

This manual is for reference and historical purposes, all rights reserved.

This page is copyright© by M. Butkus, NJ.

This page may not be sold or distributed without the expressed permission of the producer
I have no connection with any camera company

On-line camera manual library – www.orphancameras.com

This is the full text and images from the manual. This may take 3 full minutes for the PDF file to download depending on your connection type.

If you find this manual useful, how about a donation of \$3 to: M. Butkus, 29 Lake Ave., High Bridge, NJ 08829-1701 and send your e-mail address so I can thank you. Most other places would charge you \$7.50 for a electronic copy or \$18.00 for a hard to read Xerox copy.

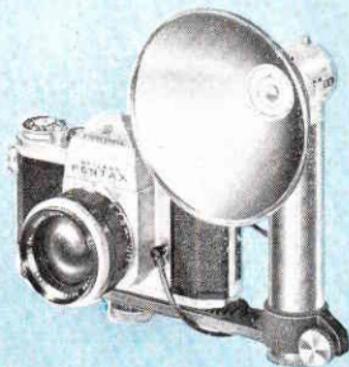
This will allow me to continue to buy new manuals and pay their shipping costs.

It'll make you feel better, won't it?

**If you use Pay Pal or wish to use your credit card,
click on the secure site on my main page.**



Pentax with Futuramic Strobosonar



Pentax with Synchro-Mite

Shutter speed Flash terminal	$\frac{1}{500}$	$\frac{1}{250}$	$\frac{1}{125}$	$\frac{1}{60}$	X	$\frac{1}{30}$	$\frac{1}{15}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	1	B
F P	FP Class (screw base)											
	FP Class (bayonet base)											
X						F Class						
						M Class						
						Electronic flash						

FLASH SYNCHRONIZATION

The PENTAX has two sets of terminals—FP and X. The table at the left shows which flash contacts, which shutter speed and which flash bulb may be combined for maximum lamp efficiency. Unless these combinations are rigidly followed, there will be a failure in flash synchronization. Note the "X" setting between 60 and 30 on the shutter speed dial. The speed of this X setting is 1/50 of a second, and this indicates the highest shutter speed at which Heiland Strobosonars or other electronic flash units may be used.

DEPTH-OF-FIELD TABLE FOR AUTO-TAKUMAR 55mm F2 LENS

Distance scale F setting	Ext. tubes	Ext. tubes	Ext.						
	1, 2, 3; scale set at 1.8 ft.	1,2; scale set at 1.8 ft.	tube 1, scale set at 1.8 ft.	1.8 ft.	2.6 ft.	4.9 ft.	9.8 ft.	16.4 ft.	32.8ft.
	in.	in.	in.	ft.	ft.	ft.	ft.	ft.	ft.
F 2	3.39 ~3.39	5.43 ~5.47	9.45 ~9.53	$1^{-19/24}$ ~ $1^{-5/6}$	$2^{-21/36}$ ~ $2^{-2/3}$	$4^{-5/6}$ ~5	$9^{-1/3}$ ~ $10^{-1/2}$	$14^{-11/12}$ ~ $18^{-1/6}$	$27^{-5/12}$ ~41
F 2.8	3.39 ~3.39	5.43 ~5.47	9.45 ~9.53	$1^{-19/24}$ ~ $1^{-5/6}$	$2^{-7/12}$ ~ $2^{-17/24}$	$4^{-2/3}$ ~ $5^{-1/6}$	$9^{-1/12}$ ~ $10^{-3/4}$	$14^{-1/3}$ ~ $19^{-1/4}$	$25^{-1/4}$ ~ $46^{-11/12}$
F 4	3.39 ~3.39	5.43 ~5.47	9.41 ~9.53	$1^{-19/24}$ ~ $1^{-5/6}$	$2^{-13/24}$ ~ $2^{-17/24}$	$4^{-7/12}$ ~ $5^{-1/4}$	$8^{-3/4}$ ~ $11^{-1/4}$	$13^{-7/12}$ ~ $20^{-5/6}$	23 ~ $57^{-5/12}$
F 5.6	3.39 ~3.39	5.43 ~5.47	9.41 ~9.57	$1^{-3/4}$ ~ $1^{-5/6}$	$2^{-19/36}$ ~ $2^{-13/18}$	$4^{-1/2}$ ~ $5^{-5/12}$	$8^{-1/3}$ ~ $11^{-11/12}$	$12^{-2/3}$ ~ $23^{-1/3}$	$20^{-1/2}$ ~ $82^{-2/3}$
F 8	3.39 ~3.39	5.39 ~5.51	9.33 ~9.61	$1^{-3/4}$ ~ $1^{-5/6}$	$2^{-1/2}$ ~ $2^{-3/4}$	$4^{-5/12}$ ~ $5^{-7/12}$	$7^{-5/6}$ ~ $13^{-1/6}$	$11^{-7/12}$ ~ $28^{-7/12}$	$17^{-3/4}$ ~ ∞
F 11	3.39 ~3.43	5.39 ~5.51	9.29 ~9.65	$1^{-17/24}$ ~ $1^{-5/6}$	$2^{-5/12}$ ~ $2^{-5/6}$	$4^{-1/4}$ ~ $5^{-11/12}$	$7^{-1/3}$ ~15	$10^{-5/12}$ ~ $39^{-2/3}$	$15^{-1/12}$ ~ ∞
F 16	3.35 ~3.43	5.35 ~5.55	9.21 ~9.76	$1^{-2/3}$ ~ $1^{-11/12}$	$2^{-1/3}$ ~ $2^{-11/12}$	4 ~ $6^{-1/2}$	$6^{-7/12}$ ~ $19^{-11/12}$	$8^{-11/12}$ ~ $114^{-1/6}$	$12^{-1/6}$ ~ ∞
F 22	3.35 ~3.43	5.35 ~5.55	9.13 ~9.88	$1^{-15/24}$ ~2	$2^{-7/24}$ ~ $3^{-1/12}$	$3^{-2/3}$ ~ $7^{-5/12}$	$5^{-5/6}$ ~ $32^{-1/2}$	$7^{-2/3}$ ~ ∞	$9^{-1/12}$ ~ ∞

When using extension tubes, the subject's distance is measured from the front frame of the lens. When extension tubes are not used, the subject's distance is measured from the film plane. In the above table, the figures 3.39~3.39 mean that the depth of field is less than 0.01 in. 25



Auto-Takumar 55 mm F 2



INTERCHANGEABLE LENSES

The PENTAX offers many interchangeable lenses. All are being used by leading photographers. Takumar lenses are widely respected by professional and amateur photographers for their fine resolution. The photographic coverage of the various Takumar lenses is illustrated on the next page. With focal lengths longer than 83 mm, the subject image is seen through the viewfinder larger than its life size. Regardless of the lens selected for the PENTAX, there is never need for an accessory viewfinder, ordinarily required for rangefinder type cameras.

When interchanging lenses, hold the lens by the distance scale ring ④ as shown in photograph 20. When attaching a lens, filter, or lenshood, do not screw it too tightly, as you may find it difficult to unscrew.



35 mm



55 mm



85 mm

DIFFERENCE OF ANGLE OF TAKUMAR LENSES

All photographs were taken from the same location and distance from the subject.





105 mm

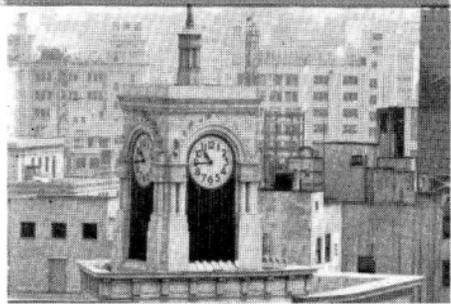


135 mm

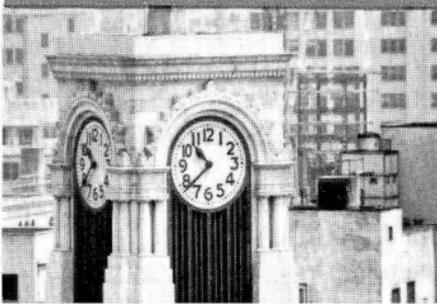


200 mm

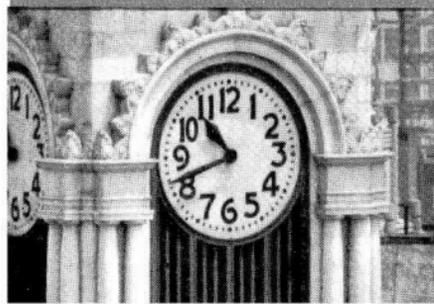
300 mm



500 mm



1000 mm

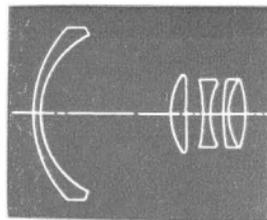


TAKUMAR 35 mm f 4

Same size as the standard lens; can be put into the camera case together with the PENTAX. Light in weight; easy to use. You do not usually need an aperture brighter than f4 for general daylight outdoor picture taking.

Lens elements ...5
Minimum aperture f22
Minimum distance ...1.5 ft.
Angle of view ...63°
Weight4.8 ozs.

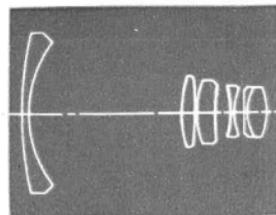
Helicoidal lens barrel; without pre-set diaphragm ring.



AUTO-TAKUMAR 35 mm f 2.3

One of the world's brightest retrofocus wide angle lenses for single lens reflex cameras. Edge-to-edge sharp resolution at full aperture; unique lens design without distortion; suitable for architectural photography.

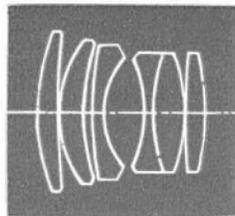
Lens elements ... 6
Minimum aperture f22
Minimum distance ...1.5 ft.
Angle of view ...63°
Weight 11 ozs.



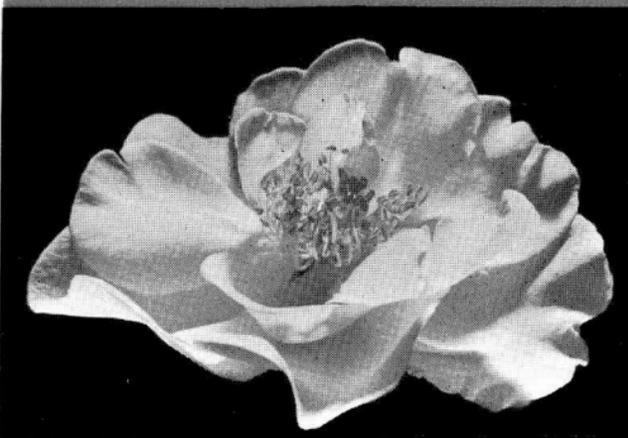
AUTO-TAKUMAR 55 mm f 2

Newest high-speed 6-element lens, utilizing latest optical glass advances. High resolving power combines with outstanding brightness for easiest focusing. Ideal for exceptional results indoors or at night.

Lens elements ... 6
Minimum aperture f22
Minimum distance ... 1.8 ft.
Angle of view ... 43°
Weight 5.8 ozs.



Auto-Takumar 55 mm f2 lens with extension tube No.2. Taken at f2.



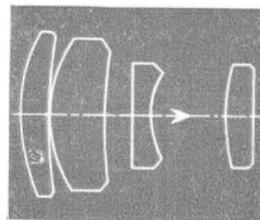
Auto-Takumar 55mm f2 lens with extension tube No.2. Taken at f22.

AUTO-TAKUMAR 105 mm f 2.8

Same lens barrel as Takumar 83 mm. A quality medium telephoto lens of 4 elements, with well corrected aberrations. Light weight design for portability and easy handling. Recommended for scenery, portrait, news photos, other moderate telephoto effects.

Lens elements ... 4
Minimum aperture f22
Minimum distance 4 ft.
Angle of view ... 23°
Weight 9.9 ozs.

Automatic diaphragm; helicoidal lens barrel.



TAKUMAR 105 mm f 2.8

Exactly same as Auto-Takumar 105 mm; except this is equipped with pre-set diaphragm, weight 8.8 ounces.

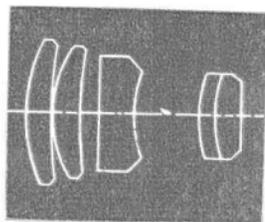
The pre-set diaphragm ring ① is set at a desired aperture before focusing. Turn the actual diaphragm ring ② to f2.8 to focus with the diaphragm fully open. After accurate focusing has been achieved, turn the diaphragm ring ② which automatically stops at the pre-selected aperture setting.



TAKUMAR 135 mm f3.5

Produces a brilliant image in all corners of the photo even with the diaphragm fully open. Indispensable for distant subject matter and for portraits. Ideal for close-ups of animals or plants even at a distance. Recommended as the ideal long telephoto lens for handheld camera operation.

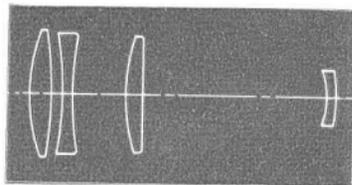
Lens elements ... 5
 Minimum aperture f22
 Minimum distance 6 ft.
 Angle of view ... 18°
 Weight.....10.6 ozs.
 Pre-set diaphragm; helicoidal lens barrel.



TAKUMAR 200 mm f3.5

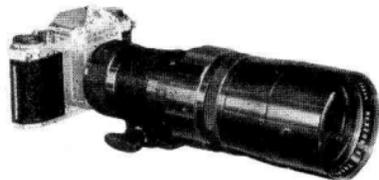
A bright 4-element telephoto lens for handheld shooting. New optical glass used with recently advanced theory of design. Ideal for extraordinary snapshots, stage, sports and news photos with exceptionally fascinating telephotographic effects.

Lens elements ... 4
 Minimum aperture f22
 Minimum distance 9 ft.
 Angle of view...12°
 Weight ... 26.5 ozs.
 Pre-set diaphragm; helicoidal lens barrel.



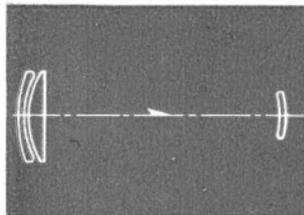
TAKUMAR 300 mm f4

The light weight of the lens enables hand-held picture taking, and is considered to be the most ideal telephoto lens for spectacular telephotographic effects. Even with the diaphragm fully open, the aberrations are corrected to the greatest extent possible. Gives needle-sharp resolution to every corner of the picture.



Lens elements.....3
Minimum
aperture.....f22
Minimum
distance 25 ft.
Angle of view 8°
Weight 48.0 ozs.

Built-on lenshood;
helicoïdal lens barrel;
without pre-set dia-
phragm ring.



TAKUMAR

Perfect ultra-telephoto lens for sports, scenic and wildlife photography. Bright f5 image simplifies aiming and focusing. Produces edge-to-edge coverage of high resolution. Comparatively light and small for its performance.



500 mm f5

Lens elements.....2

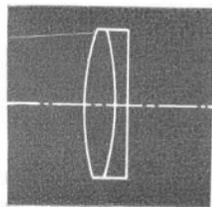
Minimum aperture..... f22

Minimum distance35 ft.

Angle of view 5°

Weight.....6 lbs. 5 ozs.

Built-on lenshood;
rack and pinion focusing;
without pre-set diaphragm ring.



TAKUMAR 1000 mm f8

Longest telescopic lens of
1000 mm! Best for wildlife,
sports and news photography.
Mostly used by sports and
news photographers.

Lens elements.....3

Minimum aperture.....f22

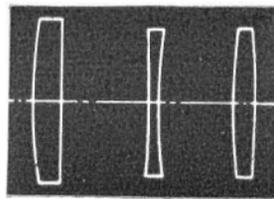
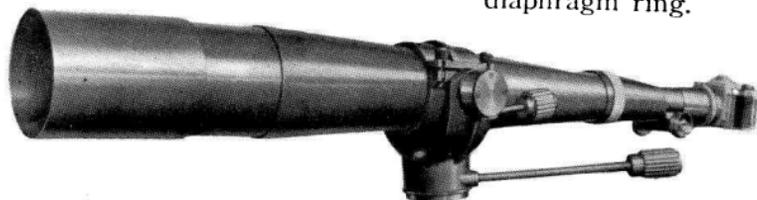
Minimum distance..... 98 ft.

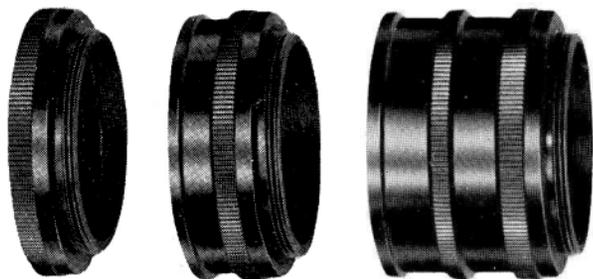
Angle of view.....2.5°

Weight of lens
16 lbs. 9 ozs.

Weight of tripod
29 lbs. 15 ozs.

Built-on lenshood;
rack and pinion focusing;
without pre-set diaphragm ring.





EXTENSION TUBES

By inserting any or all of the extension tubes between the camera body and the Takumar lens, close-ups of the subjects (as close as $3\frac{35}{64}$ inches from the front element of the Auto-Takumar 55 mm lens) may be photographed. By adding more extension tubes, close-ups as close as the focal length of the lens may be easily and simply photographed.

The extension tube set consists of 3 rings: No. 1, No. 2 and No. 3; 7.5 mm, 15 mm, and 30 mm long respectively. These rings may be used in combination as desired. Ring No. 1 is suited for moderate close-up work as in copying documents. When all extension tubes are used simultaneously with the Auto-Takumar 55 mm lens, the subject may be enlarged on the film to a magnification of 1.07 of the life size. Such extreme close-up photography is a special advantage of the single lens reflex camera because there is no parallax problem and you do not need an accessory viewfinder as is ordinarily required for rangefinder type cameras.

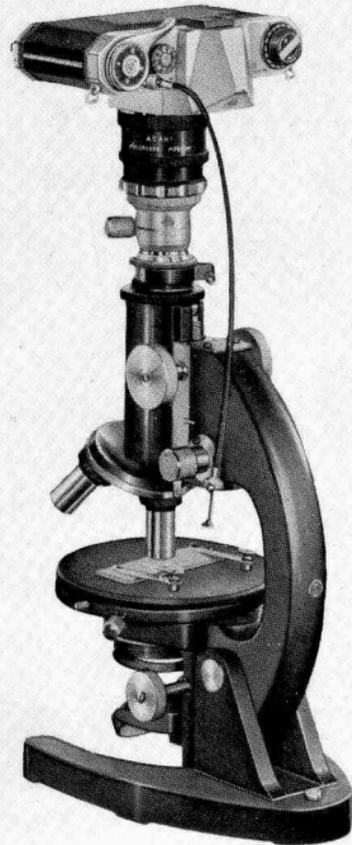
← BELLOWS UNIT



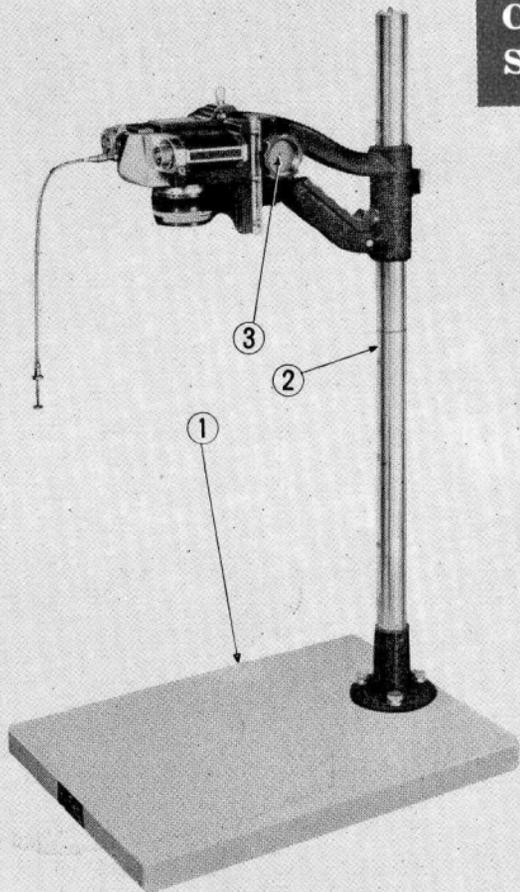
An extremely flexible accessory for ultra-close-up photography. Permits use of the camera's own lens with a special calibrated gear shaft.

MICROSCOPE ADAPTER →

By inserting this adapter between the camera body of the PENTAX and the microscope tube, photomicrography can be easily and simply accomplished with the optics of the microscope.



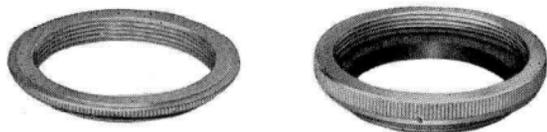
COPY STAND



For exact and accurate copying with the single lens reflex camera. Maintains precise parallel camera position while providing close-up performance impossible with a tripod or other camera stand.

The copy stand is equipped with a copying base ①, extension poles ②, and pantographic camera mount with micro-adjusting knob ③. With this unit, titles for color slides, microphotography, identification photos of small objects and other useful copying work are easily performed.

LEICA MOUNT ADAPTER



A

B

ADAPTER 'A' — For use of Leica mount lenses on the PENTAX camera body. Because the distance between the lens mount of the PENTAX and the film plane is approximately 17 mm longer than normal with Leica type lenses, Leica mount lenses may be used on the PENTAX camera body with the adapter ring **ONLY for closeup photography**. The above table illustrates the film plane-to-subject distance that can be covered by Leica-mount lenses with use of the Leica Mount Adapter A.

ADAPTER 'B' — For use of PENTAX-Takumar lenses on Leica-mount camera bodies. **FOR CLOSE-UPS ONLY**. Primarily for use with Leica lens mount enlargers. Takumar lenses make the finest enlarging lenses with this adapter.

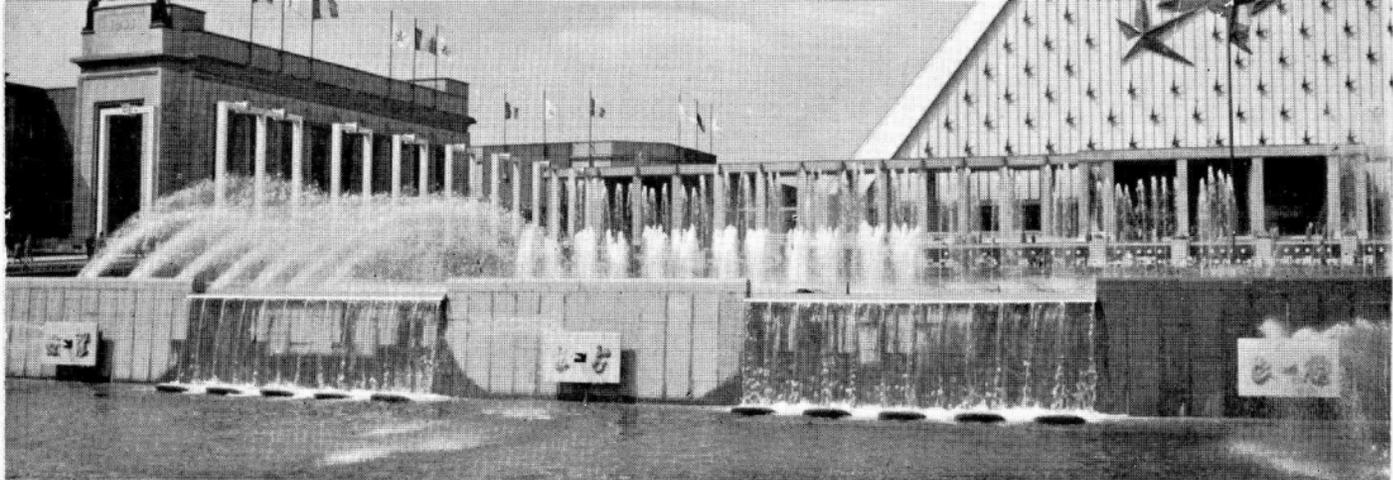
Focal length of Leica mount lens	Film-to-subject distance	Size of area to be photographed
50 mm	10. ¹⁵ / ₆₄ inches	2. ⁶¹ / ₆₄ × 3. ¹⁵ / ₁₆ in.
85 mm	22. ⁷ / ₁₆ inches	4. ¹¹ / ₆₄ × 6. ¹⁹ / ₆₄ in.
105 mm	32. ⁹ / ₃₂ inches	5. ¹⁵ / ₆₄ × 7. ⁷ / ₈ in.
135 mm	48. ⁵³ / ₆₄ inches	6. ¹¹ / ₁₆ × 10. ¹ / ₃₂ in.

(When lens is focused at infinity).

ASAHI MOUNT ADAPTER

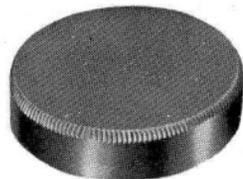


For use of old Asahiflex Takumar lenses on the PENTAX camera body. This adapter is available for owners of the Asahiflex-Takumar lenses and PENTAX camera body.



In Brussels, Belgium. Auto-Takumar 55 mm f1.8, taken at f11, 1/125 sec.

LENS MOUNT CAP

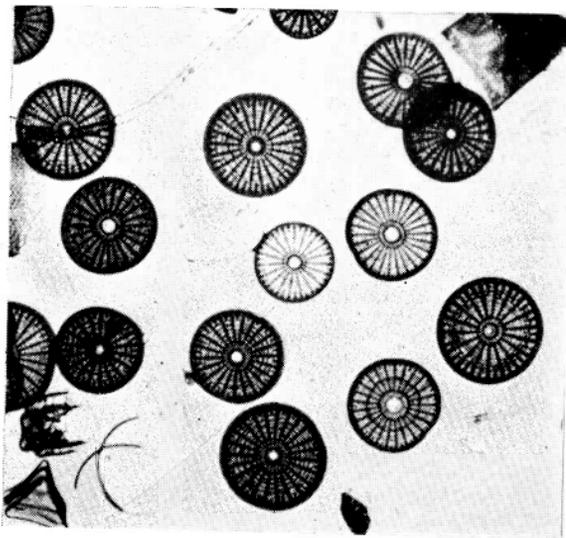


For use with all Takumar lenses. When your lenses are not on the PENTAX camera body, use this cap to avoid dust.

PENTAX BODY CAP



Use this body mount cap when you do not have a lens on your PENTAX camera body.



Photomicrographed diatoms
on spider web.



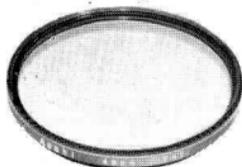
Close up with Auto-Takumar 55 mm f 2 lens.
Exposure: f 11, 4 sec., by reflected daylight
and two 100 W lamps, using extension tubes;
exposed on copying film.

LENSHOODS



Recommended for use whenever possible to avoid off-angle rays and when shooting against the light. Takumar 105 mm pre-set, 135 mm and standard 55 mm lenses use the same 46 mm size lenshood; 83 mm and automatic 105 mm lenses use same 49 mm size lenshoods; special lenshoods are available for 35 mm f4 and 35 mm f2.3 lenses. 200 mm, 300 mm, 500 mm and 1000 mm lenses are supplied with lenshood.

FILTERS



UV (Ultraviolet; haze-cut)
 Y-47 (light yellow)
 O-53 (light orange)

(Exposure
 Factor)

1
 2
 3

Available in the following sizes:

LENSES
 35 mm f 4

FILTER SIZE
 46 mm—screw-on

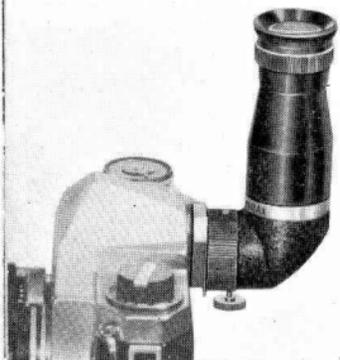
35 mm f 2.3 auto.	65 mm—clip-on
55 mm f 2 auto.	46 mm—screw-on
83 mm f 1.9	49 mm—screw-on
105 mm f 2.8 auto.	49 mm—screw-on
105 mm f 2.8 preset	46 mm—screw-on
135 mm f 3.5	46 mm—screw-on
200 mm f 3.5	67 mm—screw-on
300 mm f 4	83 mm—screw-on
500 mm f 5	46 mm
	(To be mounted behind lens.)
1000 mm f 8	46 mm
	(To be mounted behind lens.)



In Denver, Colorado. Auto-Takumar 55mm f2, taken at f11, 1/60 sec.

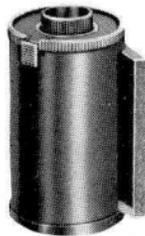
90° FINDER

A convenient accessory viewfinder to be attached to the viewfinder frame of the PENTAX H-2. For low-angle close-up, photomicrography, etc.



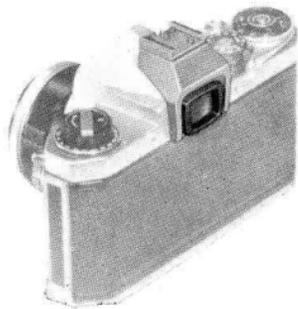
FILM MAGAZINE

For use in loading bulk film.



ACCESSORY CLIP

Attach this to the PENTAX viewfinder window for mounting a folding flash gun (like the Heiland Tilt-A-Mite), miniature exposure meter, etc.



LEATHER CASE FOR STANDARD LENSES

When using an accessory lens on your PENTAX, put your standard lens in this leather case for protection.



RESOLVING POWER OF TAKUMAR LENSES

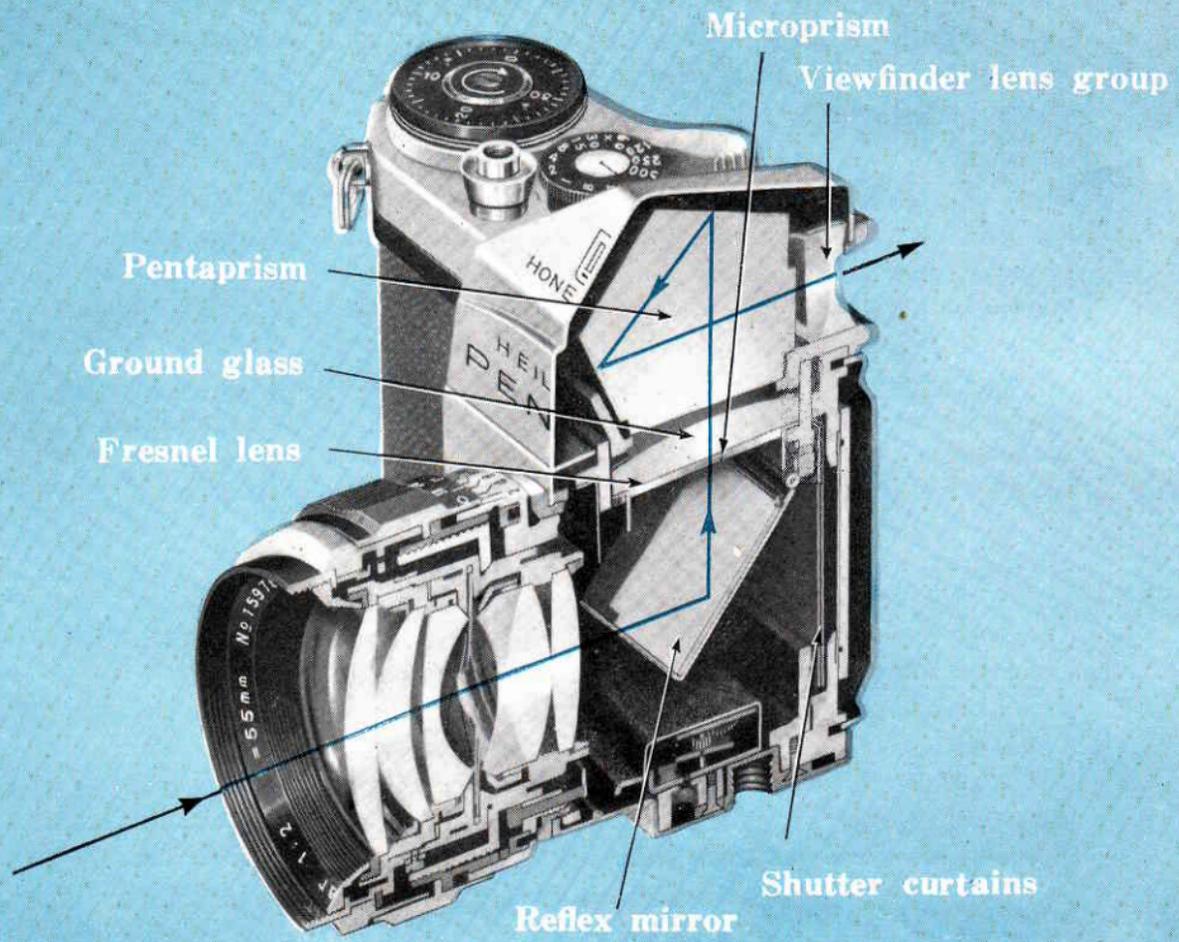
Resolving power of all Takumar lenses is factory-tested by skilled engineers. There are three types of tests: microscopic aerial test, projection test and photographed film test. Resolving power of a lens shown by lpm (lines per mm) varies depending upon the method of resolution test. Takumar lenses have been tested for resolving power to conform to Asahi standards, which are higher than those set by JIS (Japan Industrial Standards). All Takumar lenses bear the seal of the Japan Camera Inspection Institute which insures the performance standards.

When testing your lens performance . . .

Use a slow-speed fine grain film.

Generally, high speed films are grainy and are not suitable for resolution test. Support your camera on a good tripod. Use a shutter release cable to prevent movement of the camera. The definition of the picture on the negative film may decrease if exposure and developing time are not proper. Time your exposure and development correctly.

If you do your own developing and enlarging, see that your enlarger uses a fine quality enlarger lens. If it is not of a fine quality, your pictures can never be sharp no matter what superb lenses are mounted on your camera. Usually, the diaphragm of the enlarger should be closed down to f8 or f11.



Microprism

Viewfinder lens group

Pentaprism

Ground glass

Fresnel lens

Reflex mirror

Shutter curtains