

Apo-EL-Nikkor

Lenses for Color Separation, Screening, and Enlarging



Apo-EL-Nikkor Lenses: big

The unexcelled quality of Nikon-built cameras and lenses has greatly contributed to the widespread use of 35mm format photography. Quite naturally, Nikon has responded to the needs of the film processor as well. In ordinary photoengraving lenses, 1:1 is the standard magnification. But when used to produce larger images, a truly sharp image is difficult to obtain. To reproduce images as much as ten times the size of the original requires lenses designed for high magnification work with the aberrations fully corrected over the entire range. Apo-EL-Nikkor lenses surpass this challenge with highly effective aberration correction and extremely sharp resolving power. These lenses are designed exclusively to provide superior performance when making critical photoenlargements or exacting color separations from small original film formats. Optimum

performance is available not only at the standard magnifications but is maintained throughout the entire range.

Full-spectrum resolution

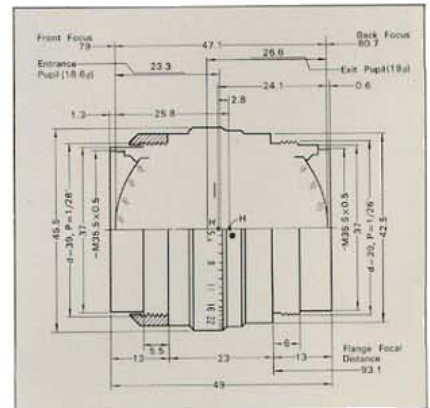
In order to make color enlargements from a color original, the original must be color separated into three elements—red, green and blue. Up till now, apochromatic lenses like Apo-Nikkor lenses with chromatic aberration corrected for three colors have been used for processing. However, in the combined enlargement/color separation process with small originals, even a minute defect in the lens is magnified enormously, since these lenses are originally designed for use at around 1:1 magnification. Apo-EL-Nikkor lenses are designed for color separation work involving high magnification and, through a combination of special Nikon-produced optical glasses

and an ingenious optical design, chromatic aberration is corrected not only for the three primary colors, but for the entire visible range of the spectrum. Moreover, Apo-EL-Nikkor lenses are corrected for chromatic aberration in the near-ultra-violet and near-infrared ranges since the spectrum sensitivity of film emulsions is not always identical to that of the human eye. These lenses provide an extra margin of fidelity resulting in more accurately reproduced color and richer tone. The outstanding resolution, higher than that of any existing original film, is due to the fact that nearly perfect elimination of all other aberrations is made possible by limiting the picture angles of the lenses. Consequently, there is no significant image displacement or difference in image size, regardless of magnification.



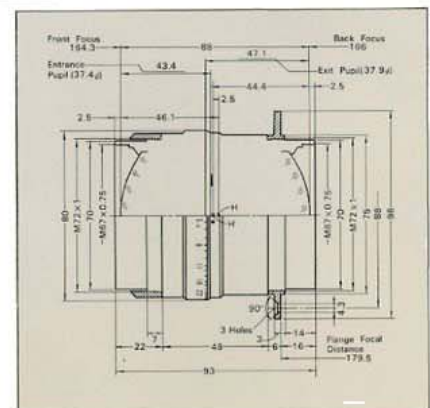
105mm f/5.6N

Focal length	104.8mm
Maximum aperture ratio	1:5.6
Minimum f/stop	f/32
Lens construction	8 elements in 4 groups
Corrected chromatic aberration range	380~750nm
Standard magnification	10X
Usable magnification range	5 ~ 20X
Picture angle	47°
Vignetting	0% (at f/8)
Distortion	-0.07%
Size of original	80mmφ (at f/5.6) 100mmφ (at f/8)
Image distance at standard magnification	1265.3mm
Weight	140g



210mm f/5.6N

Focal length	210.4mm
Maximum aperture ratio	1:5.6
Minimum f/stop	f/32
Lens construction	8 elements in 4 groups
Corrected chromatic aberration range	380~750nm
Standard magnification	5X
Usable magnification range	2 ~ 10X
Picture angle	45°
Vignetting	0% (at f/8)
Distortion	-0.02%
Size of original	153mmφ (at f/5.6) 210mmφ (at f/8)
Image distance at standard magnification	1512.3mm
Weight	830g



images from small originals.

Full-aperture brightness

Apo-EL-Nikkor lenses are designed to obtain optimum performance at full aperture, providing plenty of light for processing work and reducing exposure time. Furthermore, light transmission at the outer edges of the image circle is as good as at the center, and off-axis light falloff is minimized.

Nikon Integrated Coating (NIC)

To insure accurate reproduction, a multi-layer coating is applied to air-to-glass surfaces wherever needed. Internal reflection is virtually eliminated; thus images remain sharp, clear, and contrasty over the entire picture area. This additional feature of Apo-EL-Nikkor lenses offers the extra measure of performance necessary in performing demanding photoenlargements and color separation work.

Table of lens-film size correlation

Lens	f/stop	Film size	Magnification range
105mm f/5.6N	f/5.6	56 x 56mm (2-1/4" x 2-1/4")	5 ~ 20X
	f/8	85 x 90mm (2-1/2" x 3-1/2")	
210mm f/5.6N	f/5.6	90 x 120mm (4" x 5")	2 ~ 10X
	f/8	130 x 180mm (5" x 7")	
300mm f/5.6	f/5.6	65 x 90mm (2-1/2" x 3-1/2")	5 ~ 20X
	f/8	90 x 120mm (4" x 5")	
480mm f/5.6	f/11	130 x 180mm (5" x 7")	3 ~ 10X
	f/5.6	130 x 180mm (5" x 7")	
	f/8	180 x 240mm (8" x 10")	
	f/11	240 x 330mm (10" x 12")	

Mounting the lens on a process camera

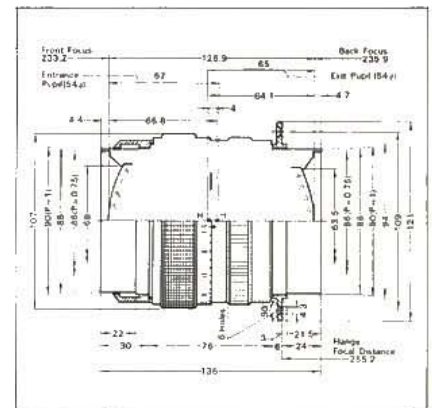
Enlarger-type process camera: Attach the lens in the usual way with its rear mount facing the camera. The 210mm, 300mm, and 480mm lenses are supplied with a flange to facilitate attachment to the camera using nuts and bolts.

Darkroom process camera: All lenses can be attached with the front mount front the camera. Remove the ornamental front ring and screw the lens into the process camera. A flange can be attached to the front mount of the 210mm, 300mm, and 480mm lenses.

300mm f/5.6



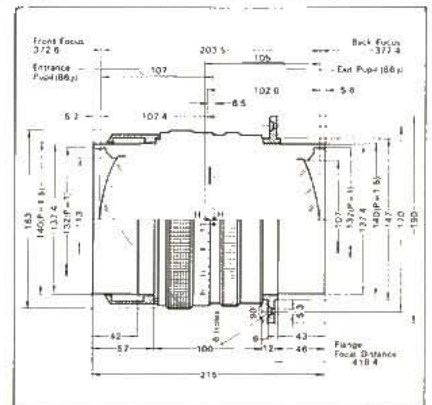
Focal length	300mm
Maximum aperture ratio	1:5.6
Minimum f/stop	f/45
Lens construction	8 elements in 4 groups
Corrected chromatic aberration range	380~750nm
Standard magnification	10X
Usable magnification range	3 ~ 20X
Picture angle	38°30'
Vignetting	0% (at f/11)
Distortion	+0.02%
Size of original	100mmφ (at f/5.6) 160mmφ (at f/8) 220mmφ (at f/11)
Image distance at standard magnification	3625.9mm
Weight	1860g



480mm f/5.6



Focal length	480mm
Maximum aperture ratio	1:5.6
Minimum f/stop	f/45
Lens construction	8 elements in 4 groups
Corrected chromatic aberration range	380~750nm
Standard magnification	5X
Usable magnification range	3 ~ 10X
Picture angle	41°30'
Vignetting	0% (at f/11)
Distortion	+0.02%
Size of original	220mmφ (at f/5.6) 320mmφ (at f/8) 400mmφ (at f/11)
Image distance at standard magnification	3449.4mm
Weight	7120g



The lenses shown in this brochure represent the latest available at the time of printing. Designs and specifications are subject to change without notice.



NIPPON KOGAKU K.K.

Fuji Bldg., 2-3, Marunouchi 3-chome, Chiyoda-ku, Tokyo 100, Japan

☎ 03-214-5311 **Telex:** J22601 (NIKON)

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