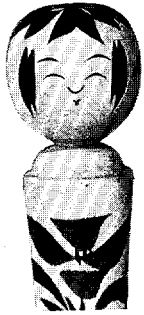
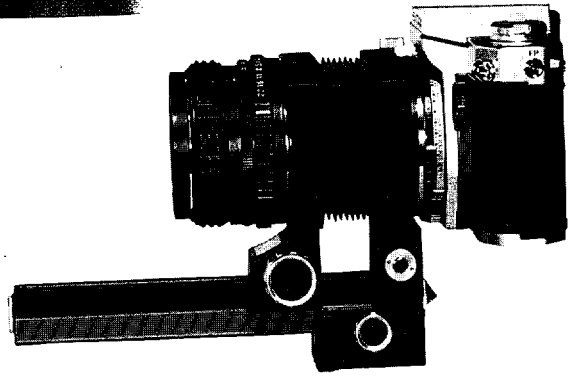
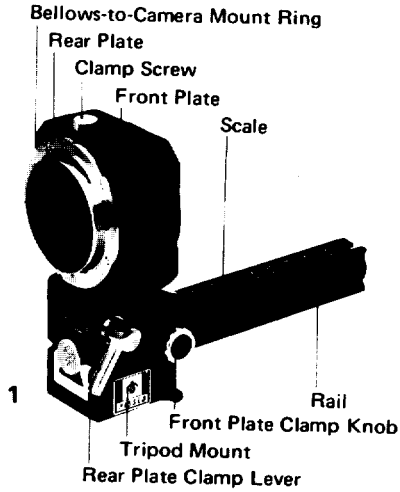
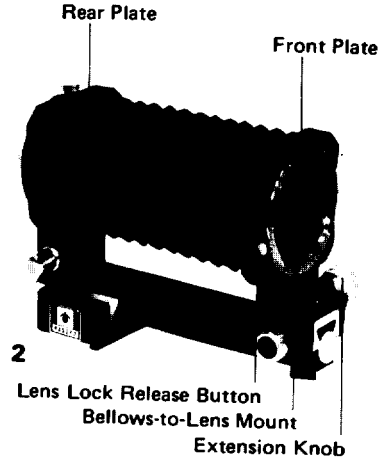
ASAHI
PENTAX
K series

BELLOWS UNIT






Bellows-to-Camera Mount Ring
Rear Plate
Clamp Screw
Front Plate
Scale
1
Rail
Front Plate Clamp Knob
Tripod Mount
Rear Plate Clamp Lever


Rear Plate
Front Plate
2
Lens Lock Release Button
Bellows-to-Lens Mount
Extension Knob

Functions and Features

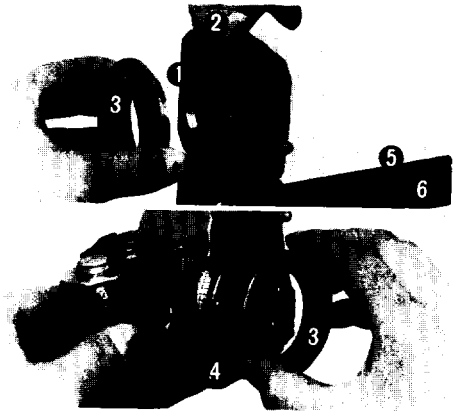
Usable on:	Pentax K Series cameras — K2, KX, KM
Lens Accepted:	SMC Pentax lenses with focal lengths less than 300mm
Bellows Extension:	32 ~ 137mm (with scale)
Size:	75 x 118 x 155mm
Weight:	404 grams

The Bellows Unit K weighs only slightly more than the SMC Pentax 120mm f/2.8 lens and measures 155mm in maximum length. It is a light, handy, compact bellows unit, easy to carry and especially good for field work and travel.

The combination of a Pentax K2, KX or KM camera with a standard lens, the Auto-Extension Tube Set, the Reverse Adaptor K 52mm, a cable release and a tripod plus the Bellows Unit K creates a most comprehensive yet relatively light and compact close-up photography pack for your travels.

The bellows unit plus the reverse adaptor ring and the 50mm lens lets you take close-ups as large as 3.5 times life size and regular distance-range shots as well. With the 55mm lens in this combination, the picture-taking range extends from infinity to close-ups of 2.8x. Though the Auto-Extension Tube Set is actually easier to operate for close-ups up to life size, the Bellows Unit K offers the advantage of much larger close-ups.

How to Set Up and Operate



3

4

As shown in Illustration 3, first loosen the clamp screw (2) above the rear plate and detach the bellows-to-camera mount ring (3).

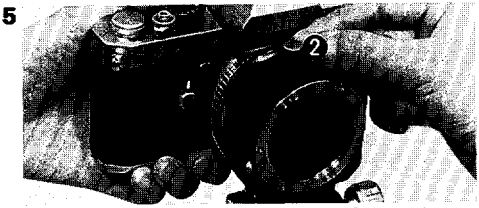
Then, as shown in Illustration 4, detach the lens from the camera and attach the bellows-to-camera mount ring (3) to the camera's lens mount (4) just as you would mount a lens.

Attach the camera to the bellows unit by attaching the bellows-to-camera mount to the rear plate of the bellows unit. If the camera is in the normal horizontal position, align the upper edge of the rear plate with the front edge of the pentaprism housing of the camera, as shown in Illustration 5, and tighten the screw (2).

If the camera is in the vertical position (it should be rotated so that the shutter button is below the lens), align the upper edge of the rear plate with the side of the camera, and tighten the screw (2) as shown in Illustration 6.

In the above cases, the rear plate of the bellows unit is usually locked at its furthest back position by the rear plate clamp lever as shown in Illustrations 1 and 2 on Page 2. The scale (5) in Illustration 3 on Page 4 indicates the extension length of the bellows in this situation. If you want to set the rear plate further forward, loosen the rear plate clamp lever as in Illustration 1 on Page 2, move the rear plate to the front manually, and then tighten the lever at the desired position.

5



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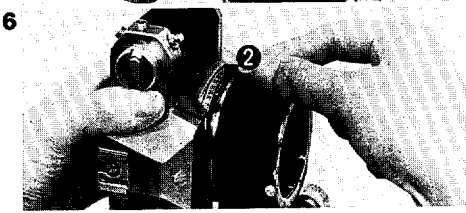


7

When the camera is mounted horizontally, the rear plate may be set at any position on the rail. (The rail is shown clearly as (6) in illustration 3 on Page 4.) When the camera is mounted vertically, the camera body will strike the rear of the rail if the rail length at the back of the rear plate is not shorter than 13mm.

8

As shown in Illustration 7, attach the lens on the bellows to the lens mount (8) on the front plate (7). To detach the lens, push the lens lock release button and turn the lens counterclockwise 65°. (The direction in which the lock release button works is different from that of the lens lock release lever on the Pentax K2, KX and KM cameras.)

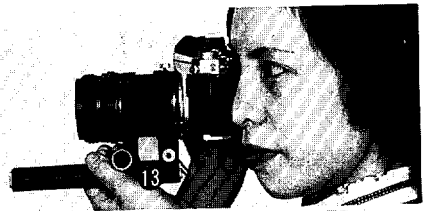
As shown in Illustration 8, loosen the front plate clamp knob (10) and turn the extension knob (11) to extend the bellows (12) for

focusing. After focusing, always remember to tighten the front plate clamp knob (10).

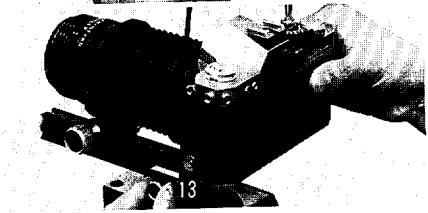
As shown in Illustration 9, the tripod mount (13) can be used as support for the left hand in hand-held shooting. Loosen the tripod mount clamp knob, set the tripod mount at the desired position and retighten the clamp knob.

As shown in Illustration 10, when you are using the bellows on a tripod, set the tripod mount so that the lens side is slightly heavier than the camera side. Setting the tripod mount at the center of gravity would seem to be the most stable, but in fact this position is most likely to cause camera movement. The camera side also should not be heavier than the lens side. When using a tripod, the use of a cable release is advisable.

9



10



How to Use

Focusing

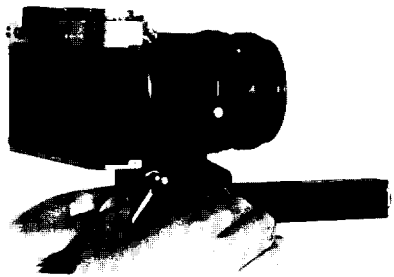
Even though SMC Pentax lenses have automatic diaphragms and full-aperture metering capabilities, they can be used only as manually-set apertures, with stopped-down aperture metering with the Bellows Unit K. Thus, open the aperture fully for focusing and then stop down the aperture to your desired value.

If the magnification is fairly large (more than 1/2x, for example), merely turning the focusing ring on the lens will not give you sharp focus. In such cases when making hand-held shots, move the entire camera closer to or farther away from the subject to get a better focus.

If you are using a tripod, loosen the tripod mount clamp knob and move the camera on the rail for critical focusing in larger magnification close-ups, as shown in Illustration 11.

In any case, the distance and depth-of-field scales on the lens barrel are of no use when shooting.

11

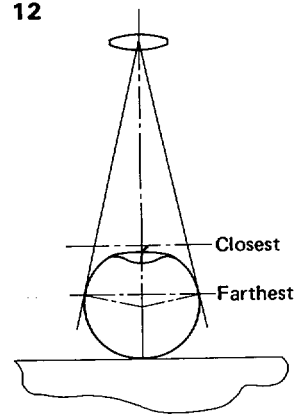


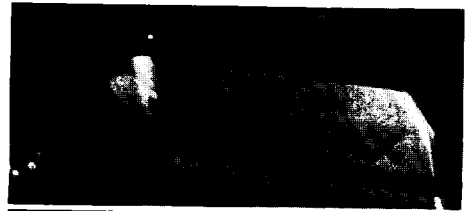
Depth-of-field in Close-ups

The shorter the lens-to-subject distance, the shallower the depth-of-field of the lens becomes. In some cases, even if the aperture is stopped down to its opening minimum of f/22 (standard lenses) or f/32 (macro lenses), the desired depth-of-field cannot be achieved, and the greatest care is required in focusing.

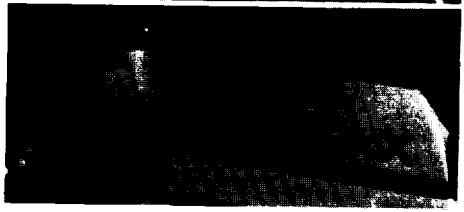
In close-ups, the depth-of-field in the foreground is identical to that in the background. The trick of good focusing is to focus on a point just halfway between the closest and farthest position in the depth-of-field as shown in Illustration 12.

12





13



14

Suppose we consider an example of a close-up focusing problem.

In Illustration 13, the picture of a Pentax K2 camera is taken with an SMC Pentax 135mm f/3.5 lens used with the Bellows Unit K extended to 80mm. The lens is stopped down to f/22. The magnification is 0.6x and the focus is set at the "X" of the Pentax lettering on the pentaprism housing. Even at the lens' minimum aperture of f/22, the "K2" lettering is slightly out of focus.

In Illustration 14, the focus is set at the "P" of the Pentax lettering since, observed from the side, "P" is about halfway between the "K" in "K2" and the "X" in "Pentax." Both "K2" and "Pentax" come into satisfactory focus at an aperture of f/22.

Exposure and Use of Tripod

As stated previously, since the depth-of-field becomes drastically shallower in close-up shooting, the lens is frequently stopped down to a smaller aperture. Exposure time naturally becomes longer because the lens-to-film-plane distance increases, when you use a bellows.

If you mount a 55mm lens on the Bellows Unit K and set the bellows extension at its minimum distance of 32mm, the distance from the lens front to the camera mount plane (equivalent to the length of the lens) becomes 71mm. This is close to the length (74.5mm) of the SMC Pentax 120mm f/2.8. When the bellows is fully extended, the total lens/bellows length becomes 177mm, almost equivalent to the length (188mm) of the SMC Pentax 300mm f/4. In view of the greater length of the lens/bellows unit and the shallow depth-of-field, hand-held shooting becomes a practical impossibility.

Since a shutter speed for a 120mm lens which is fast enough to avoid camera movement is about 1/120 sec (1/focal length of the lens), you cannot do much hand-held shooting with a bellows unit and the use of a sturdy tripod is recommended.

Beyond the Range of the Exposure Meter

If the lighting is so dim that you cannot get a reading at the desired aperture value with the built-in exposure meter, open up the aperture and then convert. For example, if the meter gives the correct exposure as f/4 and one sec while you want to shoot at f/11, the correct exposure time at f/11 is eight sec since f/11 is three stops smaller than f/4 and eight sec is three stops slower than one sec.

F	1.4	2	2.8	4	5.6	8	11	16	22	32
Exposure Time (sec)	1/2	1	2	4	8	16	32	64	128	256

However, in color shots, in cases of exposures of more than one sec – and particularly in cases of exposures of more than 10 sec – underexposure often results from irregularities in the exposure responses of various color films. In such cases, increase the exposure time and use color compensation (CC) filters for improving the color rendition. (For Kodak color film, see the Kodak Color Data Guide.)

The Pentax K2 provides automatically-controlled long-time exposures up to 8 sec. However, if you take your eye away from the finder, stray light entering through the eyepiece will cause underexposure. In dim light situations, cover the finder eyepiece or use the manual reading of the built-in exposure meter.

Ultra-Close-ups – Larger Than Life Size

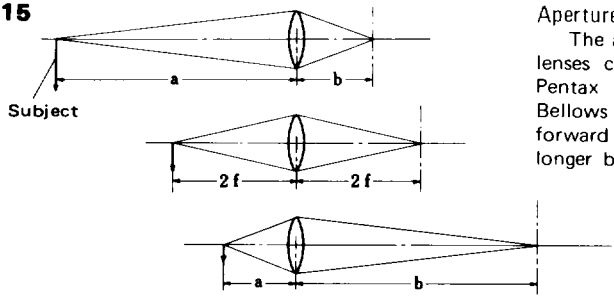
Magnification with any lens becomes 1x (life-size) if the lens-to-film-plane distance is twice as long as the focal length of the lens, as shown in Fig. 15-2 on Page 14. Since the Bellows Unit K has an extension range (the distance from the bellows-to-lens mount to the bellows-to-camera mount) which is variable from 32mm to 137mm, lenses with focal lengths shorter than 120mm can be used with this bellows for close-ups larger than life size.

A camera lens is designed for optimum focusing performance when "a" (the subject-to-lens distance) is larger than "b" (the lens-to-film distance) as in Fig. 15-1. Thus, when "b" is longer than "a" (in close-ups larger than life size) as in Fig. 15-3, reverse mounting of the lens naturally results in better focusing.

When you are shooting ultra-close-ups, use the optional accessory Reverse Adaptor K 52mm.

The close-up reference tables on pp. 23 – 39 are divided into two groups: tables on close-ups up to life size are on pp. 23 – 31 and tables on ultra-close-ups (larger than life size) to be achieved with the reverse adaptor are on pp. 34 – 39.

15



Aperture Not Shown in KX Finder

The aperture numbers of most SMC Pentax lenses can be read in the viewfinder of the Pentax KX camera. However, use of the Bellows Unit K pushes the front of the lens forward and the aperture number can no longer be seen in the finder.

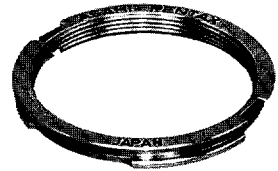
Using Screw-Mount Takumar Lenses

Takuman screw-mount lenses can be used on the Bellows Unit K with the aid of the Mount Adaptor K (Illustration 16).

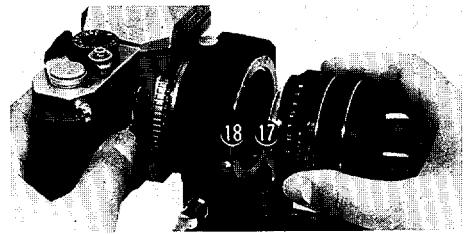
Screw the Mount Adaptor K into the rear of the Takumar lens as shown in Illustration 17. Align the red dot of the adaptor (17) with the red dot of the Bellows Unit K (18), insert the lens and turn it clockwise 65° to lock it in place.

Detaching the Takumar lens from the Bellows Unit K is done in a manner similar to detaching it from a Pentax K Series camera — i.e. by unscrewing it. Also, detaching the mount adaptor from the Bellows Unit K is done in the same manner as detaching it from the camera — press the release lever on the adaptor and turn the adaptor counterclockwise 65°. Focusing and exposure determination with the Bellows Unit K are also done similarly as when the unit is not attached to the camera.

16

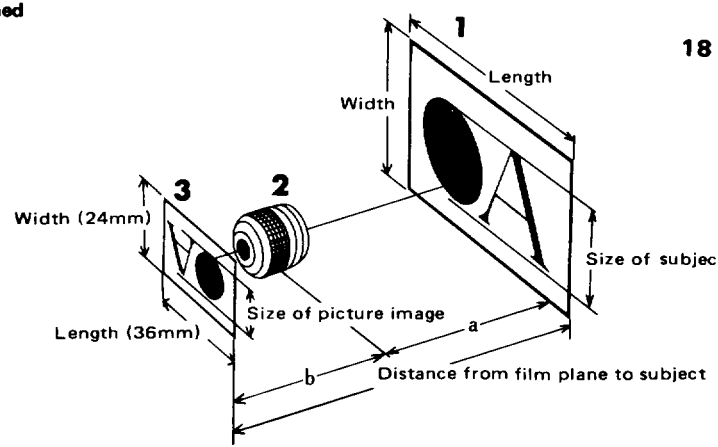


17



How to Use Close-up Tables

1. **Area to be photographed**
2. **Taking lens**
3. **Picture area of film**



18

Magnification

The magnification value equals:

$$\frac{\textit{Image Size}}{\textit{Subject Size}}$$ That is,

$$\frac{\textit{Width or Length of Picture Area on Film}}{\textit{Width or Length of Area Photographed}}$$

As the picture area of the Pentax K2, KX and KM camera is 24 x 36mm, magnification is:

$$\frac{24mm}{\textit{Width of Area to be Photographed}}$$ or

$$\frac{36mm}{\textit{Length of Area to be Photographed}}$$

Area to be Photographed

The area to be photographed is the actual 2-dimensional area (width x length) of the subject when it is photographed so as to fill the entire picture area.

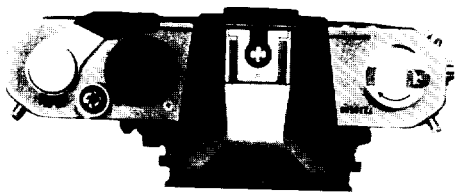
Expsoure Factors

Pentax K Series cameras have a built-in TTL exposure meter which measures the light actually passing through the lens and gives the correct exposure based on that measurement. For normal photographic purposes, you need not resort to the exposure factors given in the close-up reference tables if you rely on the TTL meter. However, you must keep in mind that close-up work requires longer exposures than would be required for shooting at normal distances.

How to Use Close-up Tables

There are three ways to use the close-up reference tables. You can decide the magnification first, the film-plane-to-subject distance first, or the area to be photographed first. Make your choice of one of these three methods, then check the adjacent columns.

19



Film-Plane-To-Subject Distance

Although the film plane is not indicated on the Pentax K2, KX and KM cameras, its position is virtually identical with the rear edge of the pentaprism housing as shown in Illustration 19. When you learn from the close-up reference tables about film-plane-to-subject distance, you can set the correct distance easily by measuring the actual distance with a steel tape or other measuring device.

Magnification Set First

When you want to photograph a subject of a known size so that it will appear on the film as certain size, set the magnification first.

For example, if you want a subject measuring 50mm to appear as 30mm on the film, if you are shooting a 55mm f/1.8 lens, the magnification is $30 \div 50 = 0.6x$. Check Table 2 and you will find a slight extension of the bellows is adequate to provide an 0.6x magnification.

To get an accurate lens extension, use the simple mathematical formula given here. In Fig. 18, "a" is the distance between the subject and the first nodal point in the lens — the point at which the light enters the lens to cross the principal axis — "b" is the distance from the second nodal point — the point at which the light crossing the principal axis leaves the lens — to the film plane, "f" is actual focal length of the lens.

To determine "a", the formula is m (magnification = $\frac{f}{a-f}$ and to determine "b." the formula $b = \frac{af}{a-f}$. Then, $b - f$ is the exact distance of the lens extension. Focusing is done by adjusting the distance between the lens and subject.

"f" — the actual focal length of the lens — will differ slightly from the nominal or stated focal length of the lens, ask your local Pentax Service Center or dealer if you need more details.

Area to be Photographed Determined First

If you wish to photograph a certain picture area, measure the size of the area. Look at the "picture area" column. For instance, if you wish to photograph a 51mm x 34mm subject with a 55mm lens, you get approximate lens extension of 40mm and magnification of 0.7x from the close-up table for the 55mm lens.

Film-Plane-to-Subject Distance Set First

If you cannot bring the lens closer to the subject, determine the film-to-subject distance first. For the same magnification, this film-to-subject distance differs from one focal-length lens to another. Choose a proper lens according to the close-up tables. For close-up and macro works from a distance, use a longer focal-length lens.

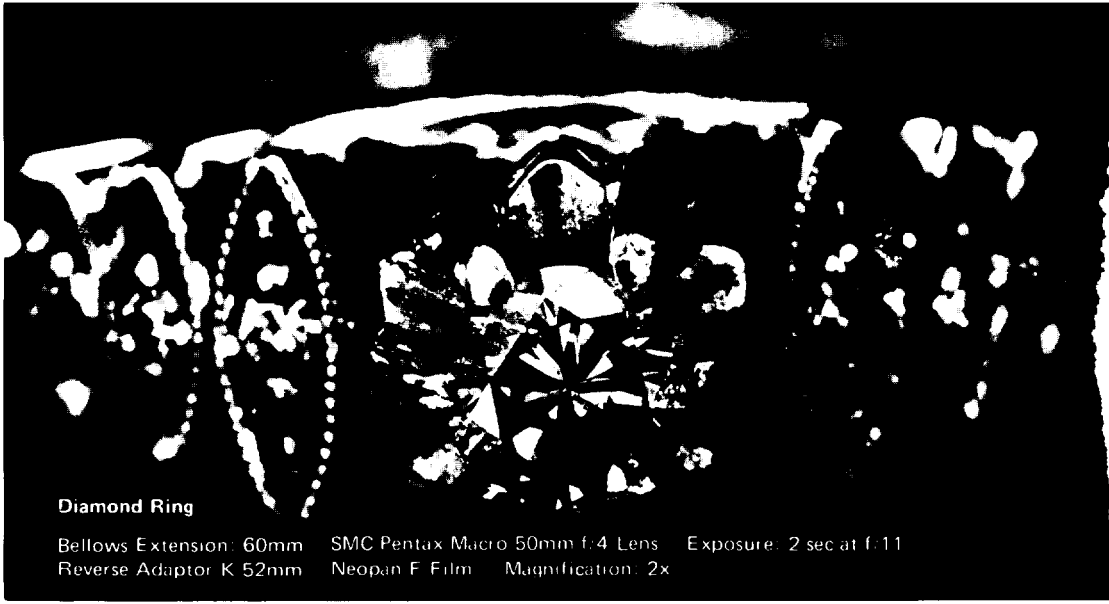
Lenses Best for Close-ups

In general close-up focusing becomes more difficult under the following conditions: with faster lenses, with wide-angle lenses having shorter focal lengths and with telephoto lenses having shorter lens barrels. Particular care must be taken when shooting under these conditions.

Lenses not included in the close-up reference tables have been omitted as they are not suitable for close-up shooting with the Bellows Unit K.

The 50mm f/1.2 and 50mm f/1.4 lenses are not suitable for shooting close-ups of flat subjects. You should use them for close-ups only in cases in which the main subject does not fill up the four corners of the picture.

The SMC Pentax Macro 50mm f/4 and 100mm f/4 lenses are designed for maximum performance at magnifications of 1/5 – 1/10x. The use of these lenses is particularly advisable for close-ups requiring critical focusing. With these lenses, distortion (a type of aberration in which actual straight lines do not come out as straight lines in the photography) has been reduced to a minimum. Thus they are very good for close-up shooting where accuracy of dimension is the important factor. These macro lenses can also be used for regular distance shooting.



Diamond Ring

Bellows Extension: 60mm SMC Pentax Macro 50mm f:4 Lens Exposure: 2 sec at f:11
Reverse Adaptor K 52mm Neopan F Film Magnification: 2x

Close-up Reference Table

Table 1: 35mm f/3.5

(Distance scale at ∞)

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
0.92	32 mm	26 ×39 mm	149 mm	×2.9
1.14	40	21.0×31.5	150	×3.5

Table 2: 55mm f/1.8

(Distance scale at ∞)

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
0.56	32 mm	43 ×64 mm	242 mm	×2.4
0.70	40	34 ×51	230	×2.9
0.88	50	27 ×41	224	×3.4
1.06	60	22.7×34	223	×4.1

Table 3: 85mm f/1.8

(Distance scale at ∞)

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
0.38	32 mm	64 × 96 mm	408 mm	× 2.1
0.47	40	51 × 76.5	371	× 2.4
0.59	50	41 × 61	345	× 2.9
0.70	60	34 × 51	330	× 3.4
0.82	70	29 × 43.5	323	× 3.9
0.94	80	25.6 × 38.4	320	× 4.5
1.06	90	22.7 × 34.1	320	× 5.1

Table 4: 105mm f/2.8

(Distance scale at ∞)

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
0.31	32 mm	79 × 118 mm	597 mm	× 2.1
0.38	40	63 × 94.5	536	× 2.5
0.48	50	50 × 75	491	× 2.9
0.57	60	42 × 63	464	× 3.4
0.67	70	36 × 54	448	× 4.0
0.76	80	31.5 × 47	438	× 4.6
0.86	90	28 × 42	433	× 5.2
0.95	100	25.2 × 37.8	431	× 5.9
1.05	110	23 × 34.5	431	× 6.6

Table 5: 120mm f/2.8

(Distance scale at ∞)

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
0.27	32 mm	90 × 135 mm	734 mm	× 2.1
0.33	40	72 × 108	652	× 2.4
0.42	50	57 × 86	590	× 2.8
0.50	60	48 × 72	552	× 3.3
0.58	70	41 × 61.5	528	× 3.8
0.67	80	36 × 54	512	× 4.4
0.75	90	32 × 48	502	× 5.0
0.83	100	29 × 43	496	× 5.6
0.92	110	26 × 39	493	× 6.3
1.08	130	22.2 × 33.3	493	× 7.7

Table 6: 135mm f/2.5 and f/3.5

(Distance scale at ∞)

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor	
				f/2.5	f/3.5
0.24	32 mm	101 × 151.5 mm	880 mm	×2.0	×1.9
0.30	40	81 × 121	774	×2.3	×2.2
0.37	50	65 × 97	693	×2.7	×2.5
0.44	60	54 × 81	642	×3.1	×2.9
0.52	70	46 × 69	610	×3.6	×3.4
0.59	80	40 × 60	586	×4.1	×3.8
0.67	90	36 × 54	571	×4.6	×4.3
0.74	100	32 × 48	560	×5.2	×4.8
0.89	120	27 × 40.5	551	×6.4	×5.9
1.02	137	23.7 × 35.5	548	×7.6	×6.9

Table 7: 150mm f/4

(Distance scale at ∞)

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
0.21	32 mm	112 × 168 mm	1088 mm	× 2.1
0.27	40	90 × 135	956	× 2.4
0.33	50	72 × 108	853	× 2.8
0.40	60	60 × 90	788	× 3.3
0.47	70	51 × 77	745	× 3.8
0.53	80	45 × 67	714	× 4.4
0.60	90	40 × 60	693	× 5.0
0.67	100	36 × 54	678	× 5.6
0.80	120	30 × 45	661	× 7.0
0.91	137	26.3 × 39.4	654	× 8.3

Table 8: 200mm f/4

(Distance scale at ∞)

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
0.16	32 mm	150 × 225 mm	1753 mm	× 1.8
0.20	40	120 × 180	1511	× 2.1
0.25	50	96 × 144	1321	× 2.4
0.30	60	80 × 120	1197	× 2.8
0.35	70	68.5 × 103	1112	× 3.2
0.40	80	60 × 90	1051	× 3.6
0.45	90	53 × 80	1005	× 4.0
0.50	100	48 × 72	971	× 4.5
0.60	120	40 × 60	924	× 5.5
0.69	137	35 × 52.6	900	× 6.4

Table 9: 300mm f/4

(Distance scale at ∞)

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
0.11	32 mm	217 × 325 mm	3529 mm	× 1.8
0.14	40	173 × 260	3033	× 2.0
0.17	50	139 × 208	2623	× 2.3
0.21	60	115 × 173	2354	× 2.7
0.24	70	99 × 148	2164	× 3.0
0.28	80	87 × 130	2024	× 3.4
0.31	90	77 × 115	1918	× 3.8
0.35	100	69 × 104	1834	× 4.2
0.41	120	58 × 87	1714	× 5.1
0.47	137	50.7 × 76.1	1645	× 6.0

*Using the Auto-Extension Tube No. 3 with the SMC Pentax Macro 50mm f/4 lens gives you magnification of 1x (life-size); both the automatic diaphragm and full-aperture metering capability is retained. For close-ups up to life-size, use of the Auto-Extension Tubes is recommended.

Table 10: Macro 100mm f/4

(Distance scale at 0.45mm)

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
0.82	32 mm	29 ×43 mm	405 mm	×3.8
0.90	40	26.6×39.8	402	×4.1
1.00	50	24 ×36	401	×4.6
1.10	60	21.7×32.6	402	×5.1

Using Reverse Adaptor K 52mm

Screw the Reverse Adaptor K 52mm (Illustration 20) into the front of the SMC Pentax lens and insert the other side of the reverse adaptor into the Bellows Unit K as shown in Illustration 21.

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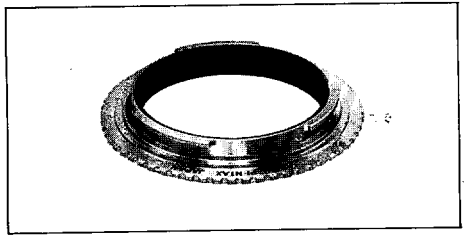

21

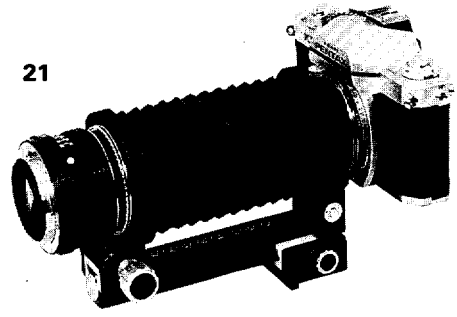

Table 11: 28mm f/3.5

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
3.02	32 mm	7.9×11.9 mm	180.7 mm	×13.3
3.30	40	7.3×10.9	188	×15.5
3.66	50	6.6× 9.9	197	×18.3
4.01	60	6.0× 9.0	206	×21.5
4.36	70	5.5× 8.3	216	×24.9
4.71	80	5.1× 7.6	225	×28.5
5.41	100	4.4× 6.6	244	×36.5
6.12	120	3.9× 5.8	264	×45.5
6.72	137	3.6× 5.4	280.5	×53.9

Table 12: 35mm f/3.5

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
2.32	32 mm	10.4×15.5 mm	175 mm	× 9.4
2.55	40	9.4×14.1	182	×10.9
2.83	50	8.5×12.7	190	×12.9
3.12	60	7.7×11.6	199	×15.0
3.40	70	7.1×10.6	208	×17.3
3.69	80	6.5× 9.8	217	×19.8
4.26	100	5.6× 8.5	236	×25.2
4.83	120	5.0× 7.5	255	×31.2
5.31	137	4.5× 6.8	271.5	×36.5

Table 13: 50mm f/1.4

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
1.40	32 mm	17.2×25.8 mm	202 mm	× 4.5
1.55	40	15.5×23.2	207	× 5.2
1.75	50	13.7×20.6	213	× 6.1
1.95	60	12.3×18.5	220	× 7.1
2.14	70	11.2×16.8	227.6	× 8.2
2.34	80	10.3×15.4	235.6	× 9.4
2.73	100	8.8×13.2	252.5	×12.0
3.12	120	7.7×11.5	270	×14.8
3.46	137	6.9×10.4	285.6	×17.5

Table 14: 55mm f/1.8

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
0.95	32 mm	25.4×38.1 mm	223 mm	× 3.7
1.09	40	22.1×33.2	224	× 4.2
1.26	50	19.0×28.5	226	× 5.0
1.44	60	16.7×25.0	231	× 5.8
1.61	70	14.9×22.3	236.5	× 6.7
1.79	80	13.4×20.1	243	× 7.6
2.14	100	11.2×16.8	258	× 9.7
2.49	120	9.6×14.4	274	×12.0
2.79	137	8.6×12.9	288.6	×14.2

Table 15: Macro 50mm f/4

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
1.44	32 mm	16.7×25.1 mm	214 mm	× 6.3
1.59	40	15.1×22.6	219	× 7.1
1.78	50	13.5×20.2	225	× 8.2
1.98	60	12.1×18.2	232.5	× 9.2
2.17	70	11.1×16.6	240	×10.5
2.37	80	10.1×15.2	248	×11.8
2.75	100	8.7×13.1	265	×14.6
3.14	120	7.6×11.5	283	×17.8
3.47	137	6.9×10.4	298.3	×20.6

Table 16: Macro 100mm f/4

Magnification	Bellows Extension	Area to be Photographed	Film-Plane-to-Subject Distance	Exposure Factor
0.96	120 mm	25.1×37.7 mm	401.1 mm	×4.8
1.06	130	22.7×34.1	401.2	×5.3
1.13	137	21.3×32.0	401.5	×5.6

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