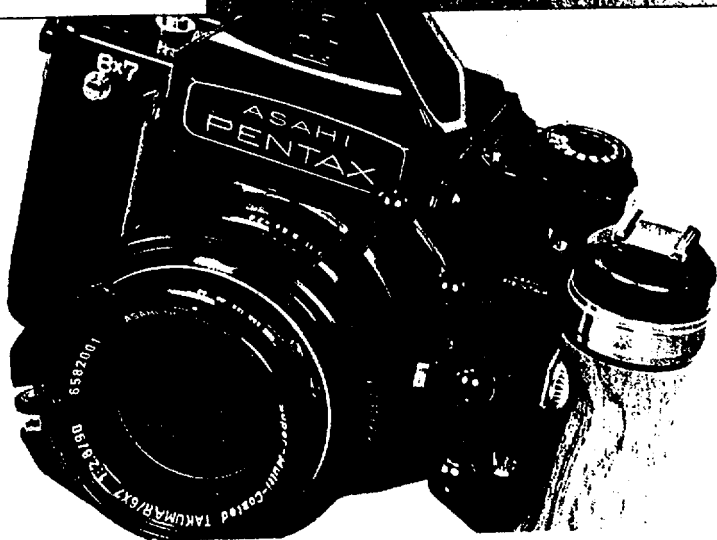
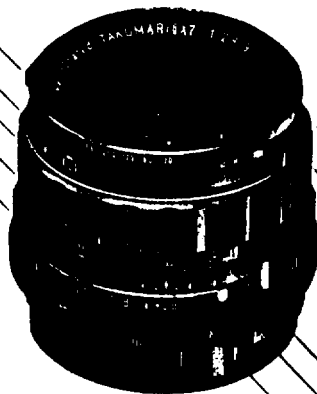


PENTAX®
6x7

SMC TAKUMAR 6x7 90mm f/2.8
LEAF SHUTTER LENS



1 2 3 4 5



1. Aperture Scale
2. Depth-of-field Scale
3. Flash Terminal
4. Cable Release Socket
5. Shutter Speed Ring
6. Focusing Distance/Aperture Index
7. Depth-of-field Preview Lever
8. Distance Scale
9. Lens Cocking Lever
10. U/S Lever (on back)

6 7 8

9 10

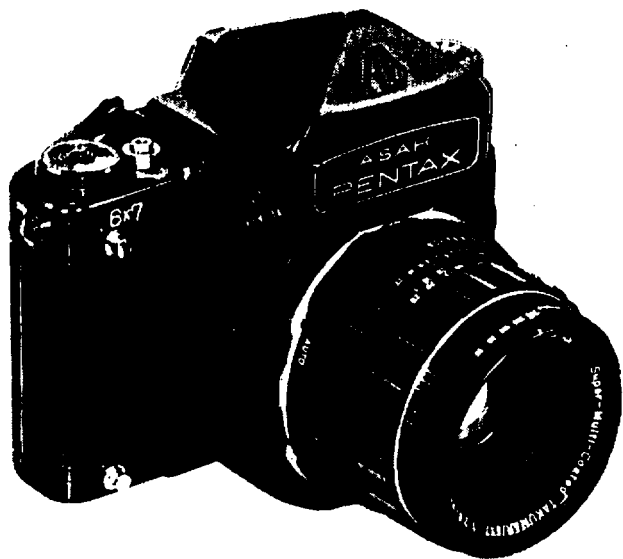
The SMC Takumar 6x7 f/2.8 leaf shutter lens is a multipurpose lens which greatly enhances the picture-taking versatility of the Pentax 6x7 interchangeable lens system. Not only does this lens feature an automatic diaphragm and offer the full open-aperture metering capabilities of a normal lens, but it also features a built-in leaf shutter, which, depending upon how it is set, enables various special applications which are beyond the capabilities of the camera's focal plane shutter alone. In addition to incorporating its own shutter, the leaf shutter lens is also provided with its own shutter speed settings from 1/30 to 1/500 sec. to enable high-speed flash synchronization for fill-in flash, etc., when

using the lens shutter jointly with the camera shutter. The lens shutter may also be used alone with the camera shutter locked opened to enable easy and efficient multiple exposures, and also to lessen the effects of camera shake in the case of single exposures. Both a flash synch terminal and a cable release socket are provided on the lens to facilitate special applications.

Basically, the types of exposure obtained with the leaf shutter lens depend on how the lens shutter is set in relation to the camera shutter. Please read this booklet carefully to acquaint yourself with the methods of operating the lens.

CONTENTS

DESCRIPTION OF PARTS	2
MOUNTING/USE AS A NORMAL LENS.	5
HIGH SPEED FLASH SYNCH (for fill-in flash, etc.).	7-8
MULTIPLE EXPOSURES/REDUCED CAMERA SHAKE WITH SINGLE EXPOSURES .	10-11
USING THE LENS SHUTTER WITH ACCESSORIES.	12-13
NOTES ON FLASH PHOTOGRAPHY/PRECAUTIONS.	14-15
SPECIFICATIONS	15



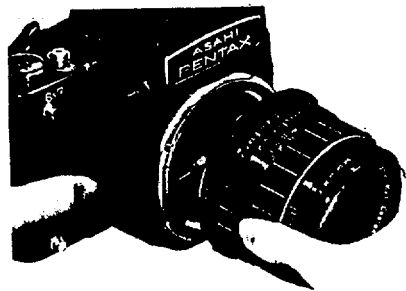
MOUNTING/USE AS A NORMAL LENS

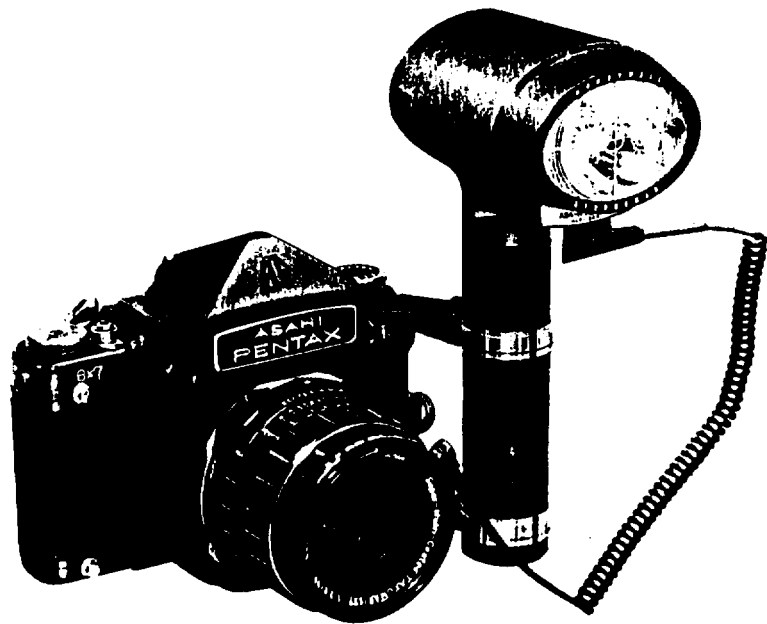
When used without cocking the lens shutter, the SMC Takumar 6x7 90mm lens functions in the same manner as any other fully automatic diaphragm SMC TAKUMAR or SMC PENTAX lens. The angle of view produced by its 90mm focal length is slightly less than that obtained with a 50mm lens in the 35mm format, which places it in the standard lens category. A quick bayonet mounting system has been employed that enables mounting the lens to the inner mount of the Pentax 6x7 camera; and fully automatic diaphragm action assures bright, full aperture focusing.

Lens Mounting: To mount the lens, simply align the red diamond-shaped aperture index on the lens with the red dot on the camera body and insert the tabs of the lens mount inside the camera's inner bayonet mount. Then, twist the lens clockwise until it locks into place. To remove the lens, depress the bayonet lock lever and twist the lens counterclockwise, until it releases from the bayonet.

Use as a Normal Lens: After mounting, simply focus, set the lens aperture as with other 6x7 lenses and release the camera shutter to take the picture.

Note: The position of the lens' U/S lever does not matter when the lens shutter is not being used.



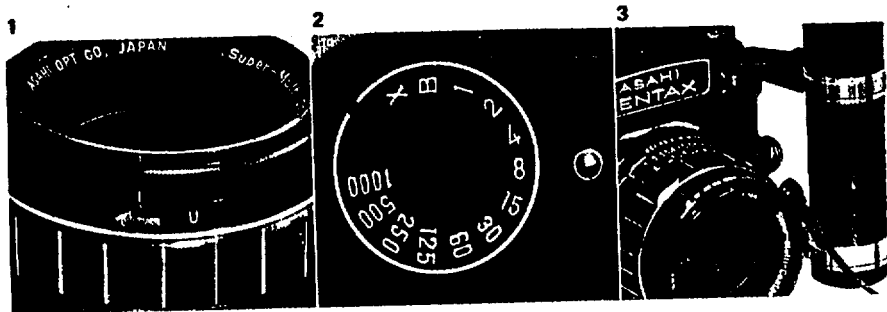


HIGH SPEED FLASH SYNCH FOR FILL-IN FLASH, ETC.

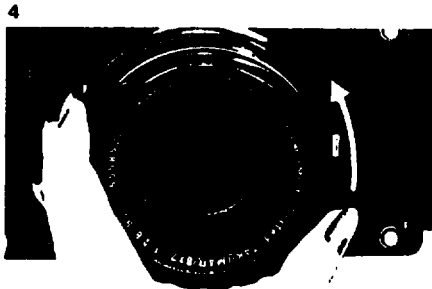
(Using the lens shutter and the camera shutter jointly)

When the lens shutter is used jointly with the camera's focal plane shutter, the leaf shutter lens enables high speed electronic flash synch between 1/30 and 1/500 sec., a must for outdoor portraits requiring fill-in flash, etc. In addition, flash bulbs may also be used with the lens shutter (refer to page 14). The procedure for using the lens shutter to provide flash synch is as follows.

1. Set the lens' U/S lever to U (Usual).
Photo 1.
2. Set the camera shutter to a speed of 1/8 sec. or slower (so that its operation does not interfere with that of the lens shutter).
Photo 2.
3. When using electronic flash or flash bulbs, plug the flash synch cord into the lens' Flash Terminal. Photo 3.



4. Set the shutter speed of the lens shutter by adjusting the lens' shutter speed ring. Also, set the lens aperture and cock the lens shutter by winding the cocking lever fully in the direction of the arrow. **Photo 4.**
5. Advance the film and focus.
6. Compose the picture and release the camera shutter button.
(The above steps 1 – 5 may be performed in random order.)



Notes:

- When making repeated exposures in the above mode with the lens shutter, only steps 4 – 6 need be repeated for subsequent exposures.
- If you neglect to cock the lens shutter, exposure will be made at the speed the camera shutter is set to.
- Do not neglect to set the U/S lever to U, or complete exposure will not be made.

Cameras with Mirror Lock-Up Provision:
Do not use the mirror lock up lever when shooting in this mode. This will result in premature tripping of the lens' shutter and ruin the exposure.

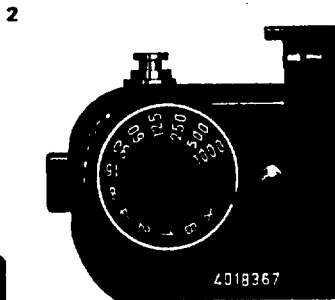
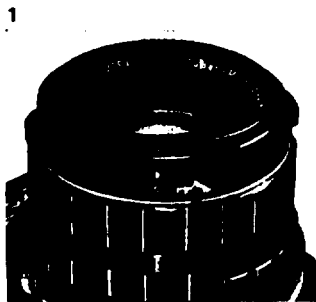


MULTIPLE EXPOSURES/REDUCED CAMERA SHAKE WITH SINGLE EXPOSURES

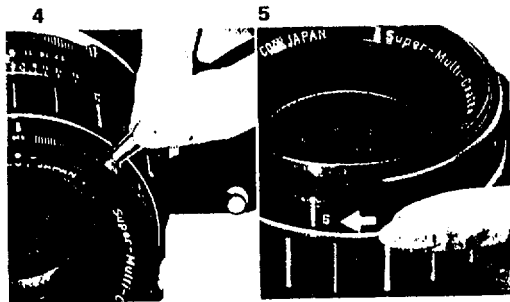
(Using the lens shutter with the camera shutter locked opened)

Multiple Exposures: When the camera's focal plane shutter is locked opened and the lens shutter alone is used to make the exposure, the leaf shutter lens proves extremely convenient for making multiple exposures as the lens shutter can be used independently without advancing the film. The procedure for making multiple exposures is as follows.

1. Set the lens' U/S lever to S (Special) – this prevents the lens shutter from tripping when you trip the camera shutter. **Photo 1.**
2. Set the camera's shutter speed dial to the special "time" setting, approximately halfway between 1/1000 sec. and X on the shutter speed dial. **Photo 2.**
3. Set the lens shutter speed by turning the lens shutter speed ring. **Photo 3.**
4. Advance the film and focus.



5. Press the camera shutter release button. (This locks the camera shutter opened, and simultaneously closes the lens shutter).
6. Release the lens shutter either by:
 - a) attaching a cable release to the lens' cable release socket, **Photo 4**; or
 - b) sliding the lens' U/S lever slowly back toward U to the point where it releases. **Photo 5.** (Let go of the lever so that it springs back to S after the shutter releases.)



7. Repeat step 3 and step 6 above for each additional exposure.
8. After you've made as many exposures as you desire, release the camera shutter from the "time" position, by turning the camera's shutter speed dial either back to 1/1000 sec. or X.

Note:

- Steps 1–4 above may be performed in random order. All steps must be performed fully as indicated, however, to assure that the desired exposure is obtained.

Single Exposures: The lens shutter can also be used to lessen the effects of camera shake with single exposures. In this instance, simply follow steps 1–6 above; then, release the shutter from the "time" position.

Use of the lens shutter is also recommended for reducing camera shake even with Pentax 6x7 cameras featuring a mirror lock-up provision, as this is more effective than use of the mirror lock-up alone.

USING THE LENS SHUTTER WITH ACCESSORIES



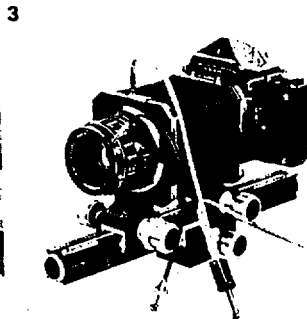
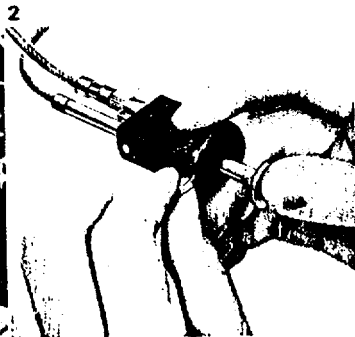
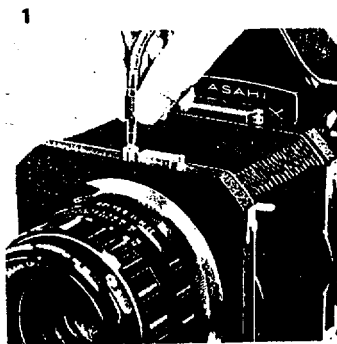
Auto Extension Tubes: With both types of shooting, Auto Extensions Tubes nos. 1, 2 and 3 may be synchronized for close-up shooting with the lens shutter if used independently. Joint use of the extension tubes is not recommended, however, as they will not synchronize properly.

Auto Bellows

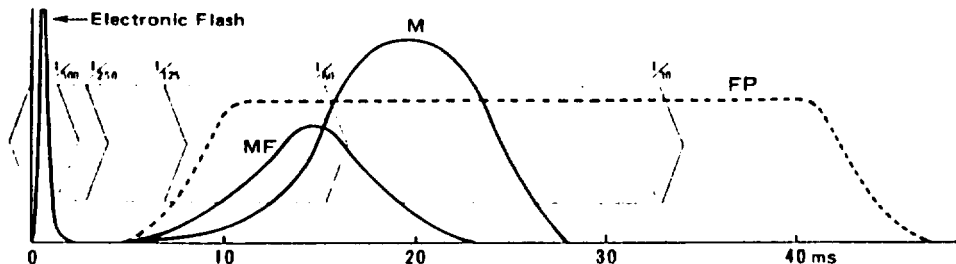
When the auto bellows is used, joint use of the lens shutter and the camera shutter is not recommended as proper synchronization is difficult to obtain. However, the auto bellows and the lens shutter can be used together with the camera shutter locked open. The procedure is as follows.

1. Attach both the camera and the leaf shutter lens to the Auto Bellows Unit.
2. Screw the end of the double cable release with the red ringed tip into the bellows' cable release socket. Photo 1. Leave the other end hang free.

3. Ready the lens and the camera shutter as indicated in steps 1—4 on pages 10 and 11.
4. Depress the double cable release button and lock it by tightening the locking screw. Photo 2. (This closes the lens' shutter.)
5. Next, press the camera shutter button to lock the camera shutter opened.
6. Complete the exposure as indicated in steps 6 and 8 on page 11.
 - After tripping the lens shutter, do not release the stopper screw of the double cable release until after you have closed the camera shutter.



NOTES ON FLASH PHOTOGRAPHY/PRECAUTIONS



- Graph comparing flash sync characteristics of electronic flash, MF and M flash bulbs in relation to shutter speeds and shutter movement in milliseconds using the lens shutter.

Flash Photography

1. Hook both electronic flash units and flash bulbs to be synchronized with the lens shutter to the lens' flash terminal and follow the shooting procedure indicated on pages 7 and 8.
2. Electronic flash units synchronize at all lens shutter speed settings from $1/30$ sec. to $1/500$ sec.
3. MF and M flash bulbs are the most suitable flash bulbs to use with lens shutter. Both types will give full flash at the $1/30$ second

shutter speed setting.

- MF bulbs will produce $1/2$ at $1/60$ sec.
- FP bulbs will give $2/3$ flash at $1/30$ sec; $1/5$ flash at $1/60$ sec.

Precautions:

- Follow all shooting instructions carefully to guarantee optimum results.
- Do not leave the depth-of-field preview lever set at MAN. after closing down the aperture for depth-of-field preview. Always return the lever to the AUTO position before shooting.

Lens mount:	Pentax 6x7 inner bayonet
Construction:	6 elements in 5 groups
Angle of View:	52.5°
Shutter:	Copal "C" special SLR shutter
Speeds:	1/30 sec. — 1/500 sec.
Diaphragm:	Fully automatic (f/2.8 — f/22)
Focusing:	0.85m (2.75 feet) to infinity
Flash:	Built-in X flash terminal
Filter Size:	Accepts 67mm bayonet filters
Other Features:	Cable release socket, depth-of-field preview lever, shutter cocking lever
Size:	91.5mm ¹ max. dia. x 62mm length (excluding mount)
Weight:	610 grams



Asahi Optical Co., Ltd. C.P.O. 895, Tokyo 100 91, JAPAN
Pentax Europe n.v. Weverdilaan 3-5, 1930 Zaventem Zuid-7, BELGIUM
Pentax Handelsgesellschaft mbH Postfach 54 0169, 2000 Hamburg 54, WEST GERMANY
Pentax U.K. Limited Pentax House, South Hill Avenue, South Harrow, Middlesex HA2 0LT, U.K.
Pentax France S.A. Z.I. Argenteuil, 12, Rue Ambroise Croizat, 95100 Argenteuil, FRANCE
Pentax (Schweiz) AG Industriestrasse 2, 8305 Dietlikon ZH, SWITZERLAND
Pentax Scandinavia AB Box 650, S-751 27 Uppsala, SWEDEN
Pentax Nederland Spinveld 25, 4815 HR Breda, THE NETHERLANDS
Pentax Norge A/S Stenersgt. 18, Oslo 1, NORWAY
Pentax Corporation 35 Inverness Drive East, Englewood, Colorado 80112, U.S.A.
Pentax Canada Inc. 1760 West 3rd Avenue, Vancouver, B.C. V6J 1K5, CANADA
Asahi Optical Brasileira Ind. e Com. Ltda. Rua Capitão Antonio Rosa 376, Sala 121 Ed. PBK, São Paulo, BRASIL