NIKKOR LENSES
FOR LARGE FORMAT CAMERAS

A NEW STANDARD FOR THE CRITICAL VIEW CAMERA PHOTOGRAPHER.
NIKKOR LARGE FORMAT LENSES: FORMULA, PERFORMANCE AND APPLICATIONS

WE MAKE OUR OWN GLASS FOR UNLIMITED DESIGN CAPABILITIES

Most lensmakers buy glass on the open market which limits them to the types and quality control standards that are available. At Nikon, where glassmaking is "our" business, our designers can reach for designs that approach perfection by specifying the precise optical characteristics required. Then, in one of the world's most advanced glass production facilities, we produce glass with exactly the refractive indices required. The result is consistently superior optics. Nikon makes over 200 different types of glass, giving our designers unlimited horizons.

UNCOMPROMISING OPTICAL ASSEMBLY

Even the best designs must receive flawless assembly to meet the incredibly high performance goals set for them. At Nikon, element manufacturing is held to incredible tolerances. Centering, the critical alignment of optical axis, is done with a care and precision unsurpassed in the optical world.

NIKON INTEGRATED COATING (NIC)

In a process pioneered by Nikon, lenses are multi-layer coated, each layer suppressing flare and internal reflections in a specific bandwidth of light. In this way, critical points in the entire visible spectrum are controlled. The result is image brilliance and flare approaching zero even under the most challenging conditions.

Nikkor Large Format lenses are designed to produce images of the highest quality for specific applications. Choosing the right Nikkor for the right job should be carefully done. The following data will help you in your selections.

NIKKOR M: APOCHROMATS TO INFINITY

The new Nikkor-M Series provides high resolution with standard covering power. The two lenses in this group, the 300mm f9 and the 450mm f9 are designed around the renowned Apo-Nikkor lenses and meet the same stringent specifications required for the most demanding reproduction and photo engraving work. Chromatic aberrations are highly corrected across the entire usable spectrum for superior performance. The Nikkor-M series, unlike photomechanical lenses which are corrected for 1:1, are corrected for infinity. Now for the first time photographers can achieve "Apo" performance at normal working distances. The Nikkor-M Series is an asymmetrical four-element design of unusually high brilliance.
NIKKOR SW: HIGH SPEED WIDE ANGLES

NIKKOR SW Series lenses are extreme wide angles ranging from 65mm to 150mm. Coverage is 105 degrees at f:16 (f:22 with 90mm, 120mm and 150mm f:8 lenses) with maximum apertures as wide as f:4. This combination of wide angle coverage and high speed means that focusing and composing on the groundglass is now fast, easy and accurate as compared to slower conventional wide angle designs. The Nikkor SW series utilizes 7 elements in 4 groups (8 elements in 8 groups for the 90mm, 120mm and 150mm f:8 lenses) producing high resolution and brilliance. Virtual elimination of flare is a result of Nikon’s critically acclaimed NIKON Integrated Coating (NIC). Center-to-edge illumination is remarkably even, resulting in images that are sharp and brilliant to the corners.

NIKKOR-W: THE FINEST ALL PURPOSE LARGE FORMAT LENS WE’VE EVER PRODUCED.

NIKKOR-W Series lenses provide maximum resolution and brilliance over a range from 100mm to 300mm for general photography. As a result, the Nikkor-W Series performs exceptionally from relatively close working distances to infinity. The fast f:5.6 aperture means easy focusing and viewing even under less than ideal lighting conditions. Distortion, curvature-of-field and chromatic aberration are corrected to the high standards you’d expect from Nikon. Both contrast and color reproduction are enhanced through the use of Nikon Integrated Coating. Nikkor-W lenses incorporate six elements in four groups and cover a field of 70 degrees at f:22 (74 degrees and 73 degrees with the 100mm f:5.6 and 135mm f:5.6 respectively).

NIKKOR-T: LARGE FORMAT TELEPHOTOS WITHOUT COMPROMISE

NIKKOR-T Series lenses represent a breakthrough in telephoto optical design. Telephotos, valued because they use bellows extensions of approximately half their focal length, have traditionally sacrificed sharpness due to excessive chromatic aberration. The new Nikkor-T Series lenses use Nikon’s famous ED (Extra-Low-Dispersion) glass which greatly reduces chromatic aberrations found in traditional telephoto designs. The five-element, four-group design available in 270mm and 360mm focal lengths provide crisp, brilliant images even at full aperture. The 270mm f:6.3 Nikkor-T covers 4x5 at f:22 while the 360mm f:8 Nikkor-T covers 5x7 or may be used on 4x5 with greater covering power and larger image sizes.
Nikkor-SW 150mm f8 plus electronic flash was used at f32 to provide high resolution plus excellent corner-to-corner illumination. Photographed on 8 x 10 color transparency material, the reproduction was directly from the chrome.

Nikkor-M Series lenses are outstanding for general photography where the resolution is critical. This photograph made with a Nikkor-M 300mm f9 on an 8 x 10 transparency film, producing extremely high resolution across the field. Exposure was 5 seconds at f32 and reproduction was directly from the transparency.
Nikkor-W lenses are fast, general purpose lenses suitable for every aspect of photography. The above photograph was made on 6x10 color negative material at an exposure of f32 for 50 seconds. Reproduction was from a color print.

Nikkor-T lenses offers unsurpassed sharpness combined with relatively short lens-to-film distance. Landscape was made on a 4x5 press camera with a Nikkor-T 270mm. Exposure was 1/60 second at f22 on color transparency material. Note overall crispness and high color saturation typical of images produced by lenses made with Nikon's exclusive ED glass.
M SERIES:
APOCHROMATS
TO INFINITY

105mm F3.5

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tbody>
<tr>
<td>Focal length</td>
<td>105mm</td>
</tr>
<tr>
<td>Maximum aperture ratio</td>
<td>1.3.5</td>
</tr>
<tr>
<td>Minimum aperture</td>
<td>f/45</td>
</tr>
<tr>
<td>Lens construction</td>
<td>4 elements in 3 groups</td>
</tr>
<tr>
<td>Covering power (f/3.5)</td>
<td>51°</td>
</tr>
<tr>
<td>Covering power (f/22)</td>
<td>55°</td>
</tr>
<tr>
<td>Image circle (f/3.5)</td>
<td>100mmØ</td>
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<tr>
<td>Image circle (f/22)</td>
<td>$2\frac{3}{4}'' \times 3\frac{3}{4}''$ mm (110mmØ)</td>
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<td>Shutter</td>
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<td>Shutter speed</td>
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<tr>
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<td>X-contact</td>
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<tr>
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<tr>
<td>Attachment size</td>
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</tr>
<tr>
<td>Rear mount size</td>
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<tr>
<td>Flange attachment size</td>
<td>32.5mmØ x 0.5mm(P)</td>
</tr>
<tr>
<td>Flange focal distance</td>
<td>96.5mm</td>
</tr>
<tr>
<td>Overall length</td>
<td>1.4'' (35.5mm)</td>
</tr>
<tr>
<td>Weight</td>
<td>6 oz. (170g)</td>
</tr>
</tbody>
</table>

![Diagram](image-url)
300mmF9

Focal length: 300mm
Maximum aperture ratio: 1:9
Minimum aperture: 1:128
Lens construction: 4 elements in 3 groups
Covering power (f/9): 55°
Covering power (f/22): 57°
Image circle (f/9): 312mmφ
Image circle (f/22): 8" x 10" (325mmφ)
Shutter: No. 1 (Copal**)
Shutter speed: 1/1, 400 sec., 1/8
Sync socket: X-contact
Front mount size: 54mmφ
Attachment size: 52mmφ 0.75mm(P)
Rear mount size: 42mmφ
Flange attachment size: 39mmφ 0.75mm(P)
Flange focal distance: 293.8mm
Overall length: 1.7" (43mm)
Weight: 10.2 oz (290g)

450mmF9

Focal length: 450mm
Maximum aperture ratio: 1:9
Minimum aperture: 1:128
Lens construction: 4 elements in 3 groups
Covering power (f/9): 50°
Covering power (f/22): 52°
Image circle (f/9): 420mmφ
Image circle (f/22): 10" x 12" (440mmφ)
Shutter: No. 3 (Copal**)
Shutter speed: 1/1, 125 sec., 1/8
Sync socket: X-contact
Front mount size: 70mmφ
Attachment size: 67mmφ 0.75mm(P)
Rear mount size: 60mmφ
Flange attachment size: 62mmφ 0.75mm(P)
Flange focal distance: 435.8mm
Overall length: 2.2" (55mm)
Weight: 22.6 oz (640g)

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65mmF4

- Focal length: 65mm
- Maximum aperture ratio: 1.4
- Minimum aperture: 1/45
- Lens construction: 7 elements in 4 groups
- Covering power (f:4): 80°
- Covering power (f:16): 105°
- Image circle (f:4): 4" x 5" (170mmø)
- Image circle (f:16): 4" x 5" (170mmø)
- Shutter: No. 0 (Copal*)
- Shutter speed: 1/1500 sec., T, B
- Sync socket: X-contact
- Front mount size: A 70mmø
- Attachment size: B 67mmøx0.75mm(P)
- Rear mount size: C 54mmø
- Flange attachment size: D 32.5mmøx0.5mm(P)
- Flange focal distance: E 70.8mm
- Overall length: F 2.6" (67mm)
- Weight: 13.1 oz (370g)
75mm F4.5

Focal length 75mm
Maximum aperture ratio 1:4.5
Minimum aperture f/45
Lens construction 7 elements in 4 groups
Covering power (f/4.5) 80°
Covering power (f/16) 106°
Image circle (f/4.5) 126mm
Image circle (f/16) 5" x 6" (200mm)
Shutter No. 0 (Copal**) X-contact
Shutter speed 1/1500 sec., T, B
Sync socket 70mm
Attachment size 67mm ø x 0.75mm (P)
Rear mount size 60mm ø
Flange attachment size 32.5mm ø x 0.5mm (P)
Flange focal distance 81.3mm
Overall length 2.9" (73.5mm)
Weight 14.8 oz (420g)

90mm F4.5

Focal length 90mm
Maximum aperture ratio 1:4.5
Minimum aperture f/64
Lens construction 7 elements in 4 groups
Covering power (f/4.5) 80°
Covering power (f/16) 105°
Image circle (f/4.5) 154mm
Image circle (f/16) 5" x 7" (235mm)
Shutter No. 0 (Copal**) X-contact
Shutter speed 1/1500 sec., T, B
Sync socket 85mm
Attachment size 82mm ø x 0.75mm (P)
Rear mount size 70mm ø
Flange attachment size 32.5mm ø x 0.5mm (P)
Flange focal distance 97.4mm
Overall length 3.4" (86.7mm)
Weight 21.2 oz (600g)

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90mmF8

Focal length: 90mm
Maximum aperture ratio: 1:8
Minimum aperture: f/64
Lens construction: 8 elements in 4 groups
Covering power (f/8): 80°
Covering power (f/22): 105°
Image circle (f/8): 154mmφ
Image circle (f/22): 5" x 7" (235mmφ)
Shutter: No. 0 (Copal* *)
Shutter speed: 1-1/500 sec., T, B
Sync socket: X-contact
Front mount size: A
Attachment size: B
Rear mount size: C
Flange attachment size: D
Flange focal distance: 97.0mm
Overall length: 2.8" (71mm)
Weight: 12.7 oz (360g)

120mmF8

Focal length: 120mm
Maximum aperture ratio: 1:8
Minimum aperture: f/64
Lens construction: 8 elements in 4 groups
Covering power (f/8): 80°
Covering power (f/22): 105°
Image circle (f/8): 200mmφ
Image circle (f/22): 8" x 10" (312mmφ)
Shutter: No. 0 (Copal* *)
Shutter speed: 1-1/500 sec., T, B
Sync socket: X-contact
Front mount size: A
Attachment size: B
Rear mount size: C
Flange attachment size: D
Flange focal distance: 130.7mm
Overall length: 3.6" (92.5mm)
Weight: 21.5 oz (610g)
Focal length 150mm
Maximum aperture ratio 1:8
Minimum aperture f/64
Lens construction 8 elements in 4 groups
Covering power (f/8) 80°
Covering power (f/22) 106°
Image circle (f/8) 253mmØ
Image circle (f/22) 10" x 12" (400mmØ)
Shutter No. 1 (Copal**)
Shutter speed T, B, I—1/400 sec.
X-contact
Sync socket 100mmØ
Front mount size A 95mmØ x 1mm(P)
Attachment size B 100mmØ
Rear mount size C 39mmØ x 0.75mm(P)
Flange attachment size D
Flange focal distance E 165.9mm
Overall length F 4.5" (115.5mm)
Weight 35.9 oz (1,020g)

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T SERIES:
LARGE FORMAT TELEPHOTOS WITHOUT COMPROMISE

270mm F6.3

Focal length: 270mm
Maximum aperture ratio: 1:6.3
Minimum aperture: f/64
Lens construction: 5 elements in 4 groups
Covering power (f/6.3): 24°
Covering power (f/22): 33°
Image circle (f/6.3): 114mmØ
Image circle (f/22): 4" x 5" (160mmØ)
Shutter: No. 1 (Copal**)
Shutter speed: T, B, 1–1/400 sec.
Sync socket: X-contact
Front mount size: A
Attachment size: B
Rear mount size: C
Flange attachment size: D
Flange focal distance: 187.6mm
Overall length: 3.9" (99mm)
Weight: 28.6 oz (810.8g)
360mmF8

Focal length 360mm
Maximum aperture ratio 1:8
Minimum aperture f/64
Lens construction 5 elements in 4 groups
Covering power (f/8) 24°
Covering power (f/22) 33°
Image circle (f/8) 154mmØ
Image circle (f/22) 5" x 7" (210mmØ)
Shutter No. 1 (Copal*)
Shutter speed T, B, 1/1000 sec.
Sync socket X-contact
Front mount size A 70mmØ
Attachment size B 67mmØ x 0.75mm(P)
Rear mount size C 60mmØ
Flange attachment size D 39mmØ x 0.75mm(P)
Flange focal distance E 261mm
Overall length F 4.9" (124mm)
Weight 28.2 oz. (799.5g)

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THE FINEST
ALL PURPOSE
LARGE FORMAT LENSES
WE'VE EVER PRODUCED

100mmF5.6

Focal length 100mm
Maximum aperture ratio 1:5.6
Minimum aperture f/45
Lens construction 6 elements in 4 groups
Covering power 60°
Covering power 74°
Image circle (f/5.6) 117mmø
Image circle (f/22) 4" x 5" (153mmø)
Shutter No. 0 (Copal**)
Shutter speed 1–1/500 sec., T, B
Sync socket X-contact
Front mount size A
Attachment size B
Rear mount size C
Flange attachment size D
Flange focal distance E
Overall length F
Weight 32.5mmøx0.5mm(P) 31.5mmø 99.2mm 1.5" (37.5mm) 6 oz. (170g)
135mm F5.6

Focal length: 135mm
Maximum aperture ratio: 1:5.6
Minimum aperture: 1/54
Lens construction: 6 elements in 4 groups
Covering power (f/5.6): 60°
Covering power (f/22): 73°
Image circle (f/5.6): 156mmØ
Image circle (f/22): 120mm×155mm
(200mmØ)
Shutter: No. 0 (Copal®*)
Shutter speed: 1–1/500 sec., T, B
Sync socket: X-contact
Front mount size [A]: 54mmØ
Attachment size [B]: 52mmØ×0.75mm(P)
Rear mount size [C]: 42mmØ
Flange attachment size [D]: 32.5mmØ×0.5mm(P)
Flange focal distance [E]: 133.8mm
Overall length [F]: 1.8" (46mm)
Weight: 7.1 oz (200g)

150mm F5.6

Focal length: 150mm
Maximum aperture ratio: 1:5.6
Minimum aperture: 1/64
Lens construction: 6 elements in 4 groups
Covering power (f/5.6): 60°
Covering power (f/22): 70°
Image circle (f/5.6): 174mmØ
Image circle (f/22): 5" × 7" (210mmØ)
Shutter: No. 0 (Copal®*)
Shutter speed: 1–1/500 sec., T, B
Sync socket: X-contact
Front mount size [A]: 54mmØ
Attachment size [B]: 52mmØ×0.75mm(P)
Rear mount size [C]: 42mmØ
Flange attachment size [D]: 32.5mmØ×0.5mm(P)
Flange focal distance [E]: 149.2mm
Overall length [F]: 2" (50mm)
Weight: 8.1 oz (230g.)

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### 180mm F5.6

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<td>Minimum aperture</td>
<td>f/64</td>
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<tr>
<td>Lens construction</td>
<td>6 elements in 4 groups</td>
</tr>
<tr>
<td>Covering power (f/5.6)</td>
<td>60°</td>
</tr>
<tr>
<td>Covering power (f/22)</td>
<td>70°</td>
</tr>
<tr>
<td>Image circle (f/5.6)</td>
<td>208mmø</td>
</tr>
<tr>
<td>Image circle (f/22)</td>
<td>5&quot; x 7&quot; (253mmø)</td>
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<td>Attachment size</td>
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<td>Weight</td>
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### 210mm F5.6

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<td>Focal length</td>
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<tr>
<td>Maximum aperture ratio</td>
<td>f/5.6</td>
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<tr>
<td>Minimum aperture</td>
<td>f/64</td>
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<tr>
<td>Lens construction</td>
<td>6 elements in 4 groups</td>
</tr>
<tr>
<td>Covering power (f/5.6)</td>
<td>60°</td>
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<tr>
<td>Covering power (f/22)</td>
<td>70°</td>
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<tr>
<td>Image circle (f/5.6)</td>
<td>243mmø</td>
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<tr>
<td>Image circle (f/22)</td>
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<td>Rear mount size</td>
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<td>Weight</td>
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240mmF5.6

Focal length 240mm  
Maximum aperture ratio 1:5.6  
Minimum aperture 1:64  
Lens construction 6 elements in 4 groups  
Covering power (f/5.6) 60°  
Covering power (f/22) 70°  
Image circle (f/5.6) 278mmØ  
Image circle (f/22) 8" x 10" (336mmØ)  
Shutter No. 3 (Copal)**  
Shutter speed 1-1/125 sec., T, B  
Sync socket X-contact  
Front mount size A 85mmØ  
Attachment size D 82mmØ x 0.75mm(P)  
Rear mount size C 60mmØ  
Flange attachment size d 62mmØ x 0.75mm(P)  
Flange focal distance e 227.3mm  
Overall length f 3" (77mm)  
Weight 28.9 oz. (820g)

300mmF5.6

Focal length 300mm  
Maximum aperture ratio 1:5.6  
Minimum aperture 1:64  
Lens construction 6 elements in 4 groups  
Covering power (f/5.6) 60°  
Covering power (f/22) 70°  
Image circle (f/5.6) 346mmØ  
Image circle (f/22) 420mmØ (10" x 12")  
Shutter No. 3 (Copal)**  
Shutter speed 1-1/125 sec., T, B  
Sync socket X-contact  
Front mount size A 100mmØ  
Attachment size B 95mmØ x 1mm(P)  
Rear mount size C 80mmØ  
Flange attachment size d 62.5mmØ x 0.75mm(P)  
Flange focal distance e 287.1mm  
Overall length f 3.7" (94.5mm)  
Weight 44.1 oz. (1250g)

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IMAGE CIRCLE CHART.

The chart to the right shows an arc of the image circle projected by each Nikkor lens when it is stopped down to the specified f-stop. The rectangular boxes indicate the film formats: the outer frame representing the designated format size, and the inner frame a usable image size for that format. By comparing the image size rectangles with the image circles of the lenses it is possible to see whether a given lens will fully cover a given film format and how much displacement is possible (longitudinal or lateral in one direction).

This life-size chart represents one quarter portion of the complete projection. Find the amount of displacement by reading the scale on the chart or by actually measuring the distance using a ruler.

Note: The usable image size may vary slightly depending upon the film holder in use, so use this chart only as a rough guide.