

# Vivitar Series 1 35-85mm f2.8 variable focusing lens.



For many photographers a lens of this focal length range is an "ideal" lens covering wide angle, through normal, to medium telephoto. But for professional and scientific photographers the requirements of an "ideal" lens include more than a versatile range of focal lengths.

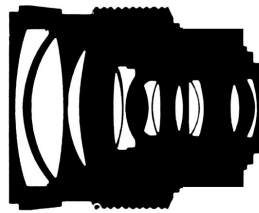
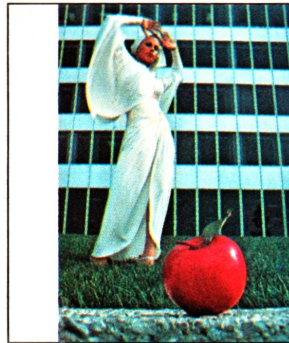
The assignment given by Vivitar to the Series 1 Research and Development Team included many complex design specifications, some conflicting, such as the need for a relatively high-speed lens and the insistence on compactness.

The specifications included the following: (1) A focal length range from 35 to 85mm. (2) Close focusing capability. (3) An f2.8 maximum aperture, so the lens could be used in place of a normal lens in low-light areas. (4) Length under 4 inches. (5) Weight under 30 ounces. (6) Contrast and resolution equal to or superior to comparable lenses. (7) Smooth but rugged mechanical operation. (8) Multicoating.

To accomplish all these requirements in one lens the team spent two years working with some of the world's largest computer banks. And instead of using the customary zoom lens configuration, which entailed some sacrifices in resolution at wide angle close focusing, the designers chose a variable focus solution. Changing the focal length is accomplished by movement of three independent floating groups in the lens, thus allowing close focusing to 4.3" from the front element (in the 35mm position), without sacrificing resolution. All done with a single-touch control.

The mechanical motion of these three groups is controlled by cams three groups is controlled by cams milled into sleeves. In order to achieve the extremely close tolerances specified by the Japanese mechanical designers, the cams had to be machined on specially-made, numerically-controlled lathes designed and built in Germany and Switzerland.

The extreme compactness of the lens itself necessitated the use of a nested series of cams and operating sleeves. Again, extremely close tolerances had to be maintained on the five concentric sleeves to eliminate centration errors. Even with the use of the most advanced optical equipment available today, to comply with the specifications each lens is individually adjusted by an engineer to ensure optimum optical alignment. The result is a valuable example of international cooperation, representing the combined efforts of Japanese, German and American specialists.



Optical Specifications	
Construction	12 elements 9 groups
Angle of view:	28° to 63°
Minimum focus distance	
From film plane:	10.2 in. (25.9 cm)
From front element:	4.3 in. (10.9 cm)
Maximum reproduction ratio:	1:3.5
Focal length ratio:	2.4:1
Mechanical Specifications	
Filter size:	72mm
Weight:	27 oz. (770 gr.)
Length:	3.6 in. (9.1 cm)
Max. diameter:	3.19 in. (81mm)
F/number range:	f2.8 to 16

Slip-on lens hood included. Available in mounts to fit Nikon, Canon, Minolta, Konica, Olympus OM, and Universal Thread Mount cameras.

## Vivitar Series 1 Program

In recent years, remarkable progress has been made in solving some of the classic problems of optical design. Intensive work in the field was spurred on by the demands of space exploration and military applications and vastly aided by the growing sophistication of computer technology.

Vivitar optical designers, working with programs devised for highly specialized optical tasks, have used computer-generated designs to develop for Vivitar a new series of lenses capable of performance unreachable until now.

Each Vivitar Series 1 lens so far introduced represents a breakthrough in optical design. The 200mm f3 and the 135mm f2.3 are among the fastest

automatic telephoto lenses in their respective focal lengths. They are unusually light and compact. Each has a uniquely positioned rear compensating element that automatically corrects aberrations at all points from the closest focusing point to infinity.

The 70-210 f3.5 automatic zoom lens and the 35-85mm f2.8 auto variable focusing lens are likewise definite advances in lens design, both offering extremely close focusing capability and remarkable compact configuration.

Most recently introduced are a 90mm f2.5 macro, a 28mm f1.9, and a 600mm f8 solid catadioptric lens. To come, 800mm f11 solid catadioptric and 1200mm f11 solid catadioptric telephoto lenses. There eventually will be a complete optical system of more than twenty Vivitar Series 1 lenses, each representative of advanced technology and demonstrably superior to other lenses currently available.



# Vivitar®

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