Euro 8 / CHF 13 / USD 10 / GBP 6 / JPY 1200

my point of view

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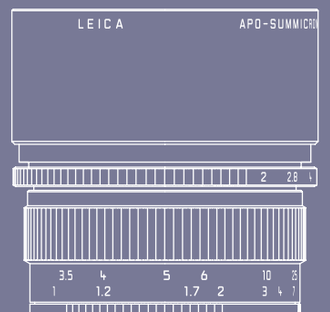
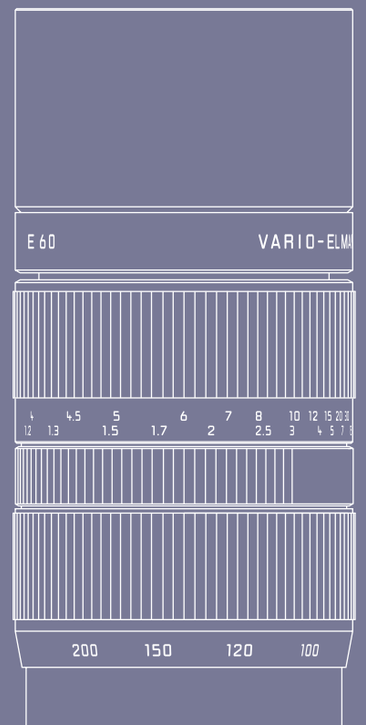
Heine/Lenz/Zizka 07/03/HY/B

Leica Lens Book

Leica Lens Book

Leica M system, Leica R system





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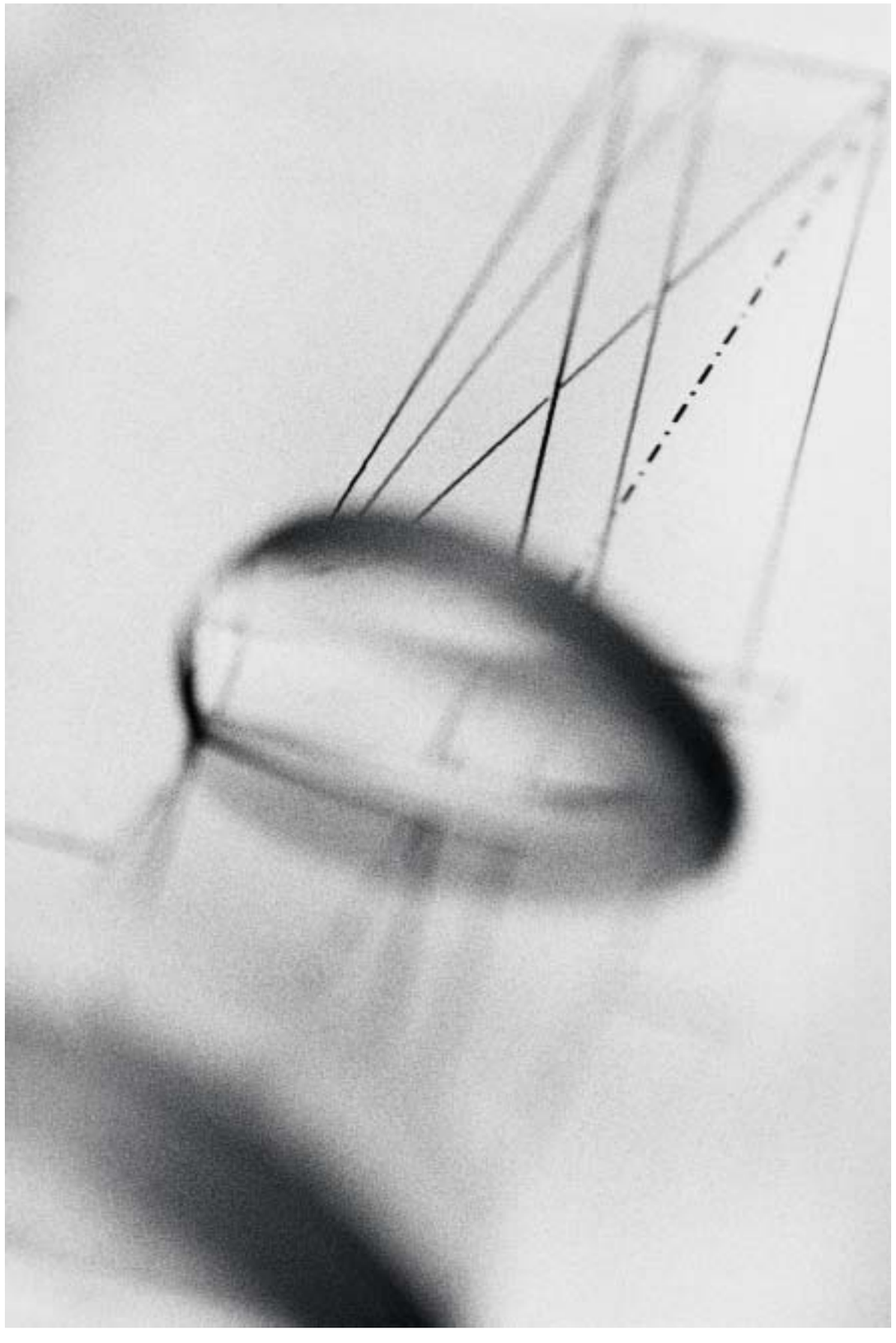
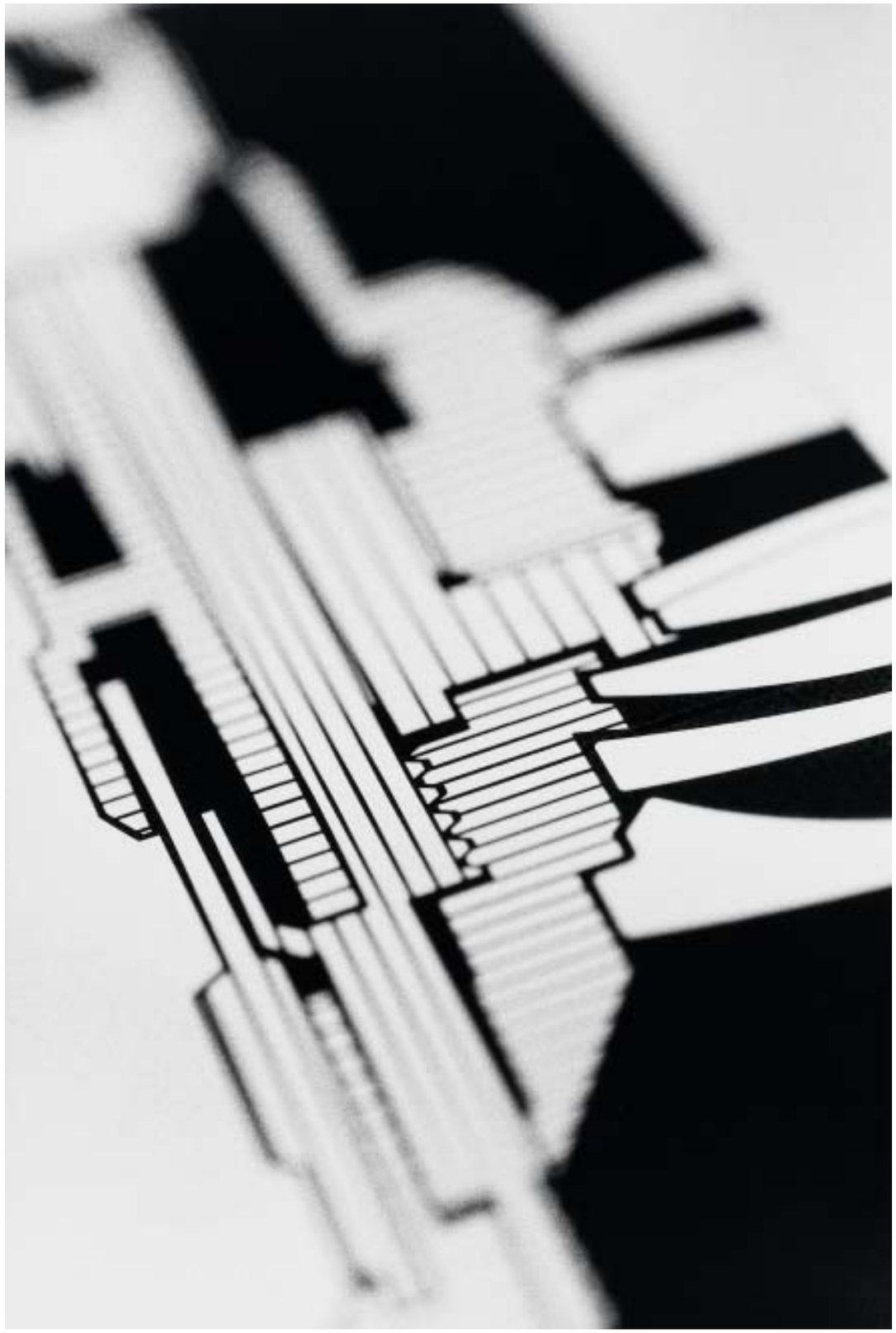
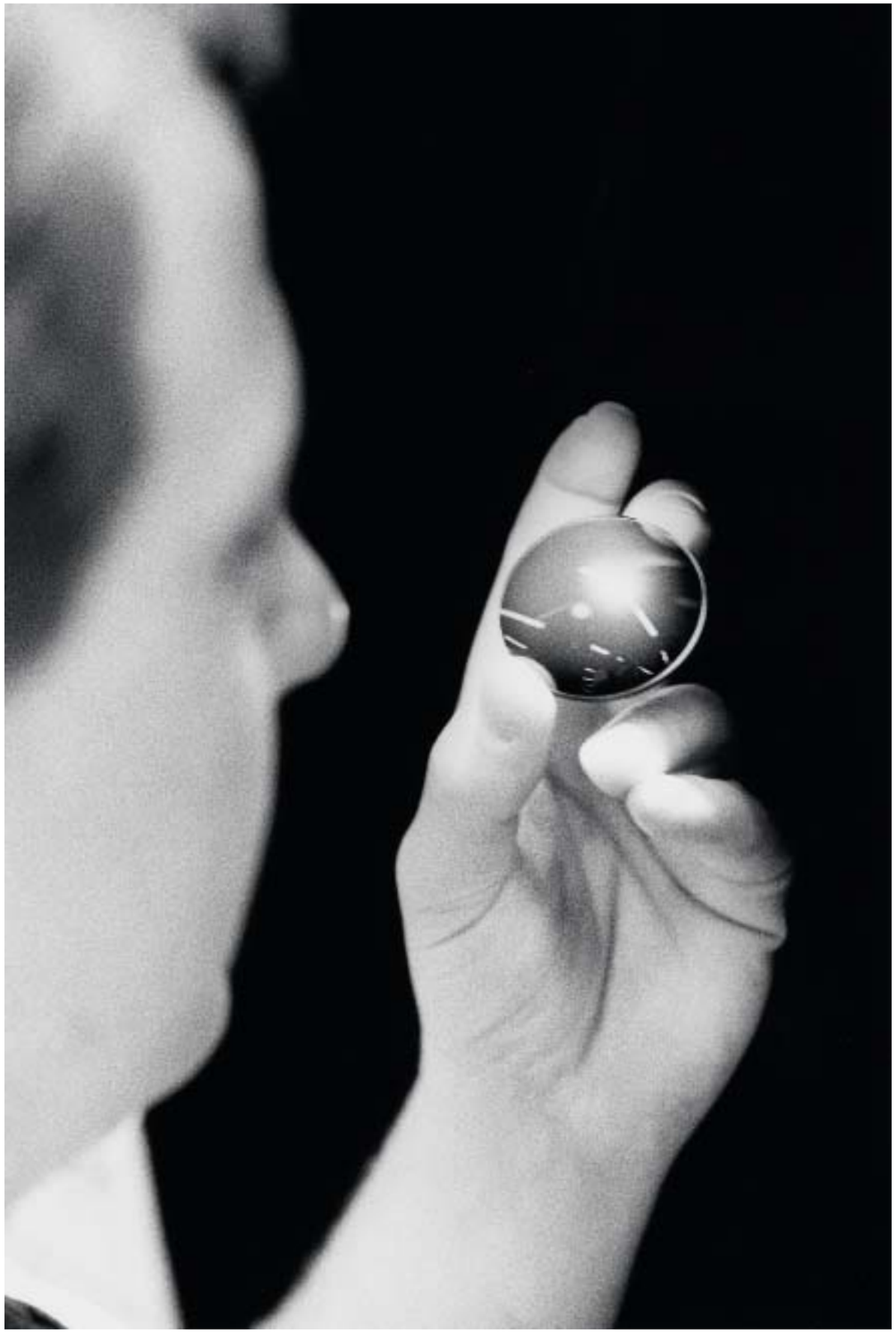
To illustrate this brochure, we sent Michael Agel and Martin Trippen of the Leica Academy to California with the dream assignment of demonstrating the performance capabilities of Leica lenses. We also invited a New York camera artist to visit us in Solms : Early in 2003 Ralph Gibson recorded his impression of how "his" lenses are crafted in our manufacturing department.

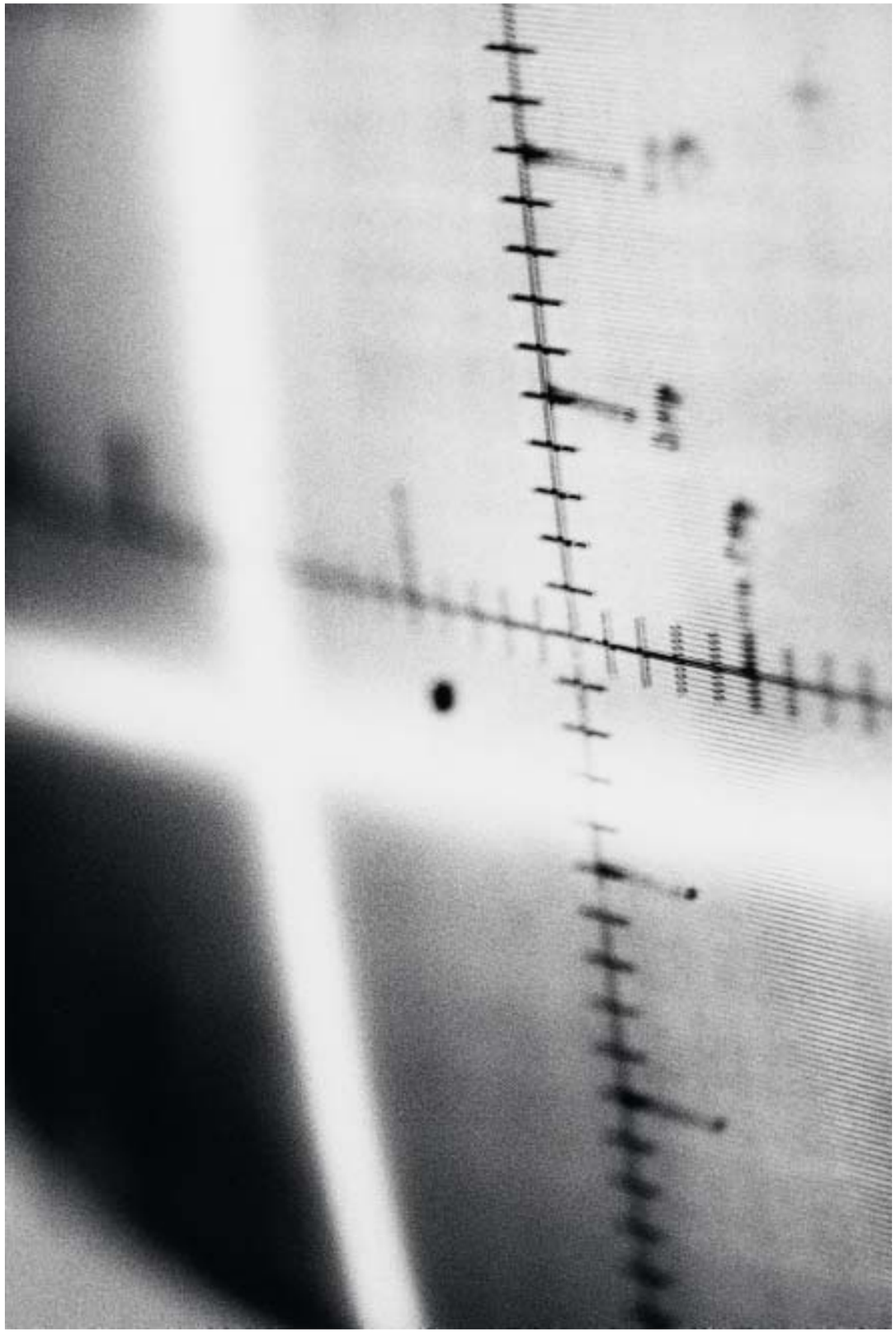
The pictures, texts and tables in this brochure provide an overview of the spectrum of Leica lenses. Additional information and technical details, lens diagrams, MTF curves and more can be found on the Internet under www.leica-camera.com.

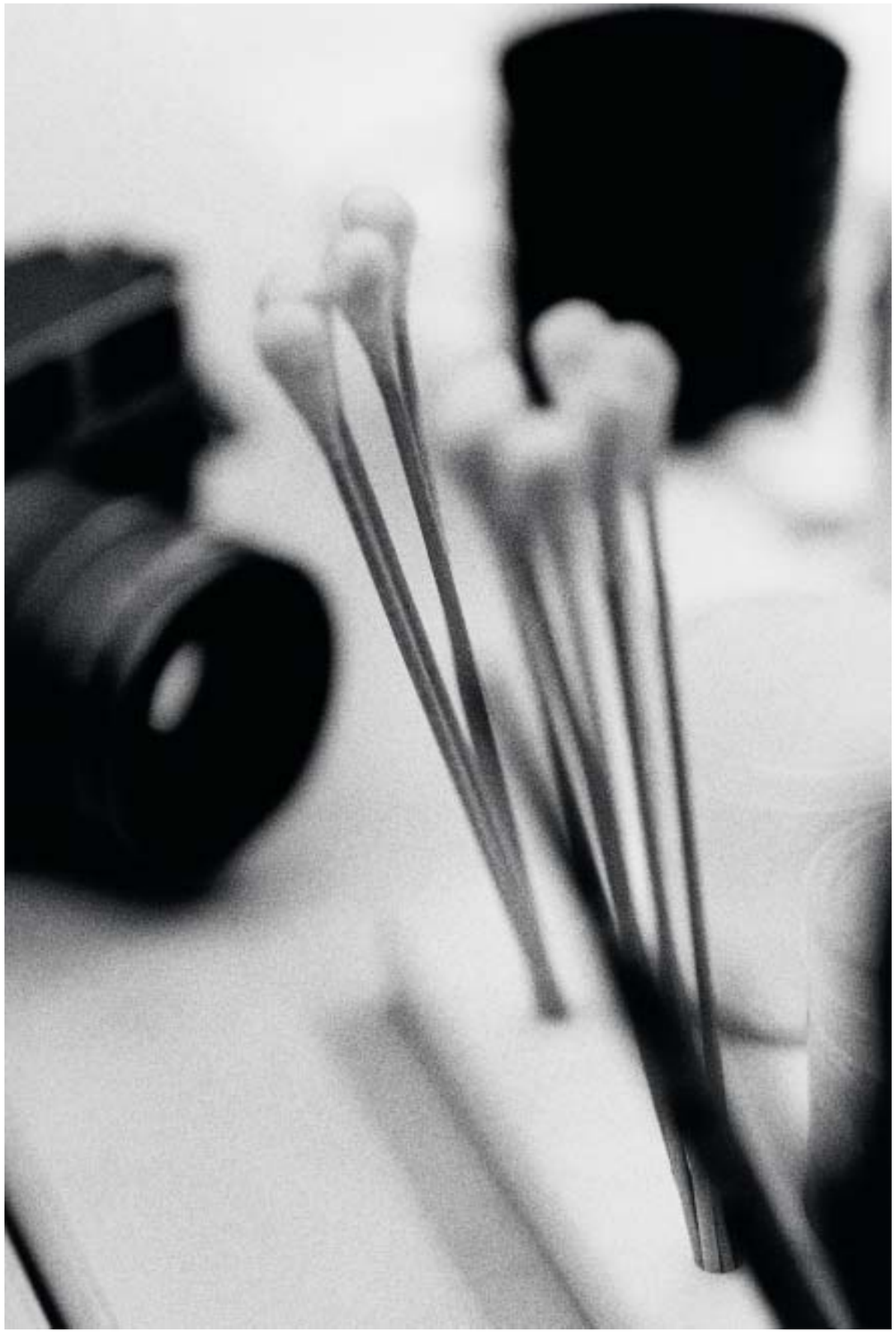
“The Leica factory in Solms is where art meets technology. It is a highly refined atmosphere, because writing with light requires a delicate instrument.” Ralph Gibson

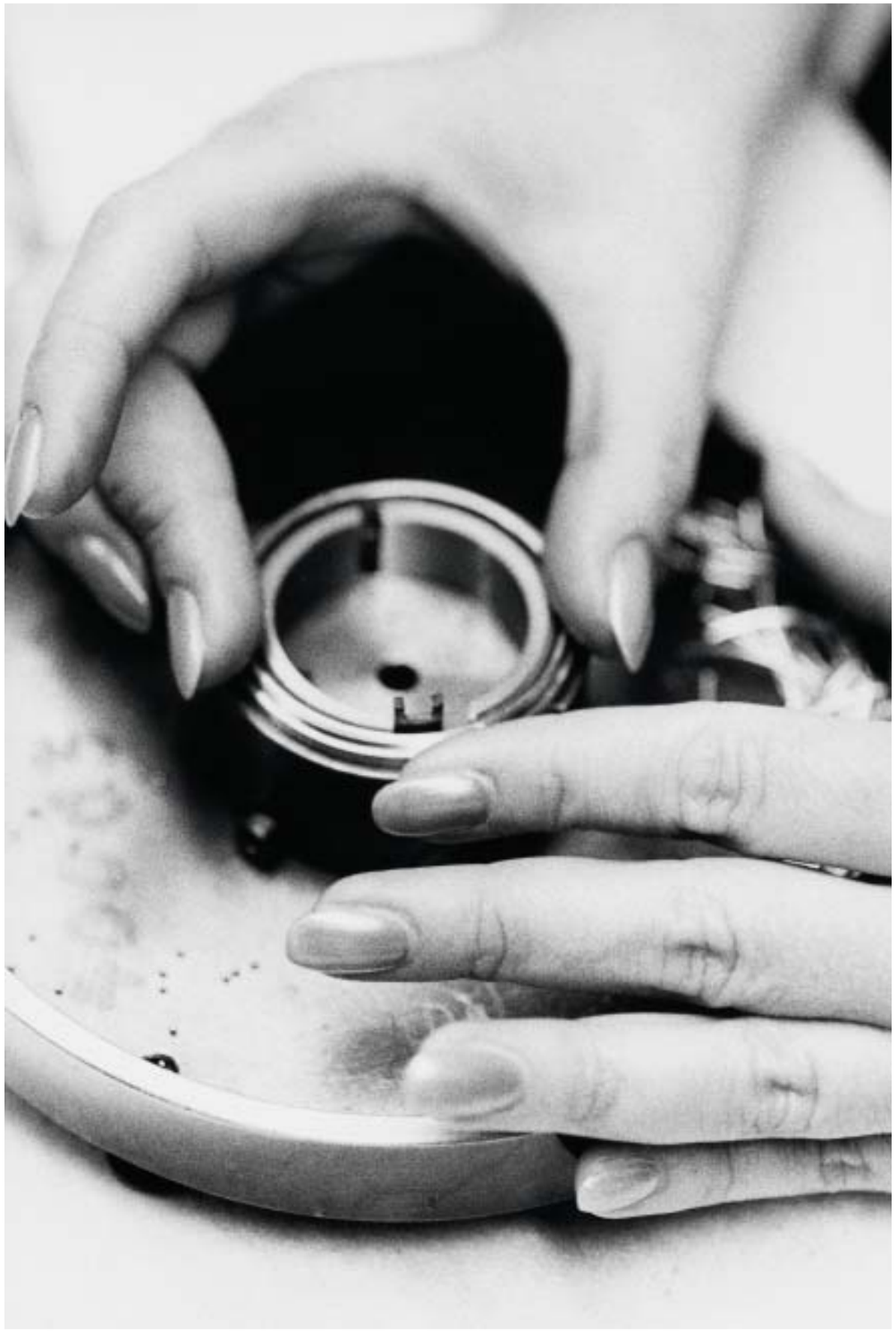












Legends are made with time

Ever since the first Leica heralded the breakthrough of 35 mm photography, the factory in Solms has concentrated on one single objective : the art of making extraordinarily high quality images possible. From the extreme demands of passionate perfectionists and the technical know-how that steadily developed over 100 years, evolved the lenses that generate the legend of Leica. Every step in manufacturing is subject to the most stringent quality standards and much time is invested in meticulous manual craftsmanship. The common goal being that every lens must feature optimal mechanical operation and the highest sharpness and richness of contrast already at full aperture. Color rendition must not only be saturated, but always uniform and neutral, regardless of which Leica lens is being used. Our unique optical computations combined with unequalled experience and know-how, as well as our complex production process turn this philosophy into reality. Maintaining the tightest tolerances ; the use of 30 different high-grade types of optical glass ; the application of high-tech coating ; plus our superior aspherical technology – all play a role in the secrets of legendary Leica optics. The interplay of production using the most modern CNC machines and subsequent application of the craftsmanship of our precision mechanics and assembly specialists always makes it possible for the wide-open aperture of a Leica lens to be also the working aperture – even in poor lighting conditions. The meticulously fabricated helical focussing mounts are the reason for the joy of being able to focus with silky smoothness and without any play, at all times, be it at –20° C (–4° F) or at +60° C (+140° F). And the painstakingly accurate lens centering assures that images are sharp all the way into the very corners. A concluding hundred-percent quality control ensures this high level of excellence. In addition, Leica lenses are designed in such a way so that they are not only easy to maintain, but – just in case – they can also quickly be brought back to optimal performance by our specialized service staff. That makes a Leica lens remain true to its high demands, even over time.

“The grains of sand that are melted into optical glass make me think of the grains of silver in the emulsions of my films … this grain seen on the print has passed through the lens and recreated itself into an image … the process of making a photograph starts on some different shore, some distant particle … turns to light.” Ralph Gibson

Leica M lenses : Masters of the moment

A camera is a tool of intuition – its lens channels the exacting power that can make history from a fleeting moment. Leica M lenses have long constituted an intelligent, compatible system for the practice of photography and they bundle their legendary performance in a particularly compact and handy form. They precipitated the worldwide fame of Leica M cameras that produce impressive photographs, even under unfavorable light conditions, while retaining all the advantages of an inconspicuous traveling companion. High-performance M lenses are available in focal lengths that range from 21 mm to 135 mm, and speeds as fast as f/1 (in the case of the 50 mm Noctilux-M). Their excellent sharpness, crisp contrast and neutral color rendition are as dependable as their unique compatibility : Virtually every M lens can be used on most Leica M cameras – since 1954 !

Wide-angle focal lengths
21 LEICA ELMARIT-M 21 mm f/2.8 ASPH.
22 LEICA ELMARIT-M 24 mm f/2.8 ASPH.
23 LEICA SUMMICRON-M 28 mm f/2 ASPH.
24 LEICA ELMARIT-M 28 mm f/2.8
25 LEICA SUMMILUX-M 35 mm f/1.4 ASPH.
26 LEICA SUMMICRON-M 35 mm f/2 ASPH.

Standard focal lengths
28 LEICA NOCTILUX-M 50 mm f/1
29 LEICA SUMMILUX-M 50 mm f/1.4
30 LEICA SUMMICRON-M 50 mm f/2
31 LEICA ELMAR-M 50 mm f/2.8
32 LEICA TRI-ELMAR-M 28–35–50 mm f/4 ASPH.

Tele focal lengths
34 LEICA SUMMILUX-M 75 mm f/1.4
35 LEICA APO-SUMMICRON-M 90 mm f/2 ASPH.
36 LEICA ELMARIT-M 90 mm f/2.8
37 LEICA APO-TELYT-M 135 mm f/3.4

38 **Accessories for Leica M lenses**

39 **Overview Leica M lenses**

Wide-angle focal lenghts : In the midst of life

Leica M wide-angle lenses are made for the moment. They unleash their perfection in the midst of turbulent events – often in fractions of a second. By making judicious use of the depth-of-field scale and by stopping down the aperture slightly, one can dispense with focusing altogether. Combined with the extremely short shutter lag of M cameras, this system is one of the fastest anywhere. This results in pictures that are highly dynamic, lively, intense and expressive.

LEICA ELMARIT-M 21 mm f/2.8 ASPH.

LEICA ELMARIT-M 21 mm f/2.8 ASPH.
This compact extreme wide-angle lens produces outstanding contrast and detail rendition at full aperture. The proverbial Leica image quality is preserved even in the close-up range. Distortion is minimal and negligible in photographic practice. At f/5.6 this lens is free of artificial vignetting. With all these qualities, it is ideally suited for dramatic effects with monumental foregrounds and strongly receding backgrounds with distant horizons. Because an extremely large depth-of-field is already achieved with a slightly stopped-down aperture, sharp dramatic pictures can be made during live reportage photography.

Malibu, sunrise

LEICA ELMARIT-M 24 mm f/2.8 ASPH.

LEICA ELMARIT-M 24 mm f/2.8 ASPH.
Its contrast and detail rendition at full aperture sets new standards for wide-angle lenses. Stopping down a mere 1 or 1.5 aperture delivers the highest optical performance over the entire image area. With a focal length that is only 3 mm longer than that of the 21 mm lens, it produces images that are impressive for their unusual perspectives without appearing to have been made with a super-wide-angle lens. Converging vertical lines are particularly easy to master with this lens. All these features make it an ideal lens for reportage and for architectural photographs.

LEICA ELMARIT-M 28 mm f/2 ASPH.

LEICA ELMARIT-M 28 mm f/2 ASPH.
This fast wide-angle lens is especially compact and its imaging performance is outstanding at f/2. The rendition of the finest details results in pictures with an extraordinary depth effect. Even in critical lighting conditions, for example in backlit situations, distracting reflections and flare are largely eliminated. Because of its large aperture of f/2, it can also be used for selective sharpness settings in the wide-angle range. And when pictures are to be taken without flash under unfavorable light conditions at twilight or in sparsely illuminated rooms, this lens is highly recommended.

Monterey, pier

Venice, bar

LEICA ELMARIT-M 28 mm f/2.8

LEICA ELMARIT-M 28 mm f/2.8
This is a classic standard wide-angle lens: It delivers very good imaging performance at full aperture. Its barrel distortion is very small and unobtrusive. In cases where light sources are included in the picture area, unwanted reflections and flare are very rare. Therefore this lens is the right one for situations that do not require an extremely wide angle of view, but where regular 35 mm lenses do not provide sufficient wide-angle characteristics. This lens is particularly popular among professional photographers.

LEICA SUMMILUX-M 35 mm f/1.4 ASPH.

LEICA SUMMILUX-M 35 mm f/1.4 ASPH.
The outstanding imaging performance of this very compact lens is due to the application of aspherical technology. It delivers high contrasts, excellent detail rendition over the entire image area, good field flatness, and it has extremely low coma. Because all these qualities remain practically unchanged in the close-up range down to 0.7 m (28 in), this Summilux lens is the universal wide-angle lens. Its applications range from portraits at medium distances all the way to landscape photographs. The 35 mm lenses are already considered to be standard lenses in the Leica M system. With its large aperture, this lens masters all photographic situations superbly.

Point Dume State Beach, beach watch station

Harbor, old seaman

LEICA SUMMICRON-M 35 mm f/2 ASPH.

LEICA SUMMICRON-M 35 mm f/2 ASPH.
Excellent sharpness, high contrast and a superb resolving power over the entire focusing range are evident at full aperture. With its aperture stopped down modestly to f/4, this versatile lens delivers a maximum of resolving power and contrast. It is all the more impressive because of its virtually perfect absence of distortion. That makes it a world-class lens among fast wide-angle lenses. In spite of its high speed and its superb imaging performance, it is surprisingly small. Every Leica M camera fitted with this lens becomes a highly compact and elegant unit.

San Jose

Standard focal lengths : Human perspective

Beginning with the focal length of 50 mm, standard Leica M lenses provide an angle of view and viewing habits that come closest to those of the human eye. Deliberately easy to use, its applications are as versatile as life itself. The Leica M system encompasses standard focal length lenses that are tailor-made for every challenge – such as the super-fast Noctilux-M for nocturnal photography, or an easy traveling companion like the Elmar-M or the ingeniously universal Tri-Elmar.

LEICA NOCTILUX-M 50 mm f/1

LEICA NOCTILUX-M 50 mm f/1
The speed of the Noctilux surpasses even that of the human eye. As the world's first production f/1 lens for 35 mm photography it is a milestone in the history of photography. Its outstanding contrast rendition provides a delicate separation of barely discernible color differences and an exact resolution of the finest details. Its maximal freedom of stray light and coma results in a practically flare-free reproduction of point sources of light. This lens makes a unique and fascinating pictorial expression possible. It is not only excellently suitable for photography at twilight, but also for nighttime photography without flash. The light of a candle is sufficient for beautifully clear pictorial results. Image details can be emphasized by taking advantage of the very shallow depth of field at full aperture. The contours in the unsharp areas of such pictures dissolve in a nearly abstract form and color aesthetic.

LEICA SUMMILUX-M 50 mm f/1.4

LEICA SUMMILUX-M 50 mm f/1.4
This lens delivers very good overall performance at full aperture. It delivers an exact color differentiation and it is virtually free of coma. It is particularly well suited for available light photography. Its outstanding performance with regard to reflections leads to optimal exposures under extremely difficult light conditions – for example in night-time photography with strong light sources within the picture area. As a result, the 50 mm Summilux is not just a fast, compact all-around lens for all kinds of applications – it is also an excellent lens for natural-looking pictorial compositions at twilight. Portraits are particularly impressive because of the shallow depth of field at full aperture and the subtle contrast transition.

Santa Cruz, harbor restaurant

Santa Cruz, pier

LEICA SUMMICRON-M 50 mm f/2

LEICA SUMMICRON-M 50 mm f/2

The optical computation of this lens leads to perfect image quality that extends into the corners at full aperture, with outstanding contrast over the entire picture area, even in the close-up range. Stopping down to f/2.8 or f/4 brings only a minimal increase in contrast. Distortion is extremely low and practically undetectable. The ideal lens for all photographers who want a high-performance tool that weighs very little and is compact in size.

LEICA ELMAR-M 50 mm f/2.8

LEICA ELMAR-M 50 mm f/2.8

This extremely compact lens collapses into the camera body and carries on the tradition of the legendary Elmar lenses on earlier Leica cameras. This design was updated optically and mechanically to a modern standard without compromises. The use of high-refraction optical glass and an intelligent new optical computation led to outstanding overall performance. A classic medium-speed lens with minimal dimensions and a low weight make this a highly versatile lens for many applications.

San Diego, zoo

Monterey, master and dog

LEICA TRI-ELMAR-M 28–35–50 mm f/4 ASPH.

LEICA TRI-ELMAR-M 28–35–50 mm f/4 ASPH.
This lens combines three of the focal lengths that are most popular among Leica M photographers. The appropriate bright-line frame appears in the viewfinder when any of the focal lengths is selected. A complex optical design gives this lens extraordinary performance characteristics: Five of the eight lens elements are made of high-refraction optical glass, two of which have aspherical surfaces. Richness of contrast and detail resolution are superb at all three focal lengths. Curvature of field and vignetting are of no practical consequence. The versatility, compact design and ease of operation of this high-performance lens make it a natural for uncomplicated shots with professional quality. Adding a 90 mm telephoto lens to this extra light Leica M traveling outfit makes it complete and ready for every imaging situation.

Carlsbad, Legoland

Tele focal lengths : The art of seeing

When the depth effect is to be compressed ; when distant objects are to be pulled up closer ; when cropping is to be tighter ; and when the surroundings of the subject are to be excluded – the first choice is a telephoto lens with Leica quality. The tele focal lengths of the Leica M system range from the fast portrait tele to the medium telephoto lens with brilliant APO quality. The whisper-quiet, vibration-free shutter on Leica M cameras gives you extra confidence in the pictorial results. Even hand-held exposures with slower shutter speeds are remarkably easy, and without camera shake.

LEICA SUMMILUX-M 75 mm f/1.4

LEICA SUMMILUX-M 75 mm f/1.4
A fast lens with unique capabilities : The flare-free and unexcelled subtleties of its color rendition are the result of a meticulous optical computation and unique optical glass. No coma can be discerned in the image area, even at wide-open aperture. Systemic vignetting is remarkably low for a lens of this speed, and distortion is practically undetectable. Its high speed of f/1.4 is ideal for available light photography, especially for natural portraits and for reportage. This lens proves its brilliance especially in difficult, high-contrast situations, such as at concerts or stage performances.

LEICA APO-SUMMICRON-M 90 mm f/2 ASPH.

LEICA APO-SUMMICRON-M 90 mm f/2 ASPH.
This lens is unique because apochromatic correction and an aspherical surface are combined for the first time. Two of the five lens elements are made of high-refraction optical glass, and two others make judicious use of anomalous partial dispersion. Brilliance and resolving power are already outstanding at full aperture. Artificial vignetting is extremely low. These features lead to superlative results – in every application: such as portraiture, reportage or studio photography. In addition, its compact design and high speed make it ideal for hand-held photography.

Malibu, bar

San Francisco, harbor round trip

LEICA ELMARIT-M 90 mm f/2.8

LEICA ELMARIT-M 90 mm f/2.8
A compact, medium focal length featuring very good contrast and sharpness across the entire picture area – even at full aperture. Vignetting too, is hardly discernible with the lens wide open. Natural-looking portraiture with an out-of-focus background is an optimal task for this slightly longer focal length and the f/2.8 aperture. The black version of this lens weighs slightly more than 400 g (14 oz) and it is only a little longer than a 50 mm lens. In combination with the Tri-Elmar lens, this light tele lens forms an outstanding, compact travel outfit with universal applications.

LEICA APO-TELYT-M 135 mm f/3.4 ASPH.

LEICA APO-TELYT-M 135 mm f/3.4 ASPH.
A telephoto lens without compromises, it offers outstanding imaging performance at full aperture that cannot be further improved by stopping down. Minimal vignetting and the very slightest distortion are additional strengths. Even the finest details are rendered clearly with rich contrast. It is the longest focal length in the Leica M system and it bridges considerable distances, thus judiciously rounding out any serious outfit. It delivers impressive landscape photographs with a typical telephoto effect : the foreground and the background are visibly compressed. Another benefit is the ability to make format-filling portraits from a discreet distance that the subject will not consider as obtrusive.

San Francisco, passers-by and newspapers dispensers

Los Angeles, Manhattan Beach

Accessories for M lenses

Accessories that are tailored specifically to Leica M cameras make photography even more pleasurable.

Lens carrier M Attaches to the camera's baseplate ; holds an extra lens, creating a compact photographic outfit with two lenses.
Order No. 14 404

LEICA VIEWFINDER MAGNIFIER M 1.25 x Makes picture composition considerably easier when using focal lengths above 50 mm. Particularly with the Leica M system 75 to 135 mm telephoto lenses, the clearly larger visible viewfinder image offers significantly better recognition of subject details within the relevant image field frame.
Order No. 12 004

Viewfinder for 21/24/28 mm lenses This viewfinder can be used on all Leica M models and, with its adjustable optical system, shows the framing for focal lengths of 21 mm, 24 mm, or 28 mm. For viewing without eyeglasses, the LEICA M6's correction lenses can be screwed into the viewfinder's eyepiece.
Black chrome finish **Order No. 12 013**
Silver chrome finish **Order No. 12 014**

Brilliant Finder for 24 mm lenses Unreversed, brilliant image, superimposed bright picture frame, reproduction ratio 0.3 x, with parallax compensation markings for distances below 2 m. With case.
Order No. 12 019

Overview Leica M lenses

Leica M lens	Focal length mm	Maximum aperture	Angle of view diagonal, in ° [1]	No. of lens elements elements/groups
LEICA ELMARIT-M 21 mm f/2.8 ASPH.	21	f/2.8	92	9/7
LEICA ELMARIT-M 24 mm f/2.8 ASPH.	24	f/2.8	84	7/5
LEICA SUMMICRON-M 28 mm f/2 ASPH.	28	f/2	75	9/6
LEICA ELMARIT-M 28 mm f/2.8	28	f/2.8	75	8/7
LEICA SUMMILUX-M 35 mm f/1.4 ASPH.	35	f/1.4	63	9/5
LEICA SUMMICRON-M 35 mm f/2 ASPH.	35	f/2	63	7/5
LEICA NOCTILUX-M 50 mm f/1	50	f/1	47	7/6
LEICA SUMMILUX-M 50 mm f/1.4	50	f/1.4	47	7/5
LEICA SUMMICRON-M 50 mm f/2	50	f/2	47	6/4
LEICA ELMAR-M 50 m f/2.8	50	f/2.8	47	4/3
LEICA TRI-ELMAR-M 28–35–50 mm f/4 ASPH.	28/35/50	f/4	75/63/47	8/6
LEICA SUMMILUX-M 75 mm f/1.4	75	f/1.4	32	7/5
LEICA APO-SUMMICRON-M 90 mm f/2 ASPH.	90	f/2	27	5/5
LEICA ELMARIT-M 90 mm f/2.8	90	f/2.8	27	4/4
LEICA APO-TELYT-M 135 mm f/3.4	135	f/3.4	18	5/4

Leica M lens	Nearest focus from film plane, in mm	Filter thread Ø in mm	Dimensions Ø x length from bayonet flange, mm / in	Weight black /chrome [2], g | oz
LEICA ELMARIT-M 21 mm f/2.8 ASPH.	70 / 2¾"	55	58 x 46 / 2 9/32 x 1 13/16	300 / 415 | 10.6 / 14.6
LEICA ELMARIT-M 24 mm f/2.8 ASPH.	70 / 2¾"	55	58 x 45 / 2 9/32 x 1¾	290 / 388 | 10.2 / 13.7
LEICA SUMMICRON-M 28 mm f/2 ASPH.	70 / 2¾"	46	53 x 40.8 / 2 9/32 x 1 19/32	270 / – | 9.5 / –
LEICA ELMARIT-M 28 mm f/2.8	70 / 2¾"	46	53 x 41.4 / 2 9/32 x 1⅝	260 / – | 9.2 / –
LEICA SUMMILUX-M 35 mm f/1.4 ASPH.	70 / 2¾"	46	53 x 46.2 / 2 9/32 x 1 13/16	250 / 415 | 8.8 / 14.6
LEICA SUMMICRON-M 35 mm f/2 ASPH.	70 / 2¾"	39	53 x 34.5 / 2 9/32 x 1⅜	255 / 340 | 9 / 12
LEICA NOCTILUX-M 50 mm f/1	100 / 3 15/16"	60	69 x 62 / 2¾ x 7/16	630 / – | 22.2 / –
LEICA SUMMILUX-M 50 mm f/1.4	70 / 2¾"	46	54.5 x 46.7 / 2⅛ x 1 27/32	275 / 380 | 9.7 / 13.4
LEICA SUMMICRON-M 50 mm f/2	70 / 2¾"	39	53 x 43.5 / 2 9/32 x 1 23/32	240 / 335 | 8.5 / 11.8
LEICA ELMAR-M 50 m f/2.8	70 / 2¾"	39	52 x 37.6 | 21.6 [3] / 2 1/32 x 1½ | 27/32 [3]	170 / 245 | 6 / 8.6
LEICA TRI-ELMAR-M 28–35–50 mm f/4 ASPH.	100 / 3 15/16"	49	55 x 67.8 / 2 9/32 x 2 21/32	340 / – | 12 / –
LEICA SUMMILUX-M 75 mm f/1.4	75 / 2 15/16"	60	68 x 80 / 2 17/16 x 3 5/32	560 / – | 19.8 / –
LEICA APO-SUMMICRON-M 90 mm f/2 ASPH.	100 / 3 15/16"	55	64 x 78 / 2 17/32 x 3 1/16	500 / – | 17.6 / –
LEICA ELMARIT-M 90 mm f/2.8	100 / 3 15/16"	46	56.5 x 76 / 2 7/32 x 3	410 / 560 | 14.5 / 19.8
LEICA APO-TELYT-M 135 mm f/3.4	150 / 5⅞"	49	58.5 x 104.7 / 2 5/16 x 4⅛	450 / – | 15.9 / –

[1] All values are rounded to ½° and are valid for nominal focal lengths.
[2] Silver chrome versions are heavier because of the use of brass instead of aluminum for outer lens mount components.
[3] The second value applies to the lens in the collapsed state.

Leica R lenses : Everything is possible

The spectrum of Leica R lenses provides every photographer with limitless freedom for creative composition. The system of 28 high-performance lenses encompasses a selection of lenses with focal lengths ranging from 15 mm to 800 mm that can be expanded even further by means of extenders. The marvelous choice of focal lengths and apertures simply make everything possible – from breathtaking astro-photography to painstaking macro photography. And Leica R cameras allow instinctive focusing, judicious control of the depth of field and precise picture composition. The metered values for each lens are determined individually, programmed into the ROM module and communicated to the camera through the contacts. The ROM contacts enable the LEICA R9 to take into account the exact focal length and aperture, so that it can, for example, accurately tailor its flash control function. A feature that is offered worldwide only by Leica ! Use Leica for image quality that international tests reward again and again with their top ratings. Soon the complete lens range can also be used for digital photography : The new exchangeable digital back will turn the LEICA R8 and R9 into the only 35 mm hybrid cameras in the world that can be used both for conventional and digital photography.

Wide-angle focal lengths
43 LEICA SUPER-ELMARIT-R 15 mm f/2.8 ASPH.
44 LEICA ELMARIT-R 19 mm f/2.8
45 LEICA ELMARIT-R 24 mm f/2.8
46 LEICA ELMARIT-R 28 mm f/2.8
47 LEICA PC-SUPER-ANGULON-R 28 mm f/2.8
48 LEICA SUMMILUX-R 35 mm f/1.4
49 LEICA SUMMICRON-R 35 mm f/2

Standard focal lengths
51 LEICA SUMMILUX-R 50 mm f/1.4
52 LEICA SUMMICRON-R 50 mm f/2
53 LEICA MACRO-ELMARIT-R 60 mm f/2.8

Short tele focal lengths
55 LEICA SUMMILUX-R 80 mm f/1.4
56 LEICA APO-SUMMICRON-R 90 mm f/2 ASPH.
57 LEICA APO-MACRO-ELMARIT-R 100 mm f/2.8

Medium to super telephoto focal lengths
59 LEICA APO-SUMMICRON-R 180 mm f/2
60 LEICA APO-ELMARIT-R 180 mm f/2.8
61 LEICA APO-TELYT-R 280 mm f/4

Module System
62 LEICA APO-TELYT-R Module System
280 mm f/2.8 to 800 mm f/5.6

Extender
64 LEICA APO-EXTENDER-R 2 x
64 LEICA APO-EXTENDER-R 1.4 x

Zoom focal lengths
67 LEICA VARIO-ELMAR-R 21–35 mm f/3.5–4 ASPH.
68 LEICA VARIO-ELMAR-R 28–70 mm f/3.5–4.5
69 LEICA VARIO-ELMAR-R 35–70 mm f/4
70 LEICA VARIO-APO-ELMARIT-R 70–180 mm f/2.8
71 LEICA VARIO-ELMAR-R 80–200 mm f/4
72 LEICA VARIO-ELMAR-R 105–280 mm f/4.2

Macro photography
74 Focusing Bellows-R BR 2 and LEICA MACRO-ADAPTER-R
75 LEICA PHOTAR lenses and LEICA PHOTAR-ADAPTER-R

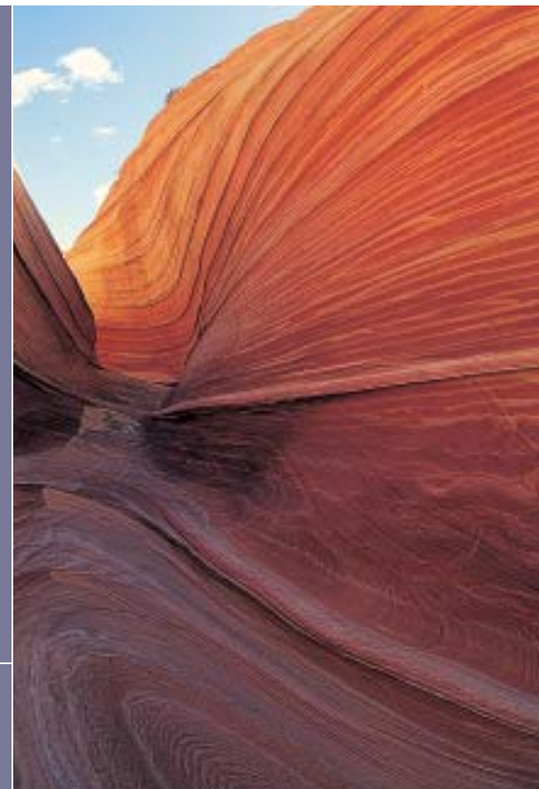
76 **Overview Leica R lenses**

Wide-angle focal lengths : Achieving an overview

While lenses with other focal lengths only cover a small field of view, Leica R lenses with focal lengths from 15 to 24 mm provide a very large overview. The characteristic dramatic perspective renders a prominent foreground with rapidly receding background. With minor stopping down, the depth of field already extends from the foreground all the way to infinity. Composing the foreground requires a careful balance, because even with a small amount of tilting the camera already leads to converging lines. But this is an effect that can also be used in artistic manner. The 28 mm and 35 mm Leica R wide-angle lenses provide an increased angle of view without the pronounced wide-angle characteristics. That makes it easier to manage converging lines. Therefore it is with wide-angle photographs in particular that the Leica R system allows precise control of the cropping and thus a meticulous composition of the images.

LEICA SUPER-ELMARIT-R 15 mm f/2.8 ASPH.

LEICA SUPER-ELMARIT-R 15 mm f/2.8 ASPH.
The optical design, with internal focusing, has 13 lens elements in 10 groups, one with an aspherical surface. This super-wide-angle lens has virtually no flare, it is not sensitive to reflections and delivers first-class images at full aperture. Contrast and sharpness are extremely high, so that the finest details are resolved into the very corners of the image. The Super-Elmarit-R has a built-in filter revolver with a neutral density filter, a KB12 artificial light conversion filter, a yellow-green filter and an orange filter. Its very wide angle of view and its impressive rendition of perspectives are superbly suitable for landscape and architectural photography, as well as for covering the full scene in confined interior quarters. Dynamic perspectives with dominant foregrounds are made possible by the large angle of view and the short near focusing distance of only 18 cm (7 in).



Antelope Canyon

LEICA ELMARIT-R 19 mm f/2.8

LEICA ELMARIT-R 19 mm f/2.8
High contrast and perfect rendition of the finest details of the subject are but a few of the strengths of this versatile wide-angle lens. It has rear component focusing as well to ensure outstanding results in the near range. It also features a built-in filter revolver. It is excellent for fashion photography, reportage and dramatic landscape perspectives ; its compact size makes it very practical and comfortable to handle. The high speed at full aperture and its excellent contrast rendition facilitate focusing, even under critical conditions.

LEICA ELMARIT-R 24 mm f/2.8

LEICA ELMARIT-R 24 mm f/2.8
This wide-angle lens uses a floating element to achieve uniformly high imaging performance across the entire focusing range from 30 cm (12 in) to infinity. Artificial vignetting, which is already extremely low for this focal length, is easy to eliminate by slightly stopping down the aperture. At first glance, photographs taken with the LEICA ELMARIT-M 24 mm f/2.8 do not look like super-wide-angle pictures, however they are very impressive because of their unusual perspective. In the close-up range, this lens makes unusual images possible because it sets the main subject off in an interesting manner in relation to its surroundings.

Skyscraper, downtown

San Francisco, harbor round trip at sundown

LEICA ELMARIT-R 28 mm f/2.8

LEICA ELMARIT-R 28 mm f/2.8
A classic wide-angle lens that embodies typical Leica qualities in every respect. Sharpness and contrast are already exemplary all the way to the edges of the image at f/2.8, plus they can be enhanced by stopping down the aperture. A floating element maintains the high performance throughout the focusing range, down to 30 cm (12 in). Compact size, high speed and harmonious wide-angle characteristics make this lens a valuable companion for universal applications.

LEICA PC-SUPER-ANGULON-R 28 mm f/2.8

LEICA PC-SUPER-ANGULON-R 28 mm f/2.8
Because of its enlarged image circle of 62 mm, this lens can be shifted from the optical axis by up to 11 mm. Its special mount permits rotation in 45° steps to permit perspective corrections in vertical and horizontal formats. In this specially designed lens mount the aperture is set in accordance with the classic working aperture method. A preset lever facilitates stopping down the aperture to the pre-selected value. A floating element ensures high imaging performance into the 30 cm (12 in) near-focusing range. This special lens is unsurpassed for architectural photography because it eliminates the converging lines of conventional lenses (left illustration). Shifting its optical axis permits a stepless perspective correction until a pleasant natural overall image is achieved.

San Francisco Bay

Las Vegas

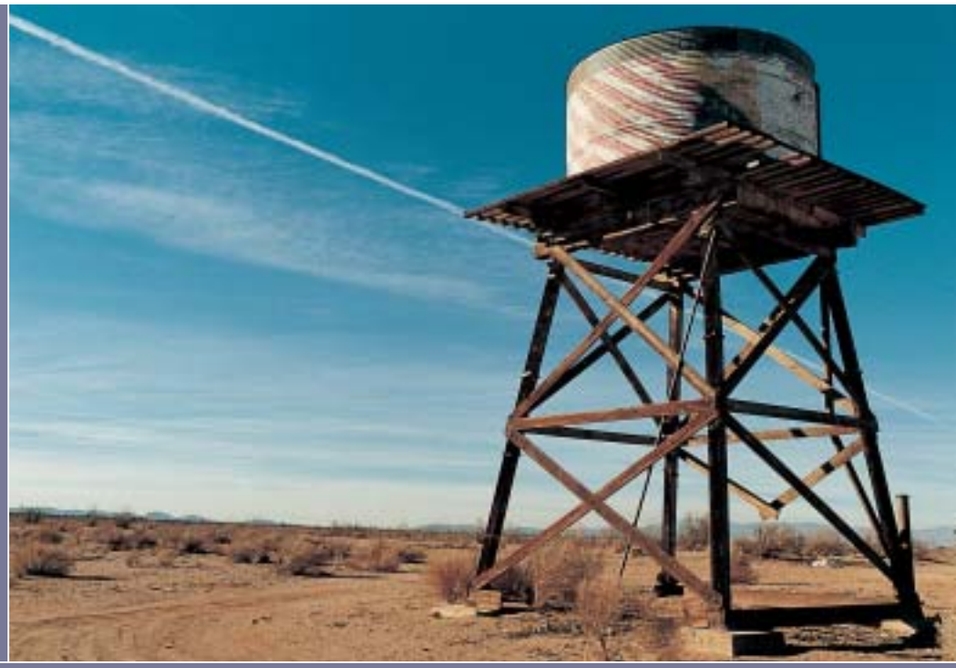
LEICA SUMMILUX-R 35 mm f/1.4

LEICA SUMMILUX-R 35 mm f/1.4
Outstanding contrast rendition and precise detail reproduction are present at full aperture. There are no disturbing reflections, even in critical situations like backlit scenes or when there are strong light sources in the picture area. Coma is practically non-existent and distortion is exceedingly low for a wide-angle lens with this speed. Floating elements provide a flat field in the near-focusing range. The high speed in conjunction with the relatively short focal length allows hand-held exposures in extremely low light situations. The starting aperture of f/1.4 produces a very bright viewfinder image that permits aesthetic application of selective sharpness. All these qualities make the LEICA SUMMILUX-R 35 mm f/1.4 a popular tool for reportage photography.

LEICA SUMMICRON-R 35 mm f/2

LEICA SUMMICRON-R 35 mm f/2
A fast wide-angle lens, distinguished by its minimal vignetting, very low distortion and excellent flare suppression. It is an excellent lens for life-like, impressive shots and perfect for a large diversity of subjects. Its compact size and low weight make it a perfect travel companion.

Big Sur, coast



Victor Valley, water reservoir

Standard focal lengths : The natural way to look at things

Leica R lenses with standard focal lengths and 45-degree angle of view come closest to the way the human eye sees things. Perspectives in the photographs are depicted naturally. The fields of application of standard lenses are extensive and varied. Landscape photographs with a good feeling of depth, impressive architectural photographs, spontaneous snapshots and carefully composed still-lifes : they all benefit from the outstanding Leica imaging quality. In spite of the high speeds, these lenses are relatively compact and lightweight, which makes it possible to continue using them for hand-held photography when lighting conditions are poor. The 60 mm macro lens can be regarded as a standard R lens that also covers the close-up range.

LEICA SUMMILUX-R 50 mm f/1.4

LEICA SUMMILUX-R 50 mm f/1.4
For a lens of such high speed, the LEICA SUMMILUX-R 50 mm f/1.4 achieves extraordinary image performance and high contrast across the entire focusing range. The wide-open aperture of f/1.4 is a fully functional working aperture. Stopping the lens down by one or two stops enhances its high performance. By setting the lens at f/1.4, composition can be influenced creatively by the reduced depth of field. Because of its great speed and compact size, this lens adds much flexibility to the outstanding working characteristics of the standard 50 mm focal length.

El Mirage, Yoshua Tree at sundown

LEICA SUMMICRON-R 50 mm f/2

LEICA SUMMICRON-R 50 mm f/2
A highly versatile standard lens that also exhibits its outstanding imaging quality at medium and close distances. In spite of the high speed of this lens, its sharpness, contrast and detail resolution are already first class at full aperture. Weighing a mere 300 g (10.5 oz) and with a length of only 41 mm (1⅝ inches), it is extraordinarily handy and compact.

LEICA MACRO-ELMARIT-R 60 mm f/2.8

LEICA MACRO-ELMARIT-R 60 mm f/2.8
Excellent image quality in the close-up range, outstanding sharpness and fascinating detail fidelity are a matter of course for this lens. Stopping the lens down by one or two stops results in superb results at greater distances as well. It is also flare-free, even under difficult lighting conditions. Vignetting and distortion are practically non-existent. With its focal length of 60 mm, it has a particularly versatile range of applications. When high speed can be foregone at this focal length in order to gain a focusing range from infinity down to 27 cm (10⅝ in), a reproduction ratio of 1:2, this lens is the perfect choice. An even closer reproduction ratio of 1:1 can be achieved in combination with the LEICA MACRO-ADAPTER-R.

El Mirage, beach sailor

Malibu, breakfast

Short tele focal lengths : Concentration is everything

To capture the moment, to exclude the extraneous and to record what is relevant in a photograph – that is the high art of photography. Because of their smaller angle of view, lenses with longer focal lengths are a great help to the photographer in that quest. By using wide apertures with the resulting shallow depth of field, the subject can be made to stand out from an unsharp back- and foreground. The increased distance from the camera to the subject also allows more discreet and unobtrusive imaging.

LEICA SUMMILUX-R 80 mm f/1.4

LEICA SUMMILUX-R 80 mm f/1.4
Minimal vignetting, moderate contrast, uniform image quality across the entire picture area and very good resolution of fine detail characterize this extraordinary lens. This lens does not exhibit unwanted reflections, even under very bright, contrasting conditions at full aperture. Tonal reproduction with fine nuances and delicate transitions to unsharpness produce exceedingly beautiful portraits with transparent yet saturated colors – even when there are strong light sources in the background.

Littlerock, Martin

LEICA APO-SUMMICRON-R 90 mm f/2 ASPH.

LEICA APO-SUMMICRON-R 90 mm f/2 ASPH.
Apochromatic correction and the use of a lens element with an aspherical surface are combined in this compact telephoto lens for high-performance imaging. Two of the five lens elements are made of high-refraction optical glass. Two other lens elements have anomalous partial dispersion. As a result, brilliance and resolution are exemplary, even at full aperture. Peak performance is achieved at full aperture. Vignetting is already minimal with the lens wide open. As a result of the large aperture of f/2 and impressive contrast rendition, it produces a particularly bright viewfinder image that permits very accurate and positive focusing, even in poor light. The nearest focusing distance is 0.7 m (27.5 in), so that subjects as small as 14 x 21 cm (5.5 x 8.25 in) can be explored. Combining this lens with the LEICA APO-EXTENDER-R 2 x produces a high-performance tele combination of 180 mm f/4.

LEICA APO-MACRO-ELMARIT-R 100 mm f/2.8

LEICA APO-MACRO-ELMARIT-R 100 mm f/2.8
Its overall performance makes it the great role model in the 35 mm field : Where else are sharpness and contrast, vignetting and distortion at all focusing distances and in all applications so exemplary ? That extends the range of applications of the LEICA APO-MACRO-ELMARIT-R 100 mm f/2.8 far beyond macro photography. Thus it also produces brilliant results in situations that are typical for medium tele lenses. And its focal length of 100 mm already enables it to enlarge subjects from a distance. That makes it much easier, for instance, to illuminate and to photograph shy small animals. When combined with the LEICA ELPRO 1:2–1:1, designed especially for use with this lens, the macro range can be explored down to a reproduction ratio of 1:1.

Littlerock, store front

Littlerock, haphazard find

Medium to super telephoto focal lengths : So close from far away

The longer the focal length, the greater the distance that can be bridged photographically. Medium to super long telephoto lenses make distant things seem close enough to touch and they place the observer in the midst of the action. In pictorial composition this means that a subject is photographed from a great distance in order to influence the perspective significantly : Fore- and background are brought closer together – the long focal lengths compress the space.

LEICA APO-SUMMICRON-R 180 mm f/2

LEICA APO-SUMMICRON-R 180 mm f/2
This extremely fast tele lens with apochromatic correction guarantees flawless image quality all the way to the edges – and it does so from infinity to the near focusing limit of 1.5 m (4’10”). With its aperture wide open, it produces images with maximal contrast, highest resolution and differentiated color rendition. The system includes a protective filter for the front lens element and a filter in the filter drawer. Thanks to its rubber-armored lens hood, the lens is protected effectively against damage from impact. The sum of its properties makes the LEICA APO-SUMMICRON-R 180 mm f/2 the ideal tele lens for situations of poor lighting conditions and where longer distances have to be bridged. Selective focus makes photographs possible with an impressive feeling of depth, and the combination of internal focusing and a wide focusing ring allow silky-smooth and pinpoint-accurate focusing. Working with a tripod is made easy by a robust tripod base that can be rotated and locked in place.

Anthony Kiedis, Red Hot Chili Peppers frontman

LEICA APO-ELMARIT-R 180 mm f/2.8

LEICA APO-ELMARIT-R 180 mm f/2.8
The overall optical performance of this apochromatically corrected 180 mm lens can certainly be compared to that of the faster LEICA APO-SUMMICRON-R 180 mm f/2 lens. Even at full aperture, it is remarkable for its outstanding image quality. Coma as well as astigmatism and curvature of field can barely be detected. The rubber-armored lens hood effectively protects the lens against damage from impacts. As a lightweight and compact lens with this focal length, it is very well suited for portraiture, fashion, sports and landscape photography – even when it is not used on a tripod. Ingenious mechanical design and pleasing ergonomics make focusing especially easy.

LEICA APO-TELYT-R 280 mm f/4

LEICA APO-TELYT-R 280 mm f/4
This apochromatically corrected lens with internal focusing is free of distortion and it delivers the highest resolution with optimal contrast rendition and color fidelity over the entire focusing range – even at full aperture. The rubber-armored lens hood, protecting it against impact damage, and a rugged tripod base make it an ideal lens for animal and landscape photography. And it bridges considerable distances, bringing distant objects up close. Thanks to its compact size, it is easy to use for hand-held photography. It focuses down to 1.7 m (5'7") for a reproduction ratio of 1:5. The LEICA MACRO-ADAPTER-R transforms it into a full-fledged macro lens. Attaching a LEICA APO-EXTENDER-R 1.4 x or 2 x creates the high-performance combinations 400 mm f/5.6 and 560 mm f/8.0. With the LEICA APO-EXTENDER-R 2 x, a reproduction ratio of 1:2 can be achieved.

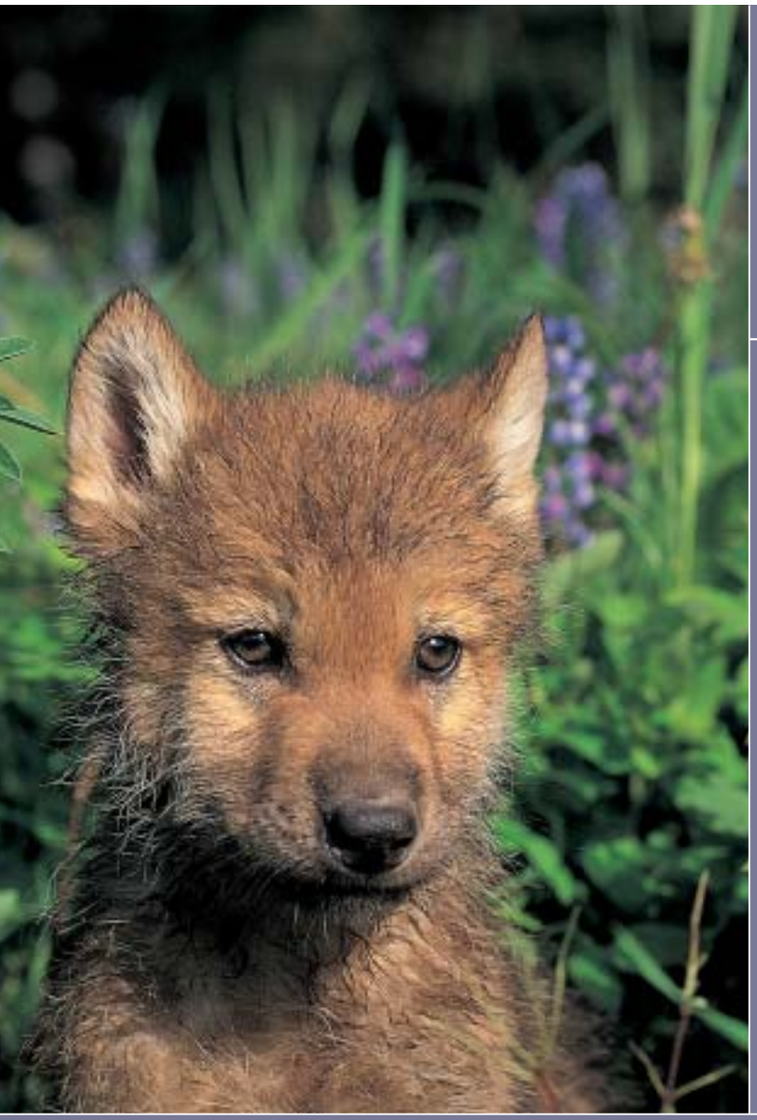
Carlsbad, Legoland

Big Sur, sea lions

LEICA APO-TELYT-R Module System

LEICA APO-TELYT-R Module System

This unique module system covers a range of focal lengths from 280 mm to 800 mm, and with the LEICA APO-EXTENDER-R 2 x, it increases to 1600 mm. It makes it possible to replace the heavy fixed-focal-length individual lenses. It takes only a few twists of the wrist to use two lens heads and three compact focusing modules to create six APO lenses with uniformly high optical quality. In the long telephoto range, the module system produces extraordinarily clear pictures with high contrast and accuracy in detail rendition and color reproduction. And because even the smallest mechanical weaknesses can significantly reduce the performance, especially in this range of focal lengths, the Leica module system is fabricated and assembled with extremely tight tolerances. Nature and animal photographers in particular, who use several focal lengths in this range, will value this system : Perhaps because they can save space with the combination of one lens head with two or three focusing modules, and/or because the smooth and easy focusing effectively supports precise settings in which the subject “springs into focus”.



Yellowstone, wolf cub

LEICA FOCUS MODULE 280/400 mm f/2.8

LEICA FOCUS MODULE 400/560 mm f/4

LEICA FOCUS MODULE 560/800 mm f/5.6

LEICA APO-TELYT-R 280/400/560 mm

LEICA APO-TELYT-R 280 mm f/2.8

LEICA APO-TELYT-R 400 mm f/4

LEICA APO-TELYT-R 560 mm f/5.6

LEICA APO-TELYT-R 400/560/800 mm

LEICA APO-TELYT-R 400 mm f/2.8

LEICA APO-TELYT-R 560 mm f/4

LEICA APO-TELYT-R 800 mm f/5.6

LEICA APO-EXTENDER-R 2 x / LEICA APO-EXTENDER-R 1.4 x

LEICA APO-EXTENDER-R 2 x
A high-grade accessory for all Leica R lenses with focal lengths from 50 mm and a speed of f/2 or less. With its highly complex design, based on high-refraction optical glass, the 2 x extender is optimally tailored to Leica R lenses. In particular in combination with Leica APO lenses, whose APO quality is retained, it creates outstanding optical systems. In use it doubles the focal length, while the speed is reduced by two stops. The focusing range of the lenses is fully preserved. The LEICA APO-EXTENDER-R 2 x has a fully automatic spring-back iris diaphragm transfer mechanism and it can be used without any restrictions in the aperture-preferred and manual exposure control modes.

LEICA APO-EXTENDER-R 1.4 x
The LEICA APO-EXTENDER-R 1.4 x was specifically for use with long focal lengths. It increases the focal length of an attached lens by a factor of 1.4 x. The nearest focusing distances of the lenses remain unchanged and the speed is reduced by only one aperture stop. The spring-loaded aperture transfer mechanism is fully automatic.

El Mirage, full moon

Possible Combinations

Leica R lens	Resulting focal length with LEICA APO-EXTENDER-R 1.4 x	Resulting focal length with LEICA APO-EXTENDER-R 2 x
LEICA SUMMILUX-R 50 mm f/1.4		100 mm f/2.8 [2]
LEICA SUMMICRON-R 50 mm f/2		100 mm f/4
LEICA MACRO-ELMARIT-R 60 mm f/2.8		120 mm f/5.6
LEICA SUMMILUX-R 80 mm f/1.4		160 mm f/2.8 [2]
LEICA APO-SUMMICRON-R 90 mm f/2 ASPH.		180 mm f/4 APO
LEICA APO-MACRO-ELMARIT-R 100 mm f/2.8		200 mm f/5.6 APO
LEICA APO-SUMMICRON-R 180 mm f/2	250 mm f/2.8 APO [1]	360 mm f/4 APO
LEICA APO-ELMARIT-R 180 mm f/2.8		360 mm f/5.6 APO
LEICA APO-TELYT-R 280 mm f/2.8	400 mm f/4 APO	560 mm f/5.6 APO
LEICA APO-TELYT-R 280 mm f/4	400 mm f/5.6 APO	560 mm f/8 APO
LEICA APO-TELYT-R 400 mm f/2.8	560 mm f/4 APO	800 mm f/5.6 APO
LEICA APO-TELYT-R 400 mm f/4	560 mm f/5.6 APO	800 mm f/8 APO
LEICA APO-TELYT-R 560 mm f/4	800 mm f/5.6 APO	1100 mm f/8 APO
LEICA APO-TELYT-R 560 mm f/5.6	800 mm f/8 APO	1100 mm f/11 APO
LEICA APO-TELYT-R 800 mm f/5.6	1100 mm f/8 APO	1600 mm f/11 APO
LEICA VARIO-ELMAR-R 35–70 mm f/4		70–140 mm f/8
LEICA VARIO-APO-ELMARIT-R 70–180 mm f/2.8		140–360 mm f/5.6 APO
LEICA VARIO-ELMAR-R 80–200 mm f/4		160–400 mm f/8
LEICA VARIO-ELMAR-R 105–280 mm f/4.2	150–400 mm f/5.9	210–560 mm f/8.4

[1] Because the LEICA APO-EXTENDER-R 1.4 x is designed for lenses with a maximum aperture of f/2.8, the LEICA APO-SUMMICRON-R 180 mm f/2 should be stopped down by 1 to 2 stops.

[2] Because the LEICA APO-EXTENDER-R 2 x is designed for lenses with a maximum aperture of f/2 and smaller, the larger aperture (by 1 f-stop) of this lens does not lead to a corresponding gain in speed, viewfinder image is not brighter and the exposure times are not shorter than they are with lenses with an aperture of f/2. Consequently, an exposure correction of -1 EV must be made when lenses with a maximum aperture of f/1.4 are being used. In addition, these lenses should be stopped down to at least f/2 (or better yet, down to f/4).

Zoom focal lenghts : Ready for any situation

Leica zoom lenses offer the possibility of selecting any desired cropping within their range of focal lengths. This is especially important when the camera position cannot be changed and the subject must fill the frame. For demanding photographers who want to travel with onlya few lenses, zoom lenses are the ideal, versatile companions. A zoom lens is simply indispensable in the fast, fleeting moments that do not allow time for changing lenses. The imaging performance of Leica zoom lenses is certainly comparable to that of Leica lenses with fixed focal lengths.

LEICA VARIO-ELMAR-R 21–35 mm f/3.5–4 ASPH.

LEICA VARIO-ELMAR-R 21–35 mm f/3.5–4 ASPH.
A compact, lightweight zoom lens that covers the full range of the most frequently used focal lengths in the wide-angle range. Even at full aperture, both contrast and sharpness are comparable to those of lenses with fixed focal lengths. In spite of its compact design, it has an unusually high performance. That is due to the use of two aspherical surfaces and two lens elements made of high-refraction optical glass and glass with anomalous partial dispersion. Its aspherical surfaces are fabricated with a highly modern precision polishing process. For a wide-angle lens, susceptibility to reflections and barrel distortion are low. With its highly practical range of focal lengths and its outstanding imaging performance, this lens masters especially those tasks for which one would otherwise need four different wide-angle lenses : From photographing people and their nearby surroundings to spacious landscape photographs with a great feeling of depth. As a wide-angle zoom lens, the use of only two additional zoom lenses can form a high-performance, lightweight and complete outfit – for instance the LEICA VARIO-ELMAR-R 35–70 mm f/4 as the normal focal length and the LEICA VARIO-ELMAR-R 80–200 mm f/4 as the tele lens.

Carlsbad, city beach

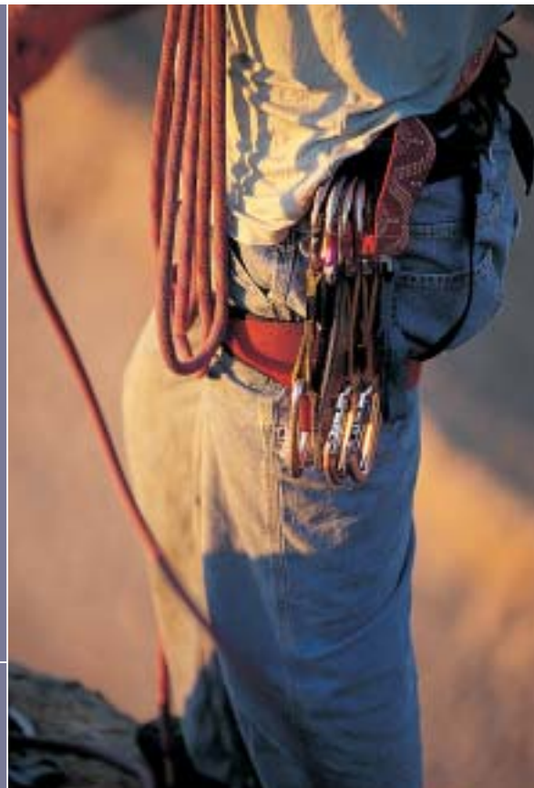
LEICA VARIO-ELMAR-R 28–70 mm f/3.5–4.5

LEICA VARIO-ELMAR-R 28–70 mm f/3.5–4.5
The special strengths of this zoom lens are a balanced imaging performance across the entire focusing range as well as good contrast rendition and detail reproduction already at full aperture. Focusing through the viewfinder is positive and fast. Stopping the lens down slightly by one or two aperture stops further enhances its excellent overall optical performance. Those who like to go on photographic trips with as little baggage as possible will find this compact and handy lens with its expanded zoom range to be an ideal traveling companion.

LEICA VARIO-ELMAR-R 35–70 mm f/4

LEICA VARIO-ELMAR-R 35–70 mm f/4
With the use of one lens element with an aspherical surface, contrast and imaging quality of this lens are at least as good as those of lenses with comparable fixed focal lengths. With its excellent gradation in shadow areas and highlights, it is particularly well suited for subjects with strong light contrasts. Thanks to a macro setting, close-up pictures as near as 26 cm (10.5 inches) are possible, which corresponds to a reproduction ratio of 1:2.8. As a universal zoom lens, it covers the classic focal lengths. All these qualities make it an indispensable standard lens in the Leica R system.

Big Sur, coast



Point Dume, climber

LEICA VARIO-APO-ELMARIT-R 70-180 mm f/2.8

LEICA VARIO-APO-ELMARIT-R 70-180 mm f/2.8
A particularly complex lens: The optical computation is based on 13 lens elements in 10 groups, using 12 different optical glasses – five of them being special glass with anomalous partial dispersion. The performance characteristics of this apochromatically corrected zoom lens with its high uniform speed of f/2.8 are comparable to those of Leica lenses with fixed focal lengths. This lens distinguishes itself in the high contrast and clear differentiation even of intricate color gradations at all focal length settings and across the entire picture area, all the way into the close-up range. Both coma and astigmatism are hardly detectable. As a result, the application possibilities of this zoom lens are virtually unlimited : Stationary subjects in fashion photography ; or for reportage, in which a fast, yet careful change of cropping is important. The rubber-armored pullout lens hood can be used to set the outfit down or to rest it on a rigid surface, and the large, rotating tripod base has special click stops for vertical and horizontal formats.

LEICA VARIO-ELMAR-R 80-200 mm f/4

LEICA VARIO-ELMAR-R 80-200 mm f/4
A very good imaging performance with high resolving power and contrast at full aperture, across the entire picture area and over the complete zoom range – that is a succinct description of this lens, which stands in comparison to the best lenses with fixed focal lengths. Coma and spherical aberration are very low and can be largely eliminated by slightly stopping down the aperture. The illumination of the picture area is uniform at all focal length settings, and in the close-up range down to 1.1 m (43.25 inches), the lens renders a reproduction ratio of 1:3.9. Thanks to its compact size it is a lightweight lens, which, together with its smooth focusing makes it a universal lens for traveling. In combination with the 21-35 mm and 35-70 mm Leica zoom lenses, one can, with only three lenses, achieve a stepless 1 to 10 range of focal lengths – and a uniformly high imaging quality.

Malibu, Jennifer

Malibu, rush hour

LEICA VARIO-ELMAR-R 105–280 mm f/4.2

LEICA VARIO-ELMAR-R 105–280 mm f/4.2
High contrast and the best resolving power across the entire range of focal lengths, an outstanding flatness of field and low coma that can be eliminated completely by closing the aperture down by only one stop – these are some of the qualities that distinguish this zoom lens. Thanks to its range of focal lengths and its near-focusing distance of only 1.7 m (5'7"), it offers great flexibility for medium and longer tele distances. With the use of the Leica extenders and with a flick of the wrist, this lens, which can be compared with lenses with fixed focal lengths, becomes an optical system for universal applications. In effect, the extremely large spectrum of focal lengths provides the photographer with extensive possibilities in many diverse situations.

San Francisco

Macro photography : Micro becomes macro

The wonders of nature become visible by means of macro photography. It reveals new, unexpected details by means of the surprising depiction of things, for instance by showing a tiny insect with great magnification. In addition to the LEICA MACRO-ELMARIT-R 60 mm f/2.8 and the LEICA APO-MACRO-ELMARIT-R 100 mm f/2.8, Leica offers a selection of interesting accessories that explore the macro range down to 18 x magnification.

Focusing Bellows-R BR 2 / LEICA MACRO-ADAPTER-R

Focusing Bellows-R BR 2
Variable extension for stepless adjustment of the reproduction ratio. It incorporates a focusing rail. The automatic spring-loaded diaphragm function of the lens is preserved, aperture-preferred and manual exposure controls can also be used. The bellows focusing device can be used with all Leica lenses with focal lengths from 50 to 180 mm and also with the LEICA PHOTAR special lenses.

LEICA MACRO-ADAPTER-R
This intermediate ring increases the extension of a lens by 30 mm. The lens' open-aperture metering and its spring- loaded diaphragm function are preserved. Aperture-preferred and manual exposure controls remain fully functional on Leica R cameras.

LEICA PHOTAR lenses and LEICA PHOTAR-ADAPTER-R

LEICA PHOTAR lenses and LEICA PHOTAR-ADAPTER-R
There are three special lenses that can be used with a LEICA PHOTAR-ADAPTER-R on the Focusing Bellows-R BR 2. They are corrected for magnified reproduction. With their magnification of up to 18 x, they cover the field of micro photography with practically no gaps.

Common green lacewing

Overview Leica R lenses

Please note Leica R lenses with electrical contacts can be used without any limitations on all Leica R cameras. In addition, these contacts serve for the electronic data transfer on LEICA R8 and R9 cameras, for example for focal length recognition and automatic adjustment of the motorzoom reflector on dedicated flash units. Most of the predecessors of current lenses, which are of the same design anyway, can be retro-fitted with the electronic components. However, for reasons of space, this may require the removal of the cams for LEICAFLEX models in certain cases. Conversely, in most cases it is also possible to replace the aforementioned LEICAFLEX cams with the new electronic components. More detailed information can be obtained from: Leica Camera AG, Customer Service Department, Post Office Box 11 80, D-35606 Solms, Germany, Telephone +49(0)6442-208-0 / Fax +49(0)6442-208-333, E-mail: customer.service@leica-camera.com

Leica R lens	Focal length mm	Maximum aperture	Angle of view diagonal, in ° [1]	No. of lens elements elements/groups
LEICA SUPER-ELMARIT-R 15 mm f/2.8 ASPH.	15	f/2.8	111	13/10
LEICA ELMARIT-R 19 mm f/2.8	19	f/2.8	97	12/10
LEICA ELMARIT-R 24 mm f/2.8	24	f/2.8	84	9/7
LEICA ELMARIT-R 28 mm f/2.8	28	f/2.8	75	8/7
LEICA PC-SUPER-ANGULON-R 28 mm f/2.8	28	f/2.8	72/93 [5]	12/10
LEICA SUMMILUX-R 35 mm f/1.4	35	f/1.4	63	10/9
LEICA SUMMICRON-R 35 mm f/2	35	f/2	63	6/6
LEICA SUMMILUX-R 50 mm f/1.4	50	f/1.4	47	8/7
LEICA SUMMICRON-R 50 mm f/2	50	f/2	47	6/4
LEICA MACRO-ELMARIT-R 60 mm f/2.8	60	f/2.8	40	6/5
LEICA SUMMILUX-R 80 mm f/1.4	80	f/1.4	30	7/5
LEICA APO-SUMMICRON-R 90 mm f/2 ASPH.	90	f/2	27	5/5
LEICA APO-MACRO-ELMARIT-R 100 mm f/2.8	100	f/2.8	24	8/6
LEICA APO-SUMMICRON-R 180 mm f/2	180	f/2	13,7	9/6
LEICA APO-ELMARIT-R 180 mm f/2.8	180	f/2.8	13,7	7/5
LEICA APO-TELYT-R 280 mm f/4	280	f/4	8.8	7/6
LEICA APO-TELYT-R 280 mm f/2.8	280	f/2.8	8.8	8/7
LEICA APO-TELYT-R 400 mm f/2.8 Module	400	f/2.8	6.2	10/8
LEICA APO-TELYT-R 400 mm f/4 System	400	f/4	6.2	9/7
LEICA APO-TELYT-R 560 mm f/4	560	f/4	4.4	11/8
LEICA APO-TELYT-R 560 mm f/5.6	560	f/5.6	4.4	9/7
LEICA APO-TELYT-R 800 mm f/5.6	800	f/5.6	3.1	11/8
LEICA APO-EXTENDER-R 1,4 x	Lens focal length x 1.4	–1 f-stop	corresponding to resulting focal length	5/4
LEICA APO-EXTENDER-R 2 x	Lens focal length x 2	–2 f-stops	corresponding to resulting focal length	7/5
LEICA VARIO-ELMAR-R 21–35 mm f/3.5–4 ASPH.	21–35	3.5–4	91.6–63.4	9/8
LEICA VARIO-ELMAR-R 28–70 mm f/3.5–4.5	28–70	f/3.5–4.5	75–34	11/8
LEICA VARIO-ELMAR-R 35–70 mm f/4	35–70	f/4	63–34	8/7
LEICA VARIO-APO-ELMARIT-R 70–180 mm f/2.8	70–180	f/2.8	34–13.7	13/10
LEICA VARIO-ELMAR-R80–200 mm f/4	80–200	f/4	30–12.3	12/9
LEICA VARIO-ELMAR-R 105–280 mm f/4.2	105–280	f/4.2	23–8.8	13/10

Leica R lens	Nearest focus from film plane, m / ft | in	Filter thread Ø in mm	Dimensions Ø x length from bayonet flange, mm / in	Weight g / oz
LEICA SUPER-ELMARIT-R 15 mm f/2.8 ASPH.	0.18 / 7 1/16"	built-in [2]	283.5 x 85.3 / 11 5/32 x 3 11/32	710 / 25
LEICA ELMARIT-R 19 mm f/2.8	0.30 / 11 13/16"	built-in [2]	71 x 60 / 2 13/16 x 2 3/8	560 / 19.7
LEICA ELMARIT-R 24 mm f/2.8	0.30 / 11 13/16"	Series 8/60 [3]	67 x 48.5 / 2 5/8 x 1 29/32	400 / 14.1
LEICA ELMARIT-R 28 mm f/2.8	0.30 / 11 13/16"	55	67.5 x 48 [4] / 2 21/32 x 1 7/8	435 / 15.3
LEICA PC-SUPER-ANGULON-R 28 mm f/2.8	0.30 / 11 13/16"	67 [6]	75 x 84 / 2 15/16 x 3 5/16	600 / 21.2
LEICA SUMMILUX-R 35 mm f/1.4	0.50 / 1'7 11/16"	67	75 x 76 / 2 15/16 x 3	685 / 24.2
LEICA SUMMICRON-R 35 mm f/2	0.30 / 11 13/16"	55	66 x 54 / 2 19/32 x 2 1/8	430 / 15.2
LEICA SUMMILUX-R 50 mm f/1.4	0.50 / 1'7 11/16"	60	70 x 51 / 2 3/4 x 2	490 / 17.3
LEICA SUMMICRON-R 50 mm f/2	0.50 / 1'7 11/16"	55	66 x 41 / 2 19/32 x 1 5/8	290 / 10.2
LEICA MACRO-ELMARIT-R 60 mm f/2.8	0.27 [7] / 10 5/8"	55	67.5 x 62.3 / 2 21/32 x 2 7/16	400 / 14.1
LEICA SUMMILUX-R 80 mm f/1.4	0.80 / 2'7 1/2"	67	75 x 69 / 2 15/16 x 2 23/32	700 / 24.7
LEICA APO-SUMMICRON-R 90 mm f/2 ASPH.	0.70 / 2'3 9/16"	60	70 x 59 / 2 3/4 x 2 23/32	520 / 18.3
LEICA APO-MACRO-ELMARIT-R 100 mm f/2.8	0.45 [8] / 1'5 3/4"	60	73 x 104.5 / 2 7/8 x 4 1/8	760 / 26.8
LEICA APO-SUMMICRON-R 180 mm f/2	1.50 / 1'7 11/16"	Series 6/100 [9]	116 x 176 / 4 7/16 x 6 15/16	2,500 / 88.2
LEICA APO-ELMARIT-R 180 mm f/2.8	1.50 / 1'7 11/16"	67	76 x 132 / 3 x 5 3/16	970 / 34.2
LEICA APO-TELYT-R 280 mm f/4	1.70 / 5'7"	Series 5.5/77 [2]	90 x 208 / 3 7/16 x 8 3/16	1,875 / 66.1
LEICA APO-TELYT-R 280 mm f/2.8	2.00 / 6'6 3/4"	Series 6 [3]	125 x 276 / 4 15/16 x 10 7/8	3,740 / 131.9
LEICA APO-TELYT-R 400 mm f/2.8 Module	3.70 / 12'2"	Series 6 [3]	157 x 344 / 6 3/16 x 13 9/16	6,240 / 220.1
LEICA APO-TELYT-R 400 mm f/4 System	2.15 / 7'1"	Series 6 [3]	125 x 314 / 4 15/16 x 12 3/8	3,860 / 136.1
LEICA APO-TELYT-R 560 mm f/4	3.95 / 12'11 1/2"	Series 6 [3]	157 x 382 / 6 3/16 x 15 1/16	6,360 / 224.3
LEICA APO-TELYT-R 560 mm f/5.6	2.15 / 7'1"	Series 6 [3]	125 x 374 / 4 15/16 x 14 3/4	4,050 / 142.8
LEICA APO-TELYT-R 800 mm f/5.6	3.90 / 12'9 1/2"	Series 6 [3]	157 x 442 / 6 3/16 x 17 13/32	6,550 / 231
LEICA APO-EXTENDER-R 1,4 x	same as lens	–	62 x 36 + 47 [5] / 2 7/16 x 1 13/32 + 1 27/32	220 / 7.8
LEICA APO-EXTENDER-R 2 x	same as lens	–	70 x 35.4 / 2 3/4 x 1 3/8	270 / 9.5
LEICA VARIO-ELMAR-R 21–35 mm f/3.5–4 ASPH.	0.50 / 1'7 19/16"	67	75 x 66.3 / 2 15/16 x 2 5/8	500 / 17.6
LEICA VARIO-ELMAR-R 28–70 mm f/3.5–4.5	0.50 / 1'7 19/16"	60	74 x 76 / 2 29/32 x 3	450 / 15.9
LEICA VARIO-ELMAR-R 35–70 mm f/4	0.60 + 0.26 [4] / 1'11 3/8" + 10 1/4"	60	74 x 79 / 2 29/32 x 3 1/8	505 / 17.8
LEICA VARIO-APO-ELMARIT-R 70–180 mm f/2.8	1.70 + 77 / 5'7" + 2'6 5/16"	77	89 x 189.5 / 3 1/2 x 7 13/32	1,870 / 66
LEICA VARIO-ELMAR-R80–200 mm f/4	1.10 + 60 / 3'7 5/16" + 1'11 3/8"	60	71 x 165 / 2 13/16 x 6 1/2	1,020 / 36
LEICA VARIO-ELMAR-R 105–280 mm f/4.2	1.70	77	89 x 238 / 3 1/2 x 9 3/8	1,950 / 68.8

[1] All values are rounded nominal values; those below 15° with one decimal.
[2] Built-in filter revolver with ND (Neutral Density), Yellow-Green YG, Orange OR and Conversion Filter Blue 80B.
[3] Series filters are held in place by lens hood supplied with lens.
[4] Front (lens hood-) dimensions 65 x 74 mm.
[5] Angle of view : no shift/maximum shift.
[6] Requires special EW filters that can only be used without a lens hood ; unmounted glass filters 74 mm Ø can be placed in the filter holder of the lens hood.
[7] Creates a reproduction ratio of 1:2, with LEICA MACRO-ADAPTER-R down to 1:1 at 12 cm (4 3/4").
[8] Creates a reproduction ratio of 1:2, with LEICA ELPRO 1:2–1:1 down to 1:1 at 22 cm (8 5/8").
[9] Series filters in filter drawer, built-in protective filter.

[1] All values are rounded nominal values; those below 15° with one decimal.
[2] Series filters in filter drawer, built-in protective filter.
[3] Series filters in filter drawer.
[4] Second value is for the Macro setting.
[5] Second value is the overall length - the optics protrude in front beyond the bayonet flange.

Glossary

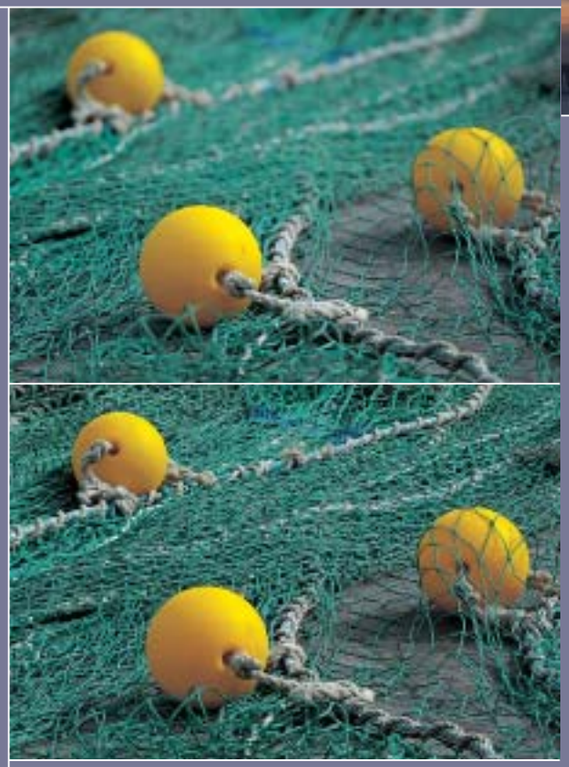
Contrast and Resolution **Contrast** is the term used to describe differences in brightness between light and dark areas of the picture. The greater this difference, the higher the contrast. Pictures with rich contrast are subjectively perceived to be sharper and more brilliant. **Resolution** is the ability of an optical system to depict fine structures. The higher the resolution, the smaller the still discernible details.

Pictorial examples : In an optimal picture (left), both contrast and resolution are high. If the contrast is too low, the picture appears flat : The black tires appear gray (center). If the resolution is too low, the pictures appear unsharp : Details of the tire's tread can no longer be discerned (right).

Natural and artificial vignetting The image in every picture darkens towards the edges. This effect is partly natural and partly artificial, and it is caused by light rays that enter the lens at an oblique angle. The effect is most pronounced in the corners of the image. Wide-angle pictures are more susceptible to this effect than pictures taken with normal or tele lenses. But vignetting is also introduced artificially, for instance by the mounts of the outer lens elements, and it often enhances the sharpness along the picture's edges. Darkening caused by artificial vignetting can be eliminated more or less by strongly stopping down the lens, whereas natural vignetting cannot be influenced.

Pictorial examples : With strong vignetting, the corners of the picture are noticeably darker (top). With low vignetting, on the other hand, the sky appears virtually uniformly bright (bottom).

Depth of field – Aperture – Iris Diaphragm **Depth of field** is the distance between the closest and the furthest away parts of the subject that still appear sharp at a particular distance setting. The depth of field is a factor of the focal length of the lens and the aperture that has been selected. The shorter the focal length and the larger the f-stop number, the larger will be the depth of field. With a small depth of field (i. e. with a small f-stop number), things in the foreground and in the background quickly become indistinct. This can be used to good advantage when attention is to be drawn to the main subject and when a more dimensional effect is to be achieved. But if several objects at different distances are to be shown in sharp focus at the same time, then a large depth of field (i. e. a large f-stop number) is required (see examples below). The **aperture** of a lens determines the maximal amount of light from an object that can be transmitted by the lens at one time. A large aperture (also called 'high speed') permits the use of shorter exposure times (i. e. faster shutter speeds) and smaller depth of field ranges, but this also involves a greater investment in the design and manufacture of a lens. The **iris diaphragm** makes it possible to reduce the effective aperture of a lens. That in turn makes it possible to use longer exposure times (i. e. slower shutter speeds), but above all it can be used to increase the depth of field.



Reflections and flare When light is reflected back and forth between two lens surfaces or when it is scattered by the lens mount, it arrives at a spot in the image that is different from the one where it is supposed to arrive. Undesired reflection images and light spots in the picture occur especially when the sun shines directly into the lens, and the pictorial impression can be impaired significantly. Several steps are taken to prevent reflections and stray light. To begin with, the shapes of the lens elements' surfaces, components of the lens mount and iris diaphragms are already optimized during the design stage, in such a way that no extreme effects on the film are to be expected. Furthermore, coating the lens elements (the application of reflection-reducing layers) and the appropriate treatment, such as matte black lacquering of internal mechanical parts lead to a significant reduction of reflection- and stray light components.

Glossary

Imaging errors (Aberrations) Light from a point on the subject must re-converge as a point in the picture in order for a sharp image to be formed. As a rule, a single lens element is not adequate for this purpose, because it has inherent deviations (image errors or aberrations) that are described below. By combining several lens elements, and by converting the computed lens design as accurately as possible into reality, all residual aberrations can be kept at a very low level. To illustrate these imaging errors, our pictorial examples show strongly exaggerated effects of the various types of aberrations. Because most of the imaging errors can be reduced or eliminated by stopping the lens down, a picture taken with the aperture of the lens wide open reveals the most about the imaging performance of a given lens. At Leica, great emphasis is placed on imaging quality already being very good at full aperture, so good that it can be enhanced only slightly by stopping the lens down. With a Leica lens it is possible, for example, to create a very sharp portrait with a dissolving background, thus giving that portrait an appealing dimensional effect.

Curvature of field – field flattening The natural shape of an image created by a lens element is curved, and this is referred to as curvature of field. If that image is recorded on a flat piece of film, the center of the image will be in sharp focus, but in practical terms the distance setting will be wrong for the edges of the picture, so that the image will not be sharp in that area. By re-focusing, the image can be sharpened at the edges. But that will cause the center of the image to be unsharp. Stopping the lens down increases the depth of field, and this attenuates this effect. The image can be flattened by means of appropriate lens configuration, so that the focus for all picture points will be on at least very close to the film plane.

Pictorial examples : The upper photograph shows a loss of sharpness towards its edges as a result of curvature of field. The lower picture shows great sharpness across the entire image.

Aperture errors – Spherical Aberration The closer to the edge that light rays pass through a lens, the more they will tend to arrive next to the actual picture point. Because this effect gets stronger as the aperture of the lens increases, it is referred to as aperture error, also called spherical aberration. Spherical aberration appears everywhere in the picture and it can be reduced by stopping the lens down. Aperture error leads to a loss in sharpness and contrast in the image. In extreme cases, flare can be noticed – halos appear around point sources of light, as can be seen on the street lanterns in the upper pictorial example.

Astigmatism The effect of astigmatism is similar to that of curvature of field, except for the additional fact that in this case the sharpness depends on the direction of the subject details. This effect also becomes more pronounced towards the edges of the picture. As an example, if we look at the corner of a picture of a chain link fence it will be noticeable, if astigmatism is present, that the wires that point towards the center of the picture are reproduced with a different sharpness than those that are oriented at a right angle to them. The wires oriented in either one or the other direction can be made to appear sharp by means of focusing, but not both at the same time. Astigmatism leads to a reduction of the imaging quality and in extreme cases it will cause an elongation of point sources of light. Here too, stopping the lens down will reduce this effect, but it will not eliminate it.

Coma When coma is present, light rays will deviate to one side from their picture point. The picture point will acquire a tail like a comet. This effect occurs more towards the edges of the picture and not in its center. Stopping the lens down reduces this effect. Coma leads to a loss of sharpness and contrast; in extreme cases the coma tail becomes noticeable on point sources of light, as demonstrated by the enlarged section of a star picture. This section was cropped from the left upper corner of the moon picture.

Distortion The term distortion is used to describe the effect that causes a scene not to be depicted at a uniform reproduction ratio. Distortion becomes especially apparent when long straight lines (such as masts or the corners of buildings) appear to be curved in the picture. Distortion occurs as a natural effect, especially with wide-angle lenses. Therefore, a small amount of distortion is a particular characteristic of these lenses.

Pictorial examples : In the distortion-free picture on the left, the ships' masts along the left edge of the picture are shown as straight lines. With pincushion distortion, middle portion of these masts appear bent towards the center of the picture. With barrel distortion, the middle portions of the masts appear bent towards the edges of the picture.

Glossary

APO-color aberration correction Every image-forming glass element – like lens elements, for example – bend light rays of different colors at different levels of refraction. This results in the fact that not all the light rays from a multi-colored subject point are reunited as a point in the image. This leads to color errors, or chromatic aberration. An outstanding color error correction (apochromatic) is achieved by means of the use of special optical glasses with anomalous partial dispersion, which results in increased sharpness of the image. At Leica, APO furthermore means that, already at full aperture, imaging performance is especially high and uniform across the entire picture area.

Pictorial examples : Color errors appear primarily as color fringes around dark objects in front of light backgrounds, as illustrated by the left picture of spires with the red fringes against the bright sky. With APO correction (right illustration) such color effects are no longer discernible.

Optical glasses with anomalous partial dispersion Light rays of different colors are refracted at different rates at a lens surface. This effect is called dispersion and different types of glass have it at different levels of strength. Most types of glass behave in a typical, “normal” manner. Special glasses with “anomalous partial dispersion”, however, have characteristics for certain ranges of color that deviate from this typical behavior that permit a special color error correction that cannot be achieved with normal glasses. Glasses with anomalous partial dispersion are used for the enhancement of imaging quality, which is needed in particular with APO systems (also see APO).

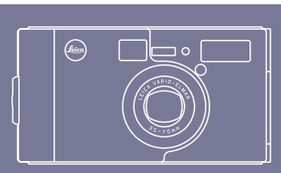
High refraction glasses High refraction glasses bend light rays more strongly than standard glasses with the same shape. Therefore the use of a lens element with high refraction can achieve a strong effect without the need for excessively strong curvatures. This helps to avoid picture errors, thus leading to greater imaging performance.

ASPH. is the abbreviation that denotes the use of at least one aspherical surface in a lens. Aspherical lens elements have a surface that has a curvature at the edges that is different from that at the center. They make it possible to influence light rays passing through edge portion of the lens in a different way from those passing through the center of the lens. This makes it possible to achieve several correction goals at the same time with a single lens element. They help to reduce the weight and the size of a lens. Furthermore, certain image errors (aberrations) can be avoided more effectively with an aspheric lens than they can with a spherical lens. They help to increase image quality or to reduce distortion. The manufacture and the handling of aspheric lens elements, however, is significantly more expensive than that of conventional lenses. Therefore the use of aspheric surfaces increases the value of a lens.

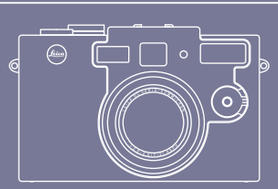
Rear unit-/internal focusing – floating elements To focus a lens, either the entire lens or at least a group of its lens elements has to be shifted. If focusing is performed by shifting a group of elements inside the lens, this is called internal focusing. Correspondingly, rear unit focusing is the term used to denote focusing by shifting the rear group of lens elements. The advantage of rear unit- and internal focusing is the fact that the portion of the lens remains unchanged, so that the length of the lens does not change during focusing. Because only a few components are shifted, focusing can be made easier and smoother as compared to a lens that requires the entire lens head to be shifted. This is particularly significant with very large lenses. “Floating elements” enable the imaging performance to be kept at a high level during focusing. In addition to the actual focusing group, another group of lens elements that has no effect on focusing is also shifted because it effectively counter-acts a reduction in imaging quality in the near-focusing range.

The very best optics in all Leica instruments

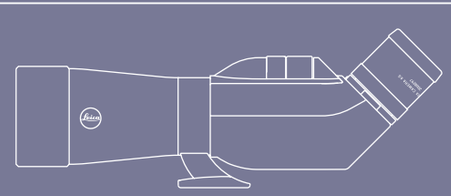
The avowed policy of applying the highest performance and perfection in the manufacture of optical masterpieces is evident not only in Leica system cameras. Compact and digital cameras, spotting scopes, binoculars and slide projectors stand out for their superb optical quality and renowned Leica quality. Whether it is the viewing, recording or reproducing – the instruments from Leica prove their outstanding optical competence day after day.



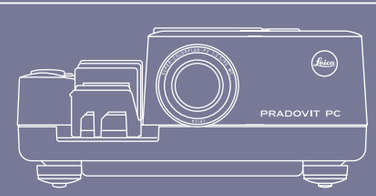
The handy Leica **compact cameras** are impressive not only because they are easy to operate and because of the clean design of their sturdy titanium or aluminum housings, but especially for their optical performance and quality standards : All lenses are manufactured of high-grade optical glass. Outstanding imaging performance distinguishes itself for its brilliant color rendition, crisp contrast and sharp details.



The modern **digital compact cameras** from Leica also benefit from the legendary high-performance optics. The core component is a zoom lens that provides great photographic latitude and that has been optimally tailored to the digital sensor. Aspheric lens components are made of high-grade coated optical glass. Very typical of Leica.



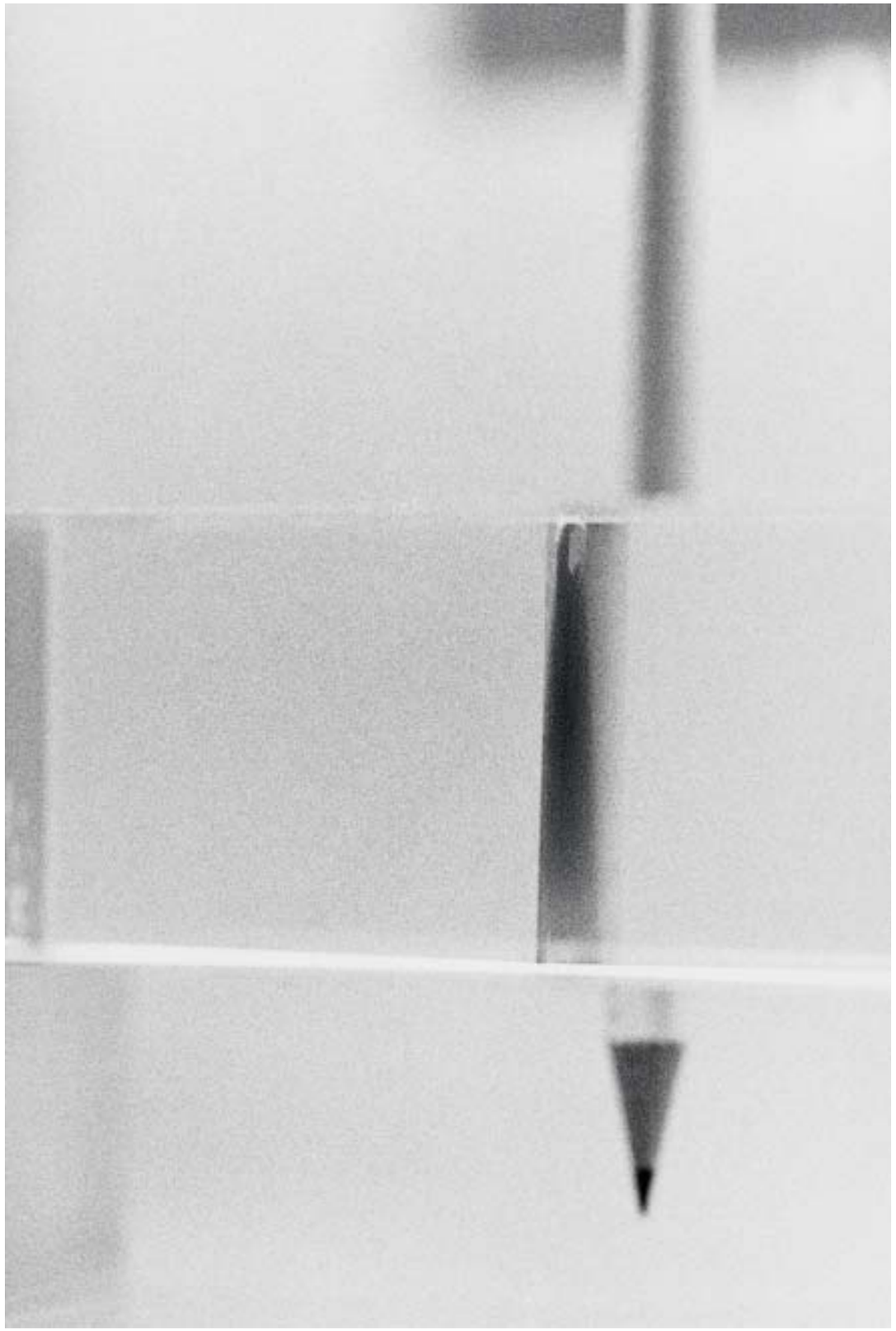
The outstanding brilliance and sharpness of the extraordinarily bright **binoculars, spotting scopes** and **laser rangefinders** from Leica expand the natural boundaries of human perception – especially in situations where distances are too great or the available light is too weak for the eyes. This opens great new dimensions for human vision.

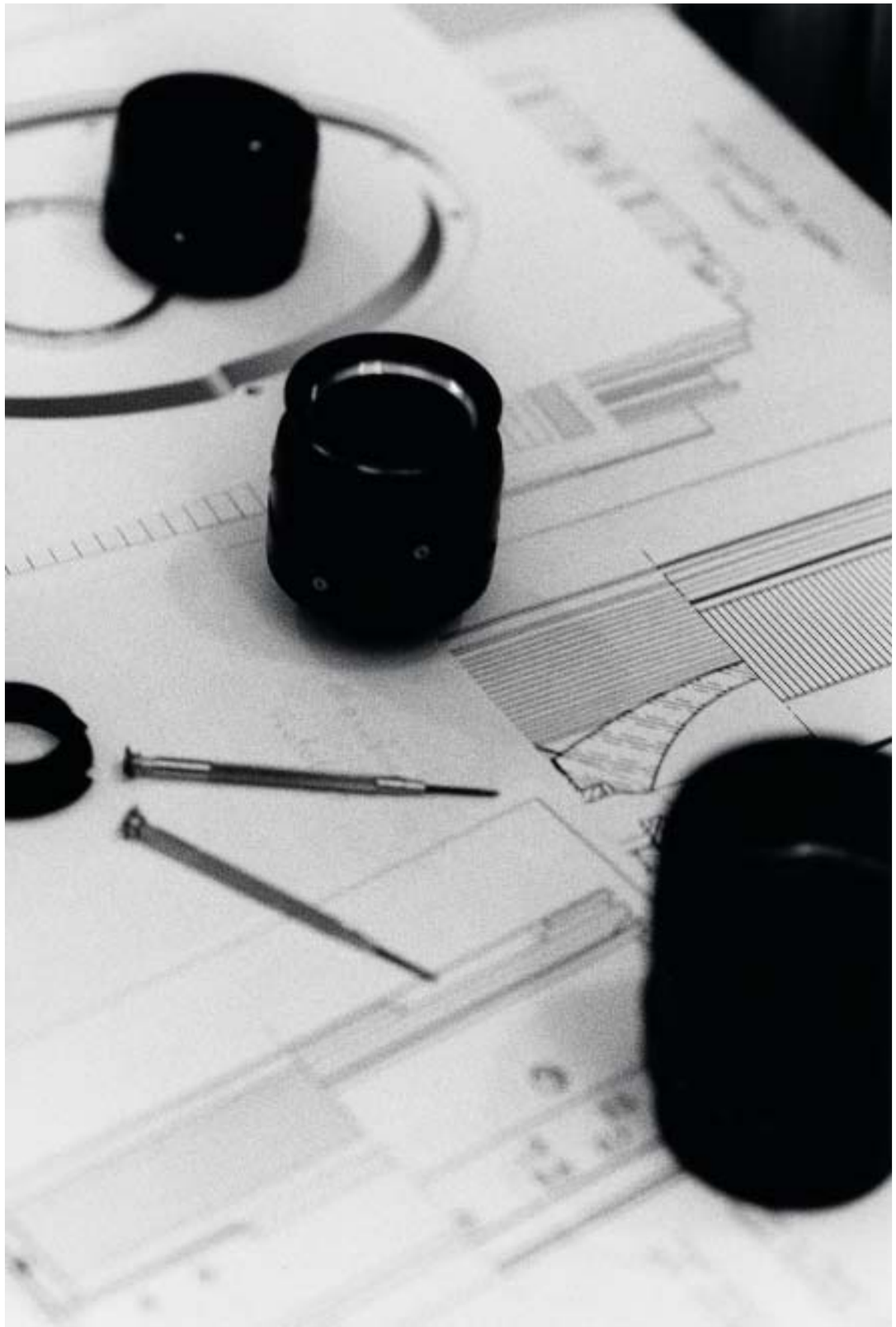


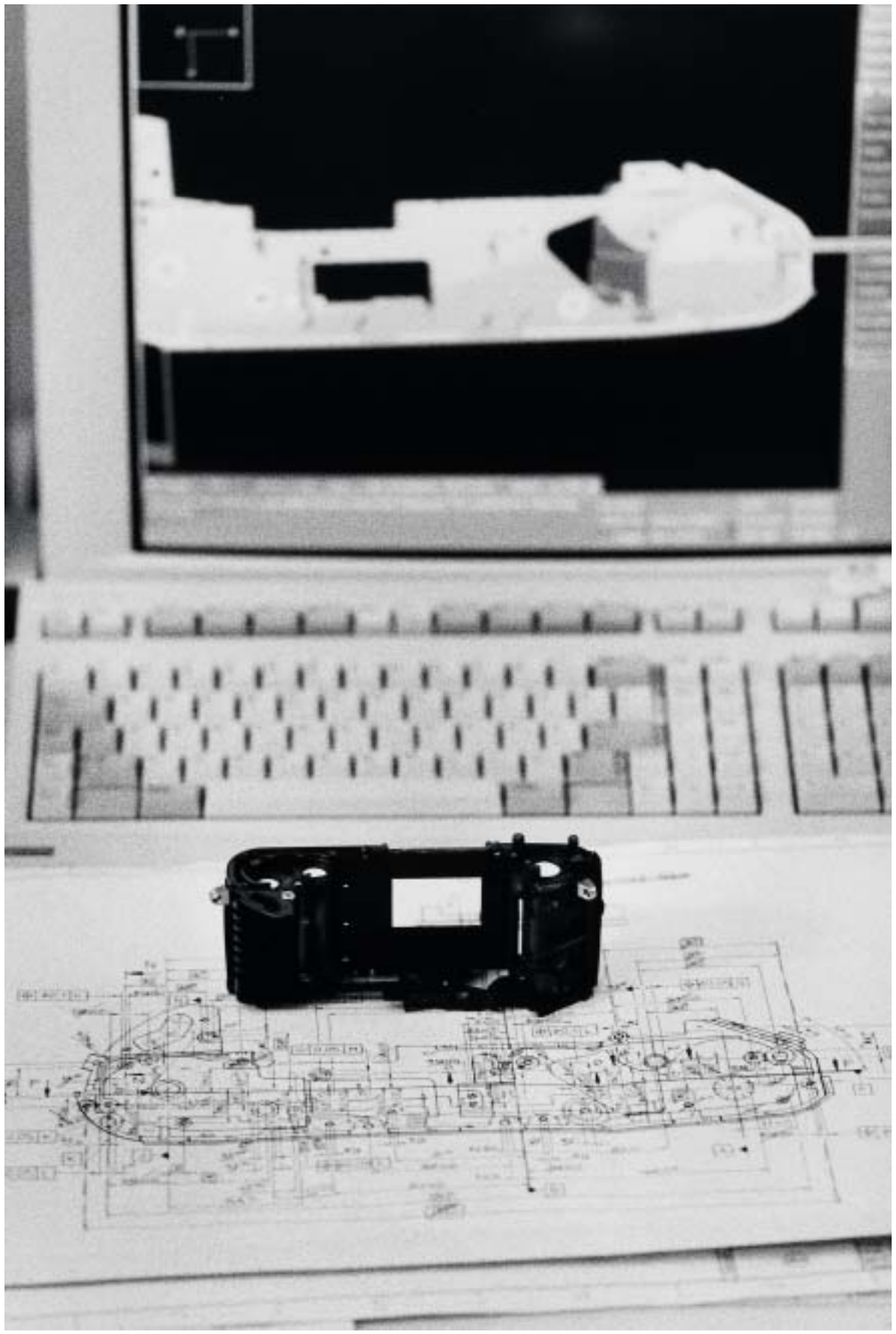
The full brilliance of your slides only becomes apparent on the projection screen when the **projector** also delivers high performance. That is the reason why Leica assigns great importance to the field of reproduction. In that spirit, Leica developed projectors and a complete line of outstanding projection lenses that will deliver every detail to the projection screen with the utmost sharpness and fidelity. This is another benefit of the extensive technical know-how and understanding that safeguard the highest optical standards in all Leica instruments.

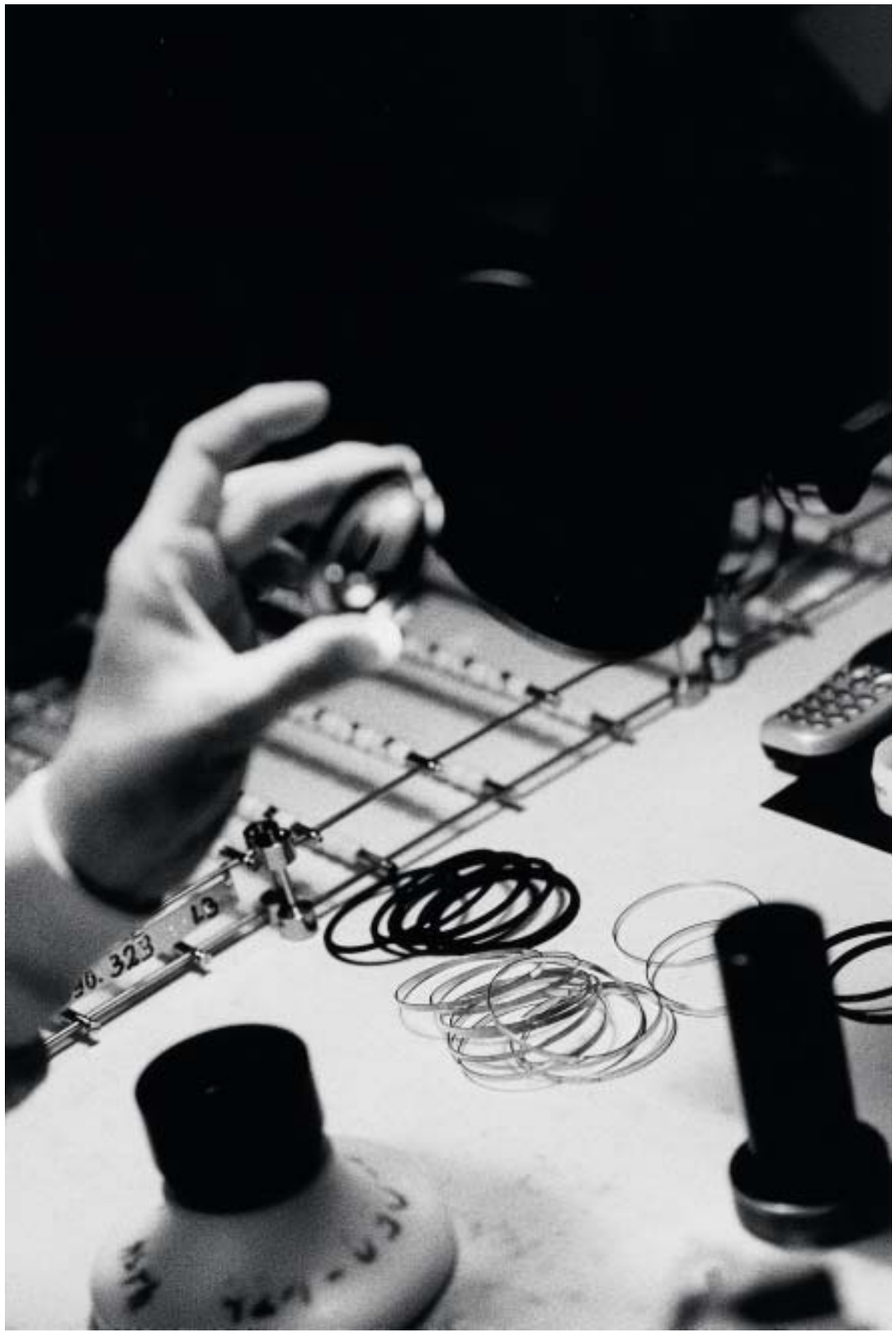
Ralph Gibson

Ralph Gibson was born in Los Angeles in 1939. His father was an assistant to Alfred Hitchcock and as a boy he visited the movie sets. He joined the US Navy, becoming photographer's mate 2nd class, upon his discharge he attended the San Francisco Art Institute and became an assistant to Dorothea Lange. He moved to New York in 1967 and worked with Robert Frank on his films. In 1970 he founded Lustrum Press and published his seminal Black Trilogy : "The Somnambulist", "Déjà vu" and "Days at Sea". At this time he discontinued his commercial work and began showing his photographs in books, galleries and museums. He has been using Leica cameras exclusively since 1961.







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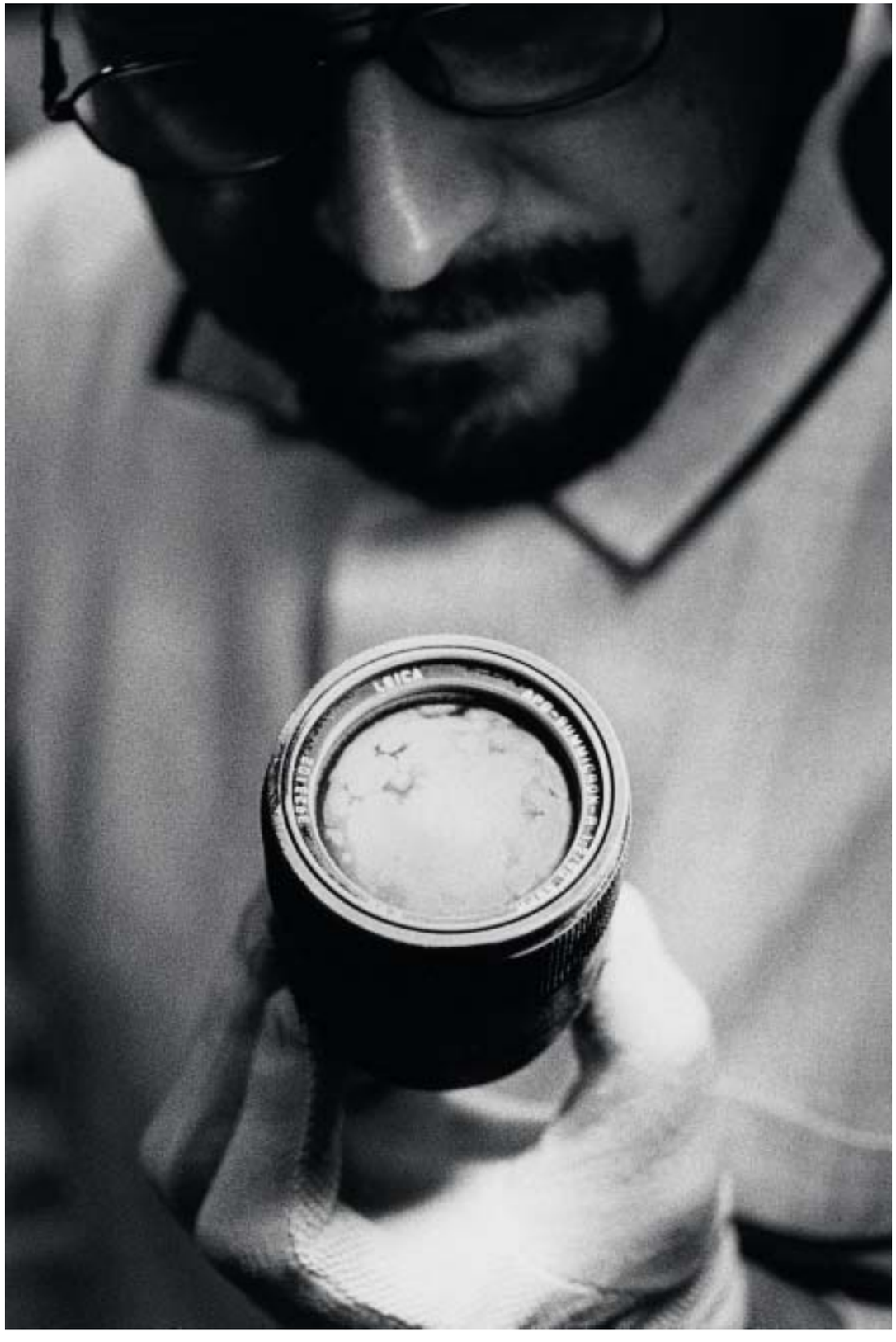

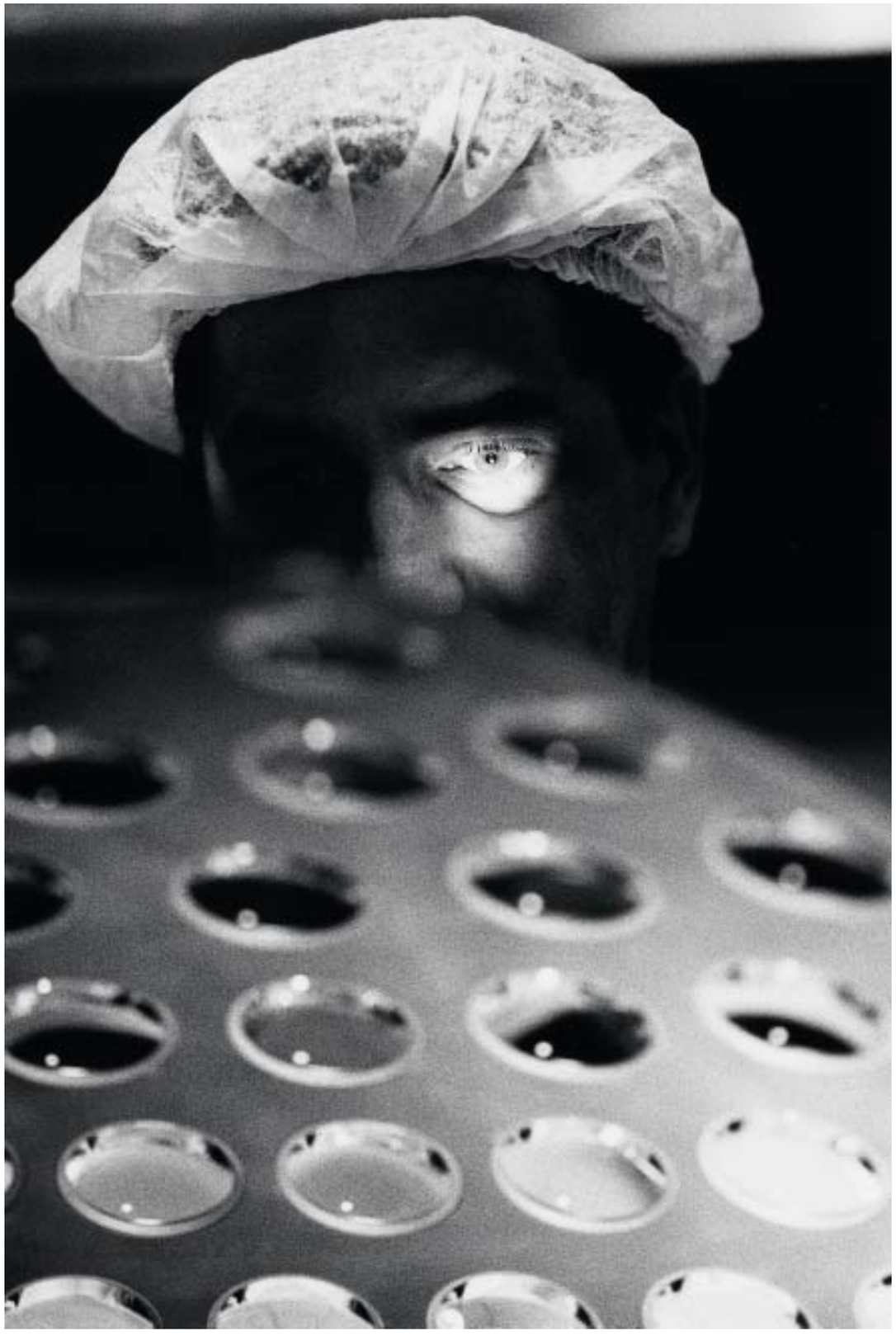

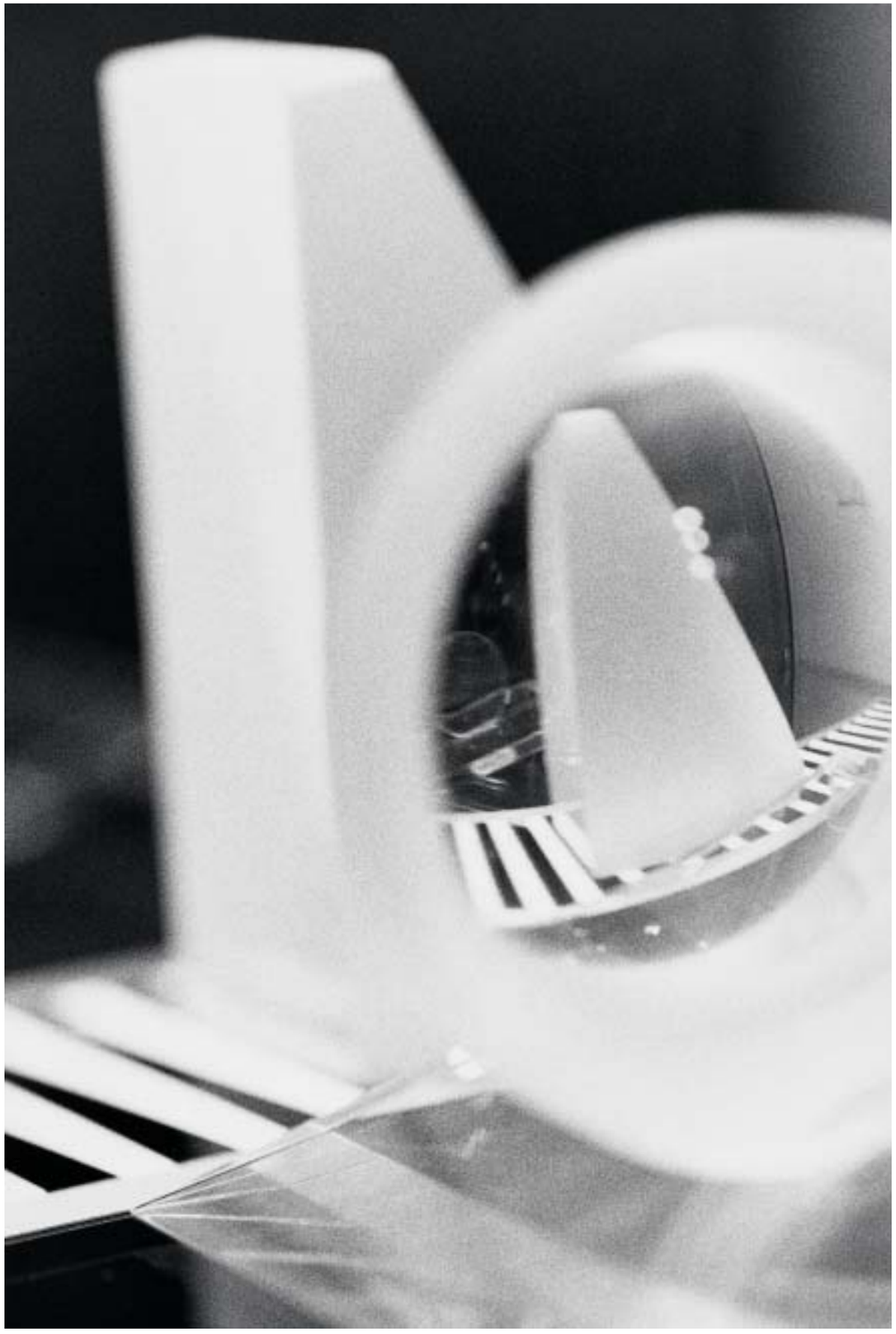

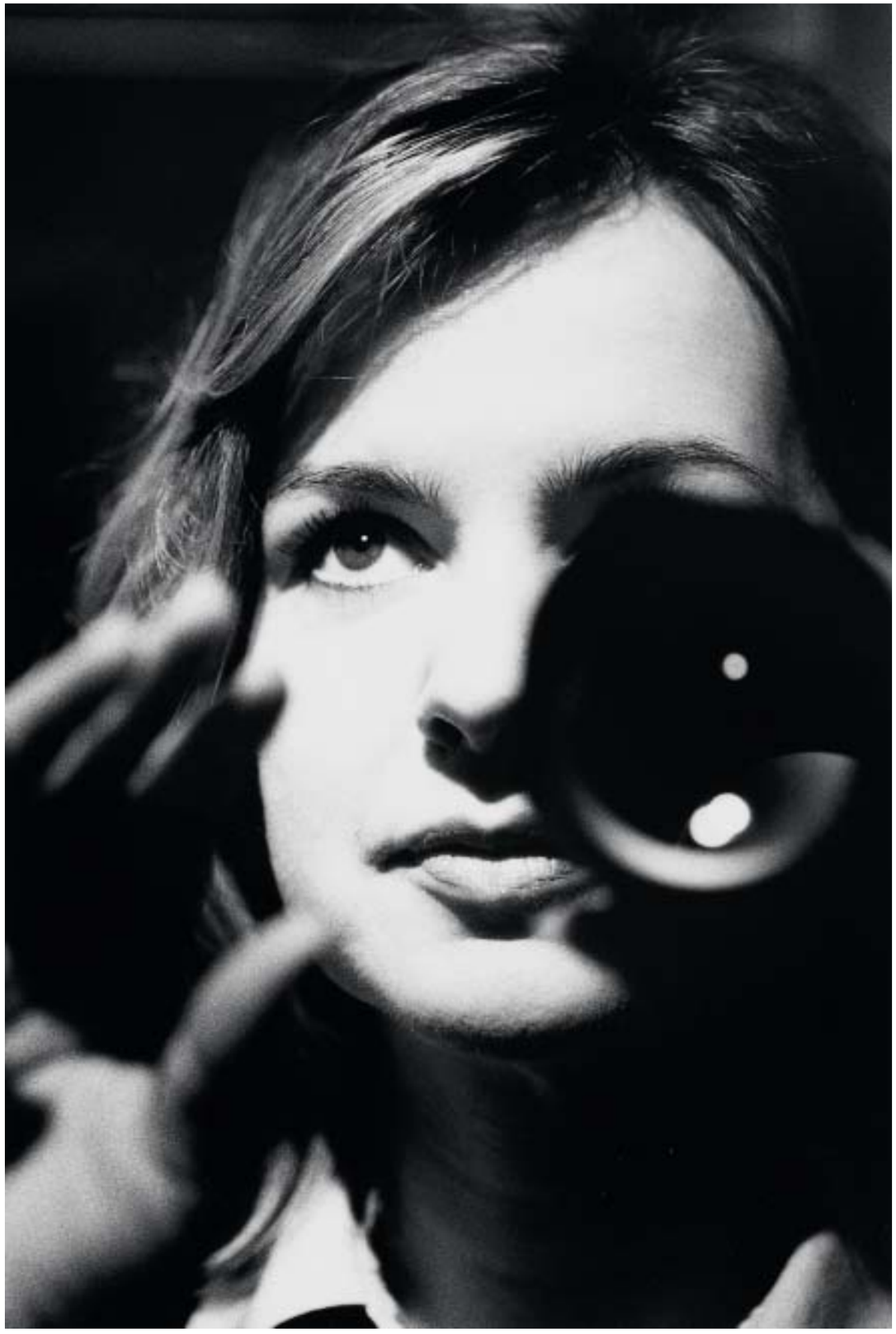

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