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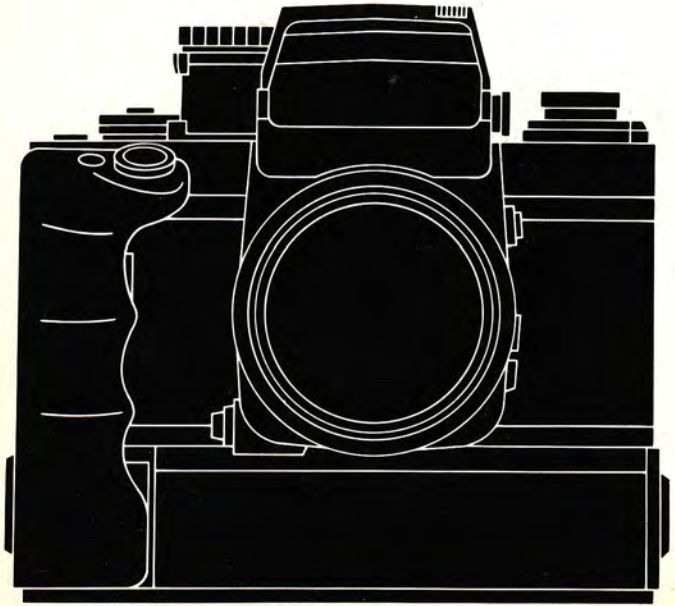
MINOLTA XK MOTOR



OWNER'S MANUAL

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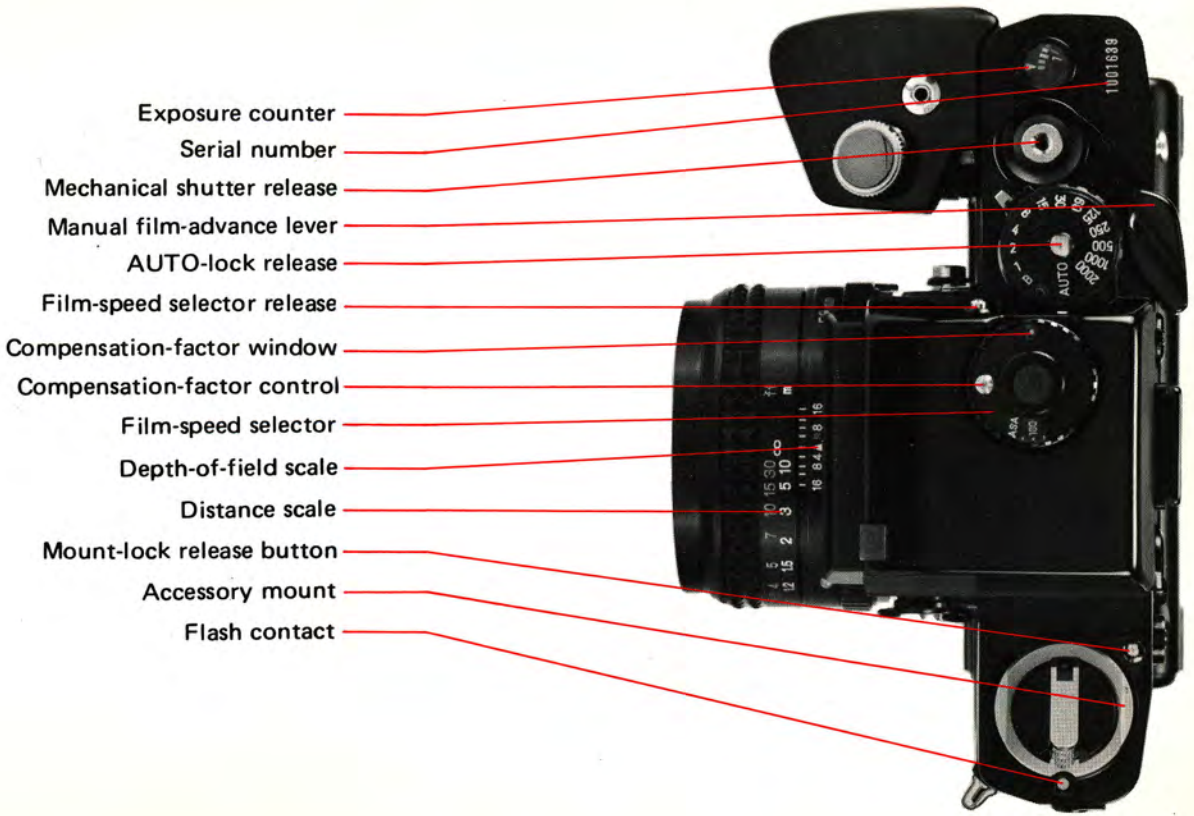
Your Minolta XK Motor Drive is the world's first 35mm single-lens-reflex camera expressly produced for motorized operation with automatic/manual exposure and frame-rate control and interchangeable viewfinders. Based on the top-model XK camera, this new premier-quality, heavy-duty unit can be set to take up to 3.5 frames per second continuously as well as single frames with motor film advance. The quick-response AE-S Finder meters over an extended range for auto-exposure control and keeps necessary information visible while you view, including stepless LED/digital shutter-speed readout. Human engineering with motorized automatic, safety, and fail-safe features never before incorporated in such a camera enable a new high in easy handling and reliability. Besides its own full line of range-broadening accessories, the XK Motor Drive uses all finders and focusing screens for the XK, Minolta interchangeable SLR lenses, and applicable system accessories for utmost compatible versatility.

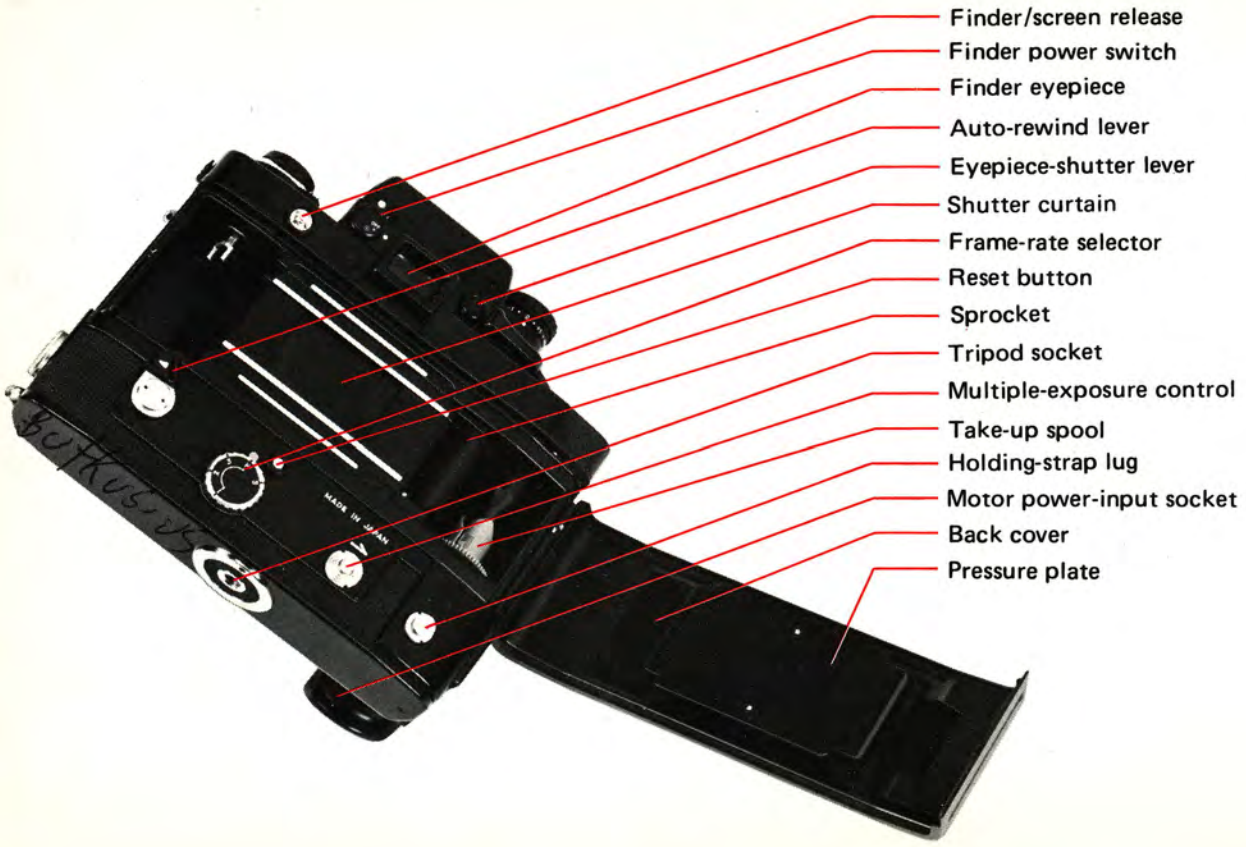
Before using your camera for the first time, study this manual carefully all the way through — or at least all the sections needed to cover your own photographic needs. As you read, assemble the screen, finder, lens, body, battery pack, and holding strap as described on pages 10 through 15; load batteries; and handle the camera and acquaint yourself with its parts and features. Then load it with film and proceed to actual picture-taking. In this way, you can obtain good results and begin to realize the unusually great potential of your XK Motor Drive from the very beginning.

CONTENTS

NAMES OF PARTS

Scale-illumination window
Grip "Senswitch"
Display-range selector lever
Back-cover release knob
Manual-rewind crank
Exposure-control battery checker
Lens-release button
Neck-strap eyelet
Focusing grip
Sync. terminal
Sync. selector switch
Motor-drive housing
Exposure-control battery chamber
Neck-strap eyelet




Finder/screen release
Finder power switch
Finder eyepiece
Auto-rewind lever
Eyepiece-shutter lever
Shutter curtain
Frame-rate selector
Reset button
Sprocket
Tripod socket
Multiple-exposure control
Take-up spool
Holding-strap lug
Motor power-input socket
Back cover
Pressure plate

MAIN FEATURES

Integral motor-drive body

The exclusive one-piece motor-drive body enables reliability, efficiency, and ease of use superior to detachable motor units, plus utmost durability in extended heavy-duty use. It incorporates motorized, automatic, and fail-safe features for unparalleled motor operation including:

- A tension sensor to halt film advance at the end of a cartridge — no need to set frame counter and no torn film
- Fingertip motorized rewind with auto switch-off and auto resetting to advance mode when back is opened
- Automatic film-advance stop if exposure-control voltage falls too low or batteries are not properly loaded

Continuous automatic/manual exposure control

In automatic operation, stepless shutter speed is continuously adjusted electronically to provide proper exposure at whatever frame rate the camera is set — "S" (single frame), 1, 2, 3, or "H" (3.5) frames per second without mirror lockup. In manual mode, correct speed for proper exposure is indicated.

Shutter-priority auto frame-rate control

The camera automatically adjusts the frame rate set as required for proper operation according to the auto or manual shutter speed. Film will not advance unless proper exposure has been completed. Thus if the speed required in auto operation becomes too long to allow operation at the frame rate selected, the XK Motor Drive automatically reduces the frame rate to provide proper exposure. If a higher speed then becomes possible, the frame rate is automatically increased up to a maximum of the rate set, and so on.

Auto-control info-center finder

- The XK Motor Drive's new AE-S finder features center-weighted metering by silicon photo cell whose instant response and extra sensitivity maintain creative operation at low light levels.
- Its integrated circuits automatically set stepless shutter speeds for eight to 1/2000 sec. to provide proper exposure at the aperture set for the light being metered and other conditions.

- Speeds being set in auto mode or correct shutter speed for proper exposure on manual are continuously indicated in the finder by stepless LED/digital readout, along with other necessary information: Lens aperture set, auto mode indication or shutter speed set on manual mode, and over-/under-range indication.
- A locking control allows setting the system to continuously provide up to two stops more or less exposure than would be set automatically.

Proved XK-model features

Designed and built to the even more rigid standards required for motor operation, the XK Motor Drive incorporates many of the same advanced features from Minolta's proven top-model XK camera, including:

- Familiar Minolta SLR bayonet lens mount and oversize mirror
- Interchangeable focusing screens and finders
- Electronically controlled focal-plane shutter with titanium curtains that travel horizontally and permit electronic-flash sync. up to 1/100 sec.
- Electronically controlled manual shutter speeds from 1/2000 to a full sixteen seconds
- "X" (1/100 sec. with X/FP sync.) and "B" settings operable without battery power
- Convenient stop-down button and battery check
- Easy-to-operate multipli-exposure control
- Eyepiece shutter for unmanned or similar operation

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Full motor-drive accessories for wide usefulness

- Seperate battery pack and battery grip
- 250-Frame Film Back and loader
- Connecting cords for actuating the built-in electromagnetic relay switch using Minolta intervalometers or wireless control units.
- Long and short remote-control cords

Full system lenses and accessories

Besides its own, the XK Motor Drive of course uses all Minolta and adapted Leitz lenses and applicable Minolta SLR system accessories for maximum compatible versatility.

General

1. Follow instructions exactly.
2. Handle components with care.
3. Never force parts.
4. Do not touch lens or screen surfaces with the fingers and be careful not to scratch or damage them.

Focusing screens

To install

1. Remove the top cap from the camera body.
2. Grasp the small projecting bracket on one side of the focusing-screen frame with thumb and forefinger 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.
3. 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/screen 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

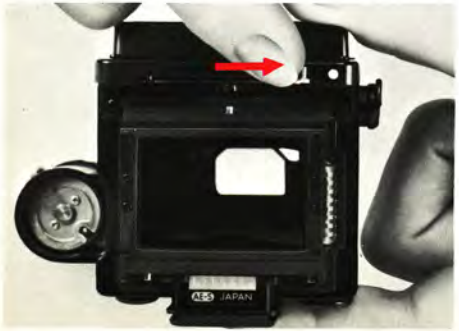
Care should be taken not to scratch the surfaces or damage the microprisms or split-field prisms of focusing screens.

Finders

To install

1. Before attempting to install the AE-S Finder or other coupling-type finder, make sure that the 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 (which has no red dot). A built-in automatic stop in these finders prevents them from seating properly unless this is done; forcibly attempting to seat a coupled finder without the coupler properly positioned will damage the finder. The above is not applicable to the Plain, High-Magnification, and Waist-Level Finders, which have no meter coupler.

2. Remove finder cap and 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.



3. 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, by pushing the finder release button and lifting the finder straight out of the receptacle, 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.)

To remove

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

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. Pushing the reset button near the frame-rate selector 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.

Lenses

To attach

1. Remove the body cap from the camera lens mount and the rear cap from the lens bayonet, both by turning the cap counterclockwise.
2. Align the red mounting index 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.

Standard Battery Pack

To attach

1. With the screw running through the middle of the battery pack aligned with the tripod socket on the bottom of the motor-drive housing, insert the battery pack's three-hole connecting terminal into the three-prong socket at the bottom of the body holding grip.
2. Secure the pack in place by turning the indented screw head clockwise with the thumb and forefinger as far as it will go, tightening it by a coin or similar object in the slot provided if desired.

To remove

1. Loosen the indented screw head on the bottom of the pack with a coin or similar object in the slot provided if necessary, and turn the screw counterclockwise out of the camera's tripod socket.
2. Pull the battery pack's connecting terminal straight out of the socket at the bottom of the body handgrip.

NOTE

- For instructions on installing batteries in the Standard Battery Pack, see p. 21.
- Instructions for other motor-drive power sources are packed with individual accessories.

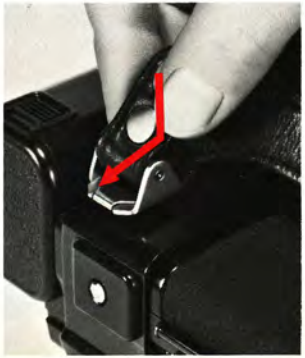
Holding Strap

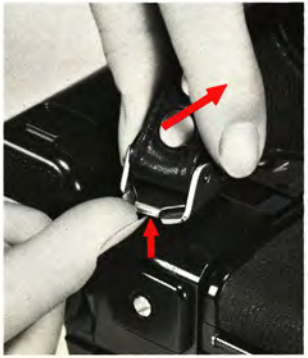
To attach

Push the large end of the keyhole-shaped slot of the strap's attaching bracket on over the head of the camera body's holding strap lug and slide it toward the small end of the slot until it snaps securely in place.

To remove

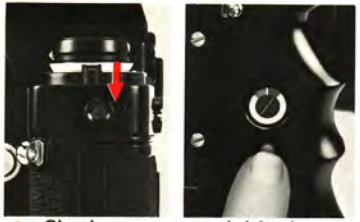
While pulling up on the free end of the retaining-spring tab of the strap's attaching bracket as shown, slide it off the holding-strap lug.





SUMMARY OF OPERATION (on "AUTO")

The steps pictured on this page outline ordinary use of your XK Motor Drive on automatic motorized mode. They give a basic idea of how easy it is to operate for perfectly exposed pictures and are keyed to corresponding sections of the manual for ready reference.



1 Check exposure and drive batteries (pp. 20, 22).

2 Open back cover and load film properly (p. 26).

3 Close cover and advance film to "1" (p. 29).

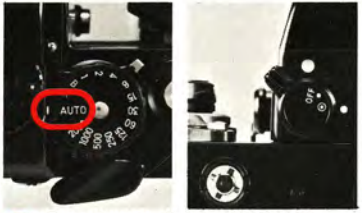
7 Grasp holding grip and unlock operating button (pp. 33, 49).

8 Set lens aperture (p. 40).

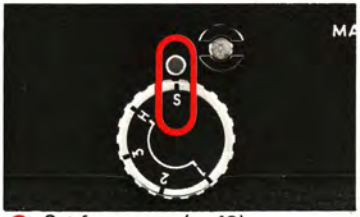
9 Adjust focus (p. 47).

This brief guide may also be useful as a quick refresher course after you have not used the camera for some time. It is not, however, a substitute for the detailed instructions in the rest of this manual, which should be thoroughly studied and followed for best results.

4 Set film speed (p. 30).

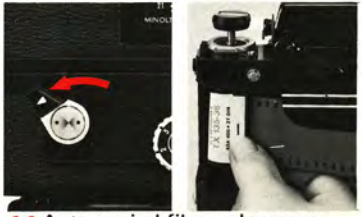


5 Set selector dial to "AUTO" and turn finder power switch on (pp. 40, 34).



6 Set frame rate (p. 49).

10 Push operating button (p. 49).



11 Auto-rewind film and remove cartridge (p. 53).

12 Turn finder off and lock operating button

IMPORTANT

Should viewing become impossible because the mirror of your XK Motor Drive remains up after the shutter is released (and film does not advance), 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 exposure-control current is off (i.e., if grip Senswitch is not being held and AE-S Finder power switch is off) on "AUTO" mode, 2) when no finder is installed, or 3) when battery voltage is insufficient at any electronic shutter setting. To restore viewing and usual function, simply turn the shutter-speed/function selector to "X" or "B" (or push the reset button) in case 1 or push the reset button in case 2 or 3. For further details, see p. 41, 12, or 24, respectively. For any other stoppage, see p. 76.

BATTERIES AND POWER

Exposure-control batteries

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

CAUTION

Do not use 1.3-volt mercury batteries, which are available in a similar shape.

To install

1. Starting it with a coin or similar object if necessary, turn the cover of the exposure-control battery chamber counterclockwise and remove it.

2. After wiping terminals with a clean dry cloth and handling 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 screw it in clockwise as far as it will go, tightening it with a coin or similar object if desired.

To test

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.

NOTE

Batteries do not have sufficient power for proper operation when the check lamp does not come on even though finder display may light.

CAUTION

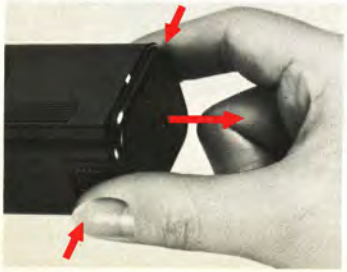
To avoid undue battery drain, do not keep the battery-checker lever depressed for more than a second or two.

Motor-drive batteries

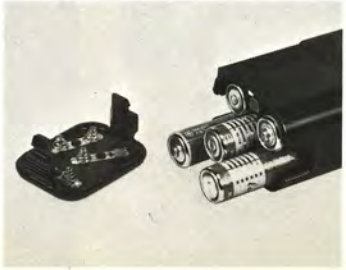
To install

The following installation instructions apply to the standard battery pack only, which is attached to the camera as indicated on p. 14. For other motor-drive power sources, see instructions packed with individual accessories.

1. Squeeze in on the grips on one end of the standard battery pack and remove the chamber cover.



2. Insert five penlight (AA) size 1.5 volt sealed carbon-zinc batteries with plus (+) and minus (—) ends positioned as indicated inside the chamber; the center battry should be plus-end down.



3. Align the white marks on cover and chamber rim, and push straight in on the cover until it snaps securely in place. (If it shaped so that it will not seat properly if the white marks are not aligned.)

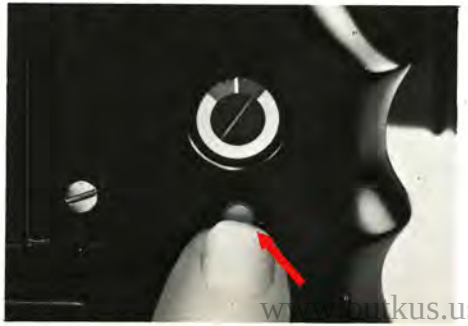
4. Remove the cover on the other end of the standard battery pack, insert batteries, and replace cover as above.

NOTE

No current will flow unless ten serviceable batteries are properly installed.

To test

Push the motor battery-check button. If the needle of the indicator near it swings within the green zone, batteries are serviceable. If the needle remains in the red zone or moves only to the space between it and the red zone, battery power is insufficient and they should be replaced. Even if the motor starts when power is insufficient, it will not run long (should this happen, see p. 50).



Test fresh batteries immediately after installing them. If the indicator does not swing into the green zone, check to make sure that they have all been inserted correctly.

Battery should be tested from time to time thereafter, particularly before starting picture-taking sessions or trips. If the needle does not swing into the green zone, they should all be replaced with fresh ones at the same time.

At temperatures for usual living, a fresh set of the recommended batteries will generally be sufficient to shoot and motor-rewind approx. 20 36-exposure film cartridges at two-minute intervals at a continuous rate of 3 fps.

CAUTION

Do not keep the motor-battery check button depressed for more than a second or two as the circuit may overheat.

Switching power on and off

Holding grip "Senswitch"

Power for metering, automatic exposure control, and shutter-speed display will be on whenever the "Senswitch" on the body's holding grip is being depressed and off whenever it is not, provided the AE-S finder power switch is in its "OFF" position. For other switch positions and picture-taking conditions, see p. 34.

NOTE

With non-metering finders, it is unnecessary to turn power on and off. The camera will draw power only when electronic shutter sppeds are used.

Auto-film-advance lock

Your XK Motor Drive camera is equipped to warn you and prevent wasting film in case exposure-control battery voltage becomes insufficient while the shutter-speed/function selector dial is at an electronic setting (i.e., any one other than "X" or "B"): If the shutter is released in this case, no exposure will be made on the film, the mirror will remain up to prevent viewing, and film advance will lock.

Pushing the reset button with a coin or similar object will return the mirror for viewing, and the film will advance to the next frame when it is released if there is sufficient motor-drive battery power (or it can be advanced manually).

Actuating the multiple-exposure control (see p. 58) before the reset button is released will recock the shutter without wasting a frame of film.

The camera may then be operated at either "X" or "B" mechanical shutter settings (see p. 44) without replacing batteries or at any electronic or mechanical setting after inserting serviceable batteries.

CAUTION

Do not push the reset button while film is being advanced or rewound either by motor or manually.

NOTE

If the auto film-advance lock has been activated, the shutter-speed/function selector can not be turned past "B" from "AUTO" until the camera has been reset.

Cold-weather operation

Batteries by nature tend to decrease in capacity as the temperature goes down.

Toward maintaining motor-drive battery power in shooting at temperatures below 5°C (41°F), the following are recommended:

a) Keep the standard battery case warm in an inside pocket whenever not actually using it attached to the camera, perhaps carrying a spare one to alternate with it.
b) Use the optional-accessory Separate Battery Pack kept warm in an inside pocket while shooting.

Though the silver-oxide batteries used for exposure control in the XK Motor Drive are more serviceable in cold weather than most others, if *old* batteries are used at temperatures below 0°C (32°F), electronic operation may be unsatisfactory. You should thus replace older batteries with fresh ones before using your XK Motor Drive in cold weather and carry spare fresh batteries with you during such use.

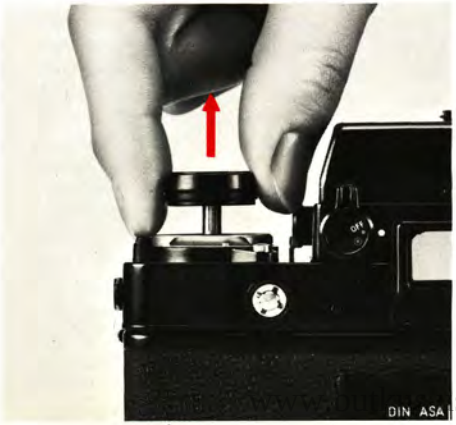
NOTE

If the camera or battery case is not to be used for more than two weeks, it is advisable to remove all batteries to avoid possibility of corrosion.

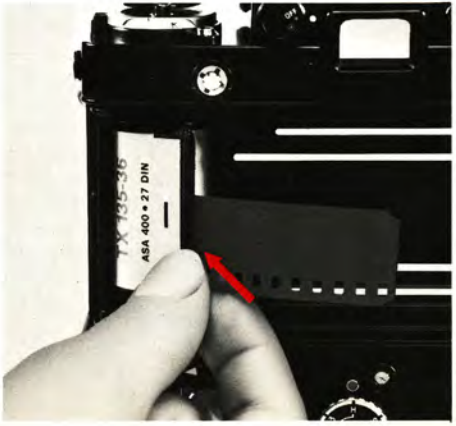
LOADING FILM

The following instructions apply for standard 35mm cartridges of up to 36 exposures each with the standard back cover on the XK Motor Drive. (Instructions for the 250-Frame Film Back are packed with it.)

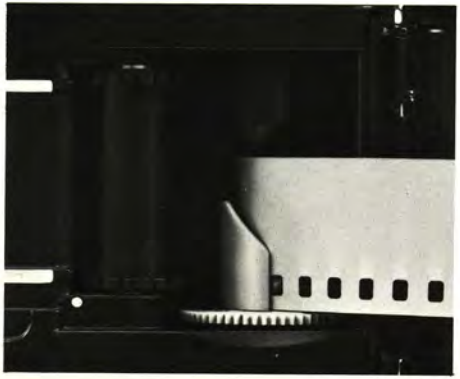
1. Pull out on the back-cover release knob until the camera back springs open.



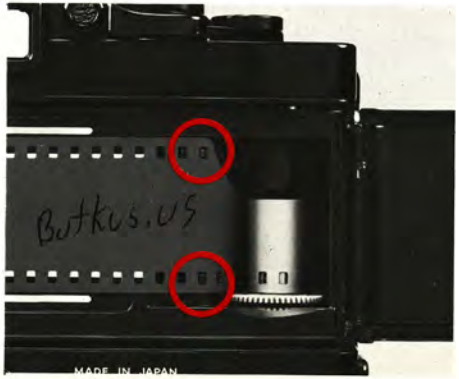
2. Leaving the knob pulled out, position a film cartridge in the chamber with the projecting-spool end toward the bottom of the camera. Then push the back-cover release knob all the way in, rotating it slightly to do so if necessary.



3. Insert the end of the film leader as shown into one of the slots in the take-up spool so that the tooth is engaged with a sprocket hole near the end of the leader. Make sure that the end of the leader does not project from another slot between tabs on the spool (as this will prevent proper rewinding).



4. With the frame-rate selector set at "S," push the operating button one or more times until the film has begun to wind firmly around the take-up spool and the sprocket teeth are engaged with the holdes on both edges of the film. If desired, this step can also be accomplished by releasing the shutter and advancing film manually (p. 52).



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 manual rewind crank and turning it in the direction of the arrow until resistance is felt.
6. Leaving the crank folded out, 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 by pushing the operating button or manually until "1" appears opposite the pointer of the exposure-counter dial. Rotation of the crank during the full winding stroke in the direction opposite the 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 again opening the back and repeating the steps from 3 above onward.

NOTE

The manual rewind crank should be kept folded in during operation to avoid its catching on anything and causing a stoppage.

Exposure counter

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 exposure made. This exposure counter automatically resets for film loading when the camera back is opened.

FILM SPEED

Film-speed selector

On metering finders, the effective exposure index of the film in use must be set for proper exposure. With the AE-S Finder, this is done by pushing the film-speed selector release and rotating the selector dial by means of its milled edge until the applicable value indication clicks into place at the red index in the window marked "ASA." Dots between numbered graduations indicate ASA numbers as shown at right:

6	**200**
• 8	• 250
• 10	• 320
12	**400**
• 16	• 500
• 20	• 640
25	**800**
• 32	• 1000
• 40	• 1250
50	**1600**
• 64	• 2000
• 80	• 2500
100	**3200**
• 125	• 4000
• 160	• 5000
	6400

CAUTION

When setting film speed, the white dot indicating zero should generally appear in the compensation-factor window (see p. 64).

ASA/DIN conversion scale

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

Memo holder

Around the ASA/DIN conversion table is a convenient frame that can be used to keep memos handy with the camera. It is just the right size to hold the film-box end, which can be inserted as a reminder of the film in use.

STOP-DOWN BUTTON

The stop-down button on the XK Motor Drive has two positions: Inner for full-aperture metering and outer for stop-down metering (see right) or depth-of-field preview (see p. 48).

Pushing the button once will set it at one of these positions; pushing it again will set it at the other.

At full aperture

METERING METHODS

With MD and MC Rokkor lenses, metering is done at full aperture, with the stop-down button at its inner position (see left), for greatest sensitivity and accuracy. The viewfinder thus remains at maximum brightness for utmost ease of composing and focusing, with the automatic diaphragm closing down only at the moment of exposure to the aperture preset on the aperture ring.

Stop-down metering is used for lenses other than the MD or MC type (see p.65).

Stopped down

Your camera should be held in a comfortable position that will provide sufficient steadiness. A recommendable way that permits ready operation of important controls is illustrated below:

To hold the camera horizontally, slip your right hand through the holding strap and support the camera by grasping the holding grip as shown. In this position, the middle finger can naturally depress the Senswitch and the index finger can conveniently push the operating button for motor operation or can be moved to the shutter-release button for non-meter use. The thumb will push against the back cover in motor operation or can actuate the film-advance lever in non-motor use.

The thumb and middle finger of the left hand can grasp the focusing grip of the lens, and the thumb and index finger of the same hand can be used to turn the aperture ring, with the ring and little fingers folded out of the way.

The camera may easily be rotated to a vertical position as shown (center) when held in this way. Using the thumb to push the operating button and perhaps the index finger to actuate the Senswitch may make for more holding comfort and stability in this case. Another possibility is to rotate it in the opposite direction and cradle the rewind-crank end in the left hand with the fingers as shown.

Power/function switch

With this three-position switch turned so that "OFF" is aligned with the index, power for metering, exposure control, and LED shutter-speed display will be on when the "Senswitch" on the body's holding grip is being depressed and off when it is not. In this position, a large red dot is visible above the switch to remind you to be sure to squeeze the Senswitch to avoid stoppage unless you are using "X," "B" or step electronic shutter setting (see p. 43).

Turning the switch so that the red circled dot (◉) is aligned with the index will override the Senswitch and keep both AE display and power on even though it is not being touched. (This position should be used if you want metering and auto-exposure control with finder shutter-speed readout when the camera is mounted on a tripod or is not being held in the usualy way.) In this position also the large red dot is visible above the switch to remind you that finder display is drawing power and should be turned off when not in use.

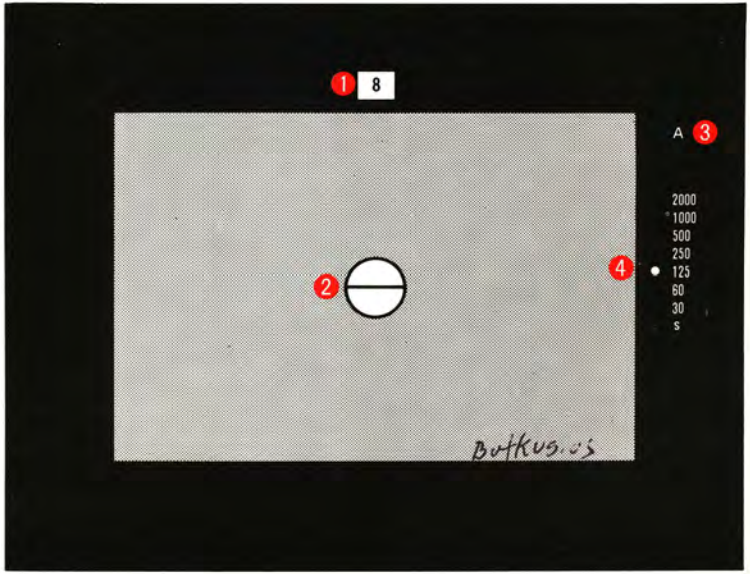
With the single red dot (•) aligned with the index, metering and auto-exposure control will continue to function, but the finder display will appear only when the Senswitch on the camera-body holding grip is depressed. (This position is intended primarily to save power when finder readout is not required as in remote or unmanned auto operation.)

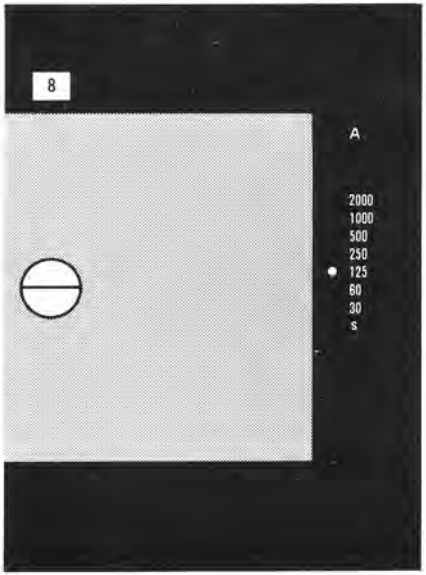
With non-metering finders, it is unnecessary to turn power on and off. The camera will draw power only when electronic shutter speeds are used.

Finder information

The following are generally visible looking through the AE-S Finder with the indication-range selector set for high range and display power on:

1. F-number of lens aperture set
2. Split-image focusing spot with standard "P" screen
3. Setting of shutter-speed/function selector: "A" for "AUTO," "X," "B," or speed number for manual step settings
4. LED/digital speed indication (high range shown): Indicates stepless shutter speed being set on automatic mode, correct shutter speed to be set for proper exposure on manual mode





LED/digital speed indication

This is divided into high and low display ranges.

High range

With this, pictured at left, stepless indication is by red LED dots that light up opposite white numbers representing shutter speeds from 1/2000 to 1/30 sec. Lighting of only a single dot opposite a given number indicates exactly that speed (for example, if only the dot opposite "125" lights, a speed of 1/125 sec.). If subject brightness, lens aperture, and/or film-speed setting change, successive adjacent dots will glow progressively brighter as the one(s) before dim and/or go out (for example, very dim glowing of the dot opposite "250" while the one opposite "125" is lighted indicates a speed somewhat higher than 1/125 sec.; if the dots opposite both "125" and "250" are glowing with equal brightness, a speed halfway between 1/125 and 1/250 sec. is indicated, and so on).

If no red indication lights up opposite a number or letter with display power on, a speed

above the upper limit of the shutter-speed range is indicated, and conditions should be adjusted until a red indication lights to avoid over-exposure.

If the speed to be indicated is below 1/30 sec., a triangular indicator opposite "S" at the end of the scale will light, indicating a slower speed in the low range.

Display-range selector lever

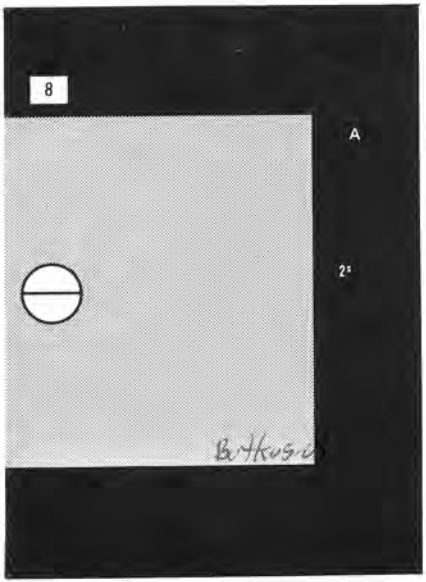
Display-range changes are made by this lever, which is located on the left side of the finder looking from the rear.

The lever locks at its high-range position pointing downward at an angle. To release it and change finder display to low range, depress the lever slightly. To fix the low-range display in position, turn the lever clockwise until it points straight ahead while depressing it.

The lever is not locked in its low-range position. To change finder display to high range, simply flip the lever toward the bottom of the camera until it pops out and locks in position.

High range

Low range



Low range

If the display is switched to low range when the high-range indication is "S," the high-range scale will disappear and stepless red digital LED indication (as shown) of shutter speeds from 1/50 through 8 sec. will be made by lighting of figures from "15" through "8s" in the same manner as described for high range above.

If the low-range display goes black after "15" has lighted, switch to high range for further display.

If the low-range display goes black after "8s" has lighted, a speed below the auto shutter-speed range is indicated, and to avoid underexposure, conditions should be adjusted until a display figure lights or high range is indicated.

NOTE

The AE Finder for the non-motorized Minolta XK camera may also be used if desired for single-frame operation only on the XK Motor Drive. Metering range and other specifications are as indicated in the XK Owner's Manual.

Minolta's "center-weighted overall" metering system employs a silicon photo cell mounted on the AE-S Finder's pentaprism with arrangements so that light from all parts of the focusing screen is measured but most influence is from the central area. Thus the reading should yield satisfactory exposure without adjustment as long as the main subject area occupies a major part of the center of the frame. If the most important subject area to be measured is not centered or occupies too small a part of the central area, move the camera to center it or move toward the subject until it fills the central part of the frame. Note the reading in this position and use the exposure adjustment control (see p. 46) to set the same shutter speed when making the exposure from the original position. Further, if the most important area is very much brighter or darker than the rest of the frame, exposure should be decreased or increased with the same control from 1/2 to 2 stops, the exact amount varying with the actual brightness difference and the effect desired. As with most metering systems, strong sources of direct light or other very bright areas may unduly influence the reading if allowed to dominate the frame.

Though the AE-S Finder is designed to minimize the effect on the meter of light entering through the finder 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 p. 42) can be used to completely eliminate this problem.

Besides offering instantaneous response with no "memory," the silicon photo cell offers considerably extended sensitivity for greater usefulness at low light levels.

AUTOMATIC EXPOSURE CONTROL

Automatic operation

1. Turn the AE-S Finder's shutter-speed/function selector dial to align "AUTO" with the index on the finder housing. A yellow "A" will appear outside the frame at the upper right in the finder.
2. Turn on power by means of the holding-grip Senswitch (p. 23) or the finder power switch (p. 34).
3. Set the desired f-stop on the lens (by turning the aperture ring for most lenses). The f-number set will appear above the frame in the finder with most Minolta lenses. The finder will vary the shutter-speed steplessly to provide proper exposure for the aperture and other settings with the light being metered. This will be done automatically within the auto range of 8 to 1/2000 sec.

whether the speed indication (p. 36) appears in the finder or not provided finder power is on. Whenever a speed outside the auto-exposure range is indicated, adjust the aperture or other conditions to yield a speed within it.

4. Adjust focus, compose your picture, and release the shutter.

Burkus, US

NOTE

If the shutter release button is pushed while power is off (i.e., when the grip Senswitch is not being depressed if the AE-S Finder switch is off) 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" or pushing the reset button 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.

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 lever at the right rear on the finder as indicated 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.

NOTE

To continuously provide more or less exposure on automatic mode, see p. 46.

Metered/manual operation

1. While depressing the AUTO-setting release if from the "AUTO" setting, turn the shutter-speed/function selector to align any step indication from "2000" through "1" with the index. The number of the speed set will appear as the yellow shutter-setting indication at the upper right outside the finder frame.

2. To set proper exposure for light as metered with the other camera settings, turn the aperture ring until the LED/digital display indication is the same as the yellow shutter-setting indication. If the same figure cannot be obtained, adjust the shutter-speed setting or other conditions to permit it.
   Note that correct exposure cannot be obtained by number matching at "X" and "B" settings or with speeds longer than 1 sec., although metered shutter speeds as long as 8 sec. can be determined by means of the finder display. Such speeds are set as described on p. 45.
3. Display indication can of course be disregarded and any speed-aperture combination set for full manual operation.

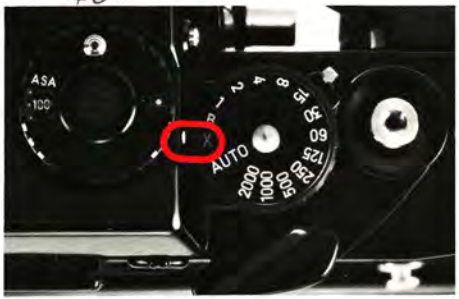
Mechanical shutter settings

Both "X" and "B" shutter settins are mechanically controlled. With either of these letters aligned with the dial index, you can view, make exposures, and advance film either with serviceable exposure-control batteries or even if those batteries are unserviceable or completely lacking.

"X" setting

Turning the shutter-speed/function selector to align "X" with the index (while depressing the AUTO-setting release if from "AUTO" setting) provides a fixed shutter speed of 1/100 sec. for fully synchronized exposure with electronic flash, existing continuous light, and/or FP flash-bulbs. A yellow "X" will appear at the upper right outside the finder frame at this setting.

At the "X" setting, the shutter may be tripped by means of either the operating button or the manual shutter-release button, with corresponding motorized or manual film advance. Metered exposure for it will be approximately correct with a finder display indication of slightly below "125."



"B" setting

This is set by turning the shutter-speed/-function selector to align "B" with the index (while depressing the AUTO-setting release if from "AUTO" setting). A yellow "B" will appear at the upper right outside the finder frame at this setting. Correct exposure for the "B" setting cannot be obtained by the number-matching method (p. 43).

For "bulb" exposures, in which the shutter stays open as long as the button is depressed, use the manual shutter release and film advance (p. 52) at the "B" setting.

For "time" exposures, in which the shutter opens when released and stays open until closed by another operation, push the operating button to open the shutter, which will remain open until the shutter-speed/function selector is turned to "AUTO," when it will close and film will advance automatically if battery power is sufficient or may otherwise be advanced manually.

Making exposures of 2 to 16 sec.

With the shutter-speed/function selector set at "B," depress the long-exposure selector 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 shutter-setting indication in the finder will remain fixed at "B" for all step speeds longer than 1 sec.

The long-exposure lever can be depressed only with the speed/function 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.

EXPOSURE-ADJUSTMENT CONTROL

To deliberately give more or less exposure on either automatic or metered-manual mode, use the exposure-adjustment control as follows:

While lifting the release of the control as shown, rotate it to the side having plus (+) numbers to produce more exposure or the side having minus (—) numbers to produce less exposure. The numbers indicate the amount of adjustment in stops or EV steps (i.e., "+1" indicates one stop more or double the zero-position exposure, and "+2" produces two stops or four times more exposure; "—1" is one stop less or half the exposure, and "—2" produces two stops less or one quarter the normal exposure; the intermediate dots indicate half stops or 0.5 EV graduations). The control locks at the "0" position and has full and half click-stops on both plus and minus sides.

CAUTION

Always return the exposure adjustment control to zero after use.

By various means

Focusing method varies with the screen (see p. 61 for those available) and focusing method being used and other conditions. To focus visually with a split-image spot, such as that centered in the standard Type P screen, look through the finder with the lens at full aperture (i.e., with the stop-down button at its inner position) and turn the focusing collar until the subject images ,in each half of the spot are exactly aligned with no broken lines between them.

Illustration is Type PM screen, which has both split-image and microprism focusing aids as well as a mat field.

Out of focus

To use a microprism field for this, turn the focusing collar until the subject image in the field appears clear rather than broken up or shimmering and blends with that surrouding it.

On a mat field, the subject is simply focused until it appears sharpest.

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.

In the specialized parallax method used with screen Types H and S, focus is adjusted until the reference point on the screen no longer appears to move in relation to the image in the background when the position of the viewer's

In focus

eye is changed (e.g., moved from side to side) slightly.

With the similar dioptric method, the position of the eye remains the same, but focus is adjusted until the reference point and the image behind it both appear sharp at the same time.

Depth-of-field preview

Depth of field at any aperture and focusing distance can be previewed visually on a mat field only by pushing the stop-down 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 judge approximately 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 (see p. 32).

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 by the small red "R" in the depth-of-field scale.

Frame-rate selector

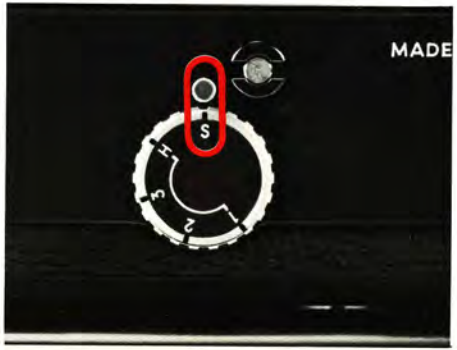
To set the frame rate for operation, turn this selector dial until the desired indication snaps into place at its click stop aligned with the red index.

CAUTION

Do not set the frame-rate selector between click stops.

Single-frame operation

1. Set the frame-rate selector to "S."
2. With the button-lock ring turned so that the black index on it is aligned with the white index, push the operating button. The shutter will be released followed by automatic film advance to the next frame each time the button is pushed unless operation stops automatically. After film advances, operation will stop until the button is pushed again.



Continuous operation

1. Set the frame-rate selector to "1," "2," "3," or "H" in accordance with the operating speed desired. The three figures indicate respective number of frames per second with serviceable batteries and shutter speeds short enough to allow them (see box). "H" indicates a maximum rate of 3.5 frames per second with fresh new batteries, average film, and sufficiently short shutter speeds.

2. With the ring at its unlocked position, push the operating button. Shutter will be released and film advanced automatically up to the rate set until the button is released or operation stops automatically.

NOTE

- If the battery power becomes too low and the motor stops while advancing film and serviceable batteries are not to be inserted, remove the old batteries or disconnect motor-power input and use manual operation (p. 52).
- Do not attempt to advance film manually while the camera is operating by motor.

SHUTTER-PRIORITY FILM ADVANCE

The unique mechanico-electrical switching system of the XK Motor Drive keeps the film-advance mechanism completely disengaged while the shutter is open and makes it impossible for film to move forward until the second shutter curtain has closed. In single-frame operation, this means that film cannot be advanced until after the whole exposure (e.g., 8 sec.) has been completed even if the operating button or manual shutter release is pushed; both are locked, as is the manual film-advance lever. In motor operation, film will be advanced automatically (as long as battery power and other conditions permit) when the second curtain closes or the operating button is released, whichever occurs later. In continuous operation, the shutter priority film-advance system constitutes automatic frame-rate control with a full range of frame rates and shutter speeds for the first time. Correct exposure will be maintained by automatic adjustment of the frame rate regardless of the selector setting. If the speed set becomes too long to allow operation at the frame rate set, the rate is automatically reduced to allow the proper shutter speed. (for example, if the shutter speed is 1/4 sec., at 2 frames per second, the actual frame rate will be 1 fps; if the shutter is set for 4 sec., film will advance only every fifth second even if set on "H"). If a higher shutter speed is then set automatically or manually, the frame rate is automatically increased up to a maximum of the rate set. Minimum shutter speeds to permit operation at given frame rates are as follows: 1/250 sec. at "H," 1/30 at 3, 1/8 at 2, and 1/2 at 1.

The shutter can be released and film advanced manually if desired, whether or not motor-drive battery power is sufficient.

Releasing shutter

To release the shutter manually, depress the manual shutter release as you would with an ordinary single-lens reflex. (The frame-rate selector may be at any setting.) The shutter speed will be determined by the automatic or manual setting (provided exposure-control battery power is sufficient for electronic speeds), but film will not advance automatically.

CAUTION

Do not push both the manual shutter release and operating button at the same time.

NOTE

- Manual shutter release with the XK Motor Drive will be as smooth as with the XK model, except for the first time the shutter is released manually after motor operation; this is normal.
- Film should be advanced manually if the shutter has been released manually; if the operating button is pushed after the shutter has been released manually, film will advance, shutter will be released, and film advanced again (with sufficient battery power and the frame rate set at "S").

CAUTION

If motor battery power is sufficient, do not depress both operating button and manual shutter release at the same time.

Advancing film

Film is advanced manually, the shutter cocked, and exposure counter advanced by operating the manual film-advance lever in one or more strokes through its 110° engaged angle. The film-advance lever moves through a 20° angle unengaged before the beginning of its engaged stroke to allow offsetting if from the body.

If the film-advance lever remains locked between exposure even though the shutter has been released, battery voltage is insufficient for electronic operation (see p. 24). 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.

REWINDING FILM

Motor rewind

To rewind film automatically at any time whether all exposures have been made or not, simply push the motor-rewind lever to the left about 35°. With sufficient battery power, film will be rewound and the motor will stop automatically when this is finished, leaving the end of the film leader out of the cartridge. The motor-rewind lever resets to its original position when the camera back is opened.

NOTE

If motor should stop due to insufficient battery power during motor rewind, remove batteries or disconnect motor-power input and finish rewinding manually.

CAUTION

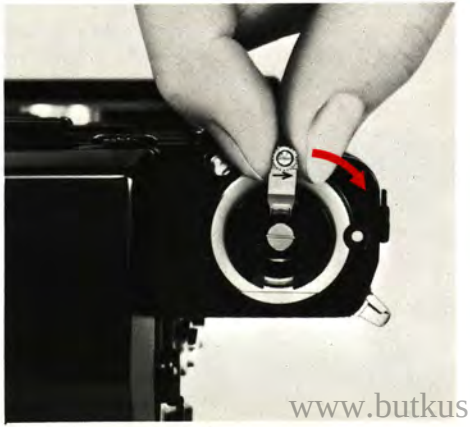
Do not attempt to turn the manual-rewind crank before opening the camera after motor rewind as this will damage the mechanism.

Manual rewind

Film may be rewound manually at any time whether batteries are serviceable or all frames have been exposed or not. To do so:

1. While pushing the button in the middle of the multiple-exposure control, move the control in the direction of the arrow (right) until a faint click indicates sprocket and take-up have been released.

2. Unfold the manual rewind crank on the back-release knob and turn it in the direction indicated by the arrow on it (clockwise). In rewinding the film completely into the cartridge in this way, you will feel tension on the film finally increase slightly, then disappear, and the crank will turn freely.



NOTE

If film is rewound manually after motor film advance, the auto-rewind lever must be pushed to the left before loading a new film.

UNLOADING FILM

When you are certain that the film is rewound as you desire, pull out on the back cover release knob to open the back and remove the cartridge.

Your XK Motor Drive is equipped 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 until it snaps into the click stop with the central groove pointing to 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 metered/manual mode (step speeds)
X	Electronic flash ("strobe")	8 through 1/100	16 through 1/60, X (1/100), B
	Class M of MF flashbulbs	8 through 1/30*	16 through 1/30*, B
FP	Class FP flashbulbs	8 through 1/2000	16 through 1/2000, X, B

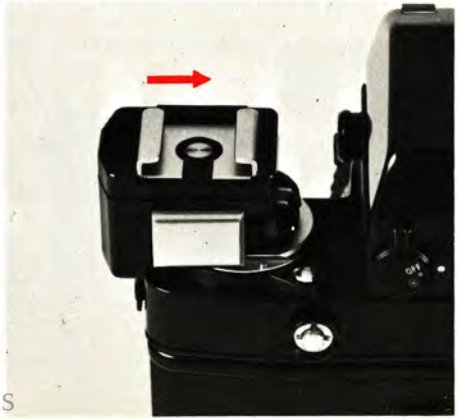
* Certain Class-M bulbs have characteristics which allow covering higher speeds.

These ranges apply for both continuous and manual or motorized single-frame operation. For satisfactory results, care should of course be taken to assure that flash equipment and conditions enable sufficiently rapid recycling for the frame rate in use.

Connecting flash units

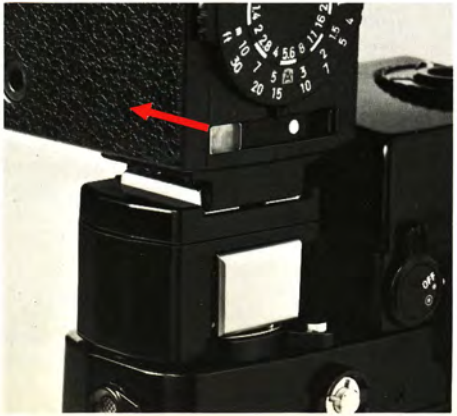
Bracket-type flash units are attached to the camera by means of its tripod socket.

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 requiring 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:

In motorized operation

1. While depressing the release button in the center of the multiple-exposure control, slide the control in the direction of the arrow (right) as far as it will go; a faint click indicates that the mechanism is actuated. (Do not hold the control in this position white film is advanced; let it snap back to the original one.)

2. With the frame-rate selector at "S," push the operating botton. (This will cock the shutter for the next exposure, but the film will not advance.)
3. If you wish to made only a double exposure, push the operating button; the second exposure will be made and film will advance in the usual way. If you wish to make more than two exposures on the same frame, repeat steps 1 and 2 above as many times as desired, making sure *not* to actuate the multiple-exposure control before pushing the operating button for the last exposure.

The multiple-exposure control may also be held all the way to the right in its actuated position for as many continuous exposures on one frame as desired.

In manual operation

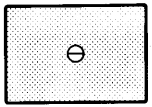
1. Make the first exposure in the usual way by pushing the manual shutter release.
2. While depressing the multiple-exposure control's central release button, slide the control as indicated by the arrow until a faint click indicates that the mechanism is actuated. (Do not hold the control in this position while is advanced; let it return to the original one.)
3. Operate the film-advance lever. This will cock the shutter for the next exposure, but film will not advance.
4. Make your second manual exposure.
5. Repeat steps 2 and 3 above as many times as desired to make further exposures, advancing film to the next frame in the usual way after the last one *without* moving the control.

NOTE

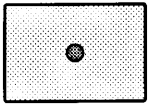
The exposure counter will advance each time the operating button or shutter release is pushed.

INTERCHANGEABLE FOCUSING SCREENS

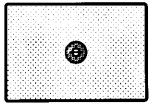
These are installed and removed as explained on p. 12. See your Minolta dealer for further new types.



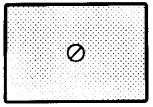
Type P: Mat Fresnel field with ϕ4mm central horizontally oriented split-image spot; for general photography, especially with wideangle lenses and subjects with vertical lines



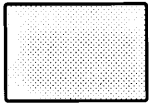
Type M: Mat Fresnel field with ϕ4mm central microprism spot; for general photography, especially with 35 to 100mm lenses and subjects without strong lines



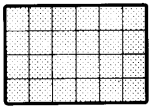
Type PM: Mat Fresnel field with ϕ2.5mm central horizontally oriented split-image spot surrounded by a circular microprism band 1.5mm wide; for general photography, with all lenses



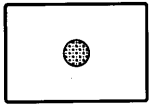
Type AP: Special fine-ground mat Fresnel field with central ϕ4mm obliquely oriented split-image spot; for general photography; provides clearer image, natural color, and easier mat-field focusing; brighter image with lenses of f/5.6 or larger maximum aperture



Type G: Mat Fresnel field only with no spot; for general photography, especially with long-focus lenses



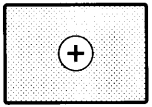
Type L: Mat Fresnel field with a grid of fine horizontal and vertical lines etched at 6mm intervals; for architectural and other work requiring accurate composition or subject alignment, especially with the Shift CA Rokkor Lens



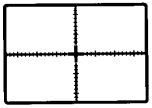
Type C1: Clear Fresnel field with ϕ6mm microprism spot; for general photography, especially in dim light, with certain lenses (see chart)

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 ϕ8mm clear spot containing an etched double cross; for dioptric and parallax focusing (p. 47) in astrophotography, photomicrography and other high-magnification applications



Type S: Clear Fresnel field with central cross as above plus etched measuring scales; for dioptric and parallax focusing (p. 47) in dim light, close-ups, photomicrography and other high-magnification applications plus making actual image measurements

LENS-SCREEN COMBINATION CHART

A number of combinations of focusing screens and lenses require metering compensation for accurate exposure. In addition to showing recommendable combinations of lenses and the metering method to be used with each, the table indicated any such factors necessary. To set the factor, see next page.

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 63); 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.

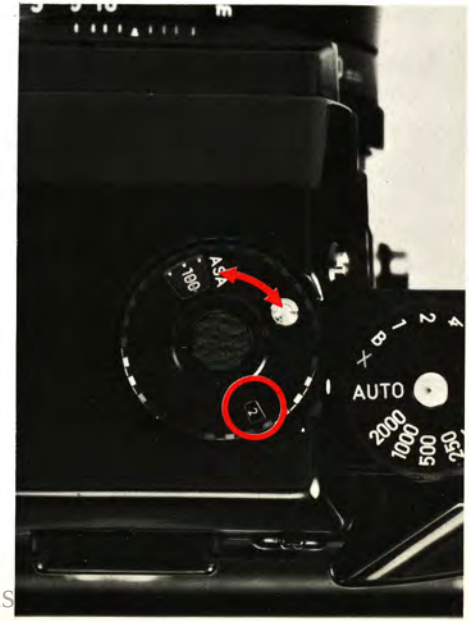
		P	M	PM	G	L	AP	C_1	C_2	C_3	H	S
FISHEYE	7.5mm f/4						2.5	3.5	3.5	3.5	•	
	16mm f/2.8						1.5		3.0	3.0	•	
WIDE ANGLE	17mm f/4						1.5		3.0		•	
	21mm f/2.8						1.5	3.0	2.5		•	
	24mm f/2.8 & 24mm V.F.C.						1.5	2.5	2.5		•	
	28mm f/2						1.5	2.5	2.5	2.5	•	
	28mm f/2.8						1.5	3.0	2.5		•	
	28mm f/3.5						1.5	2.5			•	
	35mm f/1.8						1.0	2.5	2.0		•	
	35mm f/2.8						1.5	3.0	2.5		•	
	35mm f/2.8 Shift										•	
STANDARD	50mm f/1.4						0.5	3.0	2.5	2.5	•	
	50mm f/1.7						1.0	2.5	2.0		•	
	58mm f/1.2							2.5	2.5	2.0	•	
TELEPHOTO	85mm f/1.7						1.0	2.5	2.0	2.0	•	
	100mm f/2.5						1.5	2.5	2.5	2.5	•	
	135mm f/2.8, f/3.5						1.5		3.0	3.0	•	
	200mm f/3.5, f/4, f/4.5						1.5			3.5	•	
	300mm f/4.5						1.5			3.5	•	
	300mm f/5.6	•	•	•			*1.5				•	
	400mm f/5.6 APO & w/2X Converter	•	•	•			*1.5				•	
	800mm f/8 RF	•	•	•			*2.0				•	
	1600mm f/11 RF	•	•	•			*2.5				•	
ZOOM	40-80mm f/2.8						1.5			3.0	•	
	80-200mm f/4.5						2.0			3.5	•	
	100-200mm f/5.6	•	•	•			*2.0				•	
	100-500mm f/8	•	•	•			*2.0				•	
MACRO	50mm f/3.5 Macro						1.5		3.0			
	100mm f/3.5 Macro						1.5			3.5		
	100mm f/4 Bellows	•	•	•			*2.0					

Compensation-factor selector

With the AE-S Finder, if the lens-screen combination you are using requires compensation see chart on p. 63):

1. Move the compensation-factor selector until the applicable factor designation appears in the factor window in the selector dial.
2. Then re-align the index of the film-speed selector (p. 30) with the effective ASA rating in use.

When no compensation is needed, the dot should appear in the window (with applicable film speed set) for proper metering.



Metering and exposure with RF Rokkor-X (reflex-mirror type), Auto Rokkor, and Manual-Preset Rokkor and adapted Leitz lenses are by the stop-down method as follows:

Auto Rokkor lenses

1. After focusing, set the stop-down button at its stop-down position (see p. 32).

2. Set exposure as explained on pp. 40-43. The viewfinder field will darken as the lens is stopped down, and the split-field spot and/-or microprism band may become unusable due to darkening.
3. Leave the lens stopped down the the proper taking aperture when releasing the shutter.

RF (mirror-type) and manual diaphragm lenses (viz., Minolta Manual Preset type, adapted Leitz Photar and Telyt-S)

Proceed as for Auto Rokkors above, except that the stop-down button need not be pushed, as metering may be done and exposure made with it set in either position.

NOTE

Push-in filter-elements of the 800mm and 1600mm RF Rokkor-X Lenses can be changed with the camera body in its vertical position.

Separate Battery Pack

This slender case holds the motor-drive batteries and connects with the power-input socket on the camera's holding grip via a 1.2m (4 ft.) cord. Used instead of the Standard Battery Pack, it makes the XK Motor nearly the size and weight of an ordinary SLR. The Separate Battery Pack can be conveniently attached to the photographer's belt and is particularly useful for cold-weather shooting, since keeping it warm in a pocket enables operation in considerably lower outside temperatures than otherwise possible.

250-Frame Film Back

This two-cartridge-type magazine back attaches in place of the removable regular one and holds up to 10m (33 ft.) of film to take 250 frames without reloading. Motorized or manual film advance is possible. A frame counter, film cutter, and tripod/grip socket are built in. This back considerable extends the usefulness of the XK Motor Drive for long rapid-sequence work, surveillance, or other remote or unmanned work. Either the Separate Battery Pack or the Battery Grip may be used with the 250-Frame Film Back.

Battery Grip

This is a combination grip and motor-battery case that attaches via the tripod socket and whose short cord plugs into the power-input socket on the camera's holding grip. It is primarily intended for hand-holding the camera with the 250-Frame Film Back attached but may also be used with the regular back. The built-in operating button is identical in stroke and other characteristics to the one on the holding grip and is conveniently located for either left- or right-handed actuation.

Film Loader

This unit is specially designed to load the film cartridges used in the 250-Frame Film Back. It can be set to load film lengths for any number of frames up to 250 in five-frame increments. The crank will then stop automatically when the proper length of film has been wound into the cartridge.

Intervalometer PM

This is a battery-powered repeating timer that can be set for intervals from 0.5 to 60 seconds between single-frame exposures. The compact unit attaches to the accessory shoe of the XK Motor Drive and connects via the grip input to release the shutter at the set interval for unmanned sequences of plant or other development; in traffic, surveillance, or meteorological work; and so on.

Remote-Control Cords S and L

These cords are designed for operating the XK Motor Drive from a distance. Each plugs into the input jack on the holding grip. The Cord S is 1m (about 40 in.) long, while the Cord L is 5m (16-1/2 ft.). These cords facilitate remote pictures of wildlife, shots mounted or while panning on a tripod, making exposures from subject position without returning to the camera, and so on.

Connecting Cords S and L

These are used to electrically connect the Intervalometer PM and similar devices with the camera. The Cord S is 50cm (about 20 in.) in length, while the Cord L is 250cm (about 8-1/4 ft.). Each has a four-prong plug at one end for the device to be connected and a single-prong plug on the other for insertion into the input jack on the camera's holding grip.

MINOLTA XK MOTOR DRIVE BODY

Type: Integral motor-drive, interchangeable-finder 35mm single-lens-reflex camera with electronic focal-plane shutter

Frame size: 24 x 36mm

Lens mount: Stainless-steel Minolta SLR bayonet, 54° rotating angle
Coupling: For full-aperture metering and automatic diaphragm operation with Minolta meter-coupled lenses (stop-down metering used for other Minolta or adapted Leitz lenses)
Two-position button for depth-of-field preview and stop-down metering

Shutter: Electronically controlled horizontal-run focal-plane type with titanium curtains and 2 mechanically controlled settings
Electronic speeds: 16 to 1/2000 sec. in steps, 8 to 1/2000 sec. continuously variable (with AE-S Finder)
Mechanical settings: "X" (1/100 sec.) and "B" ("time" in motor-drive mode, "bulb" in manual operation)

Viewfinder: Interchangeable type showing 98% of area appearing on film (AE-S, 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 a full range of other screen types

Film advance: Motor-driven: By single micromotor for S (single-frame) or 1, 2, 3, and "H" (3.5) continuous frames per second set by selector on back of motor-drive housing
Automatic advance stop by film-tension sensor when film exhausted
Film-advance also stops automatically and shutter and mirror lock when exposure-control battery voltage insufficient. (Button provided resets mirror and releases stop.)
Manual: Lever type, single- or multiple-stroke, 110° winding angle after 20° unengaged movement

BUYERS GUIDE

Advancing-type exposure counter with scale numbered 1 to 40 resets automatically when camera back is opened by pulling out on back release knob.
3-slot take-up spool rotates toward center of camera.
Multiple exposures possible with control provided.

Rewind: Motor-driven: By same motor as for film advance (time about 9 sec. with fresh batteries and average conditions); activated by motor rewind lever; automatic switch-off by film sensor pin leaves end of film leader outside cartridge; drive reset to advance mode when camera back opened
Manual: By crank that engages when folded out from back-release knob; sprocket disengaged by pushing multiple-exposure button

Mirror: Oversize quick-return type (PO balue: 140mm; finder image cutoff negligible even with 1600mm RF Rokkor extreme telephoto)

Flash sync.: X contact: Electronic flash synchronizes at 1/100 sec. ("X") and longer stepless and step speeds, FP contact: FP bulbs synchronize at all step speeds through 1/2000 sec. including "X"; single terminal in threaded socket with X/FP switch; direct contact on accessory mount for Minolta cordless flashguns using optional accessory hot shoe

Power sources: For electronic-shutter control and finder metering and automatic-exposure control where applicable: Two 1.5v silver-oxide cells (Eveready S-76, USAR S-76, Malloy MS-76, or equivalent); lever-lamp type checker on end of body
For motor: Ten 1.5v sealed carbon-zinc AA (penlight)-size cells; button-gauge type checker on holding grip

Other: Integral holding grip with locking electromagnetic-relay operating button with constant 1.5mm stroke and "Senswitch" to keep finder power on when camera held in usual operation (alternate switch located on AE-S Finder); remote-control input jack on holding grip for cord connection to intervalometers or similar

devices; gear coupling (with cover) on end of motor housing for 250-Frame Film Back; accessory mount (with direct flash contact) on body around back-release knob; memo holder and ASA-DIN conversion scale on removable back cover; lugs for neck and holding straps

Dimensions and weight: 83 x 147.5 x 171mm (3-1/4 x 5-3/4 x 6-3/4 in.), 1450g (51 oz.) with AE-S Finder and Standard Battery Pack, without lens and batteries

Optional motor-drive accessories: Separate Battery Pack, Battery Grip, 250-Frame Film Back, Film Loader, Remote-Control Cords S and L, Intervalometer PM, Connecting Cords S and L

Uses all applicable Minolta SLR system lenses and accessories

AE-S FINDER

Type: Eye-level pentaprism with built-in metering and automatic/electronic exposure-control apparatus

Magnification: 0.8X with 50mm lens focused at infinity

Circuit: Special low-voltage constant-current type incorporating monolithic IC's for computation, memory, and auto shutter-control functions, powered by 2 silver-oxide batteries in camera body

Visible through eyepiece: F-number set (with most Minolta MC lenses), stepless 2-range LED/-digital indication of shutter speed (being set on "AUTO" or for proper exposure on manual mode) by 8 light-emitting diodes which also give range-changing indication, function/step-shutter-speed setting

Metering: Full-aperture TTL center-weighted type by silicon photo cell mounted on pentaprism, for Minolta MD or MC lenses; stop-down metering also possible, for other lenses

Measuring range:	EV −2 to EV 17 (e.g., 8 sec. at f/1.4 to 1/2000 sec. at f/ 8) for single-frame operation, EV3 to EV17 (e.g., 1/4 sec. at f/1.4 to 1/2000 sec. at f/ 8) for continuous operation, with f/1.4 lens at ASA 100
Auto shutter-speed range:	8 to 1/2000 sec.
Film-speed range:	ASA 12 to 6400, set by selector with 1/3-stop locking increments and setting release
Shutter-speed/function dial:	AUTO, X, B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500, 1000 and 2000; lock at "AUTO" position released by central button
Auto-exposure adjustment:	Up to ±2EV continuously by control around speed/function dial with 1/2 EV click stops and lock at "0"
Screen compensation:	−0.5 EV to +3.5 EV in 0.5-EV click graduations by control on film-speed selector
Power switch:	3 positions: At "OFF," metering/exposure-control power and LED indication are switched on and off by Senswitch on camera-body holding grip; at •, exposure-control power is on but finder display is actuated by grip Senswitch; at ◉, both power and display are on continuously.
Others:	Built-in eyepiece shutter actuated by lever
Dimensions and weight:	42 x 64 x 77.5mm (1-5/8 x 2-1/2 x 3 in.), 215g (7-5/8 oz.)

STANDARD LENS SPECIFICATIONS

Lens:	50mm f/1.7 MD Rokkor-X	50mm f/1.4 MD Rokkor-X	58mm f/1.2 MC Rokkor-X
Type:	Meter-coupled Gauss-type "normal" lens		
Construction:	6 elements in 5 groups	7 elements in 5 groups	7 elements in 5 groups
Angle view:	47°	47°	41°
Coating:	Minolta Achromatic		
Min. focusing dist.:	0.45m (1.48 ft.)	0.45m (1.48 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		
Filter thread diam.:	55mm		
Dimensions:	φ64mm x 40mm (φ2-1/2" x 1-9/16")	φ64mm x 40mm (φ2-1/2" x 1-9/16")	φ70.5mm x 54mm (φ2-3/4" x 2-1/8")
Weight:	195g (6-7/8 oz.)	245g (8-5/8 oz.)	475g (16-3/4 oz.)

CARE AND STORAGE

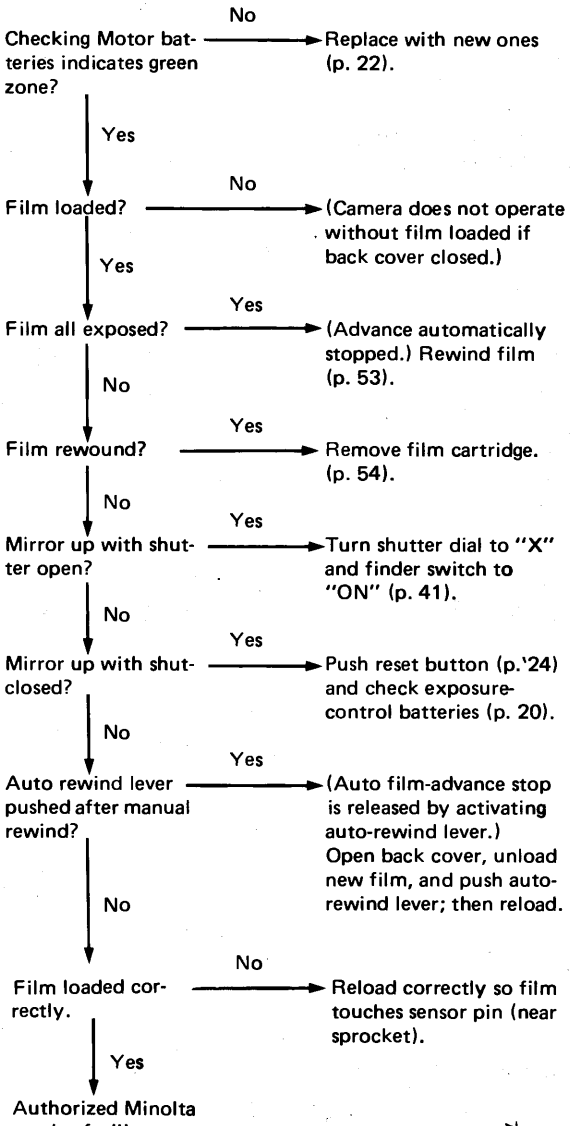
- As with all high-precision instruments, no part of the XK Motor Drive body, or any lens, finder, or screen should ever be forced at any time. If operation is not as you think it should be, use the troubleshooting checklist, carefully restudy the applicable instructions, or consult an authorized Minolta service representative.
- Always keep your camera in a protective case or gadget bag 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.
- Do not touch electrical terminals at the edge of the body's finder socket or on metering finders with the fingers. Use only a dry cloth and no chemicals to clean terminals.
- 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.
- Film guide rails may be gently cleaned with a soft clean cloth when necessary, being very careful not to damage 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 finger prints with a gentle circular motion, breathing on them to condense moisture on the surface if desired. Only if absolutely necessary, the tissue or cloth 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, silicone-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, all batteries should be removed to avoid the possibility of corrosion.
- Make sure the finder power switch (on the Auto Electro Finder) is turned off when the camera is not in use.
- It is also advisable to lock the operating button whenever the camera is not being used.

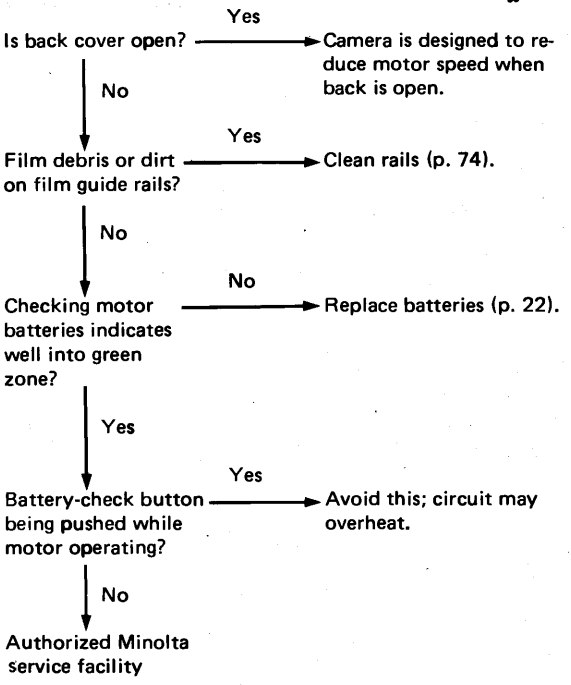
TROUBLESHOOTING CHECKLIST

The many unique advantages offered by your XK Motor Drive are made possible by complex interaction of its thousands of high-precision electric/electronic, mechanical, and optical parts. It is replete with automatic safety and failsafe features designed to promote easy, proper operation with excellent results as well as to prevent damage to itself. Most stoppages or other seeming problems thus result from features intentionally designed into this sophisticated instrument. The following limited checklist is provided to help you quickly and easily find and correct simple problems that might be encountered in usual operation and which do not require service. The page references tell you where to look in this manual for steps shown do not restore proper operation, consult an authorized Minolta service installation.

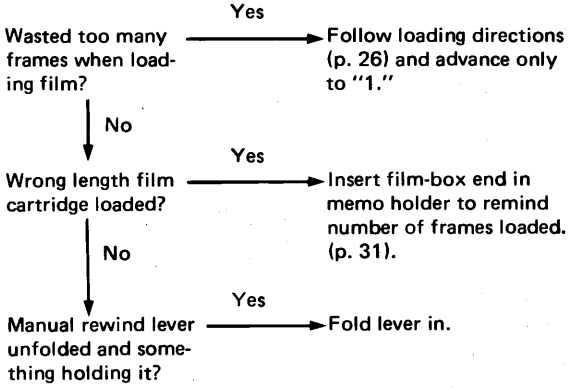
PROBLEM	WHAT TO CHECK AND/OR DO AND/OR REASON
1. Operating button cannot be pushed.	Button-lock ring locked? → Yes → Turn to release (p. 49). → No → Authorized Minolta service facility
2. Unit does not operate when operating button is pushed.	Motor batteries loaded? → No → Load batteries (p. 21). → Yes →

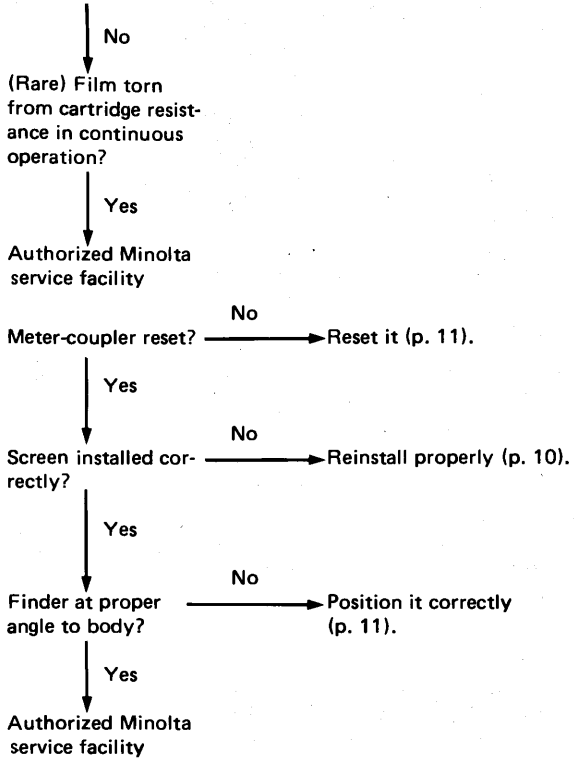

Checking Motor batteries indicates green zone?
No
Replace with new ones (p. 22).
Yes
Film loaded?
No
(Camera does not operate without film loaded if back cover closed.)
Yes
Film all exposed?
Yes
(Advance automatically stopped.) Rewind film (p. 53).
No
Film rewound?
Yes
Remove film cartridge. (p. 54).
No
Mirror up with shutter open?
Yes
Turn shutter dial to "X" and finder switch to "ON" (p. 41).
No
Mirror up with shut-closed?
Yes
Push reset button (p.'24) and check exposure-control batteries (p. 20).
No
Auto rewind lever pushed after manual rewind?
Yes
(Auto film-advance stop is released by activating auto-rewind lever.) Open back cover, unload new film, and push auto-rewind lever; then reload.
No
Film loaded correctly.
No
Reload correctly so film touches sensor pin (near sprocket).
Yes
Authorized Minolta service facility

3. Film-advance rate (motor revolution) is not fast enough.



4. Full number of film frames cannot be taken.




No
(Rare) Film torn from cartridge resistance in continuous operation?
Yes
Authorized Minolta service facility
5. AE-S (or other metering) Finder will not seat properly.
No
Meter-coupler reset?
Reset it (p. 11).
Yes
No
Screen installed correctly?
Reinstall properly (p. 10).
Yes
No
Finder at proper angle to body?
Position it correctly (p. 11).
Yes
Authorized Minolta service facility

6. Exposure is not correct.