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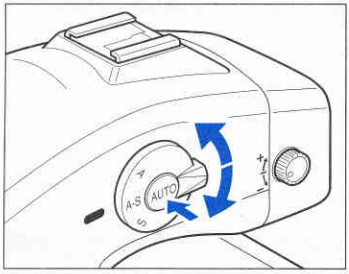
The large manuals are split only for easy download size.

Exposure Metering Modes

How to change to the Exposure Metering Mode

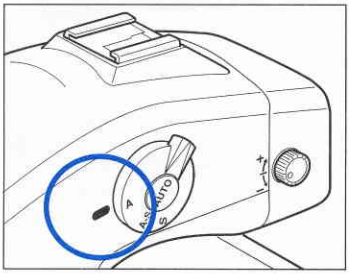
While pressing the exposure metering mode selector lever lock release button in, turn the exposure metering mode selector lever up or down.



■If a polarizing filter is necessary, use a circular polarizing filter. A linear polarizing filter is not compatible with the Mamiya 645 AFD and its operations.

Center Average Exposure Metering Mode (A)

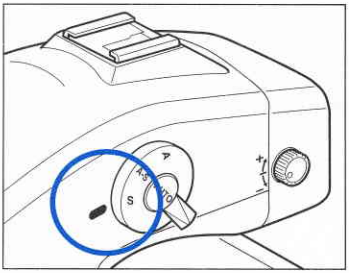
(Set the exposure metering mode selector lever to "A".)



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

Spot Exposure Metering Mode (S)

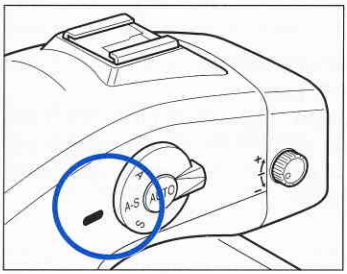
(Set the exposure metering mode selector lever to "S".)



The light in the circle at the center of the picture area is measured to determine the exposure. This mode is best suited for strongly backlit subjects, or when you desire to measure a specific area. When the spot you want to measure is not at the center of the picture, use the AE lock function. (See pages 59-60 AE Lock Mode.)

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

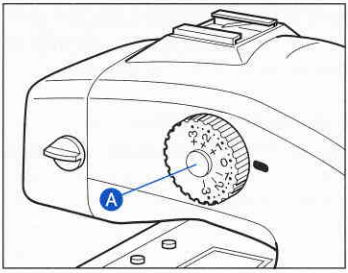
(Set the exposure metering mode selector lever to "A-S".)



With the A-S metering mode, average or spot exposure metering is selected automatically and the appropriate exposure is set accordingly.
The spot mode is selected automatically when the brightness within the spot metering area is lower than the brightness of the average metering area by about 1.5 EV or greater. 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.

Exposure Compensation

In some situations, such as a great difference between the subject and background brightness or overall subject tones that will not meter correctly because they are all black or white, the resulting photograph may be under- or overexposed. When this occurs, use the exposure compensation function. Exposure compensation can also be used when you want to intentionally create overexposed or underexposed pictures.



Turn the exposure compensation dial while pressing the exposure compensation dial lock release button in Ⓐ located on the right side of 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.

★The exposure compensation dial can be locked only in the "0" position.

★Exposure compensation is possible when locked in AE.

Display of the exposure compensation in the viewfinder's LCD panel

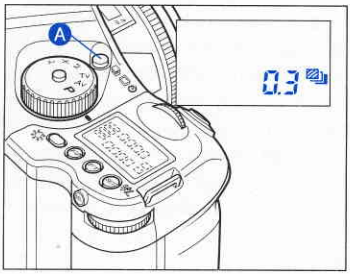
(When a Metz flash is not equipped.)

Exposure mode		Exposure compensation display
P	Program AE	The setting is displayed.
Av	Aperture priority AE	
Tv	Shutter priority AE	
M	Manual mode	※
X	Synchro mode	Not displayed.
T	Time mode	

※ The difference between the metered value and the set exposure value is displayed. The exposure compensation function cannot be used.

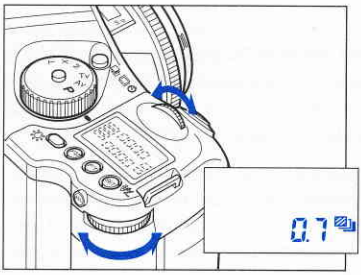
Auto-Bracketing Mode

When you take an object that it is difficult to determine the exposure compensation value for, or when you take another shot with only slightly different exposure levels, use the Auto-Bracketing function. (Overexposure, standard, and underexposure).



1. Turn the shutter release mode selector lever to the "**S**" or "**C**" position.
In the "**S**" position, the camera takes one frame each with one press of the shutter release button. In the "**C**" position, the camera takes three frames sequentially.

2. Keep pressing the function mode-setting button Ⓐ for approximately one second to enter into the auto-bracketing mode. The Auto-Bracketing mark and the initial setting value "0.3" will appear on the main LCD panel.



3. Turn the front or rear dial to choose units of exposure compensation.
By turning the front or rear dial, you can choose compensation value from 1/3, 1/2, 2/3, or 1 (the display shows 0.3, 0.5, 0.7 and 1.0). The chosen setting can be registered after 5 seconds or by pressing any another button on the camera.

4. Press the shutter release button.
Select required shutter release mode, exposure mode, and exposure compensation unit, and press the shutter release button.

★The viewfinder LCD read-outs displays "n1" (standard), "u2" (under), and "o3" (over) in the order of the frames taken, and the numbers (1, 2, and 3) blink correspondingly.

Standard Under Over

Single-Frame Mode (S)
Press the shutter release button for each frame shot.
While taking photos, the camera does not fix the exposure value. It meters the exposure level for each shot and provides auto bracket (automatic exposure in steps). The camera maintains the Auto-Bracketing function until the last shot in a roll of film.

Continuous Mode (C)
By pressing the shutter release button, the camera takes three frames in series, and then stops.
By each press of the shutter release button, the camera will repeat three continuous shots. The standard exposure will be fixed at the first frame.

★When the number of available frames of the current roll of film is less than 3 while in auto-bracketing mode, the "– ⊓⊓ – ▨" display will blink and automatically cancels Auto-Bracketing mode.

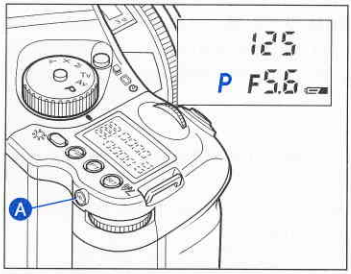
Automatic exposure shot in the Auto-Bracketing mode

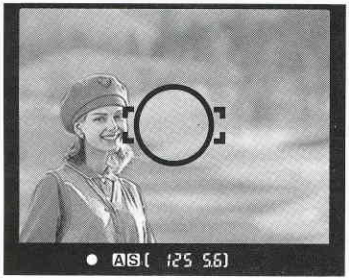
Exposure mode		Operation
P	Program AE	The shutter speed changes.
Av	Aperture priority AE	
Tv	Shutter speed priority AE	Aperture changes.
M	Manual mode	The shutter speed changes.

★When the continuous mode "C" is selected, the camera takes three frames in series. Take photos by securing the camera on a tripod or the like.
★ To exit the auto-bracketing mode, press the function mode-setting button Ⓐ three times, and the camera returns to normal shooting mode. You can also release the auto-bracketing mode by turning the shutter release mode selector lever to "L" (power OFF) position. (The set values are registered.)
★When exposure compensation is chosen, the camera takes photos in the auto-bracketing mode by adding the compensation value.
★Auto bracket shooting is also available when the camera is locked in AE.
★ When data superimpose is specified, symbols "N", "⊔", and "□" will appear on the exposure compensation value indicator. (See page 80.)

AE Lock Mode

The AEL button will lock the Auto-exposure value as the photo is being recomposed.





1. Turn the shutter release mode selector lever to "**S**" or "**C**".

2. Turn the exposure mode-setting dial and select any of "**P**", "**Av**", or "**Tv**".

3. Focus on the object you want to take a photo of for exposure metering. Then press the AEL button Ⓐ on the rear of the grip. [ ] appears in the viewfinder, indicating that the exposure value is locked.

4. Aim the camera to take the desired composition, and then release the shutter.

★When you try to take another photo while remaining in AE lock mode,[ ] display on the viewfinder blinks to show that the camera is still in AE lock mode.

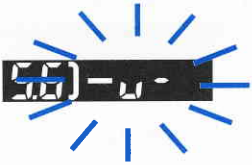
★To cancel AE lock mode, press the AEL button Ⓐ again.

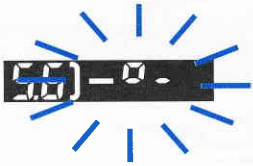
★If you turn the shutter release mode selector lever to the "L" (power OFF) position, or after elapse of one hour, the AE lock mode will automatically be cancelled.

★In the exposure mode "M" (manual mode), you cannot take a photo in the AE lock mode. Keep pressing the AEL button for approximately one second while the exposure metering difference value is displayed, then the one-push shift mechanism is activated, and the camera changes shutter speed according to the camera's meter.
(See page 53.)

Metered-value difference indicator

Press the AEL button in Ⓐ , the viewfinder LCD read-out displays the difference between the metered exposure value and exposure of a new composition. This is useful to check if an object with very different light level can be taken or not.





★ **If the difference between the set value and the metered value exceeds 6EV, the viewfinder LCD blinks "– u –" for underexposure and "– o –" for overexposure.**

NOTE:

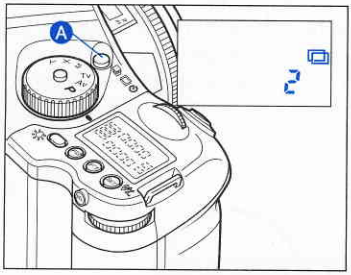
After specifying the AE lock mode, if you turn the front dial or rear dial, you can change the aperture value and shutter speed without changing the exposure when entered into AE lock mode.

When the exposure "**P**" mode (program AE) is selected, turning one of the dials shifts the program between "PH" and "PL." When the exposure mode is set to "**Av**" (aperture priority AE) or "**Tv**" (shutter priority AE), turning one of the dials changes both the shutter speed and aperture.

★**When taking photos in AE lock mode, normal operation mode, or mirror up mode, exposure compensation and auto-bracketing mode can be selected.**

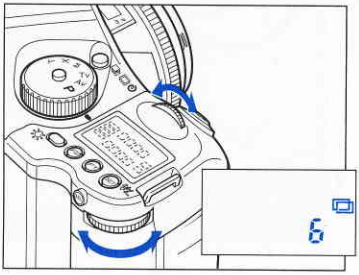
Multiple Exposure Mode

Using the multiple exposure mode, you can expose several shots on the same frame.



1. Press the function mode-setting button in Ⓐ for approximately one second, and then press it again to enter into multiple exposure mode.

2. Turn the front or rear dial to select the number of exposures desired. You can select from 2 to 6 exposures. After an elapse of five seconds or by pressing any another button on the camera, this selection will be registered.



3. Press the shutter release button. The camera will not advance the film until the specified number of exposures has been taken.

★When the camera is taking photos while in the multiple exposure mode, it shows the multiple exposure mark " ▣ " on the main LCD panel.

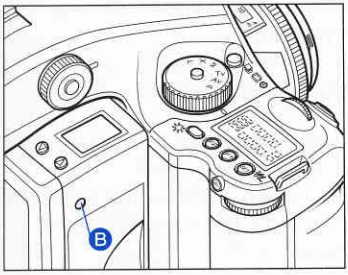
★To check the number of shots remaining for the multiple exposure, press the function mode setting button Ⓐ , and the main LCD panel displays the number of exposures remaining.

★To increase the number of exposures to more than six in the middle of taking the multiple exposure, or to decrease the number of exposures, press the function mode-setting button Ⓐ and turn the front or rear dial.

★When you press the shutter release button while in the shutter release mode "C" (continuous winding mode), and if the number of exposures terminates, the main LCD panel shows "End", and the camera returns to normal mode.

★To cancel the multiple exposure mode before taking a photo, press the function mode setting button Ⓐ twice.

To cancel the Multiple Exposure Mode



Make sure to pull the dark slide out, and half press the shutter release button while pressing the mid-roll film advance button in Ⓑ.
The camera winds on one frame and then exits from the multiple exposure mode.

★If you removed the magazine during a multiple exposure, the main LCD panel blinks "-no-▣" and will then return to normal display, canceling the multiple exposure mode. However, since the magazine has not yet canceled the multiple exposure mode, when the magazine is mounted again, the camera will resume taking multiple exposures. In this case the main LCD panel shows exposure continuing mark "▣" and the number of exposures will automatically returned to " 1 ".

Guideline for exposure compensation during Multiple Exposure Mode

As the purpose of the multiple exposure mode is to expose several shots on a single frame, exposure compensation may be needed depending on the subjects being photographed and the background.

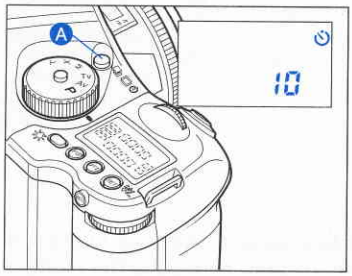
Guideline for exposure compensation in typical multiple exposure shot

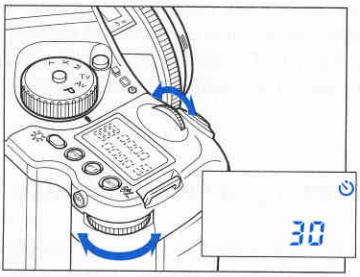
The number of exposures	Exposure compensation guideline
2	−1.0
3	−1.5
4	−2.0

★The optimum exposure compensation value will vary according to your actual photographic conditions. We recommend taking test shots.

Self Timer Mode

With this function, under the default setting 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. Mount the camera to a tripod.

2. Press the mode setting button in Ⓐ three times to set the self timer mode.
The self timer mark ⏲ and the initial setting (10 for 10 seconds) is 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 or when the shutter release button is pressed.

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.

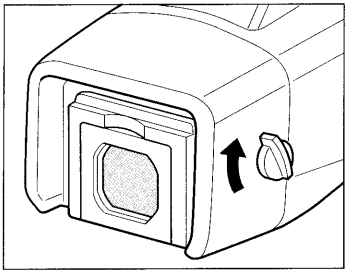
★To cancel the self timer mode after pressing the shutter release button, either press the mode setting button in Ⓐ or turn the exposure mode setting dial. Changing the exposure mode does not change the set self timer operating time.

★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.

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.
(This prevents exposure error due to light entering from the viewfinder.)



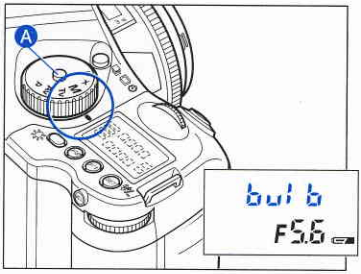
Turn the eyepiece shutter lever in the direction of the arrow.

Extended Exposure Modes (Bulb and Time Modes)

To expose film for a longer period than 30 seconds, adjust the shutter speed to "**B**" (bulb) or "**T**" (time). In order to prevent camera shake, use an electromagnetic shutter release and tripod.

Bulb Mode

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



1. While pressing the exposure mode setting dial lock release in Ⓐ turn the exposure mode setting dial and set it to "**M**" (manual mode).

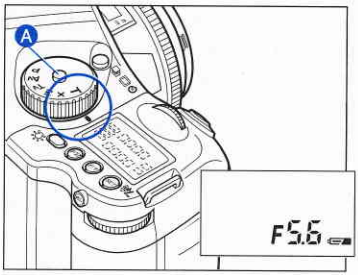
2. Turn the front dial counterclockwise to select "bulb", then turn the rear dial to set the aperture.

3. Determine the composition, focus, then take the picture. The shutter remains open as long as the shutter release button is pressed.

★**Bulb mode is controlled by an electronic circuit so that the camera consumes battery power while taking a photo.**

Time Mode

The time mode uses mechanical control, so it is best suited for extended exposures. The batteries are not used to keep the shutter open during the exposure.



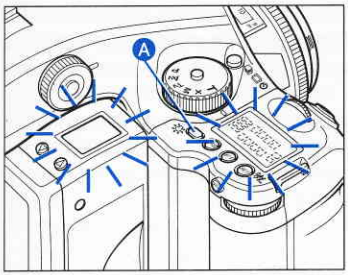
1. While pressing the exposure mode setting dial lock release in Ⓐ turn the exposure mode setting dial and set it to "**T**" (time mode).

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, while pressing the exposure mode setting dial lock release in Ⓐ turn the exposure mode setting dial to "**X**". The time exposure mode is canceled and the shutter closes.

Backlight Button



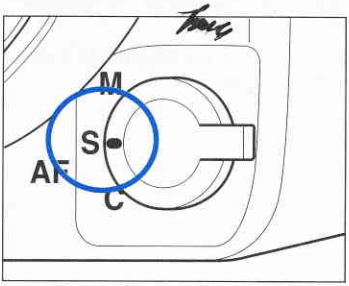
To see the main panel at night or in dark places, press the backlight button Ⓐ / ☼ .
The backlight will go off after approximately 10 seconds unless there is another operation.

★ **When releasing the shutter, or pressing the backlight button Ⓐ / ☼ while the backlight is on, the backlight will go OFF.**
★ **When operating the camera while the backlight is on, the backlight will extend the lighting period for approximately another 10 seconds.**

Taking Photos with the Mirror Up

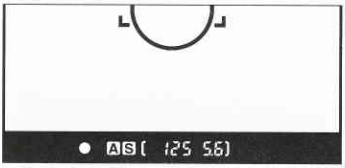
Use this function when you want to avoid even slight camera movement when taking photos under such conditions as slow shutter release using a tripod, or taking photos using a telescopic lens, close-up shots, or shooting a printed poster or another photograph.
With the mirror raised, neither the auto focus mechanism nor exposure metering mechanism can be used. Therefore, the camera instructs the operator to focus and adjust the aperture before activating the mirror up function. In order to prevent camera shake, use the electromagnetic cable release (sold separately) and a tripod.

Using auto focus and auto exposure

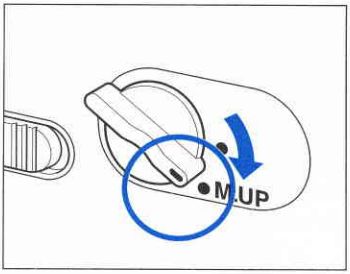


1. Select "**S**" (single focus mode) turning the focus mode selector lever.

2. Turn the exposure mode-setting dial to choose any of "**P**," "**Av**", or "**Tv**" exposure mode.
Look through the viewfinder and determine focus, composition, and exposure.



3. Press the AEL button.
By pressing the AEL button, the camera locks the metered exposure, and shows the AE lock indicator [ ] in the viewfinder.



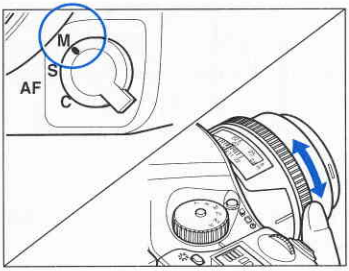
4. Turn the mirror up lever to the end of the "**M.UP**" side, and raise the mirror.

5. Press the shutter release button to take a photo.
The [ ] display in the viewfinder blinks to show that the AE lock is still active.

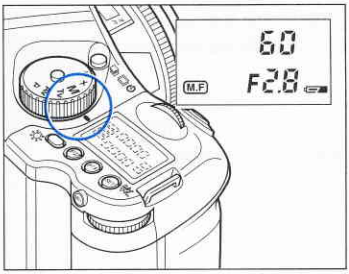
★After taking a photo with the mirror up function, return the mirror up lever to its original position, and release the currently set AE lock.
★ When you release the AE lock while in the mirror up mode and attempt to take a photo, the main panel shows "-no-AE" and locks the shutter operation. In this case, replace the mirror up lever to the original position.
★While taking a photo in the mirror up mode, and AE lock is set, exposure compensation and auto-bracketing mode are available.
★Leaving the camera in the mirror up mode for a long period may cause an unexpected exposure of the film. After completing shooting in the mirror up mode, make sure to replace the mirror up lever to its original position.
★The mirror up lever cannot be turned when the lens is not installed on the camera.
★ You cannot remove a lens from the camera when in the mirror up mode.

■If you direct the lens toward the sun with the mirror up function ON, the intense sunlight focused on the shutter blades may cause burning.

In the manual mode



1. Turn the focus mode selector lever to "**M**" (manual focus mode) position. Turn the lens-focusing ring to focus. Half-press the shutter release button to meter exposure.



2. Turn the exposure setting dial to "**M**" (manual mode) position. Turn either the front or rear dial to adjust the shutter speed and aperture with the metered values.

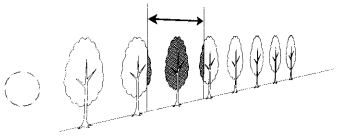
3. Turn the mirror up lever to the end of the "**M.UP**" position to raise the mirror and take a photo.

Depth of Field

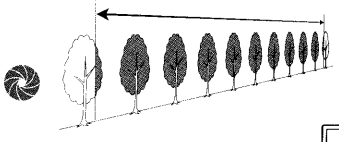
Depth of field (D.O.F.) is defined as the zone of sharpness before and behind the plane of focus. It depends on camera subject/distance, focal length of lens, aperture setting and distance the lens is focused at.

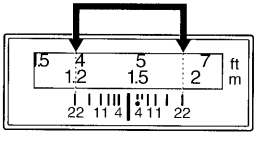
In addition to visual observation via the depth of field preview button (See page 66.), the D.O.F. can be determined by using the depth of field scale on each lens. The f/stop numbers appear on both the right and left side of the white index mark in the center of the scale. Simply read the figures which appear above the f/stop numbers on the distance scale of the lens. (see illustration below)

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



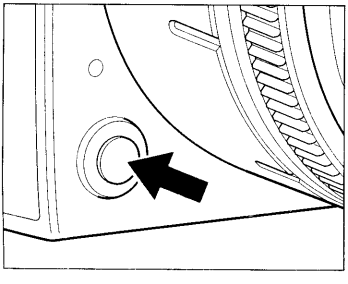
When the aperture is small
(the subject depth is large)





Depth of Field Preview Button

When the preview button is pressed in, the depth of field for the aperture set on the camera can be checked by looking through the viewfinder.



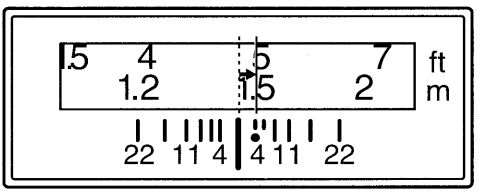
After focusing, press in the preview button. When using auto focus, the aperture is set to the displayed aperture while the button is pressed and the focus is locked.

★While operating the preview button, you cannot release the shutter.

When taking photos using infrared film, the position at which the subject is in focus is slightly different than that of non-infrared sensitive films. This is because the infrared rays have a longer wavelength and the image converges further back than non-infrared sensitive films. 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 focusing ring clockwise 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.
★You cannot take photos in AE mode when using an infrared film.

Flash Photography

In addition to its standard flash sync system, the Mamiya 645 AFD features TTL (through the lens), off the film (OTF), electronic flash exposure metering. A flash sensor located inside the camera body reads the flash reflected off the film surface at the moment of exposure. The sensor is connected via the Mamiya 645 AFD's dedicated hot-shoe to a shoe- or handle-mount style Metz flash unit via the Metz SCA 3952 TTL Adapter. Maximum flash sync speed is 1/125 sec., making daytime syncronization possible.

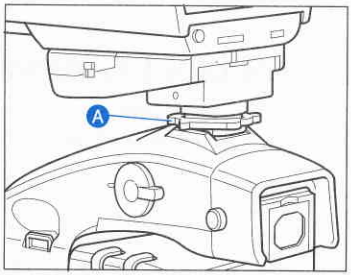
The ISO of the flash is automatically set through the TTL connection from the camera's Film Magazine; any adjustment to this is instantly recognized after the setting is locked and the shutter release is half-pressed. Also, when Film Magazines with different ISO settings are switched on the camera body, the TTL flash connection instantly recognizes the change.

To utilize the TTL flash feature with all TTL-operable Metz flash units, a Metz SCA 3952 Module is required. Please see the chart below for compatibility and/or additional adapters that may be necessary.

Adapter / Metz Flas Unit	Type of Flash	SCA 3952 Module	SCA 3000C Converter	Hot Shoe to hot shoe 3007A Connecting Cable
Metz 32 MZ-3 and -Z-2	Shoe-mount	x		*
Metz 40 MZ-3i and-1i	Shoe-mount	x		*
Metz 54 MZ-3	Shoe-mount	x		
Metz 45 CL-3 and -4	Handle-mount	x	x	
Metz 50 MZ-5	Handle-mount	x		
Metz 60 CT-4	Handle-mount	x	x	
Metz 70 MZ-5 and-4	Handle-mount	x		

* Necessary for off-camera and flash bracket use.

The resulting flash exposure automation determines correct flash exposure and automatically adjusts the output of the flash. It also automatically corrects for exposure compensation normally required when using filters, close-up bellows or extension tubes. However, as with all TTL systems, it requires manual compensation for differences in film surface reflection characteristics. The amount of compensation is determined by experimentation and is performed on the Mamiya Film Magazine ISO setting.



1. Mount the SCA3952 adapter onto the Metz flash, insert fully into the camera's hot shoe, then tighten with the locking knob Ⓐ.

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 1/125 sec. to 1/60 sec.	Automatically set by camera
Av	Aperture priority AE		Any aperture
Tv	Shutter priority AE	1/125 to 30 sec. (Be sure to set at 1/125 sec. or slower)	Automatically set by camera
M	Manual mode	1/125 to 30 sec. - bulb (Be sure to set at 1/125 sec. or slower)	Any aperture
X	Synchro mode	1/125 sec.	

★**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 setting.**

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 film latitude

Metz Flash SCA3952 System Functions

Charging completed indicator in viewfinder	When charging of the flash is completed, a charging completed flash icon ϟ will illuminate in the viewfinder's liquid crystal display panel.
Automatic setting of flash synchronizing speed	When the exposure mode is set to "Av" (aperture priority AE) , the shutter speed is set to 1/125 sec. or less when charging of the flash is completed. "P" mode sets the shutter speed to 1/125 or 1/60 only.
Automatic viewfinder (functions when the flash mode is set to the TTL mode/external auto mode)	The flash charge mark ϟ 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 Metz 32Z-2)
Emission of AF supplemental light	When the focus mode is set to "S", the autofocus measuring beam light is emitted automatically in low light. (Excluding the Metz 32Z-2)
Display of flash range (distance)	Displayed on the flash's liquid crystal display panel. (Excluding the Metz 32MZ-3 and Metz 32Z-2)
Date transfer	The film sensitivity data, exposure compensation data and aperture data is sent from the camera to the flash.

★**The shutter cannot be released until the flash's OK lamp is lit.**

★**When using an SCA300 system flash (Metz 60CT-4, 45CL-4, etc.), also use the SCA3000C converter (sold separately).**

★**For details, refer to the operating instructions of the flash and the SCA adapter.**

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

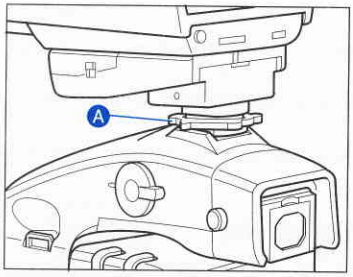
★**Cautions on using instant film**

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

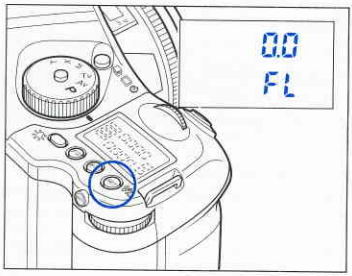
In general, set the exposure compensation to about 1 or 1 1/3 EV on the minus side.

Flash Compensation Settings

By combined use of a Metz flash and the SCA3952 adapter, the camera adjusts for flash. It can be adjusted within ± 3EV in increments of 1/3 steps.

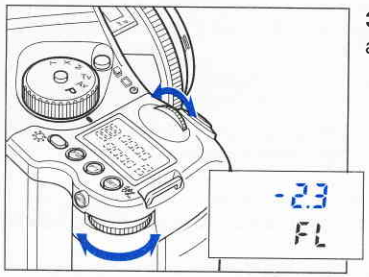


1. Install the SCA3952 adapter on the Metz flash, and put it on the camera then lock the flash in place using the locking knob on the flash shoe Ⓐ. Turn the shutter release mode selector lever to the "**S**" or "**C**" position, and turn ON the flash power switch.

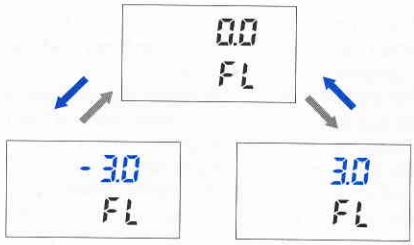


2. When the flash charge confirmation lamp lights, press the SET button in to show the " 0.0 FL " on the main LCD panel.

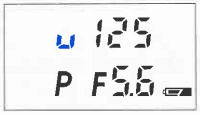
★FL = **Flash**



3. Turn the front or rear dial to select the flash adjustment value.



Main panel (normal display)



4. Half press the shutter release button, the "▫" (when positive adjustment) or "▫" (when negative adjustment) display appears on the left of the shutter speed indicator on the main panel and viewfinder LCD read-outs.

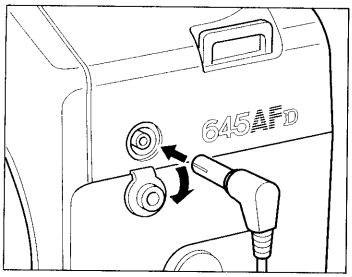
Viewfinder LCD read-outs.

★Keep pressing the SET button in to activate the flash auto adjustment mode. You can check the exposure compensation value.

★If you turn the shutter release mode selector lever to the "L" (power OFF) position, the adjusting value will be canceled and it will return to initial value " 0.0 FL ".

Flash compensation and exposure compensation can be set independently .
→ see page 86

Flash Photography with electronic flash models other than Metz



1. Mount the flash onto a flash bracket or if it is a shoe mount style flash attach to the camera's hot shoe.
Do not attach a dedicated flash unit to the camera's hot shoe that is not designed specifically for the Mamiya 645AFD. To use this type of flash, use a flash bracket or other means, and 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. While pressing the exposure mode setting dial lock release in 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 slower.

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

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

⚠ WARNING

- **Using flashes designed exclusively for other makes of cameras may damage the camera's internal mechanisms if connected to the camera's hot-shoe. In this situation, use an off-camera flash bracket and connect a PC cord to the camera's synchro terminal.**
- **When using flashes with a flash duration of 1/500 sec. or longer, set the shutter speed to 1/30 sec. or less.**

Selected aperture value can also be locked. → see page 83 to 84

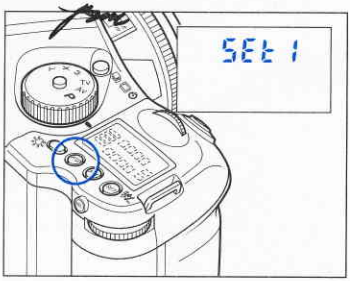
Setting functions

This chapter describes other functions such as date and data superimposes.

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

Setting date and time (select "SEt 1")

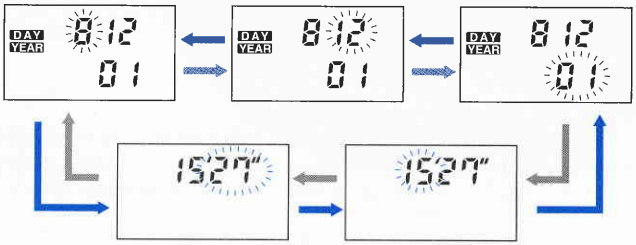
After changing batteries or using an external power supply, you have to check the camera's date and time indicators and adjust if needed.



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 main LCD 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.

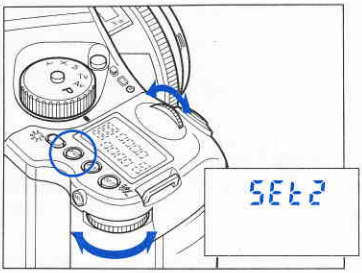


4. After setting the date and time, press the SET Button for about 2 seconds to register the setting.

★If you half press the shutter release button or other priority buttons before registering the newly set date and time, the set date and time will be canceled and will not be registered.

★Press the SET button in for approximately two seconds to confirm the registered date and time. Press the SET button in to confirm the index number (see page 78).

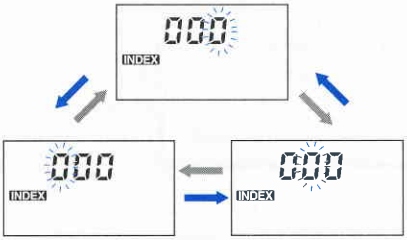
Setting the Index Number (select "SEt 2")



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 main LCD 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 continues to increase when the magazine is removed and replaced with a different magazine. 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 any of the digits.

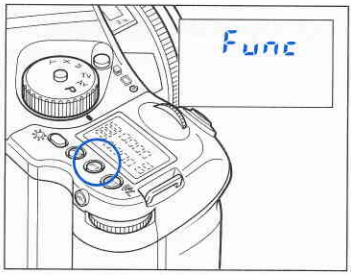
★Once the total number of photos taken reaches 999, counting starts over from 001. 000 can also be set using the index number setting procedure.

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

★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")

This function allows you to superimpose exposure or date information on the films outside edge of the image area. When selected, the superimposing mode is displayed on the main LCD panel.



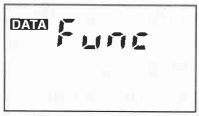
1. Set the shutter release mode selector lever to "S" (to turn the power on).

2. **Press the F1 Key for about 2 seconds** to display "Func" on the main LCD panel, then press the F1 Key again.

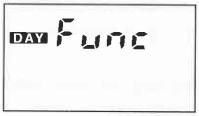
3. Turn either the front or rear dial and choose the **DATA** or **DAY** to superimpose. Select "OF" to cancel this function.

When the front or rear dial is turned clockwise
When the front or rear dial is turned counterclockwise

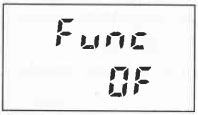
Data superimpose modes



DATA:
The following data is superimposed; Exposure mode, aperture value, shutter speed, aperture compensation value, exposure metering mode, index number, and auto bracketing order symbol (when selecting auto bracketing function).



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 in Button for about 2 seconds.** The setting is registered and the desired data superimpose mode is displayed on the main LCD panel.

★The data superimpose function is available with films having sensitivity from ISO25 to 1600. When using other films, even if the data superimpose function is used, data will not be superimposed.

Display superimposing data details.

Ex.1: When DATA mode is selected, and the following photographic conditions are set.

Exposure "**Av**" mode
Aperture value "**F8**"
Shutter speed "**1/60**"
Exposure metering "**AUTO A-S**" mode
Exposure Compensation "**– 1.0** " EV

Data superimposed on the film will be displayed as shown on the right···

① Exposure mode
② Aperture value
③ Shutter speed
④ Exposure compensation value / frame order with auto bracketing function: N, U, and O
⑤ Exposure metering mode※
⑥ Index number

Data superimposed with manual operation

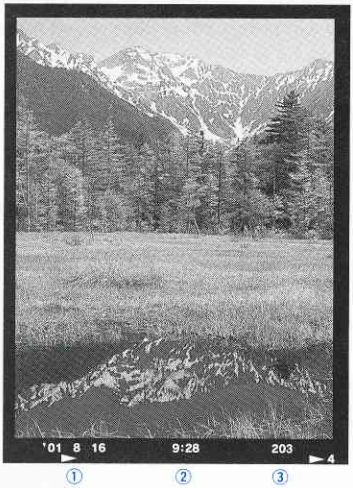
① Exposure mode
② Aperture value
③ Shutter speed
④ Automatic exposure display
⑤ Exposure metering difference display
⑥ Exposure metering mode※
⑦ Index number

★When manual operation is selected and when the exposure metering difference exceeds ±6EV, "– ◻ –" or "– ◻ –" will be superimposed on ⑤.

※When the exposure metering mode is selected as AUTO A-S (automatic change between average and spot), and if "**A**" is selected, "＊A" will be superimposed. If "**S**" is selected, "＊S" will be superimposed. If "**AUTO A-S**" is selected, "As" will be superimposed.

Ex.2: When DAY mode is selected

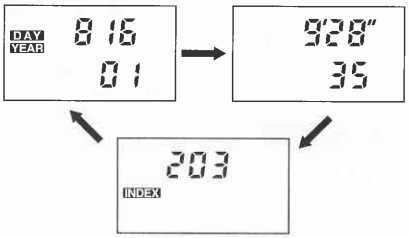
If you were to take a photo at 9:28 on August 16, 2001, the data superimposed would be as follows:···



① Year, month, and date
② Time
③ Index number

How to check data that will be superimposed

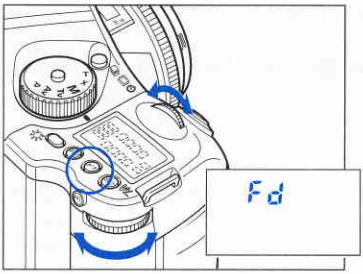
Keep pressing the SET button in for approximately two seconds, year, month, and date will be displayed on the main LCD panel. Each press of the SET button will show the details in order of "year, month, date" → "time" → "index number".



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

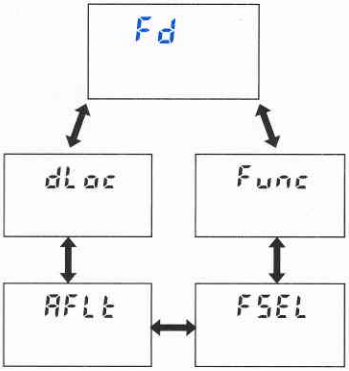
Changing the Viewfinder Display in the Manual Mode"M" (select "Fd")

When the exposure mode setting dial is set to "**M**", it is possible to display only the focus marks and flash charge mark in the viewfinder's LCD panel. This is useful when exposure settings will not change, and this information in the viewfinder could be otherwise distracting.

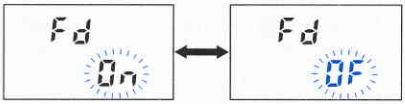


1. Set the shutter release mode selector lever to "**S**" (to turn the power on).

2. Press the F1 Key in 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 in again and turn the front or rear dial to select "OF".

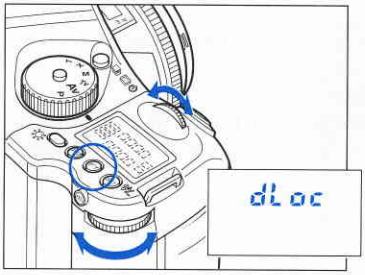
5. Press the SET Button in for about 2 seconds to register the setting.
Only the focus marks (▶, ● and ◀) and the flash charge mark ϟ (indicating that flash charging is completed) are displayed on the viewfinder's liquid crystal display panel.

Returning to the normal display

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

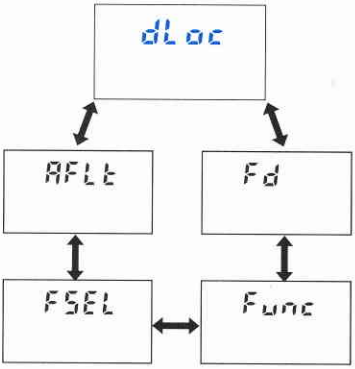
Front / Rear Dial Lock Mechanisms (select "dLoc")

When the Electronic Dial Lock is "On", all currently set values in "**Av**" (Aperture Priority AE), "**Tv**" (Shutter Priority AE) and "**M**" (Manual mode) cannot be adjusted with the front or rear dials. This prevents accidental adjustment of shutter speed or aperture values.

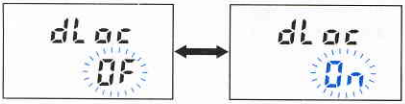


1. Set the shutter release mode selector lever to "**S**" (to turn the power on).

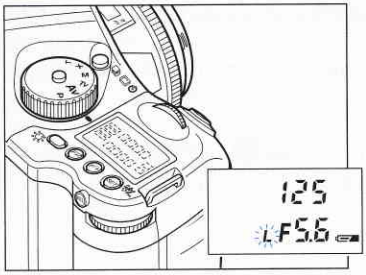
2. Press the F1 Key in for about 2 seconds. "Func" appears on the external liquid crystal display panel.



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



4. Press the F1 key in again, and the "OF" indicator will blink. Turn the front or rear dial to select "On".



5.Keep pressing the SET button in for approximately two seconds to register the value. When registered, the main panel shows "L" (dial lock indicator).

★After the value has been registered, the shutter speed and aperture will not change even if you turn the front or rear dial.

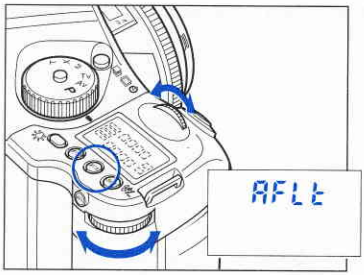
★When you activate the electronic dial lock, and if you then operate the electronic dial, the dial lock indicator "L" on the main panel blinks for three seconds to show that the electronic dial lock is functioning.

How to release the electronic dial lock

★Follow the same steps from 1 to 4. Then, turn the front or rear dial to select "OF", and press the SET button in for approximately two seconds.

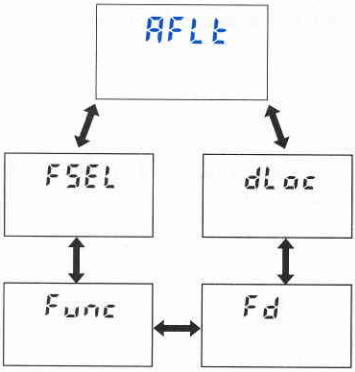
AF supplemental infrared light canceling function (select "AFLt")

Specify this function when you do not want to activate the AF supplemental infrared light.

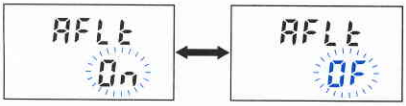


1. Turn the shutter release mode selector lever to the "S" or "C" position.

2. Keep pressing the F1 key in for approximately two seconds, and the main panel shows "Func".



3. Turn the front or rear dial to select "AFLt".



4.Again press the F1 key in, and turn the front or rear dial to select "OF".

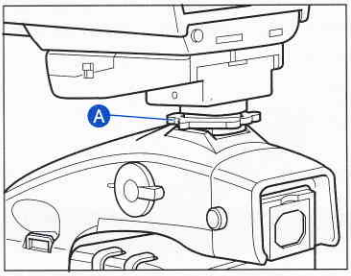
5.Keep pressing the SET button in for approximately two seconds to register the setting.

How to exit this function

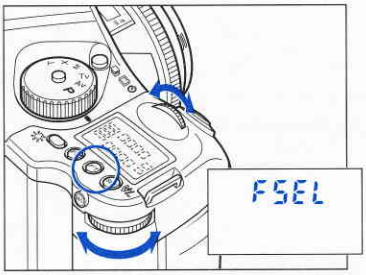
★**Follow the same steps from 1 to 4. Then, turn the front or rear dial to select** "On" **and press the SET button in for approximately two seconds.**

Changing the Flash Auto Adjustment Procedure (select "FSEL")

Flash compensation and exposure compensation can be set independently, combined with the use of a Metz flash and SCA3952 adapter.

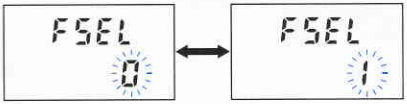


1. Install the SCA3952 adapter on the Metz flash, and put it on the camera then lock the flash in place using the locking knob on the flash shoe Ⓐ. Turn the shutter release mode selector lever to the "S" or "C" position, and turn ON the flash power switch.

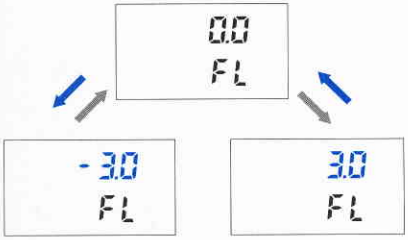


2. Press the F1 key in for approximately two seconds, the main panel shows "Func". Turn the front or rear dial to select "FSEL".

NOTE:
When flash selection "FSEL" is set to "FSEL 0", the exposure compensation dial is not workable, only the flash compensation is workable.

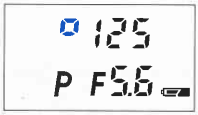


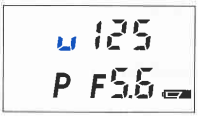
3. Again press the F1 key in, and turn the front or rear dial to select " 1 " Press the SET button in for approximately two seconds to register the setting. Flash compensation and exposure compensation can be set independently.



4. Turn ON the flash unit.
Press the SET button in to show " 0.0 FL " (flash compensation)Turn the front or rear dial to select the flash " ± " compensation value. Turn the exposure compensation dial and select the exposure compensation value (see page 56).

Main LCD panel (normal display)





5. Half press the shutter release button, the "▫" (if positive adjustment) or"▫" (if negative adjustment) display appears to the left of the shutter speed indicator on the main LCD panel and viewfinder LCD read-outs.

Viewfinder LCD read-outs.

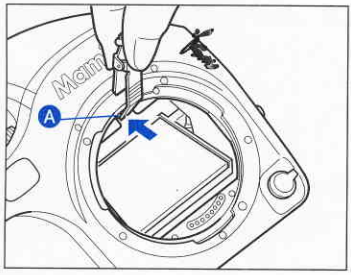
★ **If you turn the shutter release mode selector lever to the "L" (power OFF) position, the flash compensation value will be canceled and return to the initial "0.0 FL" value.**

How to exit this function

★**Follow the same steps from 1 to 4. Then, turn the front or rear dial to select "0" and press the SET button in for approximately two seconds.**

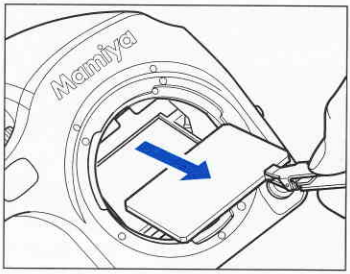
Miscellaneous operations

Changing The Focusing Screen



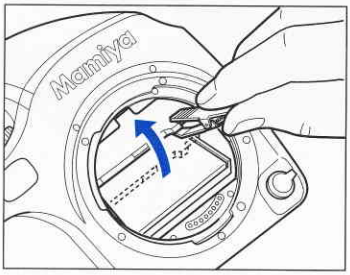
1. Remove the lens.

2. Pull the Focusing Screen Release lever Ⓐ forward, as illustrated as shown, with the tweezers to release the Focusing Screen.

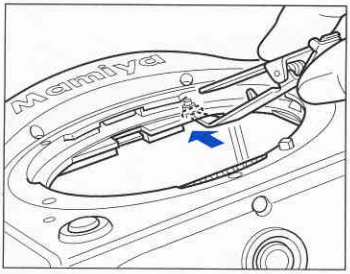


3. Remove the Focusing Screen from the Focusing Screen Frame by grasping the tab on the edge of the screen with tweezers as illustrated.

★Do not touch the mirror or allow it to be damaged in any way.



4. When installing the screen, pinch the protruding part of the screen using the screen holder, and put the screen on the screen frame.



5. Push up the screen frame up using the tweezers until hearing a clicking sound.The screen is now properly installed.

★Never press down on other parts as this will affect the focus function.

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.

★If the Focusing Screen needs cleaning, send it to the nearest authorized Mamiya service center. Do not attempt to clean the surface of the Focusing Screen, as it is very delicate.

Using the M645 Manual Focus Lenses

When using the MAMIYA M645 manual focus lens, mount the focusing screen for manual focus lenses (sold separately).

1. Mount the M645 lens on the camera body, turn the A/M lever on the lens to the "M" position. Set the lens to maximum aperture compose and focus.
You may use the focus mark to adjust focus.

2. Select exposure mode and set the desired lens aperture.

★With the AE operation, select the "Av" (aperture priority AE) and choose the spot exposure metering mode "S", you can use the lens in conjunction with stop-down metering.

3. Half press the shutter release button to show shutter speed.

Available functions with M645 lens

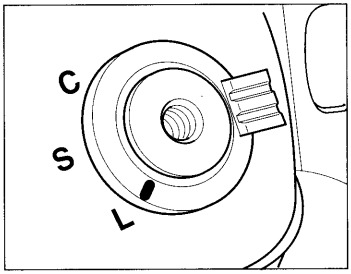
		P	Av	Tv	M	X	T
Exposure mode		×	○	×	○	○	○
Exposure-metering mode		×	○	×	○	×	×
Exposure compensation		×	○	×	○	×	×
Function mode	**Auto-bracketing mode**	×	○	×	○	×	×
	Multiple-exposure mode	×	○	×	○	○	○
	Self-timer mode	×	○	×	○	○	○

× = not an available function
○ = available function

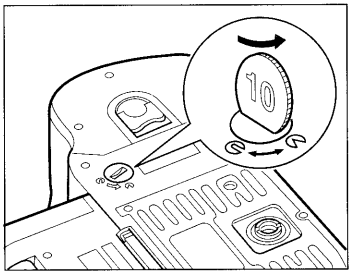
★When using a lens having a lens aperture of f/5.6 or larger, you can adjust focus using the focus assist marks in the 645AFD viewfinder. When the lens' A/M lever is set to "M" and the aperture is stopped-down more than f/5.6, you cannot adjust the focus using the focus mark●. In this case, the out of focus direction marks ▶ ◀ will blink and show that the picture is out of the focus adjustment range.
★The AF supplemental infrared light does not emit with these lenses.

External battery socket

When using an external battery case for cold weather operation (sold seperately ; PE401), connect it to the external power socket.

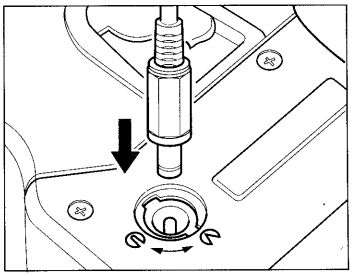


1. Set the shutter mode selector lever to "**L**".



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

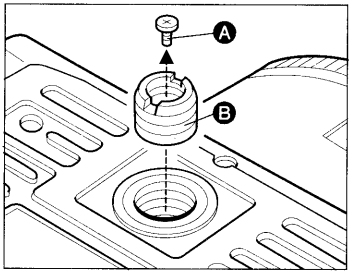
3. Remove the batteries from the camera's battery case.
Turn the battery case detach lever, remove the battery case, remove the batteries, then re-insert the battery case into the body and lock the battery case lever again.



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

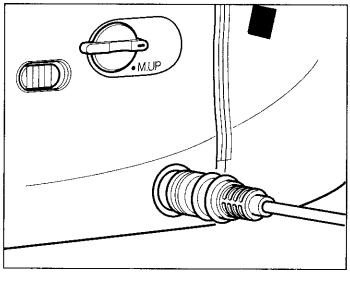
★Be sure to attach the battery case to the body.
★The camera will operate even if the batteries are not removed from the battery case, but remove them for the safety of the camera's body.

Using a Tripod



When using a tripod with 3/8 inch screw thread (instead of 1/4 inch screw thread) remove the small screw Ⓐ from the tripod screw hole on the bottom of the body using a plus screwdriver, then use a coin to remove the tripod screw adapter bushing Ⓑ.

Electronic Shutter Release Contact



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

#804821	1m (3')
#804822	5m (15')

Memo Clip

The Memo Clip on the Back Cover accepts the box top of the film carton and can also be used for other reminders.

When you think something might be "faulty."

In the conditions below or when the LCDs display the items listed in pages 95 and 96, they are not necessarily faults. Check the camera while referring the descriptions below.

Unable to release the shutter
Check to see if the batteries are installed. Check to see if the batteries are dead.
Check to see if the power is on (the shutter release selector lever should be set to "**S**" or "**C**" position).
Check to see if the dark slide has been removed.
Check to see if the camera is set to the correct ISO sensitivity (ISO indicator blinks).
Check to see if the camera is advancing the film.
Check to see if the rear door is open if film is not inserted.

The viewfinder does not show LCD read-outs.
Check to see if the batteries are installed. Check to see if the batteries are dead.
Check to see if the power is on (the shutter release selector lever is other than in the "**L**" position).
Check to see if the camera is set not to display the viewfinder LCD read-outs (selected "**M**").
Check to see if the magazine is installed.
If the camera has not operated for longer than 15 seconds, the viewfinder LCD read-outs will automatically disappear.

The dark slide cannot be pulled out
Check to see if the batteries are installed. Check to see if the batteries are dead.
The magazine is not mounted onto the camera.

Film cannot be wound.
Check to see if the batteries are dead.
The film still has some remaining frames.
Check to see if there is film loaded into the camera.
Check to see it the camera is in multiple exposure mode.

This camera employs a microcomputer. It is possible that the camera may malfunction when exposed to static electricity or the like. In this case, turn OFF the camera power and then remove the batteries. Reinstall the batteries, then turn the power on. If the camera does not function properly after these steps, contact our sales office or service center.

When any of these displays appear

LCD display			Problems
Main LCD panel	Viewfinder LCD read-outs	Magazine LCD	
End	—	End	* When operating the camera in the shutter release "**C**" mode (continuous winding mode), if the number of frames exceeds the if the number of frames possible to exposure is reached, this indicator appears for three seconds.
End	—	—	* When operating with multiple exposures and in shutter release "**C**" mode (continuous winding mode), if you keep pressing the shutter release button, and after completing the set number of frames for multiple exposure, this indicator appears and releases the mutiple exposure mode.
—	—	End	* When there are no frames left on the film and the camera has completed winding of the film,this indicator appears.
—	—	- -	* This indicator appears when a roll of film is not loaded.
—	—	- -	* This indicator appears when a roll of film is not rewound properly.
—	▶ ◀	—	* When operating in the one shot "**S**" mode if the camera cannot adjust focus with the auto focus function, you cannot release the shutter.
—	▶ ◀	—	* When a M645 lens is installed and the aperture is less than F5.6, this indicator appears.
batt	batt	—	* This indicator appears when the battery capacity is low.
-no- AE	-no-	—	* In the exposure modes of "**P**", "**Av**", or "**Tv**", and selecting the mirror up function, if you press the shutter release button, this indicator will appear and you cannot take a photo.
-no- AE	-no-	—	* When using AE lock and the mirror up function, if you release AE lock, and try to press the shutter release button, this indicator will appear and you cannot take a photo.
-no- AE	-no-	—	* When using AE lock and the mirror up function, AE lock will be Automatically released after one hour. When you try to release the shutter under these conditions, you cannot trigger the camera.
-no-	—	—	* In auto-bracketing mode and exposure mode if "**X**" or "**T**" is selected and you try to press the shutter release button, this indicator will appear and the auto bracketing function will be deactivated.
-no-	—	—	* In auto-bracketing mode and when the exposure mode is "**P**" "**Av**", **Tv** or "M", and operating in continuous "**C**" mode, if the number of frames remaining on a film is less than three, and you try to press the shutter release button, this indicator will appear and the auto-bracketing function will be deactivated.
-no-	—	—	* When using the camera with a flash, and the auto-bracketing function is selected, and you then try to press the shutter release button, this indicator will appear and the camera will exit the auto-bracketing function.
-no-	—	—	* When the multiple-exposure mode is selected if you remove the magazine, this indicator will appear and the camera will exit the multiple-exposure mode. However, the magazine does not exit from multiple-exposure mode.
-no- Fb	-no-	—	* The shutter will not operate when the dark slide is inserted into the magazine. If you try to press the shutter button,this indicator will appear.
-no- Fb	-no-	—	* The shutter will not operated when the magazine is not installed onto the camera body. If you try to press the shutter.
u o	u o	—	* When the flash compensation value is negative value, "u" will be displayed. When the flash compensation value is positive value, "o" will be displayed.
—	- u - - o -	—	* While in manual operation mode, and when the difference between the set value and metered value exceeds 6EV, this indicator will appear.
F- -	- -	—	* This will appear when a lens is not installed. * When a M645 lens is installed.
Err- 01 Err- 02 Err- 03	—	—	* When "**Err**" appears, some abnormality has been detected in the course of taking photos.

Causes and remedies	Reference page
Remedies	
· Insert fresh roll of film.	46
	61
· Take out the film and the "End" indicator will disappear.	35
· Install a roll of film into the camera.	30
· Install a roll of film into the camera.	
· Try to adjust focus again, or change to the focus lock mode or manual focus mode.	33
· Make the lens aperture larger than f/5.6.	42
· Replace with new batteries.	14
· Exit mirror up function.	68
· Exit mirror up function.	68
· Auto bracketing is not available in this mode.	57,58
· Auto bracketing is not available in this mode.	58
· Auto bracketing is not available in this mode.	
· Continue to shoot in the multiple-exposure mode, or pull the dark slide and simultaneously press the film winding button and shutter release button.	62
· Remove the dark slide from the magazine.	30
· Install the magazine onto the camera body.	
	74,87
· Change aperture or shutter speed.	52,60
· Install a lens on the camera body.	91
· Replace with new batteries and press the shutter release button. If the "Err" indicator still does not disappear, put the dark slide into the magazine. While pressing the film-rewinding button, half press the shutter release button to rewind and take out the film. Then contact our sales office or service center.	94

Specifications of 645AFD

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, stopped-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 Matte (standard) and Checker and Microprism Type C for Non-AF 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) and flash ready / OK lamp with TTL Metz connection.
AF sub-beam	: activates automatically under low light, low contrast. Range: 9m, 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 half-stop increments; 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 19 (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; ±6EV (1/3 step)

* This information is based on a linear (horizontal/vertical) measurement.
Specifications and features are subject to change without notice.

Shutter	: Electronically controlled vertical metal focal-plane shutter. (vertical travel)
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, 0.3, 0.5, 0.7, 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 SCA3002 system (SCA3952 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 (2 to 6 exposures); can be cancelled
Main LCD panel	: On camera body; shows aperture value, shutter speed value, self-timer, BL (Backlight), 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 on body
Tripod Socket	: U 1/4 inch and U 3/8 included
Power Requirements	: 6 AA-size batteries (alkaline-magnesium, lithium)
Size	: 6 "(W)X5 "(H)X7.3 "(D) / 153(W)X128(H)X184(D)mm
Weiqht	: 3.8pounds / 1,730g (W/O battery)

Common Sense Camera Care and Practice

The Mamiya 645 AFD 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 the 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 long 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.
- 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 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.

After-Sale Servicing

☆Be sure to read the terms and conditions in the warranty card.

1. For inquiries, opinions or questions concerning the product, please contact your nearest Mamiya agent or service center.
2. Servicing after the expiration of the period specified in the warranty card will be charged to the user. The freight and transport costs should always be paid by the user.
3. The servicing parts for use in repair of the product will be retained at the factory for ten years from the date of discontinuation of production.

◎The servicing is available for the same period as the servicing part retention period. As the product may be serviceable even after this period, please consult your dealer or nearest Mamiya service center for the serviceability.

☆Servicing of malfunction or damage due to dropping, impact, fire, flood, etc.

1) The degree of such a malfunction or damage will be judged by the Mamiya service department.
2) Such a malfunction or damage will be classified either non-serviceable or serviceable. When the product is classified to be serviceable, it will be repaired at the expense of the user, even if the malfunction or damage occurred within the warranty period.