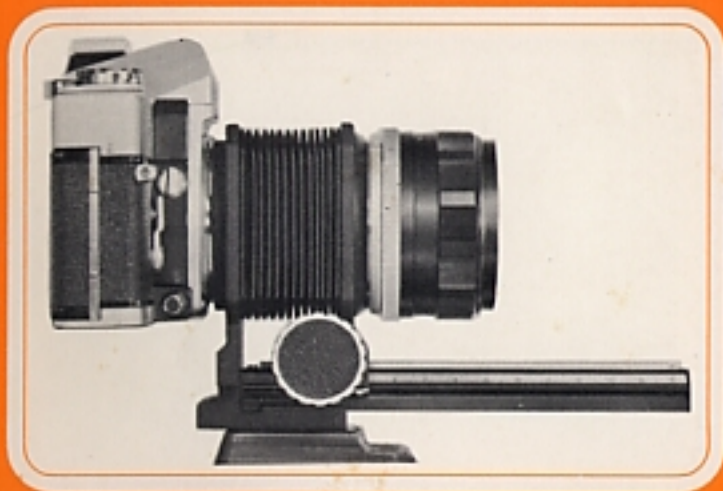


# Minolta BELLOWS III

OWNER'S MANUAL



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## NAMES OF PARTS

Lens mounting indication

Lens release button

Focusing knob

Clamp knob

Extension scale  
(not shown)

Magnification scale

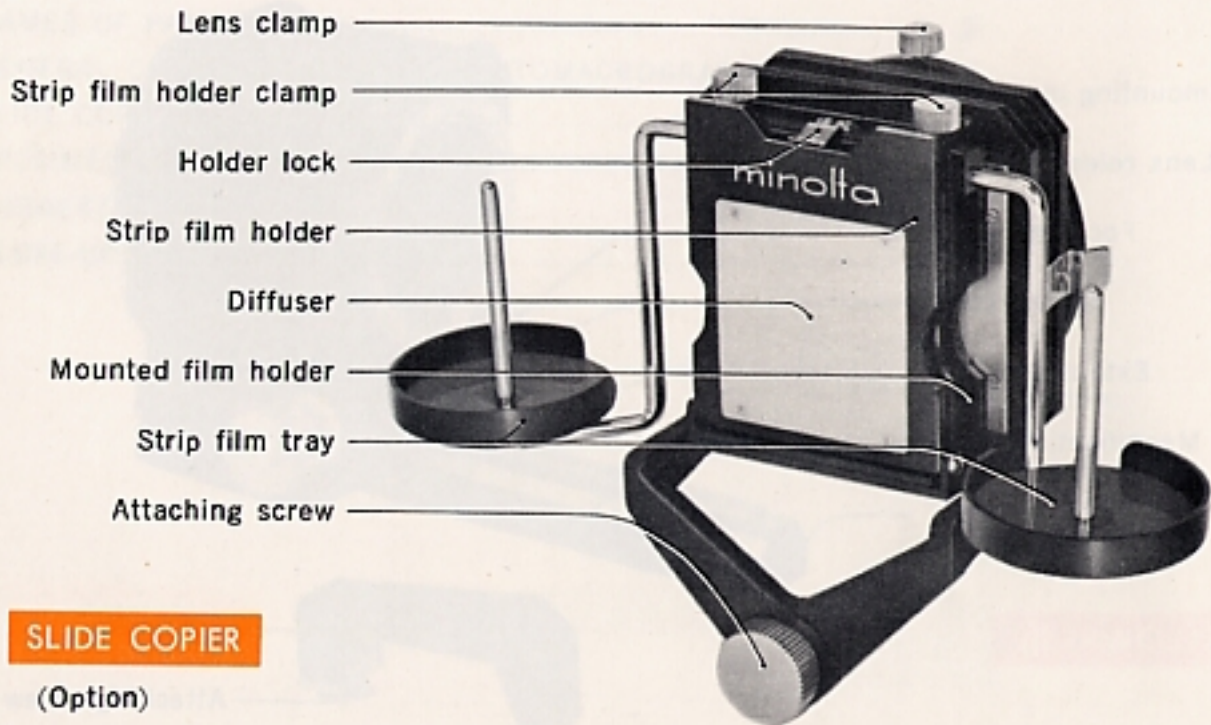
Track

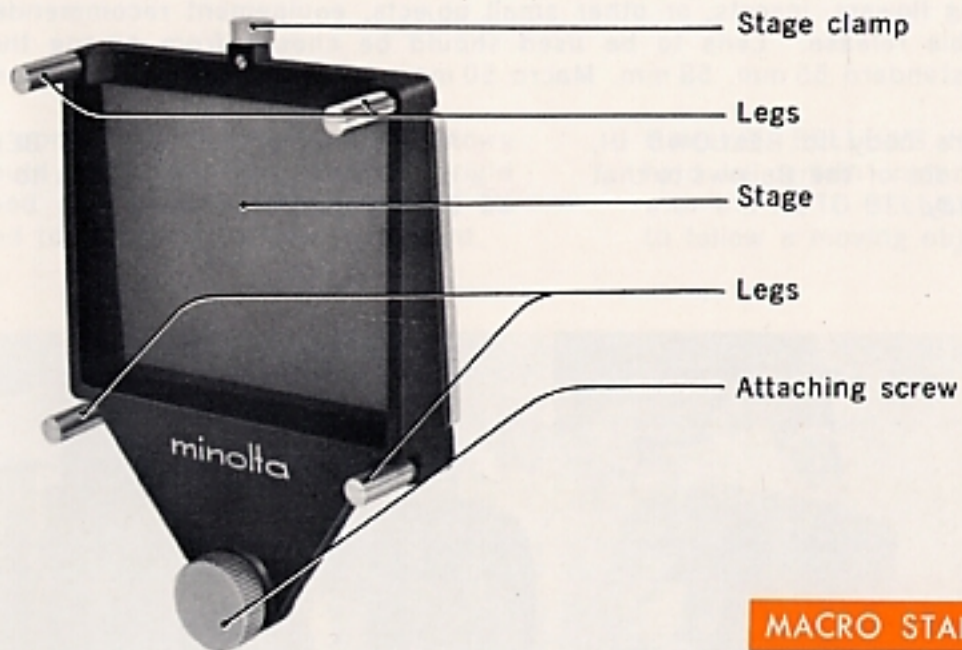
**BELLOWS III**

Connector  
(Option)

Attaching screw







**MACRO STAND**

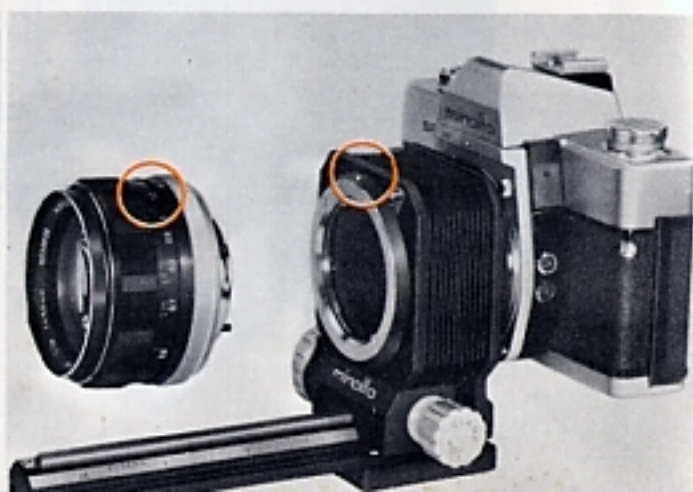
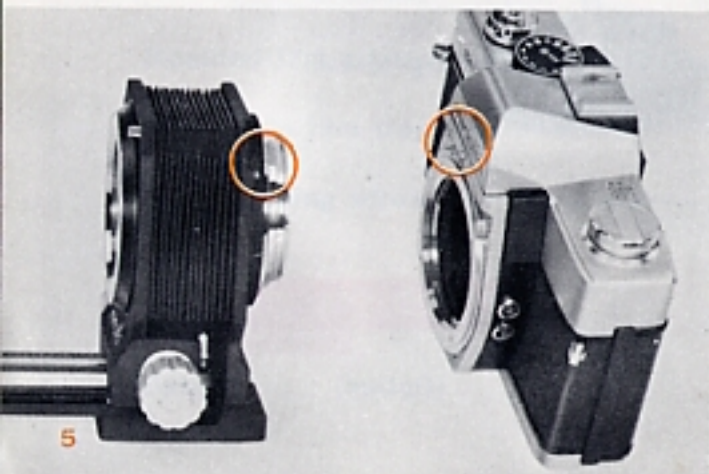
(Option)

## GENERAL CLOSE-UP, 1:1, AND PHOTOMACROGRAPHY

For photographing flowers, insects, or other small objects, equipment recommended is a tripod and a cable release. Lens to be used should be chosen from among the Auto Bellows Rokkor, standard 55 mm, 58 mm, Macro 50 mm, and telephoto 100 mm lens.

**1** Attach camera body to BELLOWS III, matching red dot of the Bellows to that of camera body.

**2** Attach lens to front part of BELLOWS III, matching red dot of lens to that of the Bellows.



**3** For good close-up results, the Bellows should normally be secured to a rigid tripod and a cable release should be used to eliminate camera movement.



**4** However, BELLOWS III can be hand-held in certain instances when used with the AUTO BELLOWS ROKKOR lens to follow a moving object.



**Table I**

Lens	Magnification	Focusing Range (from film plane to object) (cm)	Focusing Range (from film plane to object) (inch)
Auto Bellows Rokkor 100mm	$1/\infty \sim 1.1$	$\infty \sim 54$	$\infty \sim 21\frac{1}{4}$
Standard 55mm	0.7 ~ 2.8	23 ~ 28	9 ~ 11
Standard 58mm	0.6 ~ 2.6	25 ~ 29	$9\frac{7}{8} \sim 11\frac{7}{8}$
Macro 50 mm	0.7 ~ 3.0	21 ~ 27	$8\frac{1}{4} \sim 10\frac{5}{8}$
Tele 100 mm	0.4 ~ 1.5	49 ~ 42	$19\frac{5}{8} \sim 16\frac{1}{2}$



### **How to measure exposure with a Minolta SR-T 101 :**

(This procedure also applies to both slide copying and specimen photography described later)

After critical focusing is accomplished, close down lens aperture as far as possible and turn shutter dial till needles in viewfinder match.

### **How to measure exposure with Minolta SR cameras that do not have through-the-lens metering :**

After critical focusing, read figure on extension scale on the Bellows track and divide it by focal length of lens used. The figure thus obtained is the magnification. Add one (1) to this figure and square the sum. This is the exposure factor which you use to find number of extra stops to open your lens. See table I.

Then take exposure reading with your meter. If subject is so small that background-light influences meter reading, measure the palm of your hand instead under the same lighting conditions.

**Example :**

Figure on extension scale 55 mm  
Focal length of lens used 55 mm  
-1 (Life size)

$$(1 + 1)^2 = 4 \text{ (Exposure factor)}$$

Table I shows that, with an extra factor of 4, you should open your lens two extra stops. Thus, if exposure reading of your meter is F 11 at  $\frac{1}{60}$  sec., final exposure should be F 11 at  $\frac{1}{15}$  sec., (or F 5.6 at  $\frac{1}{60}$  sec. etc.)

**Table II**

Exposure factor	Number of extra stops aperture is to be opened
2	1
3	1.5
4	2
6	2.5
8	3
11	3.5
16	4
22	4.5

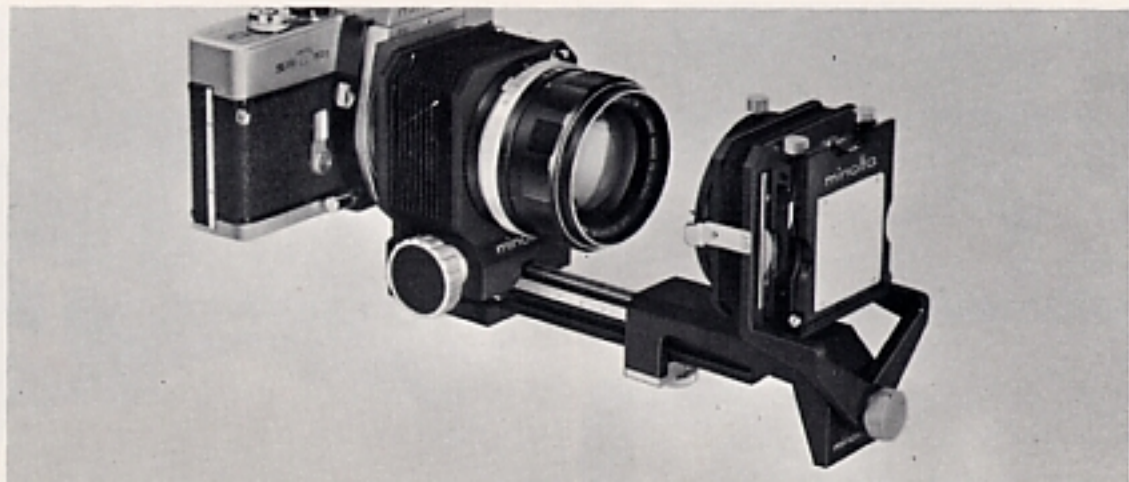
\* Should calculation yield an exposure factor value not shown in table, use next larger one.

## SLIDE COPYING

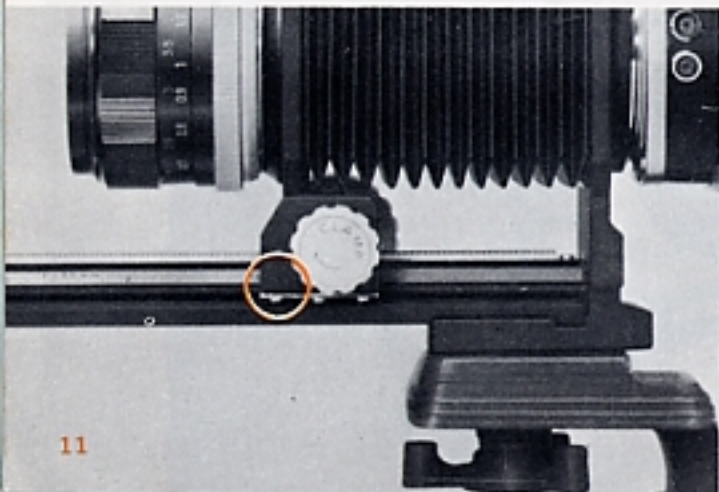
To copy slides, recommended equipment is the SLIDE COPIER, CONNECTOR, ANGLE FINDER and a CABLE RELEASE (all available from your dealer as separate accessories). Lens to be used should be selected from among the standard 55 mm, 58 mm, and Macro 50 mm lenses.

**1** Attach SLIDE COPIER to CONNECTOR with screw clamp provided.

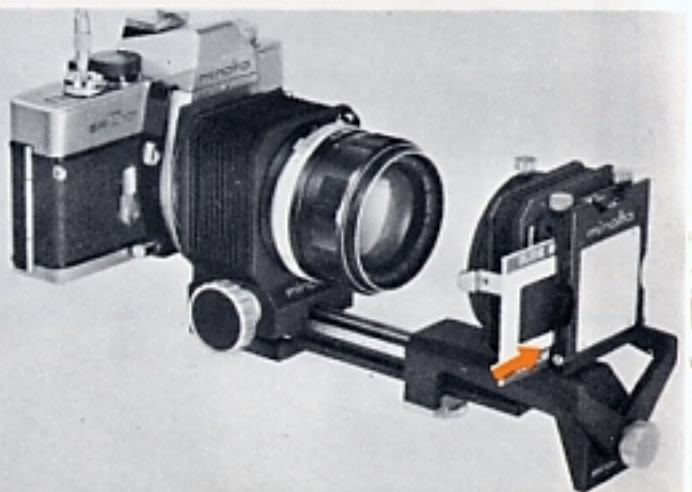
**2** Insert bellows track into CONNECTOR.



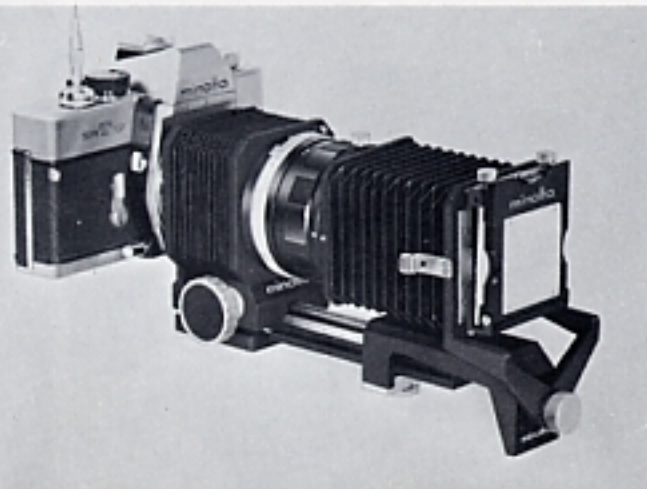
- 3** Set required magnification on the track.  
(Although scale provided is intended for the 55 mm lens, it can be used as an approximation for both 58 mm and Macro 50 mm lenses.)



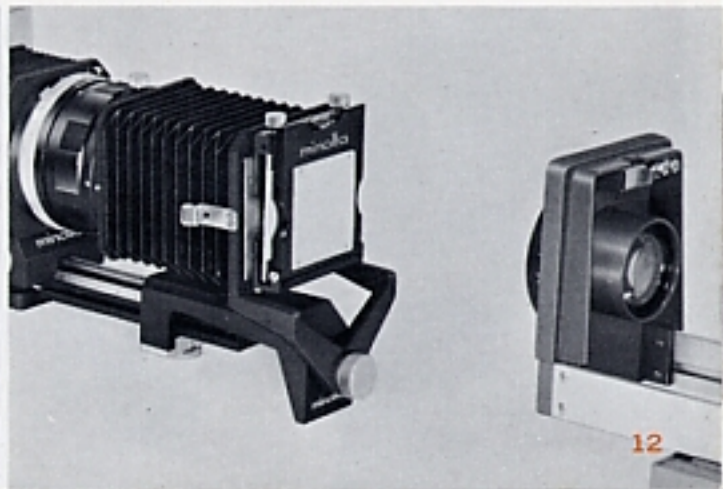
- 4** Insert a mounted slide into the slide holder.  
Be sure emulsion is toward the diffuser.



**5** Disengage the bellows-retaining clips to release SLIDE-COPIER bellows. Attach SLIDE-COPIER bellows to front of lens with the lens clamp. When used with other than the 55 mm F 1.7 lens, be sure to remove the adapter ring located inside the lens receptacle of SLIDE-COPIER bellows.

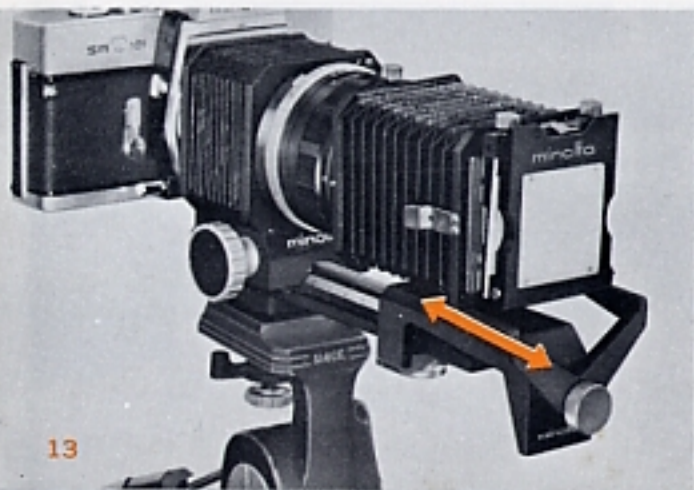


**6** Point the diffuser toward a natural or artificial light source to suit the film in use.



**7** While looking through viewfinder, move CONNECTOR back and forth to bring the slide into focusing range. Then tighten CONNECTOR screw clamp. Fine focusing is done with focusing knob of the BELLOWS III. (Lens itself should be focused at infinity.)

**8** Vertical frame adjustment can be accomplished by adjusting the slide holder higher or lower. For horizontal adjustment, move the slide itself.

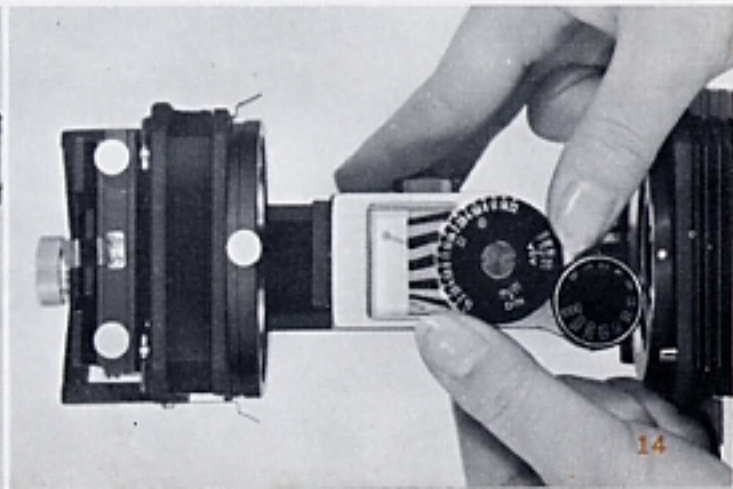


**9** When copying strip film, pull diffuser down and insert film, then close it. Long strip film can be supported by strip film trays on either side of diffuser.



**How to determine exposure when other than an SR-T 101 camera is used:**

After inserting slide and pointing diffuser toward light source, measure the light coming through the slide with SR CdS or SR-7 Meter as illustrated. Then find exposure factor by the formula on page 8 and 9.



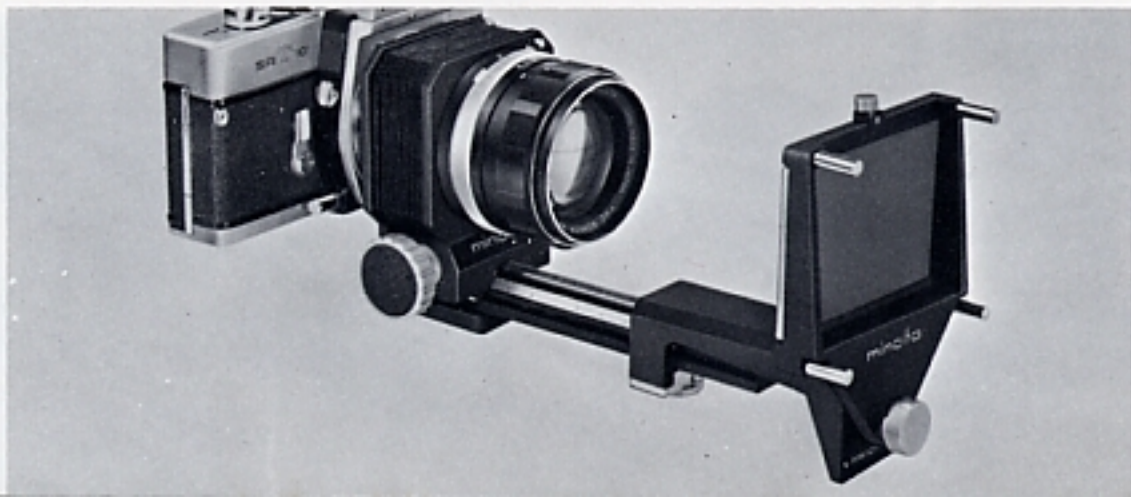
## SPECIMEN PHOTOGRAPHY

To photograph specimens or other small flat or three-dimensional still objects, ideal equipment is the MACRO STAND, CONNECTOR, and a CABLE RELEASE.

Lens can be chosen from among standard 55 mm, 58 mm, and Macro 50 mm lenses.

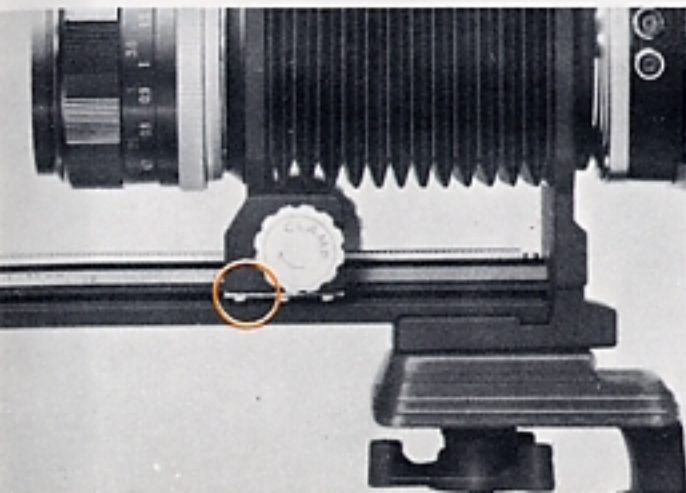
**1** Attach MACRO STAND to CONNECTOR with screw provided

**2** Insert bellows track into CONNECTOR.





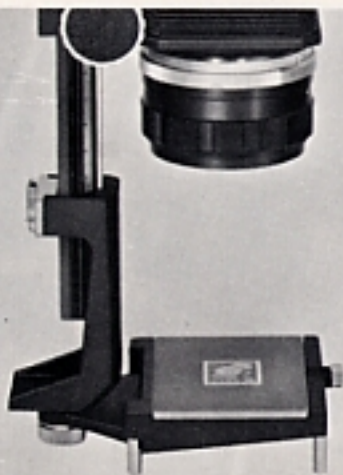
**3** Set required magnification on the track. (Although the scale is meant for the 55 mm lens, it can be used as an approximation for both 58 mm and Macro 50 mm lenses.)



**4** Looking through viewfinder, move connector back and forth to bring object into focusing range. Then tighten CONNECTOR screw clamp. Fine focusing is done with focusing knob of the Bellows III.



**5** Vertical shooting is possible as illustrated.



**6** Insert plate can be removed by loosening the set screw when shooting three dimensional objects. When shooting translucent objects, it is recommended that the object be placed on a sheet of clear glass. It may be a good idea to place a contrasting background behind the glass.

**How to determine exposure when other than an SR-T 101 camera is used :**

Disregarding object, take reading of the reflected light from the MACRO STAND's insert plate.

Determine exposure factor using formula on page 8 and 9.

**SUGGESTIONS FOR GOOD RESULTS**

- ☆ Set focusing ring of lens at infinity position, and focus with the focusing knob of the bellows.
- ☆ Use as small an aperture as possible to obtain maximum depth of field.
- ☆ Work on a rigid tripod or desk to avoid vibration.
- ☆ Use a cable release except for hand-held operation to follow moving object. (If a cable release is not available, camera's built-in selftimer can often be used instead for subjects that are not moving.)
- ☆ Use of an Angle finder is a good idea in some cases.

# Close-up table

f = 50 mm (Macro)

Magnification ratio	Bellows extension mm (inches)	Photographic area mm (inches)	Distance from film to subject mm (inches)	Extra stops to open aperture
0.7	36 (1 <sup>3</sup> / <sub>16</sub> )	34 × 51 (1 <sup>5</sup> / <sub>16</sub> × 2 )	210 ( 8 <sup>1</sup> / <sub>4</sub> )	1.5
0.8	41 (1 <sup>5</sup> / <sub>8</sub> )	30 × 45 (1 <sup>3</sup> / <sub>16</sub> × 1 <sup>3</sup> / <sub>4</sub> )	206 ( 8 <sup>1</sup> / <sub>8</sub> )	2
1.0	52 (2 <sup>1</sup> / <sub>16</sub> )	24 × 36 ( 1 <sup>5</sup> / <sub>16</sub> × 1 <sup>7</sup> / <sub>16</sub> )	203 ( 8 )	2
1.2	62 (2 <sup>7</sup> / <sub>16</sub> )	20 × 30 ( 3/4 × 1 <sup>3</sup> / <sub>16</sub> )	205 ( 8 <sup>1</sup> / <sub>16</sub> )	2
1.4	72 (2 <sup>7</sup> / <sub>8</sub> )	17 × 26 ( 1 <sup>1</sup> / <sub>16</sub> × 1 )	210 ( 8 <sup>1</sup> / <sub>4</sub> )	2.5
1.6	83 (3 <sup>1</sup> / <sub>4</sub> )	15 × 23 ( 5/8 × 1 <sup>5</sup> / <sub>16</sub> )	215 ( 8 <sup>1</sup> / <sub>2</sub> )	3
1.8	93 (3 <sup>11</sup> / <sub>16</sub> )	13 × 20 ( 1/2 × 9/16)	222 ( 8 <sup>3</sup> / <sub>4</sub> )	3
2.0	103 (4 <sup>1</sup> / <sub>16</sub> )	12 × 18 ( 1/2 × 1 <sup>1</sup> / <sub>16</sub> )	230 ( 9 <sup>1</sup> / <sub>16</sub> )	3
2.2	113 (4 <sup>1</sup> / <sub>2</sub> )	11 × 16 ( 7/16 × 5/8)	237 ( 9 <sup>3</sup> / <sub>8</sub> )	3.5
2.4	124 (4 <sup>7</sup> / <sub>8</sub> )	10 × 15 ( 3/8 × 9/16)	245 ( 9 <sup>5</sup> / <sub>8</sub> )	3.5
2.6	134 (5 <sup>1</sup> / <sub>4</sub> )	9 × 14 ( 3/8 × 9/16)	254 (10 )	3.5
2.8	144 (5 <sup>11</sup> / <sub>16</sub> )	9 × 13 ( 3/8 × 1/2)	262 (10 <sup>5</sup> / <sub>16</sub> )	4
3.0	157 (6 <sup>3</sup> / <sub>16</sub> )	8 × 12 ( 5/16 × 1/2)	274 (10 <sup>3</sup> / <sub>4</sub> )	4
3.2	165 (6 <sup>1</sup> / <sub>2</sub> )	8 × 11 ( 5/16 × 7/16)	282 (11 <sup>1</sup> / <sub>8</sub> )	4
3.4	175 (6 <sup>7</sup> / <sub>8</sub> )	7 × 10 ( 1/4 × 3/8)	286 (11 <sup>1</sup> / <sub>4</sub> )	4.5
3.5	180 (7 <sup>1</sup> / <sub>16</sub> )	7 × 10 ( 1/4 × 3/8)	290 (11 <sup>3</sup> / <sub>8</sub> )	4.5

f = 55 mm

Magnification ratio	Bellows extension mm (inches)	Photographic area mm (inches)	Distance from film to subject mm (inches)	Extra stops to open aperture
0.7	39 (1 1/8)	34 × 51 (1 5/16 × 2 )	221 ( 8 11/16)	1.5
0.8	44 (1 3/4)	30 × 45 (1 3/16 × 1 3/4)	216 ( 8 1/2)	1.5
1.0	55 (2 3/16)	24 × 36 ( 1 5/16 × 1 3/8)	214 ( 8 3/8)	2
1.2	66 (2 5/8)	20 × 30 ( 1 1/8 × 1 1/8)	215 ( 8 7/16)	2
1.4	77 (3 )	17 × 26 ( 1 1/8 × 1 )	220 ( 7 7/8)	2.5
1.6	88 (3 1/2)	15 × 23 ( 9/16 × 1 5/16)	226 ( 8 7/8)	3
1.8	99 (3 15/16)	13 × 20 ( 1/2 × 1 1/16)	233 ( 9 1/8)	3
2.0	111 (4 3/8)	12 × 18 ( 1/2 × 1 1/16)	241 ( 9 1/2)	3
2.2	122 (4 11/16)	11 × 16 ( 7/16 × 5/8)	250 ( 9 11/16)	3.5
2.4	133 (5 1/4)	10 × 15 ( 3/8 × 9/16)	259 (10 3/16)	3.5
2.6	144 (5 11/16)	9 × 14 ( 3/8 × 9/16)	268 (10 5/8)	3.5
2.8	155 (6 1/16)	9 × 13 ( 3/8 × 1/2)	278 (10 7/8)	4
2.9	160 (6 5/16)	8 × 12 ( 5/16 × 1/2)	282 (11 1/8)	4.5

f = 58 mm

Magnification ratio	Bellows extension mm (inches)	Photographic area mm (inches)	Distance from film to subject mm (inches)	Extra stops to open aperture
0.6	35 (1 3/8)	40 × 60 (1 9/16 × 2 3/8)	244 ( 9 9/16)	1.5
0.8	47 (1 7/8)	30 × 45 (1 3/8 × 1 3/4)	231 ( 9 1/16)	1.5
1.0	59 (2 5/16)	24 × 36 ( 9/16 × 1 3/8)	228 ( 8 15/16)	2
1.2	71 (2 9/16)	20 × 30 ( 7/16 × 1 9/16)	230 ( 9 1/16)	2
1.4	83 (3 1/4)	17 × 26 ( 5/16 × 1 )	235 ( 9 1/4)	2.5
1.6	94 (3 11/16)	15 × 23 ( 9/16 × 1 5/16)	241 ( 9 1/2)	3
1.8	106 (4 1/4)	13 × 20 ( 1/2 × 1 1/16)	249 ( 9 13/16)	3
2.0	118 (4 5/8)	12 × 18 ( 1/2 × 11/16)	257 (10 1/16)	3
2.2	130 (5 1/8)	11 × 16 ( 7/16 × 5/8)	267 (10 1/2)	3.5
2.4	142 (5 5/8)	10 × 15 ( 3/8 × 9/16)	276 (10 7/8)	3.5
2.6	154 (6 1/16)	9 × 14 ( 3/8 × 9/16)	286 (11 1/4)	3.5
2.7	159 (6 1/4)	9 × 13 ( 3/8 × 1/2)	292 (11 1/2)	4

f = 100 mm

Magnification ratio	Bellows extension mm (inches)	Photographic area mm (inches)	Distance from film to subject mm (inches)	Extra stops to open aperture
0.4	40 ( $1\frac{1}{4}$ )	60 × 90 ( $2\frac{3}{8}$ × $3\frac{9}{16}$ )	496 ( $19\frac{1}{2}$ )	1
0.5	50 (2 )	48 × 72 ( $1\frac{7}{8}$ × $2\frac{7}{8}$ )	449 ( $17\frac{11}{16}$ )	1
0.6	60 ( $2\frac{3}{8}$ )	40 × 60 ( $1\frac{5}{8}$ × $2\frac{3}{8}$ )	426 ( $16\frac{3}{4}$ )	1.5
0.7	70 ( $2\frac{3}{4}$ )	34 × 51 ( $1\frac{3}{8}$ × 2 )	412 ( $16\frac{3}{16}$ )	1.5
0.8	80 ( $3\frac{1}{8}$ )	30 × 45 ( $1\frac{3}{16}$ × $1\frac{3}{4}$ )	404 ( $15\frac{7}{8}$ )	1.5
0.9	90 ( $3\frac{5}{8}$ )	27 × 40 ( $1\frac{1}{16}$ × $1\frac{9}{16}$ )	400 ( $15\frac{3}{4}$ )	2
1.0	110 ( $3\frac{15}{16}$ )	24 × 36 ( $\frac{15}{16}$ × $1\frac{7}{16}$ )	399 ( $15\frac{11}{16}$ )	2
1.1	110 ( $4\frac{5}{16}$ )	22 × 33 ( $\frac{7}{8}$ × $\frac{5}{16}$ )	400 ( $15\frac{3}{4}$ )	2
1.2	120 ( $4\frac{3}{4}$ )	20 × 30 ( $\frac{13}{16}$ × $1\frac{3}{16}$ )	402 ( $15\frac{10}{16}$ )	2
1.3	130 ( $5\frac{1}{8}$ )	19 × 28 ( $\frac{3}{4}$ × $1\frac{7}{8}$ )	406 ( $15\frac{9}{16}$ )	2
1.4	140 ( $5\frac{1}{2}$ )	17 × 26 ( $\frac{11}{16}$ × 1 )	411 ( $16\frac{3}{16}$ )	2.5
1.5	150 ( $5\frac{7}{8}$ )	16 × 24 ( $\frac{5}{8}$ × $\frac{15}{16}$ )	416 ( $16\frac{3}{8}$ )	2.5

f = 100 mm (Auto Bellows Rokkor)

Magnification ratio	Bellows extension mm (inches)	Photographic area mm (inches)	Distance from film to subject mm (inches)	Extra stops to open aperture
0.1	52 (2 $\frac{1}{8}$ )	240 × 360 (9 $\frac{7}{8}$ × 14 $\frac{3}{8}$ )	1208 (47 $\frac{7}{8}$ )	0.5
0.2	62 (2 $\frac{7}{8}$ )	120 × 180 (4 $\frac{3}{4}$ × 7 $\frac{1}{8}$ )	718 (28 $\frac{1}{4}$ )	0.5
0.3	72 (2 $\frac{7}{8}$ )	80 × 120 (3 $\frac{3}{8}$ × 4 $\frac{3}{4}$ )	561 (22 $\frac{1}{8}$ )	1
0.4	82 (3 $\frac{1}{4}$ )	60 × 90 (2 $\frac{3}{8}$ × 3 $\frac{5}{8}$ )	488 (19 $\frac{3}{8}$ )	1
0.5	92 (3 $\frac{5}{8}$ )	48 × 72 (1 $\frac{7}{8}$ × 2 $\frac{7}{8}$ )	448 (17 $\frac{5}{8}$ )	1
0.6	102 (4 )	40 × 60 (1 $\frac{5}{8}$ × 2 $\frac{3}{8}$ )	425 (16 $\frac{1}{2}$ )	1.5
0.7	112 (4 $\frac{7}{8}$ )	34 × 51 (1 $\frac{3}{8}$ × 2 )	411 (16 $\frac{3}{8}$ )	1.5
0.8	122 (4 $\frac{7}{8}$ )	30 × 45 (1 $\frac{3}{8}$ × 1 $\frac{3}{4}$ )	403 (15 $\frac{7}{8}$ )	1.5
0.9	132 (5 $\frac{1}{8}$ )	27 × 40 (1 $\frac{1}{8}$ × 1 $\frac{5}{8}$ )	399 (15 $\frac{3}{8}$ )	2
1.0	142 (5 $\frac{5}{8}$ )	24 × 36 ( 1 $\frac{1}{4}$ × 1 $\frac{3}{8}$ )	398 (15 $\frac{5}{8}$ )	2
1.1	152 (6 )	22 × 33 ( 7 $\frac{7}{8}$ × 5 $\frac{1}{8}$ )	399 (15 $\frac{3}{8}$ )	2



MEMO

MEMO

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