

Nikon Apo-EL-Nikkor Lenses

for color separating / screening / enlarging



Apo-EL-Nikkor Lenses: big images from small originals.

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, such as in the step and repeat method, a truly sharp image was 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 have been designed with standard magnifications of 2X (170mm), 5X (210mm and 480mm) and 10X (105mm and 300mm) to provide a wider range of application. Working in such a powerful magnification range opens the possibility for a host of problems due to insufficiencies in the reproducing lens. 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. Apo-EL-Nikkor lenses are available in five focal lengths for various sized originals.

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 ultraviolet 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 as well 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/5.6

Full aperture brightness

The optimum performance of Apo-EL-Nikkor lenses is designed to be obtained at their full aperture of f/5.6. The maximum aperture of f/5.6 provides plenty of light for processing work despite the usual insufficiency of light inherent in making enlargements, thus saving exposure time. Furthermore, light transmission at the circumference of the lens is as good as that at the center, and off-axis light fall-off is minimized.

Nikon Integrated Coating (NIC)

As further insurance for accurate reproduction, a multi-layer coating is applied to glass-to-air surfaces wherever needed. The occurrence of internal reflection is virtually eliminated and 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.

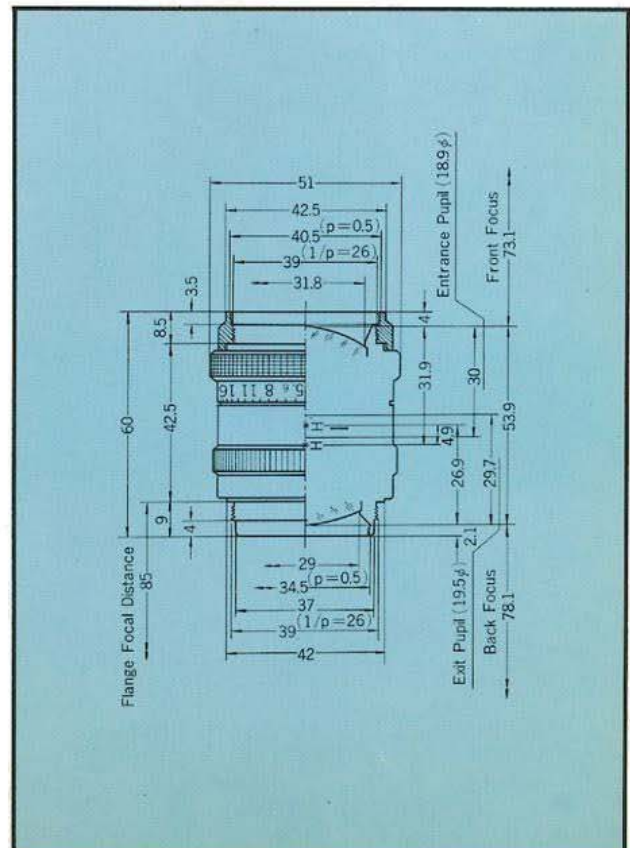
LENS	APERTURE	FORMAT SIZE
105mm f/5.6	f/5.6	24 x 36mm
	f/8	56 x 56mm
170mm f/5.6	f/5.6	90 x 120mm or 4" x 5"
210mm f/5.6	f/5.6	56 x 56mm
	f/8	90 x 120mm or 4" x 5"
300mm f/5.6	f/5.6	65 x 90mm or 2-1/2" x 3-1/2"
	f/8	90 x 120mm or 4" x 5"
	f/11 ~ f/16	130 x 180mm or 5" x 7"
480mm f/5.6	f/5.6	130 x 180mm or 5" x 7"
	f/8	180 x 240mm or 8" x 10"
	f/11 ~ f/16	240 x 300mm or 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 Apo-EL-Nikkor 210mm f/5.6, 300mm f/5.6 and 480mm f/5.6 lenses are supplied with a flange to facilitate attachment to the camera using nuts and bolts.

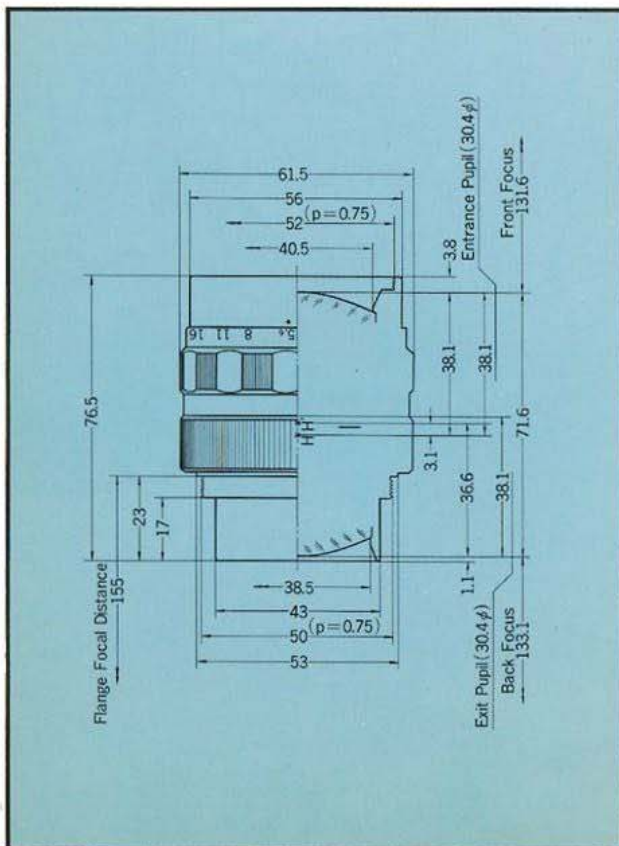
Darkroom process camera: All lenses can be attached with the front mount facing the camera. Remove the ornamental front ring (for the 170mm lens, this is not necessary) and screw the lens into the process camera. A flange can be attached to the front mount of the Apo-EL-Nikkor 210mm f/5.6, 300mm f/5.6 and 480mm f/5.6 lenses. The Apo-EL-Nikkor 170mm f/5.6 requires an intermediate ring of 52mm attachment size for mounting.

Focal length	105mm
Maximum aperture ratio	1:5.6
Minimum f/stop	f/45
Lens construction	8 elements in 4 groups
Corrected chromatic aberration range	380 ~ 700nm
Standard magnification	10X
Usable magnification range	5 ~ 20X
Picture angle	40°
Vignetting	0% (at f/8)
Distortion	+0.06%
Size of originals	80mmφ
Image distance at standard magnification	1265.6mm
Weight	315g
Diameter	51mm
Length	60mm
Rear mount size	39mm (1/P = 26)
Front mount size	39mm (1/P = 26)
Attachment size	40.5mm (P = 0.5mm)
Flange diameter	-



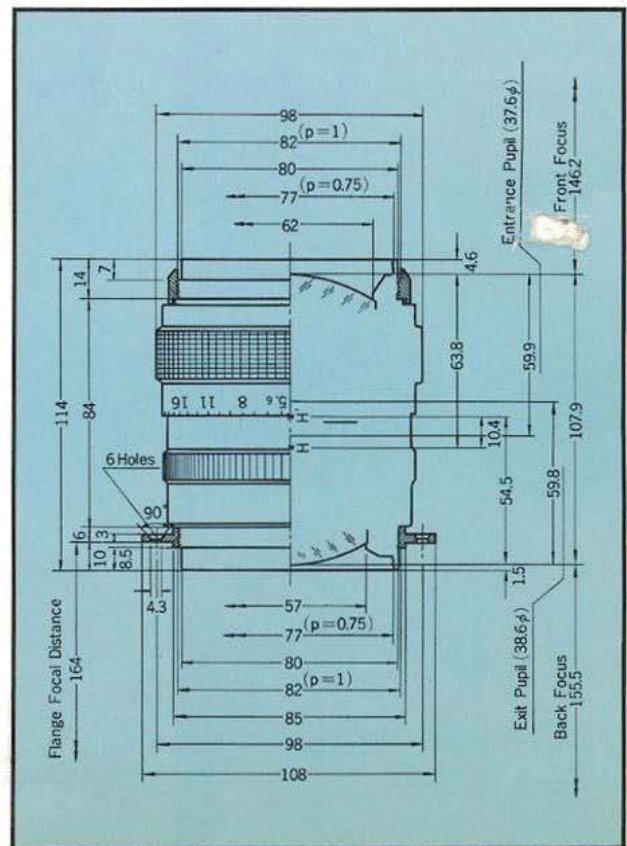
170mm f/5.6

Focal length	170mm
Maximum aperture ratio	1:5.6
Minimum f/stop	f/45
Lens construction	8 elements in 4 groups
Corrected chromatic aberration range	380 ~ 700nm
Standard magnification	2X
Usable magnification range	1.5 ~ 3X
Picture angle	35°
Vignetting	0% (at f/8)
Distortion	0.00%
Size of originals	160mmφ
Image distance at standard magnification	760mm
Weight	415g
Diameter	61.5mm
Length	76.5mm
Rear mount size	50mm (P = 0.75mm)
Front mount size	-
Attachment size	52mm (P = 0.75mm)
Flange diameter	-



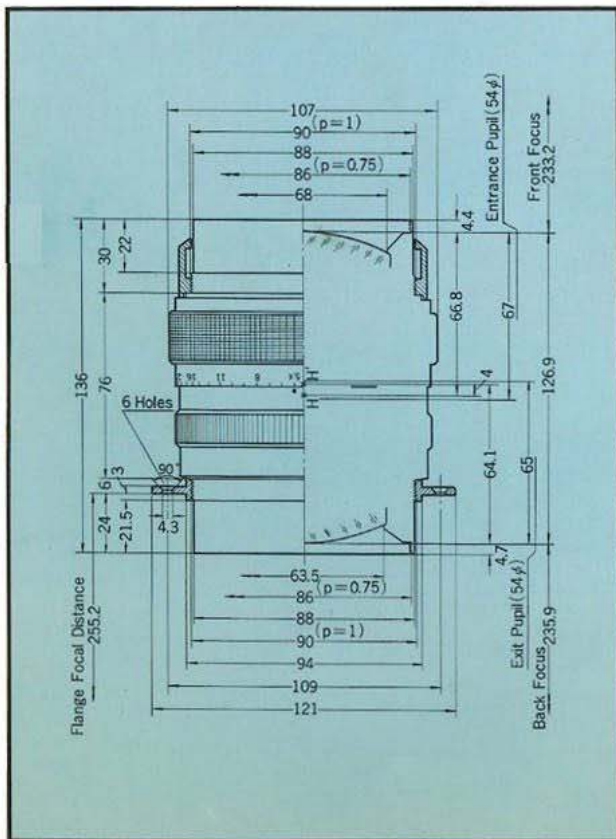
210mm f/5.6

Focal length	210mm
Maximum aperture ratio	1:5.6
Minimum f/stop	f/45
Lens construction	8 elements in 4 groups
Corrected chromatic aberration range	380 ~ 700nm
Standard magnification	5X
Usable magnification range	3 ~ 10X
Picture angle	38°20'
Vignetting	0% (at f/8)
Distortion	+0.07%
Size of originals	160mmφ
Image distance at standard magnification	1501.6mm
Weight	1220g
Diameter	98mm
Length	114mm
Rear mount size	82mm (P = 1mm)
Front mount size	82mm (P = 1mm)
Attachment size	77mm (P = 0.75mm)
Flange diameter	108mm



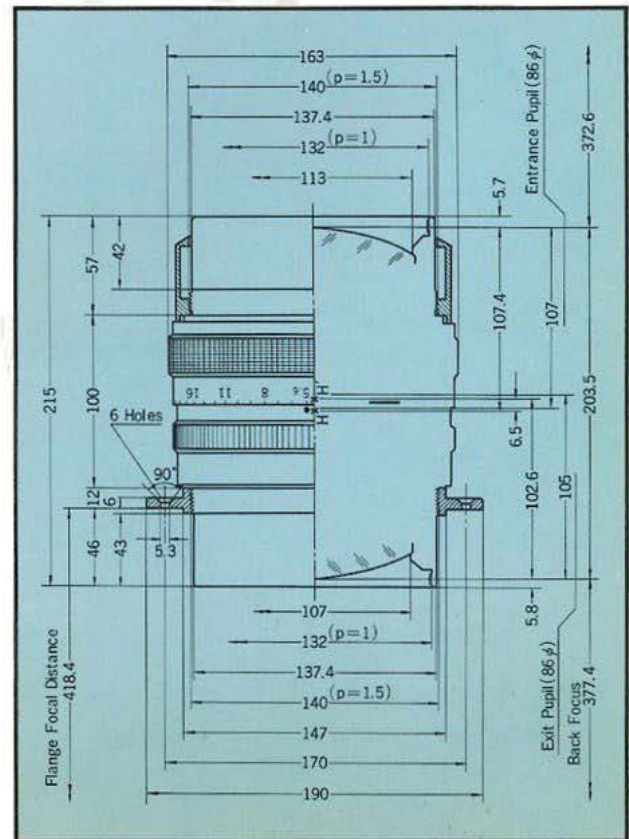
300mm f/5.6

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 ~ 700nm
Standard magnification	10X
Usable magnification range	5 ~ 20X
Picture angle	38°30'
Vignetting	0% (at f/11)
Distortion	+0.02%
Size of originals	220mmφ
Image distance at standard magnification	3625.9mm
Weight	1860g
Diameter	107mm
Length	136mm
Rear mount size.	90mm (P = 1mm)
Front mount size	90mm (P = 1mm)
Attachment size	86mm (P = 0.75mm)
Flange diameter	121mm



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 ~ 700nm
Standard magnification	5X
Usable magnification range	3 ~ 10X
Picture angle	41°30'
Vignetting	0% (at f/11)
Distortion	+0.02%
Size of originals	400mmφ
Image distance at standard magnification	3449.4mm
Weight	7120g
Diameter	163mm
Length	215mm
Rear mount size	140mm (P = 1.5mm)
Front mount size	140mm (P = 1.5mm)
Attachment size	132mm (P = 1mm)
Flange diameter	190mm



Apo-EL-Nikkor 105mm f/5.6

This color print was produced from a 24 x 36mm format original using an Apo-EL-Nikkor 105mm f/5.6 lens and direct-method screening with simultaneous enlargement.

Screening process: Direct method (with simultaneous enlargement)

Magnification: 9.5X

Lens: Apo-EL-Nikkor 105mm f/5.6

Camera: Mika direct unit Model A

Light source: Electronic flash

Contact screen: Kodak chain screen, 175 lines/in.

Emulsion: Kodak royal ortho pan lith

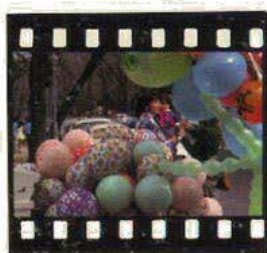
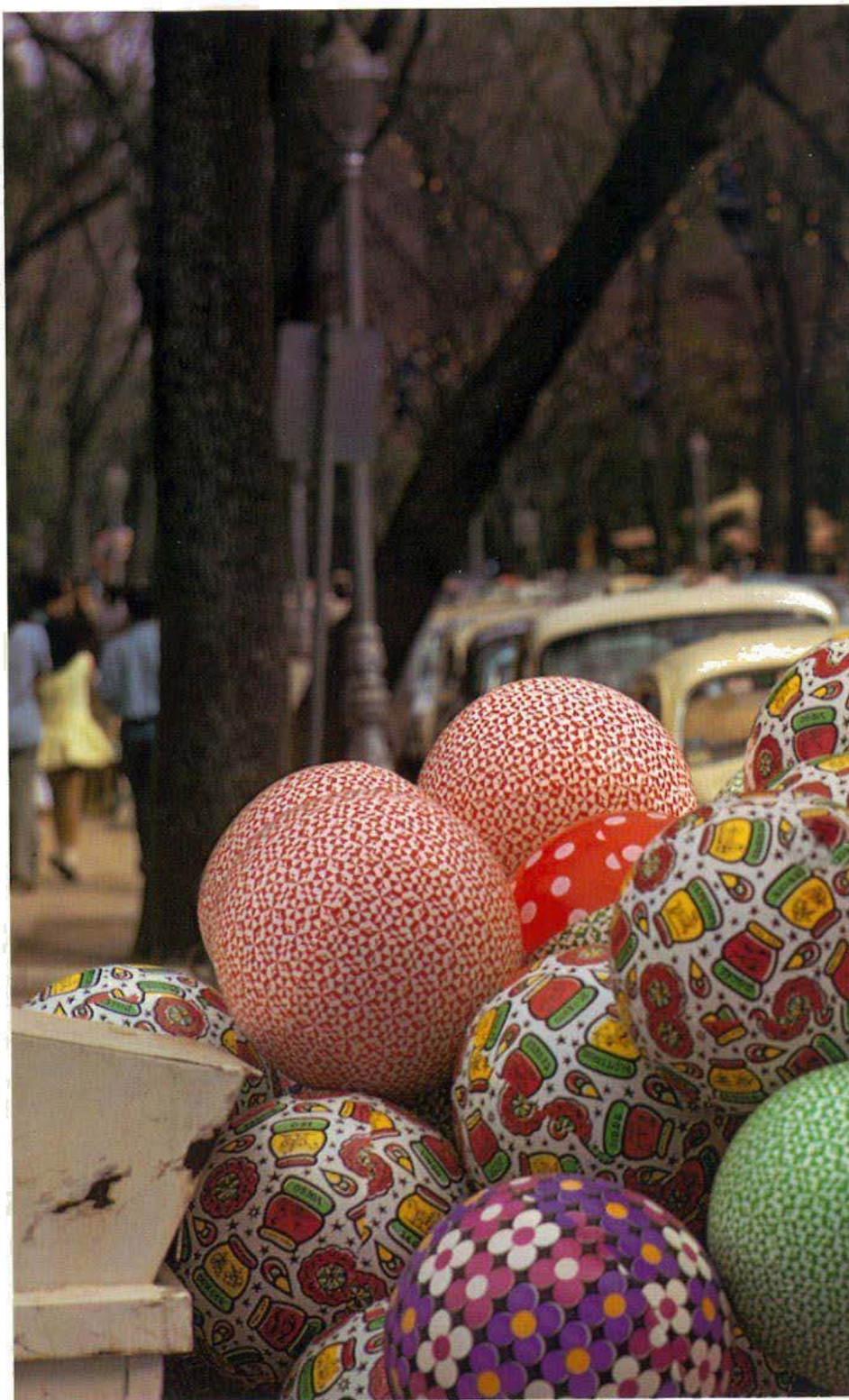
Developer: Kodak RT developer

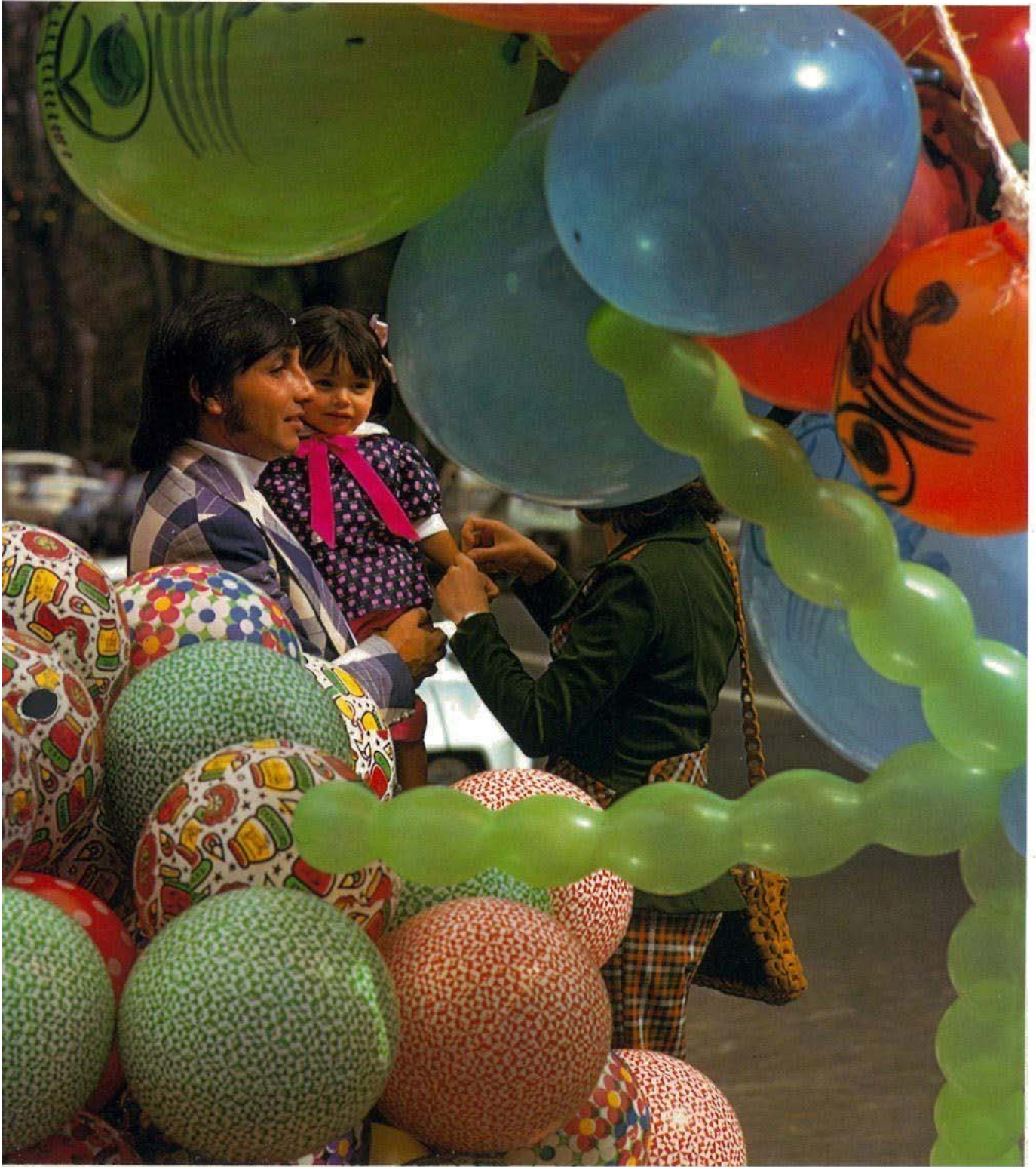
Offset: 6 colors

Plate: PS plate

Ink: DIC super HG ink

Paper: Mitsubishi art paper 25 x 37 in./93.5kg





Apo-EL-Nikkor 210mm f/5.6

This color print was produced from a 56 x 56mm format original using an Apo-EL-Nikkor 210mm f/5.6 lens and direct-method screening with simultaneous enlargement.

Screening process: Direct method (with simultaneous enlargement)

Magnification: 5X

Lens: Apo-EL-Nikkor 210mm f/5.6

Camera: Mita direct unit Model A

Light source: Electronic flash

Contact screen: Kodak chain screen, 175 lines/in.

Emulsion: Kodak royal ortho pan lith

Developer: Kodak RT developer

Offset: 6 colors

Plate: PS plate

Ink: DIC super HG ink

Paper: Mitsubishi art paper 25 x 36 in./93.5kg





The equipment shown in this catalog represents the latest available at the time of this printing. Designs and specifications are subject to change without notice.



NIPPON KOGAKU K.K.

Fuji Bldg., 2-3, 3-chome, Marunouchi,
Chiyoda-ku, Tokyo 100, Japan
☎ (03) 214-5311 Telex: J22601 (NIKON)

NIPPON KOGAKU (U.S.A.) INC.

623 Stewart Avenue, Garden City, New York 11530, U.S.A.
☎ (516) 248-4120 Telex: 096-7756 (NKUSA GRCY)

NIKON EUROPE B.V.

Freeport Bldg., Schiphol-Centrum, The Netherlands
☎ (020) 156633 Telex: 13328 (NIKON NL)

NIKON AG

Kaspar-Fenner-Strasse 6, 8700 Küsnacht/ZH, Switzerland
☎ (01) 909261 Telex: 53208 (NIKON CH)

NIKON G.m.b.H.

4000 Düsseldorf 30, Uerdinger Strasse 96-102, West Germany
☎ (0211) 451061 Telex: 8584019 (NIKO D)