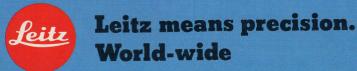
# ELECTRONIC-LEICAR3

PERFECT PHOTOGRAPHY WITHOUT TECHNICAL PROBLEMS









# LEICA®

# means LEItz-CAmera, and LEITZ stands for precision

LEITZ has always stood for a legendary blending of optical and mechanical precision. In the international world of photography, LEICA cameras enjoy an unmatched reputation for quality, ruggedness, and reliability. Now, the new LEICA R3 adds a new dimension: LEITZ perfection combined with extreme ease of operation.

The Leica R3 is a fully automatic single-lens reflex camera with a wide range of high-resolution, high-contrast LEITZ lenses for every branch of 35-mm photography. But the point-and-shoot simplicity of LEICA R3 photography has been specially designed to preserve and expand your creative freedom.

Most often, you'll work with LEICA R3 automatic integral light metering. Quite simply, this means setting the lens f/stop – shown in the viewfinder – and letting the LEICA R3 select correct shutter speeds, swiftly, accurately, effortlessly.

Sometimes, with very contrasty subject lighting, you'll switch to LEICA R3 automatic selective light metering. In this mode, the through-thelens light meter responds only to the area covered by the central focusing ring, about one sixth of the acceptance angle of the lens in use.

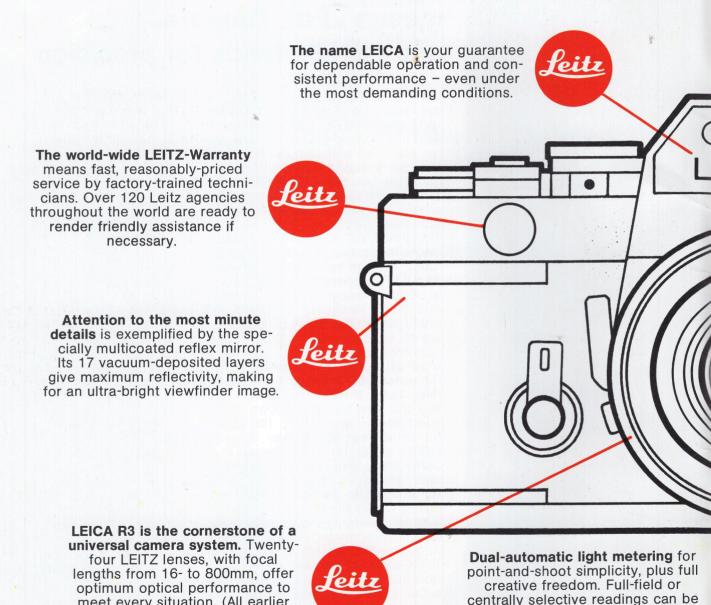
And this isn't all! The creatively versatile LEICA R3 also permits full manual operation, again with either integral or selective light measurement.

# Important advantages of the LEICA R3

meet every situation. (All earlier

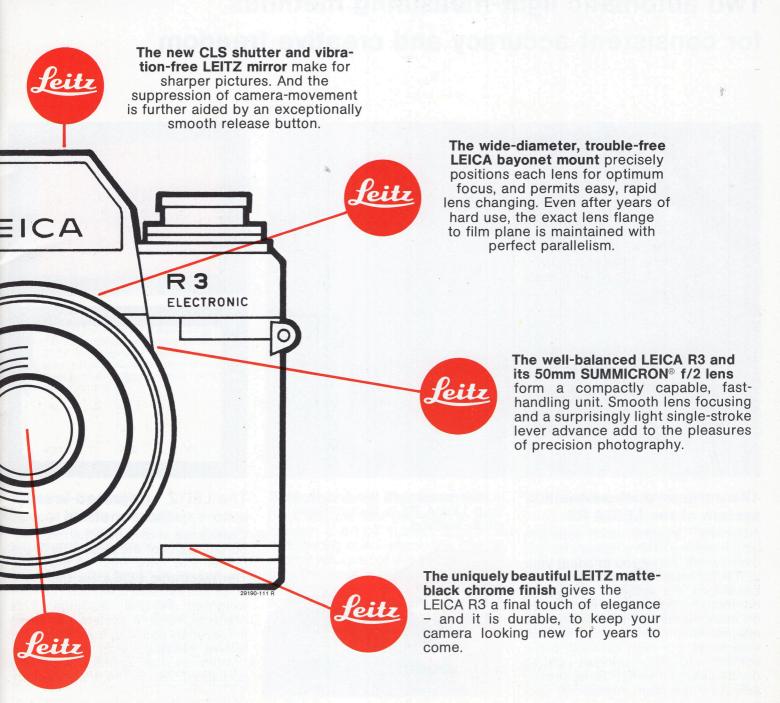
LEICAFLEX® lenses can be adapted

for the LEICA R3.)



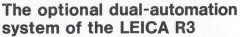
made automatically, with optional

manual operation in either mode.



# Two automatic light-measuring methods for consistent accuracy and creative freedom

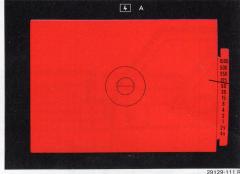


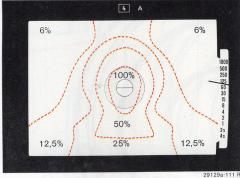


Automatic integral and selective light metering, with a handy change-over switch, allow you to adapt your LEICA R3 instantly to changing light conditions. For subjects of average contrast, nothing could be simpler, or more accurate, than automatic integral (full field) exposure measurements. For high-contrast, backlighted, and other difficult lighting conditions, just switch to automatic selective operation, measuring only

in the center of the image field. Your LEICA R3 is always ready for either method.

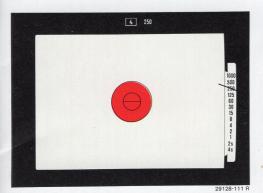




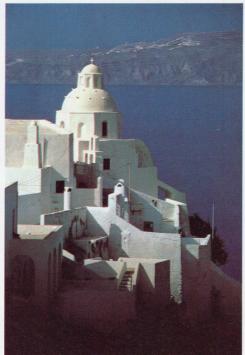


# The LEITZ integrated-area auto-exposure method

Experience shows that the most important parts of the picture lie in the center and lower half of the field. The electronic LEICA R3 therefore emphasizes these areas in its centerweighted integral readings. This practical, reliable system has been achieved by coupling the central (selective reading) CdS cell in the bottom of the camera with two additional cells in the prism section.



Above: Field for selective measurement. Left, above: Field for integral measurement. Left, below: Distribution of metering sensitivity in the LEITZ integral-area metering system. Such area reading allows automatic metering of the best possible exposure even with highly contrasting subjects.



#### **Selective Area Measurement**

Let's assume that you want to photograph a bright subject against a dark background: place the central circle over a part of this subject. Then only this area is measured and correctly exposed – and the LEICA R3 does this automatically. Selective measurement is the best system for many lighting situations, and the LEICA R3 puts this superior metering method at your finger tips, by means of its handy integral/selective changeover switch.





#### The automatic memory lock

The LEICA R3 lets you do even more: selective area measurements can be locked in until you've determined the most desirable picture composition. Then you expose with the memory-locked setting. This makes the LEICA R3 as valuable to the demanding professional as to the amateur photographer because neither has any limitations imposed upon him. Pages 12 and 13 explain the functioning of the LEICA R3 system of "dual-automatic" exposure control.

#### **Manual operation**

Special effects and difficult lighting conditions sometimes make manual exposures advisable. Again, the LEICA R3 scores by permitting either full-field or narrow-angle manual exposure control. Central, selective-area light readings are especially useful in the manual mode because they permit you to pin-point the brightness of an important part of the picture. For example, to obtain critical color rendition, one can use the tightly selective central circle to measure only a vital highlight.



# The brilliant LEICA R3 viewfinder – Your control center for perfect pictorial composition

You'll be thrilled by your first glance through the LEICA R3 viewfinder. The big, bright image is so clear, so three-dimensional, that it invites picture-making. It's fun to look through, more fun to photograph with, using brilliantly contrasty LEITZ lenses.

But experienced SLR photographers know that to get the most from modern high-quality lenses and films one must focus and expose accurately. And everything needed has been incorporated into the LEICA R3 viewfinder, beginning with a uniquely multi-coated mirror for maximum image brightness.

Centered in the field is a split-image rangefinder, for precision focusing when straight lines are present in the subject. When they're not, a surrounding collar of coarse microprisms can easily and effectively be employed. And outside of this central circle (which serves additionally to indicate the LEICA R3 selective light metering area) are countless fine microprisms that permit the focusing of off-center subjects, particularly contrasty ones.

Outside of the jet-black, clearly defined viewfinder frame you'll find the lens aperture setting (above) and shutter speed scale (to the right).

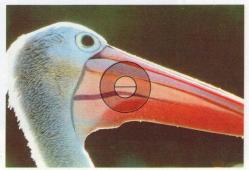
When your LEICA R3 is set for automatic exposures, a red "A" appears to the right of the f/stop; when set for manual exposures, the actual shutter speed setting appears in this position.

You'll photograph quickly and confidently, because everything you need is right there, in the finder. You see, focus, and measure the exposure at full lens aperture, with maximum image brightness. Whenever you want to see the depthof-field at a smaller aperture, just press the preview lever (at the right-hand side of the lensmount) to see exactly the effect of your working f/stop.



#### Split-image focusing

When the lens is not accurately focused, vertical subject lines are shifted sideways by the horizontal line of the split-image focusing prisms.



#### Coarse microprism collar

The ring surrounding the split-image prisms contains large four-sided microprisms that shimmer distinctly until the subject is accurately focused.



#### Fine microprism field

Tiny, three-sided microprisms fill the image field outside the central focusing circle. These give the focusing effect of a groundglass, with enhanced image brightness.

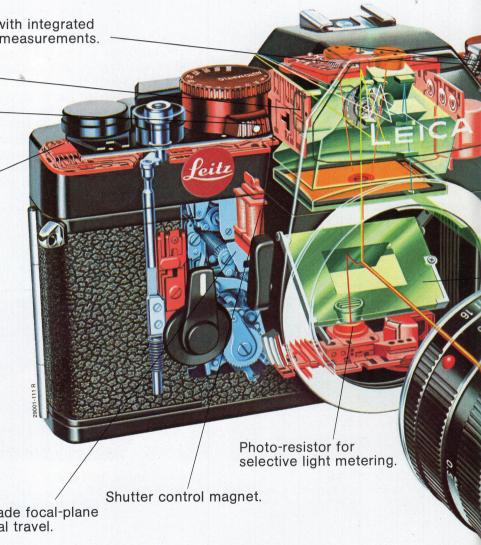
# The ELECTRONIC LEICA R3

Electronic circuit-board with integrated circuit (IC) for exposure measurements.

Circuit-board for electronic switchover between integrated and selective light measuring fields.

Switch for integrated/selective area measurement.

Circuit-board with IC's for electronic shutter timing control.



New CLS metal-blade focal-plane shutter with vertical travel.

Light rays for selective area exposure measurement.

# Technical profile of a modern reflex camera



35mm single-lens reflex camera with electronic dual-automatic light metering (selective and integrated center-weighted measuring fields).

Dimensions: 5.8 x 3.8 x 2.4 inches 148 x 96.5 x 64.6 mm

Weight: 27.5 oz.; 780 grams.

#### **Electronic shutter speeds**

Automatic mode: steplessly variable between 1/1000 and 4 seconds.

Manual mode: 1/1000, 1/500, 1/250, 1/125, 1/60, 1/30, 1/15, 1/8, 1/4, 1/2, 1, 2, and 4 sec., plus Bulb. "X" for electronic-flash synchronization = 1/90 sec.

# Mechanically controlled speeds

"X" (1/90 sec) and B settings are useable without batteries.

#### Focusing screen area

Equivalent to 92% of the film format (equals picture area of a cardboard mounted color slide).

#### Viewfinder magnification

Approximately 0.8x with standard 50mm lens.

#### Eyepiece correction lenses

Slide-on mount for correction lenses from +3 to -3 diopters.

#### **Power supply**

Two 1.55-volt silver-oxide button cells.

#### **Eyepiece shutter**

Permits closing of the eyepiece when camera is used on a tripod.

#### Shutter release lock

Master switch for light metering circuit also locks release button.

#### Rapid advance lever

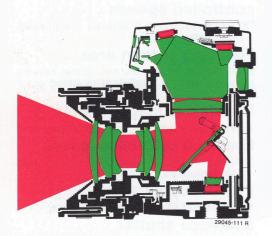
Cocks shutter and transports film in single 115° stroke; has convenient 58° stand-off position.

#### Film-type indicator

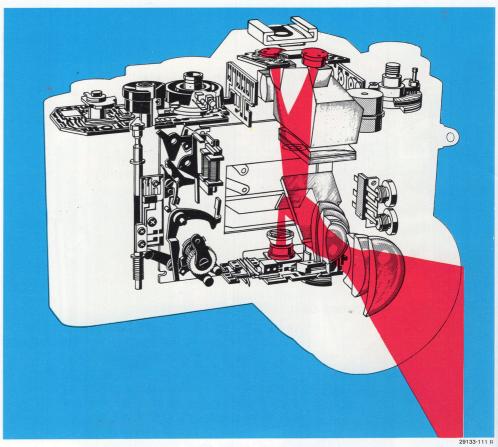
Light tight window in back panel shows portion of loaded film cartridge.

# Automatic integral center-weighted measurement

For integrated area (full field) light metering with the LEICA R3, two photo-resistors in the prism section are coupled with the selective-area photo-resistor in the bottom of the camera. All three photo cells then operate together to provide a well-balanced, centerweighted reading over the entire image field. This automatic measuring mode yields consistently accurate exposures for subjects of average, or less than average contrast.



Path of light rays used for integrated-area (full field) light measurements. The entire viewfinder area is measured, with centerweighting.



#### Sensitivity range

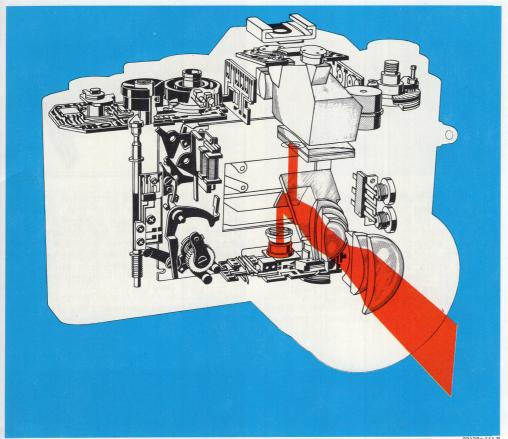
At f/1.4, from 0.25 to 32000  $cd/m^2 = 0.023$  to 2.973  $cd/ft^2$ .

In the Exposure Value (EV) system: at ASA 100/DIN 21, from EV 1 to EV 18; from 1 sec at f/1.4 to 1/1 000 sec at f/16.

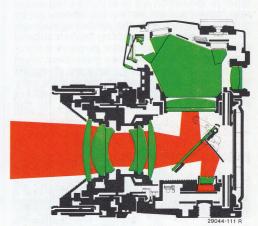
#### **Measuring accuracy**

The LEICA R3 uses three special dual photoresistors which provide an optimum balance between chemical and electrical distortion. The pointer movement per light value is completely linear over the entire measuring range, thus assuring high measuring accuracy at very high or very low brightness levels.

## **Automatic selective-area measurement**



The selective area measuring method of the LEICA R3 uses the well-proven system of the LEICAFLEX SL and SL2. A dual photoresistor in the camera base receives light from a secondary mirror. The selective measuring field is indicated by the outer ring of the microprism focusing collar, and represents about 1/6th of the whole lens field. The shutter speed chosen for any given f/stop is displayed in the viewfinder and is stored in the electronic memory of the LEICA R3 by slightly depressing the shutter release button. After a desired composition is established, the exposure is completed with the previously stored shutter speed. (This memory works only with selective readings.)



9133a-111 R

#### **Exposure override**

For intentional over- and underexposures, as well as to incorporate filter factors directly into the exposure, an override scale from +2 to -2 exposure values has been combined with the ASA/DIN film speed scale of the LEICA R3.

#### Film speed settings

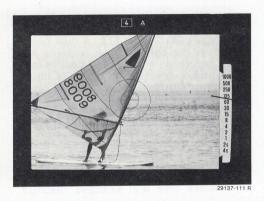
From ASA 12 to 3200 and DIN 12 to 36.

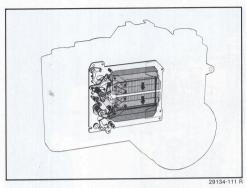
Path of light rays used for selective-area-light measurements. Only the most important part of the scene is measured.

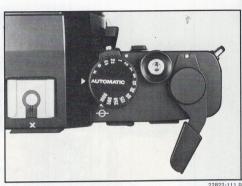
# Viewfinder

## **CLS** shutter

# Film transport





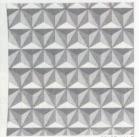


A split-image rangefinder with a collar containing coarse microprisms supplement each other in the LEICA R3 to provide easy, accurate focusing. Even wideangle lenses can be quickly focused with the split-image rangefinder, by simply connecting broken subject lines. The microprism collar displays a shimmering effect that becomes glass-clear when the subject is accurately focused. Eyeglass wearers can see the whole image field without strain, and dioptric correction lenses are provided in handy slide-on fittings for the evepiece.

The vertically traveling metal-blade Copal-Leitz focal-plane shutter is a joint development based on a LEITZ design. This new shutter permits a great reduction in camera size and weight and provides accurate, trouble-free exposures. This CLS design is the result of years of experience in the construction of precision focal-plane shutters and brings new gains in accuracy, reliability, and quiet vibration-free operation.

The LEICA R3 offers a particularly pleasant single-stroke advance lever that folds flat when not in use. Its ready position is a comfortable 58° angle with the camera back, giving plenty of room for the thumb, even when the camera is held to the left eye. The smooth, almost effortless stroke is a short arc of only 115°, making rapid-fire photography very easy.

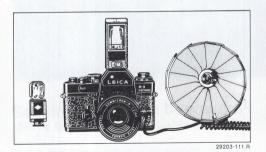




course microprism collar fine microprism field 29127-111 R

#### **Highly magnified LEICA R3 microprisms**

(left) The large 4-sided microprisms of the focusing collar; images "snap" into focus. (right) Outside the central focusing circle. small, 3-sided micro-prisms give a very bright groundglass effect for focusing and viewing.



#### Flash synchronization with X and M contacts

The LEICA R3 is outfitted with an electrical X-contact in the accessory shoe, plus seperate standard PC-contacts for X and M synchronization.



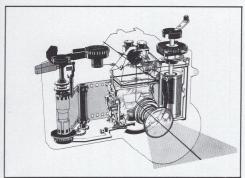
#### Self-timer

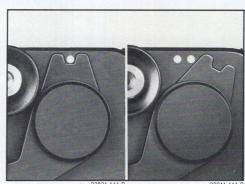
The self-timer provides a delayed-action release of from 6 to 10 seconds, and can be used with all shutter speeds. Aside from including oneself in the picture, it is a useful way to achieve gentle shutter release for tripod-mounted exposures.

### **Reflex Mirror**

# Multiple **Exposures**

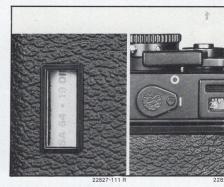
# Additional **Features**





The LEITZ cam drive for the main mirror eliminates shock and vibration. At the start of its travel from the viewing position, the mirror accelerates rapidly. But as it nears its uppermost (exposure) position, the cam introduces a counter-force that brings it to a gentle stop. The secondary mirror, for the base-mounted photo-resistor, is hinged onto this main mirror, and travels with it. The LEICA R3 mirror is specially multicoated with 17 layers to yield maximum screen brightness.

Multiple exposures on the same frame can be made at any time with the LEICA R3. After the first exposure, simply move the flat forked lever at the transport lever hub to the right so that two white dots are visible. Working the transport lever will now cock the shutter without moving the film. To prevent any accidental "double exposures", this lever resets itself to the regular (single dot) position each time the lever is stroked. This simple, positive mechanism is easy to operate, and opens up many interesting creative possibilities.



#### Master switch

When switched off, the shutter release button is locked, and electric current for both measuring systems is off. This saves battery power and prevents wasted film frames.

#### Film transport indicator

A red bar just above the LEICA R3 frame counter moves to the right to prove that film is actually being transported, and reverses direction during rewinding.

A clear window with a light-tight frame shows the type and speed of film in the LEICA R3.



**Depth-of-field preview** 

A readily accessible lever at the right-hand side of the LEICA R3 closes the lens to working aperture whenever one wishes to test the effective depth-of-field. Focusing and exposure metering are at full lens aperture, for maximum brightness.



#### **Battery test**

To be sure of sufficient battery energy, the white arrow for DIN speed setting can be pressed down at any time to actuate the red test lamp at the end of the camera.

#### Frame counter

The LEICA R3 has an automatically self-starting frame counter that springs to start position when the camera back is opened. It is readily visible, and counts forward. The generously dimensioned folding rewind crank permits quick, easy reloading.

#### Film flatness

High-aperture lenses demand extreme film flatness in the focal plane. The precisionmachined film channel of the LEICA R3 has been specially designed to prevent any film bulging in either direction, thus maintaining the best possible flatness during exposure.





# The LEICA-R system: optimum adaptability to every application and situation

The LEICA R3 is your key to a modern, practical, extremely versatile system of 35mm reflex photography. Its most important hidden feature is the optical excellence of LEITZ lenses which provide high speed with real gains in image quality.

From the fisheye to the zoom lens, from the distortion-free ultra-wideangle lens with internal "floating" elements, from the macro lens to the huge 800mm long-focus achromat. LEITZ lenses combine high resolving power with high image contrast to provide exceptional picture sharpness. And the entire range is renowned for excellent color correction. More than this, LEITZ optics are specially calculated to provide accurate, neutral color transmission. This is why they are favored by critical color workers all over the world - why so many experts insist that no other lenses can match their color rendition and saturation.

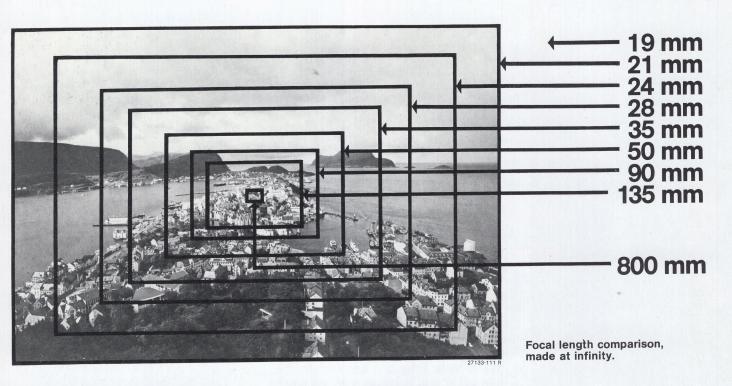
Accessories for photography in the macro, micro and reproduction ranges add to the functional versatility and creative possibilities of the LEICA-R system. The rugged, large-diameter LEICA R3 bayonet mount is more than just a quick, fumble-free means of interchanging lenses and accessories: it is your opening to the world of precision LEITZ photography into which all parts fit, and

fit accurately!

Another part of this LEITZ system is the rapid-firing LEICAFLEX SL2-mot, a motorized camera for photo-journalism, industrial photography, and all applications of sequence photography. This special camera, and its many interesting accessories are described in the LEICAFLEX SL2-mot brochure.

This illustration is far from complete! See pages 21 through 39.

# The Leica System – picture composition made easy



#### **Focal Length Comparison**

LEICA R3 lenses range from the 16mm fisheye to the 800mm long-focus achromat. With these lenses the LEICA R3 photographer can either select different parts of the subject from a single viewpoint, or introduce perspective effects by changing the camera position. Only the picture area, not the perspective, changes when pictures are made

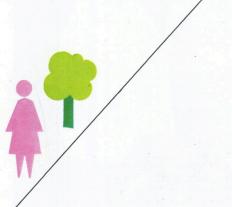
from the same position with lenses of different focal length. The panoramic picture above shows, at least theoretically, that any desired part can be enlarged from an ultrawideangle shot. But the realities of grain and sharpness – to say nothing of color slide projection – present strong arguments for interchangeable lenses. The LEICA system adds impact by providing lenses to fit each pictorial problem.



# 19 mm

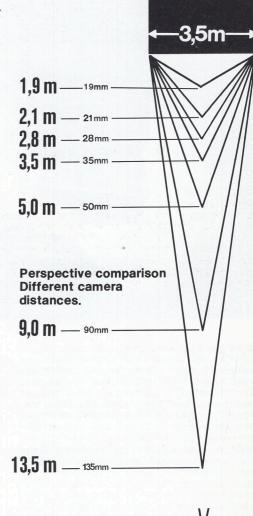
#### Perspective comparison

This graphic representation shows the size relationship between objects changes at near and far distances. Used up close, the wide angle lens emphasizes the foreground, makes the background appear much smaller.



# 400 mm

From a great distance, subject size differences are much less pronounced. A long-focus or telephoto lens is usually advisable for such effects, although it is the distance, not the focal length that gives this flat perspective.



# **LEITZ** lens report



Everyone who uses optical instruments has experienced the benefits of the marvelous merger of electronic computer technology with progress in optical glass formulation. Modern computer techniques have opened new possibilities for the creative lens designer to utilize all the properties of the new glasses, and to optimize optical performance. LEITZ lenses reflect these modern methods and actually approach the limits that are theoretically possible today. LEITZ anti-reflection coatings for highly refractive glasses - many developed in our own research laboratories - provide almost 100% transmission in the central part of the visible light spectrum. These special coatings, combined with the LEITZ "Absorban" optical cement effectively eliminate undesirable ultraviolet transmission. This adhesive, used to

cement lens elements together, and special LEITZ coatings for uncemented systems, also ensure that all LEITZ lenses provide the same neutral color transmission, irrespective of their focal lengths. This is a matter of paramount importance in color photography, and all LEICA lenses have been matched so that the colors reproduced are as close as possible to those in nature.

Even at full aperture, the residual aberrations of high-speed LEITZ lenses have been so well corrected that they do not adversely affect optical performance. Whenever necessary, the full lens aperture can be used without hesitation: in all of the LEITZ lenses, the full aperture is a practical working aperture.

All auto-aperture LEICA lenses share the following common features:

1. Helical focusing mounts, and lens aperture rings all turn in the same direction. And all are adjusted to turn easily and accurately, even under extreme temperatures.

2. The position and arrangement of these

operating rings are identical.

3. All component parts of the LEICA lenses are protected against corrosion so as to function reliably under all climatic and atmospheric conditions.

4. LEICA lenses can be used without restriction over a temperature range from -25° to

60° C (-13° to 140° F).

5. The automatic diaphragm mechanisms ro-

tate smoothly, on ball bearings.

6. Our lenses are designed and manufactured so as to sustain impact and shock of up to 100 G's. This also applies to impacts experienced during transport and handling.

7. The maximum time the automatic diaphragm requires to close from full aperture to the smallest opening is 40 milliseconds, and the total elapsed time between releasing the shutter and begining the exposure is only 45 ms.

8. Many tests on our special testing machines show that even after more than 50 000 operations the diaphragm mechanisms exhibit no appreciable signs of wear.

# Wideangle magic

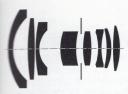
# Standard 50mm lenses

# Pulling in distant views

Wideangle lenses for single-lens reflex cameras require a long distance between the rear element and the film, compared to the actual focal length. Typical designs for such lenses comprise a multicomponent dispersing front cell, and collecting rear elements. To attain uniform corner-to-corner illumination over the film format, the front elements are strongly curved and have large diameters.

The standard 50mm lenses are modified Gauss types with 6 to 7 elements in 5 or 6 groups, arranged almost symmetrically on either side of the aperture, with separate external collecting elements and internal cemented dispersing components. In the fast 50mm SUMMILUX®R f/1.4, a cemented pair in the front, and the rear component have been separated. Even at full aperture, LEITZ 50mm lenses yield brilliantly detailed images.

Telephoto lenses are physically shorter than lenses of normal construction. This is achieved by placing strongly collective elements in front of the aperture, with weakly dispersive elements behind, and offers the additional advantage of eliminating mechanical vignetting. Because of their narrower angles of view, fewer elements are needed to achieve a very high order of optical correction. No less than eight telephoto lenses, with focal lengths from 90- to 250mm are provided for the LEICA R3.



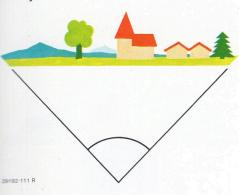




Wideangle lenses impart a new appearance to familiar subjects, because they can image so much more from equal distances, compared to lenses of normal focus. By slightly stopping down, the depth-of-field will often extend from the immediate foreground to infinity.

Two reasons for the popularity of 50mm standard lenses are high apertures and a comfortable viewing angle (about 45°). The image size is usefully large, and at medium apertures the depth-of-field is usually more than adequate.

Telephoto and long-focus lenses bridge great distances with a poster-like flattening of perspective. Medium tele lenses are prized for portraiture because of the more pleasingly realistic facial perspectives they provide atformat-filling distances, as well as for their high apertures.







Used at short distances, foreground objects assume dramatic proportions, with strongly receding background perspective.

No other lens is as versatile as the "standard 50", from landscapes to snapshots, for available-light and even technical pictures.

The narrower angle and larger image size afforded by telephoto lenses makes them indispensable parts of the LEICA system.



# The ultra-wideangle range

### 16 mm



#### 16mm Fisheye-ELMARIT®-R f/2.8

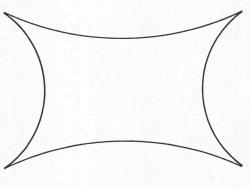
Fisheye optics are ultra-wideangle lenses that produce unusual pictorial effects because their image fields are cushion-shaped instead of conventionally rectangular. Straight lines bow outwards, towards the picture corners. Unlike most fisheye lenses that produce small circular pictures, the Fisheye-ELMARIT-R fills the full 24x36mm format. Its horizontal and vertical coverage angles are respectively 137° and 68°, and it covers 180° across the film diagonal.

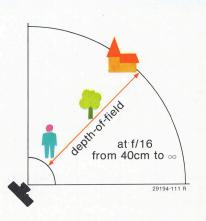
# 19 mm



#### 19mm ELMARIT-R f/2.8

This exciting new addition to the LEICA system combines a sweepingly wide angle (96° across the format diagonal) with perfect rectilinear correction and a usefully high aperture. Its performance, even at f/2.8, is exceptional, particularly with respect to the evenness of illumination. A lens for adventurously creative photographers, the 19mm ELMARIT-R finds applications in architectural, advertising, and technical photography, as well as photojournalism.





#### 21 mm



## 24 mm



## 28 mm



#### 21mm SUPER-ANGULON®-R f/4

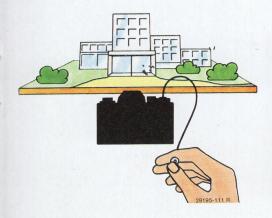
One of the most famous LEICA wideangle lenses, the 21mm SUPER-ANGULON-R is distortion-free, remarkably sharp and yields exceptionally even illumination over the whole picture area. Its diagonal field angle is almost 92°, and when stopped down to f/16 the depth-of-field extends from approximately 16 inches (40 cm) to infinity. Dramatic panoramic views with enhanced foreground interest and rapidly receeding backgrounds are but one of its many creative possibilities.

#### 24mm ELMARIT-R f/2.8

Outstanding optical correction has been achieved by means of "floating elements", internal lens components that move very slightly as the lens is focused. This modern design maintains optimum performance over the whole focusing range, which extends from infinity to 12 inches (30 cm). Its viewing angle is 84°, midway between those of the 21- and 28mm wideangles. A popular choice among working press photographers, the 24mm ELMARIT-R f/2.8 emphasizes the LEITZ policy in high-speed lens design: even the full opening is a practical working aperture.

#### 28mm ELMARIT-R f/2.8

This is the wideangle lens for fast, freehand shooting. Because of its 78° coverage it need not be very carefully aligned to avoid disturbing converging parallel lines when indoor pictures are made rapidly, on-the-go. The 28mm ELMARIT-R brings LEITZ quality to this very popular focal length in an unusually compact package—only 16 inches (40 cm) long, and weighing but 9.3 oz. (265 g).







# The "normal" wideangle range

# 35 mm





This brilliantly flare-free, high-contrast lens brings "50mm quality" to the popular 35mm focal length. Even when strong light sources appear within the picture field, the 35mm SUMMICRON-R images cleanly, with almost no visible flaring. With its 64° coverage and high aperture, this is the lens for indoor available-light pictures. Like all members of the renowned LEITZ-SUMMICRON family, it combines high speed with real gains in optical image quality.



#### 35mm ELMARIT-R f/2.8

When a higher aperture isn't needed, the 35mm ELMARIT-R f/2.8 is an ideal choice for general photography, indoors and out. At full aperture it displays the LEITZ standard of high contrast plus outstanding resolving power, with optimum optical performance at f/5.6. Smaller, lighter, and less expensive than the more complex SUMMICRON-R f/2, the 35mm ELMARIT-R f/2.8 amply serves the needs of most LEICA photographers.



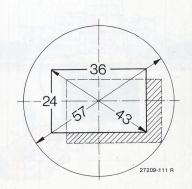
#### 35mm PA-CURTAGON®-R

The PA-CURTAGON is a special wideangle lens that shifts laterally to avoid converging vertical or horizontal subject lines caused by tilting the camera. Although its main use is in architectural photography, it has more general application in using the shift to eliminate empty foreground areas.

Its image circle of 57mm is so much larger than that of the 24x36mm format that a shift of 7mm is possible in all directions. Tall buildings can therefore be photographed without converging verticals, and the lateral shift makes straight horizontal parallels possible when the camera cannot be properly aligned to the subject.











# The standard focal length

### 50 mm



## 50 mm



## 60 mm



#### SUMMILUX®-R f/1.4

The optical excellence of the LEITZ 50- and 60mm standard-focus lenses presents a yard-stick by which others are judged, and makes the choice difficult for LEICA photographers. All three lenses exhibit remarkable image brilliance, resolution of fine detail, and color correction, and all are equal in performance at f/4. The SUMMILUX-R f/1.4 offers great speed for available-light photography, and is practically flare-free full out. It is the photo-journalist's prime tool, and is particularly prized by creative color workers. Often, its f/1.4 aperture is applied not for lens speed, but to suppress unwanted background detail through its limited depth-of-field.

# SUMMICRON-R

Ever since LEITZ produced the first of the SUMMICRON series, in 1953, this has been the lens that defined f/2 performance. But as good as it always was, the 50mm SUMMICRON-R f/2 achieves even higher image contrast, even better flatness of field. For crisply clear f/2 images it has no peers, and its legendary resolving power continues to delight critical photographers the world over.

MACRO-ELMARIT-R f/2.8

The MACRO-ELMARIT-R offers a useful tradeoff: a medium-fast f/2.8 aperture against continuous focusing from infinity to half life-sized, and full 1:1 reproduction with its special life-size adapter ring. Its 60mm focal length is 20% longer than that of the 50mm lenses, providing a proportionally larger image size, with a 39° field (about 6 degrees less than that of the 50mm lenses). Many LEICA photographers use the 60mm MACRO-ELMARIT as an all-around lens, with continuous focusing between infinity and 10.6 inches (270 mm) to cover a field of 48x72mm, exactly twice the format frame. And the correction from infinity to 1:1 (with the adapter ring) is thoroughly LEITZ-like, crisp, clear, and color-correct.









# The medium teleph

# 90 mm



#### 90mm SUMMICRON-R f/2

Compact and capable, the 90mm SUMMI-CRON-R f/2 is a true telephoto that offers really high speed for its focal length, in a handily compact package less than two-and-one-half inches long (62mm). Another LEITZ favorite among the working press, its 27° field adds impact with tight, format-filling compositions. In color photography, where after-cropping is seldom possible, and never advisable, the 90mm SUMMICRON-R is an indispensable tool with its sharply defining f/2 aperture.

# oto range

## 90 mm



#### 90mm ELMARIT-R f/2.8

Although also a telephoto type, with an overall length shorter than ist own focal length, this remarkable lens possesses qualities usually associated with reproduction objectives. An extraordinarily high correction is maintained throughout its entire focusing range, and it can even be used advantageously at high magnifications with the Focusing Bellows-R. The correction of the 90mm ELMARIT-R f/2.8 is well maintained with the LEITZ ELPRO two-glass achromatic supplementary lens VIIa, which permits a 1:3 reproduction ratio.

## 100 mm



#### 100mm MACRO-ELMAR f/4

This special lens for the Focusing Bellows-R permits continuous focusing from infinity to 1:1, leife-sized reproduction. Its four-element cemented triplet construction has been specially calculated to give optimum optical performance in the macro and close-up ranges. The 100mm MACRO-ELMAR has no helicoid focusing mount, and cannot be used directly on the LEICA R3 or LEICAFLEX cameras. It must be used on the Focusing Bellows-R.

## 135 mm



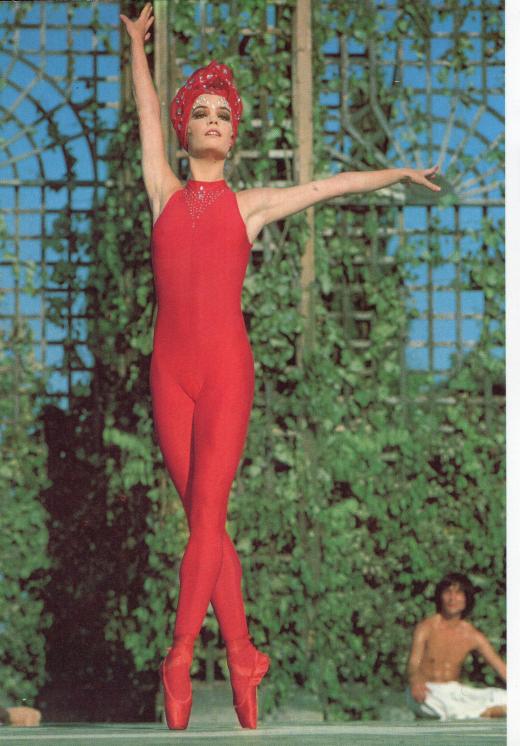
135mm ELMARIT-R f/2.8

This very popular lens is a true telephoto, with an overall length one third shorter than its focal length. High resolving power and optimum contrast are obtained at full aperture, and optical performance at f/4. Its 18° field angle, high aperture, and fast-handling characteristics make the 135mm ELMARIT-R an excellent choice for sports, action, and general outdoors photography, especially landscapes. Many LEICA and LEICAFLEX photographers find it an ideal working companion for the 60mm MACRO-ELMARIT-R.









# The extended telep

# 180 mm



#### 180mm ELMARIT-R f/2.8

This fast telephoto lens gives almost four times the "reach" of the standard 50mm lens. Its tight, 14° field and high optical correction have won many friends among professional reporters and keen amateurs who value its ability to isolate distant detail. This combination of high aperture and long focal length make the 180mm ELMARIT-R f/2.8 a bit heavier than the regular range of LEICA R3 lenses, but this has its good side in reducing camera shake when used freehand.

# hoto range

## 180 mm



180mm APO-TELYT-R f/3.4

This new ESR ("extended spectral range") lens represents a breakthrough in optical color correction based on special LEITZ-developed glasses with novel dispersion characteristics. The APO-TELYT-R is perfectly corrected for chromatic aberration, and all colors of the spectrum are brought to practically identical focus. In addition, all of the so-called "monochromatic aberrations" have been so well corrected that this lens approaches the theoretical limits of instrumental optics.

In this remarkable lens, state-of-the-art optical correction has been combined with an ideal mechanical design resulting in a pleasingly siender, light-weight, fast-handling lensmount. Your first look through the LEICA R3 viewfinder will tell the story as distant

detail "snaps" into focus.
Please note that the APO-TELYT-R does not use any fluorite cristal elements. It is an all-glass lens, and therefore needs no special maintenance, is not temperature sensitive, and has a conventional mechanical infinity stop position.

## 180 mm

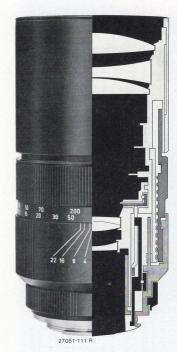


#### 180mm ELMAR®-R f/4

This very happy new addition to the LEITZ telephoto range is for the photographer who wants to travel light and carry a long reach. Just under 4 inches short (100mm), this little giant weighs only a few feathers more than 20 oz. (570 g.), and still carries its own integral telescoping lenshood (as do all of our telelenses). Its correction has been designed to match that of the 180mm ELMARIT-R f/2.8, which is another way of saying that this is a very sharp telephoto lens. And its f/4 aperture is entirely adequate for most outdoors pictures, and a lot of indoor situations too. In addition, the 180mm ELMAR-R can be used with ELPRO attachments in the close-up ranges - with ELPRO No. 3 to 1:2.

If you've been wondering whether it isn't possible to produce smaller tele-lenses, and why this hasn't been done, it is, and we have. Put the little 180mm ELMAR-R aboard a LEICA R3 and enjoy photography again!

# 250 mm



#### 250mm TELYT®-R f/4

The big 250mm TELYT-R is the longest LEICA lens incorporating an automatic aperture coupling to the dual-automatic exposure system of the R3 camera, whose brilliant viewing screen makes for fast, accurate, easy focusing. It gives five times the magnification of a standard 50mm lens, and covers a 10° diagonal field. This is an ideal lens for capturing birds and other wildlife in action, for bringing distant detail up close with real LEICA quality.

## **Zoom lenses**

## 45-90 mm



#### 45-90mm ANGENIEUX®-Zoom f/2.8

The 45-to-90mm focal range of the ANGE-NIEUX zoom lens for the LEICA R3 covers the great majority of situations in which normal and medium-telephoto lenses are usually used. But, because it is continuously variable, any intermediate focal length can be set to tailor the lens exactly to your immediate needs. Thus, without changing the camera position, an exactly correct subject cropping can be had by simply turning the zoom ring – a fact of great importance in color slide photography.

# 80-200 mm



#### 80-200mm VARIO-ELMAR f/4.5

The VARIO-ELMAR f/4.5 has a 2.5:1 zooming ratio, and the most popular range, 80-200mm. This relatively light-weight zoom lens is especially handy because its focusing and zooming controls have been combined in a single, very wide ring. Turn to set the focusing distance, push and pull to zoom. Many photographers regard the VARIO-ELMAR as a special sort of 200mm tele-lens that can cut its focal length to embrace larger angles as a moving subject approaches the camera. From 80-to-200mm it covers field angles between 30° and 12°. The VARIO-ELMAR is another "ELPRO lens". The ELPRO attachments Nos. 3 and 4 bring it into the macro ranges, right down to 1:2!

# Super long-focus lenses

#### 400mm 560mm TELYT-R f/6.8

These light-weight, fast-handling coated achromats are widely used by press, sports, and nature photographers. For quick, critical focusing, the lens-head slides back and forth in precisely made parallel guides. Convenient transport is made possible by removing the lens-head from its mounting tube, as shown opposite, and only one tube need be purchased to serve both TELYT lensheads. These 400- and 560mm achromats are famous for their crisply sharp definition, and the "springing focus" they provide on the camera's viewing screen.

Both provide very close focusing for their focal lengths, extending their usefulness to small subjects that can not bee too closely approached. The 400mm TELYT-S focuses to 12 ft. (3.6 m), covering a 6.3x9.5" (160x240 mm) subject field. The big 560mm TELYT-S goes in to 21 ft. (6.4m), covering a minimum field of 9x13" (244x336mm). And a 60mm extension tube (No. 14182) further extends their "long-range-macro" capabilities.

#### 800mm TELYT-S f/6.3

The LEITZ 800mm TELYT-S f/6.3 is another superlatively color-corrected system based on our recently developed glasses with "anomalous partial dispersion", and provides performance superior to that of many apochromatic objectives. The lens consists of three elements cemented together to provide only two-air-glass interfaces, thus greatly reducing the problem of internal reflection and yielding long-range images of the highest contrast. Its optical quality is unexcelled in this focal length.

# 400 - 800mm

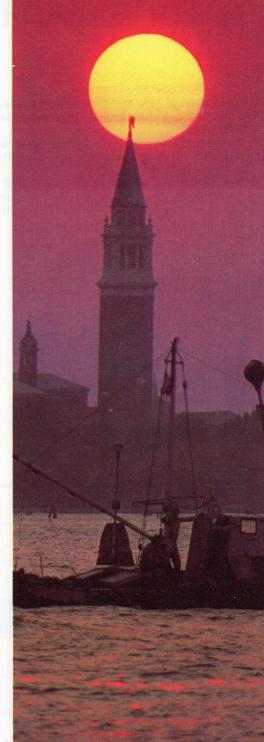


#### The application of longdistance photography.

Not only reportage-, sports- and wild-lifephotography have to cover long camera to subject distances but also photographic documentation of decay at difficult to reach places such as spires, painted ceilings, high voltage insulators.

Photographic recording of animal behaviour, close range photography yet with long camera to subject distances (hot cells) and photographic observation in criminology call for lenses with long focal lengthes.





# Special equipment for the close-up ranges

Close-ups of flowers and insects, small mechanical parts, and of microcosms with their beautiful hidden colors create a new world of photography that never fails to fascinate.

The daily routine of technicians, scientists, and professional photographers includes the reproduction of documents, drawings, artifacts, and small objects

of every description.

The LEICA R3 with its system of dual automatic and manual exposure determination is ideal for these requirements. Exposure factors are automatically compensated for by the camera's electronic measuring system.

#### **ELPRO close-up attachments**

are well-corrected two-element cemented achromats that extend the focusing range of LEICA lenses into the close-up ranges. Exposure technique is unchanged, the lens auto aperture and the exposure meter remaining fully operative.

# 1110111

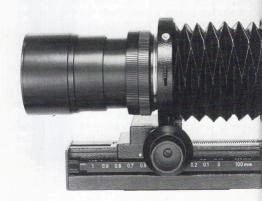
# The close-up ring combination

consists of three threaded rings that can be used individually or in sets, as shown in the table below, with lenses of 50-, 90-, 135-, 180-, and 250mm focus. The lens diaphragms are closed semi-automatically, by means of a double cable-release.



#### **LEITZ** photar objectives

are special systems designed for high image magnifications, up to approximately 16x life-sized. This corresponds to covering a subject field of only 1.5x2.4mm. PHOTAR lenses on the Focusing-Bellows-R open up an interesting field of high-magnification macro photography. Please request further details.



	~	1	:15	1:14	1	1:12	1 1	:10	1	:8	1:	6
Bellows-R with f/4					e			0				
Bellows-R for various R-lenses (50-200mm)												
Bellows-R with photar lenses (12.5-120mm)							146 14 60 2012 1 10 2012 1 10					
Elpro close up attachments (50-180mm)												
Extension rings for various R-lense (50-250mm)	es						-210/fc					

#### The Focusing-Bellows-R

provides the most efficient means for producing close-up and macro pictures at high magnification. With its special 100mm MACRO-ELMAR f/4 lens it provides continuous focusing between infinity and 1:1. The bellows has been very solidly constructed to eliminate vibration and is equipped with an integral sub-stage micrometer focusing drive. To simplify operation, the auto-apertures of the LEICA R3 lenses can be pre-set to the working f/stop and released by means of a double

cable-release, after focusing and measuring the exposure at full aperture.

A rotatable four-side scale bar on the side of the Focusing-Bellows-R indicates the reproduction ratios obtained with 90-, 100-, and 135mm lenses. The fourth side is engraved with a millimeter extension scale.

All LEICA R3 lenses from 50- to 250mm focus can be used without adapters for closerange work. For general use, the special bellows-focusing 100mm MACRO-ELMAR is highly recommended.

#### The LEICA copying stand

permits smooth vertical movement of the LEICA R3 above a generously dimensioned baseboard. Ideal for document and many small-object assignments, the rigidly constructed stand has a key-strip to maintain proper camera position and parallelism, and is outfitted with an additional fine-focusing drive on its carrier arm.

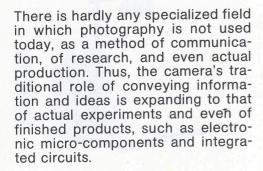


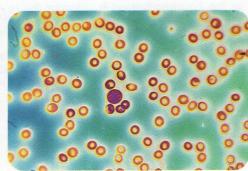


1:	4 1	:3 1	1:2 1	:1 2	:1 3:	1 4:	1	6:	1	8:	1	10:	1	12:	1	14:	1	16:1
									,									
																•		
						1			<i>'</i>									

# Photography in science and technology









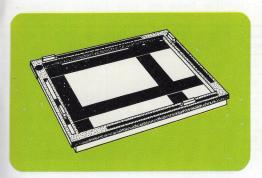


Even in twilight, or by the light of the moon and stars, fast LEITZ lenses permit photography with the LEICA R3. Photographers in government, industry and educational institutions are constantly finding new areas of application for the universal LEICA System of 35mm photography.



# LEICA-quality enlarging and projection with FOCOMAT® and PRADOVIT®

# Individual Photographic Information







A high-quality camera calls for high quality reproduction equipment. The LEITZ FOCOMAT Ic enlarger produces prints from LEICA 35mm negatives with maximum sharpness. Its auto-focusing mechanism saves time and operates precisely and ac-

curately because of a specially hardened cam. It is absolutely reliable and provides a range of enlargement from 2x to 10x linear magnification. Various color printing heads are made to fit the FOCOMAT ask your LEICA dealer for details.

LEITZ PRADOVIT projectors combine maximum ease-of-operation with optimum optical performance worthy of the LEICA R3 and its family of highly corrected lenses. A comparison test will prove its superior performance in terms of:

\* critical sharpness;

\* brighter, more uniform illumination; and

\* clear color differentiation.

Test a PRADOVIT, and request our PRADOVIT brochure No. 310-99.

"LEICA Fotografie" is the international magazine of 35mm photography catering to the special interests of LEICA and 35mm enthusiasts all over the globe. Editions are published in English, German, and French, and the magazine appears six times a year. The publishers are:

Umschau-Verlag, D-6 Frankfurt/Main, Stuttgarter Str. 18–24, Germany.



# **LEICA R3 lens data**

Focal lenght mm	Angle of view	Number of elements	Number of components	Minimum f stop	Focusing range m	Smallest object field mm	Viewfinder magnification	Filter size series	Length mm	Diameter mm	Weight g
1:2,8/16	180°	11	8	16	∞-0,30 -	401×601	0,25	built-in	60	71	470
1:2,8/19	95,7°	9	7	16	∞-0,50	468x702	0,29	M 82x0,75	60	88	500
1:4/21	92°	10	8	22	∞-0,20	148x221	0,32	8/9	43,5	78	410
1:2,8/24	84°	9	7	22	∞-0,30	250x374	0,36	8	46	67	420
1:2,8/28	76°	8	8	22	∞-0,30	188x282	0,42	7	40	63	275
1:4/35	63/78°	7	6	22	∞-0,30	140x210	0,53	8	51	70	290
1:2,8/35	64°	7	6	22	∞-0,30	140x210	0,53	7	40	63	410
1:2/35	64°	9	7	16	∞-0,30	140x210	0,53	7	61	68	530
1:2/50	45°	6	4	16	∞-0,50	180x270	0,78	M55x0,75(E55)	41	66	250
1:1,4/50	45°	7	6	16	∞-0,50	181x270	0,78	7	47	67	460
1:2,8/60	39°	6	5	22	∞-0,27 with adapter to 1:1	48x72 (24x36)	0,90	8	67 (97)	70	375 (540)
1:2,8/45-90	54-27°	15	12	22	∞−1,00	485x727 216x324	0,68-1,36	8	* 122	69	774
1:4,5/80-200	30-12°	14	10	22	∞-1,80	415x615 173x252	1,2-3,0	M55x0,75(E55)	157	72	780
1:2,8/90	27°	5	4	22	∞-0,70	140x210	1,36	7	72	65	515
1:2/90	27°	5	4	16	∞-0,70	140x210	1,36	7	62,5	70	560
1:4/100	25°	4	3	22	Focusing Bellows-R ∞-1:1	24x36	1,50	7	62,5	68	365
1:2,8/135	18°	5	4	22	∞-1,50	220×330	2,0	7	91	65	655
1:4/180	14°	5	4	22	∞-1,80	175x262	2,71	M55x0,75(E55)	100	65,5	570
1:3,4/180	14°	7	4	22	∞-2,50	276×414	2,71	7,5	135	68	750
1:2,8/180	14°	5	4	16	∞-2,00	213x320	2,71	8	134	78	1325
1:4/250	10°	6	5	22	∞-4,50	368x552	3,76	8	154	78	1410
1:6,8/400	6°	2	1	32	∞-3,60	160×240	6,0	7	384	78	1830
1:6,8/560	4,4°	2	1	32	∞-6,40	224x336	8,4	7	530	98	2330
1:6,3/800	3°	3	1	32	∞−12,50	320x480	12,0	7	790	152	6850
THE R. P. LEWIS CO., Land Low, Low, Low, Low, Low, Low, Low, Low,				8 and 16 (with		205×307	12,0		166,5	125	1800

# Converting LEICAFLEX lenses to be attached to the LEICA R3.

R-lenses of the LEICAFLEX can be fitted with a cam coupling the lens with the LEICA R3 meter system.

Converted lenses may be used without restrictions on all LEICAFLEX models.

Lens	Code No.
Fisheye-ELMARIT-R	11 222
ELMARIT-R	11 225
SUPER-ANGULON-R	11 813
ELMARIT-R	11 221
ELMARIT-R	11 204
PA-CURTAGON-R	11 202
ELMARIT-R	11 201
SUMMICRON-R	11 227
SUMMICRON-R	11 215
SUMMILUX-R	11 875
MACRO-ELMARIT-R	11 203
ANGENIEUX-ZOOM	upon inquiry
VARIO-ELMAR-R	11 224
ELMARIT-R	11 239
SUMMICRON-R	11 219
MACRO-ELMAR	11 230
ELMARIT-R	11 211
ELMAR-R	11 922
APO-TELYT-R	11 240
ELMARIT-R	11 919
TELYT-R	11 920
TELYT-R	11 960
TELYT-R	11 865
TELYT-S	11 921
MINOLTA-RF-ROKKOR	MINOLTA

#### The LEICA R3-System

The LLIOA no dystem	
Cameras:	Code No.
LEICA R3 <sup>(1)</sup>	
electronic silver chrome finish LEICA R3 <sup>(1)</sup>	10 031
electronic black chrome finish	10 032
(1) = includes carrystrap, body cap, and synchro cover.	outlet
Correction lens, spherical	
+ or - 0.5; 1.0; 1.5; 2.0; 3.0	14 240
	to 14 249
Cases:	
Ever-ready case with normal front especially	
for 50 f/1:4, 50 f/2	14 506
Ever-eady case	
with large front especially	44507
for 60 f/2.8, 90 f/2, and 90 f/2	14 507
Amateur case for camera with up to 3 lenses	14 828
with up to orenses	14020
Universal holdall case	14 809
	oto-
Special accessories for close-up ph graphy:	1010-
Focusing Bellows-R	16860
Twin cable release Copying stand	16494 16707
90° angle viewfinder	14 287
Ring combination for the close-up	14 159
ELPRO close-up attachments	
Vla for 1:2/50 R (11 228) Vlb for 1:2/50 R (11 228)	16 531 16 532
1 for 1:2/50 R (new) (11 215)	16 54 1
2 for 1:2/50 R (new) (11 215)	16542
VIIa for 90 mm and 135 mm VIIb for R 1:2.8/135 mm	16 533 16 534
3 for R 1:4/180 mm	16543
4 for R 1:4/180 mm	16544
Leather case for ELPRO close-up attachments	14 553

		,								
Filter	E 55	Series filter 6	Series filter 7	Series filter 8	Series filter 8.5					
yellow	13 236	13 013	13 006	13 019	13 022					
yellow- green		13 014	13 007	13 021						
orange	13 312	13 011	13 008	13 017	13 023					
UVa	13 373	13 012	13 009	13 018	13 024					
	E 55 (M series 7	55x0.75)			14 225					
Polarizing filters with rotating screw-in mounts M 44x0.75 (E44) for R f 2/50 (11 228) M 54x0.75 (E54) for R f 2.8/90 R f 2/90 f 4/100 R f 2.8/135 M 55x0.75 (E55) for R f 2/50 (11 215)										
		R f 4								
Circular	polarizin	g filter								
a) <b>Serie</b> for R f 2.8/2 R f 2/35	28 35		4/50 8/400 8/560		13 370					
b) <b>Serie</b> for R f 2.8/2 R f 4/35 R f 2.8/6	<b>s 8</b> 24	R f 4.	.8/400(1)		13 372					
(1) not ro	tatable if	attache	d to lens							
M 44x0.	ing screv 75 (E44) 75 (E54)	for R f 2 for R f 2 R f 2	/50 (11 2: .8/90	28)	13 353					
MEENO	75 (EEE)		.8/135	15)	13 354					
м 55х0.	75 (E55)	Rf4	/180	13)	13 357					
Impor	tant ac	cessor	ies							
	lease 10"				14 067					
carrying	strap	lolly			14 130					

table tripod

large ball

small head

14 100

14 121

14 119

39

# SEE AND TRY THE LEICA R3 AT YOUR LEICA DEALER. HE CAN TELL YOU MUCH MORE AND SHOW YOU, TOO.



