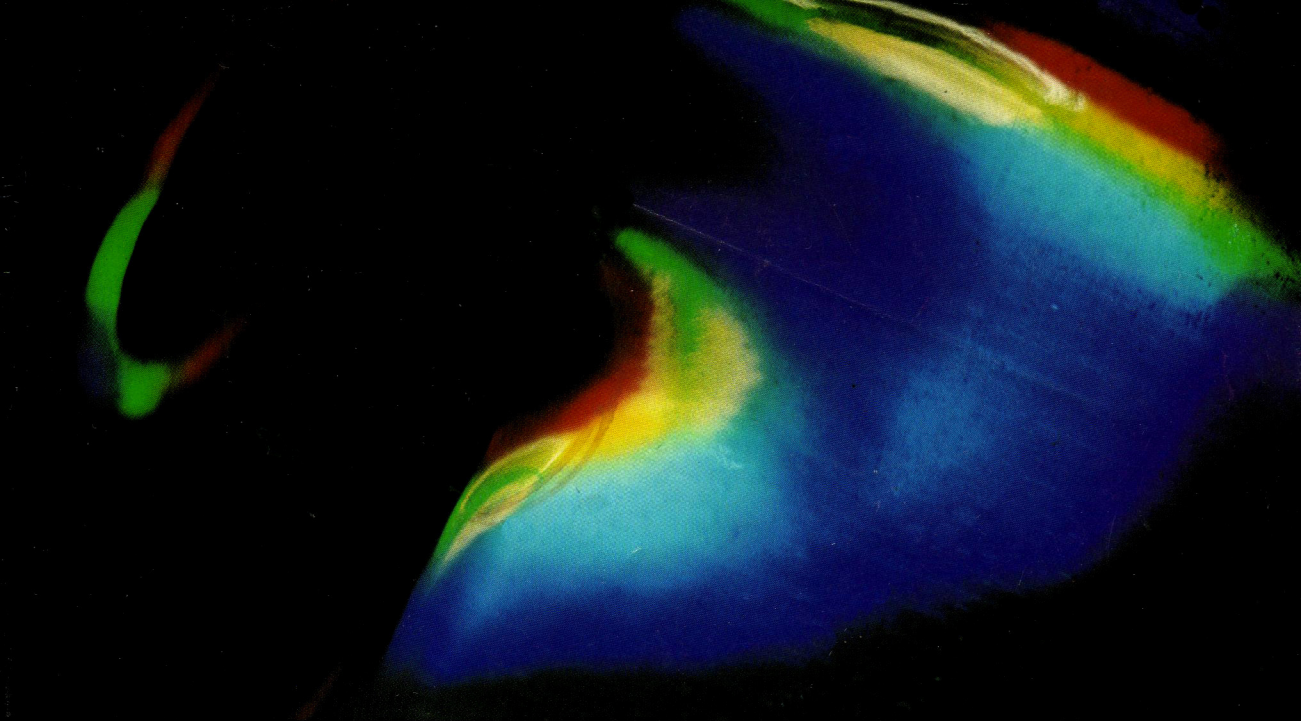


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**Nikkormat EL
Photography
Guide**

Congratulations!

You have just joined the select group of those who communicate in the language of fine photography. The Nikkormat EL is your passport to explore the boundless reaches of this fascinating world. Be proud of your Nikkormat EL. There's really no other electronic shutter camera quite like it. Look at it again. Hold it. Feel its strength and promise. The fulfillment—professional pictures that speak and persuade—is all up to you. This brochure simply reminds you of the many general picture-taking opportunities and how you can make the most use of them through the Nikon System of Photography. For whatever the photographic situation or however creative you want to be, the Nikon System opens the way. Look what's behind it: more than 40 Nikkor lenses, a complete system for close-up photography and many other accessories from the far-reaching Nikon System of Photography. Many combinations of lenses and accessories are recommended in this booklet for particular photographic situations. However, let your own creativity and personal preference decide which combination is best. For no matter how factually or fancifully you want to capture your subject, you can be confident in the

support of the Nikon System.

But first, practise and master the basics of handling your camera. Take camera steadiness, for example. Just by depressing the shutter release too abruptly or too hard, the picture will become blurred because the camera moved at the exact moment of exposure. At 1/60th of a second, even normal breathing will make your pictures fuzzy. So if pictures come out blurred, chances are your camera unsteadiness is to blame.

Naturally, as your creative spirit becomes more adventuresome you'll want to expand your collection of photographic equipment. Remember, use Nikkor lenses with your Nikkormat EL. Nikkor lenses are so precisely mated to Nikon system cameras that each lens-camera combination becomes an optical unit calculated to produce the best possible picture quality. It's this compatibility, backed by over a half-century of optical engineering, that protects and enhances the investment you have made in this precision optical instrument.

For further information on the Nikon System of Photography, please refer to literature that is available from any Nikon dealer. Good shooting!

Building your own photographic system

Recommending a set of Nikkor lenses to form your own photographic system with the Nikkormat EL isn't easy. For one thing, the more than 40 Nikkor lenses and wide variety of accessories offer the largest number of possible combinations. For another, the selection depends on your specific purpose and whether photography is your hobby or profession. And, of course, much will depend on your artistic bent and how you want to compose pictures. The following combinations are suggestions only. The final choice is yours.

You probably got your Nikkormat with either the 50mm or 55mm Nikkor normal lens. After a while, you'll want to take pictures from other than the normal viewing angle of the eye. Either a wideangle or a telephoto lens may be chosen. For wideangles, the 28mm or 35mm are recommended. For telephotos, the 85mm or 135mm. Another suggestion is to get a series of lenses which roughly halve for wider picture angle or double for telephoto capability the focal length of the normal lens. For example, the 24mm wideangle halves while the 105mm doubles the focal length of the 50mm. And to double the 105mm, there is the 200mm.

Equipped with a normal lens, a wideangle lens and a telephoto lens, you'll find picture-taking

promises more excitement and challenge.

If your interest lies in capturing fast moving subjects but find the constant interchanging of lenses a bother, then the super-compact 80-200mm f/4.5 Zoom-Nikkor is suggested. Add a wideangle lens and you form yet another photographic system. For other combinations, select lenses to meet your specific needs or interests. For instance, if you're a botanist or philatelist or if your hobby requires detailed reproductions, you'll find the 55mm f/3.5 Micro-Nikkor, with its focal range from infinity to life-size, invaluable; and you can simply leave it on your Nikkormat EL for use as a normal lens. Or the unique perspective control of the 35mm f/2.8 PC-Nikkor will be particularly welcomed by the architect, the industrial/commercial artist and the house agent. But whatever lenses you choose for your own photographic system, bear in mind the concept of Nikon Total System Resolution. The idea that Nikon System cameras and lenses will work together better because they're designed to work together. Perfectly matched components resulting in matchlessly perfect pictures. Total compatibility—total excellence. Definitely Nikon.

Travel

Bring back people and places with a photo story that never tires.

The wise photographer-traveler goes prepared. So don't forget the maps and brochures available free from tourist and guide agencies and the clippings you've saved from camera and travel magazines, for what is worth seeing is worth shooting. Besides your favorite ones, take along a high-speed Nikkor lens, either the 50mm f/1.4 or the 55mm f/1.2. Their extra brightness will really be helpful in poor lighting situations. Also carry a Nikon binocular to take you where the action is. The lightweight 7 x 35A is perfect for travelling. It's made of the same superior optics as your Nikkor lenses.

Whether you've been there before or this is your first trip, remember people and places are never the same. That's what makes life so exciting. Well-trodden tourist paths still offer photographic surprises as do out-of-the-way places. With your Nikkormat EL and your own Nikon system of accessories, you'll always be ready for them.

Because they're there

Try to capture mountains when the weather changes suddenly. Proud and distant, they often display their full majesty only briefly. The best times are at dawn or dusk when the play of light reveals

long shadows and highlights the contours, after a storm when swirling clouds pass and momentarily reveal the peak and when mist shrouds the treacherous ridges.

Since a mountain has its own personality, accentuate it, whether it is the sharp and forbidding summit or the gentle roll of the ridges. Select the right angle and the right object for the foreground (flora, a lake, boulders, a group of alpinists, hunter's hut, etc.) and carefully compose to bring out the mountain's character, the way you feel and see it.

A Nikkor medium telephoto will take care of most of your mountain photography. Or try the ultra-compact 500mm f/8 Reflex-Nikkor. You don't need a tripod and its light weight of only 1kg (2.2 lb) won't add much to your mountain-climbing gear.

When doing landscapes and pastoral scenes, also bring an object into the foreground, such as grazing sheep or a haystack, or frame your picture with overhanging branches or a fence for greater pictorial effect. Your best bet for these bucolic scenes are, again, the Nikkor medium telephotos. To convey the vastness and grandeur of nature and give the viewer the impression that he is part of

the scenery, use a Nikkor wideangle, like the bright 35mm f/1.4 or the very popular 28mm f/2. To emphasize contrast and bring out more details of the mountain or landscape, attach an orange or red Nikon filter, or try infrared photography. Remember, the higher the mountain and the more distant the vista, the more trouble you'll have with ultraviolet rays. Therefore, be sure to take along Nikon ultraviolet filters for black-and-white and skylight filters for color photography. These filters are also useful for protecting your lenses against possible scratches, moisture and dust.

Monuments of man

Each age, each country has its own architectural wonders. In shooting these tourist attractions, you'll find that you need more than just the normal lenses to take your subjects in all their natural settings and to close in on a particularly interesting object. From among the wide selection of Nikkor lenses that you can use with your Nikkormat EL, you're sure to have the right lens for the right picture.

For instance, to record a general view of the entire scene and bring the viewer into it, you have a choice of eight Nikkor wideangles. And for

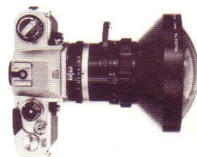


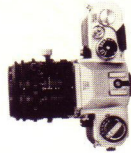


6 Richard Tucker

a still more encompassing picture try any of the five Fisheye-Nikkor, e.g., the bright 8mm f/2.8 with its 180° coverage. To give personal meaning to these pictures, have members of your family or tour group in the foreground. But don't pose them. Have them participate in the scene naturally. For a close-up of the face of the national hero on his horse or the frieze of a Greek temple, use a

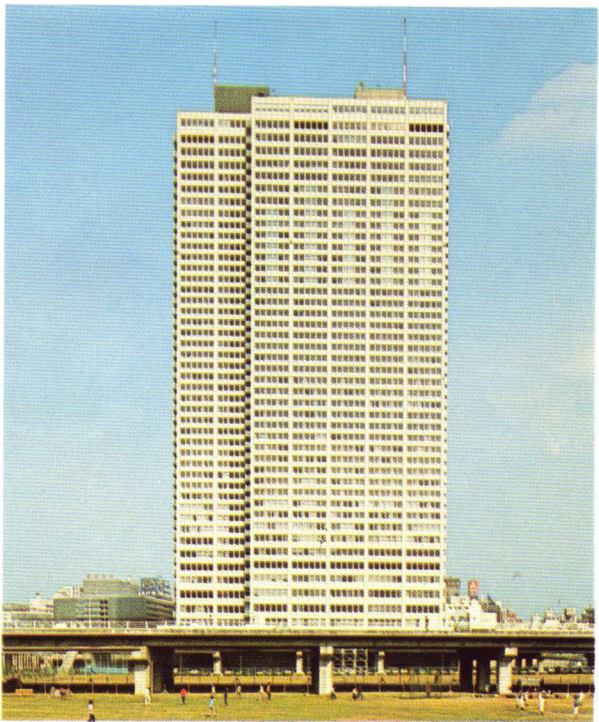
8mm f/2.8 Fisheye-Nikkor Auto Sees and records every object in a full 180° hemisphere. Everything in front, above, below and at either side of the lens is captured and appears as a 23mm circular image on film. But unlike the other fisheye lenses, it offers, in addition to its high speed of f/2.8, complete and direct viewing of the subject through the finder and an automatic aperture diaphragm for through-the-lens exposure metering at full opening. Now, there's no need to lock up the mirror. It finds many applications in scientific (including meteorological), industrial and commercial photography.

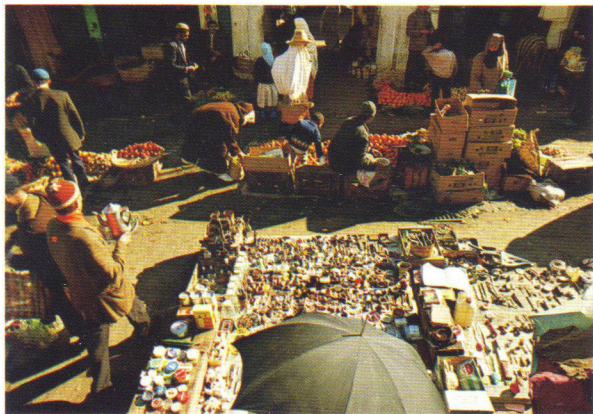




Nikkor medium telephoto, either the 105mm or the 135mm. Or substitute the 200mm f/4; it weighs only 630g (1.4 lb) and can be hand-held in shooting. And for extreme close-ups up to life-size of the carvings and paintings on the walls of palaces and temples, the 55mm f/3.5 Micro-Nikkor-P is recommended. You can also use this versatile lens for general photography. If you're an architectural buff or want pictures

35mm f/2.8 PC-Nikkor Through its ingenious perspective control, the PC-Nikkor brings view-camera versatility to 35mm photography. Its frontal element, shifting 11mm off-center in any direction, controls the parallels of structures. In addition to its obvious application in architectural recording, this remarkable lens is also very effective for commercial and industrial photography. And by shifting the lens vertically or horizontally without moving the camera, you can take a series of two pictures for an exactly matching panoramic shot.





Richard Tucker

without converging lines, you'll need the perspective control of the 35mm f/2.8 PC-Nikkor. Provided the subject lies within the picture angle, this lens will retain the vertical and, when necessary, the horizontal lines of building-like structures without having to tilt the camera.

In comparing any of the shots taken with the recommended lenses with those taken by a normal lens, you'll realize that the wideangle, telephoto and special lenses bring a greater professional touch to your pictures.

Where the people are

Open-air markets afford a splendid opportunity to catch the customs, produce and folkcraft of the region. For an overall shot, try the 28mm or 35mm Nikkor wideangles. They'll bring both the natives and their background in equally sharp focus. At public squares don't miss the chance of recording the aged sunning themselves on benches, mothers gossiping or children feeding the pigeons. During lunch hours you'll also see workers eating their lunch and young couples in love with life. Your Nikkor telephotos will capture them without intruding.

Shooting game with a camera

On a safari, shooting game with a camera is just as exciting and dangerous as shooting with a rifle. And the trophies are your pictures.

Luckily, the electronic shutter control of the Nikkormat EL takes care of exposure measurement, so you can take care of staying out of danger. For safety, stalking the animal on foot is not advised, and a hide or blind will limit your viewpoint and lighting. Your best bet, then, is to shoot from a car and luckily many game reserves are on flat, open scrub country. With a Nikkor telephoto; for example, the 200mm f/4, capture the sudden fear of a frightened fawn or the humor of necking giraffes. Or the 80-200mm f/4.5 Zoom-Nikkor will let you get as near as 4m (13 ft) to your animal for a close shot and keep it in focus as it fleets away.

Circumstances permitting, you can set up a tripod and also use the 50-300mm f/4.5 or 200-600mm f/9.5 Zoom-Nikkor, to record a duel between two kings of the jungle. What better way is there to shoot a charging rhinoceros than with a Nikkor telephoto or zoom lens? A combination a safari photographer can't be without.



J.K. Kopec

Candid

Caught in the act of living the drama of life.



What can be more dynamic than the act of living. Consequently, capturing a brief moment from life itself parallels that dynamism for the candid photographer. The natural expression of a child's eager face as he is about to take that first bite of ice cream. The dreamy aura of an old woman reflecting on the joys and perhaps, sadnesses of her youth. These are the real candid. Unposed shots of subjects engaged in natural activity, and often taken without their knowledge. And it is in candid photography that alertness, creativity and patience are as much a part of the cameraman's makeup as the accessories he uses.

Indoors

Formal shots are fairly easy, but have you tried candid shots of your friends caught with their pose down?

With the Nikon System of photography, you have the professional equipment you need to be prepared for true candid shots.

If you're ushering at a wedding or hosting a party, you'll know in advance the vantage points to shoot from. And you'll be able to pretest probable situations and the camera-to-subject distance and decide whether you need extra lighting. Because it measures illuminance as low as EV1, the Nikkormat EL will measure the correct exposure even in very dark places. For flash, the handy 45mm f/2.8 GN Nikkor Auto performs automatic aperture setting through a guide-number coupling system. And when you're not using it for flash photography, take advantage of its special compactness—20mm (3/4") from front camera panel— and leave it on your Nikkormat EL whenever you're out on an ordinary photo session.

The standard 50mm f/1.4 or 55mm f/1.2 will capture your subjects clearly even in a normally lit room.

Or depending upon the room size, use a Nikkor wideangle. The 35mm f/1.4 is recommended for the



fastest shutter speed under available light. Record your friends enjoying drinks or go-going and take in the background to capture the mood of the party. And if you want to be in the picture too, simply use the self-timer on the Nikkormat EL. You can set it for delayed exposures of up to 10 seconds.

For portraits, select one of the high-speed Nikkor telephotos, plus a high-speed film, and make the best use of available light.

The Nikon Flash Unit BC-7 has no tangling wire and provides the most effective light at a party; the collapsible fan makes it convenient to carry the unit around. And the swivel head will give you ideal bouncelight to avoid producing the sharp shadows that result from direct flash lighting.

Outdoors

For candid portraits that you can really be proud of and make your subject happy, use a Nikkor telephoto. Again, the 200mm f/4 is perfect for hand-held shooting. And for convenient framing without interchanging lenses, try the handy 80mm-200mm f/4.5 Zoom-Nikkor. It fits comfortably in your hand and can be used without a tripod. Since the most exciting and realistic candid shots are done as close to the subject as possible, make your presence known quickly but remain in the background. And if you can move in closer to the subject, switch to a Nikkor wideangle. It'll fuse him with his background and convey a dramatic sense of immediacy, especially if the subject is engaged in some activity, as in group sports or dance. Color film heightens the gaiety of a festive occasion, with an overcast day bringing out colors more vividly.



Photography under difficult lighting conditions made easier

Sunrise and Sunset

Here's where the Nikkormat EL really shines. To capture the brilliant colors of the sky from a rising or sinking sun, switch over to manual and base your exposure reading on the brightness of the sky to darken the foreground, and slightly overexpose the sun. Bring a ship, tree, people, etc., into the foreground to be silhouetted against the sky for dramatic composition. Some sun capturers try for the star effect (flaring of the sun's rays forming a star) by stopping the lens down a few stops below the basic reading. To retain some details of the foreground, close down the lens only one or two stops. For long exposures, make use of the extra-slow shutter speeds provided on your camera.

To picture the sun as a giant burning globe, you'll need the Nikkor telephotos. The longer the focal length, the larger the solar disk. Thus, with the 105mm f/2.5, the sun will be twice the diameter of that taken by the 50mm, while with the 500mm Reflex-Nikkor, whose catadioptric system of mirrors and lenses has resulted in a great reduction of its weight and bulk, the sun will be 10 times as large. With this lens you can also capture the harvest

moon forming a large golden crown for a haystack or a chapel steeple.

Sand and Snow

For sun-splashed beach, desert or ski scenes, you may get overexposure even if you are using the highest shutter speed and smallest aperture opening when your camera happens to be loaded with a high-speed film. The Nikon Neutral Density (ND) Filters come in handy here.

They reduce the amount of sunlight without altering the image contrast and color rendition. An ND filter should also be attached when the lens is used at large apertures to minimize the depth of field.

Also the Memory Lock feature can be used to eliminate incorrect exposures resulting from high-contrast lighting situations. Simply take your reading close to your main subject and employ the Memory Lock.

To prevent extraneous light from hitting the lens surface, use a Nikon Lens Hood, either the snap-on or screw-in type, depending on the taking lens. The hood will also keep sand and snow from striking the lens.

Reflections

For shots of fish and underwater creatures, use the Nikon Polarizing Filter as you would in photographing displays in a reflection-dappled show window. Usable on all Nikkor lenses with 52mm thread, this filter reduces surface reflections on water, as well as on glass or any smooth reflecting surface except metal.



Patricia Caulfield

Portraits

*Faces fascinate.
Frame them with feeling.*

Man has a myriad faces. And capturing the true one will test your many talents: photographic technique, creativeness, ability to put people at ease, etc. But like genuine works of art, good, honest portraits never fail to fascinate.

Camera fright causes most people to stiffen or assume unnatural poses, especially indoors when the camera is brought up close. Therefore, put your subject at ease. Gain his confidence. Talk to him as you suggest different poses or expressions while readjusting your photographic equipment. The eyes and mouth are great revealers of character so concentrate on them. The hands, too, are often expressive of personality. And when your subject is both emotionally and physically at ease and you know you've got the right mood and feeling that truly mirror his personality, shoot.

The Nikkor medium telephotos—the 85mm and 105mm with their reproduction ratios and natural perspective, or the 135mm, and 200mm with their comparatively shallow depth of field which will eliminate or blur the unwanted background—are ideal for good portraits. And you can keep a proper distance from your subject and still be able to talk to him.

Especially effective for large close-ups and for

emphasizing surface and skin texture, set the diaphragm at a small opening and let the camera decide the shutter speed (you can actually check the depth of field before you shoot with the depth-of-field preview button). And for this particular job, use the versatile Micro-Nikkor. Its remarkable clarity even captures the down on the face of a young miss.

To picture your subject in his natural surrounding—the artist in the atelier, the housewife in the kitchen—your Nikkor wideangles again fill the bill.

For a studio-type portrait, pose your subject in front of a simple, muted background with the light contrast kept low. Available light is really the most flattering and easiest to work with. For instance, outdoor portraits of women are most complimentary when taken in the shade or in overcast daylight since soft light hides blemishes and wrinkles and enhances even the smoothest complexion. Harsh sunlight is only for the very young. And if you're using flash, apply bounce light for softer, more diffused illumination. When working with children, give them something to play with or tell them a story while you pose them. Since it lets you get down to the level of a

child's world with waist-level viewing, screw on the Nikon Right-Angle Viewing Attachment. To avoid under- or overexposure with back- or sidelighting, take advantage of the Nikkormat EL's unique Memory Lock feature. Make your exposure reading close to your subject, depress the Memory Lock lever (thereby recording the correct exposure measurement), return your original position and with the Memory Lock still depressed, press the shutter-release button.



Family

For those closest to you, the fun of photography begins at home.



Richard Tucker

Family and friends. Uncle Joe and his favorite pipe. The girl next door. The gang at the office. The kids growing up. Or just the sweetness of everyone growing older together. Take a look around you and life at home becomes a photographer's shooting gallery. Now you can be ready to chronicle the events that shape a family.

With high-speed film and the extra brightness of the 50mm f/1.4 lens it's possible to grab almost any shot, even in available indoor light. Sometimes, just the candlelight on a birthday cake is sufficient to capture the mood of the moment. Just set the aperture, focus and shoot. The Nikkormat EL decides the correct exposure automatically. And don't wait 'til the kids are dressed up in their Sunday best to fill up the family album. Chances are they spend most of their time in a playful game of rough-house or sprawled out on the floor dressed in jeans. With your medium

telephoto lens, you can catch every raucous laugh, every pensive gaze—without intruding in their private world.

For those special gatherings, you'll want to be prepared. If there's a large group, the 28mm wideangle will provide the picture angle to get everyone in—so you won't have to go out. If there's a limit to the light, then angle the BC-7 Flash Unit for bouncelight to reduce harsh highlights and then set the self-timer and join in the party yourself. If you're the bachelor in the crowd and you're out to snap a picture of someone you'd *like* to be friends with, then the 80-200mm Zoom-Nikkor is the lens for you. Whether on the beach or the boulevard, if you're a girl-watcher, you'll appreciate this beauty. Once in focus, the subject remains in focus throughout the entire zoom range. Great for catching a surf bunny riding the crest of a wave or just plain bikini watching.



Action

*Action may speak louder than words,
but photographed,
it tells a thousand stories silently.*



Frank "Shorty" Wilcox

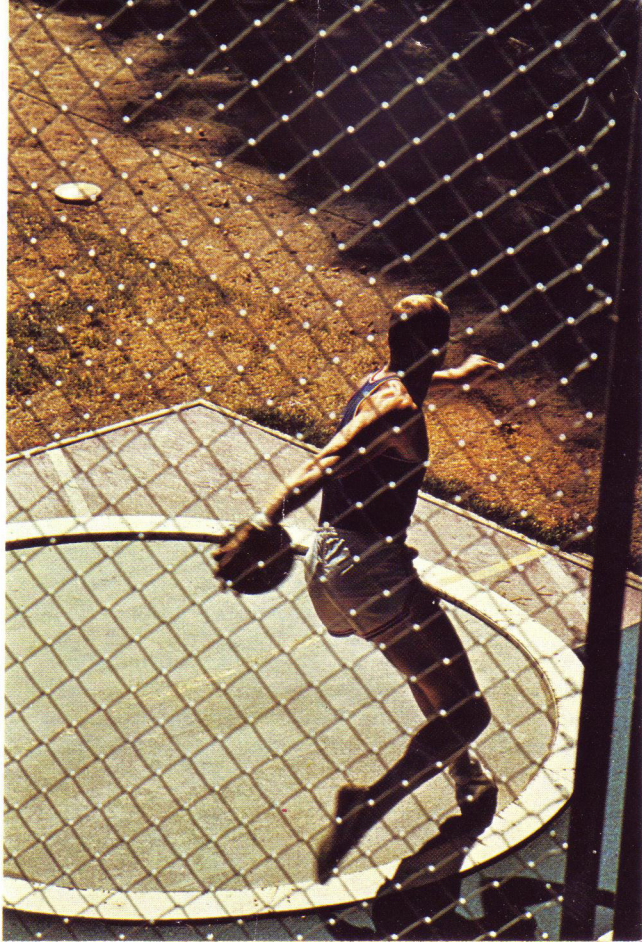
The thunderous blast-off of a sky-lab mission is action that makes news. The graceful glide of a swan is action that inspires the poet and the musician. Cell division is action that enlightens the scientific or industrial researcher. Whatever the action, your Nikkormat EL stands ready to record it and to bring out the photojournalist, the artist, the scientist and the investigator in you. The electronically controlled shutter with a maximum speed of 1/1000 sec. enables you to concentrate on composition without worrying about exposure problems. In taking action shots, bear in mind that a distant action is captured more easily than one going on near the camera and movement approaching the camera is also recorded more easily than one crossing in front of it. For sports actions, know the rules of the game, especially when a score is imminent. Plan to shoot and begin shooting before the crucial moment. And be confident. Your camera has a shutter speed of 1/1000 sec., fast enough to stop any action, and you have a choice of many very fast Nikkor lenses. Of course, the Nikkormat EL keeps up with the action. It automatically decides the correct exposure, even when the scene or the lighting changes, especially welcome when the action is so

swift there's little enough time to focus and compose.

When you can anticipate the next movement

Many sports have a definite sequence of movements and the peak actions are predictable like pole-vaulting, diving, soccer, etc. The Nikkormat EL enables you to concentrate on getting only the most photographic moment without being bothered by exposure measurement. But since a great deal of the action in a stadium or arena will take place far away from you, you won't be able to make out clearly what's going on without the Nikkor medium or long telephotos. If the event is indoors, you can't miss with the high-speed 135mm f/2.8 or 180mm f/2.8, both light enough to be hand-held. There is also the longer 400mm, and the handy, hand-holdable 500mm Reflex-Nikkor. If you're close to the action and want to show that you were in the thick of it, one of the Nikkor wideangles, such as the 28mm or 35mm will do the trick. These wideangles are especially effective for team sports where the players and you and the other spectators all seem to be involved in the same action.

Frank "Shorty" Wilcox



When quick action makes framing difficult

The greater the speed of action, the more generation of excitement, and the more opportunities for the unexpected and for more interesting pictures. This is where the telephotos bow to the zooms. You'll find the zooms also handy when you're alternately shooting the game as a whole and the star performers in close-ups. Choose any of four Nikkor zoom lenses, like the super-compact 80-200mm f/4.5. Framing is no problem, and it's only 16.2cm (6-1/4 in.) long, so you needn't worry if you haven't got any elbow room. While a zoom lens amply compensates for a number of lenses of various focal lengths, its real value is that you can see through the viewfinder the most effective framing throughout the zooming range without changing the camera position. For action on stage or under a circus tent, try the compact, easy-to-use 43-86mm f/3.5 Zoom-Nikkor. Without taking your eye away from the viewfinder, vary the focal length from semi-wideangle to normal to telephoto to compose your picture the way you want.

Nikkor Zooms Nikon was not only the first to design practical zoom lenses for 35mm still photography but also the first to craft them with quality performance comparable to that of the finest individual standard lenses. Once in focus, the Zoom-Nikkors remain in sharp focus throughout their zoom range to allow you to zoom clearly from far distant scenes to close-ups and vice versa without changing your camera position. These four zooms with focal lengths ranging from 43-86mm to 200-600mm cover from medium wideangle to super-telephoto.



Panning

In panning swift action, you may use a slower shutter speed than indicated in the viewfinder, switch over to manual, follow your subject and keep him in sight long before tripping the shutter release. The main portion of your picture will turn up sharp with the blurred background accenting the feeling of movement. The slow shuttering technique can also be used to create an effective impression of motion. Another example of Nikkormat EL versatility. The Nikkor zooms will also give you somewhat similar expressive shots. Zoom in or out of your subject and shutter at the same time. This shifting of focal lengths blurs the subject and his background. Using color film will give you dazzling streaks or soft pastel swirls to any of these shots.



Francisco Hidalgo

Close-Ups

The discovery and delight of the colors and patterns of the close-up world.



Suzanne G. Hill

So much of the wonder and mystery of the world of close-ups goes unseen. And not simply because our eyes have their limits. For one thing, we just don't take the time and bother to stop and enjoy it. For another, many photographers believe that doing close-ups—and this includes copying of color slides and black-and-white transparencies, as well as documents and other printed materials—is only for the specialists. The Nikkormat EL shows how wrong they can be. For it is in this fascinating close-up world that your camera proves its versatility and easy handling, with a viewfinder that will show you how your pictures will be framed; through-the-lens metering for precise exposure measurement; low- or ground-level viewing convenience with the Right-Angle Viewing Attachment; the depth-of-field preview button to let you see the depth of field at the taking aperture and most important, the electronically controlled shutter that allows you to really concentrate on the critical job of focusing. But added to all that, there's the large selection of Nikon accessories to choose from according to your interests or pocketbook: Close-Up Attachment Lenses, Extension Rings, Bellows Focusing Attachments, 105mm f/4 Bellows-Nikkor, Slide

Copying Adapters and the Repro-Copy Outfit Model PF-2. With this special close-up equipment, you are always prepared to record the many fascinating secrets that too often escape the naked eye. But whatever your interests and no matter the extent of your budget, Nikon offers from its wide assortment of close-up equipment the right tool to meet your specific needs and your pocketbook. (See chart, page 30, for the magnification range of various Nikon close-up accessories.)

There is no distinctly defined boundary to indicate where general photography ends and close-up photography begins, but, generally, close-ups refer to pictures taken from a distance closer than that which can be focused by an ordinary lens. This can be done by either increasing the magnification power of the lens through the simple attachment of a supplementary lens to the taking lens or by extending the lens-to-film distance through the insertion of a device of fixed (ring) or adjustable (bellows) length between the lens and the camera body.

Increasing the Power of the Lens

The easiest and least expensive way to conduct close-ups is to use the Close-Up Attachment Lenses. Available in three different diopters, Nos. 0, 1 and 2, they are screwed on Nikkor lenses with 52mm-diameter front screw thread and may be used singly or in combination. Since they allow you to shoot with the automatic diaphragm of the prime lens still in function and the electronic shutter automatically decides the correct exposure, there is no need to calculate exposure increases. These lenses are ideal for photographing subjects like flowers, insects, etc. which do not require extreme magnification.

Extending the Lens-to-Film Distance

For larger magnifications than that possible with the Close-Up Attachment Lenses, attach the Extension Ring E2 or the Extension Ring Set K between the camera body and the lens; the former extends the lens-to-film distance by 14mm; the latter from 5.8 to 46.6mm depending upon the ring combinations.

The Extension Ring E2 has a plunger which opens the automatic diaphragm of the Auto-Nikkor lenses to full aperture for the brightest focusing. Releasing the plunger stops down the lens to the taking aperture. Two of these rings may be combined for larger magnifications.

The Extension Ring Set K consists of five rings (K1 through K5) usable individually or in nine combinations for a variety of magnifications.

If you want more versatility than the extension rings, the Nikon Bellows Focusing Attachment Model PB-5 will give you a continuous and larger focusing range for close-ups and macrophotography (photography at larger-than-life-size magnification).

The BR-2 Macro Adapter Ring permits reverse mounting of any of your lens with 52mm-front thread on the Bellows Focusing Attachments for optimum optical performance in macrophotography.

For convenient copying of your color slides and black-and-white transparencies, use the Slide Copying Adapter PS-5 on the Bellows Focusing Attachment PB-5. The BR-3 Connecting Adapter serves as an adapter to connect the Slide Copying Adapter to the rear of a reverse mounted lens.

Designed exclusively for the bellows attachments, the 105mm f/4 Bellows-Nikkor will let you take pictures continuously from infinity to 1.3X close-ups. If you're conducting critical reproduction work calling for higher magnifications, such as copying documents, maps and pictures or photographing small objects and specimens, the Repro-Copy Outfit Model PF-2 gives you the firm support you need when your Nikkormat EL is mounted with any of the above close-up attachments. With the Microscope-Camera Adapter Model 2, you can attach the Nikkormat EL to a standard microscope for low-power photomicrography. An experienced world leader in the production of microscopes, Nikon offers a very wide line of professional equipment for photomicrographic and macrophotographic applications. (For further information, see your microscope representative or write us.)

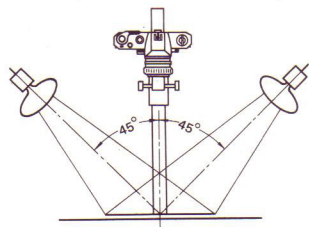
Special Close-Up Lenses

There are two Nikkor lenses specifically designed for extreme close-ups done speedily and easily: The 55mm f/3.5 Micro-Nikkor-P Auto focuses all the way from infinity to a 1 : 2 reproduction ratio and up to life-size with the M2 Ring, which is supplied with the lens; without any loss of its exceptionally sharp image resolution. Many photographers also mount this versatile and handy lens on their camera instead of a normal 50mm lens. Although originally developed for medical research photography, the 200mm f/5.6 Medical-Nikkor Auto is so completely automatic you'll find it helpful in industrial and other laboratory photography.



Some close-up reminders

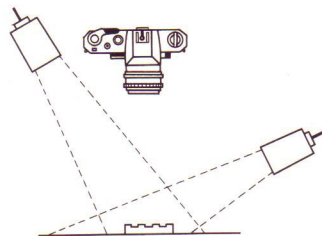
Focusing Sharp definition of texture with clear minute details is very important in close-up photography. Therefore, correct focusing will decide the total picture quality. Of course, the fast speed of Nikkor lenses and the brightness of the Nikkormat EL focusing screen will help you in accurate focusing. In addition, the Nikon Eyepiece Magnifier, with a 2X magnification provides pinpoint focusing. Unlike candids or snapshots, you shoot close-ups only after you have studied carefully what the final effect will be. Through the viewfinder of your Nikkormat EL, you can see the exact depth of field or out-focused area. Just



Basic lighting arrangement for copying flat originals.

before pressing the shutter, check once more to see that the focusing is right. Since any slight motion will ruin your picture, make sure there is no movement around you. If there is a feel of a breeze, improvise and surround your subject with a paper or vinyl wall. And be sure to use a tripod. For extreme close-ups, always use the Nikon Cable Release.

Lighting The strategy of close-up lighting depends upon the subject, desired effect and the problem that needs to be overcome. When the object is perfectly flat, such as a document, stamp or a printed page, uniformity of illumination is most



Raised surfaces require main light skimming the surface at a sharp angle. Shadow is controlled by fill-in light of lesser intensity.

important. To avoid highlights use a Nikon Polarizing Filter. Also, a piece of non-glare glass will keep the subject flat and reduce reflections. With three-dimensional objects, lighting must be designed to bring out the form and depth, while avoiding both unsightly shadows and highlights. Surface characteristics must also be considered. A dull textured surface needs strong, oblique, undiffused lighting. On the other hand, shiny metal surfaces build up strong, detail-blocking highlights when illuminated in this manner. Small, high intensity lights on long, flexible arms can be adjusted to throw light from any direction. A diffusing screen can be used to reduce highlights. Reflectors serve to pick up light from any source and redirect it towards the subject. And to eliminate shadows, various bouncelighting techniques can be used.

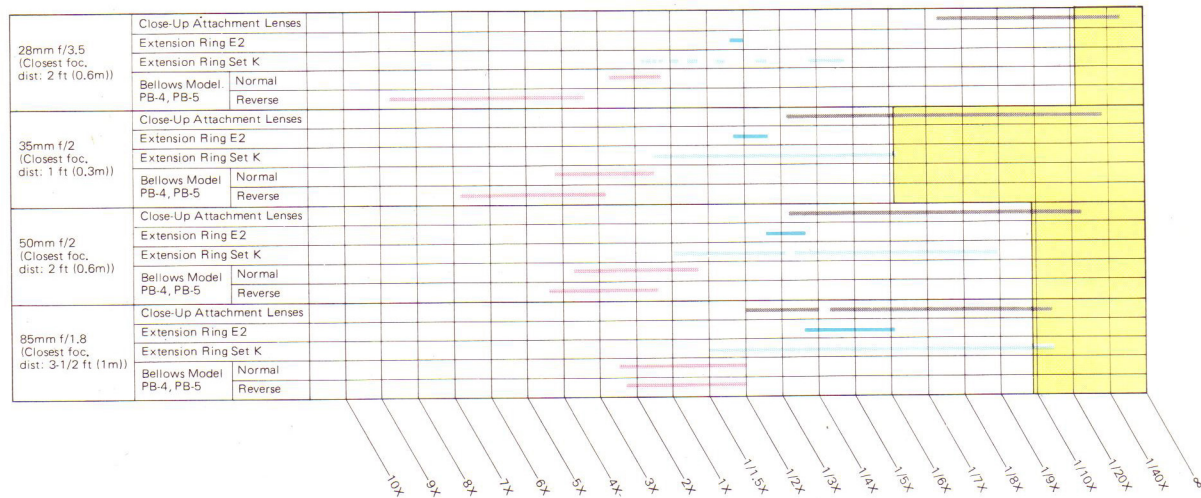
Typical subjects To maintain realism, small insects and animals should always be photographed alive. Either through the right natural light or a combination of flash and reflectors, sidelighting should be used to bring out the texture of their natural background. Care must be taken to protect the animal from extreme heat. Reptiles and flying insects may be placed within a glass cage with two

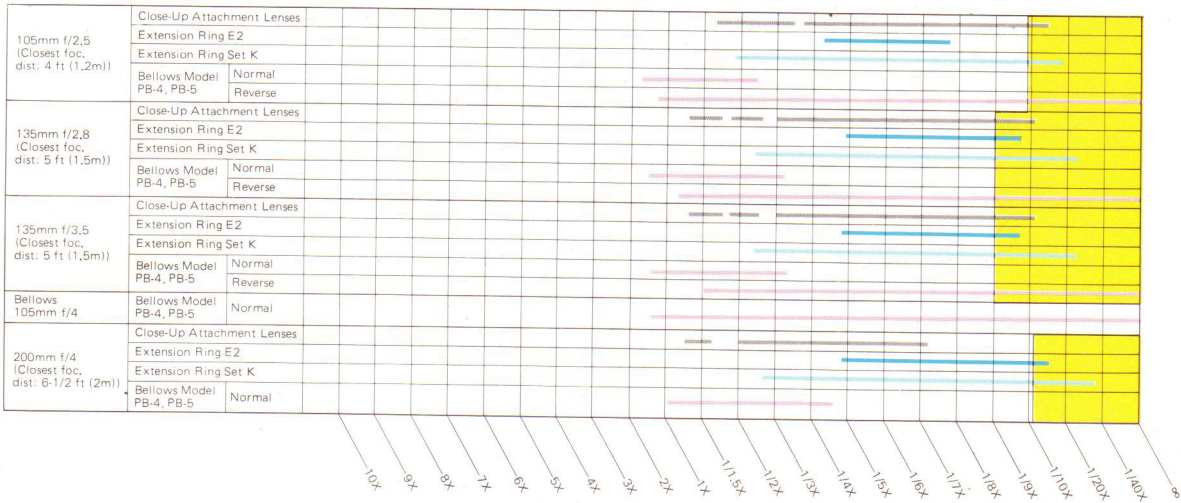
front panels, thereby restricting their range of movement and permitting accurate focusing. The same technique may be used in aquaria to keep the water creatures within a manageable zone of focusing sharpness.

For floral photography, the best light is a bright sun screened by a thin overcast. Background confusion can be eliminated by shooting from a low angle to have a blue sky background. For this purpose the Right-Angle Viewing Attachment is perfect. For an interesting effect, a spray gun can be used to deposit tiny droplets of water on the flower petals. These act as tiny lenses that reflect light to form highlight centers. Here again, motion becomes a factor. The slightest breeze can cause a blurred picture. Erecting a plastic windscreen is an effective way to combat this problem. In coin and medal photography, the subject is in very shallow relief. A single, oblique light source will reveal texture in the film of minute image details. A Nikon Polarizing Filter can be used to reduce highlights if the coins are of "mint" quality. If individual coins are to be photographed, placing the coins on pedestals (smaller in diameter) will separate them from the background.

Magnification range of various Nikon close-up accessories

Note:
 For close-up shooting larger than life-size, better performance will be obtained if the lens is reverse-mounted where the two ranges, normal and reverse, overlap.
 The yellow block to the right of the table indicates the magnification range the lenses cover without close-up accessories.





Using your Nikkor telephoto and wideangle lenses



Jerry Cooke

Nikkor Telephotos

Telephotos, like telescopes, bring the distant subject closer for a larger view than that possible with the eye or normal lens. They are particularly useful when you can't get close to the subject. With their shallow depth of field, you can isolate the subject and throw the confusing background or foreground out of focus. With a long telephoto, you can get the effect of different planes appearing as if they were compressed when the photo is enlarged and viewed from a close distance. For instance, a motor parade shot approaching you will give the impression that the cars are jammed together.

The Nikon system of photography offers you 15 telephoto lenses from 85mm to an amazingly long 2000mm, plus 4 telezooms from 43-86mm to 200-600mm to freely change the close-up viewpoint without changing your camera position.

Especially recommended for animal and bird photography are three lenses that, despite their focal length, are so compact and lightweight that they can be used without a tripod: the 400mm f/5.6 Nikkor and 500mm f/8 Reflex-Nikkor and the 80-200mm f/4.5 Zoom-Nikkor. As are the other lightweight Nikkor telephotos and zooms, this trio is also ideal for mountain and sports photography and photojournalism.



Dennis Avon

Nikkor Wideangles

Train yourself until you know the coverage of your wideangle without even looking thru the finder. Because its focal length is shorter than a normal lens, the wideangle offers a wider picture angle. Try it when you're dramatizing man and his background in close shots or shooting interiors in limited space.

Three 35mm Nikkor wideangles (f/1.4, f/2 and f/2.8) permit you to focus as close as 0.3m (1 ft). And with their great depth of field, focusing is quite simple.

These lenses are practical choices for snapshots, structures and landscapes. Because of their speed, this trio, especially the f/1.4, is very handy for indoor sports and gatherings and other interior shots. Other popular wideangles are the 28mm f/2 and f/3.5 with their large picture angle of 74°. Since they allow you to close in 0.3m (1 ft) and 0.6m (2 ft), respectively, on your subject, use them to shoot the scholar among his books in his study or children playing in the nursery. For wider angles, there are the 24mm f/2.8 with an 84° and the 20mm f/3.5 with a 94° field of view. And for a still wider coverage, there is the remarkable 110° picture angle of the 15mm f/5.6. All these

wideangles, in addition to being especially effective for reproducing the entire field of view even in very tight quarters, will also give interesting and dramatic effects by their exaggeration of perspective, which is more conspicuous the wider the angle.

Remember that with a wideangle lens of less than 28mm, apparent image distortion will be more pronounced when you focus close to your subject from above or below him. Up to a point, this exaggeration of perspective will not be unpleasant. But the more you raise or lower the camera, the greater the distortion. High-fashion photographers use the wideangles for this particular exaggerated effect. But for a wide, wide coverage of 180°, you have a choice of two Nikkor fisheyes, the 8mm f/2.8 with equidistant projection and the 10mm f/5.6 OP with orthographic projection. And for a fantastic 220° picture angle, there are the 6mm f/2.8 and 6mm f/5.6 Fisheyes (both equidistant projection). The 8mm f/2.8 and 6mm f/2.8 feature an automatic diaphragm.

And for a view of exactly what happens when you change lenses, turn the page.



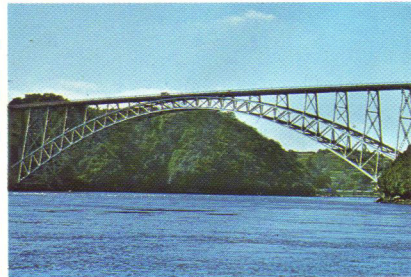
What you see is what you get



15mm

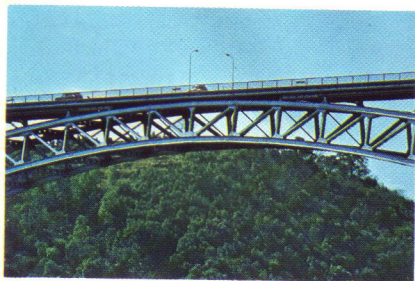


35mm



85mm

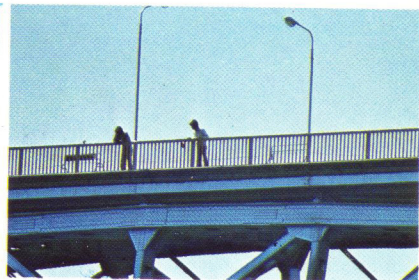
These pictures were taken with the camera position unchanged. They show the increasing magnification of the subject and the narrowing picture angle as the focal length is increased.



300mm



600mm



1200mm

Nikkor lens chart

Lens	Construction	Picture angle	Aperture			Weight (g)
	Groups-Elements		Type	Minimum aperture	Meter coupling prong	
6mm f/2.8 Fisheye-Nikkor Auto	9 – 12	220°	Automatic	22	Yes	5200
6mm f/5.6 Fisheye-Nikkor	6 – 9	220°	Manual	22	No	430
8mm f/2.8 Fisheye-Nikkor Auto	8 – 10	180°	Automatic	22	Yes	1000
10mm f/5.6 OP Fisheye-Nikkor	6 – 9	180°	Manual	22	No	400
16mm f/3.5 Fisheye-Nikkor Auto	5 – 8	170°	Automatic	22	Yes	330
15mm f/5.6 Nikkor Auto	12 – 14	110°	Automatic	22	Yes	720
20mm f/3.5 Nikkor Auto	9 – 11	94°	Automatic	22	Yes	390
24mm f/2.8 Nikkor Auto	7 – 9	84°	Automatic	16	Yes	290
28mm f/3.5 Nikkor Auto	6 – 6	74°	Automatic	16	Yes	215
28mm f/2 Nikkor Auto	8 – 9	74°	Automatic	22	Yes	345
35mm f/2.8 Nikkor Auto	6 – 7	62°	Automatic	16	Yes	200
35mm f/2 Nikkor Auto	6 – 8	62°	Automatic	16	Yes	285
35mm f/1.4 Nikkor Auto	7 – 9	62°	Automatic	22	Yes	415
35mm f/2.8 PC-Nikkor	7 – 8	62°	Preset	32	No	335
45mm f/2.8 GN Auto Nikkor	3 – 4	50°	Automatic	32	Yes	135
50mm f/2 Nikkor Auto	4 – 6	46°	Automatic	16	Yes	205
50mm f/1.4 Nikkor Auto	5 – 7	46°	Automatic	16	Yes	325
55mm f/1.2 Nikkor Auto	5 – 7	43°	Automatic	16	Yes	420
55mm f/3.5 Micro-Nikkor-P Auto	4 – 5	43°	Automatic	32	Yes	235
85mm f/1.8 Nikkor Auto	4 – 6	28°30'	Automatic	22	Yes	420

* Used with Focusing Unit

** With Focusing Unit

Lens	Construction		Picture angle	Aperture			Weight (g)
	Groups-Elements			Type	Minimum aperture	Meter coupling prong	
105mm f/2.5 Nikkor Auto	4 - 5		23° 20'	Automatic	32	Yes	435
135mm f/3.5 Nikkor Auto	3 - 4		18°	Automatic	32	Yes	460
135mm f/2.8 Nikkor Auto	4 - 4		18°	Automatic	22	Yes	620
180mm f/2.8 Nikkor Auto	4 - 5		13° 40'	Automatic	32	Yes	830
200mm f/4 Nikkor Auto	4 - 4		12° 20'	Automatic	32	Yes	630
300mm f/4.5 Nikkor Auto	5 - 6		8° 10'	Automatic	22	Yes	1060
400mm f/4.5 Nikkor Auto*	4 - 4		6° 10'	Automatic	22	No	3100**
500mm f/8 Reflex-Nikkor	3 - 5		5°	-	-	-	1000
600mm f/5.6 Nikkor Auto*	4 - 5		4° 10'	Automatic	22	No	3600**
800mm f/8 Nikkor Auto*	5 - 5		3°	Automatic (Manual)	22 (64)	No	3500**
1000mm f/11 Reflex-Nikkor	5 - 5		2° 30'	-	-	-	1900
1200mm f/11 Nikkor*	5 - 5		2°	Manual	64	No	4300**
2000mm f/11 Reflex-Nikkor	5 - 5		1° 10'	-	-	-	17500
43mm~86mm f/3.5 Zoom-Nikkor Auto	7 - 9		53°~28° 30'	Automatic	22	Yes	410
50mm~300mm f/4.5 Zoom-Nikkor Auto	13 - 20		46°~8° 10'	Automatic	22	Yes	2270
80mm~200mm f/4.5 Zoom-Nikkor Auto	10 - 15		30° 10'~12° 20'	Automatic	32	Yes	830
200mm~600mm f/9.5 Zoom-Nikkor Auto	12 - 19		12° 20'~4° 10'	Automatic	32	No	2300
200mm f/5.6 Medical-Nikkor	4 - 4		12° 20'	Automatic	45	No	670
105mm f/4 Bellows Nikkor	3 - 5		23° 20'	Preset	32	No	230

List of accessories for the Nikkormat EL

VIEWFINDER ACCESSORIES

The following accessories are screwed into the eyepiece of the viewfinder to facilitate viewing or focusing under various photographic situations.

Right-Angle Viewing Attachment: For waist-level viewing.

Eyepiece Correction Lenses: Provide greater viewing convenience for those with near-sighted or far-sighted vision.

Finder Eyecup: Prevents extraneous light from entering the eyepiece.

Eyepiece Magnifier: Magnifies the image 2X for critical focusing.

FILTERS

They complement the excellence of Nikkor lenses without loss of picture quality or vignetting. Available for both black-and-white and color photography. Majority with 52mm screw-in thread usable with most Nikkor lenses.

For black-and-white film: Ultraviolet (L39); Yellow, light (Y44), medium (Y48), deep (Y52); Orange (O56); Red (R60); Green, light (X0), deep (X1); Polarizing (Polar); and Neutral Density (ND4X, ND8X). Ultraviolet, Polarizing and Neutral Density filters also usable for color film.

For color film: Amber, light (A2), deep (A12); Blue, light (B2), medium (B8), deep (B12); and Skylight (L1A).

CLOSE-UP ATTACHMENTS

Close-Up Attachment Lenses Nos. 0, 1, 2
Extension Ring E2
Extension Ring Set K
Bellows Focusing Attachment PB-4, PB-5
Slide Copying Adapter PS-4, PS-5
BR-2 Macro Adapter Ring
BR-3 Connecting Adapter
Repro-Copy Outfit Model PF-2
Microscope-Camera Adapter Model 2

MISCELLANEOUS

Flash Unit Model BC-7
Panorama Head: Takes panoramic pictures through 360° with
Nikkor lenses from 28mm to 135mm
Pistol Grip Model 2: Camera support for hand-held shooting.
Cable Releases.
Neck Straps: Leather and leatherette.
Lens Hood.
Caps: For protection of camera body and front and rear of lens.
Cases: Eveready Camera Cases, semisoft, Lens Cases, leather-
ette, flexible pouch and clear plastic. Compartment Cases, FB-5,
FB-6, FB-8, FB-9, and Foam Rubber Compartment Case Model 2.

Nikon for anything optical

Now that you've been introduced to a world made more colorful and captivating through photography, may we remind you that the same quality and dependability provided by the Nikkormat EL and the Nikon system of photography are also available in many other Nikon products.

Other Nikon cameras:

Nikon F2 Photomic

Nikon F2

Nikkormat FT_N

Embodying camera craftsmanship, these Nikon cameras feature the same modular construction for complete interchangeability of lenses and accessories.

Nikonos II (Calypso/Nikkor-II) Widely accepted as standard equipment for underwater photography, the amphibious Nikonos II (marketed as the Calypso/Nikkor II in the United Kingdom and Europe) is the most versatile and easiest-to-handle all-weather 35mm camera available today. It not only gives the instant response required by the skin-diver at depths of 160 ft (50m) underwater without a housing, it also performs equally well on land. The oceanographer, the on-the-spot press photographer, the mariner, the archaeologist, the medical researcher and the laboratory technician all find the Nikonos II the best camera for all seasons and environments.

Nikon Binoculars Nikon has been making binoculars for more than 50 years. From among a variety of models, you can choose the right one for professional or personal use. Mounted terrestrial binoculars are also available.

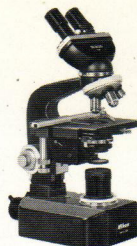
Nikon Microscopes Wherever the laboratory — in the school, hospital, scientific research institute or industrial research and development center — there is a Nikon microscope to perform the specific task with superior quality optics and precision performance. The basic compound stands of the Nikon L-Ke, S-Ke, S-Kt and S series microscopes are designed to accept interchangeable stages, objectives, eyepieces, tubes, condensers, illuminators and a multitude of other special accessories. This building-block system gives the Nikon microscopes microscopy including bright- and dark-field, phase contrast, polarization, interference-phase, epi-illumination, differential-interference, automatic photomicrography and cinemicrography. The versatile range of Nikon microscopes also includes stereoscopic models of unique zoom optics, the inverted ME and MSE models for metallurgical, as well as industrial and scientific



Nikonos II



7X21 Binocular



Nikon Microscope
Model LBR-Ke

applications, and the amazingly versatile research microscope, the Apophot with zoom Koehler illumination. The Multiphot for large-format, widefield photomacrography.

Industrial Lenses EL-Nikkor for photographic enlargers; Repro-Nikkor for life-size reproduction in the 35mm format; Cine-Nikkor for 16mm movie cameras and 1-inch vidicon cameras; Fax-Ortho-Nikkor for reproduction of drawings that need large magnifications; Fax-Nikkor for office photographic copying machines and process cameras; Apo-EL-Nikkor, Process-Nikkor and Apo-Nikkor for photoengraving; and Ultra-Micro-Nikkor for ultramicrofilming and production of integrated circuits and their large-scale integration.

Optical Measuring Instruments Profile projectors, autocollimators, measurescopes, photoelectric micrometer microscope, microtester, high-temperature microhardness testers, optical readouts and glass scales.

Surveying Instruments Auto levels, levels, transits, theodolites, laser theodolite, electro-optical range meter and cartographic stereoscopes.

Ophthalmic Instruments Fundus camera, vertexometers and zoom photo slit-lamp microscopes. And many other types of optical instruments, such as binocular telescopes, reflector telescopes for astronomical observatories and radiation shielding glass and periscopes for nuclear laboratories. We even make spectacles. That's how diversified Nikon is.



Nikon F2 Photomic



Nikkormat FTn

The models in this catalogue represent the design of our instruments at the time of printing. The design and specifications are subject to change due to further improvements.

Nikon

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