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# Minolta SR EXTENSION TUBE II

Owner's Manual





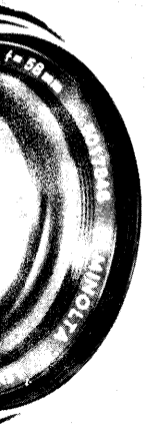
minolta

CLC

SR T 101

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MADE IN JAPAN



The Extension Tube Set is comprised of five rings.

It is to be used when close-ups are desired beyond the limitations of the normal SR lens.

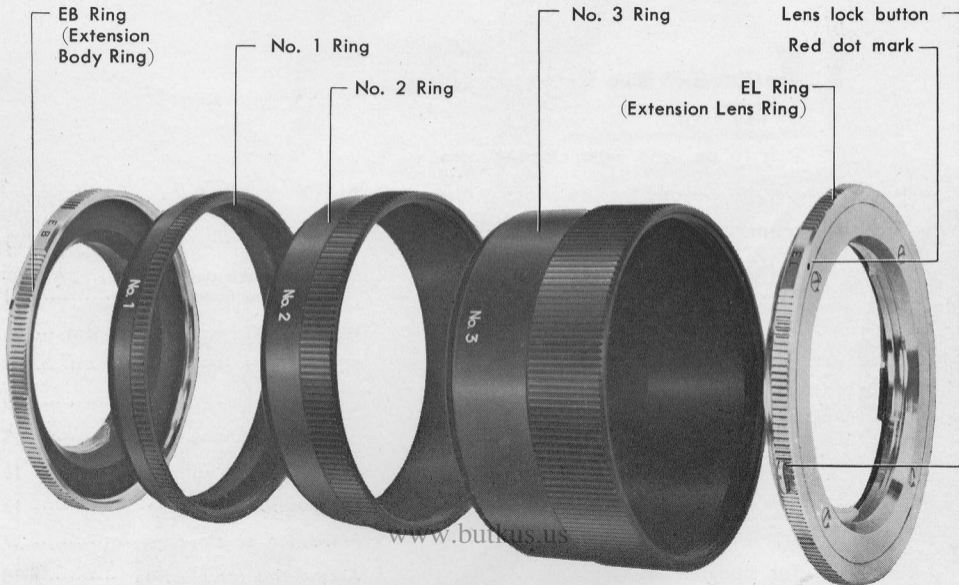
When using the standard 55 mm lens, continuous shots are possible with different magnification rates from 1/8 times to 1 times magnification with a combination of various tubes.

Extension tube set is useful for copying pictures, stamps, coins, flowers or magnified photos of specimens for study.

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# PARTS NAME



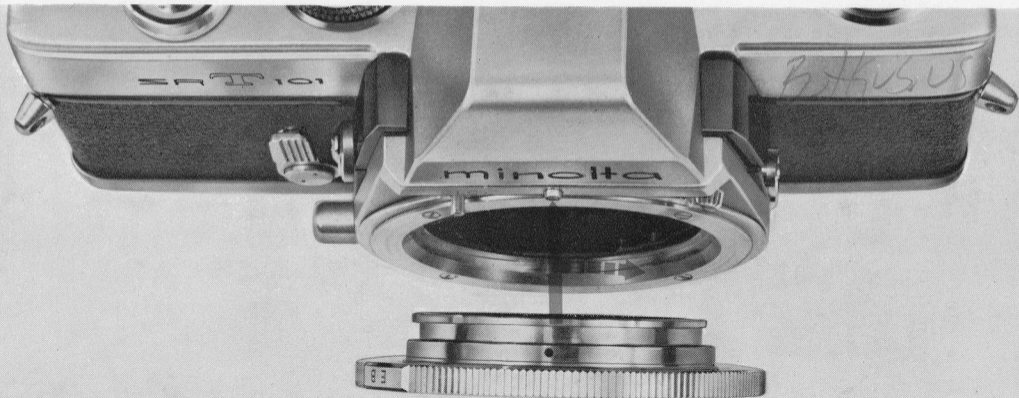
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## HOW TO ATTACH AND DETACH EACH TUBE

### EB Ring

To attach EB ring, align the red dot on the ring to that of the camera and turn the ring clockwise until it stops with a click.

When detaching the ring, push down the lens lock button, turn the ring counter-clockwise until it stops, and lift it out carefully.



EB Ring

### No. 1, 2, 3 Ring

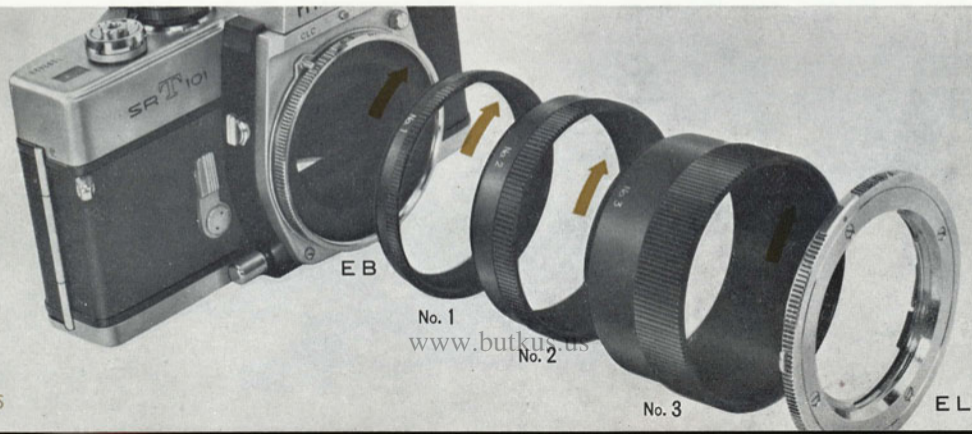
These are screw-in type tube to be screwed, clockwise into each ring.

To detach it, turn it in the opposite direction.

You may select the various combination according to your close-ups shooting.

### EL Ring

The EL ring, one side is bayonet mount and the other side is screw mount.



## HOW TO ATTACH AND REMOVE LENS

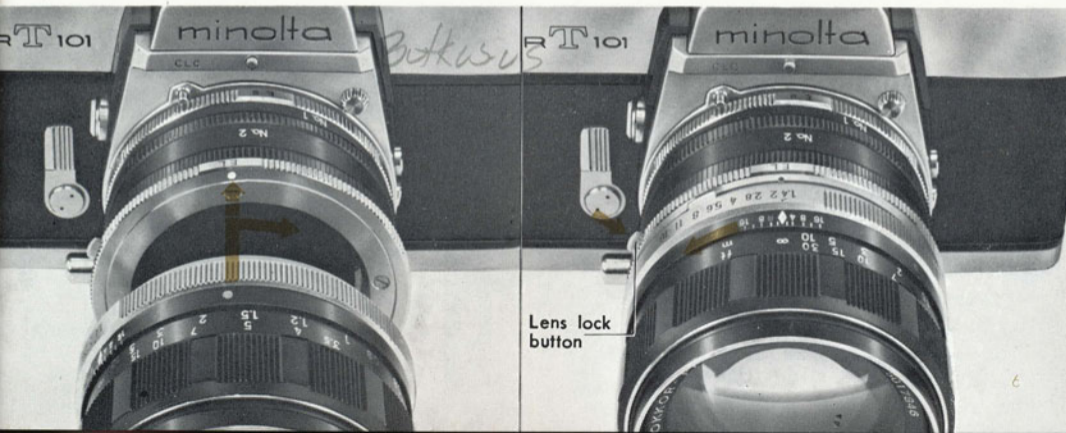
Whatever combination of extension tubes you may use, the lens must be attached to EL ring.

### ● Attach the Lens

To attach the lens, align the red dot on the lens barrel to that of EL ring, and turn the lens clockwise until it stops with a click.

### ● Removing the Lens

To remove the lens, turn it counter-clockwise while depressing the lens lock button of EL ring. Then the lens can be separated.





## HOW TO TAKE CLOSE-UPS

### 1 Determine the Photographic Range

Determine the photographic range of the image which meet your photographic requirements.



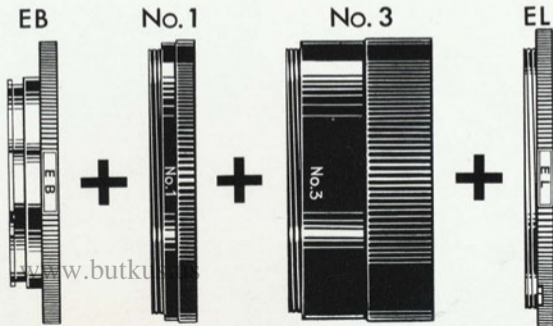
For Example :

When photographing a stamp  
 $4.5 \times 3.0$  cm with the standard  
55 mm lens, photographic range  
is  $4.5 \times 3.0$  cm.

### 2 Select the Combination of Tubes

Select a proper combination of tubes according to the close-up table on P. (10)

Example : Combination of the tubes is 3 according to the close-up table.



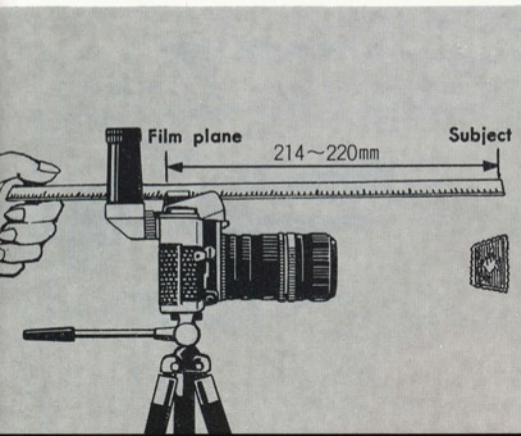
### 3 Determine the Distance

Set the camera in position, measure the distance from the subject to the film plane according to the close-up table.

Set the distance scale of the lens to  $\infty$  (infinity).

The position of the film plane is shown with the mark  $\ominus$  on top of the camera body.

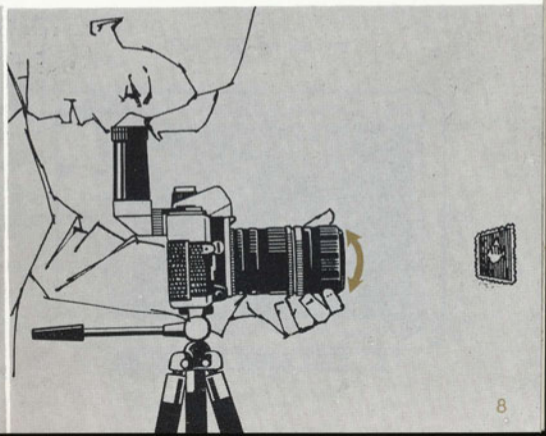
Example: Distance from subject to film plane is 214-220mm.



### 4 Setting the Focus

Look into the finder, (it is recommended to use the angle finder) with the full aperture, then turn the focusing ring.

It is rather difficult to bring the subject into sharp focus with the focusing ring for a life-size close-up and it is therefore necessary to obtain a focus by moving the camera slowly back and front so the camera can be set into the proper focusing range.



## 5 Determine the Exposure

Read the figure indicated by the exposure meter and correct the exposure according to the corresponding exposure multiple in the close-up table on P. (10)

Example : When the exposure meter indicates the figures of F16 1/8 sec. with an exposure multiple of 3, set aperture between F11 and 8, 1/8 sec. or between F16 and 11, 1/4 sec.

When using with the SR-T 101, no exposure compensation is needed.

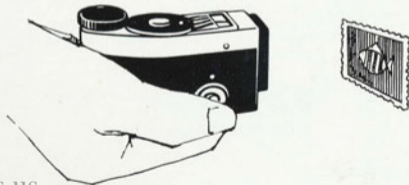
## 6 Release the Shutter

When the exposure is set, release the shutter by using the cable release to avoid camera movement.

In case of SR-T 101



In case of other Camera



# CLOSE-UP TABLE

f = 55 mm

Combination No.	Combination of Tubes No.	Photographic Range (mm)	Magnification Rate	Distance from Subject to Film Plane	Exposure Multiple
(1)	EB + 1 + 2 + 3 + EL	24 × 36 ~ 22 × 33	1.0 ~ 1.1	213 ~ 214	4 (2)
(2)	EB + 2 + 3 + EL	26 × 40 ~ 24 × 36	$\frac{1}{1.1} \sim 1.0$	214 ~ 213	4 (2)
(3)	EB + 1 + 3 + EL	31 × 47 ~ 26 × 40	$\frac{1}{1.3} \sim \frac{1}{1.1}$	220 + 214	3(1.5)
(4)	EB + 3 + EL	38 × 58 ~ 31 × 47	$\frac{1}{1.6} \sim \frac{1}{1.3}$	225 ~ 220	3(1.5)
(5)	EB + 1 + 2 + EL	48 × 72 ~ 38 × 58	$\frac{1}{2.0} \sim \frac{1}{1.6}$	242 ~ 225	2 (1)
(6)	EB + 2 + EL	62 × 94 ~ 48 × 72	$\frac{1}{2.6} \sim \frac{1}{2.0}$	263 ~ 242	2 (1)
(7)	EB + 1 + EL	96 × 144 ~ 62 × 94	$\frac{1}{4.0} \sim \frac{1}{2.6}$	335 ~ 263	1.8(1)
(8)	EB + EL	190 × 284 ~ 93 × 140	$\frac{1}{7.9} \sim \frac{1}{3.9}$	555 ~ 330	1.4(0.5)
		~ 182 × 274	~ $\frac{1}{7.6}$	~ 550	

f = 55 mm

Combina- tion No.	Combination of Tubes No.	Photographic Range (inch)	Magnification Rate	Distance from Subject to Film Plane	Exposure Multiple
(1)	EB + 1 + 2 + 3 + EL	$5\frac{1}{16} \times 17\frac{1}{16} \sim \frac{1}{8} \times 15\frac{1}{16}$	1.0 ~ 1.1	$8\frac{3}{8} \sim 8\frac{7}{16}$	4 (2)
(2)	EB + 2 + 3 + EL	$1 \times 19\frac{1}{16} \sim 15\frac{1}{16} \times 17\frac{1}{16}$	$\frac{1}{11} \sim 1.0$	$8\frac{7}{16} \sim 8\frac{3}{8}$	4 (2)
(3)	EB + 1 + 3 + EL	$1\frac{1}{4} \times 17\frac{7}{8} \sim 1 \times 19\frac{1}{16}$	$\frac{1}{13} \sim \frac{1}{1.1}$	$8\frac{5}{8} \sim 8\frac{7}{16}$	3(1.5)
(4)	EB + 3 + EL	$1\frac{1}{2} \times 29\frac{1}{16} \sim 1\frac{1}{4} \times 17\frac{7}{8}$	$\frac{1}{16} \sim \frac{1}{1.3}$	$8\frac{7}{8} \sim 8\frac{5}{8}$	3(1.5)
(5)	EB + 1 + 2 + EL	$17\frac{7}{8} \times 27\frac{7}{8} \sim 1\frac{1}{2} \times 29\frac{1}{16}$	$\frac{1}{2.0} \sim \frac{1}{1.6}$	$9\frac{1}{2} \sim 8\frac{7}{8}$	2 (1)
(6)	EB + 2 + EL	$27\frac{1}{16} \times 33\frac{3}{4} \sim 17\frac{7}{8} \times 27\frac{7}{8}$	$\frac{1}{2.6} \sim \frac{1}{2.0}$	$10\frac{3}{4} \sim 9\frac{1}{2}$	2 (1)
(7)	EB + 1 + EL	$313\frac{1}{16} \times 511\frac{1}{16} \sim 27\frac{1}{16} \times 33\frac{3}{4}$	$\frac{1}{4.0} \sim \frac{1}{2.6}$	$1-13\frac{1}{16} \sim 10\frac{3}{4}$	1.8(1)
(8)	EB + EL	$7\frac{1}{2} \times 113\frac{1}{16} \sim 311\frac{1}{16} \times 5\frac{1}{2}$ $\sim 73\frac{1}{16} \times 103\frac{3}{4}$	$\frac{1}{7.9} \sim \frac{1}{3.9}$ $\sim \frac{1}{7.6}$	$1-9\frac{7}{8} \sim 1-1$ $\sim 1-9\frac{11}{16}$	1.4(0.5)

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f = 58 mm

Combination No.	Combination of Tubes No.	Photographic Range (mm)	Magnification Rate	Distance from Subject to Film Plane	Exposure Multiple
(1)	EB + 1 + 2 + 3 + EL	26 × 40 ~ 22 × 33	$\frac{1}{1.1} \sim 1.1$	231 ~ 230	4 (2)
(2)	EB + 2 + 3 + EL	29 × 43 ~ 26 × 40	$\frac{1}{1.2} \sim \frac{1}{1.1}$	232 ~ 231	4 (2)
(3)	EB + 1 + 3 + EL	34 × 50 ~ 29 × 43	$\frac{1}{1.4} \sim \frac{1}{1.2}$	236 ~ 232	3(1.5)
(4)	EB + 3 + EL	41 × 61 ~ 34 × 50	$\frac{1}{1.7} \sim \frac{1}{1.4}$	245 ~ 236	3(1.5)
(5)	EB + 1 + 2 + EL	50 × 76 ~ 41 × 61	$\frac{1}{2.1} \sim \frac{1}{1.7}$	256 ~ 245	2(1.0)
(6)	EB + 2 + EL	67 × 100 ~ 50 × 76	$\frac{1}{2.8} \sim \frac{1}{2.1}$	302 ~ 256	2(1.0)
(7)	EB + 1 + EL	101 × 151 ~ 67 × 100	$\frac{1}{4.2} \sim \frac{1}{2.8}$	372 ~ 302	1.7(1.0)
(8)	EB + EL	204 × 306 ~ 101 × 151	$\frac{1}{8.5} \sim \frac{1}{4.2}$	620 ~ 372	1.3(0.5)
		~ 194 × 292	~ $\frac{1}{8.1}$	~ 595	

f = 58 mm

Combination No.	Combination of Tubes No.	Photographic Range (inch)	Magnification Rate	Distance from Subject to Film plane	Exposure Multiple
(1)	EB + 1 + 2 + 3 + EL	$1 \times 1\frac{9}{16} \sim \frac{1}{8} \times 1\frac{5}{16}$	$\frac{1}{1.1} \sim 1.1$	$9\frac{1}{16} \sim 9$	4 (2)
(2)	EB + 2 + 3 + EL	$1\frac{5}{16} \times 1\frac{11}{16} \sim 1 \times 1\frac{9}{16}$	$\frac{1}{1.2} \sim \frac{1}{1.1}$	$9\frac{1}{8} \sim 9\frac{1}{16}$	4 (2)
(3)	EB + 1 + 3 + EL	$1\frac{3}{8} \times 2 \sim 1\frac{5}{16} \times 1\frac{11}{16}$	$\frac{1}{1.4} \sim \frac{1}{1.2}$	$9\frac{1}{4} \sim 9\frac{1}{8}$	3(2.5)
(4)	EB + 3 + EL	$1\frac{5}{8} \times 2\frac{3}{8} \sim 1\frac{3}{8} \times 2$	$\frac{1}{1.7} \sim \frac{1}{1.4}$	$9\frac{5}{8} \sim 9\frac{1}{4}$	3(1.5)
(5)	EB + 1 + 2 + EL	$2 \times 3 \sim 1\frac{5}{8} \times 2\frac{3}{8}$	$\frac{1}{2.1} \sim \frac{1}{1.7}$	$10\frac{1}{16} \sim 9\frac{5}{8}$	2(1.0)
(6)	EB + 2 + EL	$2\frac{5}{8} \times 3\frac{15}{16} \sim 2 \times 3$	$\frac{1}{2.8} \sim \frac{1}{2.1}$	$11\frac{7}{8} \sim 10\frac{1}{16}$	2(1.0)
(7)	EB + 1 + EL	$4 \times 5\frac{15}{16} \sim 2\frac{5}{8} \times 3\frac{15}{16}$	$\frac{1}{4.2} \sim \frac{1}{2.8}$	$1 - 2\frac{5}{8} \sim 11\frac{7}{8}$	1.7(1.0)
(8)	EB + EL	$8 \times 1 - \frac{1}{16} \sim 4 \times 5\frac{15}{16}$ $\sim 7\frac{5}{8} \times 11\frac{7}{16}$	$\frac{1}{8.5} \sim \frac{1}{4.2}$ $\sim \frac{1}{8.1}$	$2 - 7\frac{1}{16} \sim 1 - 2\frac{5}{8}$ $\sim 1 - 11\frac{7}{16}$	1.3(0.5)

f = 100 mm

Combina- tion No.	Combination of Tubes No.	Photographic Range (mm)	Magnification Rate	Distance from Subject to Film Plane	Exposure Multiple
(1)	EB + 1 + 2 + 3 + EL	43 × 65 ~ 36 × 54	$\frac{1}{1.8} \sim \frac{1}{1.5}$	445 ~ 420	3(1.5)
(2)	EB + 2 + 3 + EL	48 × 72 ~ 41 × 61	$\frac{1}{1.2} \sim \frac{1}{1.7}$	448 ~ 428	2(1.0)
(3)	EB + 1 + 3 + EL	58 × 86 ~ 46 × 68	$\frac{1}{2.4} \sim \frac{1}{1.9}$	485 ~ 442	2(1.0)
(4)	EB + 3 + EL	70 × 104 ~ 53 × 79	$\frac{1}{2.9} \sim \frac{1}{2.2}$	530 ~ 462	2(1.0)
(5)	EB + 1 + 2 + EL	86 × 130 ~ 62 × 94	$\frac{1}{3.6} \sim \frac{1}{2.6}$	582 ~ 495	1.7(1.0)
(6)	EB + 2 + EL	115 × 173 ~ 79 × 119	$\frac{1}{4.8} \sim \frac{1}{3.3}$	600 ~ 565	1.6(1.0)
(7)	EB + 1 + EL	150 × 256 ~ 98 × 148	$\frac{1}{7.1} \sim \frac{1}{4.1}$	910 ~ 650	1.4(0.5)
(8)	EB + EL	343 × 515 ~ 139 × 209	$\frac{1}{14.3} \sim \frac{1}{5.8}$	1,600 ~ 815	1.2( 0 )
		~ 235 × 353	~ $\frac{1}{9.8}$	~ 1,230	



f = 100 mm

Combination No.	Combination of Tubes No.	Photographic Range (inch)	Magnification Rate	Distance from Subject to Film Plane	Exposure Multiple
(1)	EB + 1 + 2 + 3 + EL	$1\frac{1}{16} \times 2\frac{9}{16} \sim 1\frac{7}{16} \times 2\frac{1}{8}$	$\frac{1}{1.8} \sim \frac{1}{1.5}$	$1-5\frac{1}{2} \sim 1-4\frac{1}{2}$	3(1.5)
(2)	EB + 2 + 3 + EL	$1\frac{3}{4} \times 2\frac{7}{8} \sim 1\frac{5}{8} \times 2\frac{3}{8}$	$\frac{1}{1.2} \sim \frac{1}{1.7}$	$1-5\frac{5}{8} \sim 1-4\frac{7}{8}$	2(1.0)
(3)	EB + 1 + 3 + EL	$2\frac{5}{16} \times 3\frac{3}{8} \sim 1\frac{13}{16} \times 2\frac{11}{16}$	$\frac{1}{2.4} \sim \frac{1}{1.9}$	$1-7\frac{1}{8} \sim 1-5$	2(1.0)
(4)	EB + 3 + EL	$2\frac{3}{4} \times 4\frac{1}{8} \sim 2\frac{1}{8} \times 3\frac{1}{8}$	$\frac{1}{2.9} \sim \frac{1}{2.2}$	$1-8\frac{7}{8} \sim 1-6\frac{3}{8}$	2(1.0)
(5)	EB + 1 + 2 + EL	$3\frac{3}{8} \times 5\frac{1}{8} \sim 2\frac{7}{16} \times 3\frac{11}{16}$	$\frac{1}{3.6} \sim \frac{1}{2.6}$	$1-10\frac{15}{16} \sim 1-7\frac{1}{2}$	1.7(1.0)
(6)	EB + 2 + EL	$4\frac{9}{16} \times 6\frac{13}{16} \sim 3\frac{1}{8} \times 4\frac{11}{16}$	$\frac{1}{4.8} \sim \frac{1}{3.3}$	$1-11\frac{5}{8} \sim 2-\frac{1}{4}$	1.6(1.0)
(7)	EB + 1 + EL	$5\frac{7}{8} \times 10\frac{1}{16} \sim 3\frac{7}{8} \times 5\frac{13}{16}$	$\frac{1}{7.1} \sim \frac{1}{4.1}$	$2-11\frac{13}{16} \sim 2-1\frac{1}{16}$	1.4(0.5)
(8)	EB + EL	$1-1\frac{1}{2} \times 1-8\frac{1}{4} \sim 5\frac{1}{2} \times 8\frac{3}{16}$ $\sim 9\frac{1}{4} \times 1-1\frac{7}{8}$	$\frac{1}{14.3} \sim \frac{1}{5.8}$ $\sim \frac{1}{9.8}$	$5-3 \sim 2-8\frac{1}{8}$ $\sim 4-\frac{3}{8}$	1.2( 0 )

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## ABOUT THE CLOSE-UP TABLE

This close-up table is available for combinations of tubes, photographic range, picture size, distance from the subject to film plane and exposure multiple.

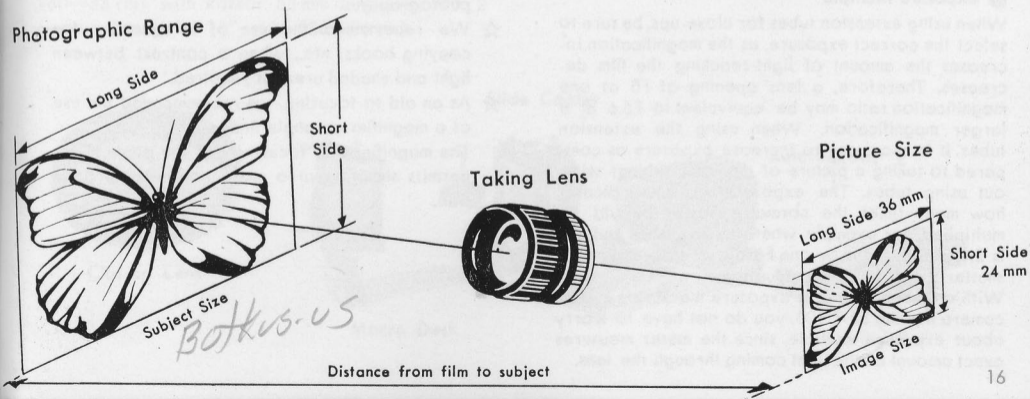
### ● Magnification of the Image

The magnification rate indicates how large an image of the subject will appear on the film surface.

As seen from the diagram, the magnification rate is  $\frac{\text{The image size}}{\text{The subject size}}$ .

The subject size.

When a 35 mm film is used, the picture size is  $24 \times 36$  mm.



Then the magnification rate is :

$$\frac{24 \text{ mm}}{\text{The short side of the photographic range } 36 \text{ mm}} \quad \text{or :}$$

$\frac{\text{The long side of the photographic range.}}$

For example, when the long side of the photographic range is 18mm the magnification rate is

$$\frac{36 \text{ mm}}{18 \text{ mm}} \text{ namely } 2$$

### ● Exposure Multiple

When using extension tubes for close-ups, be sure to select the correct exposure, as the magnification increases the amount of light reaching the film decreases. Therefore, a lens opening of F8 at one magnification ratio may be equivalent to F5.6 at a larger magnification. When using the extension tubes, it is necessary to increase exposure as compared to taking a picture of the same subject without using tubes. The exposure multiple indicates how many times the normal exposure should be multiplied. For example, when the exposure multiple is 2, open the lens by one F stop, or slow down the shutter speed by one graduation.

With a through-the-lens exposure measuring system camera like the SR-T 101, you do not have to worry about exposure multiple, since the meter measures exact amount of the light coming through the lens.

## PRECAUTIONS ON CLOSE-UPS

- ☆ The lens aperture must be set manually since the automatic diaphragm does not work when the lens is attached to the tubes.
- ☆ In order to prevent the camera movement, mount the camera on a tripod or copying stand. It is also recommended to use a cable release.
- ☆ Use a small lens opening (F8-11) since the depth of field is extremely shallow in close-up photography.
- ☆ We recommend the use of a microfilm for copying books, etc., when a contrast between light and shaded areas is required.
- ☆ As an aid to focusing, we recommended the use of a magnifier or angle finder. The magnifier aids focusing and the angle finder permits shooting at a more comfortable position.

## ACCESSORIES FOR CLOSE-UP

### Close-up Lens

Since the close-up lens screws into the front of the standard lens you simply focus and shoot since the automatic diaphragm is operated at all times. You can enjoy close-up shots of insects fluttering over flowers, and many other subjects.

No. 0, No. 1 and 2 close-up lenses are available. Lens No. 1 permits a close-up range of 23"—13" (60—33 cm) with Rokkor 55 mm lens, lens No. 2 permits a range of 14"—10" (36—26 cm).

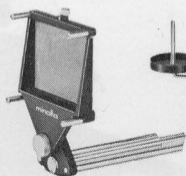
### Auto-Bellows I

Auto-bellows I is a deluxe extension bellows, automatic diaphragm can be operated. 55 mm lens with bellows can make continuous close-up shots at 1.0—3 time magnifications.

In addition, the auto-bellows I is equipped with a slide copying attachment for recopying black & white and color slides, and macro stand.

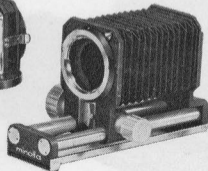
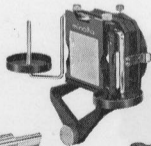


Close-up Lens

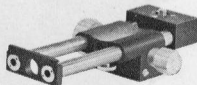


Macro Desk

Slide Copier



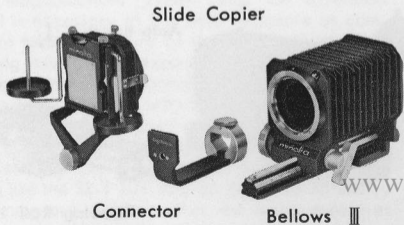
Auto-Bellows I



Focusing Rail

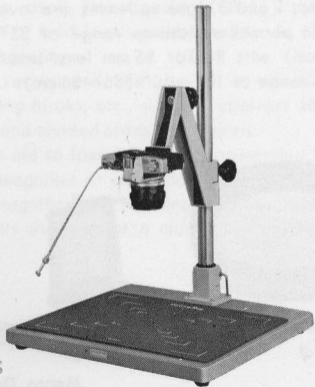
### Extension-Bellows III

An extension bellows is useful for close-up shots and macrophotography of small subjects. 55 mm lens with the bellows can make continuous close-up shots at 1.0—2.5 time magnifications. In addition, the bellows III is equipped with a slide copying attachment to permit duplication of slides.



### Copying Stand

A rigid camera support used when copying flat or three dimensional objects. The camera locks securely in place on an adjustable arm which rides an upright. Markings for copy centering are provided.



### MC Macro F3.5 50 mm Lens

This lens specifically designed for extreme close-up photography. It focuses from infinity down to 9 inches (23 cm).

Use of life-size adapter permits 0.5—1 X close-ups. The life-size adapter and reverse ring are furnished with the lens.



Life-Size Adapter



Lens



Reverse Ring

### Auto Bellows Rokkor F 4 100 mm Lens Short Mount

A specially constructed 100 mm F 4 lens, designed for use with the Minolta Extension bellows. This lens with the auto bellows I permits  $1/\infty$ —1.1 time magnifications.

In addition, automatic diaphragm can be operated with auto bellows I and pre-view button is also equipped.



## OTHER EQUIPMENTS

### **Angle Finder V**

An eyepiece attachment that permits viewing with the camera held below the eye. It can also be turned in a complete circle, allowing you to focus from any position. Adjustable for individual eyesight.

### **Magnifier V**

An aid to precise focusing when making macro-photographs, copying and taking distant telephoto pictures. It features an adjustable eyepiece with locking screws into pentaprism eyepiece. Has a 2.5X magnification power.

### **Polarizing Filters**

Help to eliminate or control reflections. Can also be used to darken skies and produce dramatic effects. In addition, it can be used as a neutral density filter to reduce light in extreme brightness

**Filters**    52 mm    O54, Y-48  
              55 mm    O54, Y-48

### **Cable Release**

**Mini 35 II Slide Projector**

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