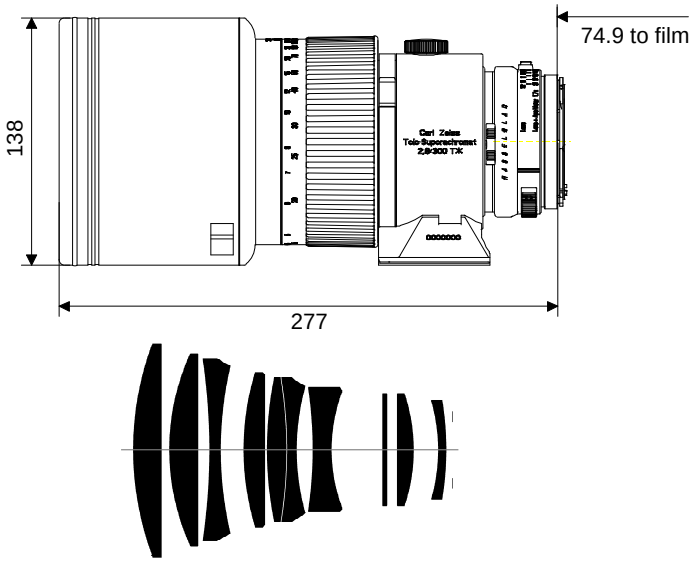
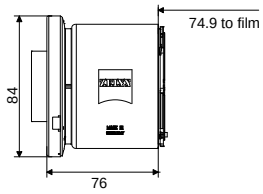
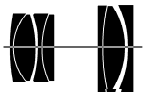
ZEISS Telephoto Power Pack

Tele-Superachromat T* 2.8/300 and Apo- **Mutar**® 1.7x E T*







Tele-Superachromat T* 2.8/300

The **Tele-Superachromat** T* 2.8/300 lens is the fastest telephoto lens in professional medium format with an outstanding optical performance on "Superachromat" level. It covers frames up to 6 cm x 6 cm. Included with the lens is a dedicated teleconverter Carl Zeiss Apo-**Mutar**® 1.7x E T*, designed for the **Tele-Superachromat** T* 2.8/300 lens right from the beginning. The combination of prime lens and teleconverter builds a powerful 500 mm f/4.8 telephoto.
The cross section of the optical system indicates to the expert, that considerable amounts of optical glass are incorporated and smooth transition of image forming rays is ensured. Several lens elements are made of fluor crown glass with anomalous partial dispersion to provide excellent correction of chromatic aberrations even at wide open aperture. Veiling glare is meticulously con-trolled to ensure brilliant color saturation under adverse lighting conditions. Especially for this lens Carl Zeiss invented a novel mechanism for internal focusing ensuring movement of large and relatively heavy optical elements with unparalled accuracy. The **Tele-Superachromat** T* 2.8/300 lens can be focused down to 2.5 meters - even with the 1.7x Apo-**Mutar**® teleconverter in use - thus opening unique creative opportunities.

Apo-**Mutar**® 1.7x E T*

Focusing scales are provided in m and feet. All scales are engraved. The focusing ring can move beyond infinity to allow use of this lens in a variety of temperature conditions. For additional creative possibili-ties a drop-in filter slot is provided and a high-quality polarizing filter, which is a part of the package, can be smoothly rotated in its own ball bearing.
The lens is equipped with a rotatable collar for flexible use, especially with rectangular film frames. It can be safely locked in any position and has a notch every 90 degrees. This collar carries the Hasselblad system tripod quick mount and standard threads 1/4" and 3/8" right under the center of gravity of camera and lens com-bined. Also built-in is the electronic circuitry for databus communication with all Hasselblad 200 series cameras.

Preferred use: people, fashion, advertising, industrial, sports, cars, motorcycles, nature and wildlife

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Tele-Superachromat T* 2.8/300

Cat. No. of lens	**10 45 53**		
Number of elements	9 + drop-in filter	Close limit field size	377 mm x 377 mm
Number of groups	8	Max. scale	1:6.9
Max. aperture	f/2.8	Entrance pupil*	
Focal length	299.9 mm	Position	348.4 mm behind the first lens vertex
Negative size	55 x 55 mm	Diameter	105.3 mm
Angular field*	width 11°, height 11°, diagonal 2w 15°	Exit pupil*	
		Position	2.0 mm behind the last lens vertex
Min. aperture	22	Diameter	47.9 mm
Camera mount	FE	Position of principal planes*	
Fiiter connection	drop-in filter	H	20.9 mm in front of the first lens vertex
Focusing range	infinity to 2.5 m	H'	163.5 mm in front of the last lens vertex
Working distance (between lens and subject)	mechanical front end of 2.1 m	Back focal distance	134.4 mm behind the aperture stop
		Distance between first and last lens vertex	168.4 mm to aperture stop
		Weight	3800 g

* at infinity

Tele-Superachromat T* 2.8/300 and Apo- **Mutar**® 1.7x E T*

Cat. No. of lens	**10 45 53 + 10 43 41**		
Number of elements	9 + 7 + drop-in filter	Close limit field size	224 mm x 224 mm
Number of groups	8 + 4	Max. scale	1:4.1
Max. aperture	f/4.8	Entrance pupil*	
Focal length	503.5 mm	Position	348.5 mm behind the first lens vertex
Negative size	55 x 55 mm	Diameter	105.3 mm
Angular field*	width 6.2°, height 6.2°, diagonal 2w 8.7°	Exit pupil*	
		Position	73.5 mm in front of the last lens vertex
Min. aperture	32 (engraved)	Diameter	33.4 mm
Camera mount	FE	Position of principal planes*	
Fiiter connection	drop-in filter	H	742.7 mm in front of the last lens vertex
Focusing range	infinity to 2.5 m	H'	418.0 mm in front of the last lens vertex
Working distance (between lens and subject)	mechanical front end of 2.1 m	Back focal distance	85.4 mm
		Distance between first and last lens vertex*	279 mm
		Weight	4230 g

* at infinity

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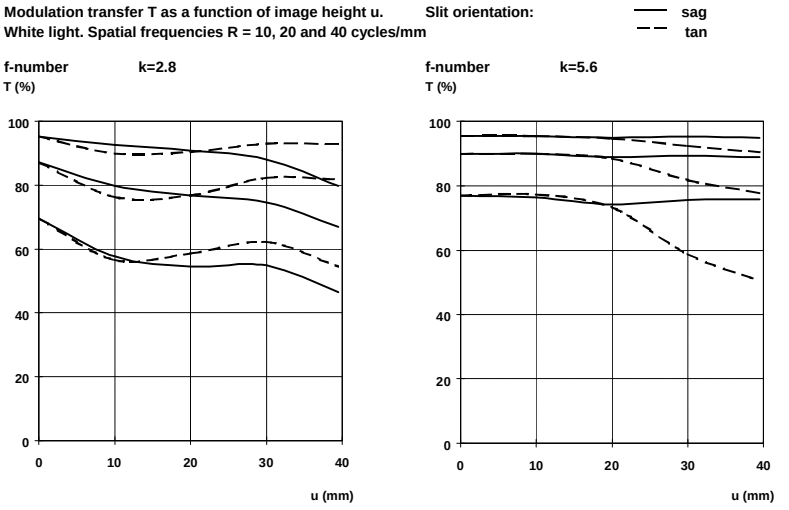
Performance data:
Tele-Superachromat T* 2.8/300
Cat. No. 10 45 53

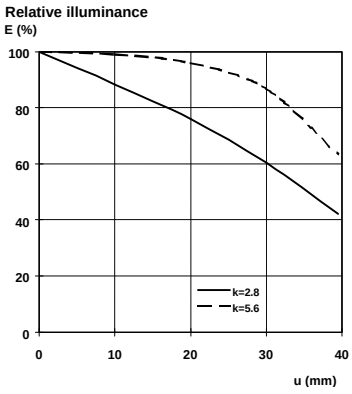
1. MTF Diagrams

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 MTF data apply.
"White" light means that the data is valid for 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.



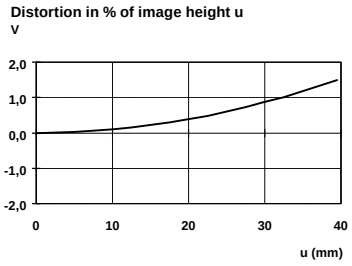
2. Relative illuminance

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.



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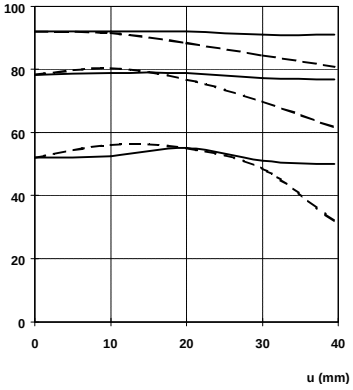
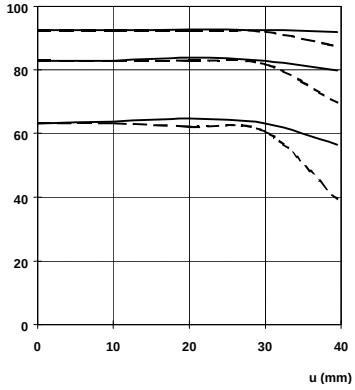
Cat. No. 10 45 53 and 10 43 41

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

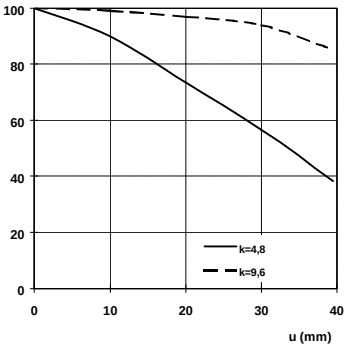
f-number **k=4.8**
T (%)



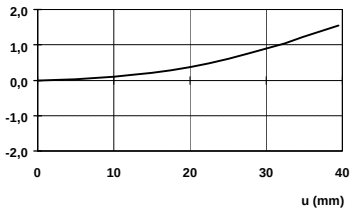
f-number **k=9.6**
T (%)



Relative illuminance
E (%)



Distortion in % of image height u
V



Subject to change.
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