

MINOLTA 110 ZOOM SLR



OWNER'S MANUAL



Your fine-quality compact Minolta 110 Zoom SLR is the world's first single-lens reflex for the 110 pocket format. Its 25 — 50mm genuine Rokkor also makes it the first 110 camera with the convenience of a 2X true-zoom lens. And it has built-in macro capability for exciting close-up focusing. Simply drop in a 110 film cartridge; no need to set film speed. Then you select the aperture, and the 110 Zoom's electronic exposure-control system automatically varies the shutter speed steplessly from 1/1000 to ten full seconds for pinpoint exposure over a wide range. And you can adjust exposure up to two stops over or under the auto setting if you wish. The clear parallax-free SLR viewfinder has a microprism focusing spot, and LED's visible while viewing come on to warn you when light is too bright or shutter speed is slow, plus giving other important shooting information. A short-stroke thumb lever advances film quickly. A convenient hot shoe and 1/150-sec. "X" setting make electronic-flash pictures easy; this and the bulb setting operate without battery power.

Before using this camera for the first time, please read this manual through carefully while installing the batteries and handling and acquainting yourself with the parts and features of your Minolta 110 Zoom SLR. In this way, you can take good pictures and begin to realize its potential right from the start.

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NAMES OF PARTS

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BATTERIES

- 4 Your Minolta 110 Zoom's automatic exposure-control system and viewfinder signals are powered by two 1.5-volt silver-oxide batteries Eveready S-76, UCAR S-76, or equivalent. Be careful not to use 1.35-volt mercury batteries, which are available in a similar shape.

To install

1. Slide the battery-chamber cover toward the bottom of the camera to unlatch it. Then swing the cover open on its hinges by lifting the lower edge up and out.
2. Insert two of the specified batteries with plus (+) and minus (-) ends positioned as indicated inside the cover.
3. Close the cover and latch it by depressing the bottom edge slightly and sliding it toward the top of the camera until secure.



To check

While looking into the finder eyepiece, depress the battery-check button. If the red triangle to the upper right outside the finder frame lights (see p. 11), batteries are serviceable; if not, they should be replaced with fresh ones.

Test batteries immediately after installing them; if the lamp does not light, make sure that they are fresh and have been inserted correctly. A set of batteries will generally last for about one year in proper normal use, but it is recommended to test them briefly with each new roll of film particularly before starting picture-taking sessions or trips.



NOTE

- To avoid the possibility of excessive battery drain from the finder indicator lamps, keep the shutter release locked (p. 15) when not taking pictures.
- If the camera is not to be used for more than two weeks, it is advisable to remove the batteries to avoid the possibility of corrosion.

6 Low-voltage warning

Your Minolta 110 Zoom SLR is equipped with a device to warn you to minimize wasted film if battery voltage becomes insufficient for proper exposure while the shutter-setting selector is at "A" (automatic): If the shutter is released when voltage is too low, the built-in eyepiece shutter will remain closed to prevent viewing.

Should this happen, depress the release and turn the selector to "X" at once to return the mirror. Then insert fresh batteries and return the selector to "A" to continue shooting with automatic exposure control. (The frame in taking position when the eyepiece shutter closes will be lost.) You can continue to make exposures using manual exposure control at the mechanical "X" or "B" settings (p. 20) even if battery power is insufficient or completely lacking.

NOTE

- Shutter may operate and eyepiece shutter open even when the battery check indicator does not light, but the picture will be more or less overexposed.
- If the batteries are unserviceable and you are taking pictures with "X" setting, be sure to remove the batteries from the chamber.

Cold-weather operation

Batteries by nature tend to decrease in capacity as the temperature goes down. Though the silver-oxide batteries used in the 110 Zoom are superior to most others in this respect, it also happens with them.

If old batteries are used at temperatures below 0°C (32°F), the camera's electronic operation may not be satisfactory. You should thus replace older batteries with fresh ones before using your 110 Zoom in cold weather and carry spare fresh batteries with you during such use.

NOTE

- Spare fresh batteries should be kept warm until use.
- Batteries whose temperature has decreased because of low temperatures will of course become serviceable again when brought to levels for normal living.

LOADING AND ADVANCING FILM

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1. While depressing the back-cover release toward the finder eyepiece to unlatch it, open the camera back.



2. Insert the film cartridge into the camera as shown.
3. Close the cover and push in on it to click it shut.



4. Operate the film-advance lever repeatedly with your thumb until it locks (about three full strokes). A series of 1's should then be visible to the right in the film-data window to indicate that film is in position for the first exposure.



Each succeeding frame is positioned for exposure by operating the film-advance lever one full stroke until it locks, and the shutter release cannot be depressed until this is done.

NOTE

Keep the shutter release locked when you are not taking pictures.



SUPPORTING THE CAMERA

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Your camera should be held in a comfortable position preferably with it and/or hands supporting it steadied against your face or body to prevent it from moving when you take the picture. Recommendable horizontal and vertical ways that permit operation of necessary controls are illustrated here.



For best results, especially at low shutter speeds when the yellow indicator in the viewfinder (p. 11) is lighted, the camera should be placed on a tripod or braced against some other firm support and exposures made with a cable release.

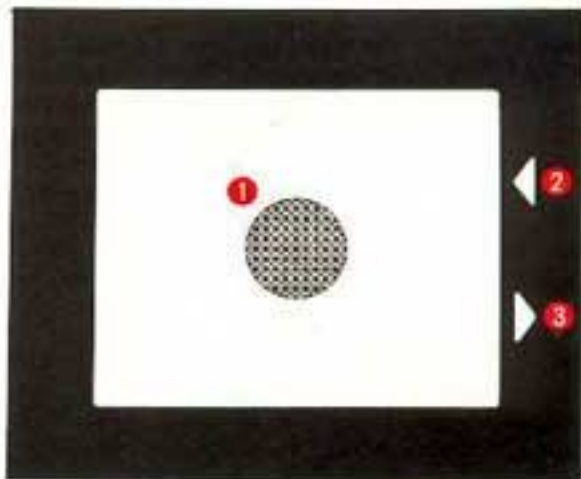
CAUTION

Always be careful that the electric eye on the front of the camera is not covered by a finger, strap, or any other object.



VIEWFINDER

Looking through the finder of your 110 Zoom, you can see the black frame with a central *microprism focusing spot* ①. When the shutter release is depressed slightly, a *red triangle* ② to the upper right outside the frame lights pointing the way to turn the aperture selector for adjustment if the auto shutter speed is over range (more than 1/1000 sec.) or when "X" or "B" is set (p. 20); it also serves as a battery-check indication (see p. 5). A *yellow triangle* ③ to the lower right outside the frame lights when the shutter release is depressed slightly to point the direction of aperture adjustment when the auto shutter speed is slow (under 1/50 sec.); it also lights at the moment the shutter is released if batteries are serviceable.



ZOOMING

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The focal length of your Minolta 110 Zoom can be changed continuously between normal (25mm) and short telephoto (50mm), enabling you to adjust subject image size and composition without changing position. To do this, simply turn the knurled zooming ring as desired.

$f = 25\text{mm}$



$f = 50\text{mm}$



FOCUSING

To focus visually in either normal or macro (p. 25) range, look through the finder and turn the focusing collar until the subject image in the microprism appears clearest, seeming to blend with that in the mat field around it and not shimmering or with lines appearing broken up.

Out of focus



In normal range, the lens may also be focused by aligning the film-to-subject distance value on the focusing scale with the index line on the lens barrel.

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Subject in focus



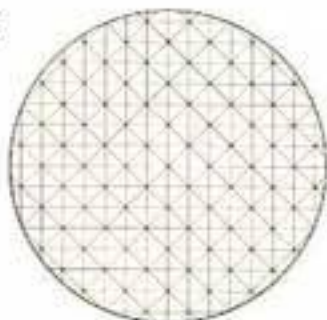
14 NOTE

- Focusing should be done with the eye centered in the finder eyepiece. If not, the microprism focusing spot may appear darkened as shown in illustration A. Should this happen, simply adjust the position of your eye until the focusing spot appears as in B.
- Normal-range focusing can be done most accurately and easily with the lens set at its longest (50mm) focal length, after which it can be zoomed to the desired value.
- The finder eyepiece of the 110 Zoom accepts Minolta eyepiece correction lenses to aid viewing and focusing for near-sighted or far-sighted individuals (see p. 30).

A



B



SHUTTER-RELEASE SWITCH

This has two positions: When "LOCK" is visible on its slide the shutter release cannot be depressed; keep the switch at this position when not taking pictures. Make sure it is in its "ON" position to avoid false starts when starting to shoot.



FLEXIBLE LENS HOOD

It is strongly recommended that the flexible rubber lens hood be extended whenever you are taking pictures. This shades the lens from stray light and helps protect it from damage. The lens hood may be folded back for storage.

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TAKING PICTURES

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Usual automatic operation

1. Make sure that the "A" on the shutter-setting selector is aligned with the index (depressing the selector release if necessary to turn it from another setting).
2. Select the desired lens opening by turning the aperture selector. Settings between f-number click-stops are possible.
3. With the lens hood extended, adjust focus (p. 13), focal length (p. 12), and composition.
4. With the shutter release unlocked (p. 15), depress it *slightly*.
 - a. If neither signal lights at the right outside the finder frame, hold the camera steady and continue to squeeze the shutter release smoothly all the way down to make the exposure.



- b. If the red triangle at upper right outside the finder frame (p. 11) lights on automatic mode, a shutter speed above the upper range limit (1/1000 sec.) is indicated, and the aperture selector should be turned in the direction pointed by the triangle (i.e., left) to set a smaller lens opening (higher f-number) until the red arrow does not come on when the release is depressed. (The same red triangle also lights when the release is depressed slightly if the shutter-setting selector is set at either "X" or "B" setting explained later.)
- c. If the yellow triangle at the lower right outside the finder frame (p. 11) lights when the shutter release is depressed slightly, a slow speed (below 1/50 sec.) is indicated, and the aperture selector should be turned in the direction pointed to (i.e., right) to set a larger lens opening

(smaller f-number) until the yellow arrow does not come on when the release is depressed if the camera is to be hand-held for exposure. Otherwise, the camera should be placed on a tripod or braced against some other firm support and the exposure made with a cable release screwed into the socket provided.

NOTE

Since the shutter will close when the shutter button or cable-release plunger is released whether the auto exposure time has been completed or not, it is essential that the button or plunger be kept depressed until you are sure that exposure is complete (as indicated by mirror return for viewing and the sound of the shutter closing).

18 Exposure adjustment

To give more or less exposure than would be set automatically, push the exposure-adjustment control slightly forward to release it from the "0" position and slide it to left or right until the desired number appears in the adjustment-factor window. The numbers indicate the amount of adjustment in stops or EV steps (e.g., "-1" is one stop less or half the exposure, and "-2" produces two stops less or one quarter the normal exposure). Intermediate values can-

Without adjustment



not be set.

Increasing exposure may be desirable or



Exposure increased



necessary in cases where the most important subject area is considerably darker than the area surrounding it or a bright area or light is in the picture. Examples of pictures that may benefit from a plus setting are back-lighted ones with no fill-in or subjects against a background of snow or light-colored sand, predominantly light-colored posters, etc.

Decreasing exposure may be desirable or necessary in cases where the main subject area is much brighter than the rest of the

Without adjustment



picture. Examples might include subjects in a spotlight or shaft of sunlight or against a very dark background (unless the background occupies only a small part of the image area), predominantly dark copy matter, etc.

CAUTION

Be sure to reset the exposure-adjustment control to "0" when more or less than normal exposure is no longer desired.

Exposure decreased

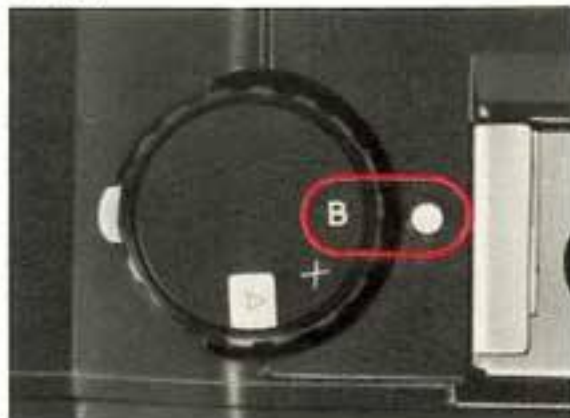


20 "X" and "B" settings

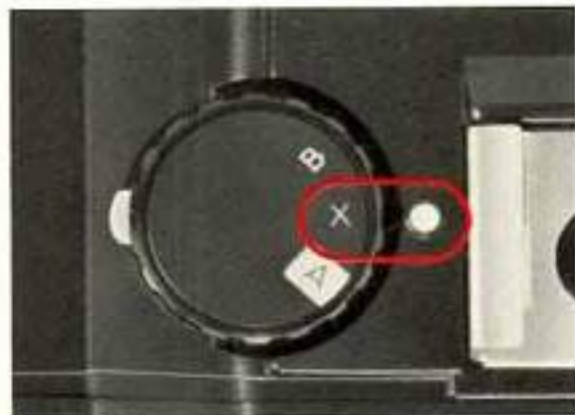
Both of these shutter settings are mechanically controlled. With either "X" or "B" aligned with the index, then, you can view, make exposures, and advance film even though batteries are unserviceable or completely lacking. The upper red triangle at the right outside the finder frame (p. 11) will come on when the shutter release is depressed



slightly when the selector is set at "X" or "B" indicating that the built-in meter and exposure-control system cannot be used, and the aperture must be selected for appropriate exposure as determined by some other means.



Turning the shutter-setting selector to align "X" with the index (while depressing the selector release) provides a fixed shutter speed of 1/150 sec. for fully synchronized exposure with electronic flash (see p. 23) and/or existing continuous light.



Turning the shutter-setting selector to align "B" with the index (while depressing the selector release) sets the camera for making "bulb" exposures. That is, the shutter will open when the shutter release or cable-release plunger is pushed and remain open until it is released.

NOTE

If the red triangle does not come on when shutter release is pushed slightly at the "X" or "B" setting, the batteries are not serviceable; remove the batteries from the chamber and go on shooting with "X."

UNLOADING THE CAMERA

- 22 After taking the last picture in a cartridge, operate the film advance repeatedly until it locks (about two full strokes), but do not force it any farther. (You will still be able to see backing paper in the window.) Then open the back cover and remove the cartridge.

NOTE

Be sure that the shutter-release switch is in its "LOCK" position (see p. 15) when not taking pictures.



FLASH PHOTOGRAPHY



Your Minolta 110 Zoom is circuited for "X" flash synchronization only through the convenient hot shoe. It is intended for use with cordless electronic flash under relatively dark conditions; while fill-in flash may be possible under certain conditions, using it is not generally recommended. Do not use bulb-flash units of any kind. To take flash pictures with your 110 Zoom:

1. Push the release and turn the shutter-setting selector until "X" clicks into place opposite the index.
2. Slide a suitable cordless electronic or autoflash unit all the way into the hot shoe. The special design of the Minolta Auto Electroflash 25 (p. 29) makes it ideal for use with this camera, and it can also be used on many others.

- 24
3. Set the required f-number by means of the aperture selector according to the instructions for the flash unit in use.
 4. Follow the instructions for the flash unit in use and focus, compose, and squeeze the shutter release all the way down to fire the flash and make the exposure.

NOTE

- Be sure that the shutter-setting selector is set at "X" whenever the camera is used for flash pictures.
- For optimum range when using Auto Electroflash 25 in automatic mode, the lens aperture should be set as follows: f/4.5 for color negative of ASA 80 and color reversal of ASA 64, f/5.6 for black and white of ASA 125, f/11 for color negative of ASA 400.

CLOSE-UP PHOTOGRAPHY

In addition to its normal focusing range, the 110 Zoom's built-in close-up capability enables focusing objects between 28.6 and 30.7cm (11-1/4 and 12-1/8 in.) from the film. The subject field taken in at this distance range averages about 11.3 x 14.9cm (4-1/2 x 5-7/8 in.) for subject images that become nearly life size in usual enlarged prints. These can be form striking or useful views of many small objects from flowers to pamphlets. To make close-ups:

1. With the zoom ring turned so that "25" is aligned with the white index and the orange arrow is lined up with orange one, depress the zoom ring slightly

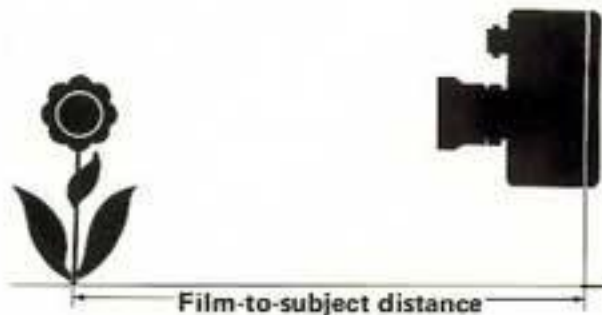


toward the camera body and turn it so that the arrow is lined up with the white index and the orange "M" is opposite the orange one.

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- 26 2. Proceed as under usual auto exposure (pp. 16-17). Because of the extremely shallow depth of field at such close-up settings, it is advisable to use as small a lens opening (that is, as large an f-number) as possible and to focus with care. While close-up focusing can be done in the same way as normal (p. 13), because of the relatively short range of adjustment possible with the focusing collar at the distance involved, it may be easier and more practical instead to move the camera or subject nearer or farther until the subject image appears clearest in the microprism spot. With close-ups, as high a shutter speed as possible should generally be used; for hand-held shots, it definitely should not be below 1/50 sec. (i.e., finder yellow triangle should not be on). The shutter should be released with extreme care, and use of a tripod and cable release is recommended for best results.



NOTE

If the subject is too dark to focus visually, it may be located at the distance for proper focus by measuring from the line on the body where the back cover joins it (which represents the film plane).

CARE AND STORAGE

- Your 110 Zoom camera or film cartridges for it should never be kept in direct sunlight or left in the glove compartment or other places in motor vehicles or elsewhere in which they may be subject to relatively high temperatures. They should also not be exposed to moisture, shock, chemicals, or corrosive conditions.
- The camera should be examined and cleaned from time to time in normal use. If it has been exposed to dust, dirt, or corrosive conditions (such as salt spray, etc., it should be cleaned as soon as possible after such exposure. Avoid touching glass lens and finder-eyepiece surfaces with the fingers. If necessary, blow away loose matter from them or use a bellows lens brush. Then use special photographic lens tissue or a soft clean cloth to remove smudges or fingerprints with a gentle circular motion. Only if absolutely necessary, the tissue may be moistened very slightly with not more than one drop of a satisfactory quick-evaporating fluid cleaner specially compounded for coated photographic lenses. *Like other fluids,*

these must never be dropped directly on the glass surface.

Other external parts of the camera may be wiped with a silicone-treated cloth. Alcohol or other chemicals or solvents should never be allowed to contact it, and no part should ever be lubricated.

The electric-eye lens and the inside of the camera may be cleaned by holding the camera at an angle so that dust will fall out and then whisking the surfaces with a bellows lens brush.

- When the camera is not to be used for more than two weeks, be sure to remove the batteries to avoid the possibility of corrosion.

Keep your camera in a cool, dry place away from dust or chemicals. Placing it in the optional soft case may help to protect it.

If the camera is to be stored for an extended period, it would be best to return it to its original packing and seal it in an airtight container (such as a heavy or double plastic bag) along with a small bag of a drying agent (such as silica gel).

DEPTH-OF-FIELD TABLE

Unit: Meters					Unit: Feet						
F no.	Dist. (m)	4.5	5.6	8	16	F no.	Dist. (ft)	4.5	5.6	8	16
		∞	∞	∞	∞			∞	∞	∞	∞
28	f = 25mm	∞	8.59	6.91	4.85	2.45	∞	28' 2"	22' 8"	15' 11"	8' 5 1/2"
	7	33.84 3.92	∞ 3.55	∞ 2.93	∞ 1.87	20	63' 9 1/2" 11' 11"	138' 6 1/4" 10' 10 1/4"	∞ 9' 1 1/8"	∞ 5' 11 1/2"	
	2	2.51 1.66	2.68 1.60	3.15 1.47	7.55 1.17	7	8' 11 1/2" 5' 9"	8' 7 1/2" 5' 6 1/2"	11' 6 1/2" 5' 1 1/8"	33' 7 1/2" 3' 11 1/2"	
	1.5	1.75 1.31	1.83 1.27	2.02 1.20	3.15 1.00	5	5' 10 1/2" 4' 4 1/2"	6' 1 1/2" 4' 2 1/2"	6' 9 1/2" 3' 11 1/2"	10' 8 1/2" 3' 3 1/2"	
	1	1.09 0.92	1.12 0.90	1.18 0.87	1.45 0.77	3.5	3' 10 1/2" 3' 2 1/2"	3' 11 1/2" 3' 1 1/2"	4' 2 1/2" 3'	5' 3 3/4" 2' 7 1/2"	
f = 50mm	∞	∞ 31.30	∞ 25.16	∞ 17.67	∞ 8.82	∞	∞ 102' 1 1/2"	∞ 82' 1 1/2"	∞ 57' 5 1/2"	∞ 28' 9 1/4"	
	7	8.93 5.76	9.57 5.52	11.37 5.06	30.40 3.97	20	24' 7 1/2" 16' 10"	26' 1 1/2" 16' 2 1/2"	30' 1 1/2" 14' 11 1/2"	60' 8 1/2" 12'	
	2	2.12 1.89	2.15 1.87	2.22 1.82	2.50 1.67	7	7' 5 1/2" 6' 7 1/4"	7' 6 1/2" 6' 6 1/2"	7' 10 1/2" 6' 3 1/2"	8' 11 1/2" 5' 9 1/2"	
	1.5	1.56 1.44	1.58 1.43	1.62 1.40	1.75 1.31	5	5' 2 1/2" 4' 9 1/2"	5' 3 1/2" 4' 9 1/2"	5' 4 1/2" 4' 7 1/2"	6' 10 1/4" 4' 4 1/2"	
	1	1.02 0.98	1.03 0.97	1.04 0.96	1.09 0.92	3.5	3' 7 1/2" 3' 4 1/2"	3' 7 1/2" 3' 4 1/2"	3' 8" 3' 4 1/2"	3' 10 1/4" 3' 2 1/2"	
Close-up	0.307	0.314 0.301	0.315 0.300	0.319 0.297	0.332 0.287	1.00592'	1' 1 1/2" 11 1/2"	1' 2 1/2" 11 1/2"	1' 1 1/2" 11 1/2"	1' 1 1/2" 11 1/2"	
	0.286	0.293 0.284	0.294 0.283	0.296 0.281	0.306 0.273	0.939'	11 1/2" 11 1/2"	11 1/2" 11 1/2"	11 1/2" 11 1/2"	11 1/2" 11 1/2"	

OPTIONAL ACCESSORIES



Auto Electroflash 25

This light, compact unit is ideal for use on the Minolta 110 Zoom and can also be used cordlessly or with its attachable sync. cord on many other cameras. It makes completely automatic electronic-flash exposures over a considerable range by means of a built-in sensor or can be used as a conventional non-auto unit. Recycling condition is indicated by a monitor lamp. Guide number is up to 25 for meters at ASA 100, 37 for feet at ASA 25.



Minolta Filters

These are specially designed with 40.5mm-diameter threads to fit the Minolta 110 Zoom's screw mount.

The UV filter (L39) cuts ultraviolet light and can be used to protect the lens. The yellow filter (Y52) increases contrast and gives better cloud effects with black-and-white film.

The exposure-adjustment control (p.18) must be set at "+1" for proper exposure when the yellow (Y52) filter is used.

Eyepiece Correction Lenses

Focusing aid for far- and near-sighted photographers is provided by these special lenses which snap into grooves provided in the 110 Zoom's eyepiece. These are available in nine different diopter strengths, from -4 to +3.

TECHNICAL INFORMATION

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Type: Compact, single-lens-reflex camera for No. 110 film format with zoom/macro lens and automatic electronic exposure control

Lens: 25 — 50mm f/4.5 Zoom Rokkor-Macro, 10 elements in 10 groups plus swing-in close-up element; auto-preset apertures f/4.5, 5.6, 8, 11, and 16 with click stops, intermediate settings possible; filter thread diameter: 40.5mm

Metering: By lens-side CdS cell, angle of acceptance: 12° vertically, 18° horizontally

Exposure control: Aperture-priority automatic, from EV 1 (e.g., 10 sec. at f/4.5) to EV 18 (1/1000 sec. at f/16); control for up to ±2 EV continuous exposure adjustment in 1 EV steps

Shutter: Metal-blade, behind-the-lens type, stepless electronically controlled speeds 1/1000 to 10 sec. plus mechanical "X" (1/150 sec.) and "B" (bulb) settings, shutter-setting and -release locks.

Power source: Two 1.5v silver-oxide cells, Eveready S-76, or equivalent; battery check by button and finder LED

Mirror: Quick-return type

Viewfinder: Eye-level Porro-mirror type showing 85% of film-frame area with microprism focusing aid centered in mat field; magnification: 0.56X (at f = 25mm) to 1.1X (f = 50mm) focused at infinity; red and yellow light-emitting diodes (LED's) indicate shutter speed under 1/50 sec., over-range warning, mechanical setting, and battery condition; eyepiece frame accepts Minolta SLR eyepiece correction lenses.

Battery warning Built-in finder shutter remains closed if shutter is released at "AUTO" system: setting when battery power is insufficient.

Flash sync.: X synchronization through direct-contact hot shoe only at "X" setting and stepless auto speeds under 1/150 sec.

Films usable: No.110 cartridges for 12 or 20 exposures 13 x 17mm, film-speed setting unnecessary

Film advance: Lever type, with single 80° stroke

Focusing: 1m (3.3 ft.) to infinity by distance scale or finder microprism spot; close-up range at "M" setting: film-to-subject distances of 286 to 307mm by microprism for respective image magnifications on film of 0.126 to 0.106X

Others: Cable-release socket, tripod socket, strap-attachment provision

Accessories available: Hand strap, retractable rubber lens hood, soft case with detachable neck strap, $\phi 40.5$ mm filters, Cable Release II, Auto Electroflash 25, eyepiece correction lenses

Size and weight: 53.5 x 108 x 132mm (2-1/8 x 4-1/4 x 5-1/4 in.), 430g (15-1/8 oz.)

Specifications subject to change without notice

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Minolta MINOLTA MASTERS PHOTOGRAPHY