

# WILSONWERKS ARCHIVES

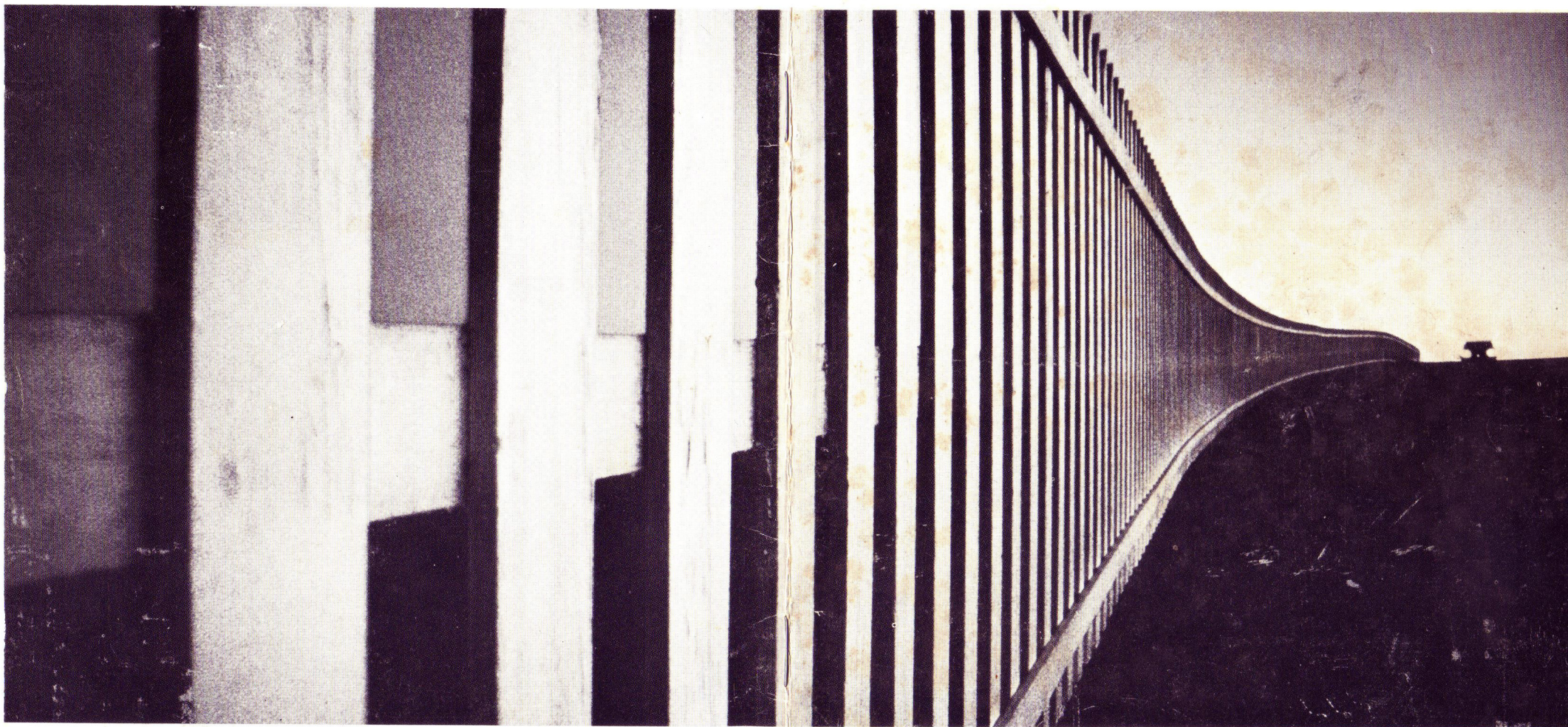
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THE  
NIKON  
SYSTEM



**NIKKOR  
WIDE ANGLE LENSES**



# NIKKOR WIDE ANGLE LENSES

Every photographer encounters situations where the normal lens does not take in all of the desired picture area. Here the wide angle lens, as the name indicates, provides a perfect and simple solution. No wonder that most camera owners choose a "wide angle" as their first additional lens to supplement the normal camera optics.

The imaginative photographer, however, also realizes the value of the wide angle lens as a creative tool. He uses its tendency to increase the apparent distance between near and far objects to produce a dramatic impression of depth bordering on the three-dimensional. He takes advantage of its great depth-of-field to impart foreground-to-background

sharpness that seems to defy perspective. Also, when shooting action, he can prefocus his wide angle lens for the approximate subject distance and, relying on its depth-of-field, be sure of sharp pictures without constant refocusing.

Nikon acknowledges the importance of wide angle optics by offering what is probably the greatest variety in all of 35mm. As owner of any Nikon or Nikkormat slr, you can choose among focal lengths from

15mm to 35mm, with picture coverage ranging from 110° to 62°.

All but one have automatic — reopen diaphragms and couple to camera meter systems for thru-the-lens exposure control at full aperture. Whichever you select, you enjoy superlative definition and color correction, freedom from distortion and the incomparable picture quality that is recognized as the hallmark of Nikkor optics.







### 15mm f5.6 Auto Nikkor

Using an entirely new optical design, Nikon has succeeded in producing a lens that provides unprecedented  $110^\circ$  picture coverage without the optical distortion associated with ultra-wide angle optics. Furthermore, the 15mm f5.6 has a back focus 2.45 times greater than its focal length. This means that it permits the automatic mirror and diaphragm to function as they do with all Auto-Nikkor lenses. Also, it couples to camera meter systems. Four filters (Skylight, medium yellow, orange and red) are built into the lens, mounted on a turret with external selector/indicator.

### 20mm f3.5 Auto Nikkor

The combination of  $94^\circ$  picture coverage, all-over sharpness and f3.5 speed makes this a favorite of serious Nikon and Nikkormat users, both hobbyist and professional.

Fully automatic and meter-coupled, it enables you to shoot as rapidly as the situation requires while keeping the subject clearly in view through the reflex finder. The lens may be focused as close as 12 inches. Depth-of-field is so great that with aperture set at f8 and distance at 7 feet everything is sharp from less than 3 feet to infinity.



### 28mm f3.5 Auto Nikkor

This is the focal length most photographers choose as the first to supplement their normal lens. But, the 28mm Auto-Nikkor offers more than versatile  $74^\circ$  picture coverage.

Its surpassing sharpness and image brilliance has led experts to term it the finest in its focal length. The automatic diaphragm and provision for meter coupling add further advantages. Closest focusing distance is 24 inches.

### 28mm f2 Auto Nikkor

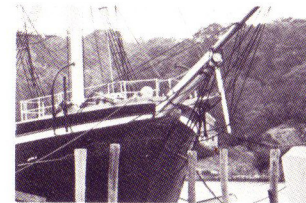
The tremendous speed of this lens marks one of numerous optical breakthroughs for Nikon. Its value for available-light photography is self-evident. Equally important, the shallow depth-of-field at f2 means easier and more positive focusing under all light conditions.

All glass-air surfaces of the 28mm f2 are multi-layer-coated, a special process whose superior effectiveness in improving light transmission and contrast and reducing flare is considered a milestone in development of high-speed quality optics. Another special feature is the independent rear lens group movement which produces markedly improved image quality at close distances.

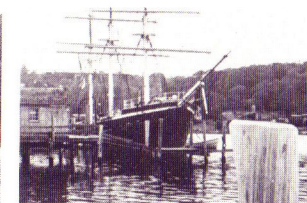


### 24mm f2.8 Auto Nikkor

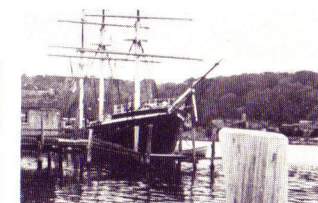
In addition to its  $84^\circ$  picture coverage and excellent speed, the 24mm f2.8 offers exceptional resolving power and correction at all shooting distances. Its special formula embodies an independent rear lens group movement that dramatically improves image quality at close focusing distances. In fact, it is widely acknowledged to be the sharpest wide-angle lens for any slr 35. Compact size is another advantage of this lens design which achieves great light-gathering power without an extra-large front element.



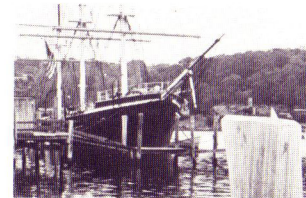
50mm



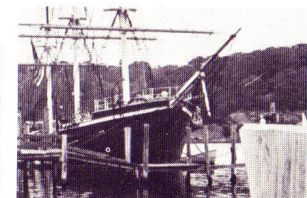
15mm



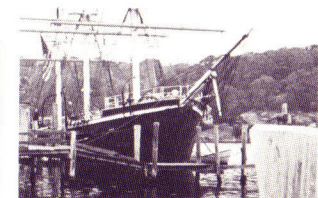
20mm



24mm



28mm



35mm





### 35mm f2.8 Auto Nikkor

This is perhaps the finest example of the classic 35mm wide angle. It is exceptionally well corrected and exhibits outstanding center-to-edge resolution and freedom from distortion. Encouraged by this optical quality, many find the 62° picture angle and great depth-of-field of the 35mm f2.8 so versatile that they often use it in place of the normal lens.

Other advantages include focusing down to 12 inches, automatic-reopen diaphragm, meter coupling and compact, lightweight design.



### 35mm f1.4 Auto Nikkor

In creating this fastest wide-angle lens ever produced for any slr, Nikon designers opened up a new world of picture opportunities. With double the light transmission of the 35mm f2, it offers truly fantastic speed for low-light situations, using color as well as black and white. Equally important, its minimal depth-of-field at f1.4 permits focusing speed and accuracy never before possible with wide angle optics.

Like the 24mm f2.8 and 28mm f2, this lens employs an independent rear lens group movement to assure exceptional picture quality at close focusing distances.



### 35mm f2 Auto Nikkor

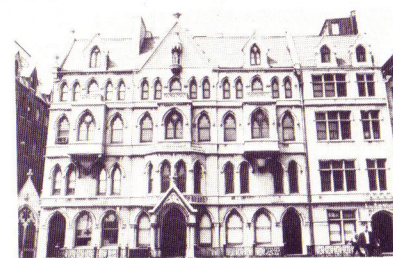
The great speed of this lens, added to the other advantages it shares with the 35mm f2.8, has earned it the highest respect of knowledgeable Nikon and Nikkormat users. Remarkably sharp, even at full aperture, it can be focused quickly and accurately thanks to the reduced depth-of-field. Closest focus is 12 inches.

### 35mm f2.8 PC-Nikkor

It was Nikon that brought perspective correction to 35mm by means of the ingenious PC-Nikkor lens.

#### Perspective Distortion

Normally, when photographing a building, the camera may have to be tilted to include the upper part of the structure. This causes the vertical lines to converge toward the top and gives the building the appearance of leaning or falling back. With view cameras, the back or film plane would be kept parallel to the building, and the upper part of the building included by raising the lens.



Camera tilted and lens on axis.



Camera back parallel to building - lens shifted

#### Lens Shifts 11mm

In the PC-Nikkor, a micrometer lead-screw permits shifting the optics off-axis by as much as 11mm. An mm-calibrated scale shows the extent of the shift. This 11mm shift in the PC-Nikkor is equivalent to a 3-inch shift on a view camera equipped with a 9½-inch lens.



For example, shooting a building from a distance of about 200 feet, an 11mm upward shift of the lens will bring about 72 feet more of the upper structure into the picture.

#### Lens Rotates 360°

Because the entire lens mount of the PC-Nikkor rotates, the effect of the shift can be applied vertically (up or down), horizontally (either side), or diagonally. There are 12 click-stop positions at 30° intervals.

#### "Wide Field" Pictures

The PC-Nikkor may also be used to produce "wide-field" pictures with uniform perspective (unlike those made with rotating pan heads). Two pictures, each taken with the lens shifted the full 11mm in the opposite extreme, can be joined where they overlap to produce a single extended photograph. The technique can be used on vertical or horizontal subjects.

In its normal position, the PC-Nikkor is an excellent intermediate (62°) wide angle lens with focusing range as close as 12 inches.

With Nikon slr cameras, use of the Type E finder screen is recommended. Its pattern of vertical and horizontal lines is helpful in aligning the subject image for precise control of parallels.



# WHY NIKKOR?

What makes a lens great? "Sharpness" or "resolution" might seem logical replies. But they are far from the only factors contributing to lens quality. As every reader of test reports knows, some relatively inexpensive lenses can perform very well indeed. But there are at least a dozen other good reasons why anyone who has invested in a Nikon or Nikkormat camera shouldn't settle for less than a Nikkor lens.

## Unsurpassed Technology

From computerized lens design to sheer brilliant originality, Nikon designers have kept Nikkor lenses in the forefront of optical innovation. For example, Nikkor pioneered multi-layer coatings. This technique increases light transmission for greater lens efficiency and greatly reduces flare, even in strongly back-lit situations. Only recently has anyone else offered multi-layer coatings. But, unlike others, Nikon uses multi-layer coatings only where necessary for superior lens performance and, in fact, integrates this process into the design of the lens.

Companies less committed to optical research, without Nikon's advanced facilities, simply cannot hope to be anything but imitators.

## 220 Types of Optical Glass

Nikon is one of the few lens makers in the world who produce their own optical glass. More than 220

varieties, in fact. Nikon designers can count on precisely the glass they need. If the glass works doesn't have it, they'll make it. They select only the choicest part of each glass melt; the rest is sold.

Most other manufacturers must depend on what an outside supplier can come up with.

## The Lens Mount

Nikon cameras and lenses feature a big, rugged bayonet mount which is safe and sure — yet permits twist-of-the-wrist changing. You'll never find a Nikkor lens mount that feels loose or shaky. There are no threads to wear, no add-on adapters to go out of line or loosen when you most need precision and dependability. Mounting lugs are made of stainless steel and phosphor bronze, so your Nikkor lenses always fit like new even after attaching and removing them thousands of times. Manufacturing specifications guarantee that lens-to-film-plane alignment will remain constant. You can shoot at maximum aperture, with depth-of-field virtually non-existent, knowing that you'll get all the available sharpness.

There are many other types of mounts — laborious screw mounts with threads that wear out, chancy, time-consuming breech-locks, wiggly add-on adapters to go out of line or loosen. None compare to Nikon for accuracy, security and speed.

## Auto-Nikkor Lens Design

On the back of any auto lens is a moving lever or pin whose alignment is vital — the automatic diaphragm actuator. This lets you compose and focus at maximum aperture. With Auto-Nikkors, it's perfectly safe to take the lens off the camera and set it down, because the actuator is protected by a projecting collar.

On a surprising number of other lenses — even expensive ones — it's the pin that projects. There's constant danger of damage and of less than accurate diaphragm action.

## Lens Assembly

Externally, lenses look pretty much the same. You'd have to see a Nikkor being assembled to appreciate the difference. Where, for instance, inner and outer rings are held together by screws, the screw goes through *both* rings. And the hole is drilled before the lens is assembled, so no metal particles are left inside.

Especially on inexpensive lenses (which can sometimes achieve high optical performance), mechanical shortcuts include screws which go through one ring only, holding the second ring with pressure. When the screw loosens, you've got an unsharp lens or, worse yet, a two-piece lens.

## Close Tolerances

A Nikkor and another lens may feel equally smooth and precise *when*

*new*. With the Nikkor it's because of incredibly precise tolerances — closely spaced and finely grooved helical threading on the focusing mount. The silky action is not affected by extremes of high or low temperatures. And, after years of use, it will still be just as smooth. The automatic diaphragm employs a ball-bearing raceway to achieve the same smoothness and avoid sticking.

Inexpensive lenses get their smoothness by a much simpler method: grease. But, as heat and cold affect the consistency of grease, erratic diaphragm action results. Eventually, grease dries out and can't be replaced, causing the diaphragm to stick.

## Lens Element Placement

Here's where accuracy really counts. Advanced computer design means nothing without meticulous care in seeing that every element or group of elements is precisely where it belongs. Even a tiny misalignment means loss of sharpness. One reason you can depend on Nikkor lenses for a lifetime of performance is that threaded retaining rings, backed up by precision-turned screws, anchor every element permanently and precisely in place.

Other lenses use a variety of less expensive and less reliable methods to position the elements — coarse screws, cement, and plain ordinary friction.



## Lens Handling

A lot of things contribute to fast, precise handling of a lens. Aperture and footage scales must be readable at a glance — even in low available light. Nikkor lenses have white numerals on a black background for high legibility. Depth-of-field scales aren't just a hard-to-read ornament but a real working tool that you can read and use quickly and easily.

With Nikkor lenses, you won't make a mistake and grab the aperture scale when it's the focusing ring you need. The two controls are spaced purposely far enough apart to prevent errors, even under the most difficult conditions. When you grip the knurled surface of the focusing ring, you are in control. And you sense the fine balance that cannot exist unless the camera and lens are made only for each other.

Check other lenses for these essential conveniences. Some literally don't give you anything to hold on to. And watch out for breech-lock rings which, if unintentionally turned, can drop the lens to the ground.

## Standard Filters

All Nikkor lenses from 24 to 200mm except 180mm f2.8 and Medical Nikkor, use the same 52mm screw-in filters and accessories. You never have to guess or experiment. It also keeps your filter costs down.

Other lens makers, unaccountably,

use a different filter size for almost every lens. A bagful of lenses requires another bagful of filters and other attachments.

## More than 40 Nikkor Lenses

From the 220° viewing 6mm Fisheye to the super-powerful 2000mm telephoto, there are more than 40 Nikkor lenses to choose from. It's hard imagine anyone needing all of them, but whatever lens you want is available as part of the Nikon system.

No one else offers a comparable range or number of lenses.

## World-Wide Warranty

Wherever you go with you Nikkor lens and Nikon or Nikkormat camera you're covered by the Nikon world-wide warranty.

To our knowledge, no other manufacturer offers such a warranty.

## Nikon and Nikkormat

The same care and originality, the same painstaking quality control which go into Nikkor lenses are intergral parts of every Nikon and Nikkormat slr camera. Whether you buy the camera because of the lenses or the lenses because of the camera, they provide an unequalled combination for 35mm photography at its finest.

Nikon Inc., Garden City, New York 11530. Subsidiary of Ehrenreich Photo-Optical Industries, Inc. 

	LENSES	Product Number	Diaphragm Action	Minimum Aperture	Picture Angle	Closest Focus	No. of Elements	Filter Size	Weight
FISHEYE NIKKORS	6mm f5.6 Fisheye	227	Manual (1)	f22	220°	fixed focus	9	6 built-in filters	15.3 ozs.
	6mm f2.8 Fisheye		Automatic (2)	f22	220°	10"	12	6 built-in filters	11 lbs. 8 ozs.
	7.5mm f5.6 Fisheye	229	Manual (1)	f22	180°	fixed focus	10	6 built-in filters	11.2 ozs.
	8mm f2.8 Fisheye	226	Automatic (2)	f22	180°	12"	10	5 built-in filters	2 lbs. 2 ozs.
	10mm f5.6 OP Fisheye	228	Manual (1)	f22	180°	fixed focus	10	6 built-in filters	14.3 ozs.
WIDE ANGLE NIKKORS	15mm f5.6		Automatic (2)	f22	110°	12"	15	4 built-in filters	19.8 ozs.
	20mm f3.5	233	Automatic (2)	f22	94°	12"	11	72mm	13.75 ozs.
	24mm f2.8	232	Automatic (2)	f16	84°	12"	9	52mm	10 ozs.
	28mm f3.5	237	Automatic (2)	f16	74°	24"	6	52mm	8 ozs.
	28mm f2	236	Automatic (2)	f22	74°	12"	9	52mm	12.2 ozs.
	35mm f2.8	240	Automatic (2)	f16	62°	12"	7	52mm	7 ozs.
	35mm f2	239	Automatic (2)	f16	62°	12"	8	52mm	9.9 ozs.
35mm f1.4	238	Automatic (2)	f22	62°	12"	9	52mm	14.6 ozs.	
NORMAL NIKKORS	45mm f2.8 GN	234	Automatic (2)	f32	50°	36"	4	52mm	5.3 ozs.
	50mm f2	245	Automatic (2)	f16	46°	24"	6	52mm	7.3 ozs.
	50mm f1.4	246	Automatic (2)	f16	46°	24"	7	52mm	11.5 ozs.
	55mm f1.2	247	Automatic (2)	f16	43°	24"	7	52mm	15 ozs.
LONG FOCUS & TELEPHOTO NIKKORS	85mm f1.8	260	Automatic (2)	f22	28°30'	3'	6	52mm	15 ozs.
	105mm f2.5	265	Automatic (2)	f32	23°20'	3'4"	5	52mm	15.2 ozs.
	135mm f3.5	271	Automatic (2)	f32	18°	5'	4	52mm	15.9 ozs.
	135mm f2.8	270	Automatic (2)	f22	18°	5'	4	52mm	21.8 ozs.
	180mm f2.8	280	Automatic (2)	f32	13°40'	6'	5	72mm	29.3 ozs.
	200mm f4	175	Automatic (2)	f32	12°20'	7'	4	52mm	22.1 ozs.
	300mm f4.5	278	Automatic (2)	f22	8°10'	13'	5	72mm	2 lbs. 3 ozs.
	300mm f2.8		Manual (1)		8°10'				
	400mm f5.6		Automatic (2)	f32	6°	16'	5	72mm	3 lbs. 1 oz.
	400mm f4.5	189	Automatic (4)	f22	6°	16'	4	122mm	6 lbs. 12 ozs. (4)
600mm f5.6	191	Automatic (4)	f22	4°	35'	5	122mm	7 lbs. 9 ozs. (4)	
800mm f8	194	Automatic (4)	f64	3°	60'	5	122mm	7 lbs. 11 ozs.	
1200mm f11	196	Manual (4)	f64	2°	130'	5	122mm	9 lbs. 5 ozs. (4)	
REFLEX NIKKORS	500mm f8	190	(5)	(5)	5°	13'	Mirror Lens System	39mm	2 lbs. 4 ozs.
	1000mm f11	197	(5)	(5)	2°30'	25'	Mirror Lens System	4 built-in filters	3 lbs. 8 ozs.
	2000mm f11		(5)	(5)	1°10'	60'	Mirror Lens System	4 built-in filters	38 lbs. 9 ozs. Mt. 16 lbs. 8 ozs.
ZOOM NIKKORS	43-86mm f3.5	275	Automatic (2)	f22	53° to 28°30'	4'	9	52mm	14 ozs.
	50-300mm f4.5	274	Automatic (2)	f22	46° to 8°10'	8 1/2'	14	95mm	5 lbs.
	80-200mm f4.5	276	Automatic (2)	f32	30°10' to 12°20'	6'	15	52mm	29.3 ozs.
	200-600mm f9.5	277	Automatic	f32	12°20' to 4°	13'	19	82mm	5 lbs. 2 ozs.
SPECIAL NIKKORS	35mm f2.8 PC	243	Pre-set	f32	62°	12"	8	52mm	11.8 ozs.
	55mm f3.5 Micro	250	Automatic (2)	f32	43°	1:1	5	52mm	8 ozs. (with M-ring, 12.5 ozs.)
	105mm f4 Bellows	166	Pre-set (3)	f32	23°20'	∞ to 1.3x	5	52mm	8.5 ozs.
	200mm f5.6 Medical	296/297	Automatic	f45	12°20'	3:1	4	38mm	22.8 ozs.

(1) Cannot be used with Photomic system on Nikon F. Fits only cameras with independent mirror control. Supplied with optical centering finder./ (2) Couples to exposure meter and Photomic systems./ (3) For use only with bellows./ (4) Requires focusing mount adapter No. 199 (weighs 3 lbs.)/ (5) Reflex Nikkors have no diaphragms but use filters to control light transmission.

All lenses are supplied with front caps. Telephoto lenses from 105mm up include lens hoods./ Nikkor "F" mount lenses can be used on "C" mount movie and TV cameras by means of Nikon "C" mount adapters./ For highest quality black & white and color enlarging, El Nikkor 50mm f2.8 offers maximum resolving power and flatness of field./ Specifications subject to change without notice.