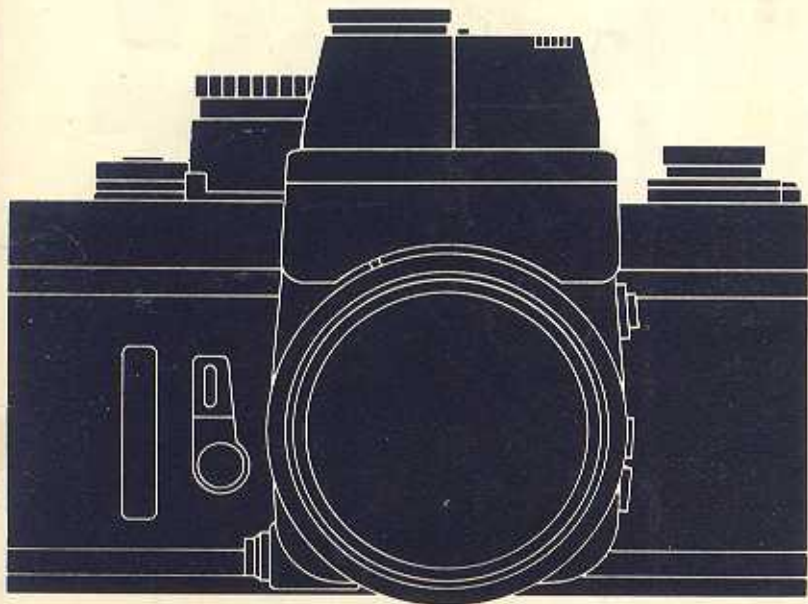


MINOLTA XM



OWNER'S MANUAL





Your Minolta XM is a wide-scope electronic system camera that accepts all Minolta SLR lenses and accessories as well as XM interchangeable finders and focusing screens. It is engineered and built to give you greatest precision; easiest, most convenient operation; and maximum versatility. It gives full information and offers complete control of all camera exposure variables. In automatic operation, the XM will adjust exposure with utmost accuracy electronically, freeing you for more enjoyment or greater creativity.

Before using your camera for the first time, study this manual carefully all the way through — or at least all the sections needed to cover your own photographic needs. As you read, assemble the screen, finder, lens, and body as described on pages 49, 37, and 53, load batteries, and handle your XM and acquaint yourself with its parts and features. Then load it with film and proceed to actual picture-taking. In this way, you can take good photos and begin to realize the great potential of your XM right from the start. Be sure to keep this manual for reference later as necessary.

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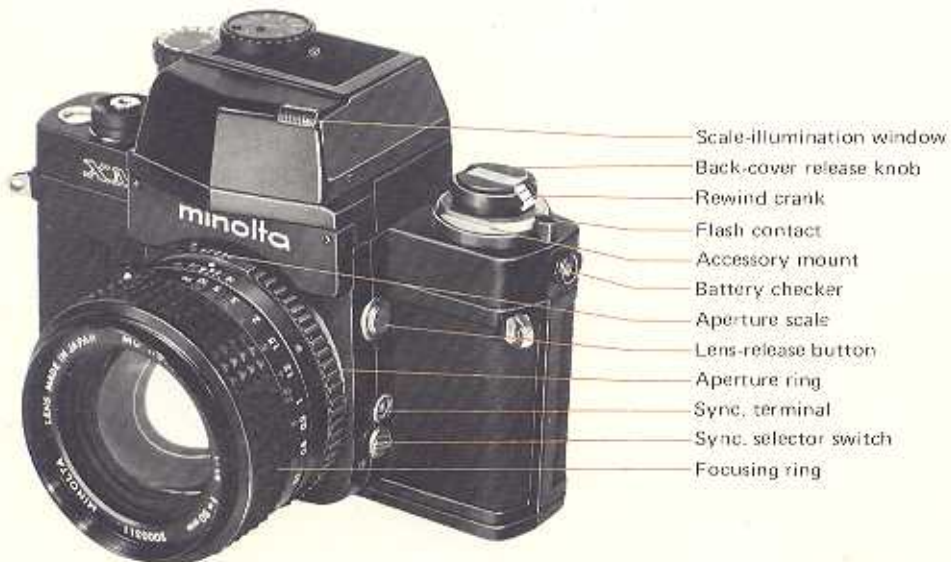
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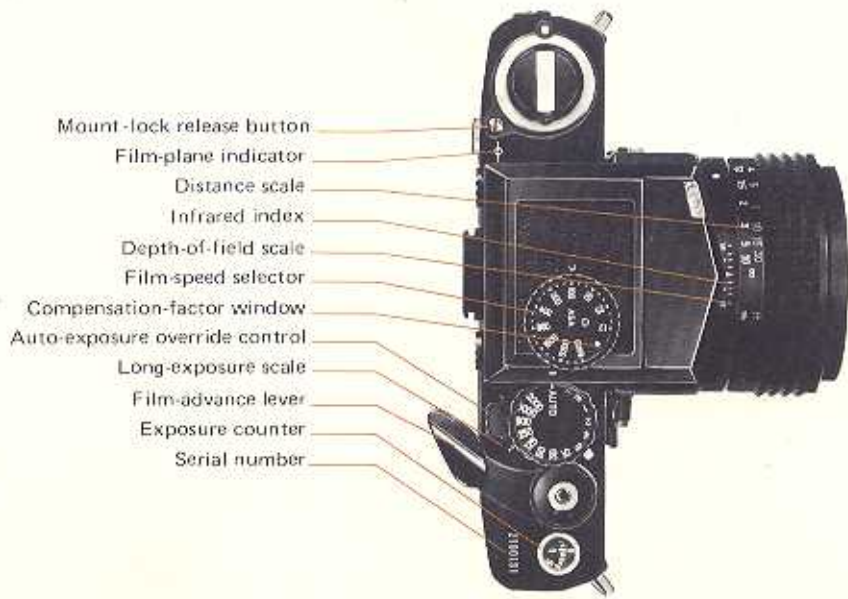
NAMES OF PARTS

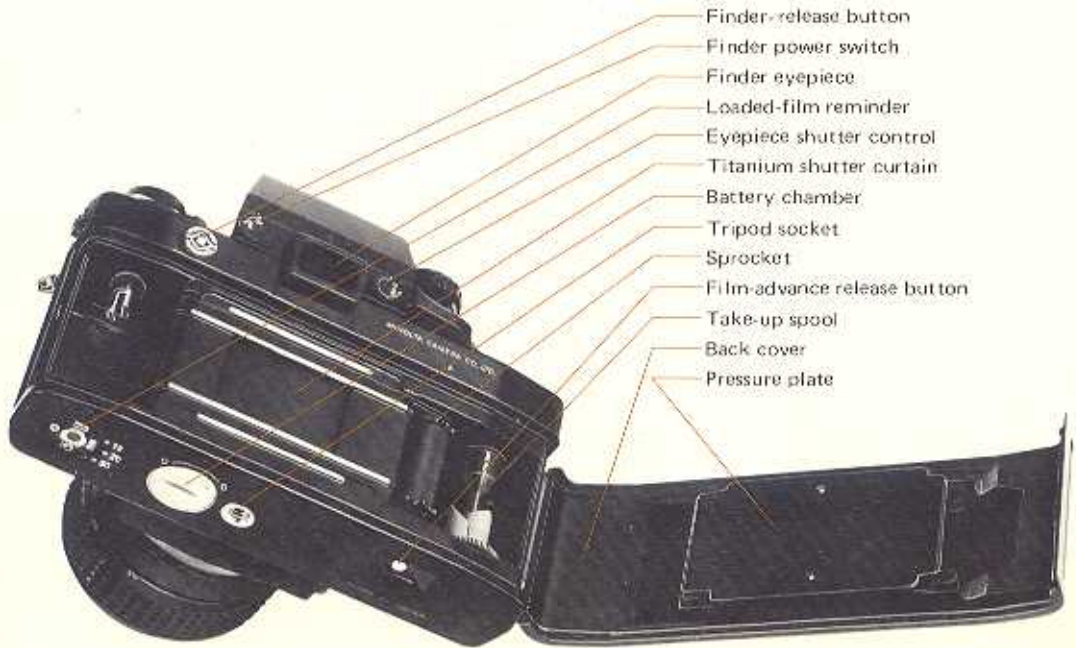
4

- Shutter-speed index
- Shutter-speed/function selector
- Shutter-release button
- Long-exposure selector lever
- Neck-strap lug
- Self-timer lever
- Auto "Senswitch"
- Stop-down/lock-up button









Finder-release button

Finder power switch

Finder eyepiece

Loaded-film reminder

Eyepiece shutter control

Titanium shutter curtain

Battery chamber

Tripod socket

Sprocket

Film-advance release button

Take-up spool

Back cover

Pressure plate

MINOLTA XM BODY SPECIFICATIONS

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Type:	Interchangeable-finder-type 35mm single-lens reflex with electronic focal-plane shutter
Lens mount:	Stainless-steel Minolta SLR bayonet, 54° rotating angle (Standard lenses: MC Rokkor 50mm F1.7, 50mm F1.4, or 58mm F1.2)
Coupling:	For full-aperture metering and automatic diaphragm operation with MC Rokkor Lenses (Stop-down metering is used for other Rokkor Lenses.)
Shutter:	Button for depth-of-field preview and stop-down metering Electronically controlled focal-plane type with titanium curtains and 2 mechanically controlled settings Electronic speeds: 16 to 1/2000 sec. in steps, 4 to 1/2000 sec. continuously variable (with Auto Electro Finder) Mechanical settings: X (1/100 sec.) and B Curtain traverse time: 9ms Power source: Two 1.5v silver-oxide batteries (Mallory MS-76, Eveready S-76, or equivalent) Film advance locks when voltage is insufficient.
Viewfinder:	Interchangeable type showing 98% of area appearing on film (Auto Electro, Plain, High-Magnification, and Waist-Level Finders available); Type P focusing screen (mat Fresnel field with horizontally oriented split-image spot) supplied as standard, interchangeable with 8 other screen types
Film advance:	Lever type, single- or multiple-stroke, 110° winding angle after 20° unengaged movement; advancing-type exposure counter; resets automatically when camera back is opened.

- Multiple exposures: Possible with film-advance release
- Mirror: Oversize, quick-return type, with lock-up device; no image cutoff even with extreme telephotos (PO value: 140mm)
- Self-timer: Lever type, operating time variable from approx. 6 to 10 sec.
- Flash sync.: X contact: Electronic flash synchronizes at 1/100 (X) and longer stepless and step speeds, FP contact: FP bulbs synchronize at all step speeds through 1/2000 sec. including X (1/100); single terminal in threaded socket with X/FP switch; direct contact on accessory mount for Minolta cordless flashguns with optional accessory hot shoe
- Other: Built-in Auto "Senswitch" keeps finder power on while camera is held in usual operation (alternate switch located on Auto Electro Finder); battery checker on end of body; accessory mount (with direct flash contact) on body around back-release knob; loaded film reminder on bottom
- Dimensions: 84 x 147.5 x 48mm (3-5/16" x 6" x 1-15/16") without lens
- Weight: 670g (23-9/16 oz.) without lens

Interchangeable lenses and accessories common to SR-T 101, etc.

AUTO ELECTRO FINDER SPECIFICATIONS

10

Type:	Eye-level pentaprism with built-in meter and automatic electronic and match-needle/manual exposure-control apparatus
Circuits:	Incorporate monolithic and hybrid IC's with 41 transistors
Magnification:	0.8X with 50mm lens
Visible in finder:	F-number, shutter-speed/function scale, meter/indicator needle, speed/function bar, light-emitting-diode exposure warning signal
Exposure meter:	Built-in TTL CLC with 2 CdS cells for full-aperture metering with MC Rokkor Lenses, stop-down metering with other Rokkor Lenses
Measuring range:	EV 1 to EV 17 (e.g., 1 sec. at F1.4 to 1/2000 at F8) with F1.2 lens at ASA100
Film-speed range:	ASA 12 to 6400
Shutter-speed/ function dial:	AUTO, X, B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500, 1000 and 2000
Auto-exposure override:	-2 EV to +2 EV stepless manual control
Compensation scale:	-0.5 EV to +3.5 EV in half-step graduations
Power source:	2 silver-oxide batteries for shutter control in camera base (shared use)
Dimensions:	50 x 76 x 65mm (1-15/16" x 3" x 2-9/16")
Weight:	225 g (8-1/8 oz.)
Other:	Power switch for use in lieu of body Auto "Senswitch"

STANDARD LENS SPECIFICATIONS

	50mm F1.7 MC Rokkor	50mm F1.4 MC Rokkor	58mm F1.2 MC Rokkor
Type:	Meter-coupled Gauss-type standard lens		
Construction:	6 elements in 5 groups	7 elements in 5 groups	7 elements in 5 groups
Angle of view:	46°	46°	41°
Coating:	Minolta Achromatic		
Min. focusing dist.:	0.5m (1.75 ft.)	0.5m (1.75 ft.)	0.6m (2 ft.)
Diaphragm:	Fully automatic, meter-coupled		
Aperture scale:	1.7, 2.8, 4, 5.6, 8, 11, 16	1.4, 2, 2.8, 4, 5.6, 8, 11, 16	1.2, 2, 2.8, 4, 5.6, 8, 11, 16
	Each with full and half click stops		
Focusing:	Double helicoid system		
Filter thread diam.:	55mm		
Dimensions:	64.8mm x 41mm (2-9/16" x 1-5/8")	65.6mm x 46mm (2-9/16" x 1-7/8")	70.8mm x 54mm (2-13/16" x 2-1/8")
Weight:	240g (8-7/16 oz.)	305g (10-3/4 oz.)	475g (16-3/4 oz.)

BATTERIES AND POWER

Two 1.5-volt silver-oxide batteries, Mallory MS-76 or Eveready S-76 or equivalent, supply the power for controlling electronic shutter speeds and for meter and electronic exposure control when applicable.

IMPORTANT:

Should viewing become impossible because the mirror of your XM remains up after the shutter is released, it does NOT mean that the camera needs repair. The automatic electronic features of the model cause this to happen if you release the shutter 1) when battery voltage is insufficient at an electronic setting or 2) when current is off on automatic mode or when no finder is installed. To restore viewing and usual function, see page 16 in case 1) or page 27 in case 2).

Installing Batteries

1. Using a coin or similar object, turn the battery chamber cover until the dot on it is aligned with "O" on the camera base plate and remove the cover.



2. Handling them only by the edges, insert two of the specified batteries plus (+) side out into the sleeve on the inside of the cover, If batteries are inserted improperly, they will not make contact, and no current will flow.



3. Replace the cover and return the dot to "C" position.

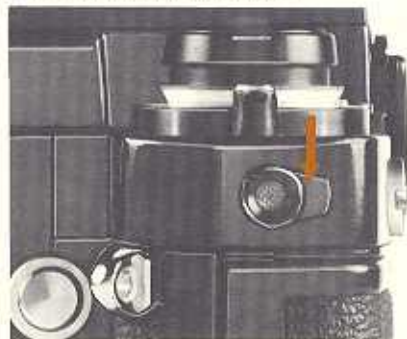


Testing Batteries

Depress the battery checker lever toward the bottom of the camera. If the red lamp lights, batteries are serviceable.

Test batteries immediately after installing them. If the lamp does not light, make sure that they have been inserted correctly.

Batteries should be tested from time to time thereafter, particularly before starting picture-taking sessions or trips. A set of batteries will usually last for about one year.



Switching Power On and Off

With the Auto Electro Finder, power for metering and electronic exposure control will be on whenever the Auto Senswitch is being touched and off when it is not, provided the finder power switch is in the "OFF" position.

Turning the finder power switch to the "ON" position, however, will override the Auto Senswitch and keep power on even though it is not being touched. (The finder power switch should be used for unmanned auto exposure, tripod

shooting, or when the camera is not held as normal. Some may wish to keep it on whenever they are using the camera.) *To avoid possible excessive battery drain from the exposure warning signal, however, make sure the finder power switch is turned off when the camera is not in use.*

With non-metering finders, it is unnecessary to turn power on and off. The camera will use power only when the electronic shutter is released.



Auto Film-Advance Lock

Your XM camera is equipped with a device to lock the film-advance lever and to warn you and prevent much waste film in case battery voltage becomes insufficient while the shutter-speed selector dial is at an electronic setting (i.e., any one other than "B" or "X").

If film has not been advanced when voltage falls too low, it will be possible to advance film once and release the shutter once. If film has been advanced, it will also be possible to release the shutter once. In either case, however, the film will receive no exposure, and the mirror will stay up so that viewing is impossible thereafter. At the same time, the film advance lever will lock and cannot be operated further.

Inserting batteries having sufficient voltage will restore normal operation immediately. For mechanical operation at "X" or "B" settings without serviceable batteries, see instructions on page 47.

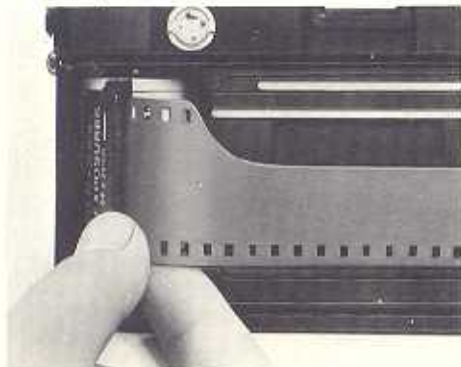
Space for two extra batteries is provided in the shoulder pad of the camera strap.

LOADING AND ADVANCING FILM

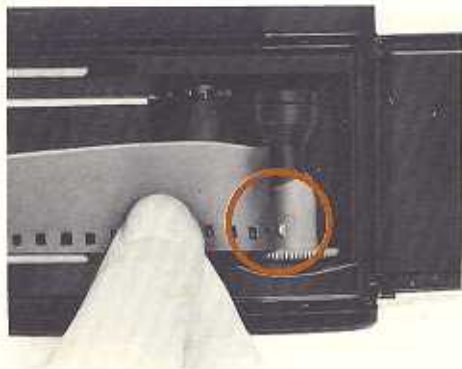
1. Pull out on the back-cover release knob until the camera back springs open.



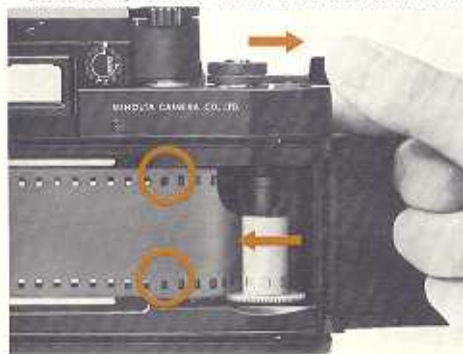
2. Leaving the knob pulled out, position a film cartridge in the chamber with the projecting spool end toward the bottom of the camera. Then push the back-cover release knob all the way in, rotating it slightly to do so if necessary.



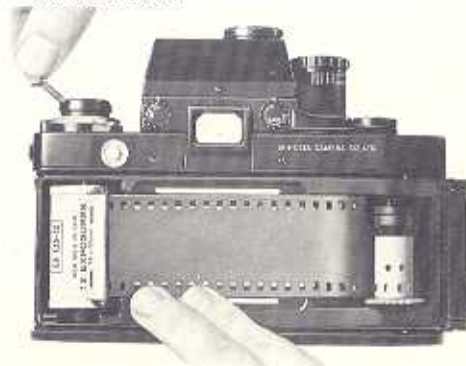
3. Insert the end of the film leader into one of the slots in the take-up spool so that the tooth is engaged in the fourth or fifth sprocket hole from the end.



4. Operate the film-advance lever in several short strokes until the film has begun to wind firmly around the take-up spool and the sprocket teeth are engaged with the holes on both edges of the film. If the advance lever locks at the end of a full stroke during this procedure, release the shutter and continue.



5. Press down firmly on the film with the fingers between the sprocket holes and one edge of the film so that it cannot move. While doing this, take up any slack in the cartridge by folding out the rewind crank and turning it in the direction of the arrow until resistance is felt.
6. Close the camera back and push in on it until it clicks locked.



7. While watching the rewind crank, release the shutter and advance film until the index points to "1" on the exposure counter dial. Rotation of the crank during the full stroke in the direction opposite that of the arrow indicates that the film is advancing properly. If the crank rotates during only a small part of the stroke or not at all, make sure of proper film loading and alignment by repeating steps from 3 above onward.



CAUTION:

Film should be handled and loading done in subdued light — at least shaded from direct sunlight by the body.

Loaded-Film Reminder

The dial on the bottom of the camera may be turned so that one of its symbols is aligned with one of the numbered dots beside it to serve as a reminder that a cartridge of 12, 20, or 36 exposures of black-and-white, color negative, or daylight- or tungsten-type color reversal film is loaded in the camera.



Film-Advance Lever and Exposure Counter

Film is advanced, the shutter cocked, and the exposure counter advanced by operating the film-advance lever in one or more strokes through its 110° engaged angle until it springs back. The film-advance lever has 20° unengaged play before the beginning of its engaged stroke to allow offsetting it from the body so that the right thumb will fit comfortably behind it.

If the film-advance lever remains locked between exposures even though the shutter has been released, battery voltage is insufficient for electronic operation (see P. 16). If the advance lever stops in mid-stroke and resists further movement, film is exhausted. The film-advance lever should never be forced when it locks or cannot be operated normally.

The exposure counter is of the advancing type and is numbered to 40, past which point it will not move regardless of the number of exposures made. This exposure counter automatically resets for film loading when the camera back is opened.

METERING WITH CLC

Minolta's exclusive CLC ("Contrast Light Compensator") metering system employs two CdS cells mounted on the pentaprism to take separate, overlapping light readings. These cells are wired so that the reading of each affects that of the other to automatically yield optimum exposure in both normal and most high-contrast lighting situations. For best results, the photographer should thus generally not make compensatory adjustment for such differences. One exception is that the lens should generally be stopped down from $\frac{1}{2}$ to 1 F-stop if the most important subject area is much brighter than the rest of the picture (e.g., is in a spotlight or shaft of sunlight). Some photographers also prefer to open a half to a full stop with a backlit subject or one whose most important area is considerably darker than the area surrounding it.

With MC Rokkor Lenses, metering is done at full aperture, for greatest sensitivity and accuracy. The viewfinder thus remains at maximum brightness for utmost ease of composing and focusing, and the automatic diaphragm closes down to the preset aperture only at the moment of exposure.

Stop-down metering is used for other Rokkor Lenses.

The metering method is changed by means of the stop-down/lock-up button. This has two positions: Inner for full-aperture metering and outer for stop-down metering (or depth-of-field preview). Pushing the button once will set it at one of these positions; pushing it again will set it at the other.

Though the CLC system and finder are designed to minimize the effect on the meter of light entering through the eyepiece under usual conditions, care must be exercised to prevent this especially if you wear eyeglasses. Use of a rubber finder eyecup is further recommended when the subject is in shade and the camera is in sunlight, when bright sidelight falls between eye and eyepiece, or when stop-down metering is used, particularly at small apertures. When viewing is unnecessary, the eyepiece shutter (see page 28) can be used to completely eliminate this problem.

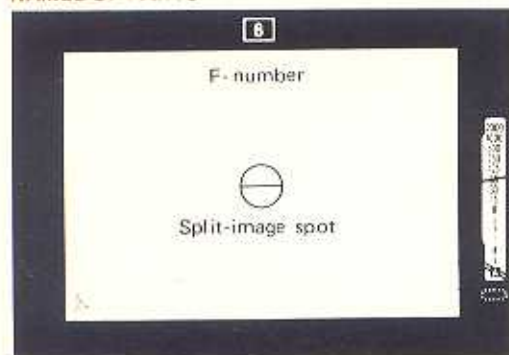
EXPOSURE-CONTROL FUNDAMENTALS

The two camera exposure-control settings are lens opening (aperture) and shutter speed. The size of the aperture determines the amount or volume of light reaching the film from a given subject and lighting. The shutter speed determines the length of time this light acts upon the film. Apertures are expressed in F-numbers, which are larger for small openings and vice versa (e.g., F16 represents a small opening, F2 a large one). Shutter speeds are expressed in seconds or fractions thereof, which are the reciprocals of the numbers on the shutter-speed scales. At usual apertures, each F-number setting (e.g., F8) lets in twice as much light as the next numerically larger one (F11) and half as much as the next smaller (F5.6). Similarly, each

shutter speed (e.g., 1/60 sec.) allows light to strike the film twice as long as the next higher speed (1/125) and half as long as the next lower one (1/30). Total exposure on the film is determined by the combination of aperture and speed. Other things being equal, using the next smaller F-number will balance using the next higher shutter speed, and so on. A great range of combinations (e.g., F5.6 at 1/30, F4 at 1/60, F2.8 at 1/125, F2 at 1/250, etc.) will thus yield the same total exposure. The specific combination you choose under given lighting conditions will depend upon how much you want the greater depth of field (see p. 35) of smaller apertures and the greater movement-blur preventing ability of faster speeds.

AUTO ELECTRO FINDER

NAMES OF PARTS



Shutter-speed scale
Meter/indicator needle

Speed/function bar
Exposure warning signal
(visible only below EV11)

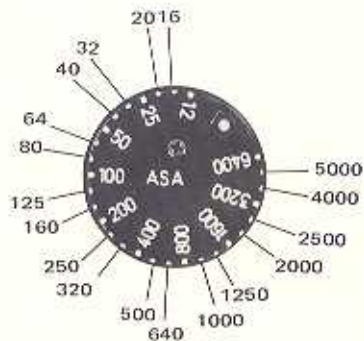
Metering Methods

Full-aperture metering with the stop-down/lock-up button in its inner position is employed when MC Rokkor Lenses are used with this finder. Stop-down metering is used with other Rokkor Lenses (see page 54).

Setting Film Speed

For correct exposure, the meter must be set for the effective exposure index of the film in use.

To do this, turn the film-speed selector until the proper ASA value indication appears opposite its index dot. Dots between numbered graduations indicate ASA numbers as shown:



ASA/DIN Conversion Scale

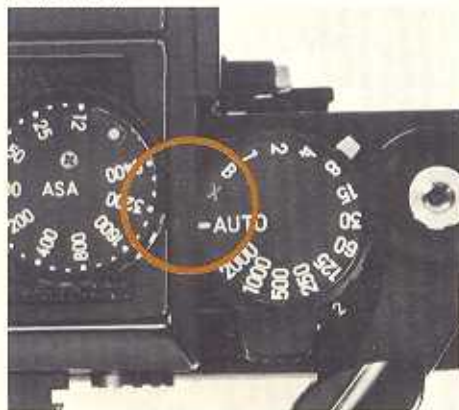
A convenient scale for converting DIN to ASA film-speed ratings is located on the back cover of the camera.

ASA											
6	12	25	50	100	200	400	800	1600	3200	6400	
.....											
9	12	15	18	21	24	27	30	33	36	39	
DIN											

A. AUTOMATIC EXPOSURE CONTROL

Automatic Operation

1. Turn the shutter-speed/function selector dial to align "AUTO" with the index. The speed/function bar will move to "A" on the scale in the finder.
2. Turn on power by touching and keeping your hand on the Auto "Senswitch" or using the switch on the finder.



3. Set the desired lens opening by turning the aperture ring on the lens barrel. The F-number set will appear above the frame in the finder, and the shutter speed indicated by the needle at the right of frame will vary automatically and steplessly to give proper exposure for the aperture and other settings with the light being metered.
4. It is then only necessary to focus, compose your picture, and release the shutter.
5. The accurate range of shutter operation on automatic mode is 1/2000 to 4 sec. 1/2000 is indicated by the upper end of the indented area on the left side of the finder scale. For exposures longer than 1 sec., the needle will move progressively farther outside the indented area down to a point between "B" and "X." To determine whether the speed is longer than 4 sec., depress the auto-exposure override control radially and move it as far as it will go to the left. If the finder scale needle moves back to the figure "1" or higher when this is done, the speed is within 4 sec. If the needle remains outside the indented area at any point below "1," the exposure set is longer than 4 sec.
Whenever a speed outside the proper auto-exposure range is indicated, adjust the aperture or other conditions to yield a speed within it.

NOTE:

If the shutter release button is pushed while power is off (i.e., when the Auto Senswitch is not being touched or the finder switch is not on) with the camera on automatic mode, the mirror will stay up and the shutter will remain open temporarily. Turning the shutter-speed selector dial to "X" will return the mirror to its lower position and close the shutter at once. Even if this is not done, the electronic circuitry will reset the mirror and shutter automatically after about 30 sec. Toward not spoiling adjacent frames under certain conditions, however, it is advisable to reset the camera as quickly as possible.

Exposure Warning Signal

Red blinking of the exposure warning signal below the scale in the finder indicates that light level has fallen below the lower limit of the meter's accurate sensitivity range on either automatic or match-needle/manual mode.

Whenever this signal is blinking, exposure set is not correct even if the shutter speed indicated by the needle falls within the acceptable range for automatic operation. It is thus important that exposure conditions be adjusted until the signal goes out.

Due to the characteristics of CdS under certain conditions, there may be an interval between the time the range is exceeded and the onset of blinking.



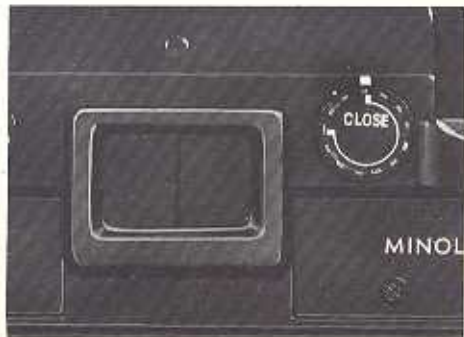
Auto-Exposure Override Control

To manually adjust exposure above or below the automatically set value, push in on the auto-exposure override control and rotate it to the right or left (for respectively more or less exposure) until the needle in the finder indicates the desired shutter-speed adjustment. (For example, to give one stop more, i.e. double, the exposure when the automatically set speed is "125," move the override control to the right until the needle points to "60." To give 1/2 stop less exposure, i.e. 3/4 of the "125" auto setting, turn the control to the left so that the needle indicates a point halfway between "125" and "250.") Hold the control in the desired position while releasing the shutter, since it will otherwise automatically return to its neutral center position.

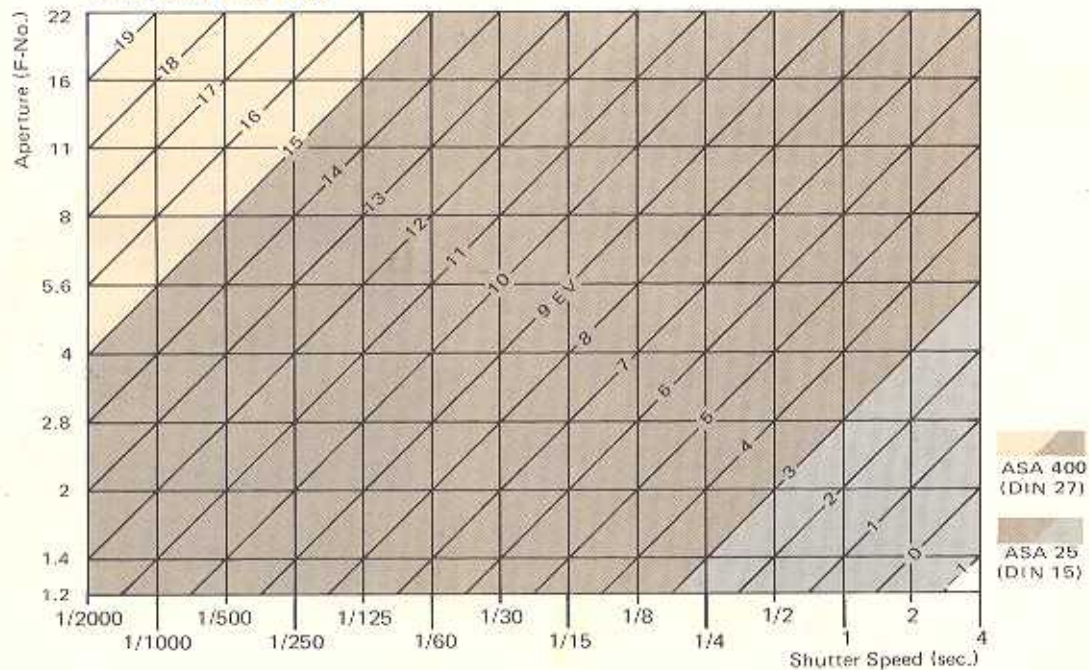


Eyepiece Shutter

For remote or unmanned operation or when the camera is set on a support and used without viewing on automatic mode, be sure to rotate the control at the right rear of the finder to close the eyepiece shutter. This will prevent unwanted light from entering through the eyepiece and affecting the meter reading and exposure when the eyepiece is not being shielded by the photographer's head, as it normally would be.



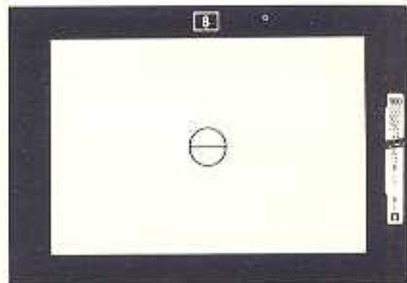
COUPLED AUTOMATIC EXPOSURE RANGE
WITH 58MM F1.2 LENS



B. MATCH-NEEDLE/MANUAL EXPOSURE CONTROL

Operation

1. Turn the shutter-speed/function selector dial to align any stop speed from 1/2000 through 1 sec. with the index. The speed/function bar in the finder will move to and remain fixed over the same scale number as that at which the selector is set, and the system is automatically switched over to match-needle/manual mode.
2. Turn on meter power by keeping your hand on the Auto Senswitch or using the switch on the finder. (This is not necessary if meter is not needed for manual exposure setting.)
3. To set proper exposure for light as metered, the black needle is made to move and align with the fixed bar by adjusting the lens F-stop. *Note that correct exposure cannot be obtained by needle alignment with shutter settings of "B," "X," and with speeds longer than 1 sec.*
4. Needle alignment can of course be disregarded and any shutter speed (including those longer than 1 sec.) and aperture combination set for full-manual operation.

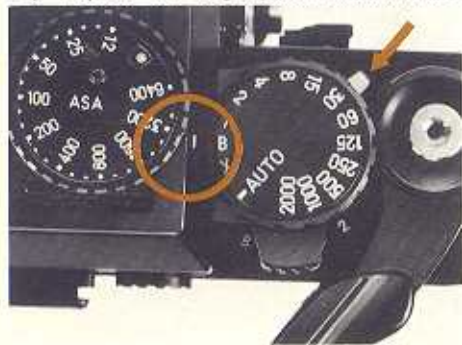


Bulb Exposures

Rotate the shutter-speed selector dial so that "B" is aligned with the index. The gray bar in the finder will move to and remain fixed over "B" on the scale, and the shutter will open when the shutter release button is pressed and remain open until it is released.

Making Exposures of 2 to 16 Sec.

With the shutter-speed/function dial set at "B," depress the long-exposure selector lever



radially and rotate it so that the index on the collar around the base of the shutter-speed knob is aligned with the desired speed indication of the long-exposure scale on the camera top plate. The speed/function bar in the finder will remain fixed at "B" on the scale for all step speeds longer than 1 sec.



The long-exposure lever can be depressed only with the shutter-speed dial set at "B," and the long-exposure collar index must be returned to "B" on the scale in order to turn the shutter-speed dial from "B" to any other setting.



HOLDING THE CAMERA AND RELEASING THE SHUTTER

The way the camera is held when exposures are made and how the shutter is released are as important as focusing for best photographic results, and these become more critical the slower the shutter speed.

To hold the camera horizontally, cradle the bottom of it in the palm of the left hand as shown on the next page with the thumb and index or middle finger on the focusing grip of the lens. The thumb and middle or ring finger of the same hand can be used to turn the aperture ring. Grasp the camera body firmly with the right hand as shown so that the index finger rests on the shutter-release button. In this position, the middle and/or ring fingers of the right hand will actuate the Auto "Senswitch," and the thumb can conveniently operate the film-advance lever.

The camera may be rotated to a vertical position when held this way, the only difference being that the rewind-crank end of the camera will rest in the palm of the left hand.

To release the shutter, steady the camera or hands holding it firmly against your face, body and/or other support and depress the release button with a slow, steady squeeze. At slower

speeds, it is also advisable to hold your breath while releasing the shutter.

For maximum sharpness or exposures too long to permit hand-holding the camera, mount it on a tripod using the built-in socket on the bottom and trip the shutter with a cable release screwed into the threaded socket provided in the shutter release button.



FOCUSING

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To focus the camera visually with the standard Type P focusing screen, look through the viewfinder with the lens at full aperture and turn the focusing ring on the lens until the upper and lower images in the split-image spot are exactly aligned with no broken lines between them. Less critical focusing can also be done on the surrounding mat field.



For microprism focusing, turn the focusing ring until the image is no longer broken up but appears clear in the microprism spot or circular band.

The camera can also be scale-focused or prefocused by aligning the desired value on the distance scale with the index on the lens barrel.



Depth-of-Field Scale

The distance behind and in front of the focused distance within which the image appears acceptably sharp is called the depth of field. Besides being greater the shorter the focal length of the lens and vice versa, this increases as the lens is stopped down and becomes greater the farther from the camera the lens is focused. It is at its least for any given lens in normal mounting when the lens is at maximum aperture (as when metering and focusing normally with MC Rokkor Lenses) and at minimum focusing distance.

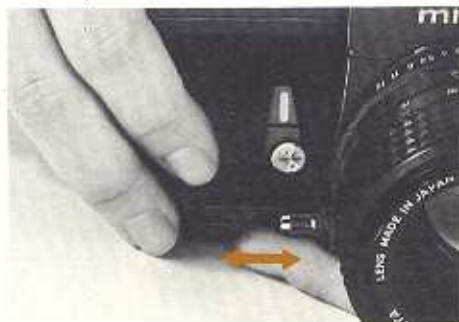
The near and far limits of acceptable sharpness can be determined from the depth-of-field scale on the lens barrel. With the lens focused at a given point, the image will be in satisfactory focus from the nearer value to the farther value on the distance scale indicated by the depth-of-field scale marks for the aperture to be used.

For example, if a 50mm lens is focused at 1.5m (about 5 ft.) and the aperture is F16, the appropriate graduations to left and right of the index on the depth-of-field scale indicate acceptable sharpness from about 1.2m to 2m (approx. 4 to 7 ft.).

Stop-Down/Lock-Up Button

Depth of field at any aperture and focusing distance can be previewed visually by pushing the stop-down/lock-up button to release it to its outer position. This will stop the diaphragm down to the aperture corresponding to the F-number preset on the aperture ring, allowing you to see through the viewfinder how much of the subject is acceptably sharp.

Pushing the stop-down button again to fix it at its inner position will reopen the diaphragm to full aperture.



Infrared Index

For proper focus when making pictures with infrared radiation, first focus your subject with visible light as described above, then turn the focusing ring to the right to align the point of proper focus on the distance scale with the index designated with a small red "R" in the depth-of-field scale.

Film-Plane Index

The \ominus symbol on the camera top plate to the left of the viewfinder indicates the exact plane occupied by the film in the camera. This can be used to measure distance from subject to film precisely for photomacrography, close-ups, etc.

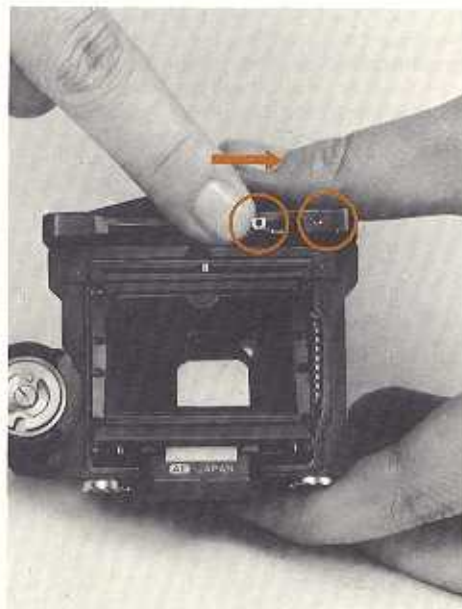


CHANGING FINDERS

To Install

1. Before installing the Auto Electro Finder, make sure that the red-dotted meter coupler is positioned at the red-dotted end of its slot. This is done by using your finger to move the coupler against the spring tension until it catches at the end of its stroke opposite the rest position.

A built-in automatic stop in this finder prevents it from seating properly unless the red dots are aligned; forcibly attempting to seat a coupled finder without the coupler properly positioned will damage the finder and perhaps also the coupling lug on MC Rokkor Lenses. The above is not applicable to the Plain, High-Magnification, and Waist-Level Finders, which have no meter coupler.



- Carefully align the finder properly (eyepiece toward back) with the camera's finder receptacle and push the finder into it straight and evenly until it seats and locks firmly in place with a muffled click.



- Turn the shutter-speed selector dial clockwise or counterclockwise until it engages with the coupling pin on the body shutter-speed knob and starts turning with click-stops. (Should the dial continue to turn freely without engaging, remove the finder as directed on page 38 and turn the knob on the body a few click stops in either direction. Then reinstall the finder — not forgetting to reset the coupler first, if applicable — and engage the dial with the pin.)

NOTE:

If the shutter release is pushed while there is no finder installed on the camera when it is on automatic mode, the mirror will stay up, and the shutter will remain open temporarily. Turning the shutter-speed selector dial to "X" will return the mirror to its lower position and close the shutter at once. Even if this is not done, the electronic circuitry will reset the mirror and shutter automatically after about 30 sec. Toward not spoiling adjacent frames under certain conditions, however, it is advisable to reset the camera as quickly as possible.

To Remove

Grasp the finder and, while pushing the finder release button all the way in, lift the finder straight out of its receptacle.



FLASH PHOTOGRAPHY

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Your Minolta XM is wired for X or FP flash synchronization, and either direct-contact cordless flashguns or units having cords can be used on it.

Synchronization

Turning the sync. selector switch to align its index dot with the appropriate indication sets the camera for synchronization as follows:

Sync. selector switch setting	Type of flash	Synchronized speed range in seconds	
		On automatic mode (stepless speeds)	On match-needle/manual mode (step speeds)
X	Electronic flash ("strobe")	4 through 1/100	16 through 1/60, X (1/100), B
	Class M or MF flashbulbs	4 through 1/30*	16 through 1/30*, B
FP	Class FP flashbulbs	4 through 1/2000	16 through 1/2000, X, B

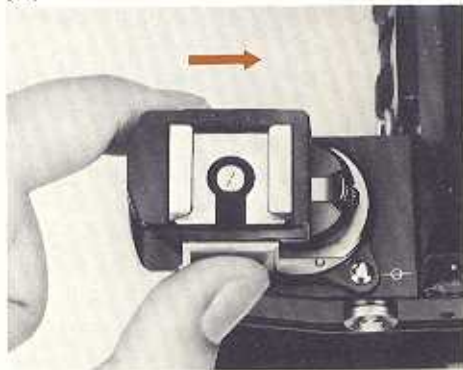
* Certain Class-M bulbs have characteristics which allow covering higher speeds.



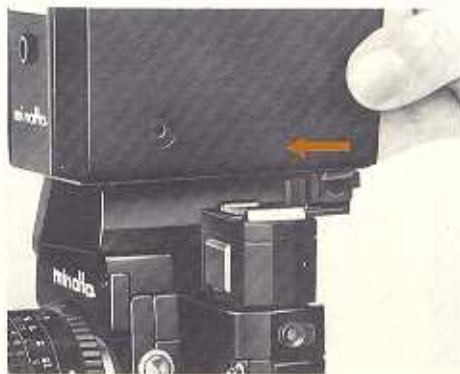
Connecting Flash Units

Bracket-type flash units are attached to the camera by means of its tripod socket.

Clip-on-type units are attached by using the optional accessory hot shoe, which slides onto the accessory mount at the base of the back-cover release knob and locks in place. The accessory hot shoe is removed by pushing the mount-lock release button and sliding the shoe off.



Cordless clip-on flash units are connected by simply sliding them into the installed accessory hot shoe. Sync cords of either clip-on or bracket-type conventional units having them must be plugged into the camera sync. terminal for operation.



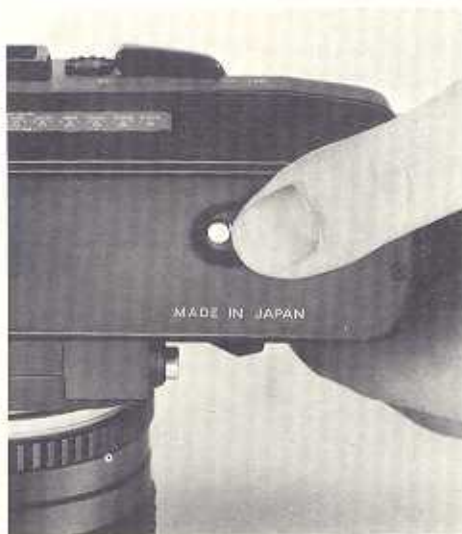
MULTIPLE EXPOSURES

To intentionally make more than one exposure on a single frame of film:

1. Make the first exposure in the usual way.
2. Push the film-advance release button on the bottom of the camera. (Do not continue depressing the button while film is being advanced.)
3. Operate the film-advance lever. This will cock the shutter for the next exposure, but the film will not advance since the release button has been pushed.
4. Make your second exposure.
5. Then repeat steps 2 and 3 above as many times as desired to make further exposures.
6. After the last multiple exposure, advance film to the next frame in the usual way without pushing the advance-release button.

NOTE:

Exposure counter will advance as usual each time the film-advance lever is operated.



SELF-TIMER

The self-timer built into your Minolta X-1 can be used to delay release of the shutter for a variable number of seconds after actuation.

To operate it:

1. Advance film.
2. Cock the self-timer by moving the self-timer lever counterclockwise. Moving the lever as far as it will go (about 150° from its rest position) sets the self-timer for a delay of about ten seconds. Moving it about 100° until it catches and does not return by itself to its rest position will set it for about six seconds' delay. Delays between these limits can be obtained by setting the lever at the appropriate intermediate position.



3. To start the self-timer, push the small release button which is hidden under the end of the self-timer lever when the lever is in its rest position.

If the shutter is not cocked, the self-timer will stop operating part way through its cycle; it can be reset either before or after advancing film.

You can override the self-timer's release of the shutter by pushing the shutter-release button to trip the shutter at any time before or after the self-timer has started operating.



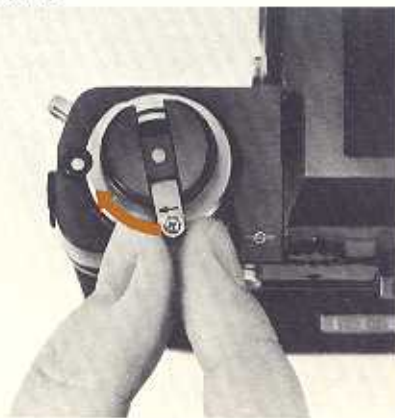
REWINDING AND UNLOADING FILM

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1. Push the film-advance release button.



2. Unfold the rewind crank and turn it in the direction indicated by the arrow on it until you feel tension on the film increase, then disappear, and the crank turns freely.
3. When you are certain the film is completely rewound, pull out the back-cover release knob to open the back and remove the cartridge.



MECHANICAL SHUTTER SPEEDS AND OPERATION

The "X" (1/100 sec.) and "B" shutter settings are mechanically controlled and can be used manually even without battery power.

To use these settings when the film-advance lever is operating normally, simply turn the shutter-speed selector dial to align one or the other of them with the index and proceed to take pictures as usual.

If the film-advance lever has automatically locked and the mirror is up (because of insufficient battery voltage when the shutter was released at an electronic setting), they can be reset to allow advancing film and viewing by turning the

index on the battery chamber cover from "C" to "O" and back to "C" again.

By turning the shutter-speed selector dial to "X" or "B" either before or after this resetting, you can view, make exposures, and advance film even though batteries are unserviceable or completely lacking. This mechanical operation will continue so long as the selector dial is not turned to an electronic setting.

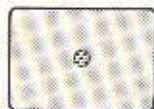
The meter in the Auto Electro Finder cannot of course be used at these mechanical settings.

INTERCHANGEABLE FOCUSING SCREENS

48



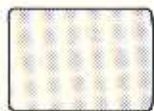
Type P: Mat Fresnel field with $\phi 4$ mm central horizontally oriented split-image spot; for general photography



Type M: Mat Fresnel field with $\phi 4$ mm central microprism spot; for general photography



Type PM: Mat Fresnel field with $\phi 2.5$ mm central horizontally oriented split-image spot surrounded by a circular microprism band 1.5mm wide; for general photography



Type G: Mat Fresnel field only with no spot; for general photography



Type C1: Clear Fresnel field with $\phi 6$ mm microprism spot; for general photography with certain lenses

Type C2: Same as Type C1 but suited for different lenses

Type C3: Same as Type C2 but suited for still other lenses



Type H: Mat Fresnel field with central $\phi 8$ mm clear spot containing an etched double cross; for dioptic and parallax focusing in astrophotography, photomicrography and other high-magnification applications



Type S: Clear Fresnel field with central cross as above plus etched measuring scales; for dioptic and parallax focusing in dim light, close-ups, photomicrography and other high-magnification applications plus making actual image measurements

See your Minolta dealer for further new types.

CHANGING FOCUSING SCREENS

To Install

1. With the finder removed from the camera, grasp the small projecting bracket on one side of the screen frame with thumb and fore-finger and hold it so that the bracket is on the upper side of the frame and toward the back of the camera over the corresponding curved recess in the camera's screen receptacle.



2. Keeping the finder release button pushed all the way in, hold the screen at an angle, insert the side toward the front or the end toward the shutter release first, and let the screen drop into place. Then release the button.


To Remove


Holding the finder release button pushed in as far as it will go, use the small bracket protruding toward back of camera to lift the screen out back side or rewind-crank side first.


NOTE:


Care should be taken not to scratch the surfaces or damage the microprisms or split-field prisms of focusing screens.

LENS-SCREEN COMBINATION CHART

 Full-aperture metering, best combination: Uniformly bright screen image provides excellent viewing.

 Full-aperture metering, satisfactory combination: Viewing is acceptably good, though there may be some darkening near the edges of the viewfield. (This does not of course affect the image on the film.)

 Stop-down metering, best combination: Excellent viewing with a uniformly illuminated viewfield image.

 Stop-down metering, satisfactory combination: Though some darkening may appear at the edges of the screen, viewing is acceptably good (and the image on the film is of course not affected).

• Focusing must be done on the screen mat area, since the central spot cannot be used to focus with this combination.

Numbers indicate necessary meter compensation factors (see page 52); if no figure appears, the compensation factor for the combination is zero.



Finder can be used only for focusing; metering cannot be done.

White spaces indicate unusable combinations.

		P	M	PM	G	C1	C2	C3	H	S
WIDE ANGLE	16mm F2.8 MC Fisheye Rokkar						3.5	3.0	*	
	21mm F2.8 MC W Rokkar					3.0	3.0		*	
	24mm F2.8 MC W Rokkar					3.0	3.0		*	
	28mm F3.5 MC W Rokkar					3.0			*	
	28mm F2.5 MC W Rokkar					3.0	3.0		*	
	35mm F2.8 MC W Rokkar					3.0	2.5		*	
	35mm F1.8 MC W Rokkar					3.0	2.5		*	
STANDARD	50mm F1.7 MC Rokkar					2.5	2.0		*	
	50mm F1.4 MC Rokkar					3.0	2.5	1.5	*	
	58mm F1.2 MC Rokkar					2.0	1.5	0.5	*	
TELEPHOTO	85mm F1.7 MC Rokkar					2.5	2.5	1.5	*	
	100mm F2.5 MC Tele Rokkar					3.0	3.0	2.5	*	
	135mm F3.5 MC Tele Rokkar						2.5	3.0	*	
	135mm F2.8 MC Tele Rokkar						3.0	3.0	*	
	200mm F4.5 MC Tele Rokkar							3.5	*	
	200mm F3.5 MC Tele Rokkar							3.5	*	
	300mm F5.6 MC Tele Rokkar	*	*	*					*	
	300mm F4.5 MC Tele Rokkar							3.5	*	
	300mm F8 RF Rokkar	*	*	*						*
	800mm F6.3 Telyr-S	*	*	*						*
	1000mm F6.3 RF Rokkar	*	*	*						*
1600mm F11 RF Rokkar	*	*	*						*	
ZOOM	80-200mm F4.5 MC Zoom Rokkar							3.5	*	
	100-200mm F5.6 MC Zoom Rokkar	*	*	*					*	
	100-500mm F8 MC Zoom Rokkar	*	*	*					*	
MACRO	50mm F3.5 MC Macro Rokkar						3.0			
	100mm F3.5 MC Macro Rokkar							3.5		
	100mm F4 Auto Bellows Rokkar									
	Photar 12.5mm F1.9									
	Photar 25mm F2.5									

COMPENSATION-FACTOR SELECTOR

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A few combinations of focusing screens and lenses require metering compensation for accurate exposure. In addition to showing recommendable combinations of lenses and screens and the metering method to be used with each, the table on page 51 indicates any such compensation factors necessary.

With the Auto Electro Finder, if the lens-screen combination you are using requires compensation, lift up on the outer ring of the film-speed selector and turn the ring until the applicable factor designation appears in the compensation factor window in the selector dial.

When no compensation is needed, the dot should appear in the window for proper metering.



CHANGING LENSES

To Install

Align the red dot on the lens barrel with the red dot on the camera lens-mount flange; insert the lens bayonet into the mount; and turn the lens clockwise until it locks into place with a click.



To Remove

While pushing the lens-release button, turn the lens counterclockwise as far as it will go; then lift the lens bayonet out of the mount.



USING OTHER THAN MC LENSES

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Metering and exposure with RF Rokkor, Auto Rokkor, and Manual-Preset Rokkor Lenses is by the stop-down method as follows:

Auto Rokkor Lenses

1. After focusing, push the stop-down/lock-up button to release it to its outer stop-down position.



2. Use automatic or match-needle/manual mode as explained on page 25 or 30, respectively. The viewfinder field will darken as the lens is stopped down, and the split-field and micro-prism spot may become unusable due to darkening.
3. Leave the lens stopped down to the proper taking aperture when releasing the shutter.

RF (Mirror-Type) and Manual-Preset Rokkor Lenses

Proceed as for Auto-Rokkors above, except that the stop-down/lock-up button need not be pushed, as metering and exposure may be done with it in either inner or outer position.



MANUAL MIRROR CONTROL

The mirror must be locked in its upper position when the old Rokkor 21mm F4 or F4.5 ultra-wideangle lenses are used. It may also be locked up at other times if desired.

To Lock the Mirror Up

With the stop-down/lock-up button in its outer stop-down position, turn the button clockwise so that the red dot on it is aligned with the red mark on the collar around the base of the button.

To Lower the Mirror after Lock-Up

Push the stop-down/lock-up button to its inner full-aperture-metering position.



CARE AND STORAGE

- As with all high-precision instruments, no part of the X-1 camera body, or any lens, finder, or screen should ever be forced at any time. If operation is not as you think it should be, carefully restudy the applicable instructions or consult an authorized Minolta service representative.
- Always keep your camera in its case when not in use.
- Never subject your camera to shock, high heat and/or humidity, water, or harmful chemicals or gases.
- Never lubricate any part of the body, finder, lens, or screen.
- Always use a body cap or top cap when a lens or finder is not installed on the body. Keep lenses, properly capped front and rear; finders, also properly capped; and screens in their cases when not in use.
- Never touch the shutter curtains or anything inside the front of the body with the fingers. These parts and the inside of the back should be dusted with a soft brush from time to time as necessary, with particular care never to exert pressure on the shutter curtains.
- Never touch glass lens or prism surfaces with the fingers. If necessary, remove loose matter from these glass surfaces with a blower lens brush. 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 photographic lenses. *Such fluids must never be dropped directly on the glass surface.*

- * Smudges or fingerprints on the mirror may be removed with lens tissue slightly moistened with lens cleaning fluid as above.
- * No liquid should be used on focusing screens, but surfaces may be dusted with a soft brush and cleaned of smudges with lens tissue or a soft dry clean cloth if necessary.
- * External camera, finder, and lens barrel — but not glass — surfaces may be wiped with a soft, silicon-treated cloth.
- * Never leave the shutter or self-timer cocked when the camera is to be stored overnight or longer.
- * If the camera is to be stored for a long period of time, its components should be returned to their original packing and kept in a cool, dry place away from dust or chemicals, preferably in an airtight container with a drying agent such as silica gel.

- * If the camera is not to be used for more than two weeks, the batteries should be removed.
- * Make sure the finder power switch (on the Auto Electro Finder) is turned off when the camera is not in use.

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