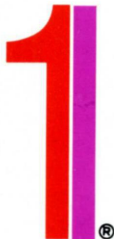


Auto Variable Focusing Lens

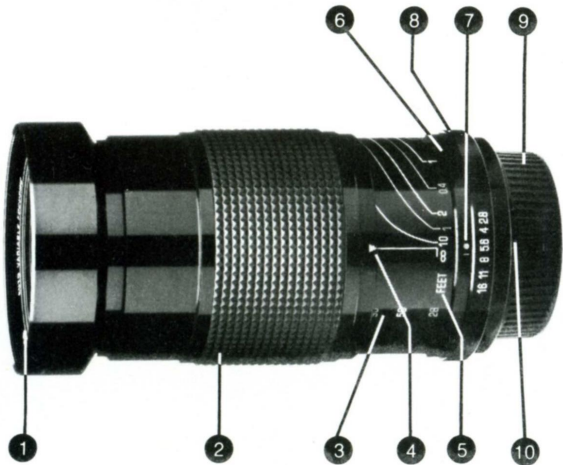
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# Vivitar Series



28-90mm  
f2.8-3.5 VMC

Owner's Manual



## Features and Controls

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1. 67mm Accessory Thread
2. One-Touch Variable Focusing Ring
3. Focal Length Scale

4. Distance Index Mark
5. Distance Scales (white for feet, green for meters)
6. Macro Range Position
7. Aperture Index Marks (red for 28mm, green for 90mm)
8. Aperture Ring
9. Lens Mount
10. Alignment Reference Dot (bayonet mounts only)

Your new VIVITAR Series 1 28-90mm Auto Variable Focusing Lens is the result of the latest advances in optical research and design. With its remarkable zoom ratio of more than 3:1, this member of the world-renowned Series 1 lens family lets you quickly handle photographic situations from wide-angle shots in tight interiors to the most flattering portraits and short telephoto requirements. The one-touch focal length control lets you crop your pictures on-camera for easy mastery over composition—one of the key elements in photographic art.

## Mounting the Lens

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Your Vivitar 28-90 has been designed to mount on your camera with ease and precision. While mounting, leave the front lens cap on to avoid smudging the front element. Simply slide the Variable Focusing Ring to the 90mm position and mount the lens (holding the lens barrel securely) as you would your normal lens.

## Exposure Control

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This lens has an automatic diaphragm which enables you to compose your picture and focus wide-open, where the image is at its brightest. When the camera shutter is released, the diaphragm automatically stops down to the aperture setting preselected manually or automatically, depending on your particular camera system. The diaphragm immediately reopens as soon as the exposure is completed. This is a variable aperture lens: At 28mm the range is f2.8-f16, and the aperture being used is

indicated by the **red dot** Aperture Index Mark. At 90mm the range is f3.5-f22, and the aperture in use is indicated by the **green line** Index Mark. (Note: The green coloring of the meter distance scale lines is unrelated to the use of green for the 90mm/f3.5-f22 focal length/aperture set.)

If you are using a camera equipped with automatic shutter control, automatic aperture control, or both, your camera will automatically compensate for the variable aperture. If you are using the manual mode on cameras so equipped, follow metering procedures as outlined in your SLR manual, remembering that changes in focal length may require manual adjustments in shutter speed or aperture.

For further information on variable aperture, contact: Consumer Affairs, Vivitar Corporation, P.O. Box 2100, Santa Monica, CA 90406.

## **Focusing and Setting Focal Length**

Your new Vivitar lens features exceptionally

smooth, "one-touch" control of focusing and focal length selection.

To change focal lengths, slide the Variable Focus Ring back and forth along the lens barrel to the desired image size. The most commonly used focal lengths are engraved on the barrel. The 28mm to 90mm focal range enables you to handle diverse photo situations from wide angle to short telephoto. You also gain extra creative control by being able to crop out unwanted backgrounds on-camera, simply moving to a longer focal length where the subject fills more of the frame.

Focus as you would with a standard lens by turning the Variable Focusing Ring until the subject appears sharpest in the viewfinder. To avoid accidentally changing focal lengths while focusing, be careful not to push or pull on the Focusing Ring as you rotate it.

**IMPORTANT!** Moving to a longer focal length may affect the exposure. Most cameras today have through-the-lens (TTL) metering systems which determine exposure settings by averaging

the light intensities in the image area. If the central subject is darker than the surrounding areas, moving toward 90mm will progressively delete the surrounding lighter areas, and the overall light intensity will drop correspondingly. If the lens is already at or near maximum aperture on an automatic aperture type camera, an underexposure situation may be indicated, requiring a slower shutter speed. On automatic shutter type cameras, an undesirably slow shutter speed may result. Although less likely, the opposite situation with a bright subject against a dark background may lead to an overexposure situation requiring correction. In either case, when using the manual mode on cameras so equipped, manual readjustment of shutter speed or aperture may be required. Always check the exposure control readout **after** moving to the focal length at which you wish to take the picture.

## **Distance Scales and Distance Index Mark**

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There are two wrap-around Distance Scales

engraved on the lens barrel to show the approximate distance between the subject in focus and the film plane. The white scale indicates the distance in feet and the green scale in meters. The red triangular Distance Index Mark is the reference point for the focus position of your lens. Reading the distance indicated on the Distance Scale at the foot of a line intersected by this mark gives you the foot or meter distance to the subject.

## **Macro Range**

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When the lens is set at the 28mm focal length, rotating the Variable Focusing Ring all the way to the right to the yellow "0.75 M-R" position enables you to focus on subjects as close as 0.75 feet (9 inches / 23 cm) from the film plane. This is equal to about  $4\frac{5}{8}$  inches (11.9 cm) from the front of the lens. Working at this setting provides a reproduction ratio of 1:3.3, i.e. the image on the film will be almost  $\frac{1}{3}$  lifesize.



## **Depth of Field**

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Depth of field, the range before and behind a focused subject which is also sharp enough to be considered as in focus, is determined by three factors: aperture, focal length and distance to the subject. Depth of field is greater for smaller apertures, shorter focal lengths, and/or longer camera-to-subject distances. Conversely, it is less for larger apertures, longer focal lengths, and/or shorter camera-to-subject distances.

The depth of field can be controlled, to a degree, by changing any one or all of the three factors. You can visually check the depth of field around your subject through the viewfinder in the normal manner for your particular camera. For precise depths of field at various focal length/aperture/distance combinations, refer to the Depth of Field Tables at the end of this manual.

## **EE Coupled Lenses**

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Canon mount lenses have a click-stop at the EE position, marked by an "O". The Aperture Ring

may be set and removed from this position in the same way as for any f-stop setting. Make sure to align the "O" with the red Aperture Index Mark.

On Minolta MD mount lenses, the minimum aperture setting is engraved in green. When using this lens in the automatic aperture mode on a Minolta XD camera, the lens must be set at this minimum aperture.

## **Lens Care**

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1. It is a good idea to keep a Skylight 1A or a UV filter on your lens at all times. This not only improves photographs but also protects the front element from dirt and scratches. Ask your dealer about Vivitar's fine line of Multicoated Filters.
2. Help keep your lens free of dust and scratches by mounting the front and rear lens caps when the lens is not in use.
3. Clean the lens only when absolutely necessary and use only special photographic lens cleaning accessories, such as an air brush, anti-static brush, or liquid lens cleaner and lens tissue. In EMERGENCY case, you may use a clean, soft

cotton cloth moistened with medicinal alcohol. Never rub any lens element with your finger, clothing or any other possibly abrasive material. Doing so will scratch the lens coating and may damage the element surface.

4. Always store your lens in a cool, dry place, preferably with a packet of silica gel.

## Specifications

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**Optical Construction:** 14 Elements in 12 groups.  
Multicoated.

**Angles of Acceptance:** 75° - 27°

**Aperture Range:** f2.8-f16 at 28mm setting  
f3.5-f22\* at 90mm setting

**Minimum Focusing Distance from Film Plane:**  
23 cm (9 in.) at Macro setting

**Maximum Reproduction Ratio:** 1:3.3 (at Macro setting)

**Maximum Diameter:** 70 mm (2.75 in.)

**Length:** 111.5 mm (4.5 in.) at 28mm setting

**Weight:** 680 g (24 oz.)

**Accessory Size:** 67mm

\*effective aperture

Specifications subject to change without notice.

Weight and length may vary slightly depending on lens mount.

## Depth of Field Tables

## 28mm

m \ f	2.8	4	5.6	8	11	16
<b>0.25</b>	0.24 0.26	0.24 0.26	0.24 0.26	0.23 0.27	0.23 0.28	0.22 0.30
<b>0.4</b>	0.38 0.42	0.38 0.43	0.37 0.44	0.35 0.46	0.34 0.49	0.32 0.54
<b>1.0</b>	0.90 1.13	0.86 1.19	0.82 1.29	0.76 1.48	0.69 1.80	0.61 2.82
$\infty$	8.69 x	6.20 x	4.43 x	3.10 x	2.25 x	1.55 x

ft \ f	2.8	4	5.6	8	11	16
<b>0.75</b>	0.73 0.77	0.72 0.78	0.71 0.79	0.70 0.81	0.68 0.84	0.65 0.88
<b>1.0</b>	0.97 1.04	0.95 1.05	0.94 1.07	0.91 1.11	0.88 1.16	0.84 1.25
<b>2.0</b>	1.87 2.15	1.82 2.22	1.76 2.32	1.67 2.49	1.57 2.74	1.44 3.30
<b>10.0</b>	7.40 15.40	6.70 19.68	5.92 32.12	5.04 43.50	4.25 x	3.37 x
$\infty$	28.51 x	20.33 x	14.52 x	10.17 x	7.39 x	5.08 x

## 50mm

m \ f	3.2	4	5.6	8	11	16
<b>0.25</b>	—	—	—	—	—	—
<b>0.4</b>	—	—	—	—	—	—
<b>1.0</b>	0.96 1.04	0.95 1.06	0.93 1.08	0.91 1.12	0.87 1.17	0.83 1.27
$\infty$	23.37 x	19.06 x	13.62 x	9.53 x	6.93 x	4.77 x

ft \ f	3.2	4	5.6	8	11	16
0.75	—	—	—	—	—	—
1.0	—	—	—	—	—	—
2.0	1 95 2 05	1 94 2 07	1 91 2 09	1 88 2 14	1 84 2 19	1 77 2 29
10.0	8 85 11 50	8 62 11 90	8 17 12 88	7 58 14 70	6 95 17 85	6 10 27 75
$\infty$	76 69 x	62 54 x	44 67 x	31 27 x	22 74 x	15 64 x

## 90mm

m \ f	3.5	4	5.6	8	11	16
0.25	—	—	—	—	—	—
0.4	—	—	—	—	—	—
1.0	—	—	—	—	—	—
$\infty$	64 20 x	58 07 x	41 48 x	29 03 x	21 12 x	14 52 x

ft \ f	3.5	4	5.6	8	11	16
0.75	—	—	—	—	—	—
1.0	—	—	—	—	—	—
2.0	—	—	—	—	—	—
10.0	9 55 10 50	9 50 10 55	9 32 10 79	9 05 11 17	8 74 11 69	8 27 12 66
$\infty$	210 63 x	190 51 x	136 08 x	95 26 x	69 28 x	47 63 x

# Vivitar®

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