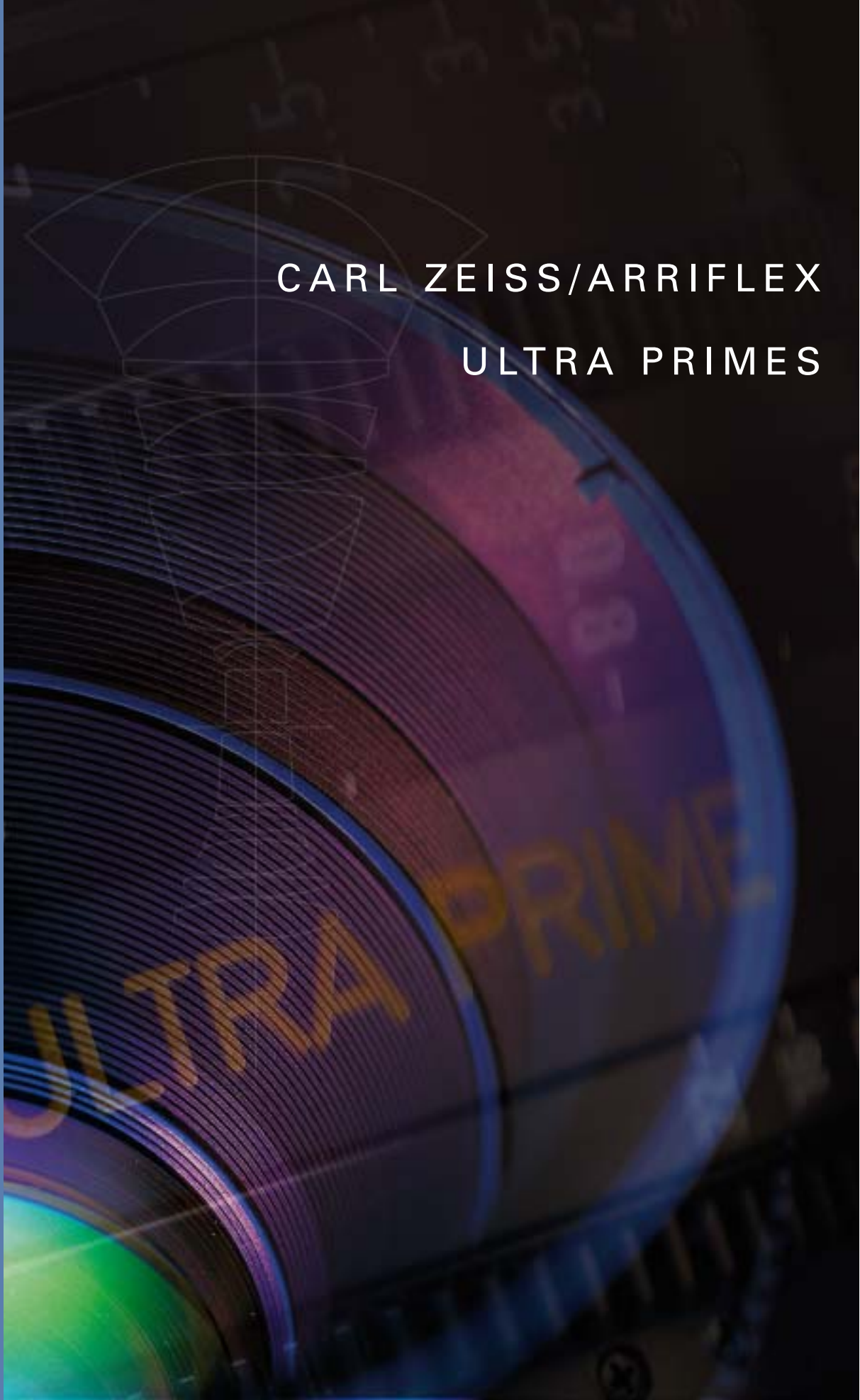
CARL ZEISS/ARRIFLEX

ULTRA PRIMES



ARRI

HIGHEST PERFORMANCE OVER

Fifteen high performance lenses with focal lengths from 10 mm to 180 mm and covering the full Super 35 format, have been developed over years of collaboration with Carl Zeiss. A large team of mathematicians and physicists have translated the latest scientific research findings into practice, among other things employing lead-free and arsenic-free optical glasses. The objective was to create lenses which for the first time completely unite all main characteristics such as focus, contrast, colour saturation, colour uniformity and compactness together with a high speed rating and low aperture-induced focus shift. Additionally the new lens standard was optimized for close-focus, where to date conventional optical concepts have clearly been weak.


THE ENTIRE FOCUSING RANGE

Lenses reach their highest performance at the focus setting for which they have been optimized. This is normally infinity. Beneath that the performance usually drops off, particularly through a considerable increase in image area curvature and increasing aperture aberrations. Because of this, most optics manufacturers limit the minimum close-up setting possibility of their lenses to avoid users from moving too far into this area of lesser performance.

Floating Elements for outstanding close-up Performance

With the ULTRA PRIME lenses, Carl Zeiss introduced and perfected an effective means against: Floating Elements. This is a design principle in which lens groups move in relation to each other during focusing, thereby correcting image area curvature. This principle must be taken into account not only in the optical design but also in the highly precise construction of the mechanical components. Both were achieved for the new ULTRA PRIME lenses allowing for close-up setting possibilities almost up to the front element of these lenses.

Genuine Internal Focus for sensitive Focusing at a constant Optical Length

Conventional lenses change the distance of the entire internal optical assembly relative to the filmplane when focusing.
In practice this brings considerable disadvantages, for example through drift of the gears for focus and iris, displacement of the center of gravity, etc..

All these disadvantages are avoided by the ULTRA PRIME lenses: through their genuine internal focus, the external position of the lens remains constant – for the entire range of focus. Instead of moving the entire internal optical assembly with a large drive mechanism, only small lightweight lens groups in the interior of the lens are moved. This facilitates considerably more sensitive focusing.

Increased Image Contrast according to the latest Research Findings of Carl Zeiss

In response to the extreme demands of advertising photography, for which Carl Zeiss is one of the leading optics suppliers, new methods and materials were developed to suppress stray light and to increase colour saturation. Purer, more intensive colours, especially at full aperture, were thereby achieved.

An important criterion in the optical design was a high MTF value for the rendering of 10 line pairs/mm, a frequency range which is responsible especially for the crispness of the image. On all ULTRA PRIMES over 90 % MTF was attained for this spatial frequency. The extremely uniform brightness across the entire image area augments the impression of sharpness. Colour fringing is no longer perceivable. For the first time the ultra primes – unlike other lenses – were corrected not only for infinity, but also particularly for close-focus. The result: highest quality optical performance over the entire focus range.

10

12

14

16

20

24

28

32

40

ARRI ULTRA PRIMES

50

65

85

100

135

180

Unified Colour Characteristics: Super-Colour-Matched

It goes without saying that the optical glasses were especially selected to ensure unified colour characteristics. As the inventor of optical anti-reflex coating, Carl Zeiss however augments this with a T* multiple-layer anti-reflex coating system for individual lens surfaces, which is adapted so that the colour characteristics (Color Contribution Indices) of all lenses of the entire set lie close together with very narrow tolerances. Put simply: the ULTRA PRIME lenses are super colour-matched.

Precision focusing with constant Optical Length, without Backlash

All lenses in this set have a rigid, very robust housing. The overall length is constant over the entire focusing range. The completely new focus drive mechanics are particularly sensitive and free of backlash.

Iris and Focusing Rings without axial Displacement

The rigid construction creates the prerequisite for an important advantage: the position of the gears for focus and iris does not move axially during focusing. External motor units thereby work more simply and with considerably increased reliability. Also, lens changing becomes much easier, faster and safer.

A NEW OPTICAL STANDA

Nine-bladed and ten-bladed Irises

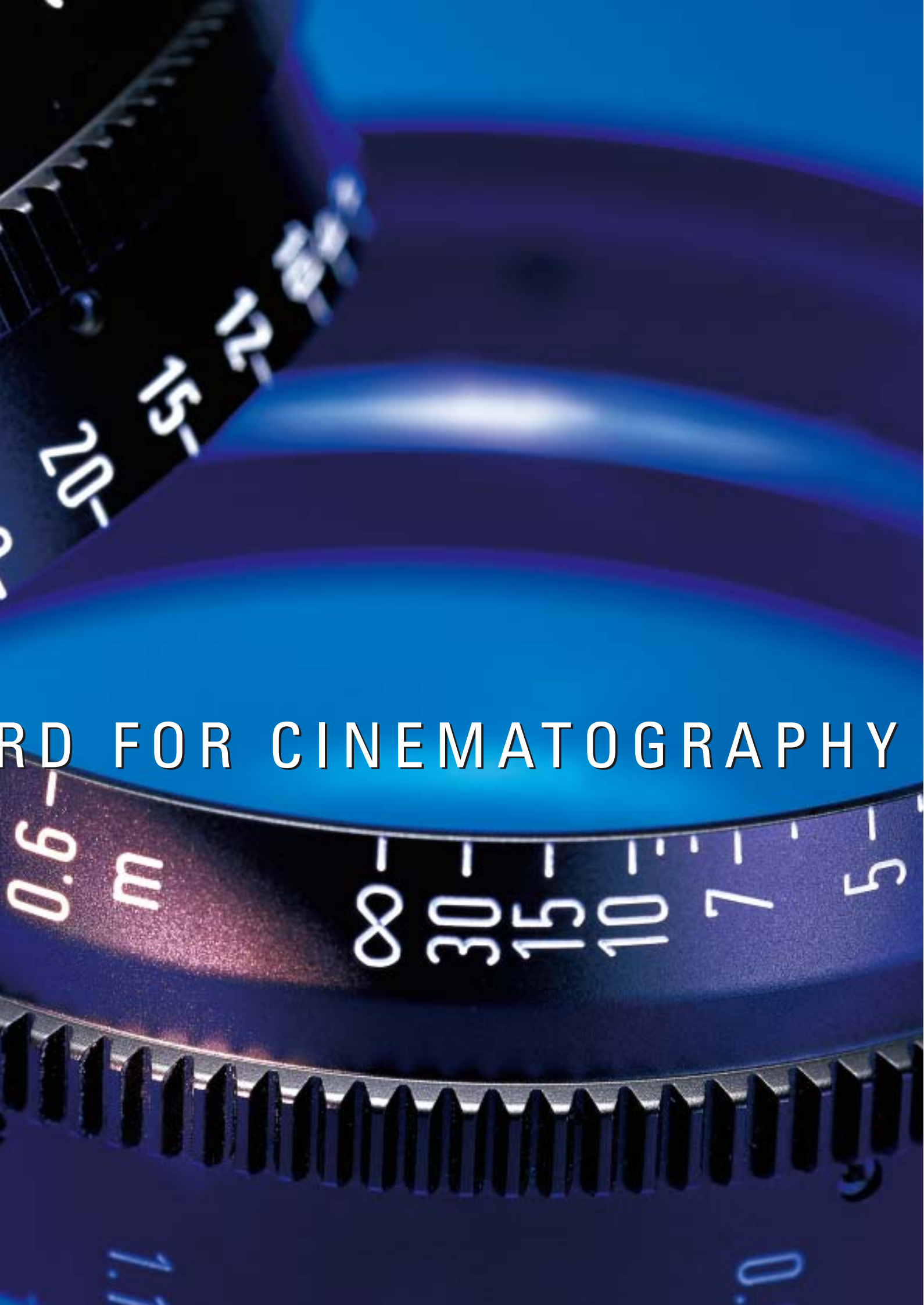
The iris on the ULTRA PRIME lenses is a new design and practically free of hysteresis error. The 135mm focal length employs a ten-bladed construction, the other focal lengths a nine-bladed design. The contours of the aperture are better rounded, and the depiction of unsharp light sources on the film thereby more round than angular – i.e. more natural and aesthetic than technical.

A Concept to meet today's Demands

Quick, sure and efficient operation is more important than ever for today's film productions. Lenses also play an important role in simplifying their tasks. Some advantages of the new lenses at a glance:

- Maximum contrast and resolution over the entire focal range.
- Uniform and constant position of the scales.
- The scales can easily and clearly be read from both sides, as can be the focal length.
- Scales in m or ft can be easily exchanged.
- Uniform overall length of the main focal lengths.
- Uniform weight of the main focal lengths.
- Service-friendly modular design with easily exchangeable front and back elements.

The uniform design principle also offers the rental house many advantages: a high level of modularity simplifies service and reduces necessary tooling equipment and spare parts stock.


RD FOR CINEMATOGRAPHY

TECHNICAL DATA

lens	closest focus setting meter	feet	length in mm	front diameter in mm	weight in lbs	number of lenses	number of groups	MTF value 10 Lp/mm at ∞	horizontal image angle 18 x 24	16 x 22
Distagon 2.0/10	0.35	1	195	156	6.4	16	13	> 90 %	100.2°	90.8°
Distagon 1.9/12	0.3	1	192	156	4.4	16	12	> 90 %	90.2°	85.2°
Distagon 1.7/14	0.22	3/4	164	114	4.0	14	12	> 90 %	80.6°	75.6°
Distagon 1.7/16	0.24	3/4	143	95	3.1	14	12	> 90 %	75.6°	70.8°
Distagon 1.7/20	0.28	1	143	95	2.7	12	11	> 90 %	62.8°	58.4°
Distagon 1.7/24	0.30	1	143	95	2.2	12	9	> 90 %	54.2°	50.2°
Distagon 1.7/28	0.30	1	143	95	2.2	11	10	> 90 %	46.8°	43.2°
Distagon 1.7/32	0.35	1 1/4	143	95	2.4	10	9	> 90 %	41.6°	38.2°
Distagon 1.7/40	0.40	1 1/2	143	95	2.2	9	8	> 90 %	33.2°	30.6°
Planar 1.7/50	0.60	2	143	95	2.2	8	7	> 90 %	26,2°	24.0°
Planar 1.7/65	0.65	2 1/4	143	95	2.2	7	6	> 90 %	21.0°	19.2°
Planar 1.7/85	0.90	3	143	95	2.2	8	7	> 90 %	16.5°	15,2°
Planar 1.7/100	1.00	3	143	95	2.7	8	7	> 90 %	13.7°	12.6°
Planar 1.7/135	1.50	5	170	95	3.5	8	7	> 90 %	10.2°	9.3°
Sonnar 1.8/180	2.60	8 1/2	218	114	5.7	9	7	> 90 %	7.6°	7.0°

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