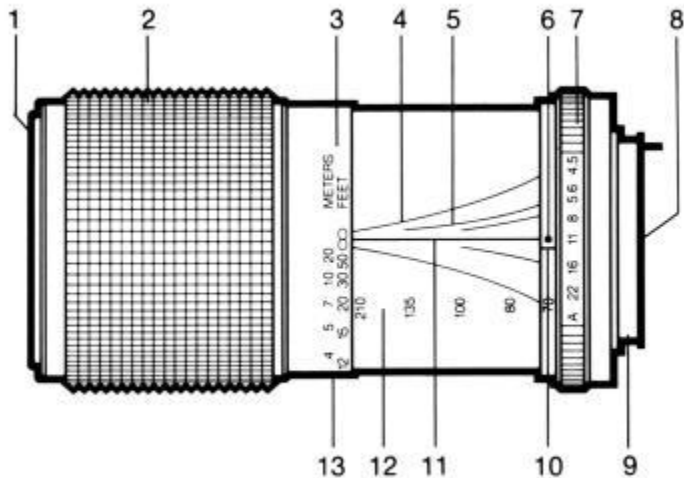


Vivitar

70-210mm f4.5/5.6



Controls and Components

1. Accessory Thread
2. Zoom/Focus Control
3. Distance Scale
4. Depth of Field Scales
5. Infrared Index Line
6. Aperture Index Dot
7. Aperture Ring
8. Lens Mounting Alignment Dot
9. Lens Mount
10. Variable Aperture Indicator
11. Distance Index Line
12. Focal Length Scale
13. Macro Range Position and Index

Mounting the Lens

Your Vivitar zoom lens will mount on your camera in the same manner as your normal lens. While mounting your lens, leave the front lens cap on to avoid smudging the front element. Make sure the Lens Mounting Alignment Dot on the lens and the similar dot on the camera are aligned before attempting to mount the lens.

NOTE: Canon mount Vivitar lenses have a black locking ring at the back of the lens mount. To mount the lens on your camera, grasp the lens firmly in your right hand with the lens mount facing away from you. With the left hand, turn the locking ring counter-clockwise so that the red index dot on the locking ring is aligned with the red aperture index dot. Remove the rear lens cover. The locking ring is now in the correct position for mounting the lens on the camera.

Holding the camera in your left hand, mount the lens onto the camera, making sure that the red index dot on the camera is aligned with the red index dots on the lens. Turn the locking ring clockwise to lock the lens on your camera.

To remove the lens from the camera, simply reverse the process. Remember, in order to remove or mount the lens or to remove or replace the rear protective lens cover, the red index dots on the lens must be in alignment.

Holding the Camera and Lens

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.

Setting the Aperture

The Aperture Ring controls the amount of light allowed to reach the film by varying the size of the lens diaphragm opening. As the lens is set to higher f/stop numbers, the diaphragm becomes smaller, allowing less light to reach the film.

This lens has an automatic mechanism which allows you to focus and compose the picture with the diaphragm wide open. At the moment of shutter release, the diaphragm will automatically stop down to the aperture pre-selected manually or as 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.

Variable Aperture Lens

This is a variable aperture lens which means that the effective aperture changes from the set aperture as the lens is zoomed from the shortest focal length to the longest focal length. For correct metering, the aperture is always set at the red Aperture Index Dot. At the shortest focal length the aperture range is $f/4.5 - f/22$. The shortest focal length is color-coded in red and corresponds to the aperture set at the red index dot. At the longest focal length the effective aperture range is $f/5.6 - f/32$ and is shown by the green Variable Aperture Indicator.

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 camera manual, remembering that changes in focal length may require manual adjustments in shutter speed or aperture due to the actual EFFECTIVE aperture values at the 210mm focal length.

Lenses for Automatic Cameras

Many of today's cameras are designed to automatically set the lens aperture. Your Vivitar zoom lens is fully compatible with these systems.

Canon: Canon mount lenses have a click stop at the green dot for automatic operation. The Aperture Ring may be set and removed from this position in a manner similar to your normal lens.

Pentax KA (P/K-A): Pentax KA mount lenses have a green "A" position on the aperture ring for automatic modes of operation. Set the green "A" to the red Aperture Index Dot.

Minolta: On Minolta mount lenses, the minimum aperture setting is engraved in green. When using this lens in automatic mode on correspondingly equipped cameras, set this minimum aperture position to the red Aperture Index Dot.

Focusing and Zooming

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 Control.

1. To focus in the normal (non-macro) mode, zoom the lens to the 210mm focal length, then turn the Zoom/Focus Control until the subject appears in sharpest focus in the camera viewfinder. Then, if you desire, zoom the lens to obtain the composition you want.
2. To zoom from one focal length to another, slide the Zoom/Focus Control along

the lens barrel to the desired position. The Focal Length Scale shows the most commonly used focal lengths. This zooming capability gives you excellent creative control over the composition of your photo, since unwanted backgrounds can be "cropped out" from around your main subject by increasing the focal length.

3. Since zooming may cause you to inadvertently turn the Zoom/Focus Control slightly, it is recommended that you recheck the focus for sharpness before taking the picture.
4. Under extremely cold conditions, all lenses experience a shift in focus. When operating under these conditions, you may observe that the lens will come into focus just prior to reaching the infinity mark and stop position. This is a normal condition.

Distance to Subject

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 meters Distance Scale intersected by the Distance Index Line.

Infrared Index Line

Since infrared radiation focuses at a different point from light, your lens has an Infrared Index Line 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 Control 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 approximate and may not be sharp in every situation.

Depth of Field

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. Conversely, 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.

Depth of Field Scales

For depth of field reference, your lens has two sets of Depth of Field Scale markings on the lens barrel. These Depth of Field Scales are color-coded to the corresponding aperture. The blue scale is for use at $f/8$ and the green scale is for use at $f/22$.

To quickly determine depth of field at these apertures, first turn the Zoom/Focus Control until the subject is in sharpest focus and then note where the color-coded Depth of Field Scale line intersects the Distance Scale on the Zoom/Focus Control. This will indicate the area of acceptable sharpness in front of and behind the subject in focus.

Example: With your lens at the 70mm setting and focused at 30 feet (9.1 meters) if the Aperture Ring is set to $f/8$, then everything between approximately 20 feet and 60 feet (6.1 and 18.3 meters) will be in focus, as indicated by the blue Depth of Field Scale markings.

With your lens at the 210mm setting and focused at 30 feet (9.1 meters), if the Aperture Ring is set to $f/22$, then everything between approximately 26 feet and 36 feet (7.9 and 10.9 meters) will be in focus, as indicated by the green Depth of Field Scale markings.

Macro Mode Operation

1. Move the Zoom/Focus Control to the 210mm focal length position.
2. Rotate the Zoom/Focus Control until it stops at the MACRO position.
3. Move your camera and lens toward the subject until the image comes into sharp focus. This is the maximum reproduction ratio. If desired, you may move away from the subject somewhat, then turn the Zoom/Focus Control for sharpest focus.
4. Do not attempt to change focal lengths when the Zoom/Focus Control is set at the Macro position. Instead, rotate the Zoom/Focus Control back until it has cleared the macro mode range and entered the green/white Distance Scale.
5. Please refer to specifications for maximum reproduction ratio and minimum focusing distance from film plane.

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 1:4 means that the size of the image on the film is 1/4 lifesize. A ratio of 1:2 means the size of the image is 1/2 lifesize.

Helpful Hints in Macro Operation

1. Because exposure in macro photography is critical to getting the best possible picture, it is 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 camera 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.)
2. Always try to use a tripod or other stable support when shooting at higher reproduction ratios 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 reproduction

ratios. If your camera has a self-timer, you can use it to prevent this movement if a cable release is not available.

4. When shooting pictures in macro mode, the depth of field is diminished. It is therefore recommended you use the smallest f/stop possible.

Lens Care

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 the lens is 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 to gently brush away loose particles. To remove fingerprints or smudges use a clean, soft cotton cloth moistened with lens cleaning fluid. Never rub the lens surface with your finger, clothing or any other possibly abrasive material. This will scratch the lens coating and cause damage to the element surface.
4. Always store your lens in a cool, dry place. It is a good idea to store it with the silica gel packet supplied, especially during wet or humid weather. A lens case

with a silica gel packet is a handy means of storage and provides excellent protection for your lens.

Specifications

Focal Length: 70 — 210mm

Aperture Range: f4.5/5.6 — f22/32

Optical Construction: 12 elements in 8 groups, multicoated

Angle of Acceptance: 34 to 11 degrees

Minimum Focusing Distance: 1.3 m (4.26 ft.)

Maximum Reproduction Ratio: 1:5

Length at infinity: 84 mm (3.3 in.)

Weight: 380 g (13.4 oz.)

Maximum Barrel Diameter: 63.5 mm (2.5 in.)

Accessory Size: 52mm

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

Vivitar



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