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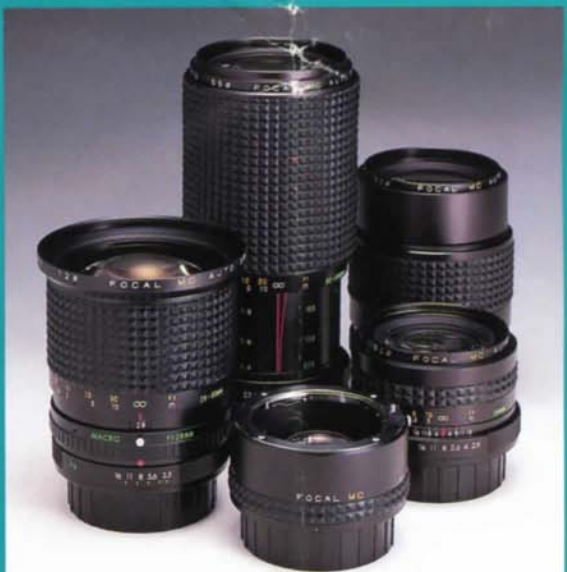
FOCAL®

Automatic Diaphragm Multi-Coated Lenses and Tele Converters



FOCAL MC AUTO Lenses and Tele Converters are available for the following cameras: CANON, MINOLTA, AND PENTAX

FOCAL MC (multi-coated) lenses and Tele Converters are fully automatic and incorporate not only computer optical design but also the latest optical multi-coating techniques. The process of multi-coating assures virtually flare free photographs even under adverse lighting conditions resulting in crisp, high contrast pictures with full color fidelity. In addition FOCAL MC auto lenses and Tele Converters are designed to retain the full range of exposure automation and metering capabilities of the camera on which they are mounted.

MOUNTING THE LENS

FOCAL MC auto automatic lens mount is similar in design to that of the standard automatic lens (50mm, 55mm, etc.) with which your camera is equipped, and is mounted and dismounted in the same manner as the 'standard' lens. Consult your camera instruction manual for detailed instructions on mounting interchangeable lenses on your camera.

AUTO DIAPHRAGM – MANUAL CONTROL

Some lens models have an A-M ring next to the diaphragm ring. This functions as a preview (stop down) mechanism on the lens itself. For normal automatic operation the ring should be set to "A". Only to preview the depth of field or to meter the scene at the shooting aperture should it be moved to the "M" position. Many cameras have a built-in stop down switch and do not require use of the A-M ring feature.

SETTING THE F STOP

Rotate the diaphragm ring to set the desired F stop at the index mark on the lens barrel. The diaphragm can be set to full stops or to any position in-between. Proper F stop is chosen as indicated by the camera's built-in exposure meter or an independent meter; or may be dictated by special requirements, such as controlling the depth of field.

METER COUPLING

Meter coupling of the lens to the camera is done automatically as the lens is mounted on the camera body. Full aperture metering of the original standard lens will, in most cases, be retained when using FOCAL MC auto lens. One exception to this is that when using FOCAL MC lenses with the Pentax Universal Screw Mount, metering must be done at shooting apertures only.

EE OPERATION

Minolta and Canon mount lenses allow automatic aperture selection when used on cameras having this feature.

With the Minolta XD camera and Minolta Mount lenses, to use the shutter priority mode, set the diaphragm to the minimum aperture setting (marked in green) and set the camera controls as indicated in the camera instruction manual.

For use with the Canon AL-1, AE-1, A-1 and F-1 cameras, rotate the diaphragm ring to the green EE mark just beyond the minimum aperture setting. For new Pentax Super "A" camera, your Pentax K mount lens will fit and can be used as the aperture-priority method only. It will not program on this new camera both in shutter speed and aperture opening.

CAUTION: Do not attempt to mount a lens on Canon cameras other than the F-1, AE-1, AV-1 or EF while the diaphragm ring is set to the EE position. First turn the diaphragm ring to a manual aperture setting in order to retract the EE pin on the rear of the lens.

INFRA-RED FOCUS

For infrared photography, correction of the distance scale is necessary because the infra-red rays are longer than the light rays of the visual spectrum. Focus first in the ordinary manner and then – before exposure – reset the distance indicated on the focusing ring to the appropriate R-index (red lines). For proper exposure and filtration with infra-red materials, follow the film manufacturers recommendations. Infra-red index lines are not included on all lenses.

DEPTH OF FIELD

Some lenses are provided with a depth of field scale. On these lenses depth of field is indicated for any distance and f stop setting on the double scale of f - numbers engraved on both sides of the center reference line. The distance settings opposite the f - number being used (shown on the left and right hand parts of the depth of field scale) indicate the range of sharpness at that distance and f stop.

FOCUSING THE LENS

Look through the view finder of your camera and rotate the focusing ring to get a sharp and clear image in the view finder.

Due to the wider depth of field, it is more difficult to see the image 'snap' into focus with wide-angle lenses or wide-angle settings of zoom lenses than it is with telephoto lenses or settings. This depth of field makes wide-angle focal lengths desirable for quick, prefocused shooting. For example, at f16 the depth of field on your 28mm lens extends from less than 3 feet to infinity. The distance scale indicates the distance between the focused subject and the film plane. The scale is necessary for checking the depth of field, exposure with flash and infra-red photography.

USING PARFOCAL ZOOM LENSES

The 80—200mm Compact Macro Zoom Lens is a true parfocal zoom lens. This means that focusing can be done at any focal length and proper focusing will be maintained as the zoom control is changed to compose your picture. For most critical focus with these lenses, your lens should first be set to the longest focal length of the zoom range, focused for the sharpest image in the view finder and then zoomed back for the desired composition. The larger image and shallower depth of field at the longest focal setting in the zoom range will help you to get more critical focus. Naturally, your lens may be focused at any point within the zoom range, but focusing at the shortest focal setting and zooming up should be avoided unless focus is re-checked before shooting.

HOW TO USE THE MACRO-FOCUSING SYSTEM

Convenient close focusing capability has been provided on the compact macro zoom lenses by having extended focusing range at close distances. Focusing at close distances with these lenses is done with the focusing ring in the same manner previously described for conventional focusing. An additional scale on the focusing ring indicates the reproduction (Macro) ratio. This scale indicates the ratio of film image size to object size. The ratio varies with focal length and the scale will be accurate for only one focal setting: 200mm for the 80—200mm Compact Zoom. For largest reproduction ratios turn the zoom control to this focal setting.

USING THE VIEW-FINDER WITH TELEPHOTO LENSES

The effectiveness of different types of focusing screens varies with the focal length and maximum aperture of the lens. The range finder or microgrid prisms built into the ground glass do

not work as well with longer focal length lenses as they do with the normal camera lens and most wide-anlge lenses, and may blackout partially or fully. When such a condition exists, focusing is best done on the ground glass portion of the viewing screen. On some SLR cameras, long telephoto lenses appear to produce a cut-off image in the upper corners or along the entire upper edge of the view finder. Actually such viewing cut-off is caused by the size of the camera's mirror which is adequate for the shorter focal length lenses only. The exposed slide or negative will be unaffected by this viewing deficiency.

PROPER CARE OF FOCAL MC AUTO LENS

FOCAL MC auto lens should always be capped to protect it when not in use. Like other precision optics, it should never be simply wiped with tissue since such tissue may abrade the surface with any dust which might be on it or on the lens.

Any accumulated dust should occasionally be blown off with a syringe or one of the available pressurized air products. To remove a fingerprint or smear, shred the edge of a lens tissue and roll it to make a swab; dampen it with a lens cleaner specially made for photographic optics and gently wipe the surface without exercising any pressure. If repeating the procedure is necessary, use a new swab.

Close examination of any multi-coated lens may reveal some minor coating defects or a small bubble in an interior lens element. These will in no way affect the performance of FOCAL MC auto lens.

2X Tele Converter

SPECIFICATIONS

- Multi–Coated
- 4 Groups
  4 elements
- Automatic Diaphragm and Meter Coupling
- 29mm x 60mm ϕ

FOCAL MC 2X CONVERTER

FOCAL MC Tele Converter is a small, lightweight and relatively inexpensive lens which can be attached to 35mm single lens reflex camera to increase the focal length of the camera lens.

Tele Converter fits almost all SLR cameras which have fully interchangeable lenses. In those cameras having built-in exposure meters, Tele Converter couples to the camera metering system. Tele Converter is available in 2X magnification. The focal length of the camera lens is doubled with 2X Tele Converter.

HOW TO ATTACH AND REMOVE TELE CONVERTER

Remove the camera lens from body and place Tele Converter direct to body, then attach camera lens to Tele Converter. When removing, always remove camera lens first, and then Tele Converter from body.

EXPOSURE:

Cameras with TTL metering system require no additional adjustment. However cameras not provided with TTL metering system such as with external reading metering system or with hand-held meter, it is required to compensate the exposure whenever Tele Converter is used. Simply open diaphragm 2 stops more with 2X. In use with artificial lights, also open diaphragm 2 stops more than that of GUIDE NUMBER table indication for 2X.

In the following is Exposure Compensation Chart showing f stops adjustments:

Prime f Value	1.2	1.4	2	2.8	4	5.6	8	11	16	22
W/2X Converter	2	2.8	4	5.6	8	11	16	22	32	45

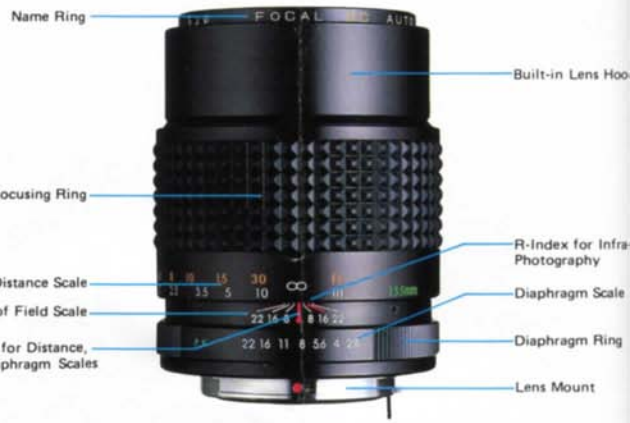
The camera shutter speed can be adjusted in the same manner instead of making the adjustment of exposure with diaphragm. However you should keep in mind that the image is magnified by Tele Converter and lens combination, it is therefore recommended to use with tripod and as high a shutter speed as possible when using telephoto lens with Tele Converter. This also applies to close-up photography.

For your guidance, Focal Distance Conversion Chart is shown hereunder:

Focal Distance Conversion Chart (Unit: mm)

Prime Focal Length	50	55	85	100	135	200	400	600
W/2X Converter	100	110	170	200	270	400	800	1200

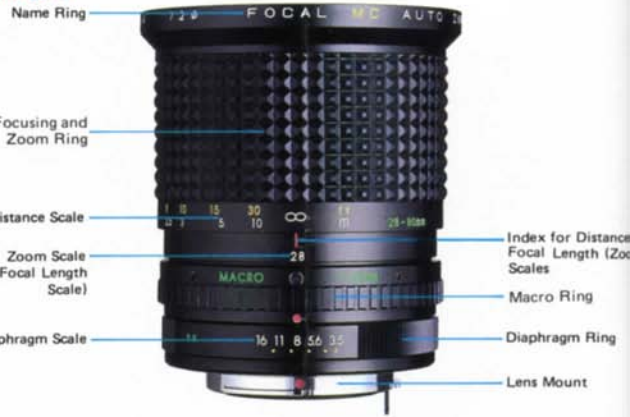
135mm f/2.8
Telephoto Lens



SPECIFICATIONS

Aperture Range: f2.8-f22	Angle of view: 18°
Min/Max. Focus Dist.:	Elements: 4 groups 4 elements
5 feet to Infinity	Filter Size: 52mm screw-in

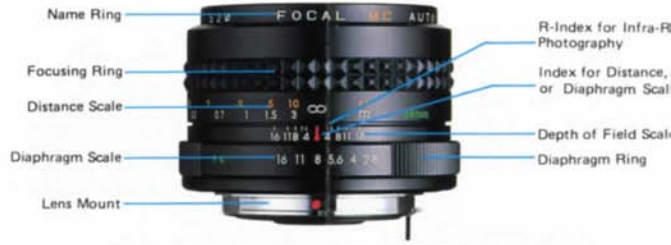
28–80mm f/3.5–4.5
One-Touch Macro
Zoom Lens



SPECIFICATIONS

Aperture Range: f3.5–f16	Angle of view: 75°–30°
Min/Max Focus Dist:	Elements: 14 groups 14-elements
5 inches to infinity	Filter size: 72mm screw-in
(Macro at f=28mm: 1:5)	

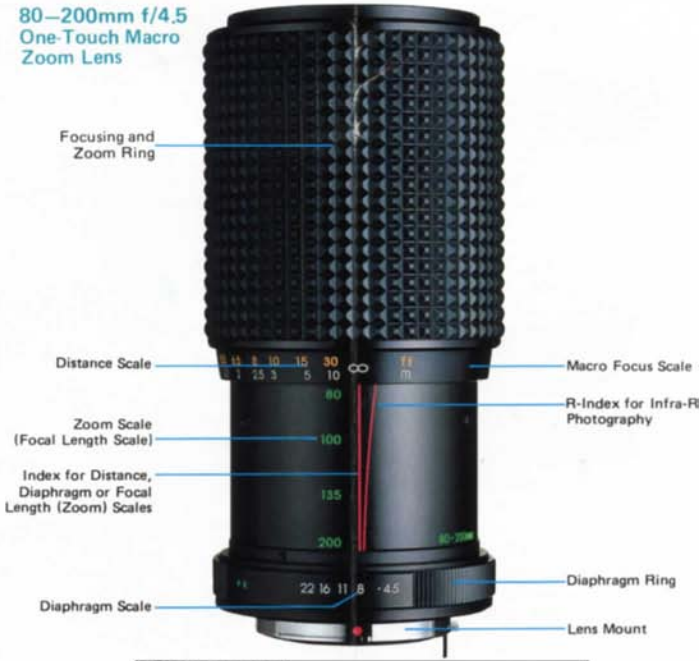
28mm f/2.8
Wide Angle Lens



SPECIFICATIONS

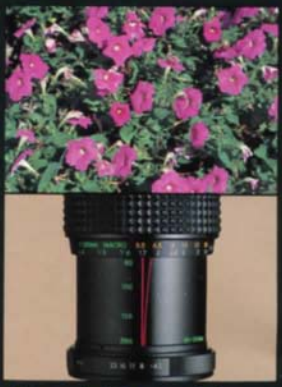
Aperture Range : f2.8-f16	Angle of view: 76°
Min/Max. Focus Dist.:	Elements: 7 groups 8 elements
1 feet to Infinity	Filter Size: 52mm screw-in

80—200mm f/4.5
One-Touch Macro
Zoom Lens



SPECIFICATIONS

Aperture Range: f4.5-f22	Angle of view: 30°-12°
Min/Max. Focus Dist.	Elements: 9 groups 13 elements
2.8 feet to Infinity	Filter size: 55mm screw-in
(Macro at f=200mm: 1:4)	



Normal: 80mm 1.7m

Macro: 200mm 1:4

28mm

80mm

135mm

200mm

	PENTAX K	MINOLTA MD	CANON FD
28mm f/2.8 Compact Wide Angle Lens	20–06–47	20–06–51	20–06–52
135mm f/2.8 Compact Telephoto Lens	20–06–48	20–06–54	20–06–55
80–200mm f/4.5 Compact Macro Zoom Lens (One-Touch)	20–06–83	20–06–84	20–06–85
28–80mm f3.5–4.5 One-Touch Compact Macro Zoom Lens	20–06–89	20–06–88	20–06–87
2X TELE converter	20–06–75	20–06–76	20–06–77

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