

Macro Lens

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**Vivitar Series**



90mm f2.5

Owner's Manual



## Before you begin —

Carefully study this Owner's Manual. Keep it with the lens for a guide when questions arise.

*Practice* with your new Series 1 lens. *Dry runs*—taking pictures without film—will help you get the *feel* of it.

*Shoot a roll of film.* After you see those first great pictures, you'll *know* that you and your new Series 1 lens are ready for an important occasion.

## About your Lens

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Your Series 1 90mm lens is a superb moderate telephoto lens that can be used for general purpose photography. Computer designed optics and VMC (Vivitar Multicoating) optimize edge-to-edge sharpness and reduce lens flare. The 90mm lens focuses from infinity ( $\infty$ ) down to 39.2 cm (15.4") with a reproduction ratio of 1:2 (half life-size).

When greater magnification is required, attach the Macro Adapter, and your 90mm lens will focus down to 35.3 cm (13.9") with a reproduction ratio of 1:1 (life-size).

## Getting acquainted with your Lens


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- |    |                               |                 |    |                                       |
|----|-------------------------------|-----------------|----|---------------------------------------|
| 1  | Accessory Thread              |                 | 12 | Depth of Field Scale                  |
| 2  | Lens Barrel                   |                 | 13 | Aperture Reference Dot                |
| 3  | Exposure Adjustment           |                 | 14 | Aperture Scale Window                 |
| 4  | Focusing Distance/Inches      | MACRO<br>SCALES | 15 | Aperture Scale                        |
| 5  | Magnification                 |                 | 16 | Aperture Ring                         |
| 6  | Focusing Distance/Centimeters |                 | 17 | Lens Mount                            |
| 7  | Focusing Ring                 |                 | 18 | Macro Adapter                         |
| 8  | Distance Scales Window        |                 | 19 | Tripod Mounting Ring                  |
| 9  | Distance Scales               |                 | 20 | Tripod Mounting Ring Locking<br>Screw |
| 10 | Distance Index Line           |                 |    |                                       |
| 11 | Infrared Distance Index Line  |                 |    |                                       |

## Mounting your Lens

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Your new Series 1 lens is designed to mount on your camera with the ease and simplicity of your normal lens.

When using the Macro Adapter , *first* attach the lens to the Macro Adapter, *then* mount this combination to the camera. *Only* this order assures proper coupling of Automatic Diaphragm Control linkages.

*Remember* to keep the Macro Adapter's rear lens cap in place when attaching the lens to prevent accidentally touching the Macro Adapter's rear glass element.

## Holding your Lens

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You'll find it best to support the camera/lens combination by placing your left hand under the lens (see photo "A"). This leaves your right hand free to operate the camera controls and assures good balance and stability when shooting.

When using the Macro Adapter, use a *tripod* attached at the Tripod Mounting Ring ⑱ socket.

## Aperture Control

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Turn the Aperture Ring ⑯ until the f-stop you have selected for proper exposure appears in the Aperture Scale Window ⑭ and aligns with the Aperture Reference Dot ⑬. The Aperture Ring may be set at any f-stop marked on the Aperture Scale ⑮ or at any point in between. The Aperture Ring is equipped with click-stops at each indicated f-stop and at each intermediate half-stop except between f16 and f22.

Your new Vivitar lens has Automatic Diaphragm Control. As you turn the Aperture Ring, the diaphragm remains open to the lens' maximum aperture. When you release the shutter, the diaphragm automatically stops down to your pre-selected f-stop and instantly reopens after the exposure is completed. The Macro Adapter is equipped with linkages to maintain Automatic Diaphragm Control between the camera and lens.

**NOTE:** Universal Thread Mount lenses have an AUTO/MANUAL Switch

(see photo "B") which must be set in the "A" (Auto) position for Automatic Diaphragm Control. With the AUTO/MANUAL Switch in the "M" (Manual) position, the lens diaphragm opens and closes as the Aperture Ring is turned.

Canon Mount lenses have an AUTO/MANUAL Lever (see photo "C") which must be set at the clockwise end of the slot for Automatic Diaphragm Control. With this lever in the counter-clockwise position, the lens diaphragm opens and closes as the Aperture Ring is turned.

## EE Coupled Lenses

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Canon Mount lenses have a click stop at the "O" marked EE position. The Aperture Ring may be set at and removed from this position in the same manner as selecting a specifically marked f-stop.

## Estimating Distance

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Your new Vivitar lens has two numbered Distance Scales ⑨ engraved on the Focusing Ring ⑦. The *white numbers* indicate distance in *feet* and the *green numbers* indicate distance in *meters*.

When using the prime lens without the Macro Adapter, the approximate distance to an *object-in-focus* is indicated on these scales at the Distance Index Line ⑩.

Refer to the macrophotography section of this manual for the use of distance scales when using the Macro Adapter with the prime lens.

## Infrared Photography

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When using infrared film, you are photographing a light wavelength which is invisible to your eye and which does not focus at the same point as visible wavelengths. A special Infrared Distance Index Line ⑪ has been provided to help you adjust for these problems.

First, focus on your subject as you would using a regular film. Then note the exact point of the Focusing Ring ⑦ which is aligned with the Distance Index Line ⑩ (see photo "D"). Turn the Focusing Ring until that same point is aligned with the Infrared Distance Index Line ⑪. (See photo "E")

Since infrared radiation is variable by nature, the Infrared Distance Index Line should be used only as an approximation for focusing.

## Depth of Field

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Depth of Field is the capability of a lens to produce acceptably sharp pictures of objects which are located in an area in front of and behind a subject in focus.

You can creatively control the size of this area, making it small to emphasize a single subject or making it large to accurately record every detail of a scene, by doing the following:

**1 — Focus** Depth of field becomes smaller as you focus on nearby objects and becomes larger as you focus on those that are farther away. For example, the depth of field with your lens focused at " $\infty$ " is much greater than

the depth of field with your lens focused at 2 feet.

**2 — Aperture** Depth of field becomes larger as you reduce the size of the lens diaphragm opening. For example, the depth of field at f16 (see photo "F") is much larger than the depth of field at f2.5. (See photo "G")

## Computing Depth of Field

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The numbers on the Depth of Field Scale ② correspond to selected f-stops on the Aperture Scale ⑮. When using the prime lens without the Macro Adapter, the approximate area of acceptable sharpness is indicated on the Distance Scales ⑨ between the Depth of Field Scale markings which correspond to the diaphragm opening you have set with the Aperture Ring.

For example, with your lens focused at approximately 8 feet and the Aperture Ring set at f16, the Depth of Field Scale indicates that objects between 7 feet and 10 feet will be acceptably sharp when you make the exposure. (See photo "H")

The Depth of Field Tables located in the back of this Owner's Manual provide precise depth of field information for selected aperture/focus combinations.

## Depth of Field Preview

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Pressing your camera's Depth of Field Preview Button stops down the lens diaphragm to your pre-selected aperture allowing you to see the depth of field in the viewfinder prior to taking the picture.



**NOTE:** The AUTO/MANUAL Switch on Universal Thread Mount lenses may be used for previewing depth of field by moving the switch to the “M” (Manual) position.

## Macrophotography

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The Macro Adapter allows you to focus as close as 35.3 cm (13.9”) between a subject and your camera’s film plane to produce a life-sized 1:1 image magnification.

### **Focusing Distance**

The two Focusing Distance Scales — Inches ④ and Centimeters ⑥ — are read at the leading edge of the Focusing Ring ⑦ to determine the approximate subject to film plane distance for any given focus setting when using the Macro Adapter.

### **Magnification**

The Magnification Scale ⑤ is read at the leading edge of the Focusing Ring ⑦ to determine the image size for any given focus setting when using the Macro Adapter.

## Exposure Adjustment

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Focusing on nearby objects extends the focal length of a lens, thereby changing the f-stop value of each Aperture Ring position. This change is not constant, but rather becomes greater as the lens is focused closer.

Usually, this change is not sufficient to make a significant difference in exposure. However, when using your new Series 1 lens with its Macro Adapter, this change becomes as great as two full f-stops.

Through-the-lens metering systems *automatically* adjust for this change and exposure compensations are *not* required.

Exposure settings based on light measurements with hand-held meters require compensation for these changes in f-stop values.

The Exposure Adjustment Factors ③ engraved on the lens barrel indicate the approximate compensation required for proper exposure when using the Macro Adapter. The useful range of each of the three factors —  $1\frac{1}{2}$ ,  $1\frac{3}{4}$ , and 2 f-stops — is indicated by the three vertical lines. For any given focus setting, simply use the compensation factor with a "range line" that intersects the leading edge of the Focusing Ring ⑦.

To apply the exposure compensation factor, open the lens diaphragm the number of f-stops indicated by the Exposure Adjustment Factor ③, by turning the Aperture Ring ⑥.

For example, if your hand-held meter indicates proper exposure at f11, and the Exposure Adjustment Factor is 2, turn the Aperture Ring to f5.6. If the meter reading is f11 and the Exposure Adjustment Factor is  $1\frac{1}{2}$ , the exposure-adjusted f-stop is the click stop between f8 and f5.6. With an Exposure Adjustment Factor of  $1\frac{3}{4}$ , the exposure adjusted f-stop lies between f8 and the click stop between f8 and f5.6.

If you use the prime lens without the Macro Adapter, and are using a hand-held meter, the following exposure adjustments should be made:

Focusing Distance	Exposure adjustment
.7 m (2.3')	½ stop
.5 m (1.6')	1 stop
.4 m (1.3')	1½ stop

## Helpful Hints for Macrophotography

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**1** — *Bracket* — shoot several pictures of the same subject at different exposures; exposure in macrophotography is critical. Under and overexpose by a half to a full stop as well as shooting at "correct" exposure. This *insurance* is well worth a few pennies in film.

**2** — Use a *tripod* or other *firm support* — slight movements and vibrations can ruin a great photo. If, for some reason, a support can't be used, shoot the photo at the fastest possible shutter speed lighting conditions will allow.

**3** — Use a *cable release* — the slight movement of your finger pressing the shutter release can cause movement of your camera (even when your camera is mounted on a tripod). After you compose the photo, make all camera adjustments, and advance the film, wait a moment — then shoot. If your camera has a *self-timer*, use it for movement free camera operation when a cable release is not available.

## Specifications

### *Optical Construction —*

*Main Lens: 8 elements, 7 groups*

*Macro Adapter: 3 elements, 3 groups*

*Angle of Acceptance: 27°*

*Aperture Range: f2.5 — f22*

*Minimum Focusing Distance from Film Plane:*

*39.2 cm (15.4") without adapter*

*35.3 cm (13.9") with adapter*

*Maximum Reproduction Ratio:*

*1:2 without adapter*

*1:1 with adapter*

### *Weight —*

*Main Lens: 654 g (23.3 oz.)*

*Macro Adapter: 285 g (10.2 oz.)*

### *Length:*

*9.0 cm (3.5") without adapter*

*13.9 cm (5.5") with adapter*

*Diameter: 70 mm (2.75")*

*Accessory Size: Ø58mm*

*Lens Cap Size: 70mm*

*Accessories Included: Front and rear lens caps for lens and adapter, Lens case*

Specifications subject to change without notice.

Length and weight may vary slightly depending on lens mount.



## Depth of Field Tables

ft. \ f	2.5	4	5.6	8	11	16	22
1.16	1.15 ~ 1.16	1.15 ~ 1.16	1.15 ~ 1.17	1.15 ~ 1.17	1.14 ~ 1.17	1.13 ~ 1.18	1.13 ~ 1.19
1.17	1.16 ~ 1.17	1.16 ~ 1.17	1.16 ~ 1.18	1.15 ~ 1.18	1.15 ~ 1.18	1.14 ~ 1.19	1.13 ~ 1.20
1.20	1.19 ~ 1.20	1.19 ~ 1.20	1.18 ~ 1.20	1.16 ~ 1.20	1.17 ~ 1.21	1.17 ~ 1.22	1.16 ~ 1.23
1.22	1.21 ~ 1.22	1.21 ~ 1.22	1.21 ~ 1.23	1.20 ~ 1.23	1.20 ~ 1.24	1.19 ~ 1.24	1.18 ~ 1.25
1.25	1.25 ~ 1.25	1.24 ~ 1.26	1.24 ~ 1.26	1.24 ~ 1.26	1.23 ~ 1.27	1.22 ~ 1.28	1.21 ~ 1.29
1.33	1.33 ~ 1.34	1.32 ~ 1.34	1.32 ~ 1.34	1.31 ~ 1.35	1.31 ~ 1.35	1.30 ~ 1.36	1.29 ~ 1.30
1.50	1.49 ~ 1.51	1.49 ~ 1.51	1.49 ~ 1.51	1.48 ~ 1.52	1.47 ~ 1.53	1.46 ~ 1.54	1.45 ~ 1.56
1.75	1.74 ~ 1.76	1.74 ~ 1.76	1.73 ~ 1.77	1.72 ~ 1.78	1.71 ~ 1.79	1.70 ~ 1.81	1.68 ~ 1.83
2.00	1.99 ~ 2.01	1.98 ~ 2.02	1.98 ~ 2.03	1.96 ~ 2.04	1.95 ~ 2.05	1.93 ~ 2.07	1.91 ~ 2.10
2.50	2.48 ~ 2.52	2.47 ~ 2.53	2.46 ~ 2.54	2.44 ~ 2.56	2.42 ~ 2.58	2.39 ~ 2.62	2.35 ~ 2.67
3.00	2.97 ~ 3.03	2.96 ~ 3.04	2.94 ~ 3.06	2.92 ~ 3.08	2.89 ~ 3.12	2.85 ~ 3.17	2.79 ~ 3.24
4.00	3.96 ~ 4.05	3.93 ~ 4.07	3.90 ~ 4.10	3.86 ~ 4.15	3.81 ~ 4.21	3.73 ~ 4.31	3.64 ~ 4.44
5.00	4.93 ~ 5.07	4.89 ~ 5.12	4.85 ~ 5.16	4.78 ~ 5.24	4.71 ~ 5.33	4.59 ~ 5.50	4.45 ~ 5.71
7.00	6.86 ~ 7.14	6.79 ~ 7.23	6.70 ~ 7.32	6.58 ~ 7.47	6.44 ~ 7.67	6.21 ~ 8.01	5.96 ~ 8.47
10.00	9.73 ~ 10.29	9.57 ~ 10.47	9.41 ~ 10.67	9.17 ~ 10.99	8.90 ~ 11.42	8.47 ~ 12.20	8.01 ~ 13.30
∞	354.35 ~ ∞	221.47 ~ ∞	158.19 ~ ∞	110.73 ~ ∞	80.53 ~ ∞	55.37 ~ ∞	40.27 ~ ∞

<b>m \ f</b>	<b>2,5</b>	<b>4</b>	<b>5,6</b>	<b>8</b>	<b>11</b>	<b>16</b>	<b>22</b>
<b>0,353</b>	0,35 ~ 0,35	0,35 ~ 0,35	0,35 ~ 0,36	0,35 ~ 0,36	0,35 ~ 0,36	0,35 ~ 0,36	0,34 ~ 0,36
<b>0,355</b>	0,35 ~ 0,36	0,35 ~ 0,36	0,35 ~ 0,36	0,35 ~ 0,36	0,35 ~ 0,36	0,35 ~ 0,36	0,35 ~ 0,37
<b>0,36</b>	0,36 ~ 0,36	0,36 ~ 0,36	0,36 ~ 0,37	0,36 ~ 0,37	0,36 ~ 0,37	0,36 ~ 0,37	0,35 ~ 0,37
<b>0,37</b>	0,37 ~ 0,37	0,37 ~ 0,37	0,37 ~ 0,37	0,37 ~ 0,38	0,37 ~ 0,38	0,36 ~ 0,38	0,36 ~ 0,38
<b>0,38</b>	0,38 ~ 0,38	0,38 ~ 0,38	0,38 ~ 0,38	0,38 ~ 0,38	0,37 ~ 0,39	0,37 ~ 0,39	0,37 ~ 0,39
<b>0,40</b>	0,40 ~ 0,40	0,40 ~ 0,40	0,40 ~ 0,40	0,40 ~ 0,40	0,39 ~ 0,41	0,39 ~ 0,41	0,39 ~ 0,41
<b>0,45</b>	0,45 ~ 0,45	0,45 ~ 0,45	0,45 ~ 0,45	0,44 ~ 0,46	0,44 ~ 0,46	0,44 ~ 0,46	0,43 ~ 0,47
<b>0,50</b>	0,50 ~ 0,50	0,50 ~ 0,50	0,49 ~ 0,51	0,49 ~ 0,51	0,49 ~ 0,51	0,49 ~ 0,52	0,48 ~ 0,52
<b>0,60</b>	0,60 ~ 0,60	0,59 ~ 0,61	0,59 ~ 0,61	0,59 ~ 0,61	0,59 ~ 0,62	0,58 ~ 0,62	0,57 ~ 0,63
<b>0,70</b>	0,70 ~ 0,70	0,69 ~ 0,71	0,69 ~ 0,71	0,69 ~ 0,71	0,68 ~ 0,72	0,67 ~ 0,73	0,66 ~ 0,74
<b>0,90</b>	0,89 ~ 0,91	0,89 ~ 0,91	0,88 ~ 0,92	0,88 ~ 0,92	0,87 ~ 0,93	0,85 ~ 0,95	0,84 ~ 0,97
<b>1,00</b>	0,99 ~ 1,01	0,99 ~ 1,02	0,98 ~ 1,02	0,97 ~ 1,03	0,96 ~ 1,04	0,94 ~ 1,06	0,92 ~ 1,09
<b>1,20</b>	1,19 ~ 1,21	1,18 ~ 1,22	1,17 ~ 1,23	1,16 ~ 1,24	1,14 ~ 1,26	1,12 ~ 1,29	1,09 ~ 1,33
<b>1,50</b>	1,48 ~ 1,52	1,47 ~ 1,53	1,45 ~ 1,55	1,44 ~ 1,57	1,41 ~ 1,60	1,38 ~ 1,65	1,34 ~ 1,71
<b>2,0</b>	1,96 ~ 2,04	1,94 ~ 2,06	1,92 ~ 2,09	1,89 ~ 2,13	1,85 ~ 2,18	1,79 ~ 2,27	1,72 ~ 2,39
<b>3,0</b>	2,92 ~ 3,09	2,87 ~ 3,14	2,82 ~ 3,20	2,76 ~ 3,29	2,67 ~ 3,42	2,55 ~ 3,65	2,41 ~ 3,97
<b>∞</b>	108,00 ~ ∞	67,50 ~ ∞	48,21 ~ ∞	33,75 ~ ∞	24,55 ~ ∞	16,88 ~ ∞	12,27 ~ ∞



A



B



C



D



E



F



G



H

Vivitar Series

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# Vivitar.

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