

70-210mm f3.5 Macro Focusing Zoom Lens

Objectif macro-zoom 70-210 mm f3,5

Makro-Zoom-Objektiv 3,5/70-210 mm

Objetivo zoom 70-210 mm f3,5 de enfoque macro

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**Vivitar Series**



Owner's Manual  
Mode d'emploi  
Gebrauchsanleitung  
Manual del propietario



Your new Vivitar 70-210mm f3.5 Macro Focusing Zoom Lens is a pace-setting member of the renowned Series 1\* family of ultimate-quality lenses. "One-touch" zooming and focusing control lets you compose your picture and focus with precision at any focal length from 70mm to 210mm. A simple turn of the wrist and your 70-210 becomes a macro focus lens, allowing you to explore the fascinating world of close-up photography.

## Controls and Components

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1. Filter Thread
2. Zoom/Focus Ring
3. Macro Range Position
4. Distance Scales
5. Distance Index Line
6. Focal Length Scale
7. Infrared Index Line
8. Aperture Ring
9. Aperture Index
10. Lens Mount

## Mounting the Lens

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The Vivitar 70-210mm Zoom Lens will mount on your camera in the same manner as your standard lens. However, because it is longer than the normal lens, special care must be taken when aligning it with the camera. For best results, slide the Zoom/Focus Ring (2) out to the 70mm position on the Focal Length Scale (6), and grasp the lens firmly around the barrel. This affords the best balance during mounting.

## Holding the Lens

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For best balance during use, support the lens/camera combination with your left hand under the lens. This leaves your right hand free to operate the camera controls.

## Diaphragm Operation

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This lens has an automatic diaphragm which lets you focus your picture with the diaphragm wide open at maximum aperture. At the moment of shutter release, the diaphragm will automatically stop down to the aperture pre-selected manually or determined by the camera's metering and exposure control system.

NOTE: Certain model lenses have an auto/manual selector which must be

set at the Auto position for automatic diaphragm control. In the manual position, the f-stop is selected by rotating the Aperture Ring (8).

## **Lenses for Shutter Priority Cameras**

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Many of today's cameras have metering systems designed to automatically adjust the lens aperture. Your Vivitar 70-210mm lens is fully compatible with these systems.

*Canon:* Canon mount lenses have a click stop at the green "O" for shutter priority operation. The Aperture Ring may be set and removed from this position in the same manner as selecting a specifically marked f-stop.

*Minolta:* On Minolta mount lenses, the minimum aperture setting of f22 is engraved in green. When using this lens in the shutter priority mode on correspondingly equipped cameras, the lens must be set at this minimum aperture position.

## **Focusing and Zooming**

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Vivitar's "one-touch" design lets you focus and compose your picture quickly and easily. Focusing and zooming are both controlled by the single Zoom/Focus Ring.

1. To focus in normal, non-macro operation, turn the Zoom/Focus Ring until the subject appears sharpest in the camera viewfinder.

2. To zoom from one focal length to another, slide the Zoom/Focus Ring along the lens barrel to the desired position. The Focal Length Scale (6) shows the most common focal lengths. This zooming capability gives you excellent creative control over the composition of your photo, since you can crop out unwanted background from around your key subject by increasing the focal length.
3. Since zooming may cause you to turn the ring slightly, re-check the focus for sharpness at the desired focal length.

## Distance to Subject

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Once focused, you can determine the approximate distance between camera and subject, if desired, (useful in flash and infrared photography) by finding the point on the feet or meter Distance Scales (4) intersected by the Distance Index Line (5).

## Infrared Index Line

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Since infrared light focuses at a different point from visible light, your lens has an Infrared Index Line (7) engraved on the barrel for use with black and white infrared film. When using B&W infrared film, focus normally on your subject, select the zoom position you prefer and find the distance-to-subject as explained above.

Without changing the zoom position, turn the Zoom/Focus Ring to the right until this distance-to-subject intersects the Infrared Index Line. Your lens will then be focused for average infrared photography. Note: Infrared radiation is variable by nature and therefore this setting can only be an approximation and may not be sharp in every situation.

Color infrared film requires no lens adjustment.

## Depth of Field

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Depth of field is the area of acceptable sharpness in front of and behind the subject in focus. This depth is determined by three factors: the lens aperture, the focal length, and the distance-to-subject. Increasing aperture size and/or focal length reduces the depth of field around a given subject. Decreasing aperture and/or focal length has the opposite effect.

In contrast, depth-of-field increases as distance-to-subject increases and vice versa.

This variability of the depth of field offers you creative possibilities—by opening the lens to wider apertures you can blur out unwanted backgrounds and foregrounds, something which is particularly pleasing in portrait and still-life photography.

Tables for determining precise depth of field at selected focal length/aperture combinations are presented at the end of this manual.

## Macro Mode Operation

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To set your lens for macro operation:

1. Align the "M.R." (3) at the beginning of the Distance Scales on the Zoom/Focus Ring with the Distance Index Line.
2. Move your camera and lens toward the subject until the image comes into sharp focus. You'll then be able to continuously change your reproduction ratio by sliding the Zoom/Focus ring from one zoom setting to another. There is no need to refocus.

NOTE: "Reproduction Ratio" refers to the relationship between the actual size of your subject and the size of its image on the film. For example, a reproduction ratio of 1:5 means that the size of the image on film is 1/5 lifesize. At 70mm, the reproduction ratio of this lens is 1:12. Zooming to 210mm increases the reproduction ratio (at M.R. position) to 1:4, 1/4 lifesize.

## Helpful Hints in Macro Operation

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1. Because exposure in close-up photography is critical to getting the best possible picture, it's a good idea to shoot several pictures of the same subject, varying the exposure slightly. This method involves shooting the



pictures at the f-stop indicated by your TTL metering system, underexposing by 1/2 to 1 f-stop and overexposing 1/2 to 1 f-stop. (Your particular camera may require use of the exposure compensation control.) The results will be well worth the few cents it may add to your film cost.

2. Always try to use a tripod or other stable support when shooting at higher magnifications to assure that no slight movements occur to degrade picture quality. If a stable support is unavailable or impossible to use, take the photo at the fastest shutter speed that lighting conditions will allow.
3. It is always a good idea to use a cable release to trigger the shutter of your camera. Even the slightest movement caused by your finger depressing the shutter release can affect the quality of macro photos at high magnification. If your camera has a self-timer, you can use it to prevent this movement if a cable release is not available.

## Lens Care

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1. It is a good idea to keep a Skylight 1A or UV filter on your lens at all times. This not only improves photographs, but also protects the front lens element from dirt and scratches.
2. Keep your lens dust free by making sure both front and rear lens caps are in place when it's not in use.
3. Clean your lens with an air brush, anti-static brush or wipe it lightly with a camel-hair brush or lens tissue with lens cleaning fluid. In EXTREME cases, use a clean, soft cotton cloth moistened with medical alcohol. Never rub the lens surface with your finger, clothing or any other possibly abrasive material. This will scratch the lens coating and can cause damage to the element surface.
4. Always store your lens in a cool, dry place. It's a good idea to store it with the silica gel packet supplied, especially during wet or humid weather.

## Specifications

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Focal Length: 70mm - 210mm

Optical Construction: 14 elements in 10 groups. VMC multicoated.

Aperture Range: f3.5 - f22

Angle of Acceptance: 34° - 12°

Minimum Focusing Distance from Film Plane: 1.2 m (47.25")

Maximum Reproduction Ratio: 1:4

Filter Size: 62 mm

Maximum Barrel Diameter: 69.5 mm

Length at Infinity: 140 mm

Weight: 710 g

Specifications subject to change without notice. Length and weight may vary slightly depending on lens mount.

# Depth of Field Tables

## Tableaux de profondeur de champ

### Tiefenschärfetabellen

### Tablas de profundidad de campo

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## 70mm

m \ f	3.5	5.6	8.0	11.0	16.0	22.0
<b>1.2</b>	1.170- 1.232	1.153- 1.251	1.133- 1.275	1.110- 1.306	1.074- 1.360	1.033- 1.431
<b>1.35</b>	1.312- 1.390	1.290- 1.416	1.266- 1.446	1.237- 1.485	1.192- 1.556	1.142- 1.650
<b>1.5</b>	1.453- 1.550	1.427- 1.581	1.397- 1.619	1.362- 1.669	1.308- 1.758	1.248- 1.880
<b>1.7</b>	1.640- 1.764	1.606- 1.805	1.569- 1.854	1.525- 1.920	1.457- 2.040	1.383- 2.206
<b>2.0</b>	1.918- 2.090	1.872- 2.147	1.822- 2.217	1.763- 2.311	1.672- 2.487	1.576- 2.737
<b>2.5</b>	2.373- 2.642	2.303- 2.734	2.227- 2.849	2.140- 3.006	2.008- 3.311	1.870- 3.769
<b>3.5</b>	3.256- 3.784	3.125- 3.977	2.988- 4.224	2.832- 4.579	2.606- 5.326	2.379- 6.622
<b>5.0</b>	4.516- 5.600	4.268- 6.034	4.016- 6.622	3.740- 7.538	3.356- 9.800	2.988-15.312
<b>10.0</b>	8.235-12.727	7.447-15.217	6.712-19.600	5.976-30.625	5.052-49.000	4.261- *
*	46.667- *	29.167- *	20.417- *	14.848- *	10.208- *	7.424- *

## 70mm

<b>f</b> <b>h</b>	<b>3.5</b>	<b>5.6</b>	<b>8.0</b>	<b>11.0</b>	<b>16.0</b>	<b>22.0</b>
<b>4.0</b>	3.898– 4.107	3.840– 4.174	3.775– 4.254	3.696– 4.358	3.573– 4.542	3.436– 4.786
<b>4.5</b>	4.372– 4.636	4.298– 4.722	4.217– 4.824	4.119– 4.958	3.967– 5.198	3.798– 5.520
<b>5.0</b>	4.842– 5.169	4.752– 5.276	4.653– 5.403	4.535– 5.572	4.351– 5.877	4.148– 6.291
<b>6.0</b>	5.774– 6.245	5.646– 6.401	5.507– 6.590	5.342– 6.843	5.088– 7.309	4.814– 7.961
<b>8.0</b>	7.603– 8.441	7.383– 8.730	7.147– 9.085	6.872– 9.572	6.458– 10.510	6.022– 11.912
<b>10.0</b>	9.387– 10.699	9.054– 11.167	8.701– 11.755	8.297– 12.583	7.701– 14.256	7.090– 16.964
<b>15.0</b>	13.662– 16.629	12.967– 17.788	12.256– 19.328	11.469– 21.673	10.360– 27.166	9.283– 39.041
<b>30.0</b>	25.085– 37.310	22.840– 43.699	20.720– 54.333	18.567– 78.082	15.825– 287.618	13.433– =
=	153.113– =	95.696– =	66.987– =	48.718– =	33.494– =	24.359– =

# 100mm

<b>f</b> <b>m</b>	<b>3.5</b>	<b>5.6</b>	<b>8.0</b>	<b>11.0</b>	<b>16.0</b>	<b>22.0</b>
<b>1.2</b>	1.185– 1.215	1.176– 1.255	1.166– 1.236	1.154– 1.249	1.135– 1.273	1.112– 1.303
<b>1.35</b>	1.331– 1.369	1.320– 1.381	1.308– 1.395	1.292– 1.413	1.268– 1.444	1.240– 1.482
<b>1.5</b>	1.477– 1.524	1.463– 1.539	1.448– 1.556	1.429– 1.578	1.399– 1.616	1.365– 1.665
<b>1.7</b>	1.670– 1.731	1.653– 1.750	1.633– 1.772	1.610– 1.801	1.572– 1.851	1.529– 1.915
<b>2.0</b>	1.959– 2.043	1.935– 2.070	1.908– 2.101	1.876– 2.141	1.825– 2.212	1.767– 2.304
<b>2.5</b>	2.436– 2.567	2.399– 2.610	2.358– 2.660	2.309– 2.725	2.232– 2.841	2.146– 2.994
<b>3.5</b>	3.376– 3.634	3.306– 3.719	3.229– 3.821	3.138– 3.957	2.997– 4.207	2.843– 4.551
<b>5.0</b>	4.751– 5.277	4.613– 5.459	4.464– 5.682	4.292– 5.988	4.032– 6.579	3.759– 7.463
<b>10.0</b>	9.050–11.173	8.562–12.019	8.065–13.158	7.519–14.925	6.757–19.231	6.024–29.412
*	95.238– *	59.524– *	41.667– *	30.303– *	20.833– *	15.152– *

## 100mm

<b>f</b> <b>n</b>	<b>3.5</b>	<b>5.6</b>	<b>8.0</b>	<b>11.0</b>	<b>16.0</b>	<b>22.0</b>
<b>4.0</b>	3 949– 4 052	3 920– 4 084	3 886– 4 121	3 845– 4 168	3 779– 4 249	3 702– 4 350
<b>4.5</b>	4 436– 4 566	4 399– 4 606	4 357– 4 653	4 305– 4 713	4 222– 4 817	4 126– 4 948
<b>5.0</b>	4 921– 5 081	4 875– 5 131	4 824– 5 190	4 761– 5 265	4 669– 5 395	4 543– 5 559
<b>6.0</b>	5 887– 6 117	5 821– 6 190	5 748– 6 275	5 659– 6 385	5 516– 6 577	5 354– 6 824
<b>8.0</b>	7 800– 8 210	7 685– 8 342	7 558– 8 497	7 404– 8 700	7 162– 9 060	6 891– 9 534
<b>10.0</b>	9 690–10 331	9 513–10 540	9 318–10 789	9 086–11 118	8 724–11 174	8 325–12 518
<b>15.0</b>	14 313–15 756	13 930–16 248	13 517–16 849	13 034–17 665	12 301–19 217	11 523–21 482
<b>30.0</b>	27 327–33 186	26 005–35 445	24 601–38 434	23 046–42 964	20 849–53 466	18 709–75 657
*	312 476– *	195 298– *	136 708– *	99 424– *	68 354– *	49 712– *

## 150mm

<b>f</b> <b>m</b>	<b>3.5</b>	<b>5.6</b>	<b>8.0</b>	<b>11.0</b>	<b>16.0</b>	<b>22.0</b>
<b>1.2</b>	1 193– 1 207	1 189– 1 211	1 185– 1 216	1 179– 1 221	1 170– 1 232	1 159– 1 244
<b>1.35</b>	1 342– 1 359	1 337– 1 364	1 331– 1 370	1 324– 1 377	1 312– 1 390	1 299– 1 406
<b>1.5</b>	1 490– 1 511	1 483– 1 517	1 476– 1 524	1 468– 1 534	1 453– 1 550	1 437– 1 569
<b>1.7</b>	1 687– 1 714	1 679– 1 722	1 670– 1 731	1 659– 1 743	1 641– 1 764	1 619– 1 789
<b>2.0</b>	1 982– 2 019	1 971– 2 030	1 958– 2 044	1 943– 2 060	1 918– 2 089	1 889– 2 125
<b>2.5</b>	2 471– 2 530	2 454– 2 548	2 435– 2 568	2 412– 2 595	2 373– 2 641	2 329– 2 698
<b>3.5</b>	3 444– 3 558	3 411– 3 594	3 374– 3 636	3 329– 3 689	3 257– 3 782	3 174– 3 900
<b>5.0</b>	4 886– 5 119	4 820– 5 194	4 747– 5 282	4 658– 5 396	4 518– 5 597	4 360– 5 859
<b>10.0</b>	9 554–10 490	9 305–10 807	9 036–11 194	8 721–11 719	8 242–12 712	7 732–14 151
*	214 286– *	133 929– *	93 750– *	68 182– *	46 875– *	34 091– *



## 150mm

$\frac{f}{n}$	3.5	5.0	8.0	11.0	16.0	22.0
4.0	3.977– 4.023	3.964– 4.037	3.949– 4.053	3.930– 4.073	3.899– 4.107	3.862– 4.148
4.5	4.471– 4.529	4.454– 4.547	4.435– 4.567	4.411– 4.592	4.372– 4.636	4.326– 4.689
5.0	4.965– 5.036	4.944– 5.058	4.920– 5.083	4.891– 5.114	4.843– 5.168	4.786– 5.234
6.0	5.949– 6.052	5.919– 6.083	5.885– 6.119	5.843– 6.165	5.775– 6.244	5.695– 6.340
8.0	7.910– 8.092	7.857– 8.148	7.797– 8.214	7.724– 8.297	7.604– 8.439	7.466– 8.616
10.0	9.860– 10.144	9.777– 10.233	9.685– 10.336	9.572– 10.468	9.389– 10.695	9.179– 10.962
15.0	14.687– 15.327	14.505– 15.530	14.303– 15.769	14.057– 16.078	13.667– 16.621	13.226– 17.323
30.0	28.772– 31.337	28.083– 32.198	27.334– 33.242	26.453– 34.646	25.100– 37.270	23.655– 40.995
*	703.071– *	439.420– *	307.594– *	223.705– *	153.797– *	111.852– *

## 210mm

<b>m \ f</b>	<b>3.5</b>	<b>5.6</b>	<b>8.0</b>	<b>11.0</b>	<b>16.0</b>	<b>22.0</b>
<b>1.2</b>	1.197– 1.203	1.195– 1.205	1.192– 1.208	1.189– 1.211	1.185– 1.216	1.179– 1.222
<b>1.35</b>	1.346– 1.354	1.343– 1.357	1.340– 1.360	1.336– 1.364	1.330– 1.370	1.323– 1.378
<b>1.5</b>	1.495– 1.505	1.491– 1.509	1.488– 1.512	1.483– 1.517	1.476– 1.525	1.467– 1.534
<b>1.7</b>	1.693– 1.707	1.689– 1.711	1.684– 1.716	1.679– 1.722	1.669– 1.732	1.658– 1.744
<b>2.0</b>	1.901– 2.010	1.985– 2.015	1.978– 2.022	1.971– 2.030	1.957– 2.045	1.942– 2.062
<b>2.5</b>	2.485– 2.515	2.476– 2.524	2.466– 2.534	2.454– 2.548	2.434– 2.570	2.410– 2.597
<b>3.5</b>	3.471– 3.529	3.454– 3.547	3.435– 3.568	3.411– 3.594	3.372– 3.639	3.326– 3.693
<b>5.0</b>	4.941– 5.060	4.907– 5.097	4.868– 5.140	4.820– 5.194	4.742– 5.288	4.652– 5.404
<b>10.0</b>	9.767– 10.244	9.633– 10.396	9.484– 10.576	9.304– 10.809	9.018– 11.221	8.698– 11.760
<b>*</b>	420.000– *	262.500– *	183.750– *	133.636– *	91.875– *	66.818– *

## 210mm

$r \backslash f$	3.5	5.6	8.0	11.0	16.0	22.0
4.0	3.988– 4.012	3.982– 4.019	3.974– 4.027	3.964– 4.037	3.948– 4.054	3.928– 4.074
4.5	4.485– 4.515	4.477– 4.524	4.467– 4.534	4.454– 4.547	4.434– 4.568	4.409– 4.594
5.0	4.982– 5.018	4.971– 5.029	4.959– 5.042	4.944– 5.058	4.918– 5.084	4.889– 5.117
6.0	5.974– 6.026	5.958– 6.042	5.941– 6.060	5.919– 6.083	5.883– 6.122	5.840– 6.169
8.0	7.954– 8.047	7.926– 8.075	7.895– 8.108	7.857– 8.149	7.793– 8.218	7.718– 8.303
10.0	9.928–10.073	9.885–10.117	9.837–10.169	9.777–10.233	9.679–10.343	9.564–10.478
15.0	14.838–15.165	14.743–15.266	14.636–15.383	14.504–15.531	14.289–15.785	14.039–16.102
30.0	29.361–30.668	28.990–31.083	28.578–31.571	28.079–32.203	27.285–33.316	26.389–34.756
*	1378.020– *	861.262– *	602.884– *	438.461– *	301.442– *	219.230– *

# Vivitar

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