

PENTAX®

35mm INTERCHANGEABLE LENSES OPERATING MANUAL



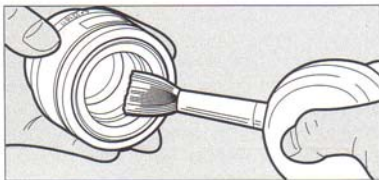
Congratulations on purchasing the Pentax SMC lens. This booklet contains all the instructions you need to make the most out of your SMC Pentax-FA, SMC Pentax-F, SMC Pentax-A, or SMC Pentax lenses. Keep this booklet handy to answer your questions about the handling and care of your lens. Read this very carefully, together with your camera's Operating Manual.

- See the Operating Manual of each Pentax camera.
- The lens listed in color on some pages are SMC Pentax-A or SMC Pentax (non-auto-focus lens) lens.

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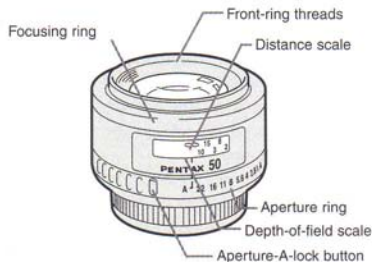
PRECAUTION AND LENS MAINTENANCE



- Leaving the camera in direct sunlight without covering the lens with the lens cap, may damage to the inside of the camera.
- When storing the lens in a case, attach the front and rear lens caps supplied with the lens to protect it from dust and scratches.
- After removing the lens from the camera body, be sure to place the lens with its front side down to keep it from rolling or falling.
- Moisture can cause serious damage to optical glass elements - the nucleus of your lens. Avoid storing the lens where temperature and humidity are high, as this may cause mildew. Keep your lens in as dry a place as possible.

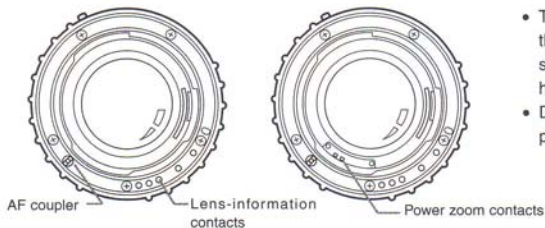
- If you do not expect to use the lens for an extended period, store it in the case with a desiccant. It is also recommended that the lens occasionally be taken out of the case and placed in a cool, dry, well-ventilated place to avoid the possibility of damage due to condensation build-up.
- Use a blower or lens brush to remove dust or fingerprints collected on the lens. If the lens becomes dirty, remove the dirt particles with a blower brush, then wipe it off with a clean cotton cloth or tissue paper moistened with lens cleaning solution. Wipe in a spiral pattern from the center to the outside.

SMC PENTAX F AND FA LENSES



KAF-mount

KAF2-mount



The Pentax FA lenses are primarily designed to work with the Pentax autofocus SLR (KAF2- or KAF-mount camera), making autofocus shooting possible. When Pentax FA Power Zoom lenses are used in combination with the same of the Z-series cameras the camera features a Power Zoom System. (Please verify your operating manual of the camera).

CAUTION:

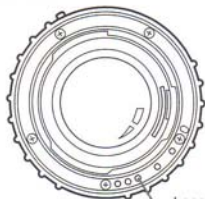
Be careful not to damage or dirty the lens information contacts and AF coupler on the mount surfaces of the camera and lens, which may result in failure or malfunction. If this occurs, wipe the contacts gently with a clean, dry cloth.

- The FA zoom lenses without the power zoom contacts are shown in the illustration do not have power zoom function.
- Do not damage or dirty the power contacts.

SMC PENTAX-A LENSES

- When using the FA zoom lens on the KAF2-mount Pentax camera for autofocus shooting, the focusing ring automatically returns to the ∞ position after the power is turned off.
- When using the FA lens with a K-mount Pentax camera having no information contacts, be sure to set the lens aperture ring to any f-stop other than A. If set to the "A" position, the lens will automatically be set to the minimum aperture, causing improper exposure.

KA-mount



Lens-information contacts

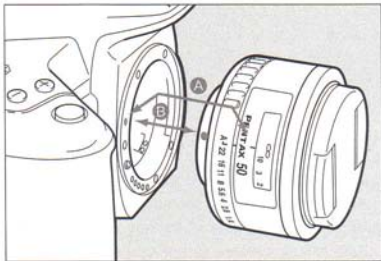
The "A" (Auto) setting on the SMC Pentax-A lens is used when the lens is used with a Pentax-KA-mount camera in its Programmed AE mode, etc. This setting, however, cannot be used with a Pentax K-mount camera (LX, K1000, etc.).

- When using the K-mount lens with a KA-mount camera, set the camera to the Aperture-priority AE Mode or Metered Manual Mode.
- When using the KA-mount lens with a KAF2- or KAF- mount camera (autofocus camera), autofocus function does not operate.

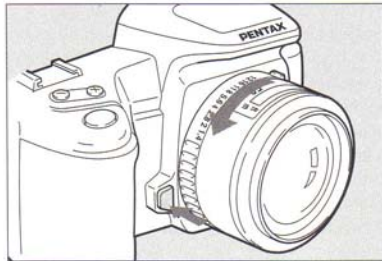
K-mount

K-mount lens does not have the lens-information contacts.

LENS ATTACHMENT AND REMOVAL

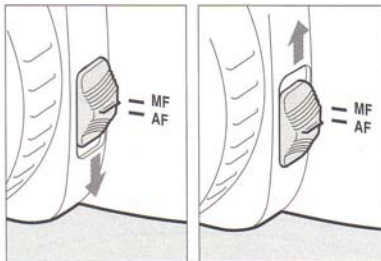


1. To mount the lens on the camera, align the red indexes on the lens and camera (see **A** and **B**) and turn the lens clockwise until the lens seats with a click.



2. To remove the lens, turn the lens counterclockwise while pressing the lens-lock-release button on the camera body.

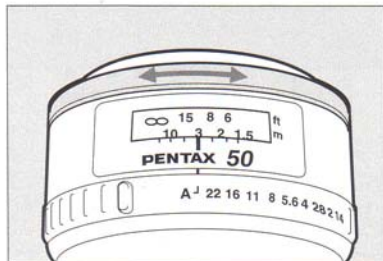
FOCUSING



To set the autofocus mode on your Autofocus camera (KAF2- or KAF-mount camera), slide the focus mode switch to the AF (autofocus) position. See the Operating Manual of your camera.

- During autofocus, do not touch the focusing ring of the lens as this will interfere with proper lens movement.

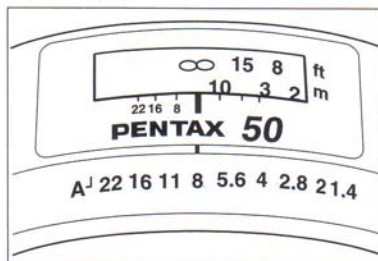
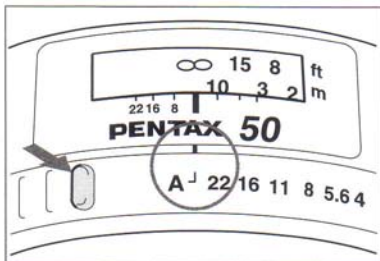
To set the manual focus mode, slide the focus mode switch on your camera to the MF (manual focus) position. In the MANUAL focus mode, you can focus the lens by turning the focusing ring



and confirming the FI signals  through the viewfinder.

- When using FA lens with the non-KAF2- or KAF-mount camera body, focus the lens by turning the focusing ring.

APERTURE CONTROL



To set the aperture to "A" (Auto), align the aperture-A index with the white-bar index while pushing the aperture-A lock button. To switch the aperture to any other f-stop, turn the aperture ring to the left while pushing the aperture-A lock button.

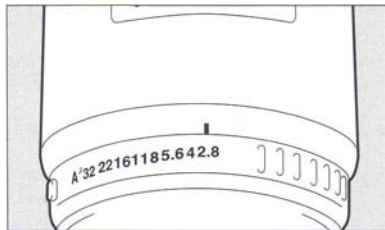
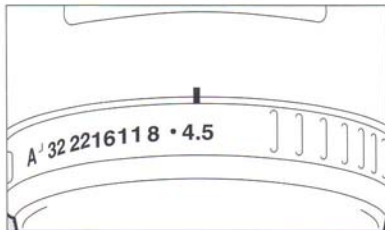
- When using a K-mount camera having no lens information contact, set the lens aperture ring to a position other than A (auto).

F-STOP OR F-NUMBER AND CLICK STOPS

There is a white dot next to the maximum f-number engraved on the lens's aperture ring on many Pentax lenses. This white dot indicates an aperture which is darker by one stop (larger number). The illustration below shows the white dot next to f/4.5 is f/5.6.

The click-stops between two engraved f-stops are equivalent to intermediate f-stops. Some lenses do not have an intermediate click f-stop on the aperture ring due to limited space between the f-numbers engraved on the aperture ring.

• 1.4	• 2	• 2.8	• 4	• 5.6	• 8	• 11	• 16	• 22	• 32	• 45
1.2	1.7	2.4	3.4	4.8	6.7	9.5	13.5	19	26	38



LENS HOOD

Pentax lens hoods come in round and square shapes, while others are built into the lens. Make sure to use the proper size lens hood specially designed for your lens.

Notes:

- When the lens hood is fitted on the front of the lens, do not use the built-in flash on your KAF2- or KAF-mount camera, as it may obstruct the path of the light coming from the flash, causing vignetting in the picture corners.
- A lens hood cannot be attached to the F Fish-Eye Zoom 17-28mm and A-15mm f/3.5 lenses.

Square Hoods	Lens
49mm spring-type (PH-SB)	FA 28mm f/2.8 AL, FA Soft 28mm f/2.8
49mm spring-type (PH-SA)	FA 50mm f/1.4 & f/1.7
Round Hoods	Lens
49mm screw-in-type (PH)	FA 50mm f/1.4 & f/1.7
49mm screw-in-type (RH)	FA 50mm f/1.4 & f/1.7
RH-RA 49mm screw-in-type	A or F Zoom 35-80mm f/4-5.6
RH-RB 49mm screw-in-type	FA Zoom 70-200mm f/4-5.6 A or FA Zoom 80-200mm f/4.7-5.6
MH-RA 49mm screw-in-type	FA 43mm f/1.9 Limited
RH-RA 52mm screw-in-type	FA Macro 50mm f/2.8 A 50mm f/1.2
RH-RB 52mm screw-in-type	FA Zoom 28-70mm f/4AL Bellows 100mm f/4
MH-RB 52mm screw-in-type	FA Soft 85mm f/2.8
RH-A 58mm screw-in-type	F or FA 100-300mm f/4.5-5.6 FA Zoom 80-320mm f/4.5-5.6
RH-RC 58mm screw-in-type	FA Zoom 28-80mm f/3.5-5.6 FA Zoom 28-105mm f/4-5.6
MH-RA112mm screw-in-type	FA* 300mm f/2.8ED(IF)
MH-RB67mm screw-in-type	A or FA 20mm f/2.8
67mm Special hood	Reflex Zoom 400-600mm f/8-12

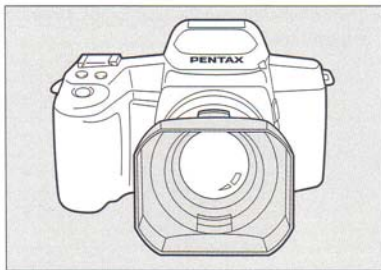
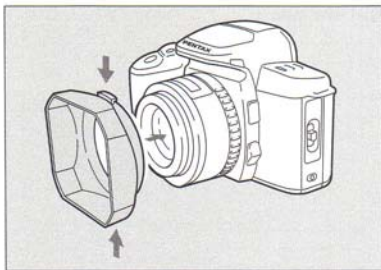
Bayonet-type	Lens
PH-RBA58	FA 20-35mm f/4AL
PH-RBB67	FA* 24mm f/2AL(IF)
MH-RBD67	FA* 85mm f/1.4(IF)
MH-RBB77	FA* 200mm f/2.8ED(IF) FA* 400mm f/5.6ED(IF)
MH-RBC67	FA* 300mm f/4.5ED(IF)
PH-RBA72	FA Zoom 28-200mm f/3.8-5.6AL(IF)
PH-RBC77	FA* Zoom 28-70mm f/2.8AL FA* Zoom 80-200mm f/2.8ED(IF)
MH-RA112 screw-in-type	FA* 300mm f/2.8ED(IF)

PH=Plastic Hood: RH=Rubber Hood: MH=Metal Hood

- The built-in-flash can be used for the 43mm f/1.9 Limited lens even if the lens hood is attached.

How to Use the Square Hood

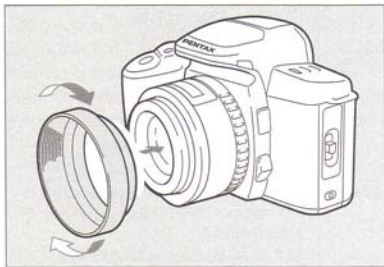
1. Attach the square hood to the front of the lens while pressing the knurled tabs on both sides of the hood.
2. Make sure to keep the top and bottom of the hood parallel with the top and bottom covers of the camera. Improper fitting will cause vignetting.



How to Use the Round Hood

The round hood screws into the front of the lens.

- The FA24mm f/2, FA85mm f/1.4, FA200mm f/2.8, FA300mm f/4.5 and FA400mm f/5.6 require special lens hoods (see pages 31 and 33.).
- A round type rubber hood can be folded when not in use.
- When the hood is in use for any lenses, do not use the built-in flash on your camera because the flash light is blocked by the hood.



How to Use the Built-in Hood

To use a lens with a built-in hood, first extend the hood to the fullest position. The 600mm f/4 lens and 250-600mm f/5.6 zoom lenses come in screw-fixed-type. Extend these hoods while rotating them for use. See the lens instruction manual for details.

Lenses with Built-in Hoods

A* 200mm f/2.8 ED

FA 135mm f/2.8 (IF)

A* MACRO 200mm f/4 ED

A* 300mm f/2.8 ED(IF)

A* 400mm f/2.8 ED(IF)

A 400mm f/5.6

500mm f/4.5

A* 600mm f/5.6 ED(IF)

FA* 600mm f/4 ED(IF)

Reflex 1000mm f/11

A* 1200mm f/8 ED(IF)

Reflex 2000mm f/13.5

FA* Zoom 250-600mm f/5.6 ED(IF)

FILTERS

Screw-in Type Filters

This type of filter screws into the front of the lens. Make sure to use the proper size Pentax filter specially designed for your lens.

Size	Lenses
43mm	*FA★ 300mm f/2.8 ED(IF) *FA★ 600mm f/4 ED(IF) *FA★ Zoom 250-600mm f/5.6 ED(IF)
49mm	FA28mm f/2.8AL, FA Soft28mm f/2.8 FA43mm f/1.9 Limited FA50mm f/1.4, FA50mm f/1.7 FA Zoom 70-200mm f/4-5.6 FA Macro 100mm f/3.5 A or F Zoom 35-80mm f/4.5-5.6 A or F Zoom 80-200mm f/4.7-5.6 *A★ 300mm f/2.8 ED(IF) *A★ 400mm f/2.8 ED(IF) *A★ 600mm f/5.6 ED(IF) *A★ 1200mm f/8 ED(IF)

52mm	A 50mm f/1.2 FA 135mm f/2.8(IF) FA Soft 85mm f/2.8 FA Macro 50mm f/2.8 FA Zoom 28-70mm f/4 AL *500mm f/4.5 *Reflex 1000mm f/11 *Reflex 2000mm f/13.5
58mm	FA Zoom20-35mm f/4AL FA Zoom 28-80mm f/3.5-5.6 FA Zoom 28-105mm f/4-5.6 FA Zoom 80-320mm f/4.5-5.6 F or FA Zoom 100-300mm f/4.5-5.6 FA Macro 100mm f/2.8 A★ Macro 200mm f/4 ED
67mm	A or FA 20mm f/2.8 FA★ 24mm f/2AL(IF) FA★ 85mm f/1.4 (IF) FA★ 300mm f/4.5 ED(IF) FA★ Zoom 28-70mm f/2.8AL Reflex Zoom 400-600mm f/8-12
77mm	FA★ 200mm f/2.8 ED(IF) FA★ 400mm f/5.6 ED(IF) A 400mm f/5.6 FA★ Zoom 80-200mm f/2.8 ED(IF)

*Accepts a filter holder.

Precautions on Filters

- A filter, when attached to your lens, becomes part of the optical system. Handle it as carefully as you do the lens. Avoid using two filters in combination, with the exception of the polarizing filters, as a deterioration in image quality may result.
- Using a filter on the FA Zoom 28-70mm lens at close shooting distance with the focal length setting wider than 35mm may cause vignetting in the picture corners.
- A filter cannot be attached to the A Fish Eye 16mm f/2.8, F Fish-Eye Zoom 17-28mm and A 15mm f/3.5 lenses.

Circular Polarizing Filter and Vignetting

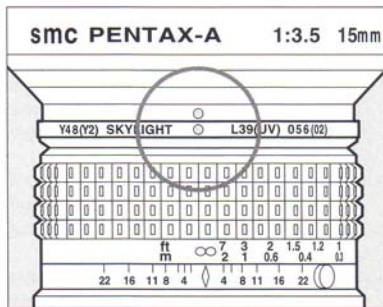
When attaching a circular polarizing filter on KAF2- or KAF- mount camera, be sure to use the filter alone. A circular type polarizing filter consists of two glass elements, and is thicker than an ordinary filter. For this reason, using the circular type on a lenses as shown on the table below may cause vignetting in the picture corners.

Size	Lens
52mm	FA Zoom 28-70mm f/4AL
58mm	FA Zoom 20-35mm f/4AL
	FA Zoom 28-80mm f/3.5-5.6
	FA Zoom 28-105mm f/4-5.6
67mm	FA Zoom 28-70mm f/2.8AL
	A or FA 20mm f/2.8

** The FA Zoom 28-200mm F/3.8-5.6 AL has a 72mm filter size. However, this filter size is not available in the PENTAX-range.*

Built-in filters

The table below indicates what lenses come with what built-in filters. As illustrated here, the white dot on the filter ring indicates "neutral"(transparent glass) and it should be aligned with index when no filter is required. No other filters can be fitted on the front rim of the lenses shown in the table. To change filters, just turn the filter ring and align the index with the name of the filter you wish to use.

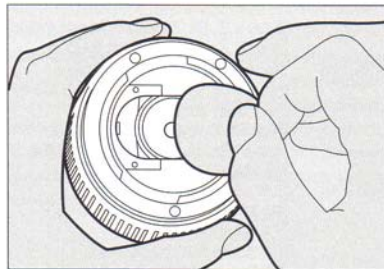
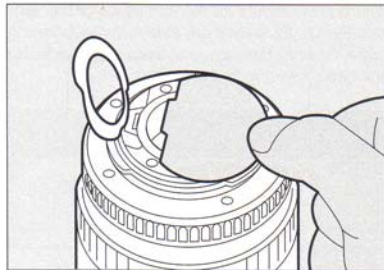


Lens	Filters
A 15mm f/3.5	Y2, UV, O2, Skylight
A Fish-Eye 16mm f/2.8	Y2, O2, Skylight
Shift 28mm f/3.5	Y2, O2, Skylight
Reflex 1000mm f/11	Y48 (Y2), R60 (R2), Skylight
Reflex 2000mm f/13.5	Y48 (Y2), R60 (R2), Skylight

Attaching gelatine filters

The Fish-Eye 16mm f/2.8 and Shift 28mm f/3.5 accept a gelatine filter on their lens mounts. With the 16mm lens, unfold the ring-shaped frame off the magnet, then place the cut-out gelatine filter on the lens mount and fold the frame back to the original position, as shown in the top illustration. With the 28mm lens, insert a gelatine filter beneath the gelatine filter retainer on the lens mount, as shown in the bottom illustration.

- Use only one gelatine filter.



LENS SOFT CASE

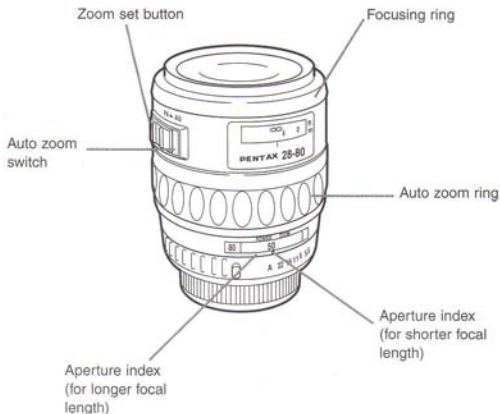
The code numbers for the soft cases of the various Pentax FA lenses are shown in the following table. Specify the lens you have when ordering the case, referring to this table.

Code number of the case	Lens
S70-70	A or FA20mm f/2.8, FA28mm f/2.8, A 50mm f/1.2, FA50mm f/1.4, FA50mm f/1.7, FA Soft 28mm f/2.8, A Fish-Eye 16mm f/2.8, Bellows 100mm f/4
S80-80	F Fish-Eye Zoom 17-28mm f/3.5-4.5, FA Zoom 28-70mm f/4AL, A or F Zoom 35-80mm f/4-5.6
S80-120	FA135mm f/2.8(IF), FA Macro 50mm f/2.8, FA 28-80mm f/3.5-5.6 FA Zoom 28-105mm f/4-5.6, F or FA Soft 85mm f/2.8, A or F Zoom 80-200mm f/4.7-5.6 FA Macro 100mm f/3.5
S80-160	A★ Macro 200mm f/4 ED, FA Macro 100mm f/2.8 FA 70-200mm f/4-5.6, FA Zoom 80-320 f/4.5-5.6 FA Zoom 100-300mm f/4.5-5.6

Code number of the case	Lens
S90-100	A 15mm f/3.5, FA★ 24mmf/2(IF) FA Zoom 20-35mm f/4AL
S90-140	Shift 28mm f/3.5
S90-160	A★ 200mm f/2.8 ED, FA 300mm f/4.5 FA Zoom 28-200mm f/3.5- 5.6AL(IF)
S100-160	FA★ 200mm f/2.8ED(IF)
S120-150	FA★ 85mm f/1.4(IF), FA★ Zoom28-70mm f/2.8AL
S120-230	FA★ Zoom 80-200mm f/2.8ED(IF), FA★ 400mm f/5.6(IF)
S135-340	FA★ 300mm f/2.8ED(IF)
HE-330	A400mm f/5.6
Trunk case	FA★ 600mm f/4ED(IF) FA★ Zoom 250-600mm f/5.6ED A★ 300mm f/2.8 ED(IF) A★ 400mm f/2.8 ED(IF) A★ 600mm f/5.6 ED(IF) A★ 1200mm f/8 ED(IF)

ZOOM LENS


- * For FA* Zoom 80-200mm f/2.8ED(IF) and FA* Zoom 250-600mm f/5.6 lenses, refer to their operating manuals.



- * An FA Zoom lenses without the power supply contacts do not have the zoom set button and auto zoom switch.

Some Pentax FA zoom lenses are "two-touch" type; they have separate focusing and zooming rings. Set the desired focal length by turning the power zoom ring. Changing the focal length by turning the power zoom ring means that the focusing point may shift slightly. After zooming to your desired focal length, make sure the image is in focus by using the focus indication (Focus indicator) in the viewfinder before releasing the shutter.

Note on "Tulip mark ()"

Zoom lenses that enable you to take a picture at the close shooting distances normally associated with fixed focal length lenses, even with the zoom lens set at a wide-angle position, are provided with the "Tulip mark ()" on the focusing ring. In the range indicated by the tulip mark at a wide-angle settings, the picture corners may be darkened due to reduced brightness of the edge of image field.

Some models of the Z-Series in combination with FA Power Zoom lenses, feature the following capabilities (*these functions don't work with cameras of the MZ-series!*)

- (1) Image Size Tracking
- (2) Zoom Clip
- (3) Zoom Effect

The Auto Zoom switch and Zoom Set button are used to select and set the Auto Zoom function: the Auto Zoom switch has three positions:

- P (Power Zoom) = Set to this position when using the Power Zoom function.
- A (Auto Zoom) = Set to this position when using the Auto Zoom function.
- AS (Auto Zoom Set) = Set to this position when selecting the type of Auto Zoom Function.

- When an FA Power zoom lens is used on the KAF2-mount Pentax camera, the following functions work when the main switch is turned off.
 - (1) When the lens is used as power zoom, the lens will automatically zoom to the focal length setting at which the lens's length becomes smallest.
 - (2) When the autofocus function is in use, the focusing ring will move to the ∞ position.
- On some FA Power zoom lenses, the letters indicating the three functions for Auto zoom switch have been changed as follows, but the usage and functions remain unchanged.

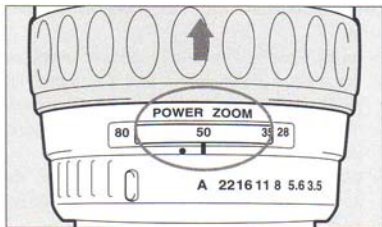
P → PZ

A → AZ

AS → MODE

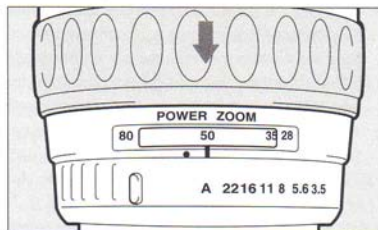
When combined with non-KAF2-mount cameras

- As the Power Zoom function does not work, set the manual zoom mode. Pull the zoom ring towards the camera side until the words "POWER ZOOM" disappear to set the manual zoom mode.
- When using non-KAF2-mount cameras, the Auto Zoom switch and Zoom Set button do not work.

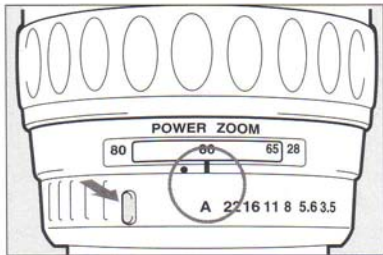


POWER ZOOM RING

To use the lens as a power zoom when mounted on the KAF2-mount camera, push the power zoom ring forward until the words "POWER ZOOM" appear beneath the power zoom ring.

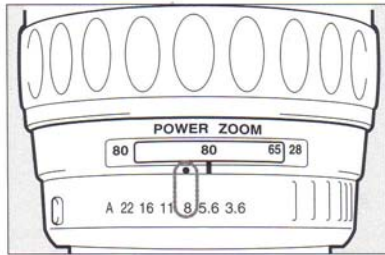


To set the focal length manually by turning the power zoom ring, pull the power zoom ring towards you to get out of the "POWER ZOOM" position.

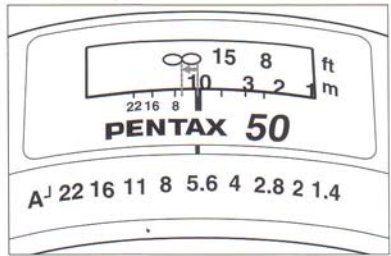
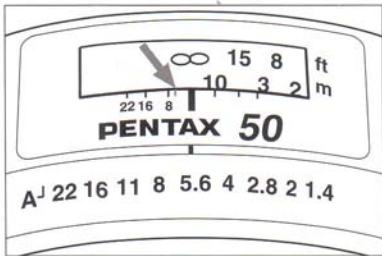


Aperture

To set the aperture of the zoom lens, align the aperture-A index with the white bar index. The dot on the left-hand side of the white-bar index serves as an index to align an f-stop other than A when shooting at a longer focal length. For example, when using the Zoom 28-80mm lens and wishing to set the aperture to f/8 with the focal length at 80mm, align "8" on the aperture ring with this dot.



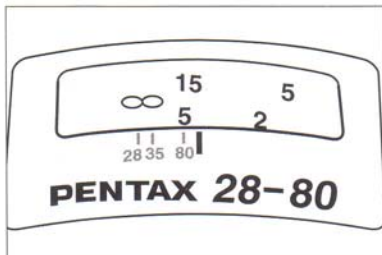
- To set the aperture to A (Auto), align the aperture-A index with the white-bar index, regardless of focal length selected.



HOW TO USE THE INFRARED INDEX

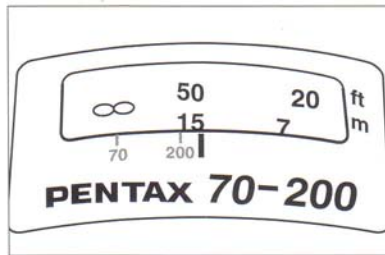
When taking infrared pictures with infrared film and either a "R2" or "O2" filter, it is necessary to adjust the focus because the point of focus is not the same with infrared light as it is with visible light. As shown above, note the focusing point on the lens distance scale when viewed through the viewfinder and then turn the focusing ring until the point you noted aligns with the infrared index.

- Turn the focusing ring in the MANUAL focus mode only.
- For the exposure control required in this special photography, see the information supplied with the infrared film.



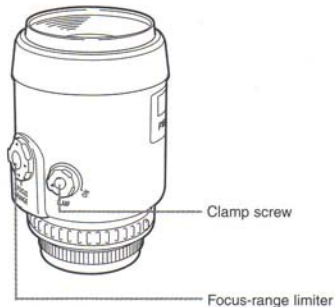
Infrared Index of the Zoom Lens

When taking infrared photographs with a zoom lens, the amount of focus compensation necessary depends on the focal length setting of the zoom lens. The distance scale on the zoom lens has infrared indexes for each focal length. As shown in the figure, the distance scale of the zoom lens has infrared indexes for each focal length. Compensate for the focus according to the focal length in use (see page 22).



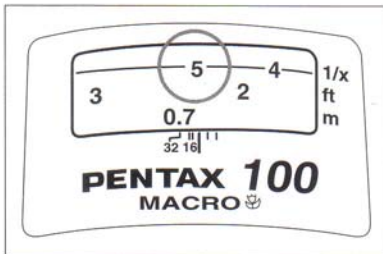
With lenses having indexes only for the longest and shortest focal length, such as FA Zoom 70-200mm, obtain the compensation value for intermediate focal length by using the scale as a guide.

MACRO LENS



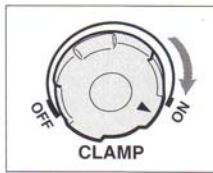
Pentax 50mm f/2.8 and 100mm f/2.8 FA Macro lenses focus from infinity down to life size (1X). The FA 100mm f/2.8 lens is equipped with focus range limiter to control the focusing range. It has an approx. 0.57m (1/4X) to 0.31m (1X) focusing range on the close-distance side; from infinity to approx. 0.63m on the long-distance side. Make the best use of this convenient range limiter according to the camera-to-subject distance.

* When the focus-range limiter is set to the "MANUAL" position, you can focus the lens manually.



Magnification Scale

The magnification is indicated by denominators on the distance scale. "5" indicates "1/5X". When determining a set magnification, first set the magnification in the MANUAL focus mode and then adjust the position of the camera by moving the camera closer or further from the subject.

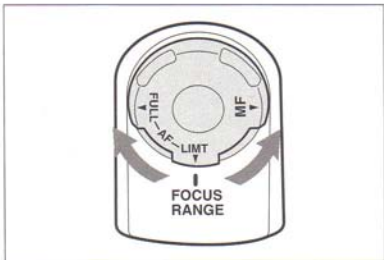


Clamp Screw

FA Macro 50mm and 100mm lenses are equipped with a clamp screw that is used when focusing manually. In manual close-up photography, when using a

copy stand, or in any situation where the lens is pointing down, turn the clamp screw to the ON position. The rotation of the focusing ring becomes tighter, helping to prevent the rotation of the focusing ring due to the lens's own weight and to avoid any shift in focus.

- When shooting in the autofocus mode, turn the clamp screw to the OFF position. Activating the autofocus mode while the clamp screw is in the ON position slows down the focusing speed. For normal use, turn the clamp screw to the OFF position.



Focus-Range Limiter

When you set the knob on the focus-range limiter at "LIMIT" with the distance scale set at ∞ , the focus range is set to the long distance side (normal photography), and when you do the same with the distance scale set at the minimum focus distance, the focus range is set to the close-distance side (macro shooting). To clear the setting of the focus-range limiter, set the knob to "FULL".

- When the magnification scale is set near 4 (1/4X), the focus range limiter knob may not turn.
- With a KAF2-mount camera, when the focus-range limiter is set at MANUAL (MF position), manual focus is possible even if the autofocus mode is set on the camera.
- With a KAF2-mount camera, when the focus-range limiter is set at MANUAL (MF position), the shutter cannot be released unless the focus indication appears in the viewfinder, if the camera is set to the autofocus mode (AF single mode).
- When these macro lenses are used on the KAF-mount camera, the built-in flash does not fire.

TELEPHOTO LENSES

Holding Telephoto Lenses

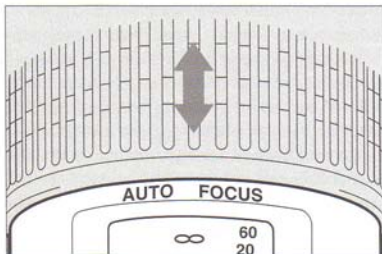
Telephoto lenses are longer than standard lenses. When using telephoto lens, take care to prevent camera shake, which may result in blurred pictures. Proper camera/lens holding is the way to avoid camera shake. Hold the focusing ring securely with your left hand, and support the camera by pressing it to your face.

Minimum shutter speed for unblurred pictures

When you are hand-holding your camera, the surest way to prevent blur is to select a high shutter speed. You can determine a comparatively safe shutter speed simply by checking the focal length of your lens. When you use a 135mm telephoto lens, select a speed faster than 1/135 sec. With a 200mm lens, use 1/200 sec. or faster, etc. As zoom lenses are longer and heavier than single focal length lenses, particular attention should be paid to shutter speed. However, if your hands and your grip are steady, you may be able to take unblurred pictures at slower speeds. When you have to use a relatively slow shutter speed, stabilize your camera/lens combination with a tripod.

TELEPHOTO LENS

(FA*85mm f/1.4(IF), FA*200mmf/2.8ED(IF), FA*300mmf/4.5ED(IF), FA*400mm f/5.6ED(IF))



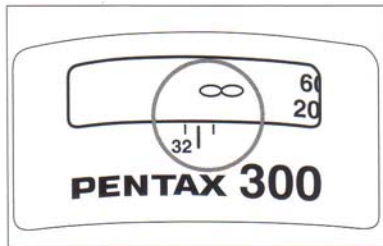
- The illustration depicts the FA* 300mm f/4.5 lens: when using the FA* 85mm f/1.4, FA* 200mm f/2.8 and FA* 400mm f/5.6, the operation is similar to that of the FA* 300mm f/4.5.
- For FA* 300mm f/2.8 and FA* 600mm f/4 lenses, refer to their operating manual.

FA* 300mm f/4.5 lens has a focusing ring which provides autofocus and manual focus setting. Push the focusing ring or pull it towards you to set the autofocus or manual focus mode respectively.

When used on the KAF2-mount camera, the manual focus mode is set by setting the manual mode on the lens even if the autofocus mode is set on the camera.

When the lens is set to the manual focus position and the focusing ring is fully rotated to the right or left to manually focus the lens, it will keep rotating as no stoppers are provided at the ∞ (infinity) or shortest distance positions.

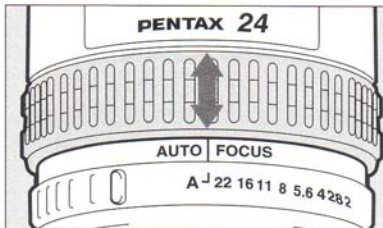
- When the focusing ring on the lens is set to the autofocus position, the focusing ring is locked.
- When used on the KAF-mount camera, set the same focus mode on the camera and lens. When the camera is set to the autofocus mode (AF single) and the lens to manual focus mode, the shutter cannot be released unless the focus indication appears in the viewfinder.



Note on ∞ (infinity) Mark (except the 85mm f/1.4 lens)

The focusing ring of the telephoto lens stops slightly past the ∞ mark. This is because temperature change causes the focusing point to shift, making the lens focus on a point past the ∞ mark. Even when shooting at infinity, be sure the image is in focus utilizing the focus indicator before releasing the shutter.

WIDE-ANGLE LENS (FA* 24mm f/2(IF))



FA* 24mm f/2 lens has a focusing ring which provides autofocus and manual focus setting. Push the focusing ring or pull it towards you to set the autofocus or manual focus mode respectively.

When used on the KAF2- mount camera, the manual focus mode is set by setting the manual mode on the lens even if the autofocus mode is set on the camera.

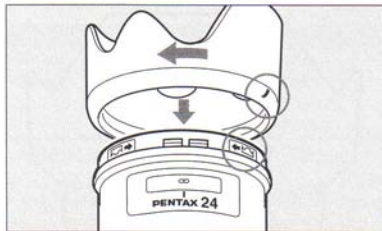
- When the lens is set to manual focus position and the focusing ring is fully rotated to the right or left to manually focus the lens, it will keep rotation as no stoppers are provided at the ∞ or shortest distance positions.
- When the focusing ring on the lens is set to the autofocus position, the focusing ring is released, allowing a full 360° rotation and providing a click stop at each 30° turn.
- When used on the KAF-mount camera, set the same focus mode on the camera and lens. When the camera is set to the autofocus mode (AF single) and the lens to the manual mode, the shutter cannot be released unless the focus indication appears in the viewfinder.
- When used on the non-KAF2- or KAF-mount camera, focus the lens with the focusing ring.

SPECIAL LENS HOOD

Lens	Hood
*FA Zoom 20-35mm f/4	PH-RBA58
FA*24mm f/2	PH-RBB67
FA*300mm f/2.8	MH-RA112
FA*Zoom 28-70mm f/2.8	PH-RBC77
FA*85mm f/1.4	PH-RBB67
FA*200mm f/2.8	
FA*300mm f/4.5	
FA*400mm f/5.6	MH-RBB77

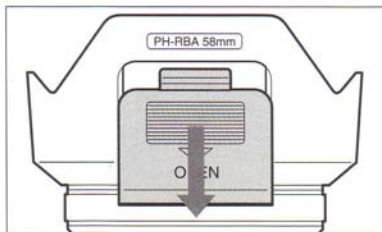
* For more details, refer to page 32

The lens hoods are bayonet type, except MH-RA112 for 300mm f/2.8



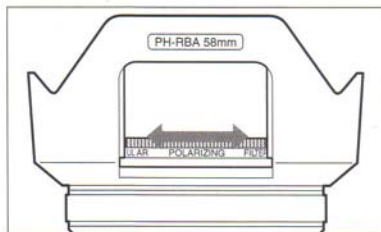
How to attach

To attach the hood to the lens, align the hood and the lens front, then turn the hood clockwise to lock it in place. To remove it, reverse the above procedure.



How to Use the Lens Hood

- The hood is designed for use with a polarizing filter or circular polarizing filter, and includes a "PL filter window" for adjusting the polarizing effect.
- When attaching the hood, align the white dots on the lens and hood so that the PL filter window positions on the bottom. If the PL filter window is on top, adjustment for a PL filter will be more difficult.



1. Remove the PL filter window cap by sliding it in the direction shown.
2. Turn the outer rim of the polarizing filter or circular polarizing filter from the PL filter window as shown.
3. Attach the PL filter window cap.

The lens hood for the FA* 300mm f/2.8 lens

The lens hood for the FA* 300mm f/2.8 lens is a screw-in type (MH-RA112).

- Always attach the hood to prevent reflections and flare.
- When the hood is not in use, fit it over the lens in reverse position. Turn the hood clockwise to lock it in place.

The lens hood for the FA* 28-70mm lens and 80-200mm lens

The lens hoods for the 28-70mm lens and 80-200mm lens are bayonet type (PH-RBC77). To attach the hood to the lens, align the hood and lens front, turn the hood clockwise to lock it in place. To remove it, reverse the above procedure.

- Always attach the hood to avoid internal reflections.
- When the hood is not in use, fit it over the lens in the reverse position. Turn the hood clockwise to lock it in place.

The lens hood for the FA* 85mm f/1.4, FA* 200mmf/2.8, FA* 300mmf/4.5 and FA* 400mm f/5.6

The lens hoods for the FA* 85mm f/1.4, FA* 200mmf/2.8 and FA* 300mmf/4.5 and FA* 400mm f/5.6 are bayonet type (MH-RBD67 for the FA* 85mm f/2.8, MH-RBB77 for the FA* 200mm f/2.8 MH-RBC67 for the FA* 300mm f/4.5 and MH-RBB77 for the FA400mm f/5.6). To attach the hood to the lens, align the hood to the lens front, turn the hood clockwise to lock it in place. To remove it, reverse the above procedure.

- Except when using the built-in flash, always attach the hood to prevent reflections and flare.
- When the hood is not in use, fit it over the lens in the reverse position. Turn the hood clockwise to lock it in place.

Notes:

- Be sure that the PL filter window cap is in place if no polarizing filter or circular polarizing filter is used.
- If strong light is entering the PL filter window, either attach the PL filter window cap or reverse the position of the PL filter window (to top or bottom of lens). Strong light entering the PL filter window will defeat the effect of the lens hood and prevent the taking of clear, sharp images.
- Vignetting will occur when using a polarizing filter or a circular polarizing filter at 20 mm focal length, and the camera-to-subject distance is about 0.3 m.

Built-in Flash

With the built-in flash in popped-up position, the flash can be used if no warning indication appears when the shutter release button is depressed halfway down. However, some lenses cause vignetting in the picture corners, even though warning indication does not appear; some do not, though the warning indication appears. For more on this, see page 36 and 37.

- Remove the lens hood when the built-in flash is used because the flash light will be blocked by the lens hood.

PENTAX DEDICATED EXTERNAL FLASH

When the FA* 28-70mm f/2.8 AL lens is attached

- When the Pentax dedicated external flash is used with the FA 28-70mm lens, do not use the hood because the flash light will be blocked by the hood.

COMPATIBILITY OF LENSES WITH THE BUILT-IN FLASH

[O = compatible X = incompatible because of vignetting]

Lens name	Compatibility SF and Z/PZ series cameras	MZ/ZX series camera
A or FA20mm f/2.8	X	X
FA* 24mm f/2 AL(IF)	X	X
FA28mm f/2.8 AL	△ * 1	O
FA43mm f/1.9 Limited	O	O
A 50mm f/1.2	O	O
FA 50mm f/1.4	O	O
FA 50mm f/1.7	O	O
FA* 85mm f/1.4 (IF)	O	O
FA 135mm f/2.8 ED(IF)	O	O
A* or FA* 200mm f/2.8 ED(IF)	O	O
A* or FA* 300mm f/2.8 ED(IF)	O	O
FA* 300mm f/4.5 ED(IF)	O * 2	O
FA* 400mm f/5.6 ED(IF)	O * 2	O
A* 400mm f/2.8 ED(IF)	O * 2	O
500mm f/5.6	X	X
FA* 600mm f/4 ED(IF)	X	X
A* 600mm f/5.6 ED(IF)	X	X
A Fish-Eye 16mm f/2.8	X	X
F Fish-Eye Zoom 17-28mm f/3.5-4.5	X	X
FA Zoom 20-35mm f/4AL	△ * 11	△ * 11
FA Zoom 28-70mm f/2.8 AL	X	X
FA Zoom 28-70mm f/4 AL	O * 3	O
FA Zoom 28-80mm f/3.5-5.6	△ * 4	O
FA Zoom 28-105mm f/4-5.6	O * 4	O * 8
FA Zoom 28-200mm f/3.8-5.6 AL(IF)	O * 5	O * 5
A or F Zoom 35-80mm f/4-5.6	O	O
FA Zoom 70-200mm f/4-5.6	O	O
FA Zoom 80-200mm f/2.8 ED(IF)	O * 6	O * 9

Lens name	Compatibility SF and Z/PZ series cameras	MZ/ZX series camera
A or F Zoom 80-200mm f/4.7-5.6	○	○
FA Zoom 80-320mm f/4.5-5.6	○	○
F or FA Zoom 100-300mm f/4.5-5.6	○	○
FA Zoom 250-600mm f/5.6 ED(IF)	×	×
FA MACRO 50mm f/2.8	○ *7	○
FA MACRO 100mm f/2.8	○ *7	○*7
FA MACRO 100mm f/3.5	○	○
A* MACRO 200mm f/4	○ *7	○
FA Soft 28mm f/2.8	○ *1	○
F or FA Soft 85mm f/2.8	○	○

- *1 Vignetting will occur with SF series, Z-1/PZ-1 and Z-10/PZ-10 camera.
- *2 Vignetting will not occur. But when using the SF series camera, the flash will not be discharged.
- *3 When using SF series, Z-1/PZ-1 or Z-10/PZ-10 camera, vignetting will occur at focal lengths between 28 to 38mm. When using Z-1P/PZ-1P camera, vignetting will occur at focal length 28mm if the camera-to subject distance is closer than 1m.
- *4 Vignetting will occur at focal lengths between 28-35mm. With the focal length set at 35mm, it will occur when the camera-to-subject distance is closer than 3m. With the focal length set at 40mm, it will occur when the camera-to-subject distance is closer than 1m. Vignetting will not occur at focal lengths from 50mm through telephoto
- *5 Vignetting will occur at focal lengths between 28-70mm.
- *6 Vignetting will occur at focal lengths between 80-135mm.
- *7 Vignetting will not occur if the camera-to -subject distance is greater than 0.7m, even if the inappropriate lens warning is blinking. The flash will not discharge when using the lens wider than 35mm or with the macro lens attached to SF series cameras.
- *8 Vignetting will occur at focal lengths between 28-35mm. With the focal lengths set at 35mm, it will occur when the camera-to-subject distance is closer than 1.5m.
- *9 Vignetting will occur at focal lengths between 80-90mm.

SPECIFICATIONS

Type	Lens	Groups Elements	Diaphragm	Angle of view
FISH-EYE	SMC Pentax-A Fish Eye 16mm f/2.8	7-9	F.A.	180°
ULTRA-WIDE-ANGLE	SMC Pentax-A 15mm f/3.5	12-13	F.A.	111°
	SMC Pentax-A 20mm f/2.8	9-10	F.A.	95°
	SMC Pentax-FA 20mm f/2.8	9-10	F.A.	94°
	SMC Pentax-FA* 24mm f/2 AL(IF)	9-11	F.A.	84°
WIDE-ANGLE	SMC Pentax-FA 28mm f/2.8 AL	5-5	F.A.	75°
	FA 43mm f/1.9 Limited	6-7	F.A.	53°
STANDARD	SMC Pentax-A 50mm f/1.2	6-7	F.A.	47°
	SMC Pentax-FA 50mm f/1.4	6-7	F.A.	47°
	SMC Pentax-FA 50mm f/1.7	5-6	F.A.	47°
MEDIUM- TELEPHOTO	SMC Pentax-FA* 85mm f/1.4 (IF)	7-8	F.A.	28.5°
	SMC Pentax-FA 135mm f/2.8 (IF)	7-8	F.A.	18°
TELEPHOTO	SMC Pentax-A* 200mm f/2.8 ED(IF)	6-6	F.A.	12.5°
	SMC Pentax-FA* 200mm f/2.8 ED(IF)	8-9	F.A.	12.5°
	SMC Pentax-A* 300mm f/2.8 ED(IF)	8-8	F.A.	8.3°
	SMC Pentax-FA* 300mm f/2.8 ED(IF)	7-10	F.A.	8.2°
	SMC Pentax FA* 300mm f/4.5 ED(IF)	7-9	F.A.	8.2°

●AL = Aspherical lens

●ED = Achromatic lens including elements of the Extra-low Dispersion glass

●IF = Lens featuring the inner focusing mechanism

SPECIFICATIONS ARE SUBJECT TO CHANGE AT ANY TIME WITHOUT NOTIFICATION OR ANY OBLIGATION ON THE PART OF THE MANUFACTURER.

Minimum focus dist.		Minimum aperture	Max. Dia. × length		Weight	Filter size
m	ft	F	Ø mm × mm		g	mm
0.2	0.7	22	65	× 56	320	Bl
0.3	1.0	22	80	× 81.5	595	Bl
0.25	0.8	22	70	× 43.5	245	67
0.25	0.8	22	70	× 44	255	67
0.3	1.0	22	72.5	× 65.5	405	67
0.3	1.0	22	65	× 40.5	185	49
0.45	1.5	22	64	× 27	155	49
0.45	1.5	22	64.5	× 47.5	345	52
0.45	1.5	22	65	× 37	220	49
0.45	1.5	22	65	× 37	170	49
0.85	2.8	22	79	× 70	550	67
0.7	2.3	32	68	× 80	375	52
1.8	5.9	32	91	× 137.5	850	77
1.2	3.9	32	83	× 134	785	77
3.0	9.8	32	133	× 236	2970	49
2.0	6.6	32	123	× 247	2500	43
2.0	6.6	32	72.5	× 160	935	43

F.A. = Fully automatic

M = MANUAL

ND = Controlled by ND filter

Bl = Filters built-in

Note : Lens length does not include mount portion.

Type	Lens	Groups Elements	Diaphragm	Angle of view
ULTRA-TELEPHOTO	SMC Pentax-A 400mm f/5.6	6-7	F.A.	6.2°
	SMC Pentax-A* 400mm f/2.8ED(IF)	8-8	F.A.	6.2°
	SMC Pentax-FA* 400mm f/5.6ED(IF)	8-9	F.A.	6.2°
	SMC Pentax 500mm f/4.5	4-4	M	5°
	SMC Pentax-A* 600mm f/5.6ED(IF)	6-8	F.A.	4.1°
	SMC Pentax-FA* 600mm f/4ED(IF)	7-9	F.A.	4.1°
	SMC Pentax Reflex 1000mm f/11	4-6	N.D.	2.5°
	SMC Pentax-A* 1200mm f/8ED(IF)	8-9	F.A.	2.1°
MACRO	SMC Pentax Reflex 2000mm f/13.5	6-8	N.D.	1.2°
	SMC Pentax-FA MACRO 50mm f/2.8	7-8	F.A.	47°
	SMC Pentax-FA MACRO 100mm f/2.8	8-9	F.A.	24.5°
	SMC Pentax-FA MACRO 100mm f/3.5	4-5	F.A.	24.5°
	SMC Pentax Bellows 100mm f/4	3-5	F.A./M	24.5°
SOFT	SMC Pentax-A* MACRO 200mm f/4 ED	9-10	F.A.	12.5°
	SMC Pentax-FA SOFT 28mm f/2.8	5-5	*1	75°
	SMC Pentax-F SOFT 85mm f/2.8	4-5	*2	28.5°
	SMC Pentax-FA SOFT 85mm f/2.8	4-5	*3	28.5°

*1 f/2.8-f/4 Manual diaphragm (Stop down metering)

f/5.6-f/22 Automatic diaphragm (Open aperture metering)

Minimum focus dist.		Minimum aperture	Max. Dia. × length	Weight		Filter size
m	ft	F	Ø mm × mm	g	oz.	mm
2.8	9.2	45	85 × 277	1240	43.7	77
4	13	32	165 × 325	6000	211.6	49
2.0	6.6	45	83 × 199	1140	40.2	77
10	33	45	126.5 × 440	3370	118.9	52
5.5	18	45	133 × 386	3280	115.7	49
5.0	16.5	32	176 × 457	7000	247	43
8	26	—	119 × 248	2300	81.1	BI/52
8	26	45	170 × 684	8580	302.7	49
20	66	—	180 × 530	8000	282.2	BI/52
0.195	0.64	32	68 × 70	385	13.6	52
0.306	1.0	32	74 × 103.5	600	21.2	58
0.43	1.41	22	68 × 71.5	220	7.8	49
—	—	32	60 × 40	185	6.5	52
0.55	1.8	32	70.5 × 145	895	31.6	58
0.25	0.82	22	65.6 × 40.3	195	6.9	49
0.5	1.65	32	66 × 60	300	10.6	52
0.5	1.65	32	66 × 60	305	10.8	52

- *2 f/2.8-f/5.6 Manual diaphragm (Stop down metering)
f/5.6-f/32 Automatic diaphragm (Open aperture metering)
- *3 f/2.8-f/4.5 Manual diaphragm (Stop down metering)
f/4.5-f/32 Automatic diaphragm (Open aperture metering)

Type	Lens	Groups Elements	Diaphragm	Angle of view
ZOOM	*4 SMC Pentax-F Fish-Eye ZOOM 17-28mm f/3.6-4.5	7-9	F.A.	180-90°
	SMC Pentax-FA ZOOM 20-35mm f/4AL	8-10	F.A.	94-63°
	SMC Pentax-FA* ZOOM 28-70mm f/2.8AL	11-14	F.A.	75-34.5°
	SMC Pentax-FA ZOOM 28-70mm f/4AL	7-9	F.A.	75-34.5°
	SMC Pentax-FA ZOOM 28-80mm f/3.5-5.6	8-8	F.A.	75-30.5°
	SMC Pentax-FA ZOOM 28-105mm f/4-5.6	11-13	F.A.	75-23.5°
	SMC Pentax-FA ZOOM 28-200mm f/3.8-5.6AL(IF)	14-16	F.A.	75-12.5°
	SMC Pentax-A ZOOM 35-80mm f/4.5-5.6	6-7	F.A.	63-30.5°
	SMC Pentax-F ZOOM 35-80mm f/4-5.6	6-7	F.A.	63-30.5°
	SMC Pentax-FA ZOOM 70-200mm f/4-5.6	8-10	F.A.	34.5-12.5°
	SMC Pentax-A ZOOM 80-200mm f/4.7/5.6	7-11	F.A.	30.5-12.5°
	SMC Pentax-FA* ZOOM 80-200mm f/2.8ED(IF)	13-16	F.A.	30.5-12.5°
	SMC Pentax-F ZOOM 80-200mm f/4.7-5.6	7-11	F.A.	30.5-12.5°
	SMC Pentax-FA ZOOM 80-320mm f/4.5-5.6	10-13	F.A.	30.5-7.7°
	SMC Pentax-FA ZOOM 100-300mm f/4.5-5.6	8-12	F.A.	24.5-8.2°
	SMC Pentax-F ZOOM 100-300mm f/4.5-5.6	8-12	F.A.	24.5-8.2°
	SMC Pentax-FA* ZOOM 250-600mm f/5.6ED(IF)	16-18	F.A.	9.9-4.1°
	SMC Pentax Reflex-ZOOM 400-600mm f/8-12	7-12	N.D.	6.2-4.1°

*4 This lens deliberately emphasizes distortion (barrel aberration) of the images at the picture corners throughout the entire focal length of 17mm to 28mm this allows you to obtain special effect photographs different from ordinary photographs.

Minimum focus dist.		Minimum aperture F	Max. Dia. × length Ø mm × mm	Weight		Filter size mm
m	ft			g	oz.	
0.45	1.5	22-32	65 × 61	255	9.0	—
0.3	1.0	32	69.5 × 68	250	8.6	58
0.43	1.4	22	84.5 × 104	800	28.2	67
0.4	1.3	22	65.5 × 66	240	8.5	52
0.5	1.3	22-38	66.5 × 78	275	9.7	58
0.43	1.4	22-32	72.5 × 95.5	515	18.2	58
0.52	1.7	22-32	78 × 83	465	16.4	73
0.4	1.3	22-32	65 × 58	185	6.5	49
0.4	1.3	22-32	65 × 58	185	6.5	49
1.1	3.6	32-45	73 × 116.5	465	16.4	49
1.1	3.6	32-38	65 × 97.5	295	10.4	49
1.4	4.6	32	87.5 × 191.5	1510	55.4	77
1.1	3.6	32-38	65 × 97.5	295	10.4	49
1.5	4.9	32-38	74.5 × 129	550	19.4	58
1.5	4.9	32-38	73 × 154.5	605	21.3	58
1.5	4.9	32-38	71.5 × 154.5	605	21.3	58
3.5	11.5	32	134 × 442	5050	198	43(112)
3	9.8	—	82 × 108	730	25.8	—



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The CE marking assures that
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