Kenko AUTO EXTENSION TUBE SET DIRECTIONS FOR USE

This is used by attaching between camera body and lens of the 35mm single-lens reflex camera. It comes as a set of 3 tubes of different lengths which singly or in combination makes it usable in 7 different lengths.

It couples perfectly with the camera's automatic diaphragm. With cameras of TTL, AE(Through-the-Lens, Automatic Exposure)type it gives perfect coupling except when combined with electronic flash AE unit.

Its dimensions are:
Tube diameter: ab. 62mm.
Tube lengths: (1) 12mm. (2) 20mm. (3) 36mm.
Weight: (1) ab. 60grams, (2)ab. 85grams, (3) ab. 125grams.
(Diameter and weight slightly vary according to type).

BEFORE THE SHOOTING

★How to Attach to Camera.

Attach to camera or detach in the same way as attaching or detaching the camera's master lens.

★Procedure for Attaching to Camera.

With Canon type of tube, be sure to attach master lens only after tube has been properly attached to camera body. Take care not to mistake this order lest it fails to couple with the TTL meter or the AE mechanism. This, however, does not apply to other types of tube.

★Order of Combining the Tubes.

When using 2 or 3 tubes in combination they can be combined freely.

★Compatibility of Lens.

Suitable lenses are from standard to semi-telephoto as well as macro(micro)lenses. Wide-angle and zoom lenses are also usable, but depending on how the lens is combined with the tube the distance between lens front and subject may become extremely close.

ON EXPOSURE

★When Using TTL AE Camera.

If Auto Extension Tube is correctly attached, it not only couples with the automatic diaphragm but also with TTL meter and AE(EE) mechanism. As the exposure factor will be automatically corrected you can shoot according to the camera's directions.

★When Using Non-TTL Camera.

As correction of exposure factor becomes necessary adjust the lens aperture or shutter speed accordingly before the shooting.

★When Using an Independent Flash Unit.

Calculate the F-value from the Guide Number, make correction for exposure factor and after using this for making test shots obtain your correct exposure.

OTHER PRECAUTIONS

(1) In close-up shooting, as the subject's depth of field becomes shallow, never forget to stop down the lens.
(2) Take care that when image magnification ratio increases camera shake is also liable to increase.(The use of tripod and cable release is advisable.)
(3) In the case of a TTL camera, the backflow of light from the viewfinder will have a stronger effect on light metering when Auto Extension Tube is attached than when shooting with the master lens alone. So when there is a backflow of light from the viewfinder follow the camera's instruction book to cut it out.
(4) Focus is adjusted by changing the distance between subject and camera or by operating the helical device of the master lens. If focusing is done by the split-image matching method it causes increase in exposure factor and may darken either the top or bottom half of the image. In such a case obtain focus on the matt surface around it.
(5) The Nikon Type of tube is for exclusive AI system lenses (unusable for other conventional lenses).

IMAGE MAGNIFICATION RATIOS AND EXPOSURE FACTORS (50mm Standard Lens)

Auto Extension Tube	Distance Reading of Master Lens	Image Magnification Ratio	Field Coverage (cm)	Distance from Lens Front to Subject (cm)	Exposure Factor
12mm	inf.	0.24	10×15	ab. 21	1.5
	0.5m	0.35	6.9×10.3	ab. 16	1.8
20mm	inf.	0.4	6×9	ab. 13	2
	0.5m	0.51	4.7×7	ab. 14	2.3
36mm	inf.	0.72	3.3×5	ab. 7.7	3.0
	0.5m	0.83	2.9×4.4	ab. 7	3.4
12+20mm	inf.	0.64	3.8×5.6	ab. 8.5	2.7
	0.5m	0.75	3.2×4.8	ab. 7.5	3.1
12+36mm	inf.	0.96	2.5×3.7	ab. 6	3.9
	0.5m	1.07	2.3×3.4	ab. 5.5	4.3
20+36mm	inf.	1.12	2.2×3.3	ab. 5.3	4.5
	0.5m	1.23	2×3	ab. 4.9	5
12+20 +36mm	inf.	1.34	1.8×2.7	ab. 4.5	5.6
	0.5m	1.47	1.6×2.4	ab. 4.2	6.1

※The above table shows general values for 50mm standard lenses. Even with standard lenses individual lenses may have actual values slightly different from these.
※Image Magnification Ratio is the ratio in size (lengths) between the subject and the image formed on the film surface. For example, Image Magnification Ratio 0.24× means that a 1cm subject becomes 1×0.24=0.24 or makes a picture of 0.24cm size on the film surface.
※When using an extension tube of same length, the image magnification ratio becomes smaller as the focal length of master lens becomes longer and the larger as the focal length becomes shorter. Also, the distance to the subject becomes further away as the focal length of master lens becomes longer and closer when it becomes shorter.
※For other than standard lenses calculate according to the following formulas:

$$\text{Image Magnification Ratio} = \frac{\text{Length of Extens. Tube} + \text{Master Lens Advance Volume}}{\text{Master Lens Focal Length.}}$$

$$\text{Expousure Factor} = (1+\text{Image Magnification Ratio})^2$$

$$\text{Master Lens Advance Volume} = \frac{(\text{Master Lens Focal Length})^2}{\text{Master Lens Distance Reading} - \text{Master Lens Focal Length}}$$

$$\text{Field Coverage} = \frac{\text{Image Size on Film Surface}}{\text{Image Magnification Ratio.}}$$

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