The Finest Optics by ZEISS

Interchangeable Photographic Lenses with Contax/Yashica Mount

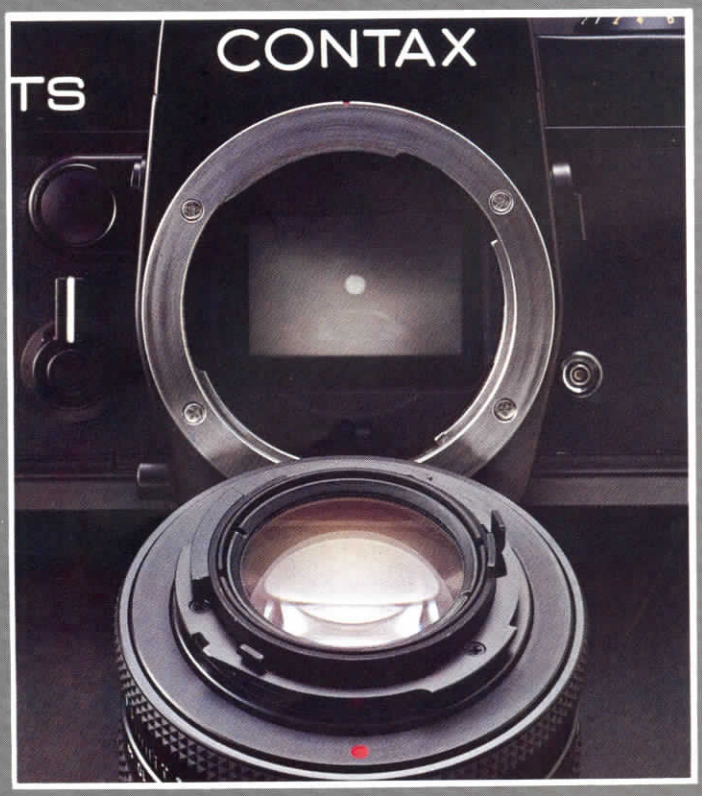
Interchangeable Photographic Lenses by

ZEISS

West Germany


Carl Zeiss
Lens made in Germany
Nr 3513278
Sonnar 2.8/135 T*
Planar 1.4/85
3129611
VARIO-Sonnar 3.5/40-80
Carl Zeiss
Sonnar 2.8/85 T*
2985652
S-Planar 2.8/60 T*
3260843

Zeiss Lenses for Better Pictures



The Zeiss interchangeable lenses with Contax/Yashica mount comprise the first group of lenses in the world designed originally for use with two famous camera brandnames — the Contax RTS and the new series of Yashica SLR cameras.

Each lens in this group features precision engineered bayonet mount and complete linkage system which make it an integral part of the camera system as soon as it is mounted properly.

All these lenses offer to the photographer the traditional Zeiss quality and performance standards. They are the result of the new lens design based on the theory of contrast rendition (See section dealing with 'Resolving Power and Contrast') and application of the latest achievements in the field of optics, including the Zeiss T* multi-layer anti-reflection coating and the use of aspherics and floating lens elements. Combined with the superior know-how, the most up-to-date

computer technology was employed in their design. They present a good example of a well-balanced combined action of such decisive optical factors as resolution and contrast, uniform illumination of the entire image field, high light transmission, freedom from distortion and optimum color correction. Characteristic of these lenses is the superb image quality at all lens openings, even at maximum aperture. Their overall performance will satisfy even the most discriminating photographer.

The Zeiss interchangeable lenses with Contax/Yashica mount cover the focal length range from 15 mm to 1000 mm, all providing extra-high speed for most convenient application even in adverse light situations.

A third of all lenses in this group are wide-angle optics, a number of which incorporate the floating elements for optimum image correction particularly at extreme close range. These wide-angle lenses include the Distagon T* 15 mm which not only assures a ultra-wide angular field of 110 degrees but also offers an extraordinary high speed of f/3.5. The F-Distagon T* 16 mm is another outstanding lens. It is a fisheye type optic providing an extra-high speed of f/2.8 and a coverage of 180 degrees diagonal. Reproducing images to fill the full 35 mm format, this lens permits wide application in general photography as well.

In lenses of certain focal lengths, a choice is provided between ultra-fast and normal speed optics, depending on the specific requirements of the photographer. These include the Distagon T* 35 mm f/1.4 and f/2.8, Planar T* 85 mm f/1.4 and Sonnar T* 85 mm f/2.8, and Planar T* 135 mm f/2 and Sonnar T* 135 mm f/2.8.

Particularly with cameras such as the Contax RTS, the extra-high speed property of the lens greatly extends the scope of application in the automatic mode of operation under which the shutter speed is set automatically in relation to the preselected lens opening.

In the telephoto range, Zeiss lenses offer such optics as the 135 mm, 200 mm as well as the Mirotar 500 mm and 1000 mm. The Mirotars are by far the fastest lenses of their type. With precision engineered mount and other mechanical parts, plus the almost perfect correction of chromatic aberration, these mirror lenses assure unsurpassed overall performance.

The Vario-Sonnar 40 mm – 80 mm zoom and the S-Planar 60 mm macro also open new horizons in their respective fields of application.

Ultimately, the photographer's skill and experience will determine the value and effect of the photographic presentation, but many outstanding compositions, whatever the subject, are possible only with top-quality lenses. The quality of the photographic lens is always a major contribution to better pictures, whether they are amateur snapshots or professional photographs. This accounts for the Zeiss slogan, "Zeiss Lenses for Better Pictures"

①

Wide Angle Fantasy

The variety of high performance wide angle lenses offers unlimited potential in photographic expression where shorter-than-standard focal length is essential. The image quality at all f-stops, uniform field illumination, etc. are truly unparalleled.

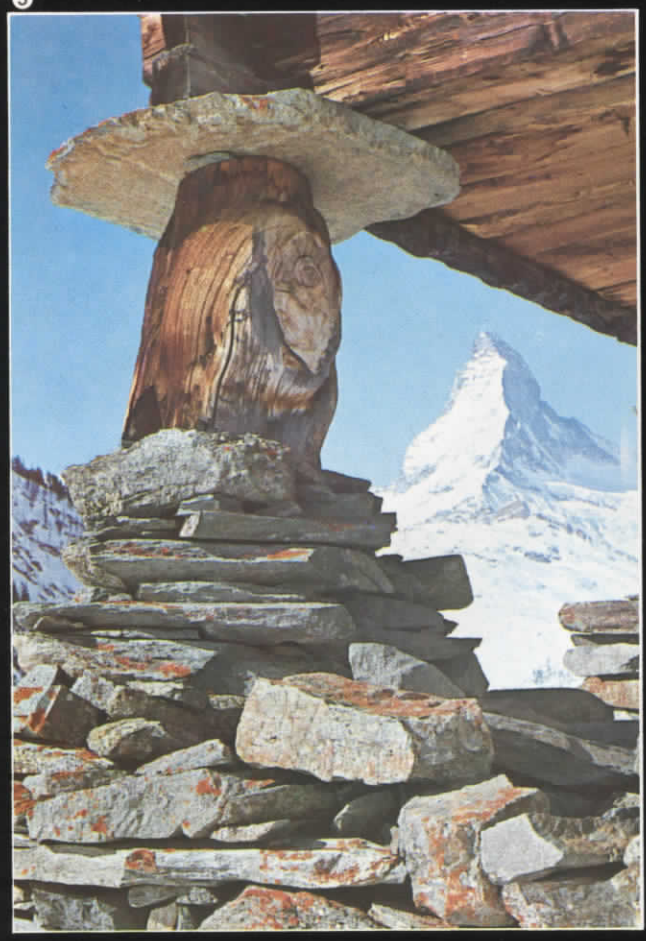
②

③

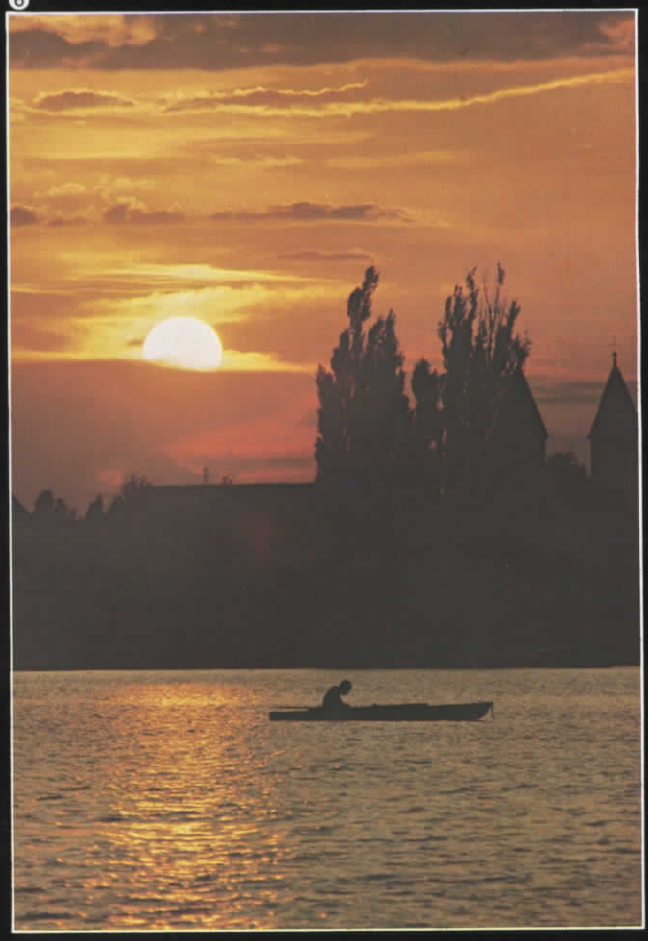
❶ F-Distagon T* f/2.8 16 mm
❷ Distagon T* f/3.5 15 mm
❸ F-Distagon T* f/2.8 16 mm
❹ Distagon T* f/4 18 mm
❺ Distagon T* f/2.8 35 mm
❻ Distagon T* f/1.4 35 mm
❼ Distagon T* f/2.8 35 mm

④

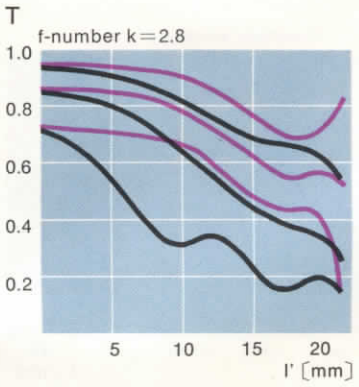
⑤

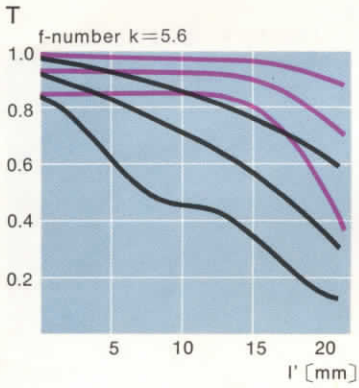


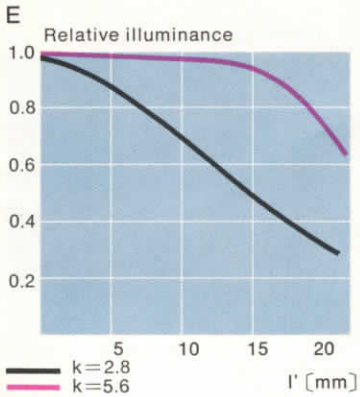
⑥

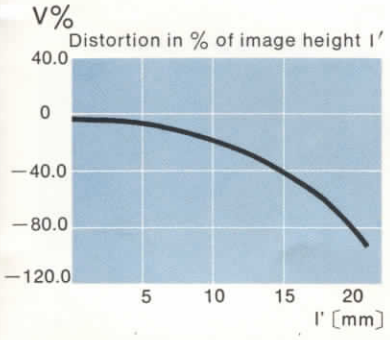


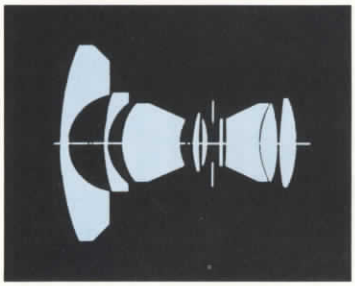
⑦











The F-Distagon f/2.8 16 mm is a high speed ultra wide-angle lens of the so-called fisheye type with excellent image quality. Designed for use particularly in general photography the focal length was chosen in such a way that the 35 mm format is fully utilized. Unlike super wide-angle lenses for technical purposes the information content decreases considerably towards the edge at 180°. Most important for general photography are above all the excellent image quality and the remarkable image field illumination at full aperture, i. e. when fully utilizing the high speed which is unusual for this type.

This super wide-angle lens is well suited for panorama photography where distortion phenomena can be avoided by skilful camera work, for detail photography where space is extremely limited and for photographs for which the extreme wide-angle perspective or the distortion are essential elements of the picture.

Number of lens elements: 8
Number of components: 7
f-number: 2.8
Focal length: 15.9 mm
Negative size: 24 × 36 mm
Angular field: 180° diagonal
Mount: Contax/Yashica mount
Diaphragm action: Fully automatic
f-stop scale: 2.8–4–5.6–8–11–16–22
Filter: Built-in turret type filters
(UV; Or 57; Y 50; B 11)
Focusing range: ∞ to 0.3 m (12 in)

F-Distagon T* f/2.8 16 mm

The Distagon T* f/3.5 15mm incorporates a sensational advance in the design of high speed lenses. It provides an extremely wide angular field and an exceedingly long back focal distance permitting free movement of the deflection mirror of the single-lens reflex camera.

For the sophisticated amateur as well as the professional photographer, this Distagon T* lens with an angular field of 110° opens up new possibilities in the true sense of fhe word. It is particularly effective in indoor photography where the lens speed makes a great deal of difference, in advertising and other fields of photography where the accentuated perspective is of importance or in model photography where the spatial impression of the construction project must be expressed more emphatically than the model itself.
The Distagon T* 15mm lens is perhaps the first optics of its type which, when stopped down slightly, assures such marginal illumination as was almost unthinkable previously.

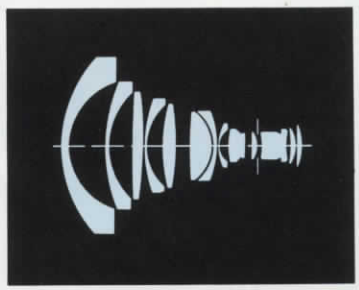
Number of lens elements: 13
Number of components: 12
f-number: 3.5
Focal length: 15.4mm
Negative size: 24 × 36mm
Angular field: 110° diagonal
Mount: Contax/Yashica bayonet mount with complete linkage system for full aperture light reading.
f-stop scale: 3.5–5.6–8–11–16–22
Filter: Built-in turret type filters (UV, Or57, Y50, B11)
Distance scale: ∞ to 0.16m (6″)
Correction of aberration at close range with 'floating element'.

T
f-number k=3.5
1.0
0.8
0.6
0.4
0.2
5 10 15 20
l' [mm]

T
f-number k=8
1.0
0.8
0.6
0.4
0.2
5 10 15 20
l' [mm]

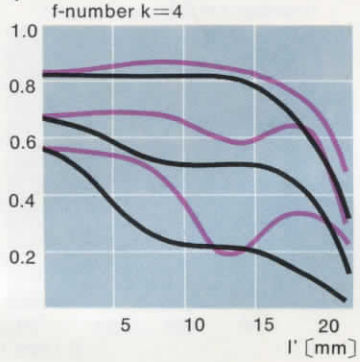
E
Relative illuminance
1.0
0.8
0.6
0.4
0.2
5 10 15 20
l' [mm]
k=3.5
k=8

V%
Distortion in % of image height l'
2.0
0
−2.0
−4.0
−6.0
5 10 15 20
l' [mm]

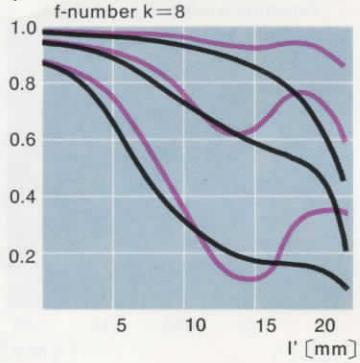


Distagon T* f/3.5 15mm

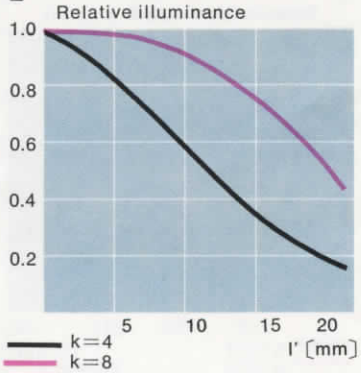
T
f-number k=4



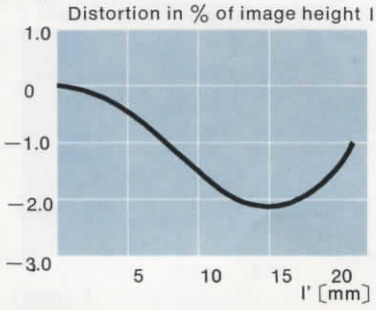
T
f-number k=8

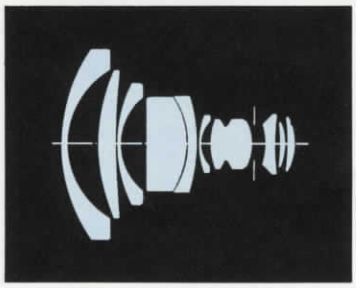


E
Relative illuminance



V%
Distortion in % of image height l'





This Distagon with an angular field of 100° has a design well tried for years.
Its special features include excellent imaging performance, a good distortion correction unexpected in this type of lens and an exceptionally compact design.

This new model does not differ in optical performance from the known and tested version when photographing distant subjects. What's new is its superb performance in close-range photography. When set to shorter object distances the positions of the components change in relation to each other. This counteracts the loss in imaging performance in the marginal areas and extends the useful range of the lens to 0.3 m.

Number of lens elements: 10
Number of components: 9
f-number: 4
Focal length: 18.6 mm
Negative size: 24×36 mm
Angular field: 100° diagonal
Mount: Contax/Yashica mount
Diaphragm action: Fully automatic
f-stop scale: 4–5.6–8–11–16–22
Filter: 70 mm slip-on type
Focusing range: ∞ to 0.3 m (12 in)
Aberration correction at close range with "floating element"

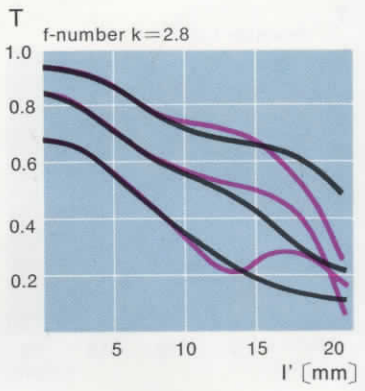
Distagon T* f/4 18 mm

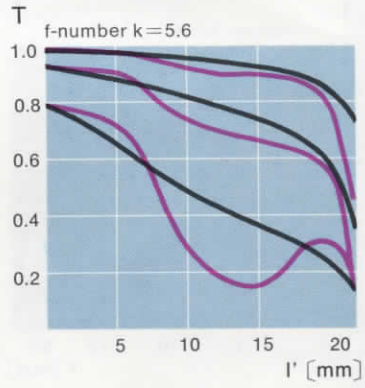
The Distagon f/2.8 25 mm with an angular field of 80° is a lens of known and tested design enjoying a good reputation with the users of 35 mm cameras.

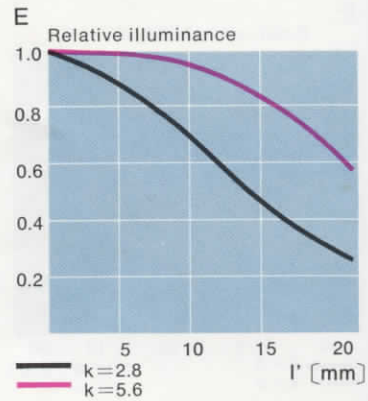
Even at full aperture the Distagon 25 mm provides an excellent image quality over the entire format although its initial aperture can be regarded as considerably large for such a fairly powerful wide-angle lens. The treatment of the glass-to-air surfaces with the T* multilayer coating—its anti-reflection effect is particularly conspicuous with multi-element wide-angle lenses — guarantees a brilliant image.

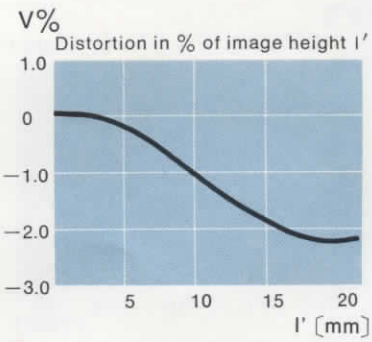
Within the varied applications of wide-angle photography the use of the Distagon f/2.8 25 mm is also of advantage for architectural and landscape photography where a relatively large object field has to be covered and where, the lateral parts of the image have to be rendered as true to the original as possible—i. e. without too pronounced perspective distortion.

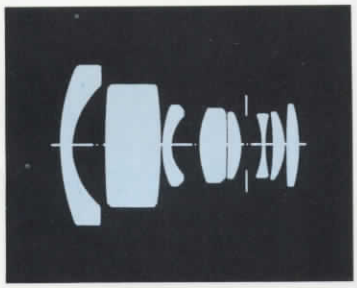
Number of lens elements: 8
Number of components: 7
f-number: 2.8
Focal length: 25.9 mm
Negative size: 24 × 36 mm
Angular field: 80° diagonal
Mount: Contax/Yashica mount
Diaphragm action: Fully automatic
f-stop scale: 2.8–4–5.6–8–11–16–22
Filter: 55 mm screw- in type
Focusing range: ∞ to 0.25 m (10″)



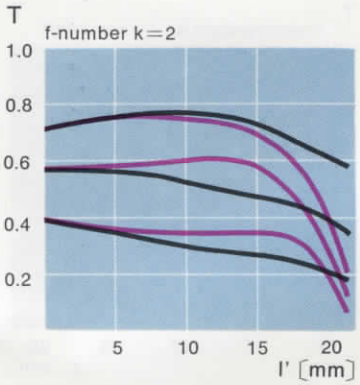


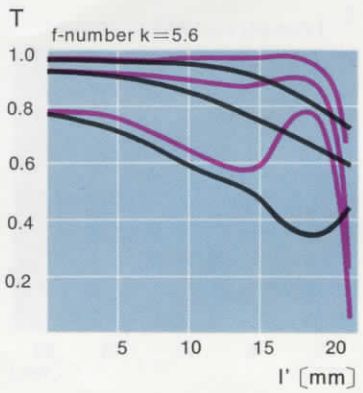


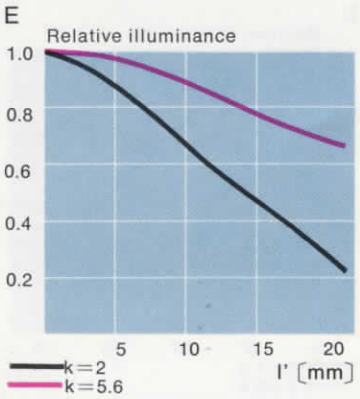


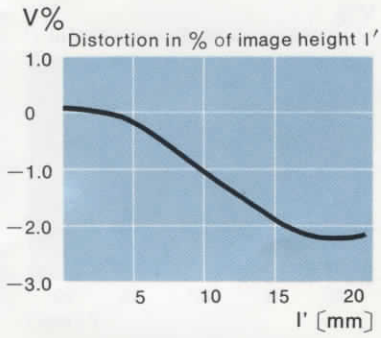


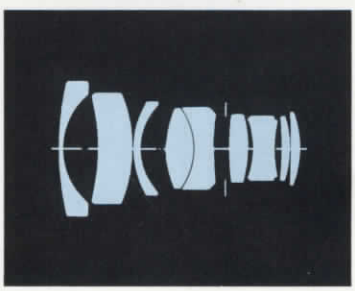
Distagon T* f/2.8 25 mm











The Distagon f/2 28 mm closes the gap in the line of top lenses in the wide-angle range. In many instances, it is something of a leap from focal length 35 mm — angular field 62° — to focal length 25 mm — angular field 80°. The ratio of the object fields is 1 : 2, the same applying to the depth of focus — provided the same stop is used. The demanding amateur may therefore find himself in situations requiring a lens which has at least an initial aperture of 1 : 2 and which at the same time provides for greater depth of focus than does the popular 35 mm lens. The task of developing a lens with a focal length of 28 mm, an angular field of 74° and excellent imaging performance despite the exceptionally large initial aperture of 1 : 2 has been admirably solved with this new Distagon.

The image quality is surprisingly uniform over the entire field up to the format corners. To make the lens usable up to as close a range as possible one component shifts in differential movement with the rest of the lens during distance setting. The loss in imaging performance in the marginal areas of the picture, otherwise disturbing, is largely compensated by this measure.

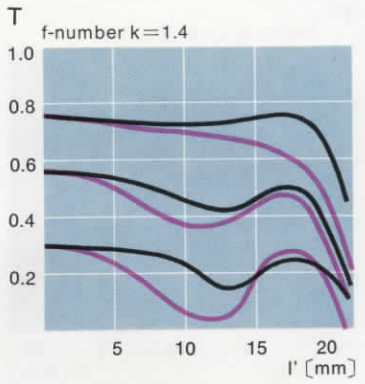
Number of lens elements: 9
Number of components: 8
f-number: 2
Focal length: 28.8 mm
Negative size: 24 × 36 mm
Angular field: 74° diagonal
Mount: Contax/Yashica mount
Diaphragm action: Fully automatic
f-stop scale: 2–2.8–4–5.6–8–11–16–22
Filter: 55 mm Screw-in type
Focusing range: ∞ to 0.24 m (10 in)
Aberration correction at close range with "floating element"

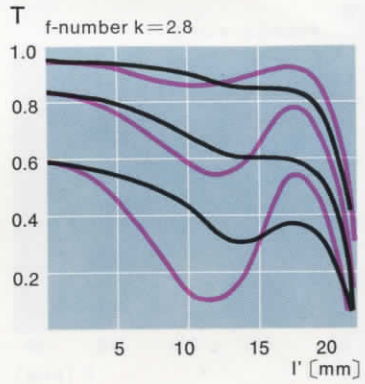
Distagon T* f/2 28 mm

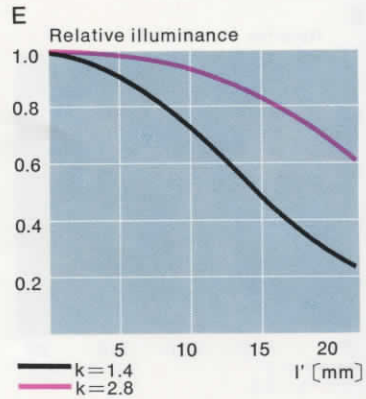
Despite the 4× greater speed — compared with the standard initial aperture of f/2.8 — the new Distagon f/1.4 35 mm has a surprisingly high image quality. Distortion, which is commonly the great drawback of the retrofocus type to which the ZEISS Distagon lenses belong is admirably corrected.

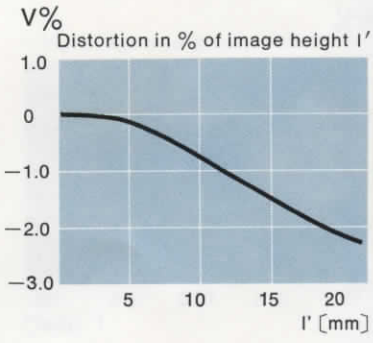
A further novelty of this Distagon is a differential motion of a component, which counteracts the decrease in image performance in the peripheral zones when the lens is set at shorter distances. For this reason, it was possible to set the minimum focusing range to only 18 cm from the front lens vertex assuring remarkably high image ratio of 1 : 5. For the sophisticated amateur, the news and the creative photographer this lens can be used for many purposes. To photographers who regard a high-performance lens with a focal length of 35 mm as indispensable, it can be assumed for certain that the new Distagon will bring with it yet a further substantial extension to the numerous applications.

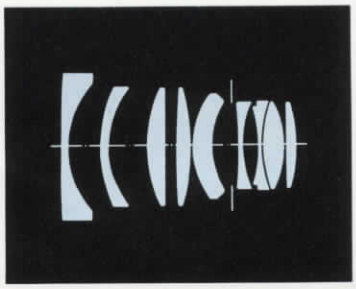
Number of lens elements: 9 (1 aspheric surface)
Number of components: 8
f-number: 1.4
Focal length: 36.4 mm
Negative size: 24×36 mm
Angular field: 62° 30′ diagonal
Mount: Contax/Yashica mount
Diaphragm action: Full automatic
f-stop scale: 1.4–2–2.8–4–5.6–8–11–16
Filter: 67 mm screw-in type
Focusing range: ∞ to 0.3 m (12 in)
Aberration correction at close range with "floating element"



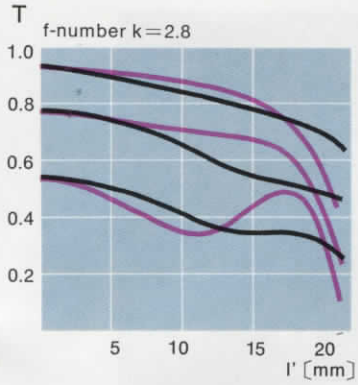


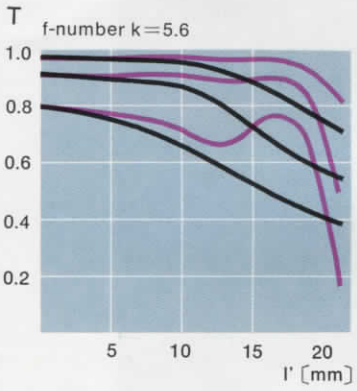


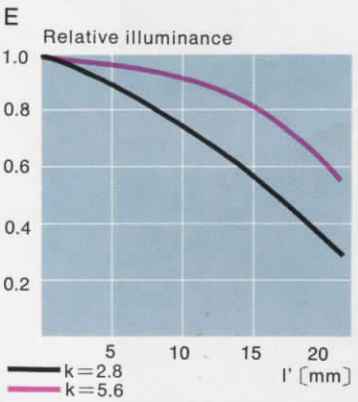


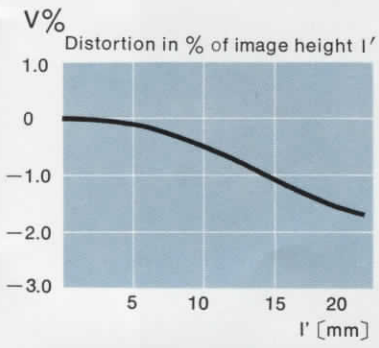


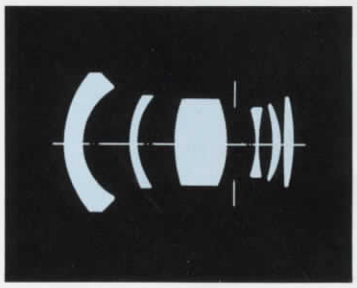
Distagon T* f/1.4 35 mm











This Distagon is a high-performance lens best suited for those interested in a so-called moderate wide angle with extraordinarily high image quality rather than exceptionally large initial aperture. Together with the Sonnar lenses of medium focal length in the tele range, this Distagon in the wide-angle range belongs to a group of lenses which ZEISS has constantly occupied itself in order to improve the image quality.

The new Distagon f/2.8 35 mm consisting of 6 lens elements assures an excellent image quality at full aperture and a remarkable image field illumination and at the same time is distinguished by a compact, lightweight construction.

The Distagon is suitable for so many purposes that it can be classed as universal lens for general photography.

Number of lens elements: 6
Number of components: 6
f-number: 2.8
Focal length: 35.9 mm
Negative size: 24 × 36 mm
Angular field: 62° diagonal
Mount: Contax/Yashica mount
Diaphragm action: Fully automatic
f-stop scale: 2.8–4–5.6–8–11–16–22
Filter: 55 mm screw-in type
Focusing range: ∞ to 0.4 m (16 in)

Distagon T* f/2.8 35 mm

Art and Realism

The superb image quality, outstanding color reproduction and ideal perspective effect of the Zeiss interchangeable lenses in the standard and long focus ranges open up new possibilities in the art and realism of photographic expression.

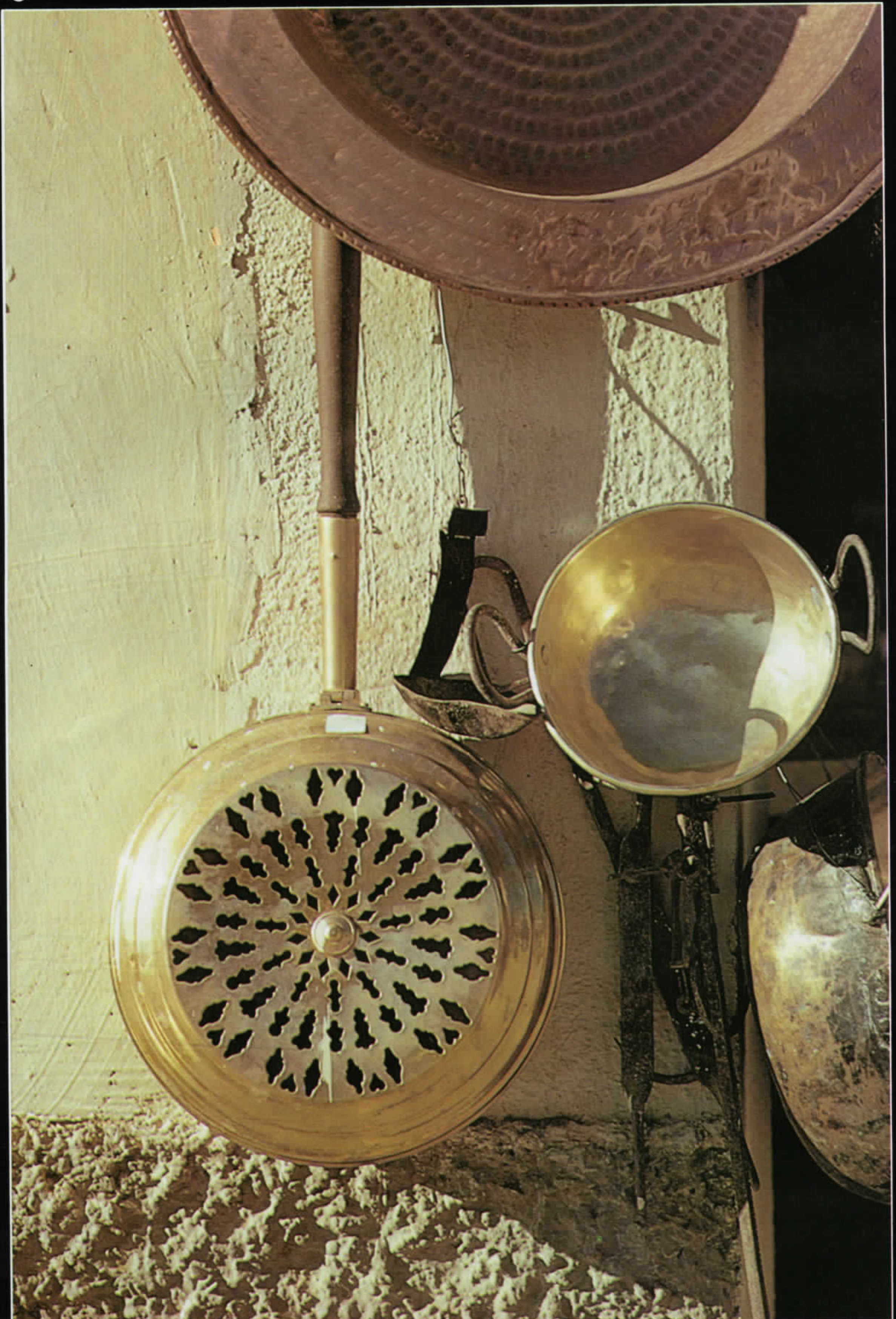
❶ Sonnar T* f/2.8 85 mm
❷ Planar T* f/1.4 85 mm
❸ Planar T* f/1.4 85 mm
❹ Sonnar T* f/2.8 85 mm

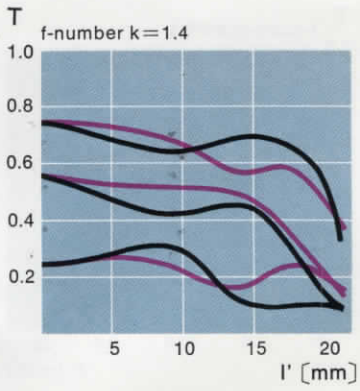
①

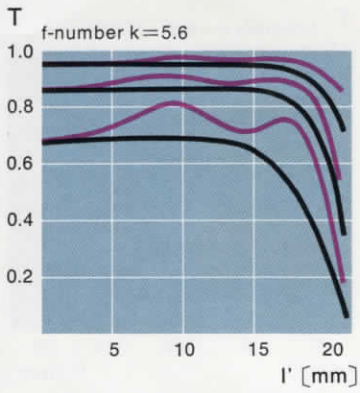
②

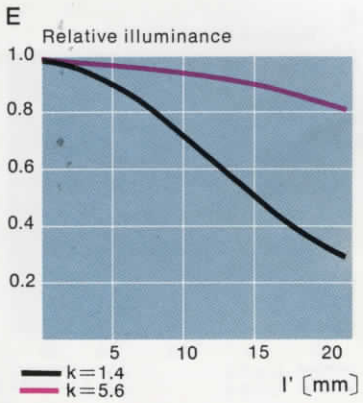
③

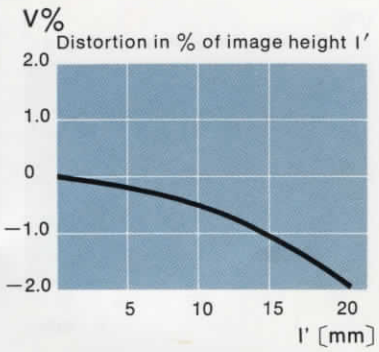
4

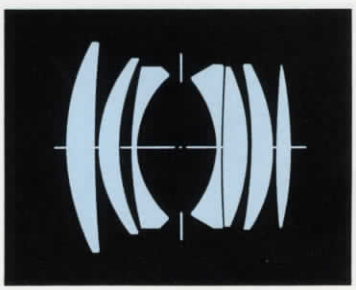












Among ZEISS lenses for 35 mm reflex cameras the Planar f/1.4 50 mm is a fast, high-performance lens with standard focal length.

This lens, too, incorporates every advance in the development of optical glass and the latest achievements in the optimum correction of image errors. This Planar f/1.4 50 mm may thus be regarded as the outstanding standard lens.

The glass-to-air surfaces are provided with the multi-layer T* coating. Coupled with the high image quality resulting from the excellent correction of all image errors, it delivers pictures with high contrast effect, unimpaired by reflections.

The lens offers multiple applications within the field of general photography. Its high speed is equally valuable for dusk and dawn photography as well as for 'freezing' fast-moving subjects through selection of high shutter speeds. The close-range limit at 0.45 m permits reduction ratio down to 1 : 6.7 without accessories, thus providing format-covering exposures with object fields down to 15 cm × 23 cm.

Number of lens elements: 7
Number of componens: 6
f-number: 1.4
Focal length: 51.8 mm
Negative size: 24 × 36 mm
Angular field: 45° diagonal
Mount: Contax/Yashica mount
Diaphragm action: Fully automatic
f-stop scale: 1.4–2–2.8–4–5.6–8–11–16
Filter: 55 mm screw-in type
Focusing range: ∞ to 0.45 m (17 3/4 in)

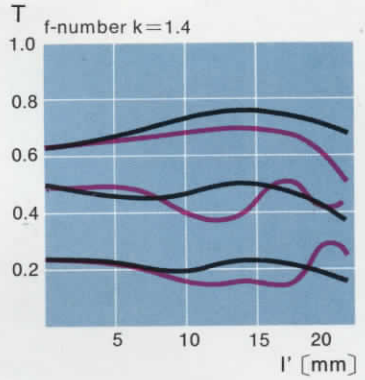
Planar T* f/1.4 50 mm

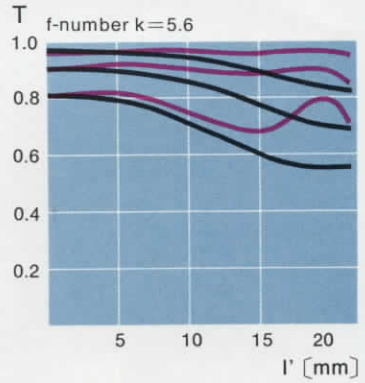
As regards the speed, the Planar f/1.4 85 mm is superior to all commercial lenses with the universally usable focal length of 85 mm presently available for 35 mm reflex-cameras. An outstanding feature is the excellent image performance even with fully open diaphragm.

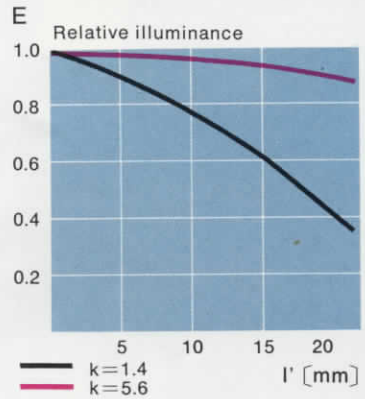
This feature results in special applications of the Planar f/1.4 85 mm for sophisticated amateur and professional photographers. This lens is especially suitable for stage photography. For sporting events, outdoor as well as indoor photography, exposures in twilight as well as floodlight, the photo reporter requires or desires a focal length which is slightly longer than that of standard lenses due to the object distance or for reasons of perspective. As regards portraits, the shallow depth of focus attainable when the lens diaphragm is fully opened is another big advantage.

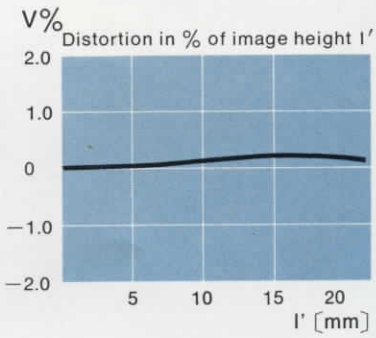
Thus a disturbing background is avoided and the portrait stands out clearly against the surrounding.

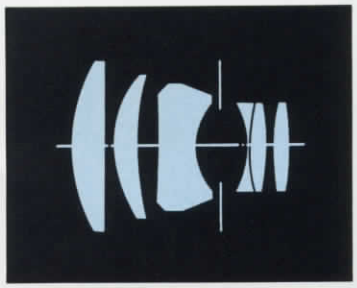
Number of lens elements: 6
Number of components: 5
f-number: 1.4
Focal length: 84.8 mm
Negative size: 24 × 36 mm
Angular field: 28°30′ diagonal
Mount: Contax/Yashica mount
Diaphragm action: Fully automatic
f-stop scale: 1.4–2–2.8–4–5.6–8–11–16
Filter: 67 mm screw-in type
Focusing range: ∞ to 1 m (3.3 ft)



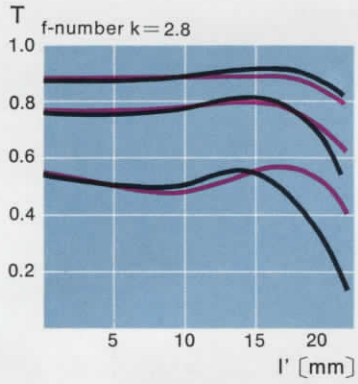


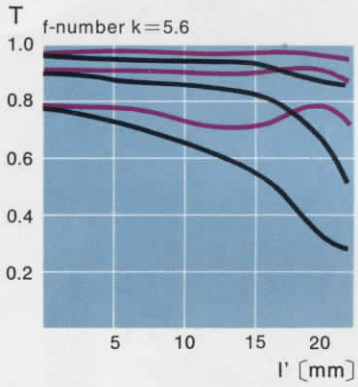


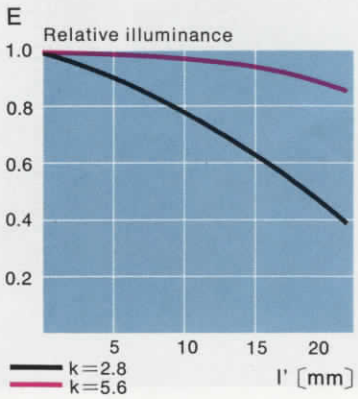


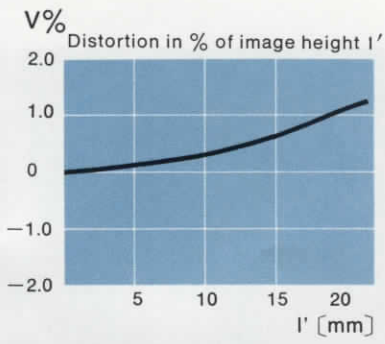


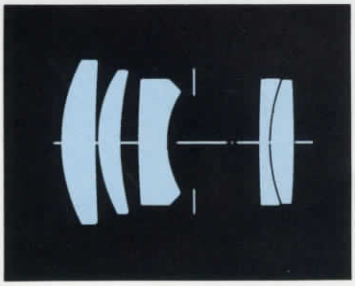
Planar T* f/1.4 85 mm











Anyone interested in exploiting the wide possibilities afforded by an 85 mm lens is almost bound to select this Sonnar as the lens of his choice, provided that he is prepared to forgo the luxury of 4 times greater speed or the possibility of reducing the exposure time to 1/4, i. e. the features that distinguish it from the Planar f/1.4 85 mm.

The Sonnar documents the endeavours of the Zeiss Works in Oberkochen to avoid exclusive preoccupation with extreme performance conditions by devoting equal attention to the improvement of already established designs.

One characteristic of this model is its compact design, the distance between the first lens vertex and the image plane being no greater than the focal length.

Distance setting goes down to 1 m measured from the film plane. At a distance of 1 m an object field 22 × 33 cm fills the format completely.

Number of lens elements: 5
Number of components: 4
f-number: 2.8
Focal length: 87.5 mm
Negative size: 24 × 36 mm
Angular field: 27°30′ diagonal
Mount: Contax/Yashica mount
Diaphragm action: Fully automatic
f-stop scale: 2.8–4–5.6–8–11–16–22
Filter: 55 mm screw-in type
Focusing range: ∞ to 1 m (3.5 ft)

Sonnar T* f/2.8 85 mm

Dynamic Expression

The telephoto optics in the Zeiss range of interchangable lenses have all the qualities for assuring better results in outdoor application—sport, landscape and other fields of photography where a more dynamic expression is desired.

❶ Planar T* f/2 135 mm
❷ Planar T* f/2 135 mm
❸ Sonnar T* f/2.8 135 mm
❹ Sonnar T* f/2.8 135 mm
❺ Sonnar T* f/2.8 135 mm
❻ Tele-Tessar T* f/3.5 200 mm
❼ Tele-Tessar T* f/3.5 200 mm

①

②

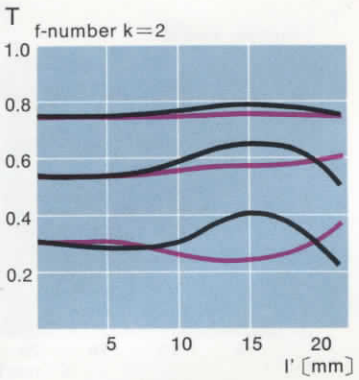
④

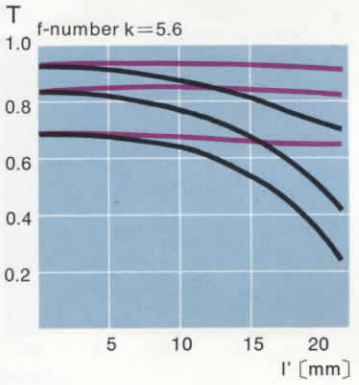
⑤

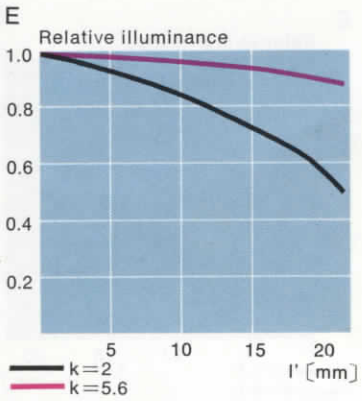
③

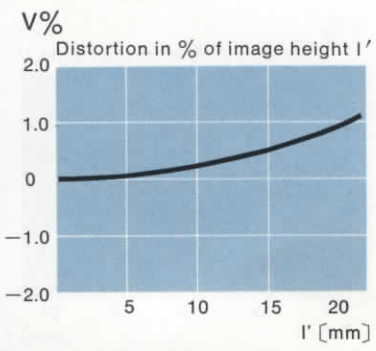
6

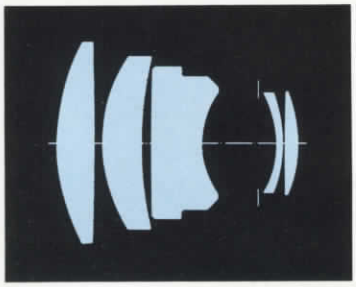
7











The Planar f/2 135 mm with its 5 detached lens elements is a mature Planar type in every respect. Of course all lens surfaces are provided with the multilayer T* coating. The performance and the image field illumination are such that the high speed can be fully utilized. Although the Planar is a lens with all advantages of the Gauss type, its overall length is surprisingly small. Measured from the front lens vertex to the image plane it is only 7% longer than the focal length. The distance between the exit pupil and the back focal point is only 56% of the focal length. This guarantees good illumination of the finder area while retaining the standard focusing screen of the camera. The Planar f/2 135 mm is thus the ideal lens of the medium focal length.

Number of lens elements: 5
Number of components: 5
f-number: 2
Focal length: 132.8 mm
Negative size: 24 × 36 mm
Angular field: 18°30′ diagonal
Mount: Contax/Yashica mount
Diaphragm action: Fully automatic
f-stop scale: 2–2.8–4–5.6–8–11–16–22
Filter: 72 mm screw-in type
Focusing range: ∞ to 1.5 m (5 ft)

Planar T* f/2 135 mm

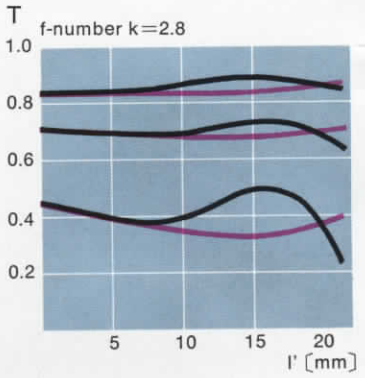
The new Sonnar f/2.8 135 mm is composed of 5 elemets in 4 groups. Like all new Zeiss designs this one too was developed in accordance with the established Zeiss practice of combining professional experience with an effective computer program.

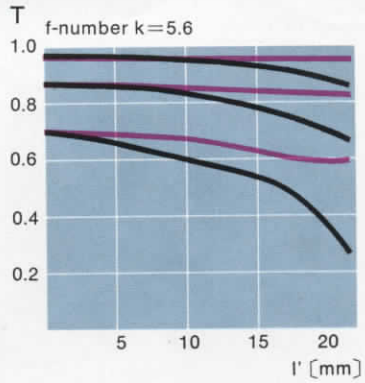
The new lens is characterized by its outstanding image quality and remarkably good image field illumination, both achievable when the diaphragm is fully open. Alongside the wide-angle lens, the new Sonnar with a focal length some three times the diagonals of the miniature format, is perhaps the most widely demanded interchangeable lens.

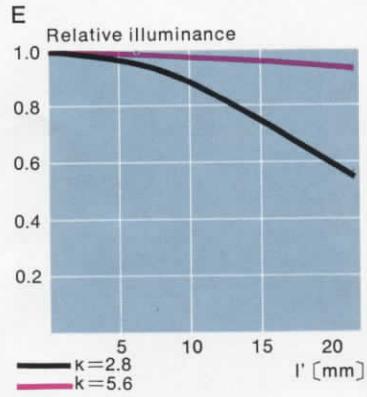
Regardless of whether it is landscape photography, fauna and flora studies, family shots or portraiture work, there will never be any shortage of subjects for which the 135 mm focal length is particularly well suited. With its help the photographer can bring up close fairly distant subjects without creating the flat perspective that sometimes mars a picture. On the other hand, picture-filling details can be selected without having to approach all that close. And finally, thanks to its reasonable tele-perspective effect it is admirably suitable for portraits, either with the diaphragm fully open or slightly stopped down.

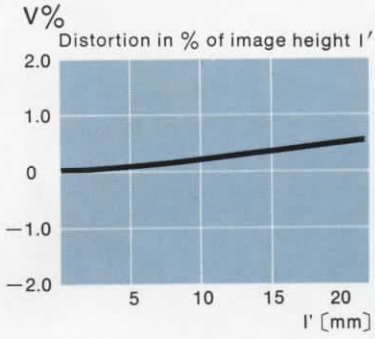
The Sonnar T* 135 mm features a built-in lens shade.

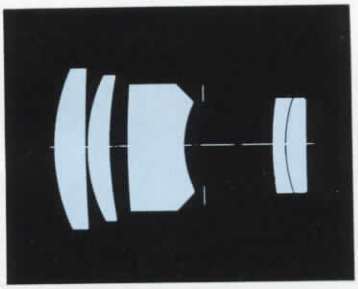
Number of lens elements: 5
Number of components: 4
f-number: 2.8
Focal length: 134.1 mm
Negative size: 24 × 36 mm
Angular field: 18°30′ diagonal
Mount: Contax/Yashica mount
Diaphragm action: Fully automatic
f-stop scale: 2.8–4–5.6–8–11–16–22
Filter: 55 mm screw-in type
Focusing range: ∞ to 1.6 m (5.2 ft)



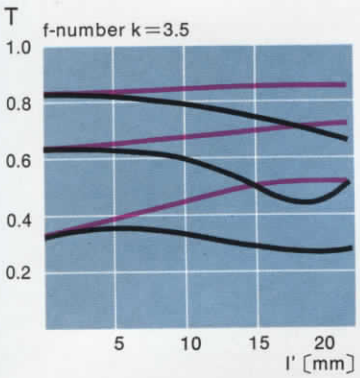


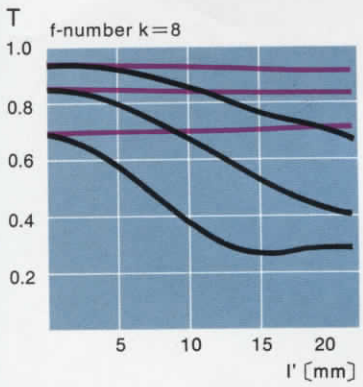


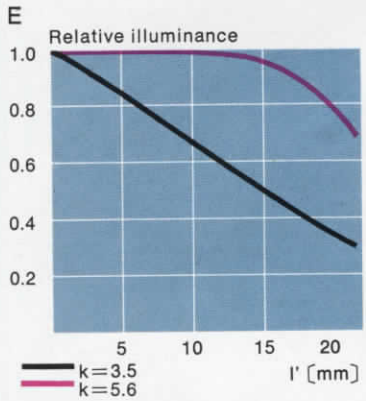


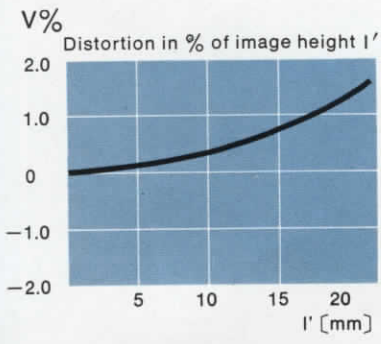


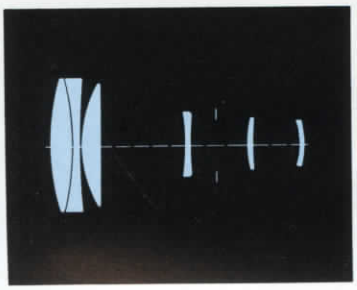
Sonnar T* f/2.8 135 mm











The Tele-Tessar f/3.5 200 mm offers all the advantages of a tele type lens, without the disadvantages of the classical tele design.

The tele lens type is characterized by a distance between front lens vertex and focal point which is about 30 mm shorter than the focal length. This ensures the compact design of the lens. Since the distance between the exit pupil and film plane with ∞ setting is only 75 mm, the finder image is brightly and uniformly illuminated. This distance being so short, it is even possible to use the same groundglass with Fresnel lens which is provided for lenses with shorter focal length and for the standard lens.

Owing to its focal length of 200 mm, this Tele-Tessar ranges between the medium tele lenses (85 and 135 mm) and those with extremely long focal lengths, and is the ideal choice for long-range work, for sports and press photography, and also for landscape photography.

Number of lens elements: 6
Number of components: 5
f-number: 3,5
Focal length: 194.0 mm
Negative size: 24 × 36 mm
Angular field: 12°40′ diagonal
Mount: Contax/Yashica mount
Diaphragm action: Fully automatic
f-stop scale: 3.5–5.6–8–11–16–22
Filter: 67 mm screw-in type
Focusing range: ∞ to 1.8 m (6 ft)

Tele-Tessar T* f/3.5 200 mm

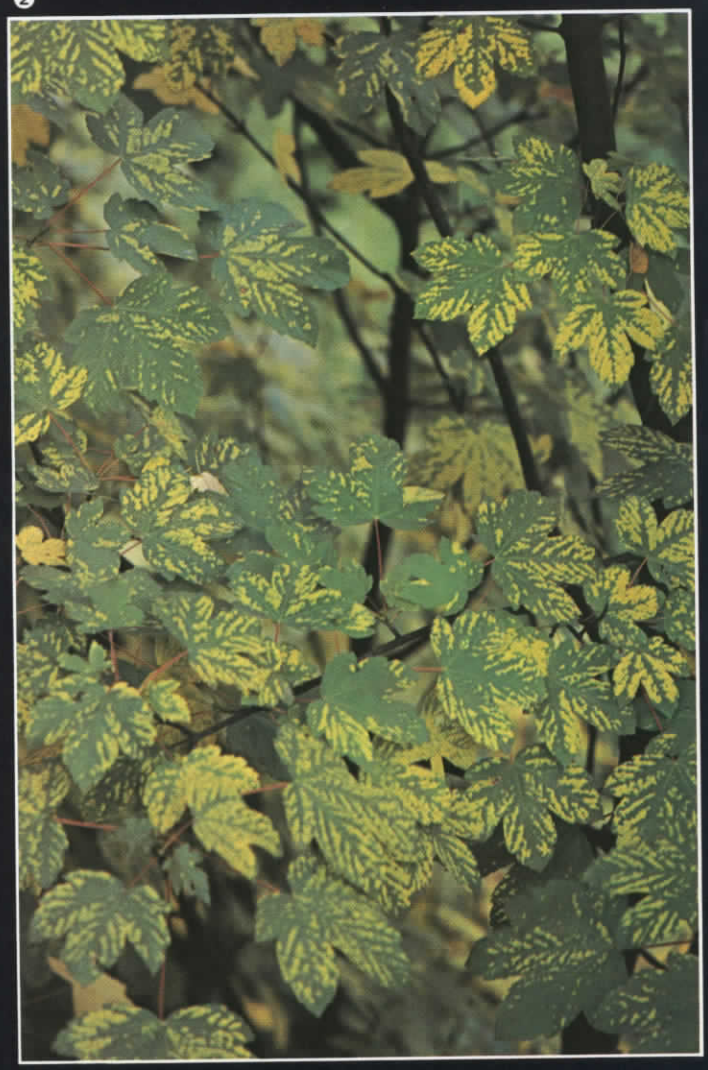
Close-Ups, Versatility and 'Reach'

Special-purpose lenses in the Zeiss range include the macro for close-up photography, the zoom for versatility in picture composition and the mirror lenses for longer 'reach'. All assure the highest degree of image quality.

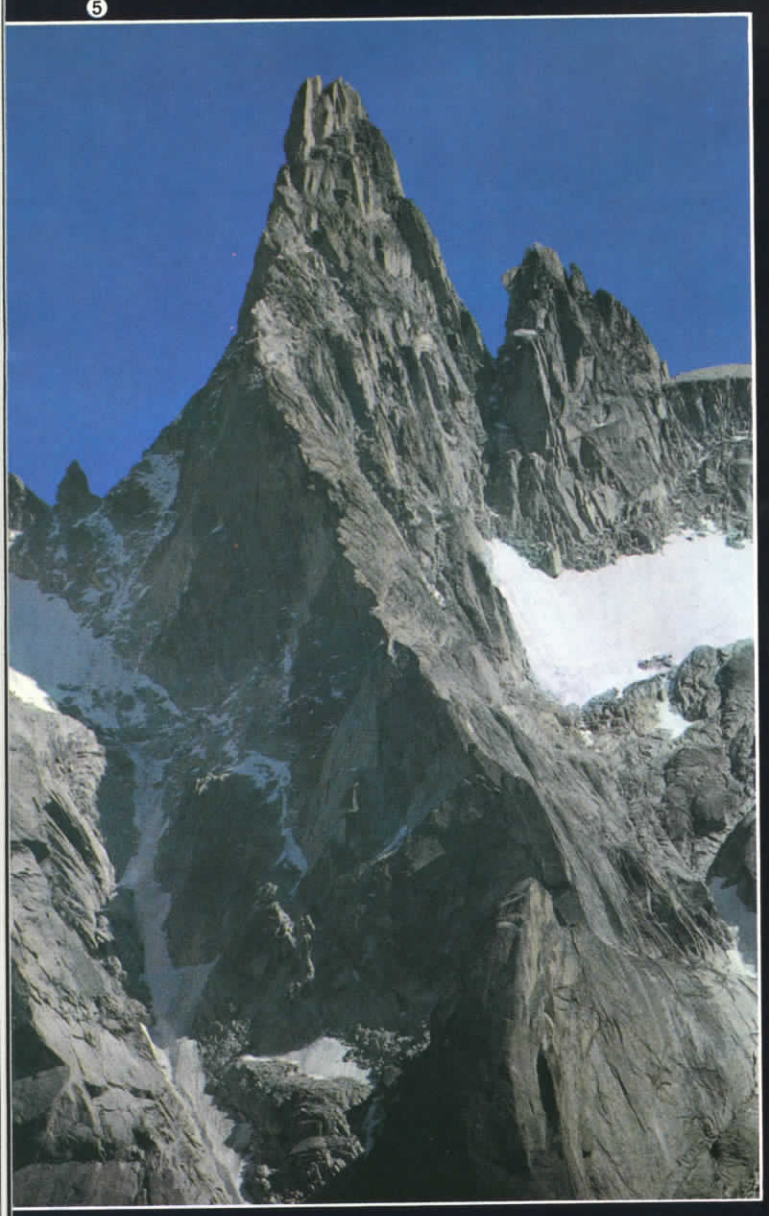
❶ S-Planar T* f/2.8 60 mm
❷ Vario-Sonnar T* f/3.5 40 mm – 80 mm
❸ Vario-Sonnar T* f/3.5 40 mm – 80 mm
❹ S-Planar T* f/2.8 60 mm
❺ Mirotar f/4.5 500 mm
❻ Mirotar f/5.6 1000 mm
❼ Mirotar f/4.5 500 mm

❶

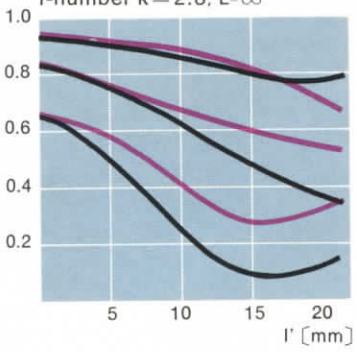
❷



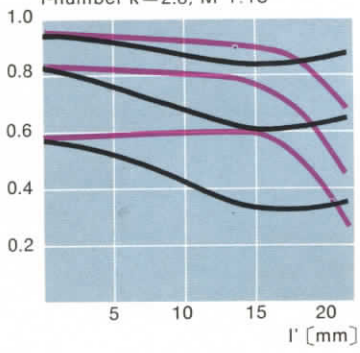
❸



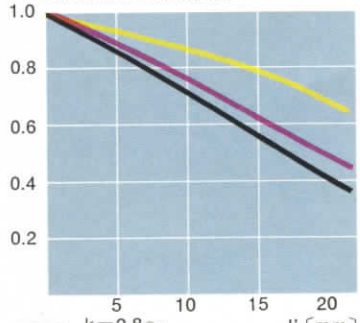
T
f-number k=2.8, E=∞



T
f-number k=2.8, M 1:10

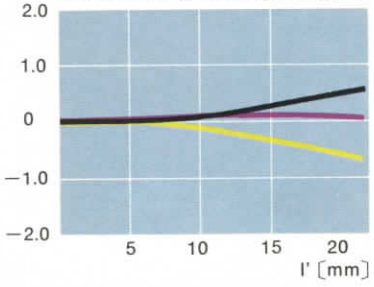


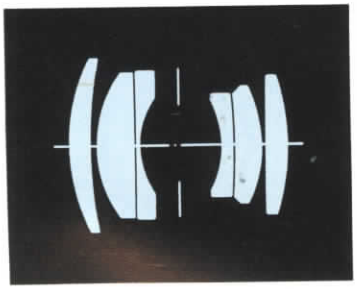
E
Relative illuminance



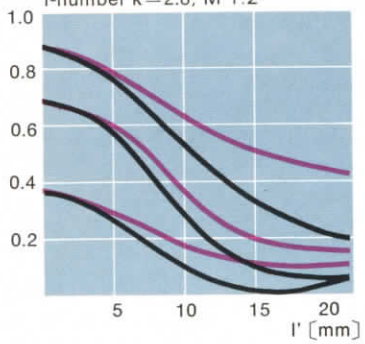
k=2.8
k=2.8, M 1:10
k=2.8, M 1:2

V%
Distortion in % of image height l'

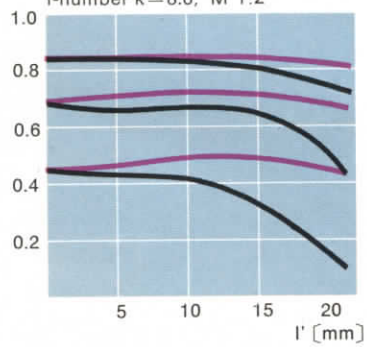




T
f-number k=2.8, M 1:2



T
f-number k=8.0, M 1:2



As indicated by the letter 'S' preceding the lens designation, the S-Planar T* f/2.8 60 mm is a special-purpose lens.

This lens is characterized by optimum correction of aberrations which are liable to occur when photographing subjects at close range. With a symmetrical design characteristic of the Planar lens, it provides superb imaging performance. When stopped down slightly further than is the normal procedure with lenses of this class of focal length, it can also be used to good advantage in photographing distant subjects.

Through manipulation of the helicoid focusing mount, the S-Planar T* 60 mm provides image magnification ratio of up to M1 : 1, not to speak of its capability for focusing on subject at a distance of infinity. Through use of extension tubes, moreover, higher ratios of magnification can be obtained.

Aside from its superb optical performance, the S-Planar T* 60 mm features an exceptionally compact and rigid construction.

Number of lens elements: 6
Number of components: 4
f-number: 2.8
Focal length: 61.5 mm
Negative size: 24×36 mm
Angular field: 39° diagonal
Mount: Contax/Yashica mount
Diaphragm action: Fully automatic
f-stop scale: 2.8–4–5.6–8–11–16–22
Filter: 55 mm screw-in type
Focusing range: ∞ to M1 : 1

*Specifications and exterior design subject to change without prior notice.

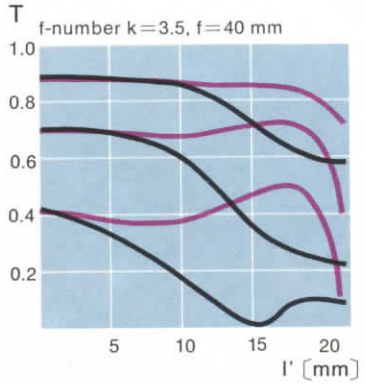
S-Planar T* f/2.8 60 mm

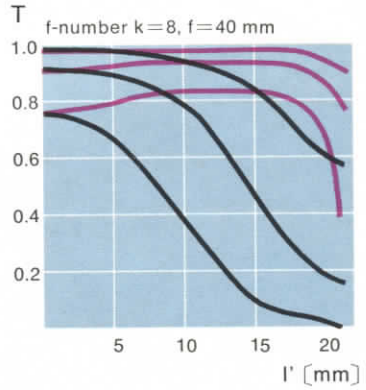
For many an amateur photographer this new lens with continuously variable focal length from wide-angle through to medium telephoto range represents a dream come true. If a lens is to be of any value to the amateur, it must be compact and lightweight and, at the same time, assure good image quality.

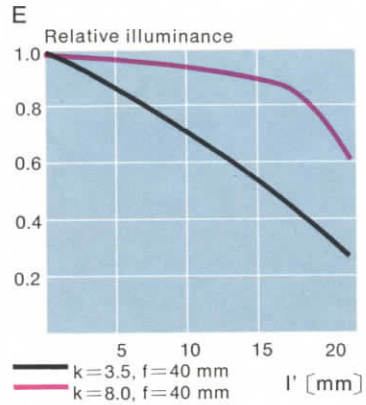
The new Vario-Sonnar does not claim to be the smallest zoom lens of its focal length range, but it does combine highly satisfactory performance with appealing lightweight, handy design.

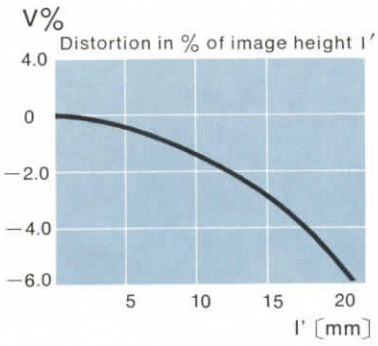
Number of lens elements: 13
Number of components: 9
f-number: 3.5
Focal length: 41.0 – 77.5 mm
Negative size: 24 × 36 mm
Angular field: 55° – 31° diagonal
Mount: Contax/Yashica mount
Diaphragm action: Fully automatic
f-stop scale: 3.5–5.6–8–11–16–22
Filter: 55 mm screw-in type
Focusing range: to 1.2 m (4 ft)

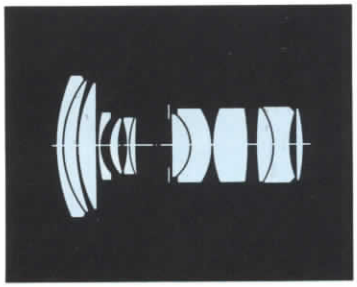
*Specifications and exterior design subject to change without prior notice.



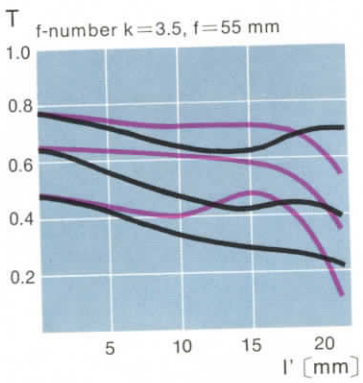


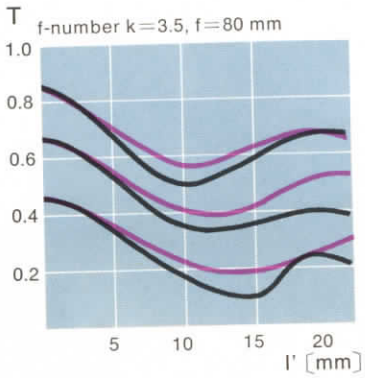


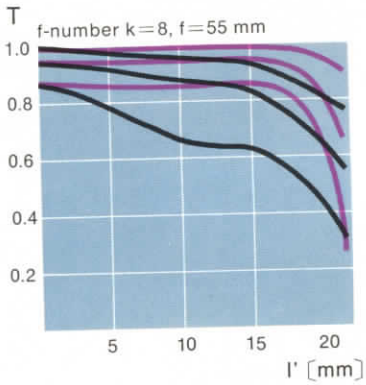


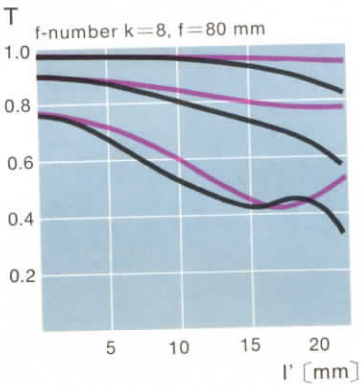


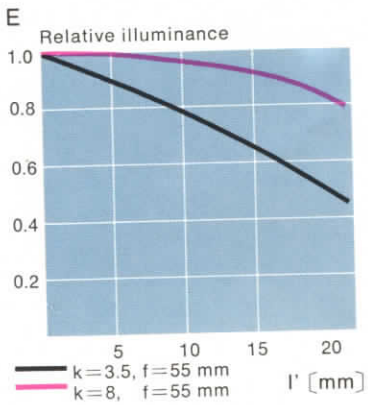
Vario-Sonnar T* f/3.5 40–80 mm

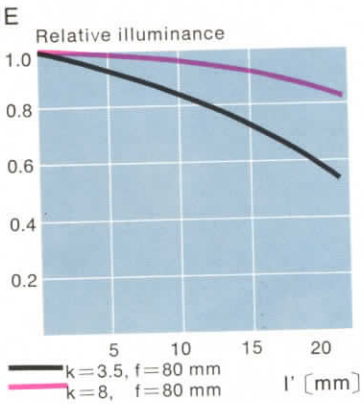

T
f-number k=3.5, f=55 mm
1.0
0.8
0.6
0.4
0.2
5
10
15
20
l' [mm]

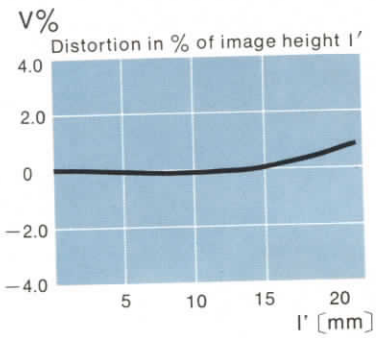

T
f-number k=3.5, f=80 mm
1.0
0.8
0.6
0.4
0.2
5
10
15
20
l' [mm]

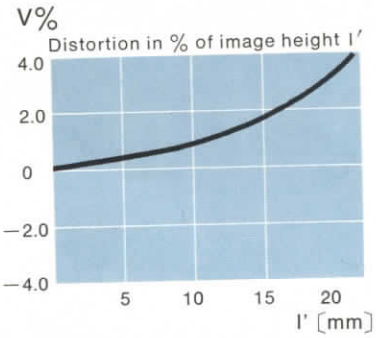

T
f-number k=8, f=55 mm
1.0
0.8
0.6
0.4
0.2
5
10
15
20
l' [mm]


T
f-number k=8, f=80 mm
1.0
0.8
0.6
0.4
0.2
5
10
15
20
l' [mm]


E
Relative illuminance
1.0
0.8
0.6
0.4
0.2
5
10
15
20
k=3.5, f=55 mm
k=8, f=55 mm
l' [mm]


E
Relative illuminance
1.0
0.8
0.6
0.4
0.2
5
10
15
20
k=3.5, f=80 mm
k=8, f=80 mm
l' [mm]


V%
Distortion in % of image height l'
4.0
2.0
0
−2.0
−4.0
5
10
15
20
l' [mm]

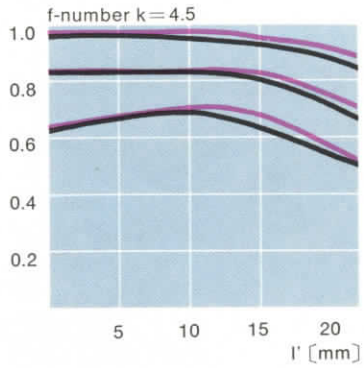

V%
Distortion in % of image height l'
4.0
2.0
0
−2.0
−4.0
5
10
15
20
l' [mm]

The Mirotar is a high speed mirror lens of extremely long focal length. Conventional high speed lenses of extremely long focal lengths show disturbing chromatic aberration at apertures larger than f/8. Such a deficiency is completely eliminated by the use of mirrors instead of lenses.
Since an iris diaphragm cannot be used in this type of lenses, the exposure is controlled by selecting a suitable shutter speed or by using the built-in neutral density filters.
The Mirotar f/4.5 500 mm is by far the fastest lens of this type and is characterized by its capability of focusing down to as close as 3.5 meters from the film plane. It offers a wide scope of use from press photography to wildlife photography.

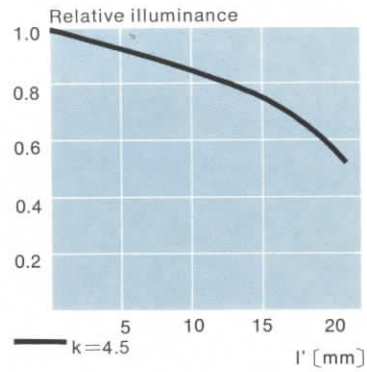
Number of lens elements: 5
Number of components: 5
f-number: 4.5
Focal length: 504.5 mm
Negative size: 24 × 36 mm
Angular field: 5° diagonal
Mount: Contax/Yashica mount
Filter: Exclusive slide type filters (R, O, Y, UV)
Built-in neutral density filters for exposure compensation
Focusing range: ∞ to 3.5 m (11.5 ft)

* Built-in revolving type exposure compensation filters equivalent to f/8 and f/11.

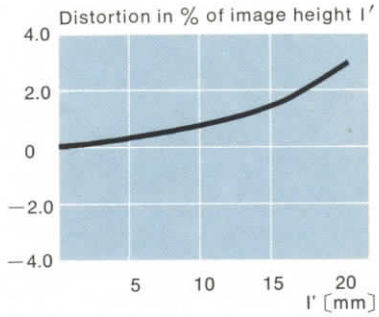
T

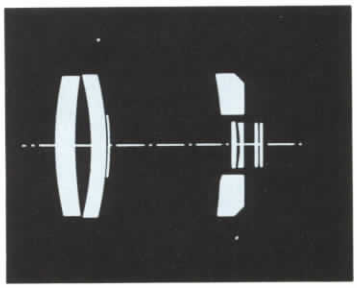


E



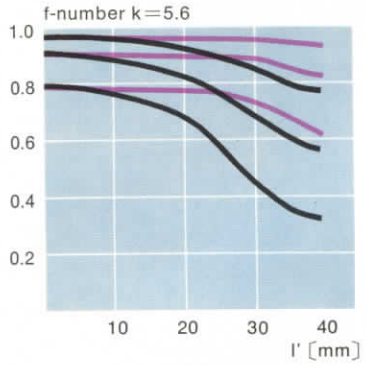
V%



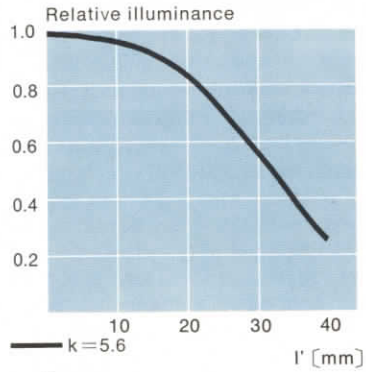


Mirotar f/4.5 500 mm

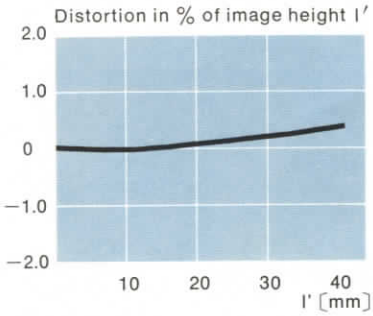
T



E



V%



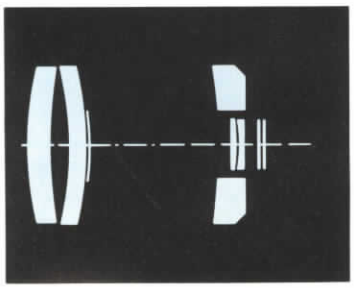
Compared with conventional lenses of the same focal length, this mirror lens is extremely compact and assures unparalled sharpness because of very good overall correction of aberrations. Precision manufacturing of mirrors, lens elements and mounts guarantees uniform image quality over the entire image field. Distant objects are enlarged with the highest degree of definition.

For focusing, the camera is moved back and forth while the lens remains stationary.

The focusing range is much greater than with conventional lenses of the same focal length.

Because of its high speed and comparatively close minimum focus, the Mirotar f/5.6 1000 mm can be used for various photographic applications, including sports, wildlife and other photography, even under unfavorable lighting conditions.

Number of lens elements: 5
Number of components: 5
f-number: 5.6
Focal length: 1020.6 mm
Negative size: Up to 6×6 cm
Angular field: Up to 4.5° diagonal
Mount: Contax/Yashica mount or other specified mount
Filter: Exclusive slide type filters (R, O, Y, UV)
Built-in neutral density filters for exposure compensation
Focusing range: ∞ to 12 m (about 39.5 ft)
* Built-in revolving type exposure compensation filters equivalent to f/8 and f/11.



Mirotar f/5.6 1000 mm

Lens Performance Charts

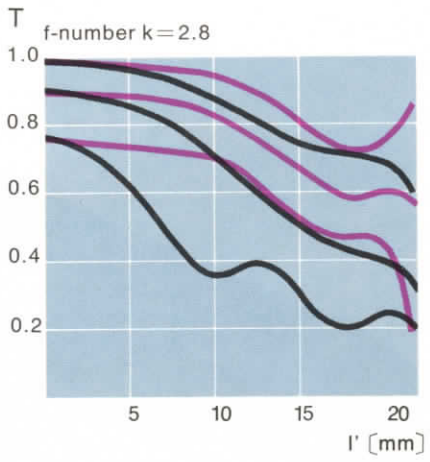
Charts appearing on the preceding pages attest to the high performance standards of the Zeiss interchangeable lenses.
They consist of the MTF diagrams, relative illuminance curve and distortion curve. Refer to the following explanations when reading these charts.

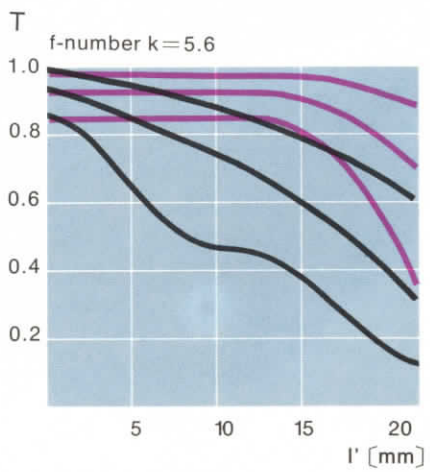
1. MTF Diagrams
The image height l', reckoned from the image center, is entered in millimeters on the horizontal axis of the graph.
The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis.
Parameters of the graph are the spatial frequencies R in periods (line pairs) per millimeter given above the charts. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair.
Above the graph is given the f-number k at 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.)

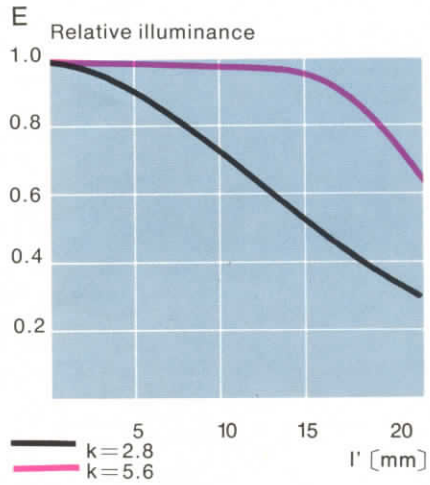
2. Relative Illuminance
In this diagram also, the horizontal axis denotes the image height l' in millimeters and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down aperture.
The values for E are determined taking into account vignetting and natural light decreases. The natural light decrease increases with the factor "cos 4 of the half angular field". It is independent of the design and degree of correction of the lens.

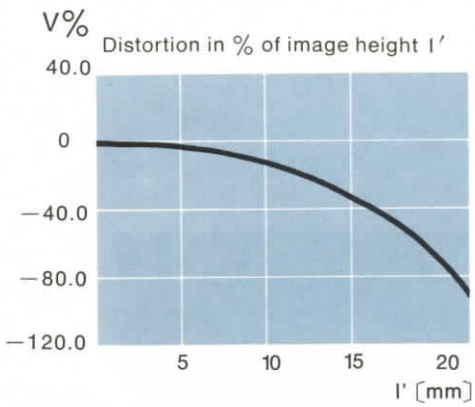
3. Distortion
Here again, the image height l' is entered on the horizontal axis in millimeters. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging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

Modulation transfer T as a function of image height l'
Slit orientation tangential
sagittal
White light
Spatial frequencies R = 10, 20 and 40 periods/mm









(All data subject to amendment.)

Outline of Zeiss Lens Type

DISTAGON

The ZEISS DISTAGON denotes the type of wide-angle lenses with a back focal length (distance between the last lens vertex and image plane) longer than the focal length. Lenses of this type are essential to ensuring the original advantages of single-lens reflex cameras featuring reflex viewfinders.
This lens type is clear proof of the great development achieved so far by ZEISS in the sphere of photographic lenses.
Configurations with eight, nine or even ten lens elements were designed to obtain the unique speed of f/2 for lenses with wide angle coverage, or in other words, extreme angular fields of up to 100° plus unusually high speeds. In spite of their wide coverage the DISTAGON lenses allow unobstructed movement of the deflection mirror in the free space between the last lens element and the image plane.
The DISTAGON, characterized by extraordinary speed, image angle and back focal length, provides remarkably good correction of all aberrations, especially spherical. This is not only proved by the excellent central definition at full aperture, but also by the almost complete lack of focal shift. Once the camera is focused through the reflex viewfinder proper focus is maintained regardless of the f-stop used.

PLANAR

The PLANAR, originally designed in 1896 by P. Rudolph of the ZEISS Works, is a milestone in the development of photographic lenses. It was the first to offer anastigmatic flatness of the image field, excellent correction of spherical aberration, and outstanding correction of chromatic aberration at a relatively large aperture.
The classic PLANAR consists of two strongly curved menisci enclosed by two positive lenses. Each lens-half features the characteristics of a Gauss telescope objective. For this reason this lens type, which has been used by numerous manufacturers, is often referred to as the Gauss-type lens.
In the twenties further reseach led to the development of high-speed f/2 and f/1.4 BIOTAR lenses for 35 mm and cine cameras, and to the f/0.85 for X-ray screen photography.
The famous pre-war lenses have now been succeeded by a new generation, the f/3.5, f/2.8, f/2, f/1.4 and f/0.7 PLANAR lenses. They incorporate all the improvements which have given the post-war PLANARs their leading position.
Due to its excellent and uniform sharpness across the entire image field even at full aperture the PLANAR is a truly universal lens. This applies particularly to its being "tailor-made" for both large-format cameras and single-lens reflex cameras requiring a large back focal length.

SONNAR

The original SONNAR lenses were developed about 30 years ago. As top class, ultra-fast optics, they contributed greatly toward popularization of 35 mm photography. Aside from their superb optical performance, their compact design and short focal length constituted important factors for adapting them for use with the 35 mm rangefinder cameras which had been introduced into the market around that time. Subsequently, a series of new SONNAR lenses was introduced, proving the suitability of this lens type for lenses of longer focal lengths.
Until today, these lenses have been subjected to a series of improvements and the new SONNAR lenses are characterized by high speed, superior definition and also excellent illumination of the image field. They are therefore highly acclaimed by professional and amateur photographers alike as especially suited for portraiture, sports and stage photography, news photography and also for technical purposes.

VARIO-SONNAR

The VARIO-SONNAR offers the advantage of continuously variable focal length, thus serving the purpose of several different focal lenses. Optically and mechanically, it is of the highest available quality. Particularly worth nothing is the fact that it provides a moderately high wide-angle effect. Because of its sophisticated design which is the result of extensive development work employing the most up-to-date computer programming as well as the highest standard of precision applied in its manufacture, the VARIO-SONNAR assures excellent image quality over the entire focal length range. Aside from its superb performance, it features a comparatively compact and lightweight construction.
The focal length is altered through shifting of the optical elements. Cams and clutches control this movement to maintain optimum sharpness on the film plane. These mechanical systems are made so that no sign of wear will occur even after protracted use.
The continuously variable focal length permits most accurate framing of the subject without the bother of interchanging lenses.

TELE-TESSAR

The TELE-TESSAR has a narrow image angle and thus a long focal length in relation to the image format. Its greatest advantage is its compactness. The distance between the front lens vertex and film plane is up to 25% shorter than the focal length in all models.
This lens type, featuring four to six lens elements, is characterized by the long distance between positive front and negative rear components. The latter is relatively small and permits the beam to pass through narrow camera openings.
The compact design of these lenses makes it possible in most cases to install fully automatic diaphragms. Being lightweight hand-held photography is possible with all lenses.
The first TELE-TESSAR lens was developed in the ZEISS factory in 1921 by W. Merte. New glass types with very favorable properties for this kind of lens and extensive research work utilizing electronic computers led to the high quality of modern TELE-TESSAR lenses.
The TELE-TESSAR is specially suitable for photography at large distances, such as in sports and expedition photography. The shallow depth of focus is another characteristic feature of this lens.

Resolving Power and Contrast

Lens manufacturers are frequently asked what the resolving power of their lenses is, on the assumption that the resolving power is a criterion for quality. However, the German optical industry does not disclose any figures concerning resolving power for the following three reasons:

1. The disclosure of figure on the performance of lenses is rather problematical. A proper evaluation of the quality of a lens is possible only if several numerical values are known, which—for example—give information on
- The sharpness of the lens over the entire image area from the center to the very corners of the field,
- The image quality at different lens openings, starting with full aperture,
- The image field illumination (vignetting toward the corners), the distortion, etc.

These performance data must be carefully balanced and different emphasis must be placed on the various values depending on the intended use of the lens, e.g. for general photographic purposes, for portraiture, for enlargements, or copy work. Consequently, only a person fully experienced in the testing of photographic lenses will be able to evaluate such data without the risk of misinterpretations.
Furthermore, any data on the performance of a certain lens is useful only if these values can be fully applied in the regular production run of a given type of lens.

2. When determining the resolving power, it is possible to influence the results quite considerably by using photographic emulsions and development techniques which deviate from the common practice. As a result, as long as no standard specifications exist, manufacturers may be tempted to apply measuring techniques which may upgrade the results but do not correspond to actual conditions.

3. Finally—and this is the main reason why the German optical industry refrains from giving lens resolution figures—the resolving power is not as important a criterion for image quality as is generally believed. This statement will be proved in the following paragraphs.

A number of photos were taken with perfectly uniform image quality over the entire field, so that it is not necessary to balance center sharpness against edge sharpness. Neither do these pictures show any visible vignetting nor distortion. We may, therefore, use these photos without any reservation for comparative image quality tests.
Let us first consider photos 1 and 2. They are both of poor quality. If you had to choose, however, which of the two would you prefer? At first glance, you would probably select photo 2. At least, that is what everyone did who saw the pictures up to now. Photo 2 appears to have much higher contrast than photo 1, the latter giving the impression of being fuzzy. However, if you take a close look, you will notice that photo 1 has a considerably higher resolution and better definition than photo 2 which, upon close examination, is rather unsharp. We do not know for which of the two pictures you will finally settle. Your decision will largely depend on your personal preference. In any case, however, you will certainly not find photo 1 so much better as the resolution figure would have it. Actually, the lens resolution figure for photo 1 is twice as high as that for photo 2.
Let us now turn to photos 3 and 4. Their image quality, or at least the image quality of photo 4, is much better than that of the pictures previously studied. And yet, it is photo 3 which has the higher resolution. But unless we take a very good look, we do not realize it. The higher resolution, therefore,

Figs. 1 - 4: Sample photos demonstrating the significance of resolving power and contrast transfer. Stained glass window at Strasbourg Cathedral, showing Emperor Henry II.

1

2

is of no consequence for the impression created by the picture.
Far more striking examples could be presented in photos of really good image quality. Unfortunately, this cannot be done here because the screens employed in the printing process would destroy the fine detail which we need to prove that a poorer photo actually can have the higher resolution. But with the aid of a trick we can create similar conditions to those encountered in very good pictures. For this purpose, we need only choose a larger viewing distance; in other words, we observe photos 3 and 4 from a distance of, say, 3 or 6 feet instead of from the normal reading distance of approximately 10 in. There will then be absolutely no doubt about which of the pictures is the better one, and we realize of how little avail high resolution can be. The fine detail reproduced in the photo with the higher resolution can no longer be clearly seen. In other words, it does not matter whether it is resolved or not.
Just compare photos 1 and 4 from a distance of about 3 feet. Both pictures have the same lens resolution figure—but what a difference in image quality. It is evident that the resolving power—or at least the resolving power alone—is not the decisive criterion in evaluating the quality of photographic lenses.
At this point the question may be raised whether the poor image quality in photos 1 and 3 may not primarily be the result of softer printing as compared to the printing of photos 2 and 4. The answer is no because all four examples were taken on identical photographic material and treated alike during processing.
But, you will ask, what is it that distinguishes photo 4 with its modest resolution from photo 1 which has the same resolution as 4, and photo 3 with high resolution?
Our comparative photographs have shown that the image quality is not so much determined by the definition of fine detail as by the manner in which the more easily perceptible, larger structural elements in the picture are reproduced. The more faithful the contrast ratio, the better the image quality. It is obvious that the degree of accuracy of contrast rendition in an image depends on how coarse or fine the respective structural elements of the image are. The contrast in very coarse structural elements will always be reproduced to a fairly accurate degree. On the other hand, there is no such thing as "true contrast rendition" as soon as we go beyond the limit of resolution. Details, however, the size of which lies between these two extremes, will not be reproduced absolutely true, but still with more or less good contrast.
In order to get a better idea of the image-forming properties of optical systems, it seems appropriate to look at contrast rendition as a function of the size of a given detail. A very simple method is employed for determining contrast. Screens are used with equidistant white and black lines of the same width. The number of lines in 1 mm space serve as a measure of the size of a detail.

The theory of contrast rendition (in technical literature, generally referred to as "frequency response function" or "contrast transfer function" of the lens and the photographic emulsion), has, in the course of the last 15 years, been discussed in many a scientific publication, and a number of techniques for the measurement of contrast transfer as a function of detail size has been described. These ideas have prompted the optical industry to develop equipment which still require a relatively large amount of mechanical and particularly electronic devices. The use of such equipment is, however, very advantageous, because it permits not only far-reaching automation of optical testing procedures, but will also lead to important new knowledge and thus eventually benefit the quality of optical systems.

(Excerpt from article under same title by E. Heynacher and F. Köber, Zeiss Information No. 51)

3

4

T* Multi-Layer Anti-Reflection Coating

Reduction of glass-to-air surface reflection constituted one of the few fundamental advances made in optics technology this century.

Until a solution to this problem was derived, the optical design of the photographic lenses was restricted invariably to not more than three free-standing components or, in other words, six glass-to-air surfaces. With a larger number of components, multiple reflections at optical surfaces caused so much stray light to reach the image plane that contrast was impaired. Moreover, as a result of double reflection, false-light images were liable to be produced in the vicinity of the film plane; these were then reproduced in the picture as more or less sharply defined light spots usually taking the form of the diaphragm aperture pattern. The number of such double reflections with 6, 8, 10, 12 14 and more glass-to-air surfaces becomes 15, 28, 45, 66 and 91 times greater. The greater the number of these double reflections, the more likely it is that, apart from the more or less diffused contrast-reducing false light, these discrete ghost image would be superimposed on the image of the subject.

In 1817, Fraunhofer notices that reflection at glass surfaces decreases with exposure to atmospheric influences. Similar observations were made later by Lord Rayleigh and Denis H. Taylor.

In 1904, Taylor patented a process in England for anti-reflection finishing by acid treatment. This did not, however, produce constant results and the method gradually faded into obscurity.

The major breakthrough in the field was made at Carl Zeiss in 1935 when Smakula discovered a method suitable for industrial application, wherein thin layers of low-refracting fluorides were vacuum-deposited in specific quantities on to glass surfaces. It was Smakula, too, who was instrumental in fostering the process from laboratory stage to shop floor application and subsequently realizing its widespread application in the optical industry.

Before the end of the Second World War, or just about a decade after the first successful experiments, there were already over a hundred vacuum chambers of Smakula's design in operation. Zeiss was granted a

German patent on the process effective November 1, 1935.

The discovery of anti-reflection coating gave rise to intensive research activity in the field of thin optical coatings. The salient aims of this work were to improve the hardness of the coatings so as to make them resistant for outer surface application as well, to find methods of production other than high-vacuum evaporation, and finally to further reduce the residual reflection of the bloomed surfaces.

In Germany, research was conducted partly by Zeiss and Schott of Carl Zeiss Foundation, by the laboratories of those optical manufacturers interested in the application of the invention, and the physics laboratory of Heraeus in Onstmettingen.

In 1939, a significant step was taken toward reduction of residual reflection by Schott who succeeded in producing the first double coating by applying the so-called gas decomposition method. This was followed by the first triple coating in 1943. The theory of triple-layer coatings was thus developed and, after the war was over, reports appeared on the characteristics of multi-layer coatings.

It is today impossible to say whether it was the prospects for industrial production of thin layers that was responsible for the bounding advances made in vacuum technology or inversely whether the advances in vacuum technology promoted the production of thin layers. Nor is it easy to trace the developments, especially of multi-layer coatings, as it always involves long and tedious work from the development of laboratory prototypes until they can be placed on the production line. In short, the art of multi-layer production lies rather in finding the right single layers of correct refractive indexes and fulfilling various other conditions than in the discovery of a specific layer combination.

In the course of the reconstruction of the Zeiss Works in Oberkochen in 1945, the vacuum units were quickly modernized and research was devoted to multi-layer coatings. Initially, double layers went into production. On lenses of low refractive index for narrow spectral range, this was much more effective than a single layer coating. The main field of application in the photographic sector was filters.

Then, about ten years ago, coating with three or more layers was introduced for objectives of microscopes intended for reflected light work. False light interference is much greater in reflected-light microscopy than in photographic applications.

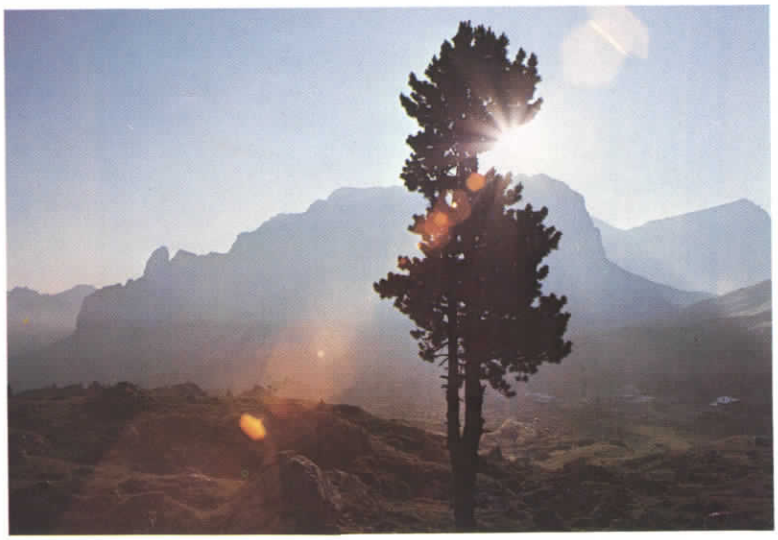
At the beginning of the sixties, Optical Coating Laboratory Inc. of America which had experience in the field of multi-layer coating in association with Balzers AG of Europe, applied these techniques with success in regular coating of glass parts and optics in the aerospace industry.

Carl Zeiss began to attach increasing significance to the switchover from single-layer to multi-layer coating in the photographic sector as the number of glass-to-air surfaces in their lenses grew ever greater. For example, it was not uncommon that ultra-wide angle and zoom lenses had 16 to 18 such surfaces.

The final decision by Carl Zeiss in 1972 to switch over to multi-layer coating had the same significance as the original introduction of the anti-reflection concept had for the optical industry as a whole. It was therefore befitting that Zeiss lenses with the multi-layer coatings, like those predecessor models

marked with the red T, should now be marked with the T plus a star (T*).
The great improvement in suppression of reflection brought about by the T* coating has the following advantages for the photographer:
Truer color reproduction is assured. False light reaching the image area as a result of multiple reflection usually has a color differing from that of the image on which it is superimposed, thus impairing the tones of the image.
Photographs appear more brilliant because contrast is enhanced as a result of suppression of false light. A disturbing whitening is prevented, which otherwise reduces color saturation.
Ghost images which are usually in the shape of the lens opening are completely, or at least largely, eliminated. Transmission of the lens is increased because no light is lost as a result of the interference reaction between reflections at thin layers of non-absorbing substances. Increase of transmission in comparison with the effect of single-layer coating with lenses of not more than six glass-to-air surfaces is normally negligible, but the greater the number of free-standing component in a lens, the more important it becomes.

Photo taken with lens featuring T* multi-layer anti-reflection coating shows hardly any sign of ghost images.



Use of a lens with a single-layer coating shows distracting ghost images when the picture is shot against light.

Uniform, Functional Design

Aside from the superior optical performance, the Zeiss T* lenses are characterized by their functional design.
All lenses, from ultra-wide angle to telephoto, feature uniform exterior design. The functional parts, such as the aperture control ring and the focusing ring, are positioned almost identically. The aperture ring for presetting the lens opening is placed as close to the camera body as possible, while the focusing ring is positioned for most convenient operation. All scales, moreover, have extra-large figures for ready legibility and are color-coded in white and red for error-free reading.
The majority of these lenses have screw-thread filter mounts of identical diameter—55mm and 67mm.
In optical performance standards as well as in functional ease, the Zeiss T* lenses have all qualities to satisfy even the most fastidious users.

F-Distagon T* f/2.8 16mm

Distagon T* f/3.5 15mm

Distagon T* f/4 18mm

Distagon T* f/2.8 25mm

Distagon T* f/2 28mm

Distagon T* f/1.4 35mm

Distagon T* f/2.8 35mm

Planar T* f/1.4 50mm

Planar T* f/1.4 85mm

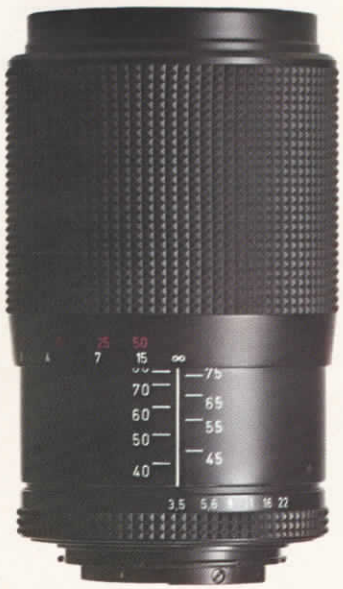
Sonnar T* f/2.8 85mm

Planar T* f/2 135mm

Sonnar T* f/2.8 135mm

Tele-Tessar T* f/3.5 200mm

S-Planar T* f/2.8 60mm



Vario-Sonnar T* f/3.5 40–80mm

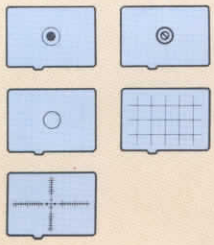
Zeiss T* Interchangeable Lenses

	Lens	Lens Composition	Angular Field	Minimum Focus
Fisheye	F-Distagon T* f/2.8 16 mm	8 – 7	180°	0.3 m
Ultra Wide-Angle	Distagon T* f/3.5 15 mm	13 – 12	110°	0.16 m
	Distagon T* f/4 18 mm	10 – 9	100°	0.3 m
	Distagon T* f/2.8 25 mm	8 – 7	80°	0.25 m
Wide-Angle	Distagon T* f/2 28 mm	9 – 8	74°	0.24 m
	Distagon T* f/1.4 35 mm	9 – 8	62°30′	0.3 m
	Distagon T* f/2.8 35 mm	6 – 6	62°	0.4 m
Standard	Planar T* f/1.4 50 mm	7 – 6	45°	0.45 m
Long Focus	Planar T* f/1.4 85 mm	6 – 5	28°30′	1.0 m
	Sonnar T* f/2.8 85 mm	5 – 4	27°30′	1.0 m
Telephoto	Planar T* f/2 135 mm	5 – 5	18°30′	1.5 m
	Sonnar T* f/2.8 135 mm	5 – 4	18°30′	1.6 m
	Tele-Tessar T* f/3.5 200 mm	6 – 5	12°40′	1.8 m
Macro	S-Planar T* f/2.8 60 mm	6 – 4	39°	M1:1
Zoom	Vario-Sonnar T* f/3.5 40 mm-80 mm	13 – 9	55° – 31°	1.2 m
Reflex	Mirotar f/4.5 500 mm	5 – 5	5°	3.5 m
	Mirotar f/5.6 1000 mm	5 – 5	2°30′	12.0 m

Aperture Range	Filter (Screw-in)	Lens Shade (Slip-on)	Size	Remarks
2.8 – 22	Built in		70.0 × 61.5 mm	Built-in turret type filters (UV, O, Y, B)
3.5 – 22	Built in		83.5 × 94.0 mm	Features floating element; built-in turret type filters (UV, O, Y, B)
4 – 22	70 mm (Slip-on type)	70 mm	70.0 × 51.5 mm	Features floating element
2.8 – 22	55 mm	59 mm	62.5 × 56.0 mm	
2 – 22	55 mm	59 mm	62.5 × 76.0 mm	Features floating element
1.4 – 16	67 mm	70 mm	70.0 × 76.0 mm	Features floating element and aspherical lens
2.8 – 22	55 mm	59 mm	62.5 × 46.0 mm	
1.4 – 16	55 mm	59 mm	62.5 × 41.0 mm	
1.4 – 16	67 mm	70 mm	70.0 × 64.0 mm	
2.8 – 22	55 mm	59 mm	62.5 × 47.0 mm	
2 – 22	72 mm	75 mm	75.0 × 101.0 mm	
2.8 – 22	55 mm	Built in	68.5 × 93.0 mm	
3.5 – 22	67 mm	Built in	77.5 × 128.0 mm	
2.8 – 22	55 mm	59 mm	62.5 × 60.0 mm	
3.5 – 22	55 mm	59 mm	67.0 × 87.0 mm	
			151.0 × 225.0 mm	Built-in revolving type exposure compensation filters equivalent to f/8 and f/11; exclusive slide-in type filters (R, O, Y, UV)
			250.0 × 420.0 mm	Built-in revolving type exposure compensation filters equivalent to f/8 and f/11; exclusive slide-in type filters (R, O, Y, UV)

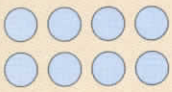

FX-1
YASHICA
FX-1
YASHICA
Distagon 2.8/25
RTS
CONTAX
Planar 1.4/50
Carl Zeiss

System Built Around Zeiss Lenses



Focusing Screens

Rubber Eyecup
Eyepiece Shutter



Diopter Lenses

CONTAX RTS

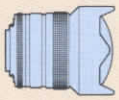
Right-Angle Finder

Magnifier

YASHICA FX-1

Body Cap

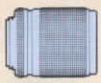
F-Distagon T*
f/2.8 16 mm



Distagon T*
f/3.5 15 mm

Distagon T* f/4 18 mm

Distagon T* f/2.8 25 mm



Distagon T*
f/2 28 mm

Distagon T*
f/1.4 35 mm

Distagon T* f/2.8 35 mm

Planar T* f/1.4 50 mm

Planar T* f/1.4 85 mm

Sonnar T* f/2.8 85 mm

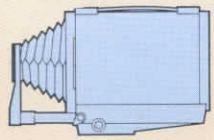
Planar T*
f/2 135 mm

Sonnar T*
f/2.8 135 mm

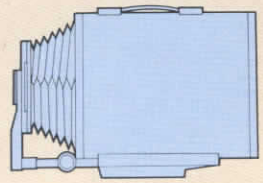
Tele-Tessar T*
f/3.5 200 mm

S-Planar T* f/2.8 60 mm

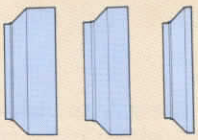
Vario-Sonnar T*
f/3.5 40 mm – 80 mm



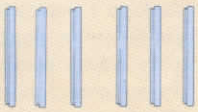
Mirotar
f/4.5 500 mm



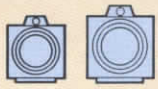
Mirotar
f/5.6
1000 mm



Lens Shades



Filters Softar



Gelatine Filter Holders

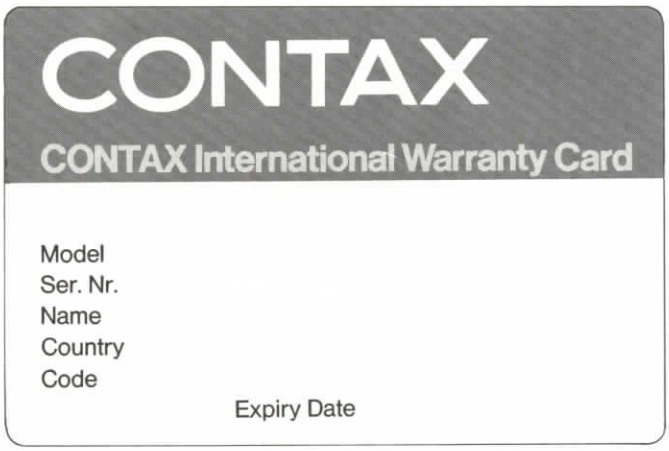
Lens Rear Cap

Lens Cap

Lens Pouch

International Warranty

Every Zeiss interchangeable lens with Contax/Yashica mount carries an international warranty against defects in material and workmanship over a period of twelve months from the date of purchase.
Yashica's worldwide distribution network will be at the disposal of Zeiss lens owners for warranty servicing and repair of lenses.
As its name denotes, this warranty will be effective in all countries of the world.
For further details on the lenses as well as the warranty system, contact your nearest Yashica office or agent.



YASHICA CO., LTD., HEAD OFFICE
27-8, 6-chome, Jingumae, Shibuya-ku, Tokyo 150, Japan
Phone: (03) 400-1411

YASHICA INC., USA MAIN OFFICE
50-17, Queens Blvd, Woodside, N.Y. 11377, U.S.A.
Phone: (212) 446-5566

YASHICA INC., MIDWESTERN REGIONAL OFFICE
120 King Street, Elk Grove Village, Ill. 60007, U.S.A.
Phone: (312) 640-6060

YASHICA INC., WESTERN REGIONAL OFFICE
900 Grand Central Avenue, Glendale, Calif. 91201, U.S.A.
Phone: (213) 247-2140

YASHICA INC., HAWAII OFFICE
Room No. 223, 830 Ala Moana Blvd, Honolulu,
Hawaii 96813, U.S.A. Phone: (808) 533-6534

YASHICA INC., ATLANTA SERVICE STATION
2109 Faulkner Road, N.E., Atlanta, Georgia 30324, U.S.A.
Phone: (404) 636-3535

YASHICA INC., DALLAS SERVICE STATION
Empire Center, Suite 124, 8383 Stemmons Freeway, Dallas,
Texas 75247, U.S.A. Phone: (214) 630-2345

YASHICA EUROPE G.m.b.H.
2 Hamburg 28, Billstrasse 28, West Germany
Phone: 781521

YASHICA HANDELSGESELLSCHAFT m.b.H.
Rotenturmstrasse 5-9/VI, A-1010 Wien, Austria
Phone: 63-54-37

YASHICA AG
Renggerstrasse 71, CH-8038, Zurich, Switzerland
Phone: (01) 438833

Information contained herein are as of October 1975.

Specifications and exterior design subject to change without prior notice.

Printed in West-Germany.