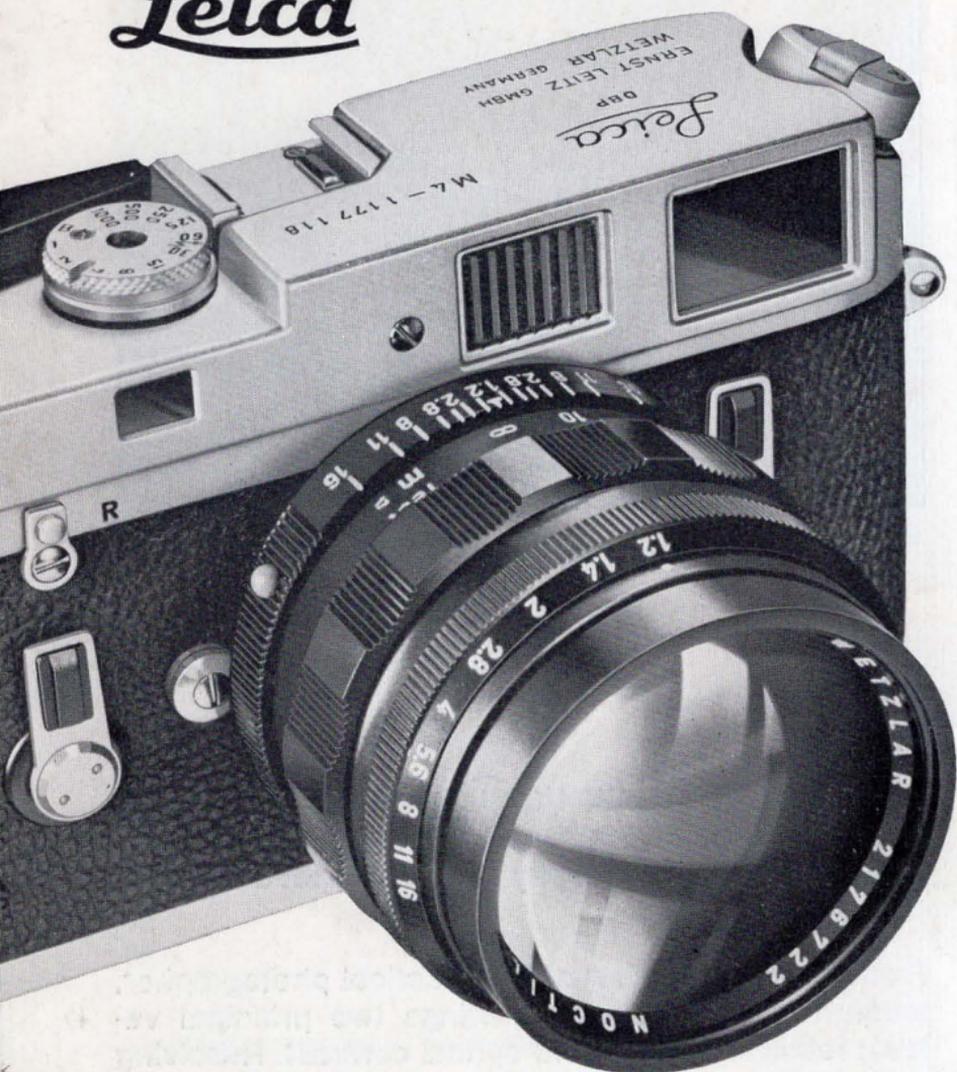


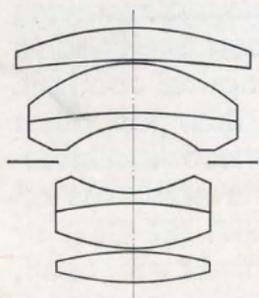
Leica



50mm

NOCTILUX

f/1.2



An aspherical
ultra-speed lens
for available-light
photography



26273-990

strong halation

The 50mm NOCTILUX f/1,2 is a special LEICA lens designed to meet the most critical requirements of available-light photography with high-speed films.

From the point of view of the practical photographer, modern optical correction brings two principal values: resolving power and optical contrast. **Resolving power**, the classical criterion of lens performance, represents the ability of the lens to image very fine subject details. **Optical contrast** refers to the ability of the lens to perform two very different, and very important practical functions: to clearly separate closely similar total values, and to concentrate all of the light from a single subject point into a single image point.

Because high-speed films — both black-and-white and color — used for high-aperture “available darkness” photography provide only moderate resolving powers, the LEITZ NOCTILUX has been designed to yield an exceptionally high degree of optical contrast, with slightly lower resolving power than the other high-speed 50mm LEICA lenses. Whenever available-light pictures are made with high lens apertures on b-and-w films with indexes of 400 ASA (27 DIN) or higher, as well as when fast color films are used,



clear, reflection-free highlights

26274-990

superior optical contrast weights the scale decisively in favor of the NOCTILUX.

A glance at the NOCTILUX cross-sectional diagram reveals a 6-element, 4-group classical Gauss formula that is actually simpler than those of other high-speed lenses. This less complicated optical design with fewer air-glass surfaces was made possible by the most modern computer calculation methods, the use of very new optical glasses with specially high refractive powers and low color dispersion developed by the LEITZ Glass Research Laboratory in Wetzlar, and by the employment of aspherically ground optical surfaces.

No one of these factors could have provided the high NOCTILUX performance by itself, but the inclusion of aspherically ground lens surfaces is the key factor. It is this that gives the NOCTILUX its almost perfect freedom from spherical aberration, and from coma over the whole field.

Almost complete freedom from coma is a special NOCTILUX advantage of great practical value to the available-light photographer. Coma is the optical aberration which distorts image points into tear-shaped forms pointing either inward toward the

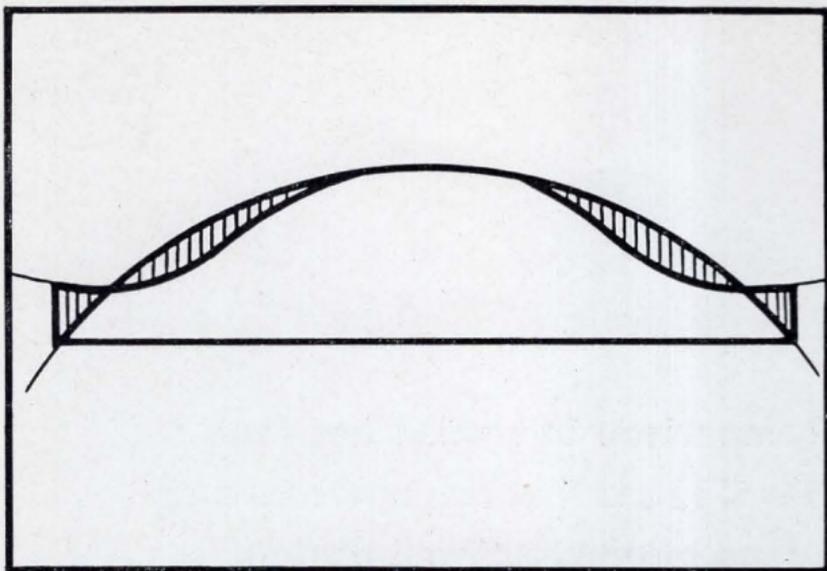


Comparison of results between NOCTILUX at full aperture and a lens of conventional design

center of the picture, or outward toward the margins. Coma is especially critical in available-light work because such pictures often contain direct light sources such as incandescent lamps. Even at $f/1.2$, this new aspherical lens records these light points accurately, without shape distortion.

This high correction of coma and of all other critical aberrations, combined with an almost complete absence of internal reflections, results in an unusually high optical contrast. In available-light photography, NOCTILUX optical contrast means more shadow detail with cleaner highlight areas. **Even at $f/1.2$ the NOCTILUX produces so very little flare that strong light-sources are imaged with only minimum halo surround.** Brightly back-lighted subjects, anathema to poorly corrected high-aperture lenses, have clear, accurate outlines.

High optical contrast is especially advantageous in color photography because exposure by non-image-forming light subtracts from final color density in the reversal film process. **Available light color transparencies made with the NOCTILUX exhibit improved color saturation because light energy is concentrated where it belongs: rays intended for highlight areas are not spread all over the film.**



exaggerated sketch of aspherical and spherical surfaces

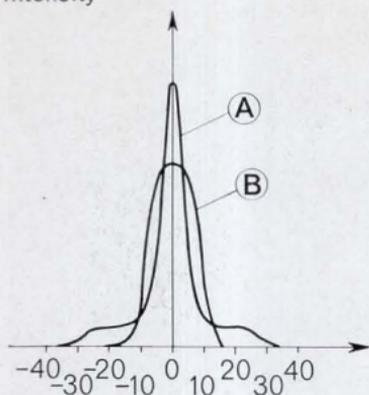
26275-110

Another interesting fact about the NOCTILUX is that it has what might be called a "built-in optical lenshood". This can be seen by looking at the front lens surface from an extreme angle, and then slowly moving your eye toward the lens center. When your visual angle exceeds the NOCTILUX field of view you will see what appears to be a mirror. This is a total reflection of all unwanted light rays from outside the imaging field.*)

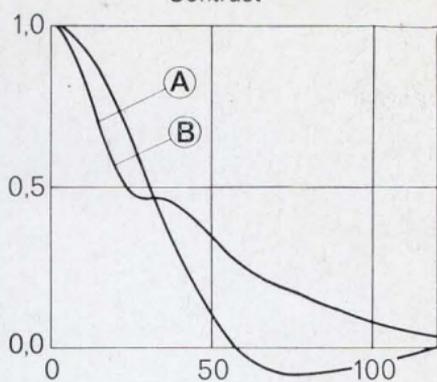
Superior optical contrast due to high correction for coma and all other critical aberrations and due to freedom from internal reflections, make the NOCTILUX the ideal high-aperture lens for use with high-speed available-light films.

*) Although a lenshood is not so important for the NOCTILUX as for other lenses, LEITZ provides an open-sector hood for this lens. This hood is useful for blocking out very strong side illumination, as well as for keeping the front surface free from rain, spray, and fingermarks. The NOCTILUX lenshood also serves as a holder for standard Series VIII filters.

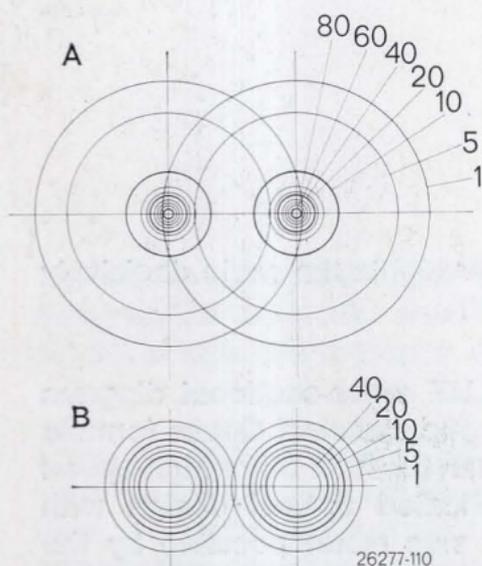
Intensity

Distance in μm
Slit Image

Contrast



26276-110

Number of Lines/mm
Transfer Function

26277-110

A Conventional lens, corrected for resolving power. Definition is excellent, but with great loss of energy. Except for the center there is only stray illumination, bringing a loss of contrast.

B Lens corrected for high contrast. All energy is concentrated in the center. A small reduction of resolving power is accompanied by a notable increase in optical contrast.

Dotted lines indicate equal brightness. Values given in arbitrary units.

50mm NOCTILUX f/1.2 · Ultra-speed standard-focus LEICA lens in bayonet mount for coupling to LEICA M 4/M 3/M 2 range-viewfinder cameras · Type: Gauss design with aspherical front and rear surfaces · Number of elements: 6 · Number of groups: 4 · Angular field: diagonal = 45°, long side = 38°, short side = 26° · Click stops: to f/16, with half-stops · Filter size: Series VIII, held by lenshood · M-LEICA range-finder focusing: ∞ to 40" (1m) · Distance scale: combined feet and meters · Lensmount: black-anodized aluminum, with parallel focusing movement.

50mm NOCTILUX f/1.2 with open-sector lenshood and front cap, in clear plastic case

No. 11 820

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