AUTO EXPOSURE CONTROL AND METER RANGE—continued

High-contrast light situations

When there are severe brightness differences between the subject and the background, you will often obtain better results using the Nikkormat's center-weighted metering system and memory lock.

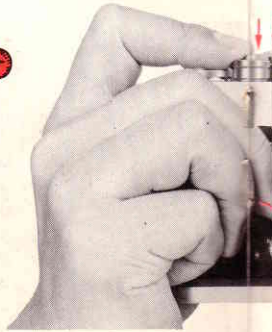
First place the subject in the central part of the viewfinder, or better still, if the subject is accessible, move in on it to make a close-up reading of that particular portion you wish to emphasize. Then press the self-timer/memory lock to the left; the light based on the main subject is now frozen. With the memory lock lever still pressed to the left, move back to get your desired composition and shoot. The shutter has been released at the speed on the memorized reading. The memory "hold" disconnects upon releasing the finger from the memory lock.

For landscapes including an expanse of sky, tilt the camera downward during measurement and lock the reading to prevent underexposure caused by the brightness of the sky. For backlit subjects, move up close and include dark areas of the subject and freeze the reading with the memory lock.

Even when the lever has locked the memory system, the black needle inside the viewfinder continues to deflect according to the brightness of the scene, providing a convenient reference for contrast ratios.

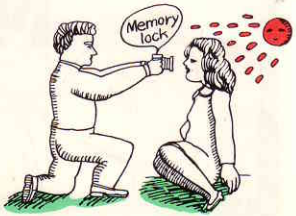
Compose.

Mov



Move in on the subject; lock the reading.

With the memory-lock lever held pressed to the left, move back to get your desired composition and shoot.



Keeping out stray light

The viewfinder is designed to minimize the effect of light entering through the finder eyepiece under normal conditions. For the following situations, a finder eyecup is recommended:

- *When the camera is in the sunlight and the subject is in the shade.*
- *When the stop-down method is used at small apertures.*
- *When a shaft of sunlight falls between the eye and the eyepiece.*

When the shutter is tripped by the self-timer, the eyepiece should be shaded by the hand or other object to prevent stray light from entering through the finder eyepiece.

To prevent camera shake, when the meter needle inside indicates speeds slower than 1/30 sec., mount the camera on a tripod or other firm support and use a cable release to trip the shutter. The shutter release button is threaded to accept the Nikon cable release.

Caution: When mounting the camera on a tripod, do not overscrew the tripod thread into the camera tripod socket as it may damage the camera baseplate.

MANUAL OVERRIDE

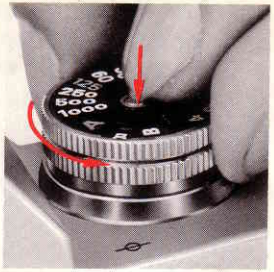
Nikkormat EL incorporates an override for manual exposure control so that you may select the aperture/shutter-speed combination you want to use, or for deliberate underexposure or overexposure. The manual control is also used when conducting flash photography. On the manual control, the camera gives a choice of 13 click-stopped settings ranging from 4 to 1/1000 sec., plus B. The green needle inside the viewfinder indicates the shutter speed you have selected.

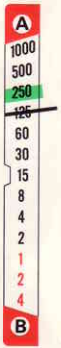
Exposure determination

Even with the camera set at manual control, the built-in exposure meter still remains cross-coupled with the shutter speed and the aperture diaphragm of the lens, and the black needle in the viewfinder continues to indicate the shutter speed according to the scene brightness.

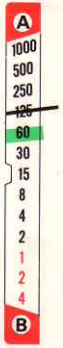
To get the correct exposure at manual setting, first look through the viewfinder at the shutter-speed scale, and then adjust the aperture and/or shutter speed until the green and black needles match each other. For fine adjustment the lens aperture permits reliable intermediate settings.

If you want deliberate underexposure or overexposure, reset the green needle to a number higher or lower than the number indicated by the black needle in the shutter-speed scale.





Deliberate one-step underexposure is obtained . . .



. . . and one-step overexposure.

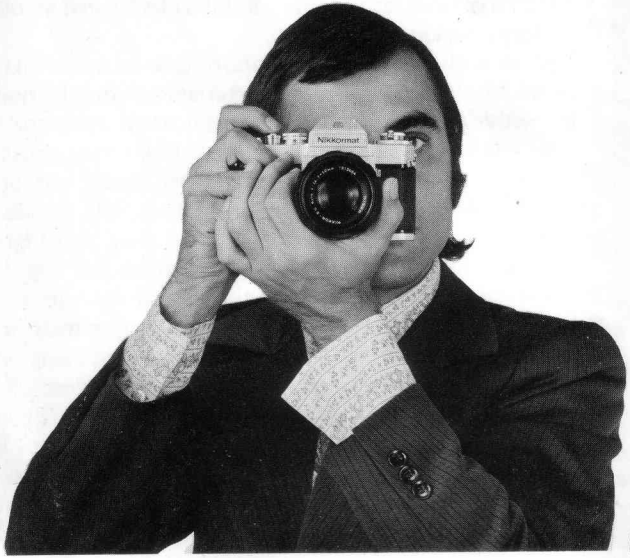
Choice of shutter speed/aperture combinations

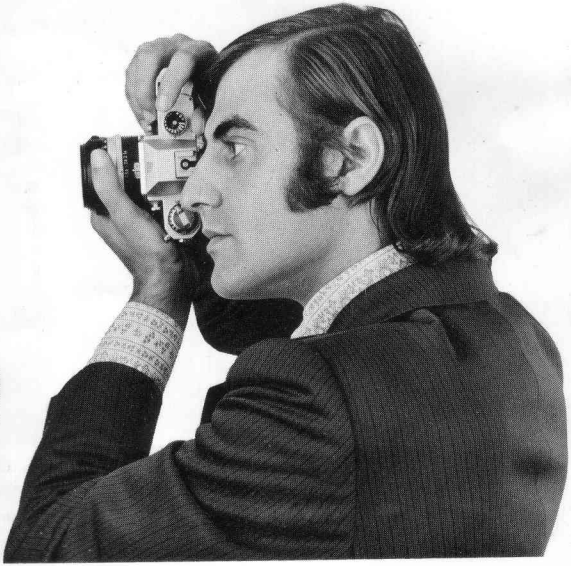
The amount of exposure the film receives is determined by a combination of the lens aperture and the shutter speed. Since the two are interrelated, different combinations will give the same amount of exposure. The best combination depends on the results desired. Use fast shutter speeds to freeze motion or slow ones to create deliberate blur. Small apertures give greater depth of field; large ones let the subject stand out against an out-of-focus background.

Just as with automatic operation, care must be taken to be sure the ASA/f-stop/shutter speed combinations are within the EV range of the meter.

HOLDING THE CAMERA

Steady camera holding is important since even the slightest camera shake at the moment of exposure can result in an appreciable loss of sharpness, especially at slow shutter speeds. The photos show the best way to hold the camera. Wrap the fingers of the right hand around the camera body so that the index finger rests comfortably on the shutter-release button and the thumb fits between the body and film-advance lever, and press the camera against your forehead. This way you can stroke the film-advance lever without removing your eye from the viewfinder. Cradle the camera in the left hand for additional support, with the left thumb and index finger grasping the focusing ring. The camera may be switched from the horizontal to the vertical format in this position.





DEPTH OF FIELD

Depth of field refers to a zone extending in front of and behind the plane of sharpest focus. Within this zone, blur (or lack of definition) will be negligible and everything can be accepted as being in sharp focus. Depth of field extends a greater distance behind the subject in focus than in front. Depth of field depends on two factors—reproduction ratio and taking aperture. The smaller the aperture and the greater the reproduction ratio, the greater the depth of field. By carefully considering the desired perspective and reproduction ratio, as well as the available f-stops, full control of the depth of field is achievable.

Depth-of-field preview button

The depth-of-field preview button lets you check the depth of field before shooting to make any desired adjustments. Press the button and the lens stops down to the preselected aperture to allow you to see how much background or foreground is in or out of focus.

DEPTH OF FIELD—continued

Depth-of-field scale

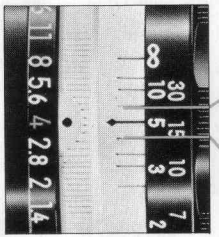
The depth of field can also be read from the color-coded scale engraved on the lens. The pairs of colored lines correspond to f/numbers of the same color. To find the depth of field at a particular aperture, first focus the lens on the subject. Then check the numbers on the distance scale opposite the colored lines which match the corresponding color of the taking aperture to find the depth of field at that aperture.

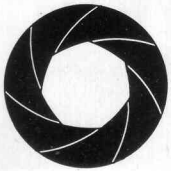
For example, f/16 on the aperture ring of the 50mm f/1.4 lens is blue. With the lens prefocused at 17 feet (5 m), the numbers on the distance scale opposite the blue lines show that the depth of field extends from 9 feet to infinity (∞).

Always remember that smaller apertures, although rendering a greater depth of field, require slower shutter speeds. Consider both factors carefully before shooting, and always focus accurately.

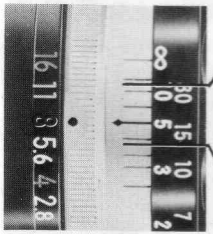
By stopping down the lens only, the depth of field can be increased as illustrated by the following three photographs:

1 Lens at f/4. Small depth of field with only main subject in focus.

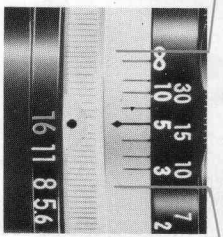


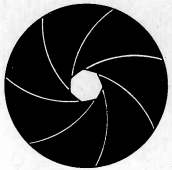


2. Lens further stopped to f/8. Larger depth of field.



3. Lens at smallest aperture. Great depth of field with subject, background and foreground in focus.





FLASH SYNCHRONIZATION

The Nikkormat EL is designed to synchronize with various types of flashbulbs at almost all shutter speeds and with speedlights at speeds up to 1/125 sec. To set the camera for flashbulb, lift up the milled synch selector ring around the shutter-speed dial and turn it until the bulb symbol appears in the selector window. For speedlight, follow the same procedure until the lightning-bolt symbol appears. The table below shows which shutter speeds are acceptable with different types of flashbulbs and speedlights.

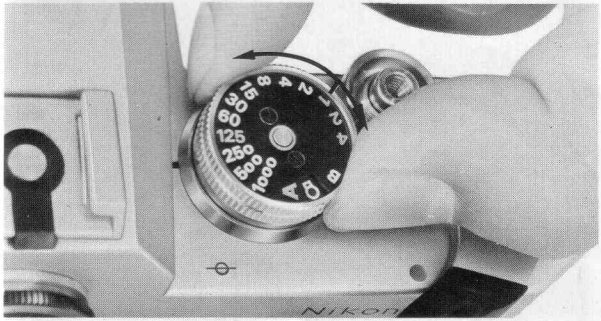
Remember that the camera's auto exposure control works only with constant light sources such as sunlight or photo floods and not with an instantaneous source such as a flashbulb or an electronic flash.

Flashbulb	Symbol	Shutter speed (sec.)												
		1/1000	1/500	1/250	1/125	1/60	1/30	1/15	1/8	1/4	1/2	1	2	4	B
M															
FP															
MF															
X (Speedlight)															

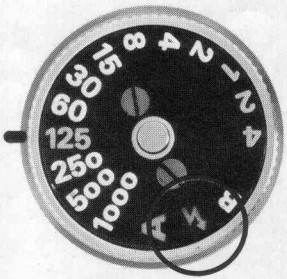
= Synchronized = Cannot be used

Either a bulb- or electronic-type flash unit slides over the accessory shoe on top of the pentaprism housing. For units with a hot shoe, the accessory shoe has a hot-shoe contact which eliminates the need for a synch cord. For flash units without a hot shoe, use a synch cord and connect the synch terminal on the side of the camera with the synch socket on the flash unit. The synch terminal on the camera is threaded for positive connection. To prevent an accidental electric shock, the safety switch in the accessory shoe turns on only when the flash unit is in place.

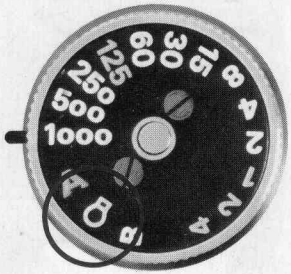
To mount the Nikon BC-7 flash unit, first slide the accessory flash unit coupler AS-2 onto the camera's accessory shoe, and then mount the unit onto it. The hot shoe contact built into the coupler eliminates the need for a synch cord.



Caution: Flash units without a hot shoe may fire accidentally when being slipped into place or when a flashbulb is inserted. Although not recommended, accidental firing may be prevented by covering the hot-shoe contact on the camera body with electrical tape.



Speedlight



Flashbulb

CHANGING THE LENS

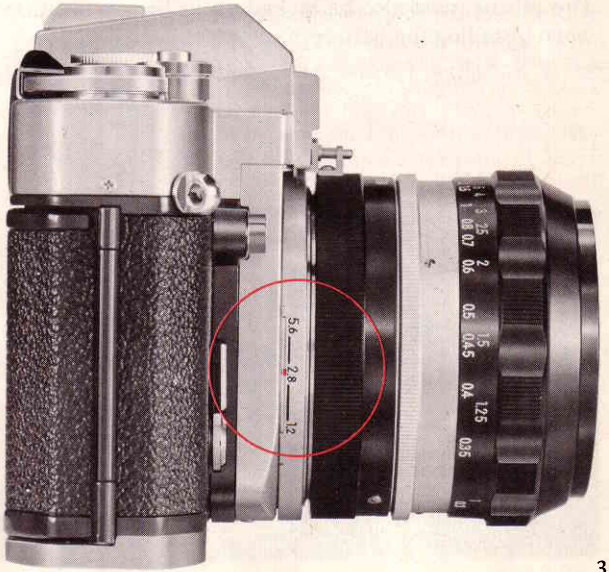
To remove the lens from the camera, press the lens-release button and twist the lens to the right as far as it will go. The lens will come loose and can be lifted out. To mount a new lens, first push the camera's coupling pin to the right as far as it will go. Set the lens diaphragm at f/5.6 and insert the lens into the bayonet mount, making sure that the coupling pin fits into the slotted prong on the lens. Twist the lens counterclockwise until it locks into place with a sharp click.

Maximum aperture indicator

In order to measure light at full aperture with lenses of different maximum apertures, the Nikkormat EL's meter must be adjusted for the maximum aperture of the lens in use. This must be done each time a lens is mounted. Turn the aperture ring all the way to the minimum aperture setting (largest f/number), then all the way in the opposite direction. This step automatically adjusts the meter to the maximum aperture of the lens.

Maximum aperture scale

The above adjustment can be confirmed by looking at the maximum aperture scale on the ring with the coupling pin. The scale has a range of f/1.2 to f/5.6. For example, if the 24 mm f/2.8 lens is mounted on the camera, the red index mark should fall opposite the 2.8.

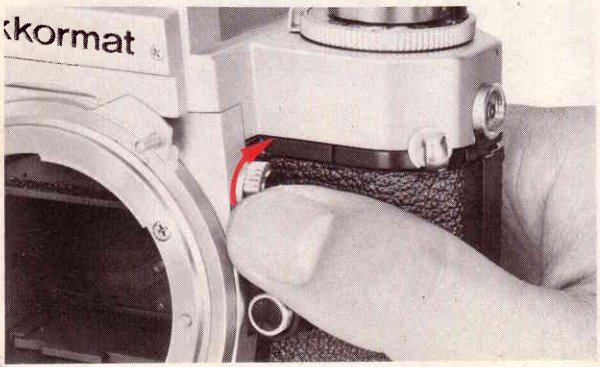


MIRROR LOCK

The reflex mirror must be locked in the up position when using the Fisheye-Nikkor 6 mm f/5.6 or the OP Fisheye-Nikkor 10 mm f/5.6 lenses since their rear elements protrude into the camera body and interfere with mirror movement. To lock the mirror, turn the milled mirror-lock lever upward. The mirror will remain locked in the up position until the lever is returned to its original position.

The mirror must also be locked up in the up position when installing the battery.

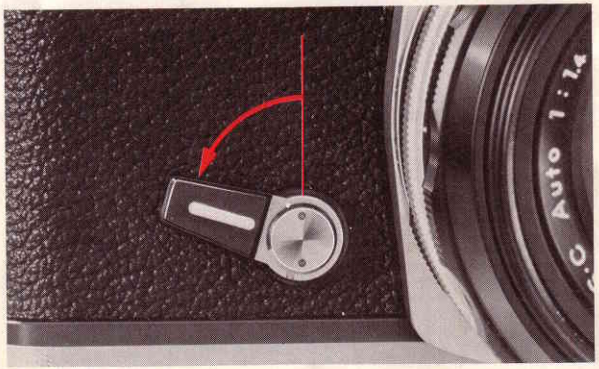
Caution: When releasing the shutter with the mirror in the locked up position, use the self-timer instead of the shutter release button. This will give adequate time for the lens diaphragm to respond. Failure to observe this precaution may result in incorrect exposure, although there is no danger of camera damage.



SELF-TIMER

The built-in self-timer, usable for both automatic and manual-override shutter-speed settings, allows delayed exposures of approximately 10 sec. It activates when the lever is turned downward (counterclockwise) as far as it will go. When the shutter-release button is pressed, the timer starts. Independent of the shutter mechanism, the timer can be set either before or after the shutter is wound. Do not use at "B" setting.

The self-timer also doubles as the memory lock (see page 24).



EXPOSURE MEASUREMENT : special cases

Stop-down exposure measurement

Full-aperture exposure measurement is not possible with the following lenses and accessories, because either the lenses have no auto diaphragms or the diaphragms will not couple with the meter. Therefore, the stop-down method of measuring exposure with the lens aperture diaphragm manually stopped down to the taking aperture must be used. First, push the coupling pin as far to the right as it will go. Mount a lens or lens/accessory setup to the camera and switch on the meter.

Auto lenses without coupling prong

With automatic exposure control: Use the depth-of-field preview button to stop down the lens and turn the aperture ring until the black needle is in the shutter-speed scale (Take note of the meter's EV range).

With manual override: Use the same procedure as above. Then turn the shutter-speed dial until the green needle matches the black one. At manual setting, pressure on the depth-of-field preview button is no longer necessary since the correct exposure is set mechanically.

Caution: Never advance the film with the depth-of-field preview button in the depressed position.

EXPOSURE MEASUREMENT—continued

Micro-Nikkor-P Auto 55 mm f/3.5 with M2 ring

Use the same procedures as the auto lenses without coupling prong.

Preset lenses

Set the shutter-speed dial at "A" and turn the aperture ring until the black needle swings to an appropriate shutter speed.

Bellows focusing attachments, extension rings and focusing units

Use the same procedure as that for lenses with preset diaphragms.

Reflex-Nikkor lenses

The Reflex-Nikkor 500 mm f/8, 1000 mm f/11 and 2000 mm f/11 lenses have no aperture diaphragm. Set the shutter-speed dial at "A" and the black needle gives the shutter speed.

Repro-copying, slide-copying and photomicrography

Some exposure correction may be necessary depending on the type of film and the subject, or the original slide. The numbers in the table below show the exposure corrections in shutter-speed steps. Readjust the shutter speed according to the indicated numbers or reset the film speed. Three marks on the film-speed dial are equivalent to one step.

Original / Type of film	Repro-copying & slide-copying			Photo-micrography
	B&W or color photo	Letters or figures on light background	Letters or figures on dark background	
Panchromatic film for general use	No compensation necessary	+1 1/2 steps	−1 1/2 steps	+1 steps

Example 1. If the automatic shutter-speed setting is 1/125 sec. and the table indicates a one-step increase, reset the shutter-speed dial at 1/60 sec.

Example 2. If the automatic shutter-speed setting is 1/125 sec. and the table indicates a one-step increase, move the camera until the black needle of the shutter-speed scale swings to 1/60 sec. Depress the memory-lock lever to the left, and the exposure reading will be frozen while the camera is moved back for shooting.

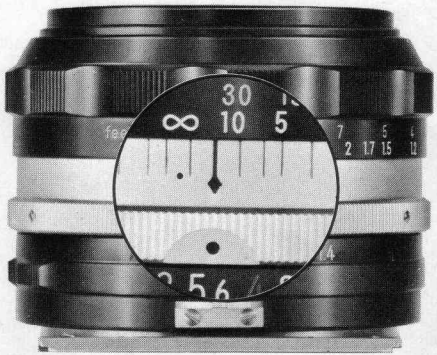
Example 3. If a film of ASA 100 rating is loaded in the camera and the table indicates a one-step increase, reset the film-speed dial so that the red dot appears opposite 50.

INFRARED PHOTOGRAPHY

In infrared photography, the plane of sharpest focus is slightly more distant than the one produced by visible light and seen by the naked eye through the viewfinder. To compensate for the shift in focus, Nikkor lenses have a red dot or line on the lens barrel near the color-coded depth-of-field index scale.

After focusing the image sharply through the viewfinder, turn the focusing ring to the left until the red dot lines up with the prefocused distance.

For example, in the picture below the 50 mm f/1.4 lens has been focused at infinity (∞). The focusing ring is turned slightly to the left so that the infinity mark appears in line with the red dot. When lenses having a focal length of 50 mm or less are stopped down to f/8 or smaller, no adjustment is necessary. At such small apertures, these lenses have enough depth of field to compensate for the shift in focus.



ACCESSORIES

Lens hood

The use of a lens hood is recommended at all times to prevent extraneous light from striking the lens surface and causing flare or ghost, and also to protect the lens against damage. Nikon lens hoods come in four types depending on the lens: screw-in, snap-on, slip-in and built-in. They are calculated precisely for each focal-length Nikkor lens to provide maximum protection against stray light.

To attach or remove the snap-on lens hood, simply depress the button on either side of the hood. The hood will also fit directly over a screw-in filter so both can be used on a lens at the same time. When not in use, the snap-on hood can be reversed for storage on the lens, and the lens and its hood can be stored together in the eveready case.

Filters

Nikkor lenses and Nikon filters are made for each other. Therefore, for best results, use Nikon filters, which are made of optical glass, ground and polished so that both surfaces are optically flat and parallel. They are available in both screw-in and series mounts, depending on the lens.

No exposure compensation for filters is necessary with the Nikkormat EL. The built-in exposure meter reads only the light passing through the lens and therefore compensates for the loss of light.

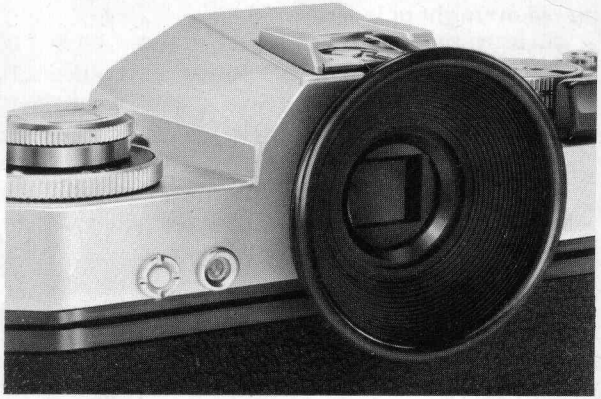
If you want to protect your lens with a UV filter, use the L37 instead of the L39.

Eyepiece correction lenses

The nine eyepiece correction lenses are designed to permit nearsighted or farsighted users to view and focus without their glasses. Available in −5, −4, −3, −2, 0 +0.5, +1, +2 and +3 diopters, each representing the combined dioptry of the lens and the finder. Simply screw into the finder eyepiece.

Finder eyecup

The soft rubber finder eyecup screws directly onto the finder eyepiece to prevent extraneous light from entering the viewfinder.



CAMERA CARE

Good camera care is common-sense care. Treat your Nikkormat EL as you would any valuable precision instrument. Although ruggedly constructed to stand the rigors of normal use, it may still be damaged by shock, heat, water or misuse. Here are some basic tips for keeping your camera in top condition:

Storage

Keep the camera in an eveready or compartment case when not in use to protect it from dust.

Avoid storing the camera in excessively hot, cold or damp places. Always attach a body cap when the camera body is stored separately. Do not leave film in the camera for a long period of time. Never leave the shutter or self-timer cocked if the camera is to be stored overnight or longer.

Camera body

Clean the inside of the camera periodically with a soft brush. Do not exert pressure on the shutter curtain as this may damage the curtain. Keep the mirror free from fingerprints and dust; it should be cleaned only by a qualified serviceman. Special care must also be taken when changing batteries to avoid damaging the battery chamber and other parts of the mirror box.

Extreme temperature changes

The Nikkormat EL functions faultlessly in a temperature range of 55° to −15°C. Even within this range however, avoid suddenly exposing the camera to temperature extremes—i.e., taking it from the cold outdoors to the warm indoors or vice versa. The sudden, extreme temperature change is apt to form deposits of atmospheric moisture such as sweat beads or frost on the surfaces of the camera body (much like pipes sweating on a hot summer day or winter frost accumulating on the inside of a window during the dead of winter) which will develop into rust and damage the camera's tiny components and electrical contacts. A good precautionary measure is to pack the camera in a moisture-proof bag or a polyethylene bag, along with a silica gel dessicator—and unpack only when the temperature inside the bag has risen or fallen to the ambient level.

Battery

The Nikkormat EL accepts either a 6-volt silver-oxide or alkaline-manganese battery as a power source. The silver battery has the two major advantages of long life and constant voltage, while the alkaline battery wins on low cost and good performance at extremely low temperatures. When either type of battery is exhausted, the voltage drops off, and the Nikkormat's automation suddenly ceases to function.

At below-freezing temperatures, the battery performance deteriorates until the temperature rises again, though the degree of deterioration varies with the type of battery. To ensure the most reliable service at low temperatures, use of a fresh battery is recommended.

Lens

Keep the lens surface free from fingerprints and dust as much as possible. Use only lens tissue to remove dust; never cloth or ordinary tissue. If smudges or fingerprints persist, moisten the lens tissue sparingly with alcohol.

Remember: Even an approved lens cleaner can cause damage if it seeps into the lens mount.

Keep the camera away from water

Avoid excessive moisture. When using the camera near water, guard against splashes, especially salt-water spray.

Never oil any part of the camera

Lubrication should be left to an authorized serviceman.

Prior to taking a holiday trip or being assigned an important photo job, test your camera by making a few trial exposures. Check the finder meter. Remember, it takes at least two or three weeks for processing the test film and making any needed repairs or adjustments.

Type: 35mm single-lens reflex camera.

Lens mount: Nikon F bayonet mount

Viewfinder: Eye-level pentaprism; focusing screen consists of a matte Fresnel field with a central 3mmϕ split-image rangefinder spot surrounded by a doughnut-shaped 1mm-wide microprism for fast, accurate focusing; frame coverage approx. 92%; shutter-speed display and exposure data visible inside viewfinder.

Shutter: Electromagnetic-controlled focal-plane shutter with downward-vertical movement; stepless speed variations from 4 ~ 1/1000 sec. on auto control; speed variations same on manual control plus B, except that they are stepped; when power source exhausted, speed mechanically fixed at 1/90 sec.

Exposure meter: TTL CdS meter with center-weighted metering at full aperture with Nikkor auto lenses; maximum aperture range f/1.2 ~ f/5.6; ASA range 25 ~ 1600; Metering range: EV1 ~ EV18 (e.g., f/1.4, 1 sec.~f/16, 1/1000 sec. at ASA 100 with 50mm f/1.4 lens)

Mirror: Automatic instant-return type with lock-up feature.

Frame counter: Additive, automatic resetting.

Film-advance lever: A single stroke winds film, cocks shutter and operates frame counter. Also switches meter on or off and locks shutter release.
Winding angle is 105°, with 30° clearance angle.

Flash synchronization: At any speed, plus B, with flashbulbs and speeds up to 1/125 sec. with electronic units; synch selector adjusts for either bulb or electronic flash.

Synch terminal: Inner thread accepts Nikon synch cords for positive connection.

Accessory shoe: Contains hot-shoe contact.

Self-timer: Can be set for 8- to 10-sec. delay. Also serves as memory lock.

Battery: Single 6V silver-oxide battery powers both CdS meter and electromagnetic controlled shutter.

Battery checker: Glows to indicate battery is good.

Dimensions: 145.0 x 54.5 x 93.5mm

Weight: 780g (body only).