Sonnar® T* f/2.8 - 180 mm

45.5 to film
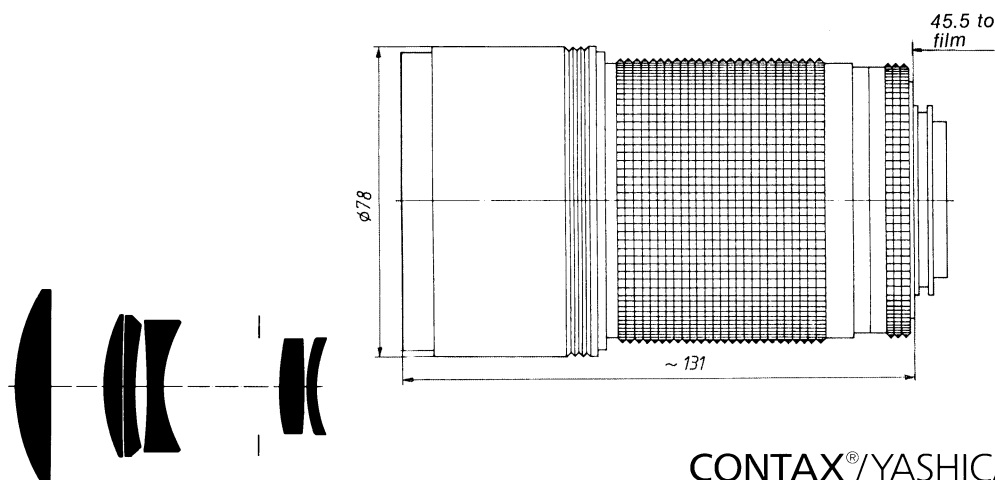
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CONTAX®/YASHICA® mount

This **Sonnar**® lens is a "speed giant" among the telephoto lenses for the **Contax**®. The combination of its speed and the telephoto angular field of 14° has proved particularly useful in press and sports photography. Delightful photographs of children can be taken, as the playing child does not take any notice of the camera at a 3 - 4 m distance. With the diaphragm fully open, the depth of field range is relatively small, making the principal subject stand out distinctly from a distracting fore- or background. Landscapes are appreciably compressed by the telephoto perspective.

The optical design is based on a new computation which guarantees excellent image quality and remarkable image field illumination. The compact design makes this **Sonnar**® lens ideal for freehand shots. The distance between the exit pupil and the image plane is only about half the focal length. This is essential for good illumination of the finder image field when using any Fresnel-type focusing screen. A further feature is the automatic aberration correction during focusing. The useful range was thus extended to a short-range limit of 1.4 m, where an object field of only 145 x 220 mm fully covers the 35 mm format.

Cat. No. of lens:	**10 11 17**
Number of elements:	6
Number of groups:	5
Max. aperture:	f/2.8
Focal length:	178.1 mm
Negative size:	24 x 36 mm
Angular field 2w:	14° diagonal
Mount:	focusing mount with bayonet; TTL metering either at full aperture or in stopped-down position. Aperture priority/Shutter priority/ Automatic programs (Multi-Mode Operation); built-in lens hood.
Aperture scale:	2.8 - 4 - 5.6 - 8 - 11 - 16 - 22

Filter connection:	clip-on filter, diameter 75 mm screw-in type, thread M 72 x 0.75
Focusing range:	∞ to 1.4 m; aberration correction for close range by floating element
Entrance pupil:	
Position:	74.0 mm behind last lens vertex
Diameter:	61.8 mm
Exit pupil:	
Position:	13.4 mm in front of last lens vertex
Diameter:	31.1 mm
Position of principal planes:	
H:	9.6 mm in front of first lens vertex
H':	5.8 mm in front of first lens vertex
Back focal distance:	74.7 mm
Distance between first and last lens vertex:	97.4 mm
Weight:	approx. 815 g

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Performance data:
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1. MTF Diagrams

The image height u - calculated from the image center - is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top of this page. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph, the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight. Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.
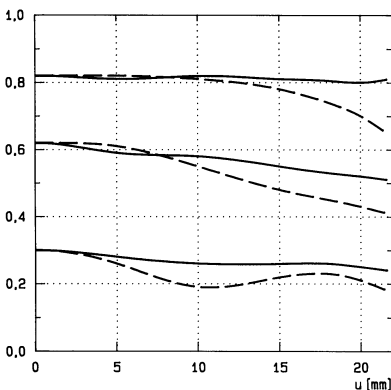
2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.
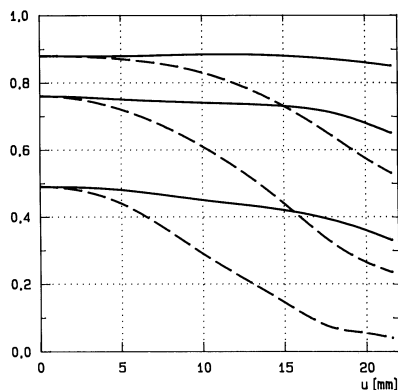
3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

Modulation transfer T as a function of image height u. Slit orientation: tangential — — — sagittal ————
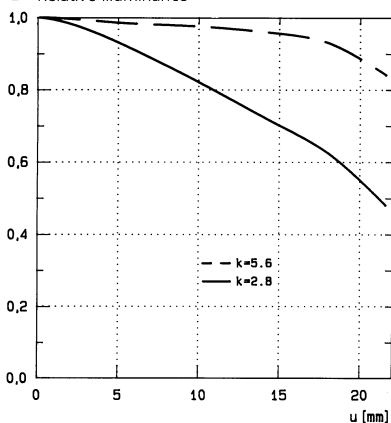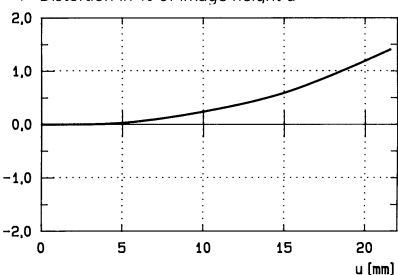White light. Spatial frequencies R = 10, 20 and 40 cycles/mm

T   f-number k = 2.8

T   f-number k = 5.6

E   Relative illuminance

- - - k=5.6
——— k=2.8

V   Distortion in % of image height u

Subject to change.