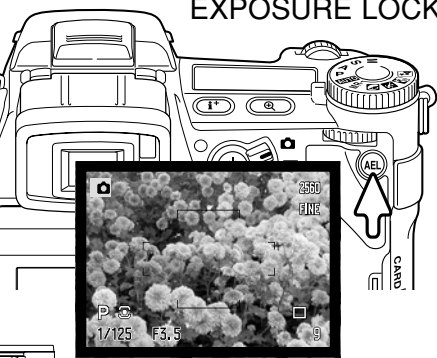


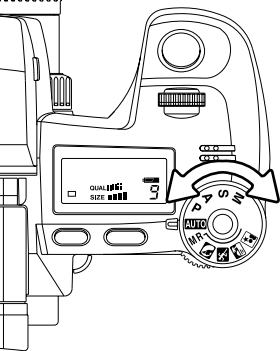
EXPOSURE LOCK







The AE lock button locks the automatic exposure system. This function allows the exposure to be set by a gray card or reference target outside the scene. When using flash in the P or A exposure modes, slow-shutter sync is active (p. 87). The operation of the AE lock button can be customized in section 1 of the recording menu (p. 94).

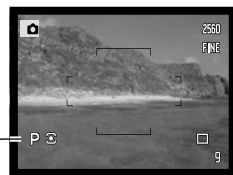
Press and hold the AE lock button to lock the exposure; the shutter speed and aperture monitor displays turn black; releasing the button cancels the setting. Frame the subject and press the shutter-release button partway down to lock focus.

EXPOSURE-MODE DIAL



The exposure-mode dial is used to select traditional exposure modes as well as subject programs that optimize camera settings to specific shooting conditions. Camera settings saved in the camera can also be recalled with this dial. Simply turn the dial to the appropriate position.

- M** Manual exposure (p. 56)
- S** Shutter priority (p. 55)
- A** Aperture priority (p. 54)
- P** Program exposure (p. 51)
- AUTO** Auto recording (p. 52)
- MR** Memory recall (p. 73)
-  Portrait subject program (p. 58)
-  Sports action subject program (p. 58)
-  Sunset subject program (p. 58)
-  Night portrait subject program (p. 58)



Exposure-mode indicator

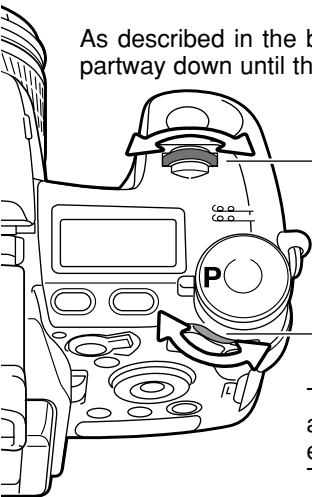
PROGRAM - P

Program exposure is set with the exposure-mode dial (p. 50). The program AE uses luminance and focal-length information to calculate exposures. This allows the photographer to shoot without worrying about exposure settings. The shutter speed and aperture values of the exposure are displayed on the monitors and data panel. If the brightness level of the scene is outside the exposure control range of the camera, the shutter-speed and aperture displays turn red on the monitors and blink on the data panel.

PROGRAM SHIFT - Ps/PA

Program-shift function allows adjustment to the shutter-speed/aperture combination determined by the camera. The built-in flash cannot be used with program shift. The camera gives priority to the flash exposure; once the flash is raised, any changes made with program shift will be canceled.

As described in the basic recording operation (p. 33), press the shutter-release button partway down until the shutter speed and aperture value are displayed.



Turn either the front or rear control dial to shift the shutter speed and aperture combination; each combination gives the equivalent exposure. The values are shifted in 0.3Ev or 1/3 stop increments. The front dial changes the shutter speed (Ps) and the rear dial changes the aperture (PA). If the lighting changes, the shifted value remains fixed and the other display changes to compensate for the required exposure.

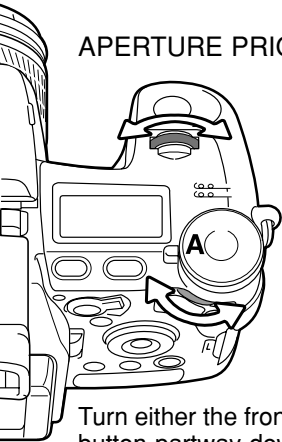
AUTO RECORDING

Auto recording is set with the exposure-mode dial. Auto recording is the same as the program exposure mode (p. 51), except that when the camera is on, if the exposure mode dial is turned to or from the auto position, the auto exposure mode is reset. Turning the camera off will not reset the mode. The following functions are reset:

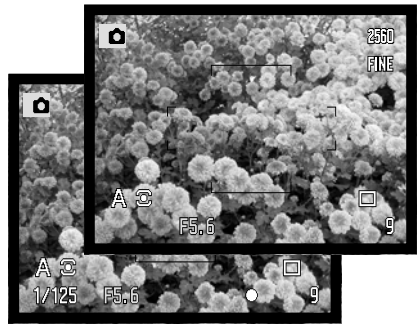
Display mode	Standard	p. 45
Exposure compensation	0.0	p. 59
Flash compensation	0.0	p. 59
Drive mode	Single-frame advance	p. 61
Anti-shake	On	p. 37
White balance	Auto	p. 70
White-balance shift	0	p. 70
Custom white balance	Memory reset to daylight	p. 70
Camera sensitivity (ISO)	Auto	p. 74
Metering mode	Multi-segment	p. 69
Contrast compensation	0	p. 77
Color-saturation compensation	0	p. 77
Filter	0	p. 77
Focus area	Wide focus frames	p. 33
Image size	2560 X 1920	p. 82
Image quality	Fine	p. 82
Flash mode	Fill flash	p. 86
Flash metering mode	ADI	p. 92
Flash output (Manual)	1/4	p. 92
AEL button	AE hold	p. 94
Interval	1 minute	p. 96
Number of frames (Interval)	2	p. 96
Start time (Interval)	0.0 hr	p. 96
Bracket setup	0.3Ev step	p. 96
Data imprinting	Off	p. 98
Imprint to	Image and Exif	p. 98

Instant playback	Off	p. 100
Voice memo	Off	p. 101
Color mode	Natural color (sRGB)	p. 102
Sharpness	Normal	p. 97
Noise reduction	On	p. 103
Monitor amplification	Auto	p. 104
Monitor amplification - Manual exp.	Exposure priority	p. 104
Magnification button	Digital zoom	p. 105
DSP setup	DSP (Digital Subject Programs)	p. 106
Subject tracking AF	On	p. 106
AE Lock	Off	p. 94
Spot AE area	Center spot	p. 107
Direct manual Focus (DMF)	Off	p. 107

APERTURE PRIORITY - A



Aperture priority is set with the exposure-mode dial (p. 50). The photographer selects the aperture and the camera sets the appropriate shutter speed to ensure the correct exposure. When A mode is selected, the aperture display on the monitors turns blue.



Turn either the front or rear control dial to change the aperture. Press the shutter-release button partway down to activate the exposure system; the corresponding shutter speed is displayed.

The aperture values can be changed by 0.3Ev or 1/3 stop increments between f/2.8 and f/11 at the lens' wide-angle position and f/3.5 to f/11 at the lens' telephoto position. If the aperture value is beyond the shutter-speed range, the shutter-speed display will blink on the data panel and turn red on the monitors.

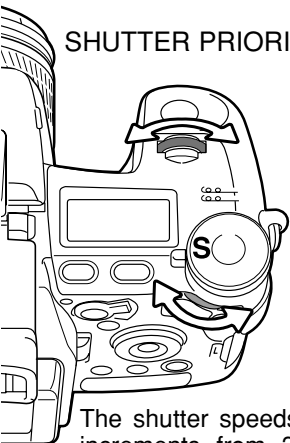
With the camera sensitivity (ISO) set to auto (p. 74), the shutter speed may not change when the aperture is adjusted because the shutter speeds can be adjusted in fine steps.

Camera Notes

When photographing scenes with very bright objects such as the sun at large apertures (f/2.8 or f/3.5), streaking may be apparent in the image. Black areas caused by a loss of data may result. In these situations, stop down the aperture or use neutral density filters to minimize the effect.

Do not point the camera toward the sun for prolonged periods of time. The intensity of the sun could damage the CCD. Between exposures, turn off the camera or cover the lens.

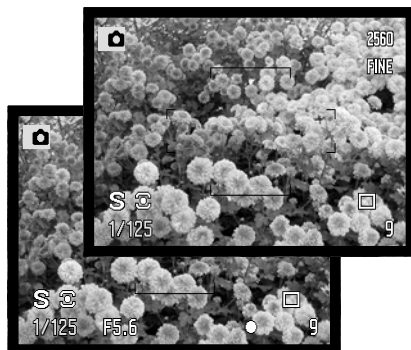
SHUTTER PRIORITY - S



Shutter priority is set with the exposure-mode dial (p. 50). The photographer selects the shutter speed and the camera sets the appropriate aperture to ensure correct exposure. When S mode is selected, the shutter speed display on the monitors turns blue.

Turn either the front or rear control dial to change the shutter speed. Press the shutter-release button partway to activate the exposure system; the corresponding aperture will be displayed.

The shutter speeds can be changed by 1/3 stop increments from 30 to 1/16000 second. If the shutter speed is beyond the aperture range, the aperture display will blink on the data panel and turn red on the monitors.



When using flash, the shutter speed should be set to the flash duration of flash unit to prevent underexposure. A maximum shutter speed of 1/1000s is recommended when using the built-in flash and 1/250s when using a compatible Minolta flash unit.

The yellow and white Anti-shake indicators do not appear in S mode.

Shooting tips

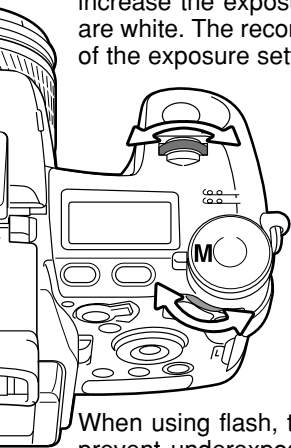
The self-timer drive mode (p. 68) can be used to minimize camera shake with long exposures. When using the camera on a tripod, photographs of static subjects (landscapes, still-lives, or close-up photographs) can be made with the self-timer. Because no contact is made with the camera during exposure, there is no risk of camera shake caused by the operator.

MANUAL EXPOSURE - M

Manual exposure mode allows individual selection of shutter speeds and apertures. This mode overrides the exposure system giving the photographer total control over the final exposure. Manual exposure is set with the exposure-mode dial (p. 50).

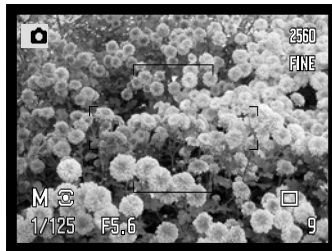
The shutter speeds and aperture values can be changed in 1/3 stop increments. The shutter speed range in manual exposure mode is 30 to 1/16000 second including bulb (p. 57). The camera sensitivity is set to ISO 100, but can be changed with the function dial (p. 74).

As changes are made to the exposure, the effect will be visible on the monitors. The shutter-speed and aperture display will blink on the data panel and turn red on the monitors if the image is extremely under or overexposed. If the monitors are black, increase the exposure until the image is visible; decrease the exposure if the monitors are white. The recording menu can be used to constantly display a live image regardless of the exposure setting (p. 104).



To set the shutter speed, turn the front control dial. To set the aperture, turn the rear control dial. The appropriate display will turn blue as the exposure is changed.

To use manual shift, press and hold the AEL button while turning the front control dial; both the shutter speed and aperture are changed without affecting the total exposure.

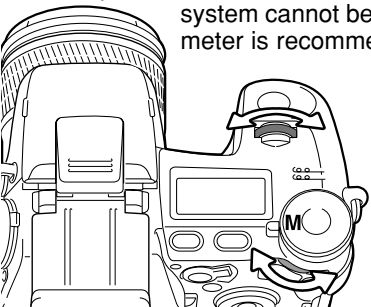


When using flash, the shutter speed should be set to the flash duration of flash unit to prevent underexposure. A maximum shutter speed of 1/1000s is recommended when using the built-in flash and 1/250s when using a compatible Minolta flash unit.

The operation of the manual exposure mode can be customized with the setup menu (p. 145). The yellow and white Anti-shake indicators do not appear in M mode.

BULB EXPOSURES

Bulb photographs can be taken in the manual-exposure mode (M). Exposures up to thirty seconds can be made by pressing and holding the shutter-release button. The use of a tripod and a remote cord is recommended for bulb exposures. The camera's exposure system cannot be used to calculate bulb exposures. The use of a separate light meter is recommended.



Use the front control dial to decrease the shutter-speed until “bulb” is displayed.

Use the rear control dial to set the appropriate aperture required for the exposure.

To take the picture, press and hold the shutter-release button for the duration of the exposure. Releasing the shutter button will end the exposure.

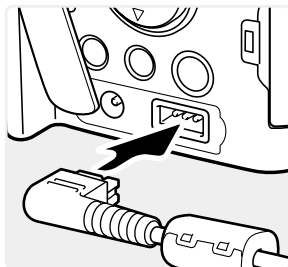
The monitors will be blank during the exposure. The shutter sound effect will signal the end of the exposure. The monitors will remain blank for up to 30 seconds while noise-reduction processing is applied to the image.



ATTACHING A REMOTE CORD (SOLD SEPARATELY)

The optional remote cords (RC-1000S or RC-1000L) can be used to reduce vibrations from touching the camera during long exposures. Before using the cord, attach the ferrite core supplied with the camera as described on page 161.

Remove the remote-control terminal cover using the notch on the right side of the cover. The cover is attached to the body to prevent loss. Insert the plug of the cord into the terminal.



DIGITAL-SUBJECT-PROGRAMS

Digital subject programs optimize the camera's exposure, white-balance, and image-processing systems for specific conditions and subjects. Simply turn the exposure mode dial to select the appropriate subject program.



Portrait - optimized to reproduce warm, soft skin tones and a slight defocusing of the background. Most portraits look best at a telephoto setting; the longer focal length does not exaggerate facial features and the shallower depth of field softens the background. Use the built-in flash with strong direct sunlight or backlight to reduce harsh shadows.



Sports action - used to capture fast action by maximizing shutter speeds. When using a flash, make sure the subject is within the flash range (p. 75). The flash range can be extended by changing the camera sensitivity (p. 74). A monopod is more flexible and compact than a tripod when shooting events.



Sunset - optimized to reproduce rich, warm sunsets. When the sun is above the horizon, do not point the camera toward the sun for prolonged periods of time. The intensity of the sun could damage the CCD. Between exposures, turn off the camera or cover the lens.



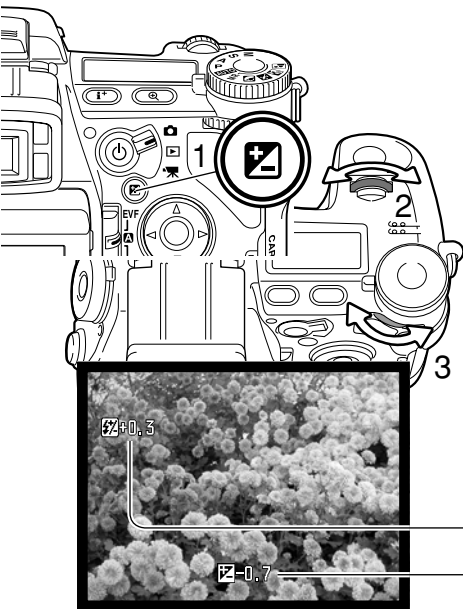
Night portrait - for deep, subtle night scenes. When used with flash, the subject and background exposures are balanced. Use a tripod to eliminate blurring from camera shake. The flash can only be used with close subjects such as with a portrait of a person. When using the flash, ask your subjects not to move after the burst; the shutter will still be open for the background exposure.

Not all recording functions, such as the metering mode, can be changed when using Digital Subject Programs.

EXPOSURE AND FLASH COMPENSATION

The ambient light and flash exposure can be adjusted before the image is captured to make the final picture lighter or darker. Exposure can be adjusted by as much as $\pm 2\text{Ev}$ in $1/3$ increments (p. 111). The exposure and flash compensation will remain in effect until it has been reset. For more on exposure and flash compensation, see page 110.

Adjustments to exposure must be set before the image is captured. When setting exposure or flash compensation, the change in Ev is shown on the data-panel aperture display and on the monitors. After the setting is made, the shutter-speed and aperture displays will indicate the actual exposure.



Press the exposure-compensation button (1).

Use the front control dial (2) to set exposure compensation.

Use the rear control dial (3) to set flash compensation.

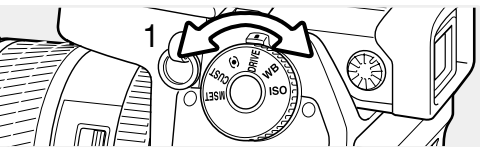
Press the shutter-release button partway down or press the exposure-compensation button to complete the operation. The values will automatically be set if a change is not made for a few seconds. If any other value except 0.0 was set, an indicator will be displayed on the monitor as a warning. Also see camera notes on page 65.

Flash compensation

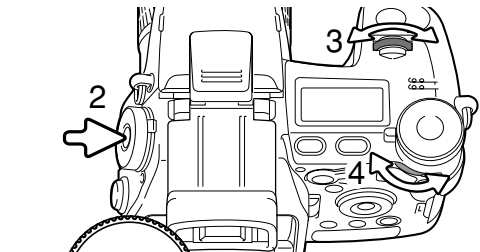
Exposure compensation

USING THE FUNCTION DIAL

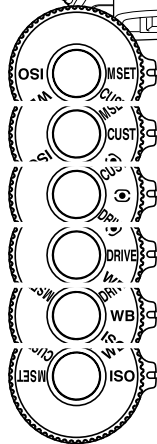
The memory function, metering mode, drive mode, white balance, and camera sensitivity are controlled by the function dial. The custom position is for a designate menu function that can be set in section 2 of the setup menu. Only white balance can be set in the movie recording mode.



Turn the function dial to the mode to be changed (1).



Press the function button in the center of the dial (2). Turn the front control dial to change the mode (3). Use the rear control dial (4) to select between options of various functions like a 10-second and 2-second self-timer, or a specific custom white-balance register. Press the shutter-release button partway down or press the function button to complete the operation. Changes are displayed on the monitors. Also see camera notes on page 65.



Memory set - to store camera settings (p. 72).

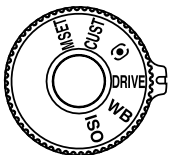
Custom function - to set the function designated in section 2 of the setup menu (p. 136).

Metering mode - changes the metering pattern (p. 69).

Drive mode - changes the method of image capture (p. 61).

White balance - changes between automatic, preset, and custom white balance (p. 70).

ISO - changes camera sensitivity (p. 74).



DRIVE MODES

The drive modes control the rate and method images are captured. Indicators showing the selected drive mode appear on the data panel and monitors. The drive mode is set with the function dial (p. 60).



Single-frame advance - to take a single image each time the shutter-release button is pressed (p. 33).



Bracketing - to take a series of images with differing exposure, contrast, saturation, and color (p. 62).



Continuous advance - to take a series of images when the shutter-release button is pressed and held (p. 64).



High-speed continuous advance - to take a series of images at approximately 2.8 frames per second (p. 64).



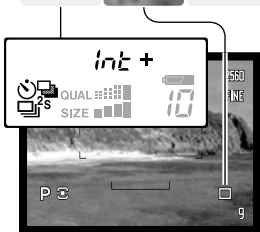
Interval - to take a series of images over a period of time (p. 66).



Interval and time-lapse movie - to take a series of still images and a movie clip of a slow moving event (p. 66).



Self-timer - to delay the release of the shutter by 10 or 2 seconds. Used for self-portraits (p. 68).

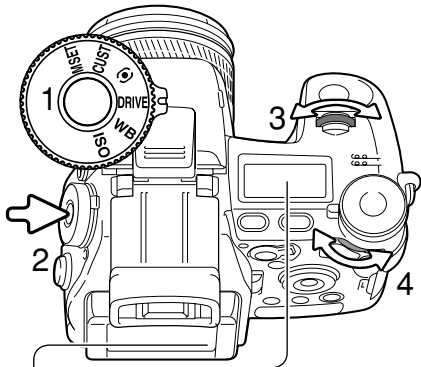


All indicators have been shown for clarity. The single-frame advance and continuous advance indicators occupy the same area of the data panel. All the drive-mode indicators appear at the same location in the monitors.

When a large amount of image data is captured in a short period, the camera's internal buffer memory becomes full; the frame counter turns yellow on the monitors. Time must be given for this data to be written to the memory card. Wait for the indicator to turn white before capturing more images.

BRACKETING

This drive mode makes a three image bracket of a scene. Bracketing is a method of taking a series of images of a static subject in which each image has a slight variation in exposure. Contrast, saturation, and filter brackets can also be made.

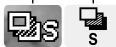


Turn the function dial to the drive mode position (1).

Press the function button in the center of the dial (2). Turn the front control dial to select the bracketing drive mode (3). Use the rear control dial (4) to switch among continuous-advance, single-frame advance, and Digital Effect brackets; the Digital Effect bracket depends on the position of the Digital Effect switch (p. 77). Press the shutter-release button partway down or press the function button to set the mode.



Continuous-advance bracket - the order of the exposure bracket series is normal exposure (as indicated by the camera), underexposure, and overexposure. The exposure bracket is set to 0.3Ev increments, but can be changed to 0.5Ev increments in section 2 of the recording menu (p. 96). If the memory card is filled or the shutter button is released before the series has completed, the camera will reset and the entire bracket must be made again.

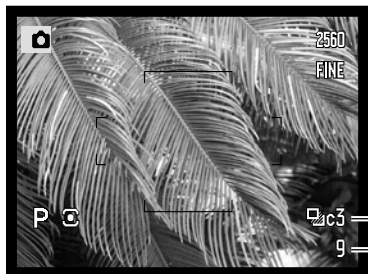


Single-frame advance bracket - the same as the continuous-advance bracket except that the shutter-release button must be pressed for each exposure. Focus does not lock with the first frame.

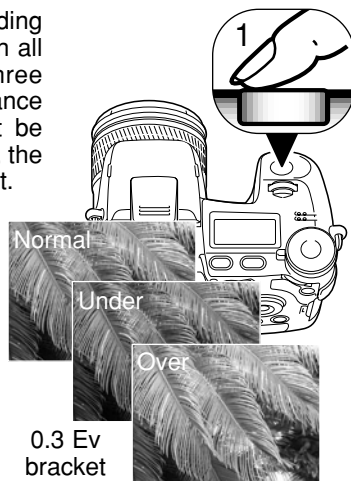


Digital Effect bracket - for filter, color saturation, or contrast brackets. Set the contrast, color saturation or filter to the desired level; the bracket series is from the Digital Effects Control setting to one unit under to one unit over. See the Digital Effects Control section on page 77 to set the contrast, color saturation, and filter.

Compose the picture as described in the basic recording section (p. 33). Press and hold the shutter-release button all the way down (1) to make the bracket series; three consecutive images will be captured. If single-frame advance bracketing is selected, the shutter-release button must be pressed for each exposure. If set to continuous AF (p. 46), the camera will continue to focus during a continuous bracket.



Number of frames in bracketing series
Frame counter



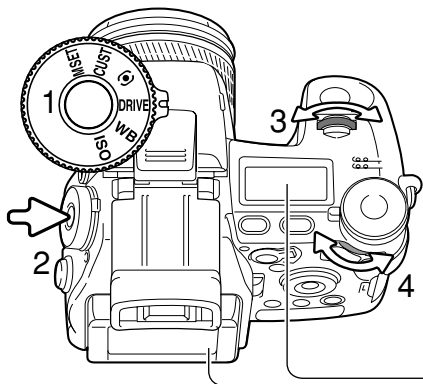
To make a flash bracket, set the continuous-advance or single-frame advance bracketing drive mode and raise the camera flash. The bracket will not advance automatically; the shutter-release button must be pressed for each exposure. The ambient exposure is not bracketed.

When exposure brackets are made in S exposure mode, the aperture controls the bracket. In A and M modes, the shutter speed controls the bracket. The camera will use both the aperture and shutter speed control the bracket in P mode.

With a Digital Effect bracket, if the contrast or color saturation is set to the maximum or minimum level (± 5), one bracket will be made at ± 6 : +5, +4, +6. A RAW image cannot exceed the maximum and minimum levels and will contain two identical brackets: +5, +4, +5. A black and white Filter bracket is made to the settings before and after the set Filter (p. 78). If Filter 10 is selected, the bracket series will be 10, 9, 0.

STANDARD AND HIGH SPEED CONTINUOUS ADVANCE

Continuous-advance mode allows a series of images to be captured while holding down the shutter-release button. Continuous advance acts like a motor drive on a film camera. The number of images that can be captured at one time depends on the image-quality setting; five with RAW images, and three with the other options. When the shutter-release button is pressed and held, the camera will begin recording images until the maximum number has been taken or the shutter button is released. The built-in flash can be used, but the rate of capture is reduced because the flash must recharge between frames.



Turn the function dial to the drive mode position (1). Press the function button in the center of the dial (2). Turn the front control dial to select the continuous-advance drive mode (3). Use the rear control dial (4) to switch between standard and high-speed continuous advance. Press the shutter-release button partway down or press the function button to set the mode.



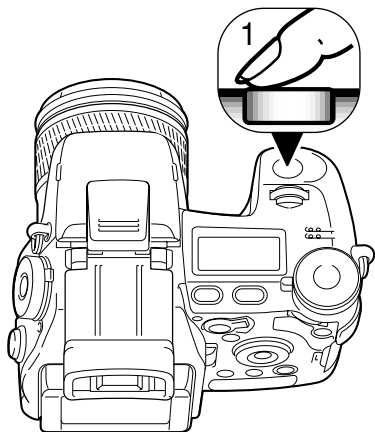
Standard continuous advance



High-speed continuous advance

Continuous advance - captures a series of images at 2.0fps. When used with continuous autofocus, the camera will adjust the focus during the series. The live image will be briefly displayed between frames.

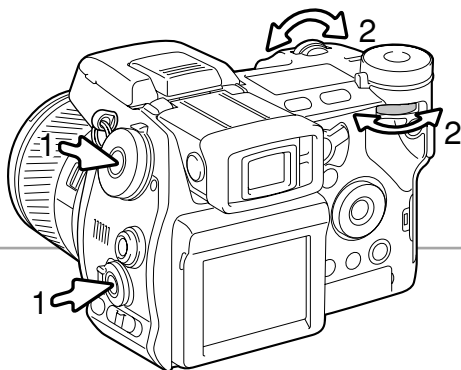
High-speed continuous advance - captures a series of full-size images at 2.8fps. The rate of capture decreases with images smaller than 2560 X 1920. Focus is locked with the first frame regardless of the focusing mode. The live image will freeze during the series.



Compose the picture as described in the basic recording section (p. 33). Press and hold the shutter-release button all the way down (1) to begin taking pictures. If the shutter-release button is continuously held down after the series, a new series of images will be capture after a short delay.

Camera Notes

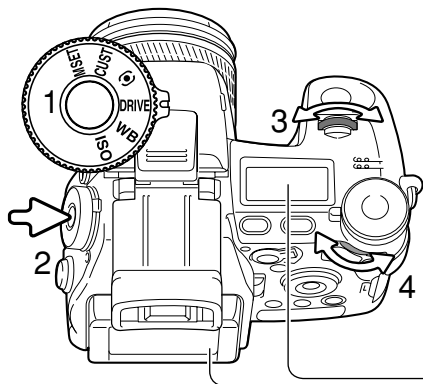
To change function dial or Digital Effects Controller settings quickly, simply press and hold the center dial or controller button (1) and select the setting with the front and rear control dials (2). Release the center button of the function dial or Digital Effects Controller to set the change. The exposure-compensation button can be operated the same way.



INTERVAL

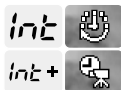
The interval mode makes a series of still or moving images over a period of time. Similar to time-lapse photography, a series of images of a slow moving event can be taken: the blossoming of a flower, the construction of a building. The built-in flash can be used. Instant playback (p. 100) is disabled.

The parameters of the interval series is set up in section 2 of the recording menu. The length of the interval between frames, the number of frames in the series, and the start time are set with the menu. See page 96.



Turn the function dial to the drive mode position (1).

Press the function button in the center of the dial (2). Turn the front control dial to select the interval drive mode (3). Use the rear control dial (4) to switch between the two interval modes. Press the shutter-release button partway down or press the function button to set the mode.

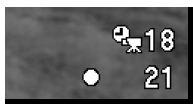


Interval

Interval and time-lapse movie

Interval - to create a series of still images specified within the parameters set on the recording menu.

Interval and time-lapse movie - to create a series of still images and a 640 X 480 movie clip specified within the parameters set on the recording menu. The movie file is played back at four frames per second.



Number of frames in the interval series

Frame counter

After mounting the camera on a tripod, compose the image so that the subject area falls within the focus frames; the camera sets the focus, exposure, and white balance, and charges the flash just before each exposure. Continuous AF can be used. Settings locked with the AE lock button are canceled after the first frame. To override the automatic systems, use manual focus (p. 46), manual exposure (p. 56), and preset or custom white balance (p. 70).

Confirm the memory card has enough storage capacity for the series by comparing the number of frames in the interval series with the number of recordable images displayed on the frame counter. Image size and quality settings can be changed to increase the number of pictures that can be saved on the memory card.

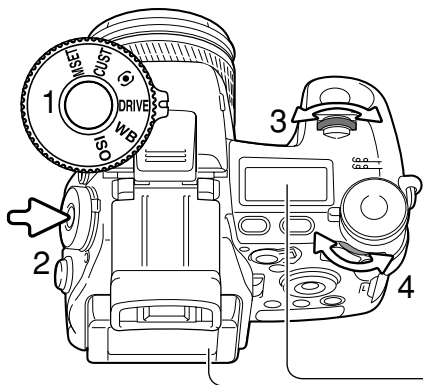
Press the shutter-release button to begin the series. During the interval series, the monitors will be turned off to conserve power. “Int” will be displayed on the data panel and the data-panel frame counter will countdown the remaining frames in the interval series. The access lamp will glow when an image is being recorded.



The camera will stop recording images and reset to the first frame when the number of frames set has been taken, or when the memory card is full. The use of an AC adapter is recommended when recording with long intervals or a large number of frames. To cancel the interval series, press the main switch or press the shutter-release button partway down.

SELF-TIMER

Used for self-portraits, the self-timer will delay the release of the shutter after the shutter button is pressed. A ten second and two second self-timer is available.



Turn the function dial to the drive mode position (1). Press the function button in the center of the dial (2). Turn the front control dial to select the self-timer drive mode (3). Use the rear control dial (4) to switch between a ten-second and two-second delay. Press the shutter-release button partway down or press the function button to set the mode.

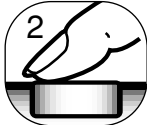


Ten-second self-timer

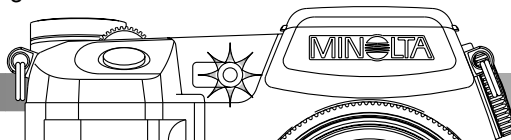
Two-second self-timer



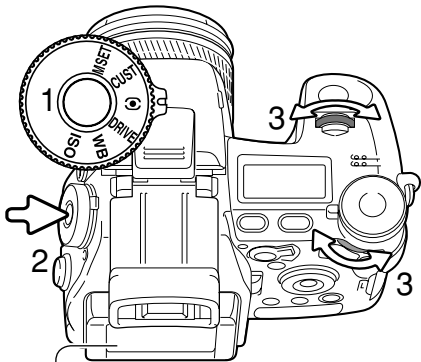
With the camera on a tripod, compose the picture as described in the basic recording section (p. 33). Focus lock (p. 34) or the Flex Focus Point (p. 48) can be used with off-center subjects. Press the shutter-release button partway down (1) to lock the exposure and focus. Press the shutter-release button all the way down (2) to begin the countdown. Because focus and exposure are determined when the shutter-release button is pressed, do not stand in front of the camera when taking a self-timer image. Always confirm the focus with the focus signals before beginning the countdown (p. 35).



The self-timer lamp on the front of the camera and the audio signals indicate the countdown. The lamp will glow steadily just before the shutter fires. To stop the countdown, press the menu or function button or change the position of the flash (lift it or push it down). When using the ten-second self-timer, the drive mode is reset to single-frame advance after the exposure. The audio signal can be turned off in section 3 of the setup menu (p. 141).



METERING MODES



Metering mode indicators are displayed on the monitors only. To lock the exposure while pressing the shutter-release button partway down, the AE lock option in section 4 of the recording mode menu should be on. If the luminance levels of the scene are outside the metering range, the metering indicator turns red.

Turn the function dial to the metering mode position (1). Press the function button in the center of the dial (2). Turn the front or rear control dials to select the metering mode (3). Press the shutter-release button partway down or press the function button to set the mode.



Multi-segment - uses 300 segments to measure luminance and color. This data is combined with distance information to calculate the camera exposure. This advanced metering system will give accurate worry-free exposures in almost all situations.



Center weighted - a traditional metering method in film cameras. The system measures light values over the entire image area with emphasis given the central region.

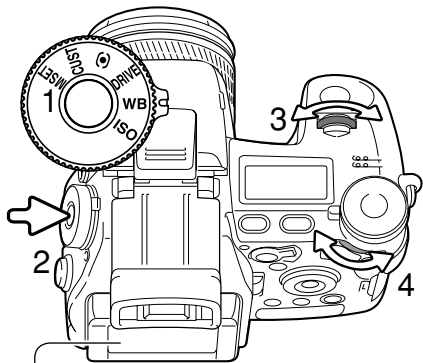


Spot - uses a small area within the image to calculate the exposure. When this mode is selected, a small circle will appear in the middle of the live image indicating the measuring area. The spot allows precise exposure measurements of a particular object without being influenced by extremely bright or dark areas within the scene. When using spot metering with the Flex Focus Point (p. 48), the spot circle can move with the focus point. This function is selected in section 4 of the recording menu (p. 107).



Spot metering display

WHITE BALANCE



White balance is the camera's ability to make different types of lighting appear natural. Any changes are immediately visible on the monitors.

Turn the function dial to the white-balance (WB) mode position (1).

Press the function button in the center of the dial (2). Turn the front control dial to select the white-balance mode (3). Use the rear control dial (4) to shift the color balance of the preset modes or to select the custom white-balance register. Press the shutter-release button partway down or press the function button to set the mode.

AWB

Auto white balance - to automatically detect the type of light and adjust the white balance accordingly. When the built-in flash is used, the white balance is set for the color temperature of the flash. When set, no indicators appear on the data panel or monitors.



Daylight



Tungsten



Fluorescent



Cloudy



Shade



Flash



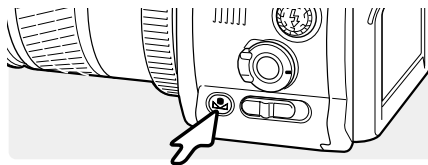
Custom white balance - to apply custom white-balance settings. The rear control dial can be used to select one of three custom registers. When set, an indicator appears on the monitors and WB on the data panel. See page 71 on how to make custom white-balance calibrations.

Preset white balance - to set the white balance to a specific light source. The rear control dial can be used adjust the white balance in seven levels: +3 to -3 (+4 to -2 for fluorescent). Except for fluorescent, the change of one unit is approximately equal to a 10 mired shift. When set, an indicator appears on the monitors and WB on the data panel. For information on light sources, see page 111.

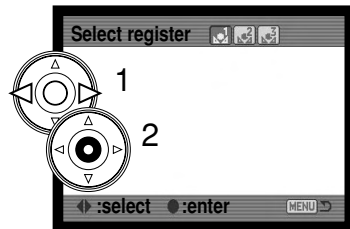
CUSTOM WHITE-BALANCE CALIBRATION

Custom-white-balance function allows the camera to be calibrated to a specific lighting condition. Three setting can be stored in the camera and used repeatedly. Custom white balance is especially useful with mixed-lighting conditions or when critical control over color is needed.

Select a white object and fill the the center of the live image with it; the object does not need to be in focus. Press and hold the custom white-balance button to calibrate the camera; the measuring area is briefly displayed before the shutter releases.



On the register-selection screen use the control dials or left/right keys of the controller (1) to select the custom white-balance register in which to store the setting; any previous setting is replaced. Press the central button of the controller (2) to complete the operation. The menu button cancels the operation without saving the setting.



If an error occurs during calibration, a message will appear on the monitors. Press the controller to cancel the message and press the menu button to cancel the register-selection screen; the custom white-balance indicator will be yellow to indicate the error. Recalibrate using a suitable reference target. A calibration error may occur under extremely bright light sources, especially with flash units. Use a gray card as the calibration target to reduce the intensity of the illumination.

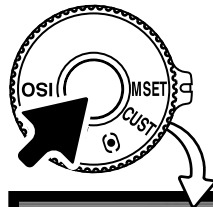
Shooting tips

When making the calibration, the color of the object used is critical. The object should be white. A colored object will cause the calibration to compensate for the object color rather than the color temperature of the ambient light. A blank piece of white paper is an ideal surface and can easily be carried in a camera bag.

MEMORY - STORING CAMERA SETTINGS

Five sets of camera settings can be saved. This saves time under frequently repeating conditions by eliminating the need to set the camera. Except for functions like subject programs, data imprinting, voice memo, and instant playback, most recording-mode camera settings will be saved including the position of the Flex Focus Point, the display mode, and changes made with the function dial and digital effects control. Settings are displayed before being saved. Although the Digital Effects bracketing drive mode setting can be saved, the type of bracket, contrast, color saturation, or filter, must be reset with the Digital Effects Controller.

To save the current camera settings, turn the function dial to the M SET position and press the function button to open the register-selection screen; the current camera settings are displayed.



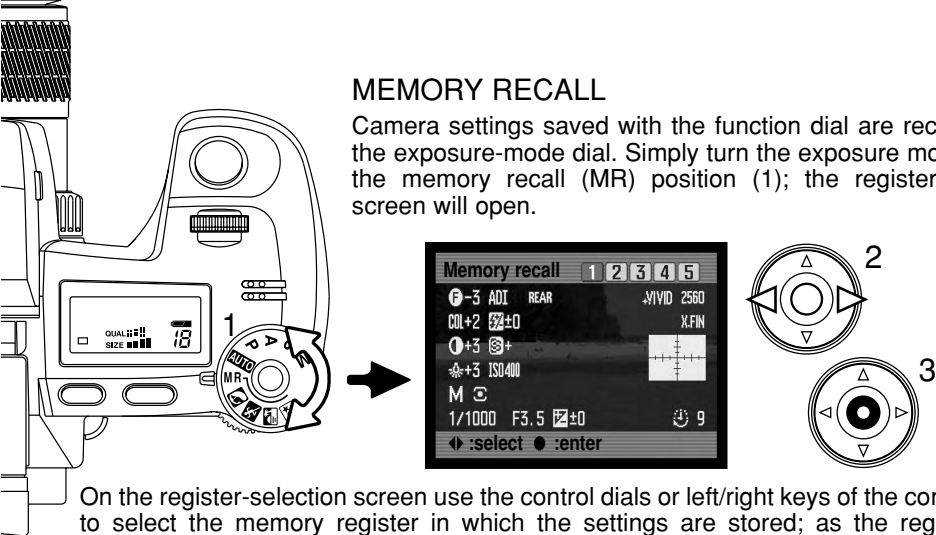
On the register-selection screen, use the control dials or left/right keys of the controller (1) to select the memory register in which to store the settings; any previous settings are replaced. Press the central button of the controller (2) to complete the operation. The menu button cancels the operation without saving the settings.



Camera settings cannot be deleted from memory by turning the camera off. They are erased with the reset function in section 3 of the setup menu.

MEMORY RECALL

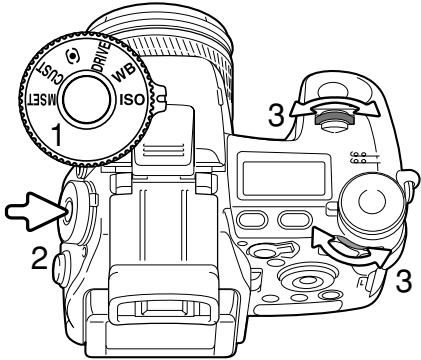
Camera settings saved with the function dial are recalled with the exposure-mode dial. Simply turn the exposure mode dial to the memory recall (MR) position (1); the register-selection screen will open.



On the register-selection screen use the control dials or left/right keys of the controller (2) to select the memory register in which the settings are stored; as the registers are selected the camera settings are displayed on the screen. Press the central button of the controller (3) to apply the settings to the camera. The menu button cancels the operation without recalling the settings.

To recall another set of settings in a different register, turn the exposure-mode dial to another position and then back to MR to open the memory-recall screen. Saved memory settings can also be assigned to the digital-subject-program positions on the exposure dial with section 4 of the recording menu. See page 106 for more information.

CAMERA SENSITIVITY - ISO



Five settings can be selected for camera sensitivity: Auto, 100, 200, 400, and 800; the numerical values are based on an ISO equivalent. ISO is the standard used to indicate film sensitivity: the higher the number, the more sensitive the film.

Turn the function dial to the ISO position (1). Press the function button in the center of the dial (2). Turn the front or rear control dials to change the camera sensitivity (3). Press the shutter-release button partway down or press the function button to set the mode.

The auto setting automatically adjusts the camera sensitivity to the light conditions between ISO 100 and 200. When any other setting than auto is used, “ISO” will appear on the data panel, and “ISO” and the set value will be displayed on the monitors.

Photographers can select a specific sensitivity setting. Like grain in silver-halide film that increases with speed, noise increases with sensitivity in digital imaging; an ISO setting of 100 will have the least noise and 800 will have the most. A change in ISO also affects the flash range; the higher the ISO, the greater the range.

As the ISO value doubles, the camera sensitivity doubles; changing the ISO between 100 and 200, 200 and 400, or 400 and 800 changes the camera sensitivity by one stop or 1 Ev (p. 111). A change between 100 and 800 changes the camera sensitivity by a factor of 8 or three stops. High ISO settings (400, 800) will allow the photographer to hand hold the camera in low-light conditions without the need of a flash.

FLASH RANGE AND CAMERA SENSITIVITY

For correct flash exposures, the subject must be within the flash range. The flash range can be extended by changing the camera sensitivity. When the camera sensitivity is set to auto, the ISO is set between ISO 100 and 200.

The flash range is measured from the CCD. Because of the optical system, the flash range is not the same at the lens' wide-angle position as it is at the telephoto position.

ISO setting	Flash range (wide angle)	Flash range (telephoto)
AUTO	0.5m ~ 3.8m / 1.6 ft. ~ 12.5 ft.	0.5m ~ 3.0m / 1.6 ft. ~ 9.8 ft.
100	0.5m ~ 2.7m / 1.6 ft. ~ 8.8 ft.	0.5m ~ 2.1m / 1.6 ft. ~ 6.9 ft.
200	0.5m ~ 3.8m / 1.6 ft. ~ 12.5 ft.	0.5m ~ 3.0m / 1.6 ft. ~ 9.8 ft.
400	0.5m ~ 5.4m / 1.6 ft. ~ 17.6 ft.	0.5m ~ 4.2m / 1.6 ft. ~ 13.8 ft.
800	0.5m ~ 7.6m / 1.6 ft. ~ 25 ft.	0.5m ~ 6.0m / 1.6 ft. ~ 19.6 ft.

ATTACHING A MINOLTA ACCESSORY FLASH UNIT

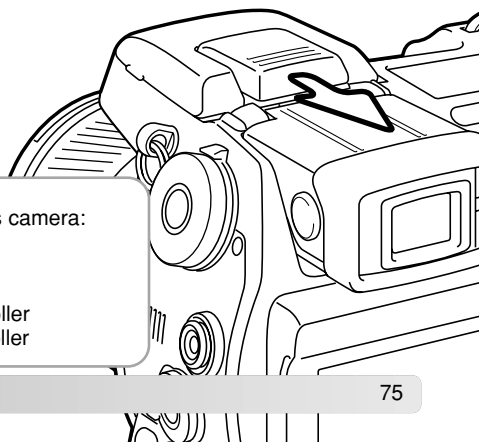
To extend the versatility of the camera, an accessory flash unit (sold separately) can be used. Always remove the accessory flash when the camera is not in use, and replace the accessory-shoe cap to protect the contacts.

Slide the accessory-shoe cap off as shown. Mount the flash unit on the accessory shoe by sliding it forward until it stops.

System Accessories

The following Minolta flash units are compatible with this camera:

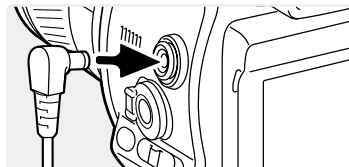
- Maxxum/Program Flash 2500(D)
- Maxxum/Program Flash 3600HS(D)
- Maxxum/Program Flash 5600HS(D)
- Macro Ring Flash 1200 with Macro Flash Controller
- Macro Twin Flash 2400 with Macro Flash Controller



USING THE FLASH SYNC TERMINAL

The flash sync terminal allows a studio or location flash system to be connected to the camera with a standard PC cord. The terminal is compatible with both center positive (normal polarity) and center negative (positive polarity) flash units with a voltage of 400V or lower.

Unscrew the terminal cover. Securely connect the flash's PC cord to the flash sync terminal. Confirm the flash is off before connecting the cable to prevent it from firing. Always replace the cover when the terminal is not in use.



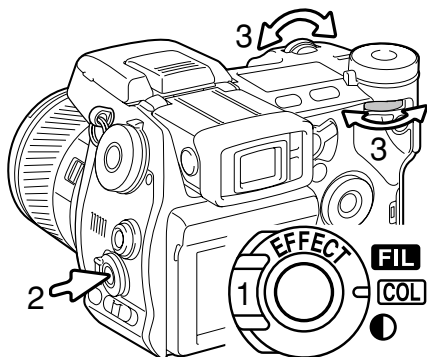
To ensure correct exposures, use the manual exposure mode (p. 56). Set the shutter speed equal to or slower than the flash duration; refer to the flash unit's instruction manual. If the monitor image is too dark, change the manual-exposure option under monitor amplification to display priority in section 3 of the recording menu (p. 104).

If the built-in flash is raised when another flash unit is connected to the flash sync terminal, both flash units will fire. However, the camera's automatic flash control systems will not provide correct exposures. To use the built-in flash as a fill light, use manual flash control (p. 92).

The use of custom white balance is recommended (p. 71). When calibrating the camera, use the shutter speed and aperture settings require for the final exposure. A gray card may have to be used as the reference target with powerful flash units to reduce the intensity of the illumination. If custom white balance is not practical, use the preset daylight or flash setting; auto white balance is not recommended.

DIGITAL EFFECTS CONTROL

The Digital Effects Controller can adjust image contrast, color, and saturation. Changes are instantly visible on the monitors before the image is captured.



Turn the Digital Effect switch (1) to the image characteristic to be adjusted.

FIL Filter **COL** Color-saturation  Contrast

Press the Digital Effects button (2) in the center of the switch; the setting screen is displayed. Turning the front or rear control dial (3) to make adjustments. Press the Digital Effects button again or press the shutter-release button partway down to set the adjustment. Also see camera notes on page 65.

Adjustments can be made repeatedly and in combination. Adjustments remain in effect until manually reset. When set to any value other than zero, an indicator and value will be displayed on the monitors as a warning.

COLOR-SATURATION COMPENSATION



The color saturation of a scene can be adjusted within eleven levels (± 5) with the Digital Effects Controller. Colors can be accented, positive value, or subdued, negative value.

Shooting tips

Unlike the display on a computer monitor, changes to contrast and color saturation can be difficult to judge on the monitor. To ensure the optimum level of contrast or color saturation, make a Digital Effect bracket (p. 62) of the scene.

CONTRAST COMPENSATION



The contrast of a scene can be adjusted within eleven levels (± 5) with the Digital Effects Controller (p. 77). The contrast must be set before the image is captured. When changing the contrast setting, an indicator is displayed to show an increase (+) or decrease (-) in contrast. If contrast is set to any other value than zero, the indicator and value remain on the displays as a warning.



Contrast decreased



Contrast normal



Contrast increased

FILTER



The overall color of a scene can be adjusted with the Digital Effect Controller. The Filter effects differ between the color mode in use, see the color examples on page 171. The filter must be set before the image is captured. When changing the setting, an icon and numeral will indicate the filter in effect. If the Filter is set to any other setting than zero, an indicator and value will remain on the displays as a warning.

When used with Natural Color, Vivid Color, or Adobe RGB, the Filter can be adjusted in eleven levels (± 5). A positive adjustment acts like a warming filter. A negative adjustment makes the image cooler.

When used with the black-and-white color mode, the Filter can tone the neutral monochrome image in eleven steps. The Filter effect cycles from neutral to red, to green, to magenta, to blue, and returning to neutral. The zero position is neutral. Black and white filter settings have no effect on RAW images.

Minolta History

On February 20th, 1962, John Glenn became the first American to orbit the Earth. On board his Friendship 7 spacecraft was a Minolta Hi-matic camera to record that historic event. The 4 hour, 55 minute, and 23 second flight orbited the Earth three times at an average speed of 28,000 kph (17,500 mph).

Mr. Glenn visited our Sakai camera factory in Japan on May 24th, 1963 to plant a palm tree to celebrate the occasion. The palm tree is still in the courtyard of the factory and stands over eight meters tall (26ft).

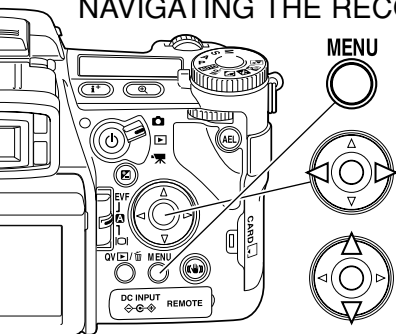
The camera? It was not lost. It is on display at the Smithsonian Institution's National Air and Space Museum in Washington D.C. This and other objects from John Glenn's Friendship 7 Mercury flight can be found in galley 210, "Apollo to the Moon."



RECORDING MENU

In recording mode, press the menu button to activate the menu. The menu button also closes the menu after making settings. The four-way key of the controller is used to move the cursor in the menu. Pressing the central button of the controller will enter a setting.

NAVIGATING THE RECORDING MENU



Activate the recording menu with the menu button. Tab 1 at the top of the menu will be highlighted.

Use the left/right keys of the controller to highlight the appropriate menu tab; the menus will change as the tabs are highlighted.

When the desired menu section is displayed, use the up/down key to scroll through the menu options. Highlight the option whose setting needs to be changed.



Press the right controller key to display the settings; the current setting is indicated by an arrow. To return to the menu options, press the left key.

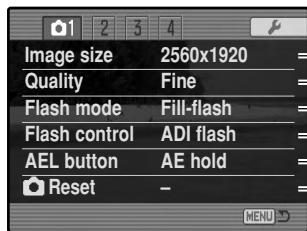


Use the up/down key to highlight the new setting. If “Enter” is displayed, press the central button of the controller to open the next screen.

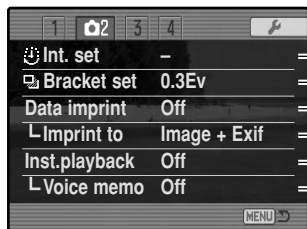


Press the central button of the controller to select the highlighted setting.

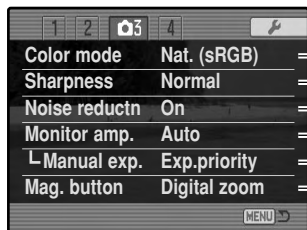
Once a setting has been selected, the cursor will return to the menu options and the new setting will be displayed. Changes can continue to be made. To return to the recording mode, press the menu button.



- To set image resolution (p. 82).
- To set file type and compression (p. 82).
- To set the flash mode of the built-in flash (p. 86).
- To set automatic or manual flash control (p. 92).
- To customize the operation of the AEL button (p. 94).
- To reset the recording-mode functions (p. 95).



- To set the interval drive mode parameters (p. 66)
- To bracket with 0.3Ev or 0.5Ev steps (p. 96).
- To imprint data on a recorded image (p. 98).
- To imprint to the image or Exif data (p. 98).
- To play back images after they are recorded (p. 100).
- To attach audio to images after instant playback (p. 101).



- To select color or B&W images, and color space (p. 102).
- To increase or decrease image sharpness (p. 97).
- To apply noise reduction to long exposures (p. 103).
- To activate automatic monitor amplification (p. 104).
- To set M exposure mode monitor preferences (p. 104).
- To set the digital zoom or Digital Flex Magnifier (p. 105).



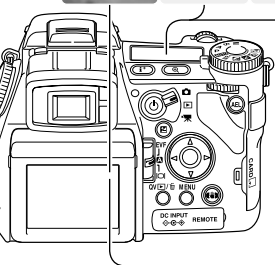
- To use Digital Subject Programs for memory recall (p. 106).
- To activate Subject Tracking AF (p. 106).
- To activate AE lock with the shutter-release button (p. 106).
- To select the spot metering area location with FFP (p. 107).
- To activate Direct Manual Focus (p. 107).

IMAGE SIZE AND IMAGE QUALITY

Image size and quality must be set before the picture is taken. Changes are displayed on the LCD monitor and data panel. Image size and quality are set in section 1 of the recording menu (p. 80).

2560	SIZE ■■■■	2560 X 1920
2080	SIZE ■■■	2080 X 1560
1600	SIZE ■■	1600 X 1200
640	SIZE ■	640 X 480

Changing image size affects the number of pixels in each image. The greater the image size, the larger the file size. Choose image size based on the final use of the image - smaller images will be more suitable for web sites whereas larger sizes will produce higher quality prints.



RAW QUAL ■■■■	RAW	Minolta RAW - high-quality raw data.
QUAL ■■■■	TIFF	A high-quality TIFF image.
QUAL ■■■	X.FIN	Extra fine - the highest quality JPEG file
QUAL ■■	FINE	Fine - the default setting. (JPEG)
QUAL ■	STD.	Standard - the highest compression. (JPEG)

Image quality controls the file type and rate of compression, but has no effect on the number of pixels in the image. TIFF and RAW are high-quality image files. The extra fine, fine, and standard settings produce JPEG files at various rates of compression. The higher the image quality, the lower the rate of compression and the larger the file sizes. If economical use of the memory card is important, use the standard mode. The TIFF and RAW mode will produce the highest quality image and the largest image files.

Only full-size images can be taken with RAW image quality. RAW images require special processing before they can be used, refer to the DiMAGE Viewer software manual. Some camera functions cannot be used with the RAW image-quality setting. See page 84 for more information.

The number of images that can be stored on a memory card is determined by the size of the card and the file size of the images. One memory card can contain images with differing sizes and qualities. The actual file size is determined by the scene; some subjects can be compressed further than others.

Approximate file sizes.					
Quality \ Size	2560 X 1920	2080 X 1560	1600 X 1200	640 X 480	
RAW	7,373KB	–	–	–	
TIFF	14,520KB	9,506KB	5,625KB	900KB	
Extra fine	4,920KB	3,289KB	1,995KB	420KB	
Fine	2,520KB	1,704KB	1,058KB	320KB	
Standard	1,491KB	1,025KB	656KB	240KB	
Approximate number of images that can be stored on a 16MB memory card.					
RAW	2	–	–	–	
TIFF	1	1	2	15	
Extra fine	2	4	7	35	
Fine	5	8	14	47	
Standard	10	14	23	63	

Camera Notes

The frame counter indicates the approximate number of images that can be stored on the memory card at the camera's image quality and size settings. If the settings are changed, the frame counter adjusts accordingly. Because the counter uses approximate file sizes, the actual image taken may not change the counter or may decrease it by more than one. When the frame counter displays zero, it indicates no more images at the image size and quality settings can be captured. Changing those settings may allow more images to be saved to the card.

ABOUT RAW IMAGE QUALITY

In the RAW image-quality mode, the image size is set at full and cannot be changed. The image size will not be displayed on the monitors. The digital zoom, enlarged playback, data imprinting, and print functions cannot be used.

Unlike the other image-quality modes, RAW image data is unprocessed and requires image processing before it can be used. To view the RAW data, the DiIMAGE Viewer software is required. This software can reconstruct the image and apply the same image processing controls as the camera. RAW data is saved as a 12-bit file; the DiIMAGE Viewer software can convert this data into 24-bit or 48-bit TIFF files.

A RAW image is stored with a file header that contains white-balance information, changes made to contrast, saturation, and color with the Digital Effects Control, any image processing applied in a subject-program setting, and changes to sharpness. The changes in camera sensitivity are applied to the RAW data; ISO values can be manually set to control noise (p. 74).

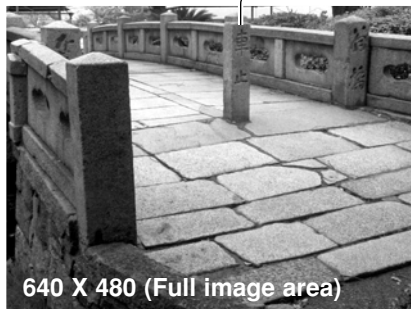
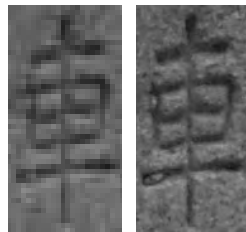
The camera's image-processing controls apply the affect of the color modes to the live image on the monitors, but the stored data may not be influenced by the setting. The black and white color mode has no effect on the final image; a raw image taken in the black-and-white color mode can be restored to a color picture. However, black and white filter effects (p. 78) are not applied to a RAW image. The saturation difference between the Natural Color and Vivid Color modes is preserved in the RAW data, but the solarization color mode does not alter the image data. For more on color modes, see page 102.

Minolta history

In the center of the Sakai plant in Japan is Okina bridge. In the 15th century, Sakai was a prosperous free city, and Okina bridge spanned the moat at one of the entrances into the walled town. For centuries, this bridge carried pilgrims on their way to two of Japan's sacred places: the mountain monastery of Koyasan and the great Shinto shrine, Kumano Taisha. The bridge in the courtyard dates from 1855, see photo on the next page. In 1968, Minolta offered to preserve the bridge when the city government announced they would fill in the moat for a planned highway. The bridge now spans a specially constructed goldfish pond. The writing on the stone bollard at the front of the bridge prohibits vehicles from crossing.

NOTES ON IMAGE SIZE AND RESOLUTION

Image size changes the number of pixels in the image. When displayed at the same resolution, images appear to have the same amount of detail, but the dimensions of the image increases with the number of pixels; except for the 640 X 480 image, the other pictures are too large to be displayed on this page. When the images are enlarged to the same dimensions, the difference in the recorded image size affects the resolution of details.



640 X 480 (Full image area)



1600 X 1200 (Cropped)



2080 X 1560 (Cropped)

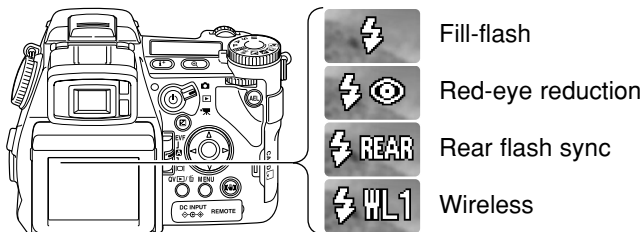


2560 X 1920 (Cropped)



FLASH MODES

The flash mode can be changed in section 1 of the recording menu (p. 80). For the flash to fire, the built-in unit must be manually lifted. The flash will fire in the selected mode regardless of the amount of ambient light. When the flash is used, the camera sensitivity is automatically set between ISO 100 and 200. This setting can be changed using the function dial (p. 74). The auto-white-balance setting will give priority to the flash's color temperature. If preset or custom white-balance settings are used, priority is given to the active setting's color temperature.



FILL FLASH

Fill-flash can be used as the main or supplementary light. In low-light conditions, the flash will act as the main source of illumination and overpower the ambient light. Under strong sunlight or in backlit situations, the fill-flash can reduce harsh shadows.



RED-EYE REDUCTION

Red-eye reduction is used when taking photographs of people or animals in low-light conditions. The red-eye effect is caused by light reflected from the retina of the eye. The camera will fire two pre-flashes before the main flash burst to contract the pupils of the subject's eyes.