BRONICA CO.,LTD.
662 Bijogi, Toda-shi, Saitama Prefecture 335, Japan
Telephone: (0484) 22-0003
Cable Address: "BRONICA WARABI"
Telex Call No. 02962733 BRONC J
Fax: (0484) 21-2413

Printed in Japan
E10781H

Zenza BRONICA ETRS

AUTOMATIC EXTENSION TUBE-E

INSTRUCTIONS

Read Before Use

The Automatic Extension Tube-E has been developed for the purpose of providing greater lens extensions than possible with the unaided Zenzanon E lenses (from 40 mm to 250 mm focal lengths), without loss of the automatic lens diaphragm and electronic shutter actions in the lenses. Thus, operations are identical to that without the automatic extension tube which means that operations are very simple and trouble-free even when the accessory is used between Zenzanon lens and ETR body.
Three automatic extension tubes are available, with extensions of 14 mm, 28 mm and 42 mm which are designated E-14, E-28 and E-42. For extensions greater than 42 mm, the use of the Automatic Bellows Attachment-E is recommended because it can provide greater, variable lens extension.

Finally, for greater pleasure and freedom from troublesome exposure calculations, the use of the AE Finder-E is recommended because complete exposure automation is retained even when the automatic extension tube is used.
Please read the instructions through completely before you use the accessory, as you will then be able to use the accessory with greater ease and more satisfaction.

Important

The automatic extension tube-E can only be used singly.
Do not connect the automatic extension tubes to each other.

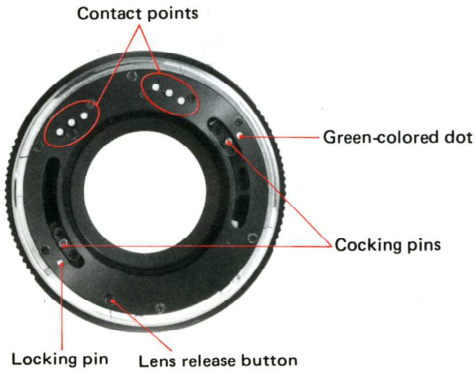
E—42 E—28 E—14

Contents

Nomenclature

Front surface (Lens side)

Rear surface (Body side)

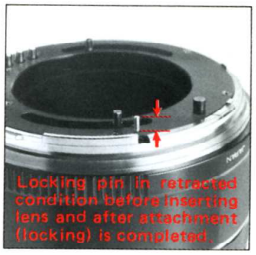


1. Attachment of Lens to Accessory

(1) First, check whether the cocking pins of the automatic extension tube and lens are coincided to their green-colored dots, if not, coincide the pins to their dots, by rotating them with your finger.

* The lens and/or automatic extension tube cannot be attached when the cocking pins are not coincided to their green-colored dots.

(2) Next, line up the red dots on the lens and automatic extension tube (front end), insert the lens fully into the latter's mount and, when well seated, rotate the lens in the counter-clockwise direction until it stops (about 34°). There should be an audible click which will indicate that the lens is securely locked.



When the lens is inserted, the locking pin on the rear surface of the accessory will extend an additional 2 mm or so but will retract to its former height, when the lens is rotated counter-clockwise and locked securely.
If the locking pin does not retract, after extending 2 mm, the lens is not securely locked in place. Therefore, re-

2. Attachment to the Body

verse the lens back to the red dot position and then revolve it once more until it locks securely which can be confirmed by the height of the locking pin.

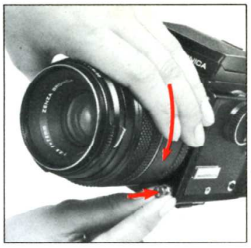
* It will not be possible to attach the automatic extension tube to the body if the locking pin does not retract.

(1) The lens connected to the automatic extension tube cannot be attached to the body (or detached from the body) unless the shutter is cocked, as in the case for attachment/removal of the lens only (see page 15 of the instructions for the ETR).
In other words, first, rotate the film winding crank and cock the lens

shutter. Next, line up the red dots on the body and the automatic extension tube. Then, insert the automatic extension tube fully into the body mount. When well seated, rotate in the counter-clockwise fully until it stops. An audible click should be heard which will indicate that the accessory is securely locked into place.

Preparations for taking pictures are completed with the above.

3. Detachment from the Body

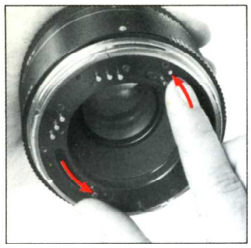


(1) The combination of lens and automatic extension tube must, first, be detached from the body.

* Do not detach the lens from the automatic extension tube first.

Therefore, first, rotate the film winding crank and cock the lens shutter. Next, rotate the milled locking ring on the lens release button (on the body) 45° in the clockwise direction and then depress the lens release button. Finally, rotate the automatic extension tube in the clockwise direction, while keeping the button depressed at the same time, until a full stop is made at which point the lens can be detached.

4. Detachment of Lens from Accessory



(1) The cocking pins on the automatic extension tube will be shifted slightly in the direction of release, when the lens and accessory combination is detached from the body. Therefore, shift the cocking pins to coincide with the green-colored dot, as initially done before attachment.

(2) Next, depress the lens release button on the accessory and rotate the lens in the clockwise direction (while maintaining pressure on the button). When a full stop is made, the lens can be detached.

* It will not be possible to depress the lens release button, when the cocking pins are not coincided to the green-colored dot and, therefore, it will not be possible to detach the lens, too.

5. Care and Maintenance

(1) The contact points on the front and rear surfaces of the accessory must always be clean, as otherwise, there will be faulty contact upon attachment which might cause troubles in shutter operation, flash sychronization and/or automatic exposure control.

(2) Always cover the front and rear surfaces with their caps to protect the contact points and pins from damage and/or dust during storage or when carrying them around.

6. Pointers for Close-Up Photography

(1) Focusing with the split-image or microprism spot may be found rather difficult in close-up shooting because of a decrease in the actual brightness through the lens, as will be explained later. Therefore, in such cases, focus with the matte screen area.
Or focusing screens with a central matte area, such as the matte focusing Screen-E or Grid Focusing Screen-E should be used.

(2) When using the 250 mm focal length lens, there may be some darkening in the corners of the frame area, of about 2 mm or so.

(3) When using the 40 mm and 50 mm focal length lenses, it should be noted that there will be certain magnifications and/or exposure factors between the E-14 and E-28 tubes and between the E-28 and E-42 tubes which it will not be possible to use, because of the limitations in the amount of extension possible with the helical focusing systems of these two lenses.

(4) The depth of field will become more shallow as the magnification is increased in close-up shooting. Therefore, focus as carefully as possible and, at the same time, stop down the lens as much as possible in order to increase the depth of field.
And, naturally, a slow shutter speed will be the rule, in this case. Therefore, use a strong, rugged tripod for holding the camera set-up, in order to eliminate camera vibration and, at the same time, use a cable release as much as possible.
At the same time, it should be noted that in close-up shooting, there is danger of a shadow being case on the subject matter by the photographer and/or camera and that special care must be exercised for properly illuminating the subject. A lens of a longer focal length can be utilized, in this case, as it will permit the photographer and/or camera to be positioned at a greater distance from the subject and the illumination. On the other hand, of course, the depth of field will be even more shallow which will require even more care in focusing.

7. Formulas for Macrophotography

The close-up working datas for the various lenses which can be used with the automatic extension tubes are to be found in the tables in the following section.
Magnification is the relationship between the size of the subject and the size of the image on the film and is found by the following formula:—

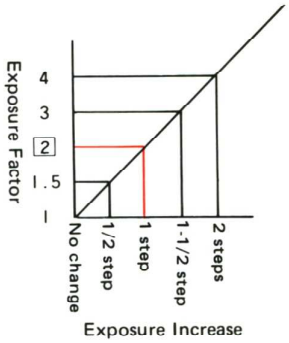
$$\text{Magnification} = \frac{\text{Image size}}{\text{Object size}}$$

Exposure factor is the amount by which the F/number or exposure must be increased to take into account the decrease in light with extension of the lens because less light will fall on the film plane when the lens is extended with the automatic extension tube. (Theoretically there is a small amount of extension when the lens is focused on a near subject with its helical focusing system, too, but this can be disregarded for all practical purposes.)
The following table shows the increase that must be made in the aperture or shutter speed for obtaining a correct exposure with these exposure factors.

Example:
An exposure factor of 2 means that the aperture or shutter speed has to be increased by one step.

(F8 → F5.6 or 1/60 → 1/30)

When the AE Finder-E is used, however, automatic exposure operations are possible without concern for the exposure factor because of the through-the-lens metering that takes place.



8. Close-Up Working Datas

With Automatic Extension Tube E-14

(Unit: cm)

Lens Used	Focusing Ring Setting	Magnification	Area Photographed	Object-to-Film Plane (Distance)	Object-to-Front Lens (Surface)	Exposure Factor
75 mm	∞ Infinity	0.18	23.5 x 30.5	59.2	46.2	1.5
	Max. Extension	0.36	11.8 x 15.3	39.1	24.7	2
150 mm	∞ Infinity	0.09	45.5 x 59.0	191.3	174.9	1.5
	Max. Extension	0.22	19.3 x 25.0	100.6	82.3	1.5
250 mm	∞ Infinity	0.06	75.9 x 98.4	502.9	480.3	1
	Max. Extension	0.14	30.4 x 39.4	236.2	211.5	1.5
40 mm	∞ Infinity	0.35	12.1 x 15.7	25.3	11.5	1.5
	Max. Extension	0.50	8.5 x 11.0	22.4	8	1.5
50 mm	∞ Infinity	0.28	15.2 x 19.7	32.7	18.9	1.5
	Max. Extension	0.42	10.1 x 13.1	27.3	12.8	1.5

With Automatic Extension Tube E-28

(Unit: cm)

Lens Used	Focusing Ring Setting	Magnification	Area Photographed	Object-to-Film Plane (Distance)	Object-to-Front Lens (Surface)	Exposure Factor
75 mm	∞ Infinity	0.36	11.8 x 15.3	39.1	24.7	2
	Max. Extension	0.54	7.84 x 10.2	33.4	17.6	2
150 mm	∞ Infinity	0.19	22.8 x 29.5	112.3	94.5	1.5
	Max. Extension	0.31	13.6 x 17.6	81.7	62	2
250 mm	∞ Infinity	0.11	37.9 x 49.2	280.3	256.3	1.5
	Max. Extension	0.20	21.7 x 28.1	186.4	160.3	2
40 mm	∞ Infinity	0.70	6.07 x 7.87	20.8	5.6	2
	Max. Extension	0.85	5.0 x 6.48	20.4	4.6	2
50 mm	∞ Infinity	0.56	7.59 x 9.84	24.9	9.7	2
	Max. Extension	0.7	6.07 x 7.87	23.8	7.9	2

With Automatic Extension Tube E-42

(Unit: cm)

Lens Used	Focusing Ring Setting	Magnification	Area Photographed	Object-to-Film Plane (Distance)	Object-to-Front Lens (Surface)	Exposure Factor
75 mm	∞ Infinity	0.54	7.84 x 10.2	33.4	17.6	2
	Max. Extension	0.72	5.88 x 7.63	31.2	14	3
150 mm	∞ Infinity	0.28	15.2 x 19.7	86.9	67.7	2
	Max. Extension	0.41	10.5 x 13.5	72.1	51	2.5
250 mm	∞ Infinity	0.17	25.3 x 32.8	207.0	181.6	1.5
	Max. Extension	0.25	16.9 x 21.9	159.4	131.9	2
40 mm	∞ Infinity	1.05	4.05 x 5.25	20.3	3.7	2.5
	Max. Extension	1.2	3.54 x 4.59	20.4	3.2	2.5
50 mm	∞ Infinity	0.84	5.06 x 6.56	23.2	6.6	2.5
	Max. Extension	0.98	4.34 x 5.62	23.1	5.8	2.5

Automatic Bellows Attachment-E