

CINEMA LENSES





Strict inspection ensures the high quality of the sophisticated lenses.



The first patent of Josef A. Schneider was awarded for a cinema lens in 1910.

SCHNEIDER-KREUZNACH: Cutting-edge technology and market leader

High-quality optical taking and reproducing systems are among the most complex products manufactured in industrial production. As a result, only a few manufacturers have been able to establish themselves on the professional market in this sector. We are proud to be one of them: SCHNEIDER-KREUZNACH has

been synonymous for first-class, high-performance camera lenses for more than 90 years. Cinema lenses have always been an important product range in the versatile range of

SCHNEIDER-KREUZNACH from the very start, and Josef A. Schneider was granted his first patent for a cinema lens in 1910. SCHNEIDER-KREUZNACH subsequently became the clear market leader and now has a share of more than 50% of the global market.

SCHNEIDER-KREUZNACH enjoys the trust of demanding professionals who attach a legendary reputation to such internationally famous lenses as the XENAR, APO-SYMMAR, SUPER-ANGULON or COMPONON. This success is based on a rich vein of experience in lens design while utilizing the latest technologies and has also been secured for the future with the most sophisticated methods of calculation, design, production and testing.

The corporation won its first Technical Achievement Award of the Academy of Motion Picture Arts and Sciences, the technical Oscar of the movie industry, for a converter in 1976; this was followed by an award for the CINELUX-ULTRA in 1978, for the SUPER-CINELUX 35 in 2000 and again for the CINELUX PREMIÈRE in 2005. The same level of quality is also shown by all other SCHNEIDER-KREUZNACH cinema lenses which are developed and produced only in Bad-Kreuznach and which provide the optimum solution for every application in professional cinema projection. Every single lens undergoes a strict final inspection and every model is available ex stock.





Cinema projection

High-performance cinema projection lenses for all current film formats, anamorphic lenses and conversion lenses, wide-angle projection lenses for 70 mm film with 8 or 10 pitch, test films for 35 mm projection.



Digital projection

A new cine-digital series for digital high-performance projectors, with lenses tightly staggered in fixed focal lengths, and anamorphic projection lenses which can be relied on for contrast and sharpness of detail. The areas of application of these new lenses extends from d-cinema through e-cinema and home-cinema up to presentation of computer simulations.



B+W filters

The leading brand for demanding professionals and amateur photographers for creative photography in conjunction with best image quality: correction and contrast filters for color and black & white photos, Käsemann polarization filters, close-up lenses, softeners, most of them with SLIM-mounts for pictures free from vignetting with wide-angle zoom and fixed focal-length lenses.



CCTV/OEM

Infrared-corrected CCTV lenses, high-resolution C-mount lenses, and macro systems for image processing and non-contact measurement technology, as well as customized development and manufacture of optical and mechanical components.



Photo-optics

Photographic and enlarging lenses of the very highest order for all areas of professional photography, both analog and digital, from 35 mm to large format.



Ophthalmic optics

Eyeglass lenses in glass and plastic; single-vision, multifocal, and progressive addition lenses in high-index materials with a special lens design for better appearance and wearing comfort.



Servo-hydraulic system

Electro-hydraulic and electro-pneumatic servo valves with high-grade electronic control units for precise position, speed, power, and pressure adjustments in machine construction.



Schneider - KREUZNACH
LENS MADE IN GERMANY

Première

4 2.8 2 1.7

CINELUX PREMIÈRE

25 lenses with focal lengths of 32.5 to 100 mm, stepless aperture f/1.7... f/4.0



High-performance lenses with aspheric surfaces and a variable iris diaphragm



A large maximum aperture of f/1.7 for an increase in brightness of up to 40% over conventional standard lenses with an aperture of only f/2.0.



An iris diaphragm with stepless adjustment from f/1.7 to f/4.0 for the optimum matching of brightness to the different cinema projection formats with 12 blades for an almost circular aperture to minimize diffraction.

Multiplex theatres with large screens make very high demands on the projection lenses. Our new lens series opens up new design possibilities for cinema presentation in an unsurpassed combination of brightness, flexibility and imaging: Aspheric technology has been combined with adjustable iris diaphragms for the first time. This allows a uniformity of illumination to be achieved over the total image field right from the maximum aperture of f/1.7 – something previously thought impossible. Stopping down a little can actually even increase the already excellent imaging performance.

The integrated variable diaphragm makes it possible for the first time to match the brightness level of the different cinema formats to one another without changing the projector setting.

The depth of field can be visibly increased by stopping down the lens; possible problems with oblique projection or when projecting with subtitles can thus be countered more easily. The marginal sharpness of the image when projecting onto a screen with greater curvature is likewise improved.

With a fully open aperture, the lamp power of the projector can be reduced over that of a Super-Cinelux 35 lens with the same brightness so that less power is consumed; in addition, the service life of the xenon lamp is thus considerably longer.



CINELUX PREMIÈRE 1.7/32.5



CINELUX PREMIÈRE 1.7/60



CINELUX PREMIÈRE 1.7/80

4
5



Multiplex cinema comparison test of screen illumination

The revolutionary Cinelux Première lenses project up to 40% more light than conventional f/2.0 lenses and feature exceptionally uniform illumination right into the corners thanks to high color saturation, deep black and extremely high contrast. Their stepless stopping down capability permits an increase in depth of field (e.g. for a curved or slanted screen). The high resolving power of the Cinelux Première lenses is likewise characterized by amazing consistency over the total image area irrespective of the screen size.

The two figures to the right show the results of comparative measurements of the image brightness and image homogeneity with a standard 40 mm f/2.0 projection lens (top) and the new Cinelux Première (bottom). The measurements were taken in a multiplex cinema using a USL Light Meter™. The two rectangles at the right represent the screen size. The gray areas in the 45 different measurement fields correspond to the relative brightness measured at the center of each measurement field with respect to white = brightest part of the screen center. The numbers show the luminance in foot-lamberts.

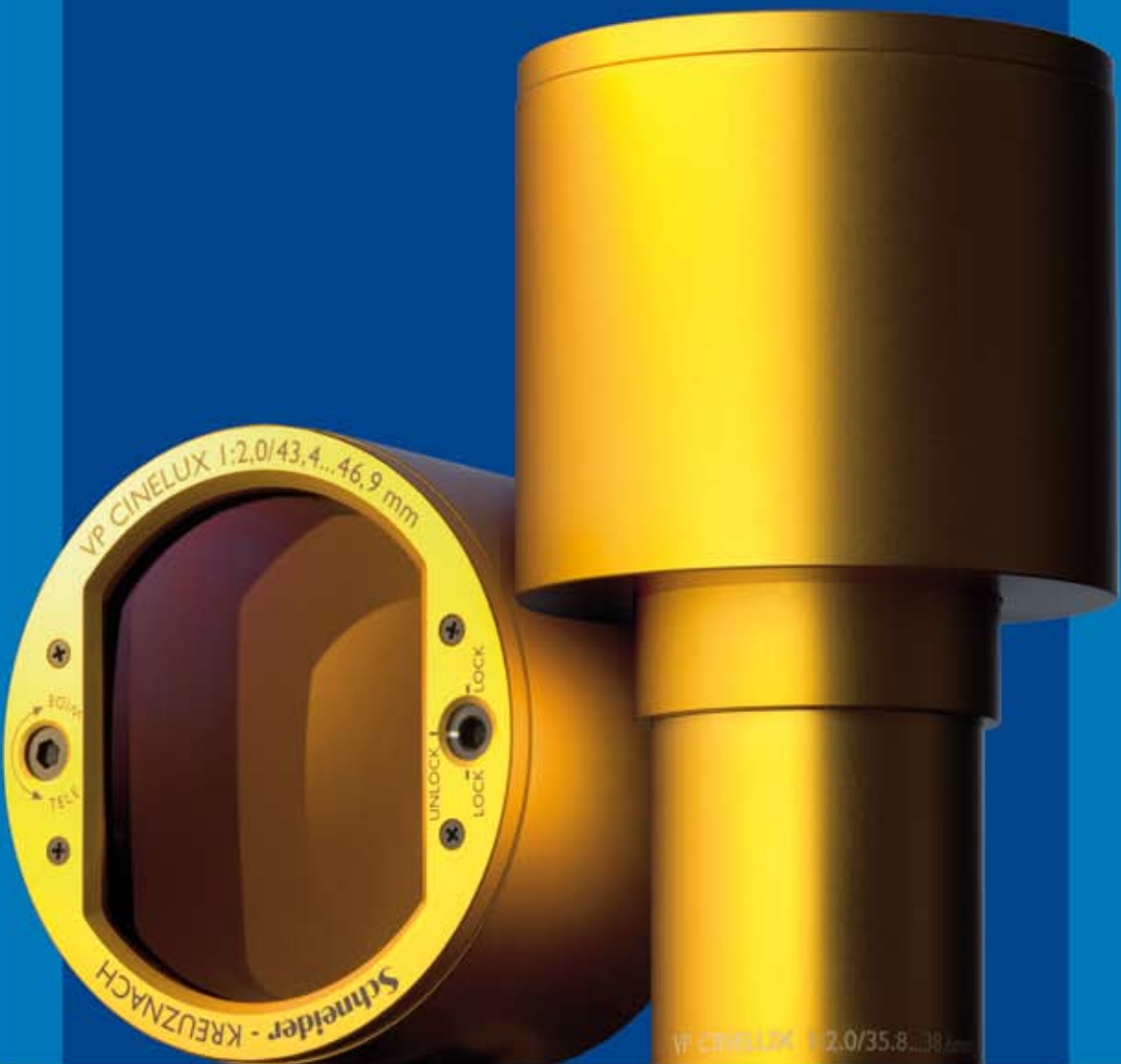
3.5	4.6	5.6	6.2	6.6	6.4	5.8	5.2	4.2
5.0	6.2	7.6	8.6	9.0	9.0	8.0	7.0	5.6
5.6	7.0	8.0	9.0	9.4	9.2	8.2	7.2	5.6
5.8	7.0	8.0	8.8	9.0	8.8	8.0	7.0	5.4
5.0	6.4	7.2	7.8	8.2	7.8	7.0	6.0	4.4

Standard projections lens 2.0/40

7.0	8.4	9.6	10.2	10.4	10.4	10.2	9.4	8.2
8.0	9.4	10.4	10.8	11.0	10.8	10.4	10.0	8.8
8.6	10.0	10.8	11.0	11.0	11.0	10.4	10.0	8.8
8.8	10.0	10.6	10.8	10.6	10.6	10.4	9.8	8.6
8.4	9.6	10.2	10.4	10.4	10.2	9.8	9.2	8.0

Cinelux Première 1.7/40

CINELUX PREMIÈRE



VP CINELUX 1:2,0/43,4...46,9 mm

Schneider - KREUZNACH

UNLOCK
LOCK
Lock

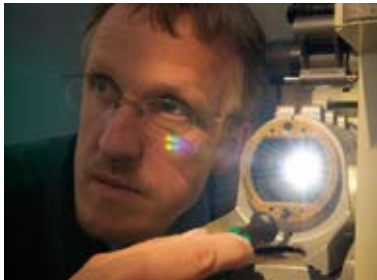
VP CINELUX 1:2,0/35,8...38 mm

VP-CINELUX

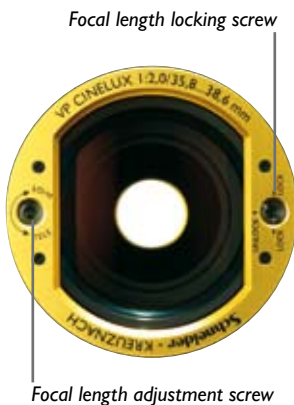
13 lenses with overlapping variable focal lengths of 28.9 to 63.7 mm, aperture f/2.0



Perfect, full-format screen illumination due to precise focal length adjustment



Precise focal length adjustment according to the screen size and distance can be done from the comfortably accessible front side.



If visitors to the Museo Centro de Arte Reina Sofia in Madrid could only see 92% of Pablo Picassos masterpiece “Guernica” due to space limitations, there would be an uproar. However, a similar problem often occurs in cinemas with large screens if the focal length of the projection lens is not matched precisely to the screen size.

This no longer has to be the case: the “Variable Prime” lens series VP CINELUX covers all focal lengths from 28.9 mm to 63.7 mm steplessly for the film formats 1:1.37; 1:1.66; and 1:1.85 with 13 lenses. Every VP-CINELUX projection lens allows a precise adjustment of focal length within its specific range; the fine-tuning of the projection image to the screen size can be carried out easily when the test film CLT is running.

A tool is supplied with which the lock can be set to the “UNLOCK” position; then a mid-range focal length is set and the lens mounted in the lens holder of the projector. The focus is set while the test film is running and then the lens is fixed in place in the lens holder. The image size can now be adjusted using the sensitive focal length setting with reference to the format limitations of the test film CLT. Finally, the lens is fixed in the “LOCK” position and, if necessary, the focus corrected again.

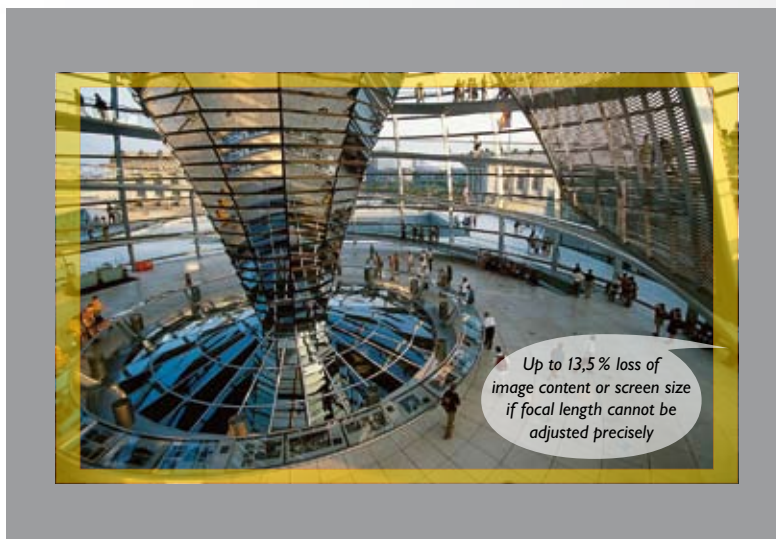


VP-CINELUX 28.9...31.2



VP-CINELUX 35.8...38.6

6
7



No image area loss thanks to a stepless focal length

With a fixed screen size and also an unchanging projection distance, a projection image size can result in the most unfavorable cases – even with a very sensitive focal length selection – which is up to 7% wider or narrower than the screen itself. This represents an areal maladjustment of up to 13.5%.

The steplessly adjustable focal length of the VP-Cinelux lenses avoids this problem and permits a loss-free projection of the full image content in full-screen size – for optimum cinema enjoyment.

VP-CINELUX

SUPER-CINELUX 2 / 77,5 mm

35mm FILM

SUPER-CINELUX

14821630



SUPER-CINELUX 35

29 lenses with focal lengths of 24 to 100 mm in very small steps, aperture f/2.0



The award-winning standard series with finely stepped focal lengths from 24 mm



In 2000 the designer team of the lens series SUPER-CINELUX 35 received the technical Oscar of the movie industry in Hollywood.

Employees of SCHNEIDER-KREUZNACH won a Technical Achievement Award of the Academy of Motion Picture Arts and Sciences for this cinema lens series in 2000 – the third such award, for they had already won this technical Oscar of the movie industry for a converter and for the Cinelux-Ultra (in 2005 they won their fourth award for the Cinelux Première). This explains why Schneider cinema lenses are almost always chosen when it is a question of satisfying the highest demands in projection quality.

Schneider Super-Cinelux 35 lenses are available from a focal length of 24 mm in small steps of 2 mm and 2.5 mm (up to 30 mm and 85 mm respectively; then in 5 mm steps up to 100 mm). This permits a very precise matching of the focal length to the respective screen size and to the projection distance. Only in this way can the full quantity of light and all image information be transmitted to the screen and not reduced by image masks.

The extremely low distortion due to the sophisticated design and the large depth of field ensure perfect image transmission for the highest demands on straight screens, slightly curved screens and also in very large movie theaters. This makes the Super-Cinelux 35 the first choice of “cinema makers”. It is naturally always available ex stock and so just-in-time if necessary.



SUPER-CINELUX 35 2/24



SUPER-CINELUX 35 2/42.5



SUPER-CINELUX 35 2/67.5



SUPER-CINELUX 35 2/100



Optimum adjustment thanks to very fine focal length steps

The 29 models from 24 mm to 100 mm focal length of this cinema lens – winner of the Technical Achievement Award – permit an almost loss-free adjustment to every customary screen size and to every projection distance for optimum image brightness and reproduction of the full, uncut image content.

Since it is often only possible to determine the ideal focal length just before the opening of a newly fitted movie theater, the fast availability of all models ex stock is an important selection criterion.



CINELUX-ULTRA

13 lenses with focal lengths of 105 to 180 mm for long distances, aperture f/2.0 to f/2.8



Award-winning high-performance lens for very large projection distances



The very long projection distances relative to the screen size at many open-air events require much longer focal lengths. The 13 models of the Cinelux-Ultra series are then the optimum projection lenses, also for wide-screen projection in combination with the Cinelux anamorphic attachments.

Employees of SCHNEIDER-KREUZNACH won their second Technical Achievement Award of the Academy of Motion Pictures Arts and Sciences for this cinema lens series (or more precisely: for its then version) in 1978. This series extends our cinema lens program to include long focal lengths over 100 mm such as are always required when the projection distance is particularly long with respect to the screen size, e.g. with very big movie theaters and for most open-air events.

The extremely high resolving capability up to the image corners and the astounding brilliance ensure that even the smallest image details are reproduced clearly even at large projection distances. Another remarkable feature is the extremely uniform brightness distribution over the total screen area.

The Cinelux-Ultra series harmonizes to perfection with the WA-Cinelux Anamorphic 2x MC and, for even larger projection distances, with the Tele-Cinelux Anamorphic 0.5x MC. Suitable extension tubes are available to combine the anamorphic lens with the base lens – see Accessories on page 24.

The Cinelux-Ultra lenses up to 150 mm focal length are suitable for 35 mm film and 70 mm film; the larger focal lengths are only suitable for 35 mm.



CINELUX-ULTRA 2/115



CINELUX-ULTRA 2.8/180

10
11



Aspect ratio of the projected image

1:1.37

Old standard format from 1931, used only with very old movies

1:1.66

Standard format since 1953, very popular in Europe

1:1.85

Flat widescreen since 1953, still used worldwide

1:2.39

Cinemascope since 1952 (anamorphic)

35 mm and 70 mm formats

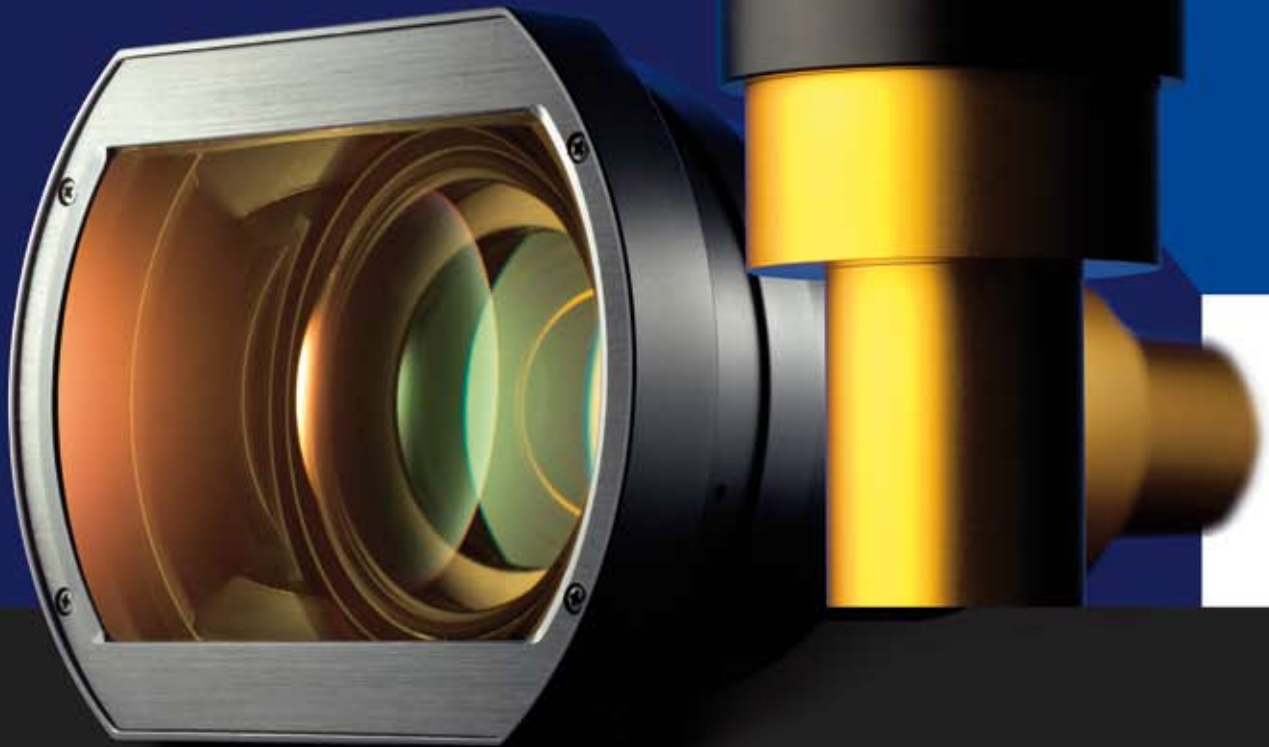
The traditional film format of the professional cinema film is the vertically running, perforated 35 mm film. Since the soundtrack runs on a side next to the perforation, a width of only around 21 mm is left for the film image. Depending on the image aspect ratio (1.33 to 2.65) and any possible anamorphic compression, a number of different image heights are customary.

To increase the image quality, 35 mm film has also been used running horizontally for larger film sizes and 70 mm film was introduced (with aspect ratios up to 2.76). However, the taking format (nega-

tive) may be different from the reproduction format (positive). The negative is often taken in a larger size to have reserves for the loss of quality on multiple copying.

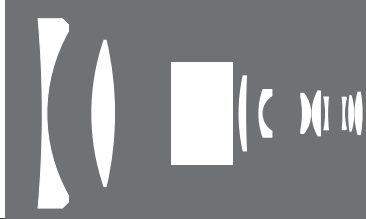
Only the positive size is important for the choice of the projection lens. So that the variety of image sizes and aspect ratios can be projected onto the screen size of the movie theater without loss and as large as possible, cinema lenses are required with very finely stepped focal lengths or steplessly adjustable focal lengths. This means that every customary film size and aspect ration can be shown in optimum size when required.

SCHNEIDER OPTICS
19mm f2.0



SUPER-WIDE-CINELUX

2 lenses with focal lengths of 19 and 21 mm for giant screens, aperture f/2.0



A projection angle of unsurpassed size illuminates even huge screens



The fascination of the IMAX™ cinemas is substantially based on the huge-sized screen image which fills practically the whole visual field and so puts the viewer right in the middle of the action. The huge image area of these cinemas, however, requires excellent lenses with very short focal lengths for the best possible details with standard film presentation.

Cinema projection onto large screens which the audience can practically no longer take in completely without head movement makes the viewers forget the real world and gives them the feeling they are actually in the middle of the movie action. Achieving this desired illusion was previously often impossible because the projection spacing was not sufficient for the screen size required for this. This dream can now become reality with the Super-Wide-Cinelux lenses of SCHNEIDER-KREUZNACH with their sensation-ally short focal lengths. The focal lengths of 19 mm and 21 mm permit projection distances up to around 20 % shorter than cinema lenses with the previously widest angles or, with the same projection distance, up to around 25 % larger screen widths and heights (up to around 56 % more area)!

To achieve a brilliantly bright projection image even with huge screen sizes, these exceptional cinema lenses offer the large aperture of f/2.0 for the aspect ratio format of 1:1.85 and have a very uniform light distribution despite their extremely large projection angle.

The definition of these optical giants naturally also satisfy the highest demands right up to the corners for IMAX™ cinemas, theme parks and other movie theaters where standard film should be projected onto the largest over-dimensional screens.



SUPER-WIDE-CINELUX 2/19



SUPER-WIDE-CINELUX 2/21

12
13

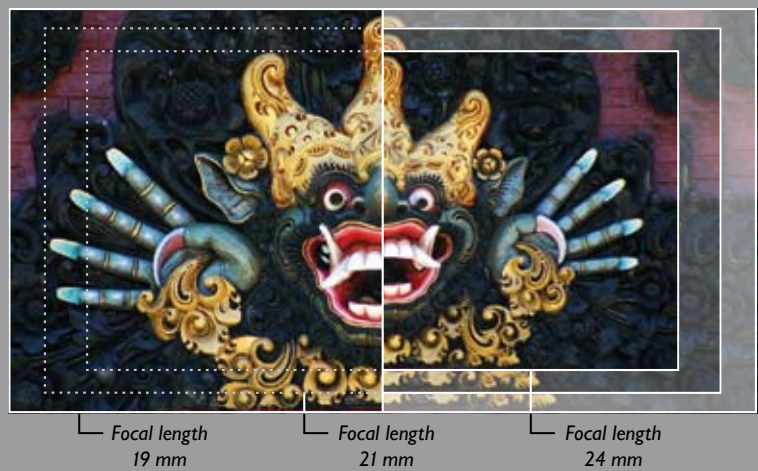


Lenses for larger pictures

The format comparison opposite shows by how much the projection image can become bigger with the same projection distance with the extremely short focal lengths and the resulting image angles of these Super-Wide-Cinelux lenses.

This makes a huge projection image possible in many movie theaters, even with a restricted room depth. The result is an overwhelming effect which draws in every viewer and which makes the movie a “real” experience. An overpowering impression is possible in larger movie theaters even with normal films on a large screen.

Projection image sizes at the same distance



SUPER-WIDE-CINELUX

SUPER-CINELUX 2 / 50 mm 1,97 in
70 mm FILM 8 perf



SUPER-CINELUX 70

16 lenses with focal lengths of 29 to 100 mm for 70 mm film, aperture f/2.0 to f/2.8



The exclusive 70 mm premium format requires the best possible lens quality



The 70 mm film with much larger images requires a substantially larger image circle and also makes much higher demands on the resolving power of the lenses. The Super-Cinelux 70 series for 70 mm film meets these demands to perfection.

The film image area on 70 mm film can be up to 10 times larger and can show up to 10 times as many details – provided that the projection lens offers such a high resolving power. The Super-Cinelux 70 lenses with six, seven and more lens elements are optimized for this demand and for the largest screen formats. The image field curvature is adapted to the film curvature in the projector and provides the highest possible sharpness, which is also very uniform, over the full format up into the image corners. A further increase in the MTF values has been made possible by the use of high-quality optical glass. An innovative optical design reduces the distortion and the lateral chromatic aberration.

The Super-Cinelux 70 lenses have a mount diameter of 70.65 mm and are often used with a 4" special tube (101.6 mm) – see Accessories on page 24.

The main area of application for these lenses can be found in theme parks, attraction cinemas and planetariums. Their exceptional imaging also makes them a popular choice for simulations and for professional medium-size transparency projections.

In the longest focal length region of more than 100 mm, this lens series is supplemented by the Cinelux-Ultra lenses which are available for 70 mm film in the focal lengths 105 to 150 mm with fine focal length steps of 5 mm - see page 11.

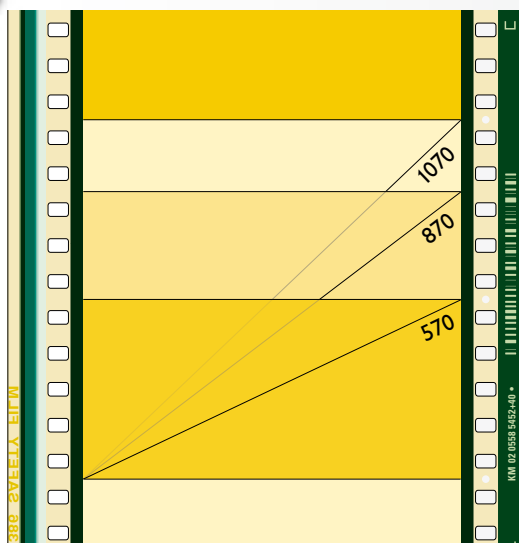


SUPER-CINELUX 70 2,8/29



SUPER-CINELUX 70 2/65

14
15



All three 70 mm film formats in original size. Format 570 provides a wide screen image without an Anamorphot while formats 870 and 1070 provide a larger image height.



This symbol indicates that the cine-lenses project 70 mm film formats either with image heights up to 5 or up to 8 or up to 10 perforations without vignetting.

Quoting the film sizes

To ensure that a film size can be projected without vignetting, the projection lens must have an image circle diameter that is at least as large as the film image diagonal.

However, quoting an image circle diameter is not customary. It is rather the film width in millimeters which is quoted as an indication of the maximum film image format for a lens, with this width being preceded by the number of perforations as the image height. For instance, the number 535 indicates that the lens can project images up to 5 perforations in height on 35 mm film without loss.



CINELUX PREMIÈRE ANAMORPHIC

21 lenses with focal lengths of 42.5 to 100 mm, stepless aperture setting f/1.7... f/4.0



The brightest anamorphic lenses for extremely large Cinemascope® screens



Cylinder lenses are the essential optical components of an anamorphic system. They widen the projection angle horizontally without altering it vertically (as the model on this page does) or they compress the angle vertically without altering it horizontally (as the Tele-Cinelux Anamorphic 0,5x on page 21 does).

These lenses are composed of the excellent Cinelux Première base lenses and the proven ES-Cinelux-Anamorphic 2x attachment lenses and are designed for extremely large screens. They represent the fastest Cinemascope® combinations and are characterized by, among other things, extremely good imaging (detail reproduction, modulation transfer) thanks to the use of aspheric lens elements.

The sensational light output due to the large aperture and high transmission and the ideally uniform light distribution (see also the figures at the bottom of page 5) provide the brightest possible image with substantially lower drop-off to the corners than previously possible even with the largest screens and with the shortest base lens focal length of 42.5 mm.

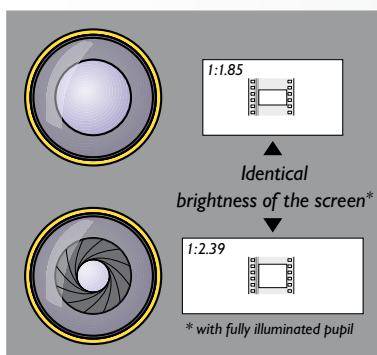
The variable iris diaphragm of the Cinelux-Première base lenses (see page 5) can be used, on the one hand, for the individual adaptation of the illumination with different film sizes and for the balance of the brightness loss due to lamp ageing and, on the other hand, both for the increase of the depth of field for screens with greater curvature and for a further improvement in the uniformity of illumination.

The focusing and its locking take place at its front with the supplied special tool and can also be carried out with the lens in place. The special tool prevents accidental displacement by unauthorized persons.



CINELUX PREMIÈRE ANAMORPHIC 1.7/62.5

16
17



With correctly adjusted illumination optics of the projector, a variation range of 2.5 f-stops between the fully open aperture f/1.8 and f/4 allows the setting of the aperture for identical brightness of the image for all film and screen formats used in the same movie theater.

Balancing the brightness

When film formats of different sizes have to be projected at different imaging scales for the respective optimum utilization of the screen size, different image brightness values will normally result. This problem is now a thing of the past thanks to an iris diaphragm which is steplessly adjustable from f/1.7 to f/4.0, that is over 2.5 f/stops.

To achieve the largest possible uniform brightness with all film formats used, the aperture of the lens is fully opened for the film size projected in the largest imaging scale and is then stopped down to identical brightness for the other sizes.



The iris diaphragm can be steplessly adjusted at this setting ring of the base lens Cinelux Première both for the brightness adjustment and the increasing of the depth of field.

CINELUX PREMIÈRE ANAMORPHIC

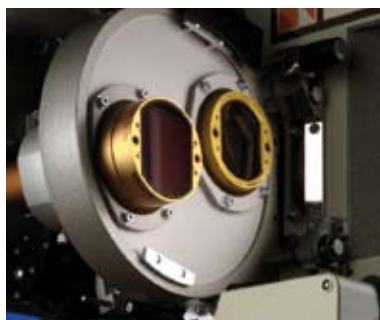


ES-CINELUX ANAMORPHIC

21 lenses with focal lengths of 42.5 to 100 mm, aperture f/1.7... f/4.0



A reliable standard series of anamorphic cinema lenses in small focal length steps



Whenever highest imaging quality matters, Schneider lenses are the best choice.

This renowned first-class series of compact anamorphic cinema lenses guarantees Cinemascope® wide-screen projection at the highest possible level. It offers the perfect solution for many projectors with lens revolvers when it is a question of installing anamorphic projection and is the currently most successful Schneider cinema lens series.

As with all anamorphic lens systems, the lenses here also consist of a base lens to produce the image and a preceding anamorphic lens for the horizontal stretching of the image for the wide-screen format. The optical design of the base lens is based on the proven Super-Cinelux 35 which won the Technical Achievement Award of the Academy of Motion Picture Arts and Sciences in 2000, and it has become the standard for modern multiplex cinemas in combination with it.

The extremely precise focusing drive (microfocus) at the front of the lens barrel facilitates the setting of the best sharpness and its front flush finish without any protruding parts makes a combination in the lens holder possible without vignetting with wide-angle lenses of up to 42.5 mm focal length. The focusing and its locking can also be carried out with the lens in place with the supplied special tool (Allen wrench). The special tool prevents accidental displacement by unauthorized persons.



ES-CINELUX ANAMORPHIC 2/65

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19

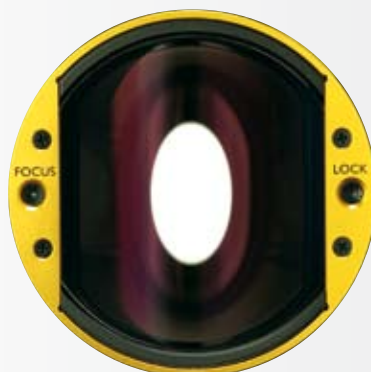


Focusing of the base lens and the anamorphic lens

Anamorphic lenses make a focusing of the base lens and of the preceding anamorphic element necessary and the following order has to be observed:



1. The projection distance is roughly set on the side scale by turning the FOCUS hexagon socket head screw with the supplied Allen wrench.



2. While the test film CLT is running, the projection image for the horizontal structures (lines) is focused using the standard focusing device of the lens holder or of the lens revolver of the projector. The marginal zone of the projection image must also be considered.

3. If the vertical structures (lines) are not yet fully in focus, the Allen wrench should be used to adjust the FOCUS screw for fine focusing. If the horizontal structures go out of focus while doing this, steps 2 and 3 should be repeated.

ES-CINELUX ANAMORPHIC



SCHNEIDER-KREUZNACH TELE ANAMORPHIC 054

SCHNEIDER-KREUZNACH MC

∞ ←
17.35 ∞ ft
5.10 ∞ m
→ 5m

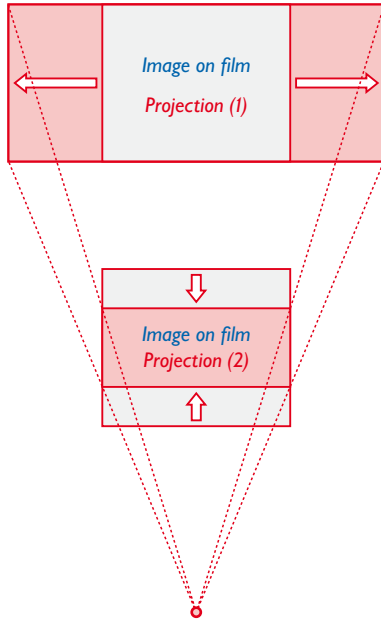
Schneider-Kreuznach



WA/TELE-CINELUX ANAMORPHIC

2 models for lenses with focal lengths of 100 mm resp. 65 to 180 mm of any aperture

High-performance lens attachments for anamorphic image widening



While the WA-Cinelux Anamorphic attachment stretches the horizontally compressed film image by a factor of 2 horizontally (1), it now also compresses the height of the Tele-Cinelux Anamorphic attachment (2). This admittedly then likewise corresponds to a correctly equalized image, but one which is only half the width and height. It must therefore be projected to twice the screen distance to obtain the full screen size like with a lens of twice the focal length.

These two anamorphic lens attachments with known good imaging performance and precise, lockable focus are now even easier to use with their extended 70.65 mm tube. The WA-Cinelux Anamorphic widens the projection horizontally by a factor of 2 and the Tele-Cinelux Anamorphic compresses it vertically by a factor of 0.5, which corresponds to a horizontal widening by a factor of 2 with a simultaneously doubled focal length.

The WA-Cinelux Anamorphic 2x can be combined with lenses from a focal length of 45 mm on principle; however, the more favorably priced and more compact anamorphic lens combinations ES-Cinelux Anamorphic 2x and Cinelux Première Anamorphic 2x are available for focal lengths from 42.5 to 100 mm. The WA-Cinelux Anamorphic attachment is therefore specifically recommended for lenses from 100 to 180 mm.

The Tele-Cinelux Anamorphic 0.5x is the ideal solution for large projection distances. It can be used with extension tubes on lenses from 65 mm (effectively 130 mm then). If a Cinemascope® combination with an effective focal length of 220 mm were, for instance, required to bridge a larger projection distance, the combination of the Tele-Cinelux Anamorphic 0.5x with a 110 mm base lens would produce exactly the desired projection result.



WA-CINELUX ANAMORPHIC 2x



TELE-CINELUX ANAMORPHIC 0.5x

20
21



Focusing the attachment

Unlike a normal lens, an anamorphic lens is not rotationally symmetrical: The WA-Cinelux Anamorphic 2x leaves the vertical projection angle unchanged and stretches the horizontal angle considerably, as if the focal length of the base lens had been halved, so that the image width is double. In contrast, the Tele-Cinelux Anamorphic leaves the horizontal projection angle unchanged and narrows the vertical angle, as if the focal length of the base lens had been doubled, which halves the projection image height. You therefore have to focus and lock the focus as follows:

1. Loosen locking screw of the ring.
2. Use the knurled adjustment ring of the anamorphic lens to roughly set the projection distance on the side scale.
3. The lens is focused using the focusing device of the projector: to the horizontal image structures with the WA-Cinelux and to the vertical structures (e.g. lines of the test film) with the Tele-Cinelux.
4. Use the adjustment ring of the anamorphic lens to set the focus to the respectively other image structures. If the previously focused image structures go out of focus, repeat steps 2 and 3.
5. Tighten locking screw.



ES-CINELUX ANAMORPHIC 2x

ES-Cinelux Anamorphic 2x

This anamorphic lens is designed as an integral component of the ES-Cinelux Anamorphic lenses (on pages 18 and 19), but can also be subsequently attached to the Super-Cinelux 35 lenses from 42.5 to 100 mm focal length for 35 mm film as required to obtain a horizontal widening of the projecting image by a factor of 2 to show wide-screen films.

The table on page 24 shows which adapter is needed for the connection of the ES-Cinelux Anamorphic 2x.



CINELUX M65

Cinelux M65 (WA/Tele Vario Conversion Lens)

This multi-function converter with variably adjustable magnification can be used either as a wide-angle or a tele converter (you reverse it to change function).

As a wide-angle converter 0.63x to 0.70x it creates a wide-angle combination. For example, with a 65 mm base lens a wide-angle lens combination is created with steplessly selectable focal length between 40.2 and 45.6 mm. This lens combination has a longer mechanical length than standard wide-angle lenses. This increased mechanical length can be used to solve problems of vignetting by an obstacle.

As a tele converter 1.4x to 1.65x it serves to obtain longer focal length than the maximum 180 mm of the standard lenses for long projection distances, e.g. with a 140 mm lens a steplessly selectable focal length of 201.8 to 225.8 mm can be achieved.

The table on page 24 shows which projection lenses can be combined with the Cinelux M65, whether an adapter is needed, and if so which one.



EXTENSION

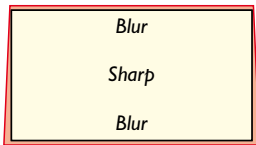
Extension

This lens attachment transposes the exit pupil of the lens toward the front thanks to its additional glass distance without having even the slightest negative effect on the imaging. It is used with lenses which have a short focal length and which are needed with a very large screen with only a short projection distance. The Extension avoids partial vignetting of the wide image which can e.g. be caused by parts of the projector which extend into the beam path, parts of other lenses in the same lens revolver or by too narrow a window.

There are three different Extension versions for the Super-Cinelux 35 lenses: SK 4026 for focal length 24 mm; SK 4027 for focal length 26 mm; and SK 4031 for focal lengths from 28 to 50 mm.

No adapter is required to connect the Extension.

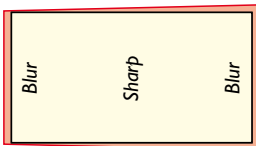
Keystone Corrector



Correction:



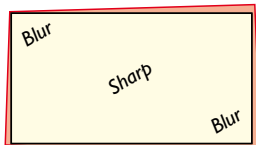
The projector is higher than the screen center; the lens must be shifted down.



Correction:



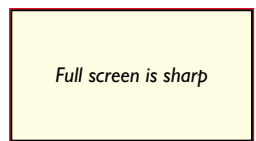
The projector is to the left of the screen center; the lens must be shifted to the right.



Correction:



The projector is higher and too far left; the lens must be shifted down and to the right.



The Keystone Corrector produces a non-distorted image without aberrant lines or image loss and with the best focus over the whole screen despite an asymmetric projector position. After the shift, the lamp position must be changed for a uniform illumination.

The Keystone Corrector allows trapezoidal distortion to be eliminated in projectors with a 4" lens mount; this distortion occurs when the projection does not take place at right angles to the screen, e.g. with oblique downward projection. It is used for cinema lenses with a tube diameter of 70.65 mm in place of the 4" adapter. It cannot be used in projectors with lens revolvers.

If the projector is not central with respect to the screen, but has a lateral offset, (additional) distortion occurs with a larger image height on the screen side further away from the projector; there is also a visible loss of focus on both sides if the lens has been focused to the center of the screen. This error can also be eliminated using the Keystone Corrector; it only has to be installed rotated such that the lens does not move down in a perpendicular manner when shifted, but obliquely in the direction toward the further distant side of the screen. The equalization performed with the Keystone Corrector does not only ensure that plunging lines and the horizontal axes diverging toward the further distant screen side again extend precisely perpendicular or horizontally, but also provides a very uniform focus over the whole screen format. The Schneider software "Theater Design Pro" (see page 26) can calculate the required shift from the projector position with respect to the screen and the focal length of the lens.



Keystone Corrector with anamorphic lens



Cause and elimination of trapezoidal distortion

The rectangular film image will only likewise appear rectangular on the screen if the axis of the cinema lens is aligned at a right angle to the screen plane. In many movie theaters with steep-rising rows of seats, the projector is, however, a lot higher than the center of the screen so that the projection is carried out obliquely downwardly. This results in "plunging lines" inclined obliquely inwardly at the left hand and right hand margins and a trapezoidal distortion of the image (wider at the bottom than at the top) when the screen is approximately perpendicular.

The problem is eliminated when the projector is aligned (approximately) horizontally and the image, which is then projected at too high a level for the screen, is lowered by shifting the lens down until the image is correct on the screen.

With an oblique projection, it is not only the "plunging lines" which are irritating with trapezoidal distortion of the image, but the greater image height also means a loss of a triangular image section at the left hand and right hand margins and of a small strip at the top and/or bottom (see opposite).



Trapezoidal distortion (projector a little to the left and too high); red margin is off the screen.



Image after correction with Keystone Corrector.

ADAPTERS



ADAPTER 70.65/101.6



ADAPTER RING

Adapters and Extension Tubes

A variety of adapters are available for the combination of anamorphic attachments or of the WA/Tele Converter Cinelux M65 with specific base lenses of the Super-Cinelux and Cinelux-Ultra series and for the adaptation of the tube diameter to larger diameters of certain projectors. Furthermore, extension tubes are available to extend the mechanical design length (required e.g. for some lenses for mounting in the Keystone Corrector).

NOTE: In order to avoid vignetting, we recommend the combination with the base lens without its front ring.

Adapter ring for accessory ► combined with lens ▼			WA-Cinelux Anamorphic 2x MC or Tele-Cinelux Anamorphic 0.5x MC		ES-Cinelux Anamorphic 2x MC		Cinelux M65 (WA/Tele Vario Conversion Lens)	
Lens	Filmformat	Brennweite	Ø 62,5 mm	Ø 70,65 mm	Ø 62,5 mm	Ø 70,65 mm	Ø 62,5 mm	Ø 70,65 mm
Super-Cinelux 35	35 mm	24 mm	–	–	–	–	–	–
		26 mm	–	–	–	–	–	–
		28 mm	–	–	–	–	–	–
		30 mm	–	–	–	–	–	–
		32.5 mm	–	–	–	–	–	–
		35 mm	–	–	–	–	–	–
		37.5 mm	–	–	–	–	–	–
		40 mm	–	–	–	–	–	–
		42.5 mm	–	–	SK 4032 *	SK 4032 *	–	–
		45 mm	–	–	SK 4032 *	SK 4032 *	–	–
		47.5 mm	–	–	SK 4032 *	SK 4032 *	–	–
		50 mm	SK 4033	SK 4033	SK 4033	SK 4033	–	–
		52.5 mm	SK 4033	SK 4033	SK 4033	SK 4033	–	–
		55 mm	SK 4033	SK 4033	SK 4033	SK 4033	–	–
		57.5 mm	SK 4033	SK 4033	SK 4033	SK 4033	–	–
		60 mm	SK 4033	SK 4033	SK 4033	SK 4033	SK 4033	SK 4033
		62.5 mm	SK 4033	SK 4033	SK 4033	SK 4033	SK 4033	SK 4033
		65 mm	SK 4033	SK 4033	SK 4033	SK 4033	SK 4033	SK 4033
		67.5 mm	SK 4039	SK 4039	SK 4039	SK 4039	SK 4039	SK 4039
		70 mm	SK 4039	SK 4039	SK 4039	SK 4039	SK 4039	SK 4039
72.5 mm	SK 4039	SK 4039	SK 4039	SK 4039	SK 4039	SK 4039		
75 mm	SK 4039	SK 4039	SK 4039	SK 4039	SK 4039	SK 4039		
77.5 mm	SK 4034	SK 4034	SK 4034	SK 4034	SK 4034	SK 4034		
80 mm	SK 4034	SK 4034	SK 4034	SK 4034	SK 4034	SK 4034		
82.5 mm	SK 4034	SK 4034	SK 4034	SK 4034	SK 4034	SK 4034		
85 mm	SK 4034	SK 4034	SK 4034	SK 4034	SK 4034	SK 4034		
90 mm	SK 4035	SK 4035	SK 4035	SK 4035	SK 4035	SK 4035		
95 mm	SK 4036	SK 4036	SK 4036	SK 4036	SK 4036	SK 4036		
100 mm	SK 4037	SK 4037	SK 4037	SK 4037	SK 4037	SK 4037		
Cinelux-Ultra	35 mm / 70 mm	105 mm	SK 3908	No adapter	–	–	SK 3908	No adapter
		110 mm	SK 3908	No adapter	–	–	SK 3908	No adapter
		115 mm	No adapter	No adapter	–	–	No adapter	No adapter
		120 mm	No adapter	No adapter	–	–	No adapter	No adapter
		125 mm	No adapter	No adapter	–	–	No adapter	No adapter
		130 mm	No adapter	No adapter	–	–	No adapter	No adapter
		135 mm	No adapter	No adapter	–	–	No adapter	No adapter
		140 mm	No adapter	No adapter	–	–	No adapter	No adapter
		145 mm	No adapter	No adapter	–	–	No adapter	No adapter
150 mm	No adapter	No adapter	–	–	No adapter	No adapter		
Cinelux-Ultra	35 mm	160 mm	SK 4040	SK 4040	–	–	No adapter	No adapter
		170 mm	SK 4040	SK 4040	–	–	No adapter	No adapter
		180 mm	SK 4040	SK 4040	–	–	No adapter	No adapter

* Assembly must be done at Schneider-Kreuznach

TEST FILM

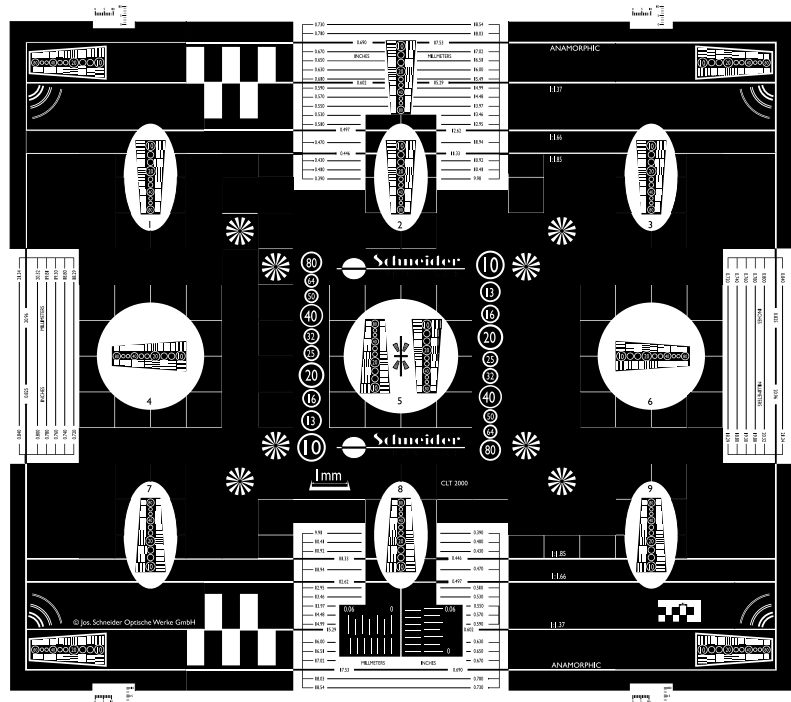
New test film CLT with improved contrast for even more precise focusing

Every movie theater operator wants the best possible reproduction quality. This requires high-quality projection lenses, their exact focusing, the best possible focus equalization with a curved screen and the correct elimination – or at least substantial reduction – of the trapezoidal distortion in the case of oblique projection.

SCHNEIDER-KREUZNACH offers excellent projection lenses and accessories such as converters, varioconverters, adapters or the Keystone Converter for this purpose. Precise checking, setting and adjustment are indispensable for the optimum use and utilization of all these means.

Checking with “normal” films is not enough since they lack image structures which are distributed uniformly over the whole image surface and are identical everywhere, the film grain is often too coarse, the image steadiness is often not still enough, the brightness and contrast are not distributed equally and, like the image structures, are subject to constant change and regularly arranged vertical and horizontal lines for the evaluation of distortion are lacking.

The test film CLT, on the other hand, has been designed especially for these test and adjustment purposes and provides optimum conditions for a regular check of all relevant quality parameters.



The new test film CLT mercilessly exposes all imaging errors and defects due to inexact focusing, curved screen or oblique projection. The first-class SCHNEIDER-KREUZNACH cinema projection lenses and anamorphic systems do not need to fear this test, but can actually demonstrate their superior performance. To ensure unchanging high projection quality, we recommend checking the projection system with this test film at regular intervals.



Advantages of the new CLT

This test film is used to ensure the best dimensional accuracy and focus and a calm image steadiness – not as a copy, but only as an original – in lengths of 4 m, 15 m, 30 m and 61 m.

All standard formats are presented by boundary lines in accordance with the latest and practiced SMPTE standards and are given in millimeters and inches. This allows a precise determination of even very low format differences.

The horizontally and vertically extending grid lines allow the recognition of barrel distortion or pincushion distortion (by

convex or concave curved lines instead of straight lines); perspective trapezoidal distortion caused by oblique projection (by diverging vertical and/or horizontal grid lines); or geometric distortion caused by screen curvature (by arched horizontal lines) well over what is allowed; the necessary remedies can also be controlled.

15 finely graded line grid test groups with a resolution of up to 100 lp/mm (line pairs per millimeter) are distributed over the whole image format. The horizontal and vertical structures are ideally suitable for the optimum focusing of the projection lens and specifically also of anamorphic

lenses (see bottom of page 19). The focus distribution can be optimized for the total area in the event of a curved screen or oblique projection. The line grid test groups in the four corners permit an inspection of contrast and focus up to the most extreme corners of the screen even at a format aspect ratio of 1:2.39.

White lines on a black background with an extremely high contrast allows chromatic aberration (color fringes) and scattered light to be recognized easily. This allows a clear distinction between exceptional projection lenses and ones which are not quite so good.

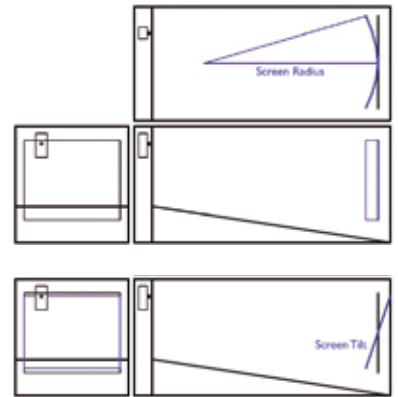
THEATRE DESIGN PRO

Software for all necessary computations

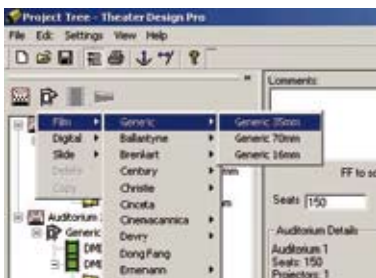


Software Theatre Design PRO is intuitively useable software and can be downloaded free from the website of SCHNEIDER-KREUZNACH.

When setting up a movie theater, it is important to know the projection distance, the screen size, the projector position (vertical offset and lateral offset to the screen center) and the curvature and inclination of the screen when selecting the lenses for the different film sizes or digital formats. The focal length and the size of the image circle as well as the possible shift option play a role here. The software Theatre Design PRO has been developed to ensure that all these parameters are correctly taken into account for an ideal solution. It can be downloaded free from www.schneiderkreuznach.com/pdf_downloads.htm It runs on all PCs with Windows 95 or higher and offers intuitive operation to a great extent. The data of all current Schneider cinema lenses are taken into consideration by the software.



Asymmetrical projector position, a curved or a tilted screen – whatever the problem is, Theatre Design Pro will find an ideal solution.



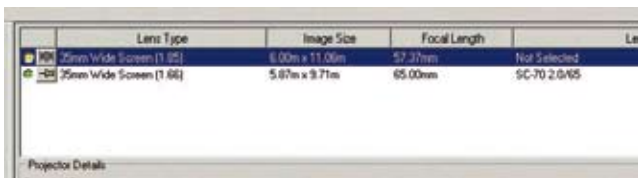
Choosing and adding a projector



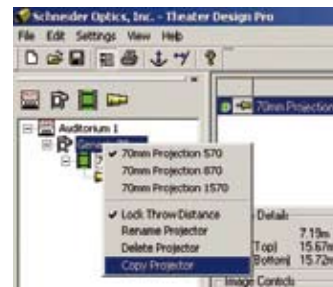
Entering the curvature of the screen



Entering the angle of inclination of a screen



Choosing a film format



Applied format of the projector



Display of possible and recommended Schneider lenses

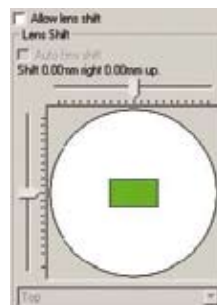
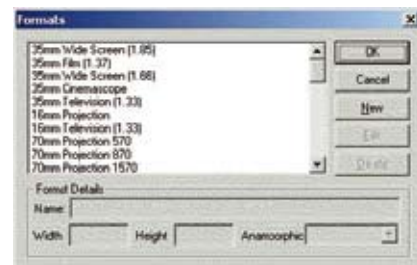


Image circle and shift range



Adding a non-listed film format

TECHNICAL DATA/INTERNET

Comprehensive information with data sheets over the internet: www.schneiderkreuznach.com

Schneider KREUZNACH Products Distribution Service News Know-how Company

Cinelux Première

High performance cinema projection lenses with aspherical lens elements and variable irises for different cinema formats.

- 25 models in the range of focal lengths of 32.5 mm up to 100 mm
- Variable irises with a relative aperture of f/1.7 up to f/4.0
- Barrel diameter 70.65 mm

Relative Illumination, Distortion, Transmittance
Modulation Transfer Function
Mech. Dimensions
Brochure

1.7 / 32.5 mm
1.7 / 35 mm
1.7 / 37.5 mm
1.7 / 40 mm

info@schneiderkreuznach.com

By clicking on a gray dot of the matrix (see red arrow) will display the desired document

CL 1.7/75 ASPHERIC

$f^* = 74.0 \text{ mm}$ 5×1.018
 $r_1 = 42.0 \text{ mm}$ $sg_1 = 5.0 \text{ mm}$
 $sg_2 = 44.0 \text{ mm}$ $sg_3 = -90.0 \text{ mm}$
 $HM = -0.8 \text{ mm}$ $X \pm 0.1 \pm 0.0 \text{ mm}$

RELATIVE ILLUMINATION
The relative illumination is shown for the given focal distances or magnifications.

f^* / f

— $f^* = 0.0000$ $v_{rel} = +1.0$ $00^{\circ} \pm 00$
 — $f^* = 0.0000$ $v_{rel} = +1.0$ $00^{\circ} \pm 00$
 — $f^* = 0.0000$ $v_{rel} = +1.0$ $00^{\circ} \pm 00$

DISTORTION
Distortion is shown for the given focal distances or magnifications. Positive values indicate pincushion distortion and negative values barrel distortion.

— $f^* = 0.0000$ $v_{rel} = +1.0$ $00^{\circ} \pm 00$
 — $f^* = 0.0000$ $v_{rel} = +1.0$ $00^{\circ} \pm 00$
 — $f^* = 0.0000$ $v_{rel} = +1.0$ $00^{\circ} \pm 00$

TRANSMITTANCE
Relative spectral transmittance is shown with reference to wavelength.

— $f^* = 0.0000$ $v_{rel} = +1.0$ $00^{\circ} \pm 00$
 — $f^* = 0.0000$ $v_{rel} = +1.0$ $00^{\circ} \pm 00$

Joe. Schneider Optische Werke GmbH
Ringeistrasse 132 85543 Bad Kreuznach Germany

Relative Offsets: 1.14, 1.2
 Relative aperture: 1.14, 1.2
 Anam. Lines: 7
 Number of elements: 7
 Beamsplitter: 1.244.0
 Area of f-stop: 1.244.0

Element	D	L1	L2	L3	s-Apoch	f-F	Bestellnummer
32.5	40	129	22.5	98.5	31.7	30.4	10724
35	40	126.5	28.5	107.0	36.8	31.5	10730
37.5	40	143	30.5	110.5	45.4	31.5	26880
40	40	136.7	27.5	107.5	46.7	34.5	11151
42.5	46	147.0	38.4	101.6	35.0	36.7	14709
45	46	145.8	42.4	102.4	26.0	37.1	14710
47.5	46	142.4	43.6	113.0	33.0	40.5	14711
50	40	100.3	20.8	82.5	51.7	37.7	1007131
52.5	40	144.1	34.5	107.5	54.5	37.5	1007132
55	40	82.7	23.3	82.5	54.4	32.4	1007133
57.5	40	88	18.5	68.5	53.4	30.5	27289
60	40	90	20.5	62.5	50.5	30.4	19992
62.5	40	87.5	23.0	62.5	57.3	30.3	27288
65	47	84	24.5	60.5	62.6	30.3	19355
67.5	42	92	25.5	62.5	63.3	40.5	25485
70	42	85	25.5	63.5	60.7	41.2	20381
72.5	52	101	31.5	62.5	75.3	43.5	29374
75	52	101	31.5	62.5	78.6	44.0	23607
77.5	52	101	31.5	62.5	78.4	46.7	29375
80	52	107	37.5	62.5	84.7	56.1	20482
82.5	52	107	37.5	62.5	88.9	60.2	21067
85	52	107	37.5	62.5	86.5	49.5	29377
90	53.8	125.5	13.8	120.7	61.5	48.6	1005029
95	53.8	125.5	13.8	120.7	62.7	49.7	1005030
100	53.8	122.3	14.5	124.8	72.3	58.0	1009252

Copyright © Schneider Kreuznach
 All dimensions without unit in mm
 Not for internet on 2 days for information

Product number: 1007132
 Name: Cinelux Première Aspheric MC
 Variable iris for 35mm film
 Serial: 17.4.01
 Drawing: 14.01.01
 Material: 14.01.01
 Joe. Schneider Optische Werke GmbH
 Ringeistr. 132 85543 Bad Kreuznach
 Germany

This brochure provides a detailed overview on the comprehensive analog cinema projection lens range of SCHNEIDER-KREUZNACH. You can find additional information on the individual models on the internet under www.schneiderkreuznach.com.

First select "Cinema/Projection". You can then choose from "Analog Cinema", "Digital Camera", "Home Cinema", "OEM/Simulation", "Software" and "Oldies". Simply move the cursor over one of these titles and a submenu will pop up, e.g. under "Analog Cinema" a list of all the lens types shown in this brochure together with "Anamorphic Attachments", "Test Film" and "Accessories". If you click on "Cinelux Première" for example, the window shown as an example on the left pops up with an image and a brief description, data on the available focal length range and a matrix for selection of the documents which can be called up.

If you move over a matrix dot and click on it, a PDF file opens containing the document given on top of the matrix for the lens with the focal length given to the left of the matrix. In the above example for the matrix dot marked by a red arrow here, this is a PDF file with the MTF curves (modulation transfer function dependent on the relative image height) for the lens Cinelux Première 1.7/37.5 mm for the f/stops 1.7, 2 and 2.8.

Two samples of the downloadable A4 sized data sheets "Relative Illumination, Distortion, Transmittance" for 75 mm focal length and "Mech. Dimensions" for all focal lengths.



Cutting edge lenses available for digital projection, too

Digital cinema projection makes new demands on the lenses. SCHNEIDER-KREUZNACH has therefore developed telecentric lenses with longer back focal length (beamsplitter!) and large image circles (shift range!) for this application with aspheric surfaces and exotic LD glass to provide the highest resolution and achromatic correction.

IMPRINT

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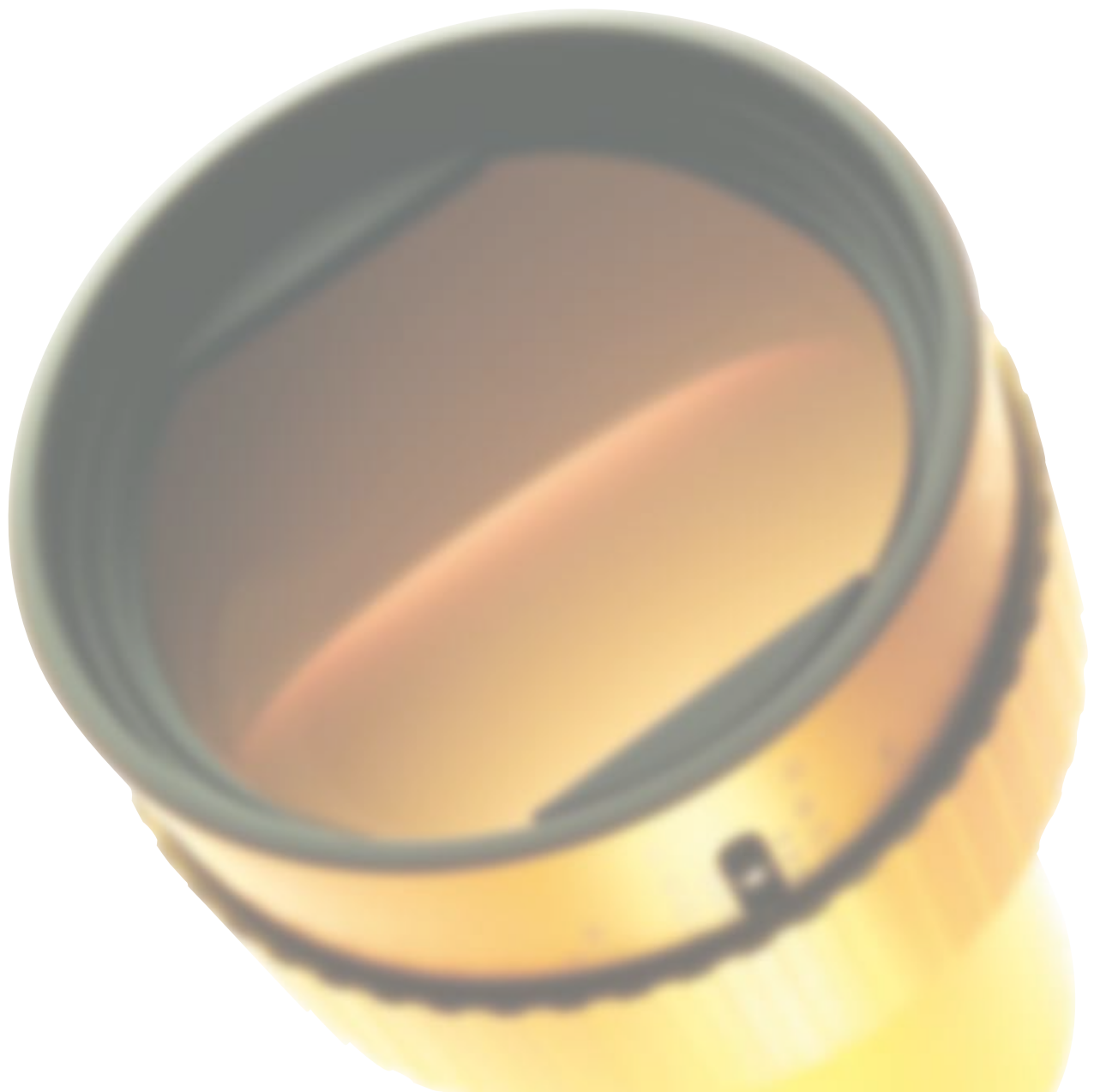
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