



Photomacrography with the MP-4



Exposure Guide

Selecting the right lens for photomacrography

Basic Focusing Steps

Magnification Tables



MP4/MP4+ Exposure Guide¹

How to determine recommended shutter speed:

Table A: Find the number that applies to the speed of the film you are using.

Table B: Measure the length of the material being copied and the length of its focused image on the ground glass (to determine the reproduction scale). Find the corresponding number in the table.

Table C: Decide which lens f-stop you wish to use. Find the number that corresponds to that f-stop.

Table D: Add the numbers you get from Tables A, B, and C. Find that number in Table D, and see the suggested shutter speed. *If your total has a 1/2 in it, use the next higher full number from Table D.*

Table A

Film Speed

ISO3000/36°	1
ISO800/30°	3
ISO400/27°	4
ISO200/24°	5
ISO100/21°	6
ISO80/20°	6 1/2
ISO50/18°	7
ISO25/15°	8
ISO3/6°	11

With color films, adjust the speed to compensate for filter factors.

Table B

Reproduction Scale

1:10 to 1:5	1
1:4 to 1:2	2
1:1	3
1.5X	3 1/2
2X	4
3X	5
4X	5 1/2
5X	6
6X	6 1/2
7X, 8X	7
9X, 10X	8

Measure the length of the original and its length on the ground glass to determine the reproduction scale.

Table C

Lens Aperture

f/4.5	1/2
f/5.6	1
f/8	2
f/11	3
f/16	4
f/22	5
f/32	6

When setting the lens between two f-stops, use half numbers. Thus, for f/11-f/16 use 3½.

Table D

(Total of A + B + C)

Shutter Speed

(exposure time)*

Shutter Speed

7	1/125 sec.
8	1/60
9	1/30
10	1/15
11	1/8
12	1/4
13	1/2
14	1 sec.
15	2
16	6**
17	15**
18	40**
19	1 ½ min.**
20	4 min.**

*Filtration will be necessary for Polacolor films. See the current film instructions for specific details.

****Includes compensation for low light-level reciprocity failure.** This compensation is an average for Polaroid instant films in general, and thus a rough guide only. Note that color films will require filtration in addition to a longer exposure.

For information or technical assistance:

From within the U.S., call toll-free 1-800-343-5000, Monday-Friday, 8 AM to 8 PM (Eastern Time).

If outside the U.S., contact the nearest Polaroid office.

¹This is intended as a guide, not a precise exposure indicator. You may have to compensate for unpredictable variables which affect exposure, such as brightness of window or room lighting, differences in color or contrast of the subject material, voltage fluctuations, or the age of the lamps.

Selecting the right lens for photomacrography

The table below shows the range of magnifications you can achieve with each of the MP-4 lenses. Note that you have several lens options for achieving various magnifications. For example, to enlarge an object five times, you can use a 75mm lens with two macro extensions, a 50mm lens with one macro extension, or a 35mm lens by itself.

If you have a choice between two or more lenses, always use the lens with the longer focal length. The longer the focal length, the more space you have between the subject and the lens. For example, with the 75mm lens at full bellows extension (about 3x), the space between the lens and the object would be about 4 inches (10 cm). To achieve the same magnification with the 50mm lens, the space between the lens and object would be a relatively cramped 1.5 inches (4 cm).

Approximate Magnification Ranges

Lens	1:1	1.5x	2x	3x	4x	5x	6x	7x	8x	9x	10x	12x	14x
135mm													
105mm													
75mm (min.=2x)													
50mm (min.=2x)													
35mm (min.=5x)													

Lens	8x	10x	12x	14x	16x	18x	20x	22x	24x	26x	28x	30x	32x
17mm (min.=10x)													

Code:



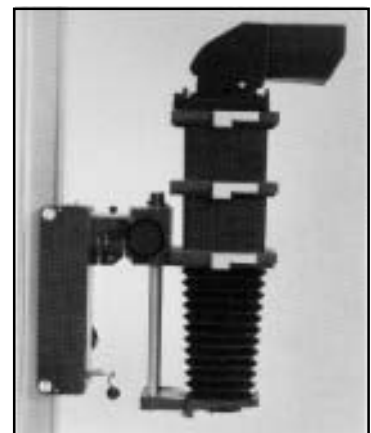
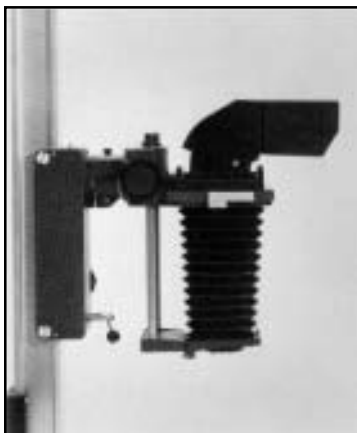
camera alone



with one
macro extension



with two
macro extensions



Basic Focusing Steps

To focus, set the lens aperture at its largest opening (smallest f-number). Then follow these basic steps.

With the magnification tables:

1. Select the appropriate table according to the MP-4 camera head you are using.
2. Find the lens-to-film distance (bellows extension) to give the desired magnification.
3. Adjust the camera bellows until the lens-to-film distance appears.
4. Move the camera head as close as possible to the object. Then raise the head slowly until the image appears sharp.
5. Compose the picture within the appropriate scribe marks on the ground glass.
6. Lock the camera on the column.
7. Insert the film holder and set the exposure.

Without the magnification tables:

To focus without using the magnification tables, adjust the bellows extension to get the approximate image size. Then move the camera head up or down (or use a focusing stage) for sharp focus.

The bellows extension determines magnification. To increase image size, increase the bellows extension and reduce the lens-to-subject distance. To decrease image size, reduce the bellows extension and increase the lens-to-subject distance. If you get a sharp image that is not quite the size you want, make a small adjustment of both the bellows extension and the lens-to-subject distance.

MP-4 Fixed Head

Magnification	135mm	105mm	75mm	50mm	35mm	17mm
1:1	22.5	16.9				
2x	24.0*	15.4*	18.2	11.2		
3x	25.5**	25.9*	25.7	16.2		
4x		24.4**	21.2*	21.2		
5x			16.7**	26.2	16.6	
6x			24.2**	19.2*	20.1	
7x				24.2*	23.6	
8x				17.2**	15.1*	
9x				22.2**	18.6*	
10x					22.1*	10.6
11x					25.6*	12.3
12x					17.1**	14.0
13x					20.6**	15.7
14x					24.1**	17.4
15x						19.1
16x						20.8
18x						24.2
20x						15.6*
22x						19.0*
24x						22.4*
26x						25.8*
28x						17.2**
30x						20.6**
32x						24.0**

MP-4 Sliding Head

Magnification	135mm	105mm	75mm	50mm	35mm	17mm
1:1	22.1	16.5				
2x	23.6*	27.0	17.8	10.8		
3x	25.1**	25.5*	25.3	15.8		
4x		24.0**	20.8*	20.8		
5x			16.3**	25.8	16.2	
6x			23.8**	18.8*	19.7	
7x				23.8*	23.2	
8x				16.8*	26.7	
9x				21.8*	18.2*	
10x				26.8**	21.7*	10.2
11x					25.2*	11.9
12x					16.7**	13.6
13x					20.2**	15.3
14x					23.7**	17.0
15x						18.7
16x						20.4
18x						23.8
20x						15.2*
22x						18.6*
24x						22.0*
26x						25.4*
28x						16.8**
30x						20.2**
32x						23.6**
34x						27.0**

*Add one macro extension. **Add two macro extensions.