory purposes. The actual display may differ.

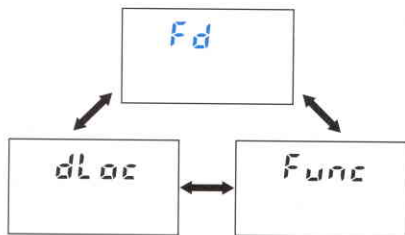
Changing the Viewfinder Display in the Manual Mode "M" (select "Fd")

When the exposure mode setting dial is set to "M", it is possible to display only the focus marks and flash charge mark on the viewfinder's liquid crystal display panel.



1. Set the shutter release mode selector lever to "S" (to turn the power on).

2. Press the **F1** Key for about 2 seconds to display "Func" on the external liquid crystal display panel.



3. Turn the front or rear dial to select Fd.



4. Press the **F1** Key again to display OF or On (flashing).

Turn the front or rear dial to select OF.

5. Press the **SET** Button for about 2 seconds to register the setting.

Only the focus marks (▶, ● and ◀) and the flash charge mark ⚡ (indicating that flash charging is completed) are displayed on the viewfinder's liquid crystal display panel.

Returning to the normal display

★ Repeat steps 1 to 4 about, turn the front or rear dial to select "On", then press the **SET** Button for 2 seconds.

End

This is displayed for 3 seconds when the end of the film is reached while shooting in the "C" (continuous advance) shutter release mode.

-no-
AE

This is displayed when the shutter release button is pressed while the mirror is up when the exposure mode is set to "P" (program AE), "Av" (aperture priority AE) or "Tv" (shutter priority AE).

-no-



This is displayed when auto bracketing does not function, as follows:

- When the shutter release button is pressed while the exposure mode is set to "M", "X" or "T", this is displayed, the shutter is not released and the auto bracketing mode is canceled.
- When the shutter release button is pressed while shooting with the exposure mode set to "Av", "Tv" or "P" and there are fewer than three frames of film left, this is displayed, the shutter is not released and the auto bracketing mode is canceled.

-no-



If the roll film holder is removed while the multiple exposure mode is set, this is displayed and the multiple exposure mode is canceled.

batt

This is displayed when the batteries are spent.

Err-
01

These are displayed when a problem is detected during shooting.

If the error display is not canceled when the shutter release button is pressed again, insert the Dark slide, half-press the shutter release button while pressing the roll film holder's manual film advance button to wind up the film, then contact your nearest Mamiya agent or service center.

Err-
02

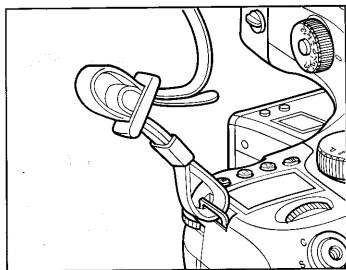
Err-
03

If the shutter cannot be released

- The shutter cannot be released when the batteries are spent or no batteries are loaded.
- The shutter cannot be released while the film is being advanced.
- The shutter cannot be released while the flash is charging (while the flash mark is flashing) when the shutter release mode is set to "C" (continuous shooting) with a Metz flash mounted with the SCA 3951 adapter. The shutter can be released once flash charging is completed.
- The shutter cannot be released when the film holder is not mounted.
- The shutter cannot be released while the ISO sensitivity is being set after mounting the film holder.
- The shutter cannot be released when the film holder is mounted and the dark slide is inserted.
- The shutter cannot be released even if the rear lid is open when the film holder is mounted and the film insert is not mounted. (The shutter can be released when the pull-out lid is removed.)
- The shutter cannot be released when the film holder is mounted and the rear lid is closed with the film wound up.
- When the mode setting button is pressed while the self timer is operating, the self timer is canceled and the shutter cannot be released.
- When the exposure mode setting dial is turned while the self timer is operating, the self timer is canceled and the shutter cannot be released.
- When the shutter release mode selector lever is operated while the self timer is operating, the self timer is canceled and the shutter cannot be released.
- When the focus mode selector lever is operated while the self timer is operating, the self timer is canceled and the shutter cannot be released.
- When the exposure mode selector lever is operated while the self timer is operating, the self timer is canceled and the shutter cannot be released.
- The shutter cannot be released when one of the error messages is displayed.
- When the shutter release mode selector lever is set to "L" during long exposures of over 1 second, the rear membrane closes and the long exposure mode is canceled.

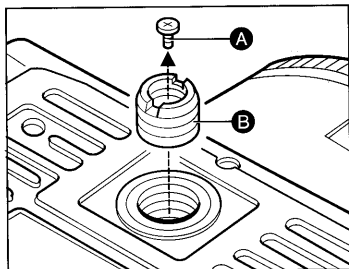
Strap/Using a Tripod/Auxiliary Release Contact

Strap



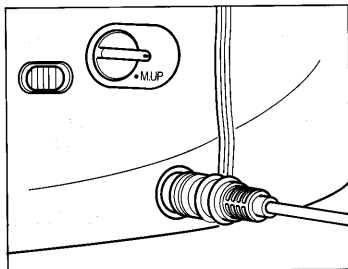
Put the next strap through the camera's strap mount as shown on the diagram and tighten it. For safety, check that the strap is securely fastened to the strap mount.

Using a Tripod



When using a tripod with 3/8 inch screws (larger than the normal tripod screws), remove the small screw **A** from the tripod screw hole on the bottom of the body using a Phillips screwdriver, then use a coin to remove the tripod screw adapter **B**.

Auxiliary Release Contact



This is the jack for connecting Mamiya electromagnetic cable release (sold separately) when taking photos with the mirror up, with long exposures or with slow shutter speeds.

#804821	1m (3')
#804422	5m (15')

Specifications of 645AF

Camera Type	: 6x4.5cm format, electronically controlled focal-plane shutter, TTL multiple mode AE, AF single lens reflex
Actual Image Size	: 56x41.5 mm
Film Type	: 120 roll film (16 exposures); 220 roll film (32 exposures); Polaroid Land Pack Film (requires special HP402 magazine)
Lens Mount	: Mamiya 645 AF Mount, compatible with M645 mount (manual focus confirmation, focus aid, stop-down exposure metering)
Viewfinder	: Fixed prism viewfinder magnification x0.71; built-in diopter adjustment (-2.5 to +0.5, separate diopter correction lenses provide adjustment ranges of -5 to -2 diopter and 0 to +3 diopter); built-in eye-piece shutter
Focusing Screen	: Interchangeable between Matt (standard) and Checker and manual focus microprism for M645 lenses.
Field of View	: 94%* of actual image
Viewfinder Information	: Focus mark, out-of-focus direction mark, aperture value, shutter speed, metering mode (A, S, A/S), exposure compensation value (difference between set value and actual value)
AF sub-beam	: activates automatically under low light, low contrast. Range; 9m yet to be determined; Automatic switching to flash unit's built-in sub-beam when Metz flash unit is attached.
AF Lock	: Half-press on shutter release in S Mode
Exposure Control Modes	: Aperture-priority AE, shutter-priority AE, programmed AE (Ph, Pl setting possible)
Metering method	: Center-weighted average (AV), spot (S) and variable ratio (1.5-step A-S auto change by program shift setting), manual
Setting Steps	: Shutter speed and aperture both can be set in 1/2 steps; electronic dial lock
Light Metering	: TTL metering; center-weighted average (AV), spot (SP), and auto A-S variable ratio
Metering Range	: EV 2 to EV 18 (with ISO100 film, f/2.8 lens)
Exposure compensation	: ± 3 EV (1/3 step)
Film speed	: ISO 25 to 6400
AE lock	: With AEL button; released by pressing twice or shutter operation; light metering value differentiation in viewfinder exposure compensation display when ELS button is held down; ± 6 EV (1/3 step)

*This information is based on a Linear (horizontal/vertical) measurement.

Shutter	: Electronically controlled vertical metal focal-plane shutter
Shutter speed	: AE 30 to 1/4000 sec. (1/8 step), manual 30 to 1/4000 sec. (1/2 step), X, B (Bulb, electronically controlled), T (time, mechanically controlled), emergency shutter curtain open mechanism (open when magazine is removed, automatically closed when magazine is attached)
Auto-Bracketing	: Enabled with Mode button, 1/3, 1/2, 2/3, 1-step units
Flash Synchronization	: 1/125 sec., automatically sets to 1/125 at faster speeds, synchronized to displayed speed at slower speeds (when Metz flash unit is used)
Flash control	: TTL direct metering, supports Metz SCA3000 system (SCA3951 Adapter)
Film transport	: Automatic via built-in motor, single or continuous exposures
Film loading	: Automatic advance to first frame when shutter release button is pressed once (Easy Loading)
Multiple Exposure	: Enabled with Mode button (1 to 5 exposures); can be cancelled
External LCD	: On camera body; shows aperture value, shutter speed value, self-timer, ABL, battery check, multiple exposure, programmed AE or programmed AE shift value, data imprinting Interchangeable Film Magazine: ISO speed, type of film (120/220), exposure number
Data Imprinting	: 7 segment dot matrix; DATA mode: exposure mode, aperture value, shutter speed value, exposure compensation, metering mode, ID number; DAY mode; year, month, date, time, ID number Switchable between enabled and disabled
Sync terminal	: X contact (sync speed 1/125 sec.)
Cable release socket	: On shutter button
Remote-control terminal	: On side of body; electromagnetic cable release
Self-Timer	: 3 to 60 sec. (standard: 10 sec., can be set in 1 sec. steps between 3 and 10 sec., and in 10 sec. steps between 10 and 60 sec.)
Depth-of-field confirmation	: Preview Button
Tripod Socket	: U 1/4 inch and U 3/8 included
Power Requirements	: 6 AA-size batteries (alkaline-magnesium, lithium)
Size	: 153(W)X128(H)X184(D)mm
Weight	: 1,730g(w/o battery)

Common Sense Camera Care and Practice

The Mamiya 645 AF is a precision optical/mechanical instrument, built for heavy professional use and a long service life, if properly treated and maintained. Please observe these basic caveats:

- Read instructions before using camera.
- Protect camera against shocks and falls. Use neck strap supplied with it, whenever possible.
- Check the battery frequently and always carry spares. The sealed battery supplied with the camera may have been subject to storage conditions which have reduced its service life.
- Be sure to wipe battery contacts before installation and watch correct polarity.
- Battery life differs, depending on frequency of use, type, age, storage condition, ambient temperature (use External Battery Case in very cold weather), etc.
- Always remove the battery (and film) when camera is not used for a period of time.
- Always keep covers on lenses and camera body.
- Do not store the camera at temperatures exceeding 40°C (105°F) and -10°C (15°F). Also avoid humid or sea air environment.
- Prolonged disuse shortens camera life. Periodically exercise the shutter (at different speeds, lens diaphragms and focusing mounts).
- Protect camera against rain and moisture.
- Do not touch lens surfaces. Use blower or lens tissue to remove dust particles.

Specific Suggestions:

- Operate the film advance lever with easy strokes. If moved too rapidly it may affect spacing.
- Hold lens focusing mounts on bottom in order not to block range finder window.
- Always test your equipment before going on important assignments.

The Importance of Proper Maintenance

Your camera has mechanisms like film transport, shutter and diaphragm blades, rangefinder couplings, etc. They are controlled by gears, levers, springs, and so on. All require special lubrication from time to time. Ambient conditions can also affect these mechanisms, as well as the electronic components and the optical glass of your lenses. We therefore suggest that you have your camera and lenses checked, and if necessary serviced, periodically.

Batteries Care

1. The sealed, new battery which is supplied with this camera may have been subject to storage conditions which have reduced its service life. Therefore it is desirable to replace it with a fresh battery as soon as possible.
2. Carefully wipe the battery contacts before inserting into the chamber. Failure to do so may result in poor electrical contact and consequent malfunctioning of the camera.
3. Always remove battery when camera is not used for a while. Always carry spare batteries.
4. Battery life differs, depending on type, age, storage condition, ambient temperature, frequency of use etc.
5. Be sure to match the poles of the battery with those shown in the diagram in the chamber.
6. Always keep batteries out of the reach of children and never throw used batteries into a fire or expose to excessive heat.
7. When going on trips be sure to carry spare batteries to ensure that the camera will function. Also, as batteries tend to temporarily malfunction at temperatures below freezing, when photographing in extremely cold climates, carry the External Battery Case.
8. When you carry spare batteries, leave them in the original factory packaging. If they are "unpackaged", be sure to wrap them carefully in order to prevent them touching each other or any metal objects which can cause them to short circuit and become useless.

Liquid Crystal Display

All displays on the liquid crystal display consist of "8" and the number of places is limited. For this reason, some letters and words are abbreviated.

SEt	→	SET
Func	→	Function
batt	→	Battery
End	→	END
dLoc	→	Dial Lock
Fd	→	Finder Display
Err	→	Error
OF	→	OFF
On	→	On
÷	→	+