Leica R-Lenses

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Chapter 8: 28 mm lens

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

__Introduction

The main differences between the film-based photography and the photography based on electronic image capture is the division of labour and the status of the analogue negative and digital image file. In film-based photography the negative (or slide) is the final result, which can be changed only slightly by darkroom processes. The digital image file on the other hand is the basic raw material for extensive digital manipulation with the computer. This fact forces the photographer to adopt different working methods.

In analogue photography (s)he must visualize and think about the final image before making the picture. Then the scene must be arranged and composed, the lighting set up and manipulated and all other technical and artistic details considered at length before the shutter is tripped. With the method of electronic image capture there are many more degrees of freedom at the picture taking stage, as the software for manipulating the image has an almost unlimited potential for correction and change.

It is evident that the result may be identical in both worlds, but the approach is fundamentally different. With film, the creative process is activated and finished before making the picture and can be extended at best till the moment of exposure. The potential for manipulation after the picture has been made is limited. For slides there is hardly any possibility. Here the picture is the final result. In the darkroom, we are able to influence the printing process and change the quality of the negative. With dodging and burning, split grading and choice of gradation and chemicals, there are numerous and important ways of changing the basic negative. But the digital manipulation is easier (not faster!) and has a larger range of image transformations.With electronic image capture, the creative control extends beyond the capture stage (often it begins just here) and is even unlimited in time after the picture has been made.

There is a growing trend in the world of film-based photography to choose the large format camera as an antidote to the hurried style of taking pictures that is often the mark of 35mm photography. The careful consideration of a scene and theme and the planning of a picture, technically and artistically, add a new dimension to the style of the photographer. As with many works of art, the way of making the work is often as important as the content for the final result.

The large format camera is the ultimate in flexibility and can be used to manipulate depth of field, perspective and to control the plane of picture sharpness. In film-based photography the studio camera (or technical camera) is a necessary tool, when you need to control and manipulate these aspects before taking the picture. The mastery of the large format camera is not easy and it is a clear token of craftsmanship to be able to use such a tool to good effect.

Outside the studio, the large format can be very effective as a documentary tool. No one who has seen the moving pictures by Walker Evans of the period of the Great Depression can dismiss the large format camera as a static tool, suitable only for studio work.

The versatility of the 35 mm system is greatly enhanced when the possibilities of the large format camera can be added to its capabilities. In 1969 Leitz offered the PA-Curtagon-R 35 mm f/4 to its range of lenses. Where the Japanese competition offered shift and tilt options to emulate the movements of the large format camera, Leitz/Schneider limited the lens to the shift movement. The range of the movement was less than could be realized with some of the competition and the image quality of the PA-Curtagon was decent, but not impressive. PA stands for the German words "Perspektivischer Ausgleich" or Perpective Control (PC), the designation of the current lens. The LEICA PC-SUPER-ANGULON-R 28 mm f/2.8 (introduced in 1988) can be shifted in all directions and has an extension horizontally and vertically from 11mm and diagonally from 9.5 mm. The normal image circle for a 35 mm camera lens has a diameter of 43.2 mm and with the PC lens it is 62 mm. The maximum displacement is 19 mm, which explains the maker's recommendation to limit the useable shift to 9.5 mm in either direction (19 mm divided by 2 equals 9.5 mm). It is interesting to reflect on the fact that the 28 mm PC lens has almost the same image coverage as a 15 mm lens.

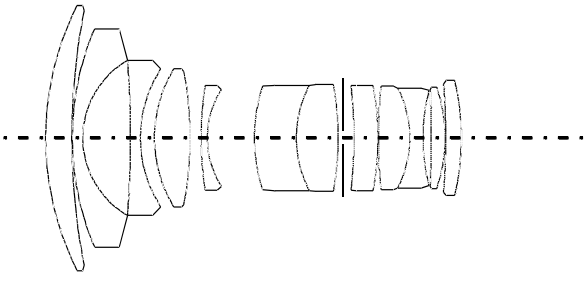
The obvious question is why the PC lens has only shift and no tilt possibilities. The tilt options in a studio camera are mostly used for close focus shots and in these situation the short focal length of 28 mm can offer only very limited support. A long focus lens would be needed in these situations. The tilt function is mostly used to extend the depth of field, but in a wide angle design, the depth of field is already quite large. Adding the tilt function to a wide angle lens, complicates design and has limited value.

The diaphragm is not automatic and must be stopped down manually by a lever that is convenient to use.
Sometimes the PC lens is seen as a gimmick. It is not: it is very potent lens for serious photography where the image and the perspective must be controlled in a tight way. Simply looking through the finder and turning the milled knob of the shift mechanism may generate amazingly intersting and inspiring viewpoints.

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

__Optical considerations

The LEICA PC-SUPER-ANGULON-R 28 mm f/2.8 has a complex design of 12 elements in ten groups, with a floating group in the front section to improve the image quality at close distances.



An evaluation of this lens should be based on the PC characteristics, as one would not buy this lens only as a normal 28 mm lens. In this case, the LEICA ELMARIT-R 28 mm f/2.8 is clearly the better choice. The PC-Super-Angulon-R lens, however, should be useable as a normal 28 mm lens and a comparison of the capabilities is of some interest. At full aperture the PC lens delivers a medium contrast image with good centre sharpness and a visible softening of the fine image details at the outer zones. The extreme corners are quite soft, but can handle about 20 lp/mm with good visibility ***(see image 1)***. There is a visible tendency to flare in strong back-lit situations.

Stopping down to 5.6 gradually improves the overall quality and now contrast has improved significantly and the outer zones can reproduce very fine detail (up to 100 lp/mm) with good edge contrast ***(see image 2 and 3)***. Optimum aperture is f/11where the image quality may be described

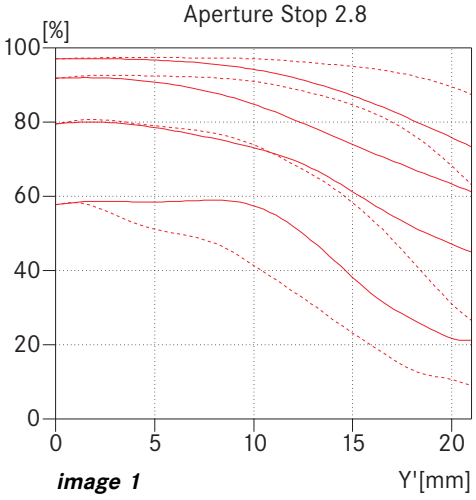
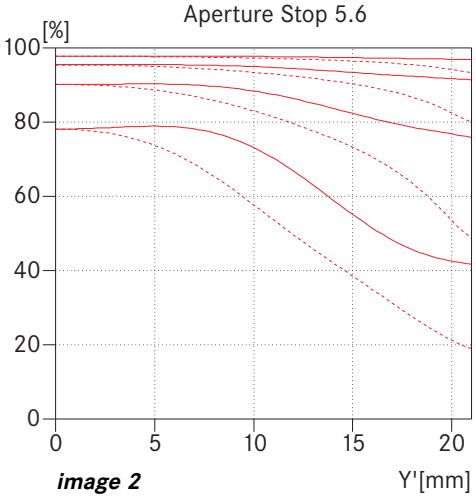


image 1



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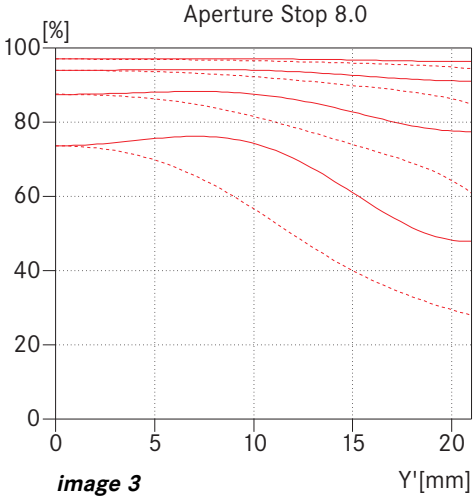

image 3

as outstandingly good. The edge of the image is still a bit weak, but can be used with full confidence.

Compared to the Elmarit-R 28 mm, the most noticeable difference is the higher contrast of the Elmarit and the crisper definition of really fine detail in the outer zones of the image, aperture for aperture. The differences are greatest at the wider apertures, and become very small at the optimum diaphragms.

It is at maximum extension that the PC-Super-Angulon-R delivers amazing performance. At f/2.8 (wide open) overall contrast is medium high with good edge sharpness at the lower frequencies. The image quality at the outer zones is very good with crisp rendition of fine detail over most of the image area. The corners, however, are not good, even close to unacceptable ***(see image 4)***. The MTF graphs are representative of the maximum quality you can expect. There is a tendency within the world of Leica photography to consider only the maximum figures and the maximum performance. If some lens has a resolution of 150 lp/mm and an MTF value of 80% for the reproduction of the fine frequencies around 40 lp/mm, this performance then is seen as the norm or every lens. In fact we are talking here of a lens with a quality of a very high order, that can not be realized with every design. We should realize that the MTF analysis for the 20 lp/m and the 40 lp/mm is at the limit of useable image quality and for most pictures we use only the lower frequencies, even when we want large-size pictures. If you would carefully analyse your own pictures in large format prints, or projected as slides, you would be surprised to find that the fine detail you see at these magnifications can be related to the 10 to 20 lp/mm in the MTF graphs.

The wide open performance of the PC-Super-Angulon-R is quite good. The major outlines of subject detail is well defined and allows pictures with high visual impact.

Stopping down brings the usual improvements and again at f/11 the best quality can be expected ***(see image 5 and 6)***.

Given the intended use of the lens, we may assume that in most cases small apertures will be used. The performance at these diaphragms and at moderate shifts is the real yardstick for this lens. When using low-speed film, a tripod and small apertures, we may indeed approach the impeccable image quality we expect from large format cameras.

Vignetting at the normal position is very low (1.5 stops) at maximum aperture and disappears quickly when stopping down ***(see image 7)***. In the maximum position the numerical value of 3.4 stops seems rather high. But my test pictures at aperture f/2.8 and maximum extension of 11 mm

show a visually quite acceptable loss of luminance in the corners. As so often, we should not rely fully on the measured values, but translate them to the practical situations and the style of photography we want to implement. There are many pictorial situations where a slight darkening in the corners may be an advantage, as the effect will direct the main focus to the centre of the picture ***(see image 8)***.

Distortion is another matter. For a lens that will be used to photograph architectural structures and buildings, especially in the maximum shift position, excessive distortion will be unacceptable. The PC-Super-Angulon-R has a 3% distortion, both in normal and in extended positions. The shape of the distortion is however quite different. In normal position the distortion is not objectionable and often will not be detected at all ***(see image 9)***. In the position of maximum extension the distortion has a different shape (pin-cushion type of distortion) and may be quite visible in a number of occasions. Of course one must be very careful to align the camera to the subject plane very carefully and then it depends on the scene whether the distortion is acceptable. The maximum extension for best distortion control is 6 to 9 mm ***(see image 10)***.

The interesting question would be what is the better approach: a section enlargement of a picture, taken with the Elmarit-R 28 mm or a full enlargement of a picture taken with the PC-Super-Angulon-R at maximum shift. The main difference would be the higher contrast of the Elmarit-R and the improved definition of quite fine detail over the image area. The higher magnification would of course show slight distortions, camera movements and will also lower the overall contrast a bit. The additional possibilities of the PC lens give it the edge in this comparison and anyone who needs the shift capabilities of a view camera, should think of acquiring the PC-Super-Angulon-R.

__Artistic considerations

The PC-Super-Angulon-R is a lens designed with a special purpose. In the normal position it operates as a standard 28mm lens. The use of this focal length has been discussed in a previous chapter. The shift capability is the raison d'etre of this lens and we should focus on this aspect in our report. It is customary to approach the R8/9 camera as the reflex version of the M-camera. This is however a too narrow view. The rangefinder camera is eminently suited for the dynamic style of photography where a strong emotional relation exists between photographer and subject, but the M-camera can also be used in the studio as many outstanding photographers have demonstrated. To make the best use of the capabilities of the R-system, one is inevitably

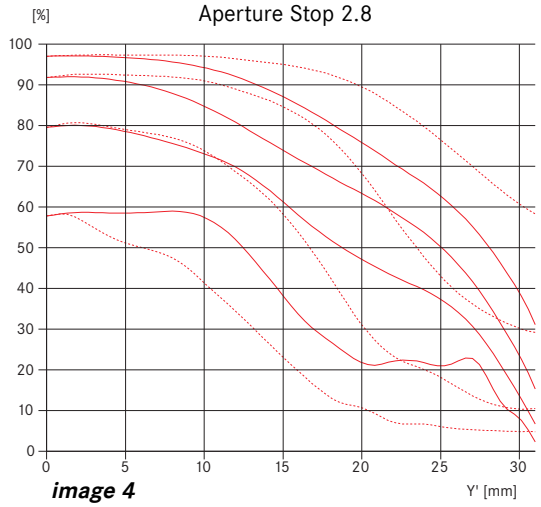

image 4

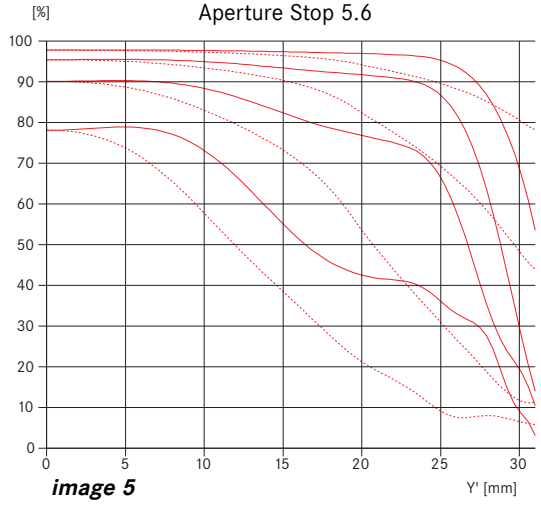

image 5

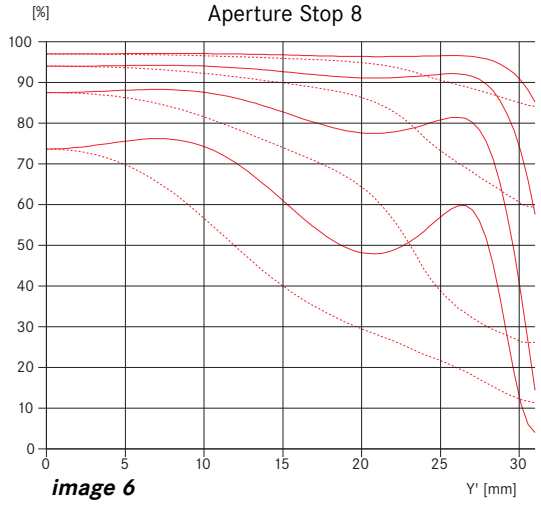

image 6

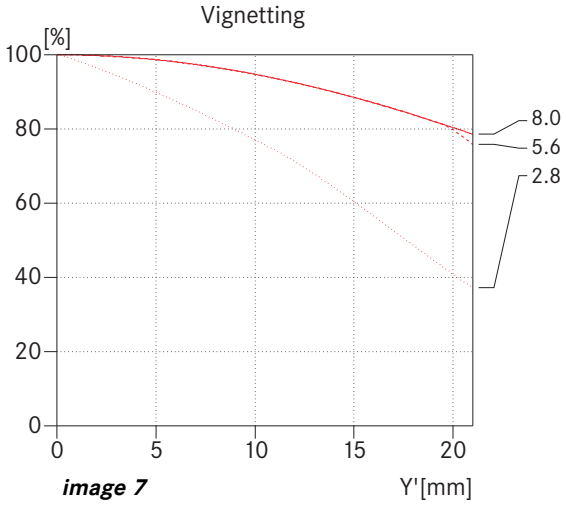

image 7

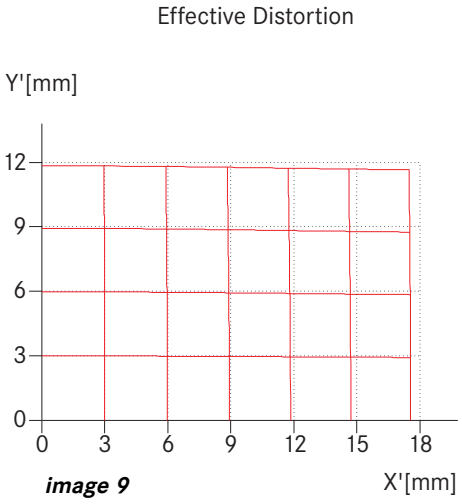

image 9

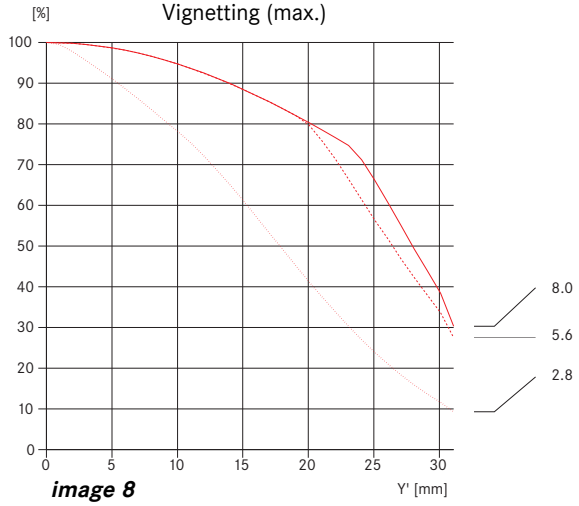

image 8

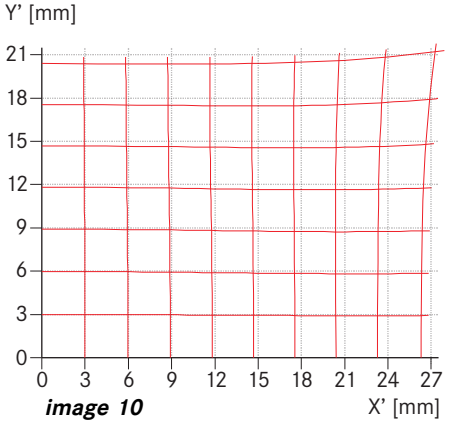

image 10

drawn to the comparison with the large format field and studio camera. As noted in the introduction, we can produce impressive documentary work (Walker Evans) when using the field camera. It is not a question of equipment, but of intention and emotion. The R-system is an excellent tool for documentary photography in all its incarnations and lends itself to the so-called considered approach to subject matter. The functional capabilities and the very high level of optical and mechanical precision of the R8/9, combined with the array of dedicated lenses, direct the R-user to the considered style of photography.

The PC-Super-Angulon-R adds substance to this approach. I used the lens handheld when doing street scenes and landscapes and industrial architecture. The lack of an automatic diaphragm and the sequence of focusing at wider apertures, manually stopping down the lens, exposure metering and tripping the shutter force you to take your time.

The most obvious use of the shift capability is the removal of unwanted foreground and the correction of camera tilt when photographing tall buildings. It is amazing how often a picture improves pictorially when employing a moderate shift. The shift movement of the lens is extremely smooth and gives a very solid feeling and thus a strong confidence in the quality of the picture. As discussed in the optical section, the lens is best used for images with visual impact, as exemplified by the great Dutch landscape painters. At mod-

erate and close distances, the shift movement has additional and very interesting additional possibilities.

The lens movement is continuous in every direction and this can be used to photograph detailed objects, where angling of the camera would produce unwanted distortion. A simple example is the photography of a square box in close up.

With normal lenses, the perspective of the lens will show the box as a distorted shape with one corner pointing prominently into the lens. With the right movement of the PC-Super-Angulon-R one can find an angle that reproduces the box with a normal perspective. The horizontal shift movement can be used to remove unwanted reflections from a scene (pictures of shop windows as example). It can also be used to make panoramic pictures by overlapping exposures.

With the PC-Super-Angulon-R, the 35 mm photographer acquires the possibilities of technical movements that were reserved for users of large format cameras. When using the lens in normal photography, one becomes aware how often a picture can be improved by a moderate shift to correct falling lines, or small distortions by the fine control of perspective. It is also a lens that teaches you to observe the scene intensely and intentionally as you become more and more aware of the shapes and distortions of subjects. You can see it quite visually when using he shift movement and observing at the screen what happens. The lens can be used handheld, but the fine tuning of the perspective control can be better analyzed when the camera is on a tripod.

The additional advantage is the use of very small apertures and the extended depth of field. The lens stops down to f/22 and focuses till 30cm. At closer distances the maximum depth of field is required and the PC-Super-Angulon-R can be used without reservation at the smallest apertures, where crisp imagery is delivered.

The extended use of the lens allows for a gentle learning curve in a course for the study of technical movements. It may be an eye opener for any photographer who often takes pictures in a subconscious way. The shift capabilities of the lens bring a growing awareness of the subtle changes in shape and perspective and the impact of these changes on the final image.

__Conclusion

The LEICA PC-SUPER-ANGULON-R 28 mm f/2.8 is a very versatile and flexible tool. It can add to the R-camera some important technical movements of a large format camera and transform the R-camera into a 35 mm studio or field camera. The full implementation of all possibilities is of course impossible in a 35 mm camera system, as the design and construction of this type of equipment is quite elaborate. The PC-Super-Angulon-R is very sturdily built to support the optical qualities of the lens, even at its extreme positions.

The optical performance of the lens must be evaluated with the shift capabilities as major focus, as the lens is not

LEICA PC-SUPER-ANGULON-R 28 mm f/2.8 image: Sven Sturm

designed as competition for a normal 28 mm lens. Indeed, compared to the current LEICA ELMARIT-R 28 mm f/2.8, the PC used as a normal 28 mm lens, needs to be stopped down to f/5.6 to become competitive. But this direct comparison is a bit unfair. You would not want to seriously test a sports car on its all-terrain performance.

Where the PC-Super-Angulon-R gets very high marks is in the area of perspective control. Here the additional visual impact of a picture is in many cases quite stunning. The versatility of the R-system is greatly enhanced by this lens. The image quality at the smaller apertures and in the moderate shift position is excellent and can be favourably compared with the quality you get form larger format field cameras. The lens can be used for technical and artistic purposes and is a great learning tool for training the visual awareness of the photographer.

Once you have learned to see with an eye to the differences in shapes and perspective that are available with small shift and tilt movements, the lens offers ever-expanding possibilities to improve the visual impact of your pictures.

Whetherthese possibilities in the technical and artistic sense justify the use of the lens, is the decision of each individual photographer.

LEICA PC-SUPER-ANGULON-R 28 mm f/2.8 image: Sven Sturm