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OPERATING MANUAL
MODELS H3v & H1a

HONEYWELL PENTAX



major working parts of the

HONEYWELL PENTAX

H3v and H1a



- Ⓐ Shutter speed dial
- Ⓑ Rapid wind lever
- Ⓒ Automatic re-setting film exposure counter
- Ⓓ Shutter release
- Ⓔ 'Cocked' indicator
- Ⓕ Diaphragm ring
- Ⓖ Diaphragm and distance index

- Ⓗ Depth-of-field guide
- Ⓘ Distance scale
- Ⓙ Distance scale ring
- Ⓚ X flash terminal
- Ⓛ FP flash terminal
- Ⓜ Back lock
- Ⓝ Preview lever

MAJOR FEATURES OF THE HONEYWELL PENTAX H3v AND H1a

Here's why the Honeywell Pentax cameras are the outstanding values in their field:

Type	Single-lens reflex
Film & picture size	35mm film (20 or 36 exposures); 24mm x 36mm
Standard lenses	H3v - Super-Takumar 55mm f/1.8 with fully automatic diaphragm H1a - Super-Takumar 55mm f/2 with fully automatic diaphragm



Shutter	Focal plane shutter; single, non-rotating shutter speed dial. Speeds: H3v - T (Time), B (Bulb), 1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500 & 1/1000 sec. H1a - Same as above up to 1/500 sec.
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Finder and focusing	Pentaprism finder with microprism Fresnel lens brightened ground glass. Life size image viewing and focusing with standard 55mm lens.
Reflex mirror	Instant return type.
Rapid film advance	Single-stroke rapid wind lever transports film and cocks shutter.
'Cocked' indicator	When shutter is cocked, a red disc appears in a small window alongside the shutter speed dial.
Film rewind	Rapid rewind crank speeds film take-up.
Double exposure	Coupled film wind and shutter cocking prevents double exposure.
Lens mount	Threaded lens mount for interchangeable lenses. Adapter rings are available for use of Leica-type and Asahiflex lenses.
Flash synchronization	FP and X flash terminals.
Film type dial	Colour coded film type reminder dial with ASA ratings for colour and black-and-white films.
Accessory clip	Grooves located on both sides of the viewfinder window frame accept clip-on exposure meter, accessory clip, and 90° finder, available as accessories.
Exposure counter	Automatic re-setting film exposure counter automatically counts the number of exposures made.
Self-timer	Tiny self-timer is built in H3v body.

MAINTENANCE OF YOUR CAMERA

1

Protect your camera from humidity, salty air and dust. Hot temperatures above 104°F (40°C) and low temperatures below -4°F (-20°C) will affect the shutter performance. In extremely hot weather, try to keep your camera cool. Never put it in the glove compartment or on the rear window sill of your car. When extremely cold, try to keep the camera warm.

2

To remove grit or dirt from the camera body, use a soft brush or a dry soft piece of cloth. For the lens, use only a spray of air, soft lens tissue, or a camel hair brush. For the reflex mirror, use a spray of air or a soft camel hair brush only. Never wipe the mirror or lens surface with cloth.

3

Never use oil in your camera and do not touch the shutter curtains.

4

When advancing the film, be sure to stroke the rapid wind lever all the way until it stops.

5

Do not use Auto-Takumar 55mm f/1.8 lens with lens number smaller than 462500 with the H3v and H1a camera bodies, for its automatic diaphragm will not work correctly due to modification and improvement of the Instant Return Mirror and automatic diaphragm mechanisms of these new models.

6

If your camera should need repair, do not try to fix it yourself. Take it to the dealer from whom you purchased it. Further refer to the Warrantly Policy described on the last page of this operating manual.



HOW TO HOLD YOUR CAMERA



In horizontal position. Hold the camera firmly with your left hand, and draw your arm close to your body.



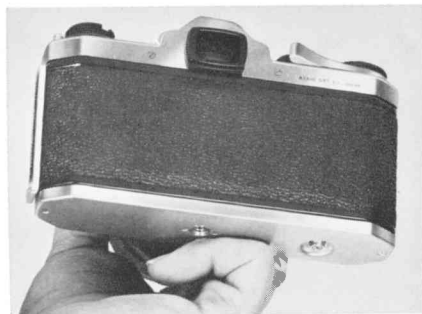
In vertical position A. Hold your camera tightly to your forehead with your left hand, and draw your right arm close to your body.



In vertical position B. Hold your camera tightly to your forehead with your left hand, raise your right arm and draw your left arm to your body.

As a general rule, your camera should be held more firmly by the left hand which does not release the shutter. If you hold your camera with the right hand—the hand which releases the shutter—it may cause camera movement. Very often, pictures which are not sharp are due to movement of the camera.

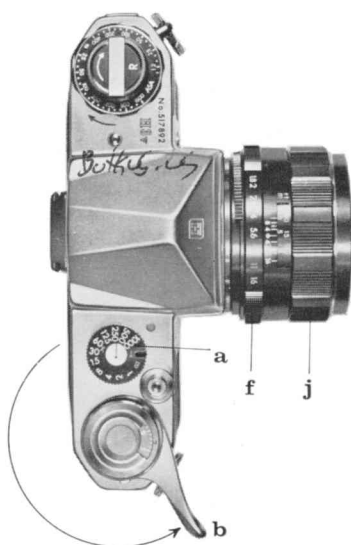
When you focus with the camera held horizontally, hold the lens barrel as illustrated in photograph. Put the camera on the roof of your left hand thumb and little finger. Turn the distance scale ring with your thumb and index finger.



When holding the camera vertically, some people release the shutter with the thumb (center photo), while others release it with the index finger (left photo). Position B is more desirable for fast focusing and shooting. With the Honeywell Pentax, whether held vertically or horizontally, you can see your subject image through the taking lens, and this enables you to compose, focus and shoot faster than with any other type camera.

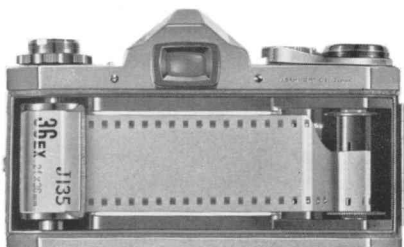
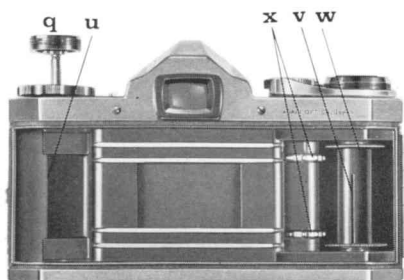
BEFORE TAKING PICTURES

- 1 Set the preview lever ① in 'A' (automatic) position for bright full-aperture viewing.
- 2 Cock the rapid wind lever ② all the way until it stops.
- 3 Select the f stop you want by setting the diaphragm ring ③.
- 4 Set the proper shutter speed by turning the shutter speed dial ④ either way.
- 5 Compose your picture through the viewfinder.
- 6 Get the clearest image of your subject by turning the distance scale ring ⑤.
- 7 Then trip the shutter.
- 8 To view exact depth of field at different apertures, move the preview lever ① to 'M' (manual) position, and view your focused subject by turning the diaphragm ring ③.



FILM LOADING

Avoid direct sunlight when loading your film.



- 1 Open the back by pulling out the lock ①.
- 2 Pull out the film rewind knob ② completely, place the film cassette into the cassette chamber ③, and push back the rewind knob. Draw out the film leader and insert it into the slit ④ of the take-up spool ⑤. If the slit is not in a proper position to insert the film leader, turn the take-up spool with your finger.
- 3 Turn the rapid wind lever ⑥ and make sure that both sprockets ⑦ have properly engaged the film perforations. Close the back and fasten the lock ⑧.

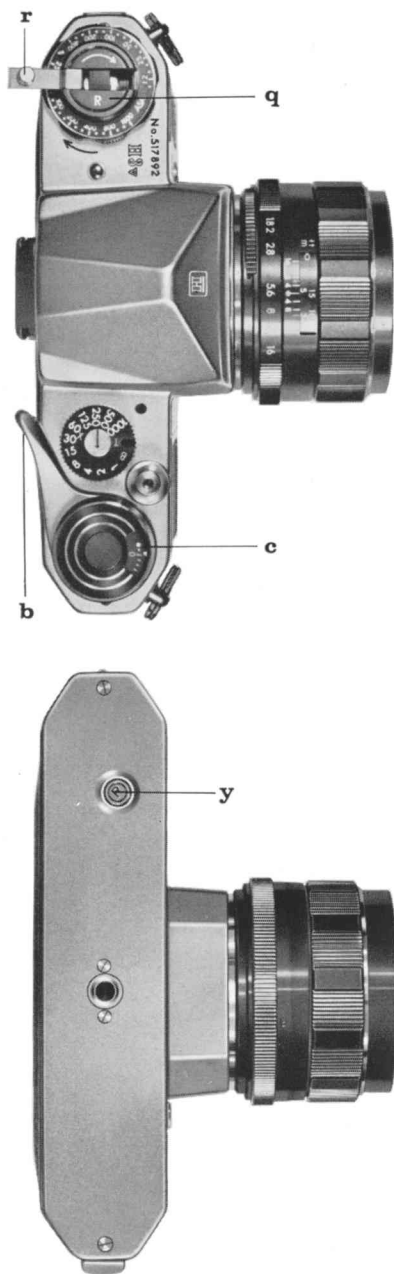
FILM WIND AND REWIND

- 1 Before turning the rapid wind lever (b), slowly turn the film rewind knob (d) clockwise until a slight resistance is felt. This prevents loosening or warping of the film.

- 2 The first portions of the film can not be used for picture taking as they have already been exposed to light. Generally, two blank exposures should be made before taking your first picture. Cock the rapid wind lever until it stops. Watch to see that the film rewind knob automatically turns counter-clockwise, indicating that the film is moving from cassette to take-up spool. Trip the shutter. Cock the rapid wind lever and trip the shutter again. Your camera is now ready for the first picture. When cocking the rapid wind lever for the first picture, the exposure counter (c) automatically turns to '1', indicating that the first picture is ready to be taken. **ALWAYS COCK THE RAPID WIND LEVER COMPLETELY WITH A FULL STROKE.**

- 3 After the final picture on the roll (20 or 36 exposures) has been taken, the rapid wind lever will not turn all the way as you stroke it. This indicates that the final picture has been taken on your film, and that the film must be rewound. **DON'T** open the back of the camera, or *all* exposed frames will be ruined.

- 4 Unfold the film rewind crank (f).



- 5** Depress the film rewind release button ⑤. Turn the rewind crank to rewind the film into the film cassette. The film rewind crank permits rewinding at a smooth, even rate. (Under some atmospheric conditions, erratic or too rapid rewinding will cause static electricity marks on the film.) You will feel the tension on the rewind crank lessen as the leader end of the film slips off the take-up spool.

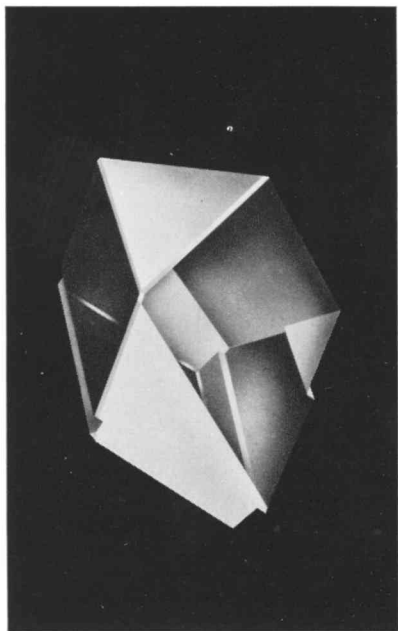
Stop rewinding when you feel this happen. **AVOID DIRECT SUNLIGHT WHEN UNLOADING YOUR FILM.** (The rewind release button will return to normal position as you load your next film and turn the rapid wind lever.)



- 6** Open the back, pull out the film rewind knob ④, and remove the film cassette. Bend the leader end of the film to indicate that the film is exposed and ready for development.
-

Little Jewel

This gem-like object is a pentaprism—nearly two solid ounces of finest optical glass. Ground and polished to extremely fine tolerances, it contains 25 distinct surfaces and is a thing of beauty, yet it dwells out of sight within the innards of Honeywell Pentax cameras.



BRIGHT FIELD FOCUSING

- 1** You can start viewing and focusing before and after cocking the rapid wind lever. When the preview lever ⑩ is in 'A' (automatic) position, the diaphragm is fully open except for the moment of exposure.
- 2** Turn the distance scale ring ④ until your subject image is clearly in focus. It is not always necessary for you to view and focus with the diaphragm fully open. In bright sunlight, you can easily focus with the diaphragm closed to $f/5.6$ or $f/8$, and still observe the depth of field. It is easier, however, to focus with the diaphragm fully open as your subject image is much brighter.

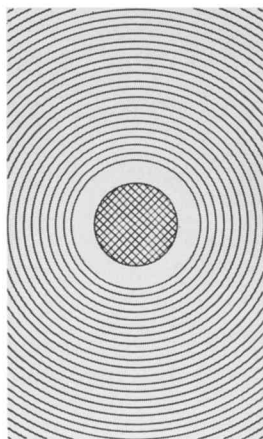
When the letter 'M' appears beside the lever ⑩, the lens is in manual position; when 'A' appears, it's in automatic position.



MICROPRISM

Honeywell Pentax cameras have a Fresnel lens with a microprism centre underneath the ground glass. As you look through the finder, you will see that the Fresnel lens consists of many concentric rings which provide the brightest possible image on the ground glass.

The microprism is the centre portion of this diagram. When your subject is in focus, the image in the microprism will be sharp and perfectly clear. If your subject is not in focus, the H3v's microprism will break the image up into many small dots, much like an engraver's screen, while a number of parallel diagonal lines will appear in the microprism of the H1a also breaking up your subject's image. You can focus on your subject at any portion of the ground glass.



AUTOMATIC DIAPHRAGM

When the preview lever ⑪ is in "A" (automatic) position, the fully automatic diaphragm is at its largest aperture at all times, except for the instant of exposure, no matter what aperture is set on the diaphragm ring. When you release the shutter, the diaphragm automatically stops down to the predetermined aperture and the shutter curtains start traveling instantly. When the exposure is completed, the diaphragm reopens to maximum aperture completely automatically, and you are ready to compose, focus, and shoot your next picture. If you wish to visually check exact depth of field before making the exposure, move the preview lever to "M" (manual) position. This stops the diaphragm to the aperture selected and shows you exactly how much depth of field will appear in your picture. The preview lever may be moved back to "A" (automatic) position before or after making your exposure, or, if you are making pictures in bright sunlight, it may be left in manual position, which permits a constant check of depth of field.



OUT OF FOCUS



IN FOCUS

SHUTTER



Turn the shutter speed dial ④ clockwise or counter-clockwise as you like, to the desired shutter speed. The shutter speed may be set either before or after cocking the rapid wind lever. As you cock the shutter by turning the rapid wind lever, the 'cocked' indicator ⑤ becomes red showing that the shutter is cocked. The indicator window blacks out as you trip the shutter button. For use of the X setting on the shutter speed dial, refer to page 14.

With the shutter speed dial set on B (bulb), the shutter will stay open as long as you depress the shutter button. As you release your finger from the shutter button, the shutter closes. When a long exposure is desired while using the B setting, attach a shutter release cable with a locking device to the shutter button. This will permit a "Time" exposure.

With the shutter speed dial set on T (time), the shutter stays open after the shutter button is released. To close the shutter, turn the shutter speed dial in either direction. Unless you turn the shutter speed dial, the shutter will not close.

CAUTIONS

- 1 At slow speeds—slower than 1/30—support your camera rigidly or use a tripod to prevent movement of your camera.
- 2 To protect the shutter mechanism, trip the shutter release before putting the camera out of use for any extended period.

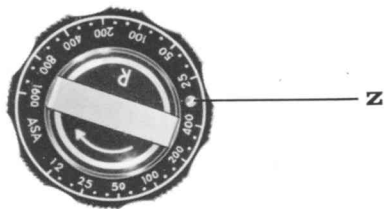
DEPTH - OF - FIELD GUIDE



Depth of field is the range between the nearest and farthest distances which are in focus at different lens apertures.

If you want to know how great the depth of field is at a certain aperture, look at the depth-of-field guide ①. In the above photograph, the distance scale is set at 15 feet...the lens is focused on a subject 15 feet away. The calibrations on each side of the distance index ② correspond to the diaphragm setting and indicate the range of in-focus distance for different lens apertures. For example, if the lens opening of $f/8$ is to be used, the range on the distance scale ring covered within the figure 8 on the depth-of-field guide indicates the area in focus at that lens opening. You will note from the depth-of-field guide in the above photograph that the range from 10 to 25 feet is in focus. Note that as the lens apertures change, the effective depth of field also changes. For the depth of fields at different apertures and distances, refer to page 13.

FILM TYPE REMINDER DIAL



The ASA film speed rating of all 35mm films is given in the data sheet packed with each roll of film. As the ASA number increases, the sensitivity of the film also increases. For example, for two films of ASA 50 and ASA 200, the ASA 50 film requires 4 times more exposure than the ASA 200 film.

Use the film type dial to show what type of film is in your camera. Simply move the nipple ② and set the ASA number of your film opposite the red pointer. Use white figures for black-and-white film and green figures for colour and other special films. To check whether the camera is loaded, turn the film rewind knob clockwise. If it turns freely, the camera is not loaded.

For ASA-DIN film speed conversion, refer to page 33.

DEPTH-OF-FIELD TABLE

SUPER-TAKUMAR 55mm LENS

Distance Scale F Setting	Ext. Tubes 2, 3 @ 1.5 ft.	Ext. Tubes 2 @ 1.5 ft.	Ext. Tubes 1 @ 1.5 ft.	1.5 Ft.	1.7 Ft.	2 Ft.	2.25 Ft.	2.5 Ft.	3 Ft.	3.5 Ft.	4 Ft.	5 Ft.	7 Ft.	10 Ft.	15 Ft.	30 Ft.
F/1.8	0.72 ~0.72	0.80 ~0.80	0.94 ~0.94	1.47 ~1.47	1.69 ~1.71	1.98 ~2.02	2.23 ~2.27	2.47 ~2.53	2.95 ~3.05	3.44 ~3.57	3.91 ~4.09	4.86 ~5.15	6.72 ~7.30	9.4 ~10.6	13.7 ~16.5	25.3 ~36.9
F/2	0.72 ~0.72	0.80 ~0.80	0.94 ~0.94	1.47 ~1.47	1.68 ~1.71	1.98 ~2.02	2.22 ~2.28	2.47 ~2.54	2.95 ~3.05	3.43 ~3.57	3.90 ~4.10	4.85 ~5.16	6.70 ~7.33	9.4 ~10.7	13.6 ~16.7	24.8 ~37.9
F/2.8	0.72 ~0.72	0.80 ~0.80	0.94 ~0.94	1.47 ~1.47	1.68 ~1.72	1.97 ~2.03	2.21 ~2.29	2.45 ~2.55	2.93 ~3.07	3.40 ~3.61	3.87 ~4.14	4.79 ~5.23	6.58 ~7.45	9.1 ~11.0	13.1 ~17.5	23.2 ~42.3
F/4	0.72 ~0.72	0.80 ~0.80	0.94 ~0.95	1.44 ~1.50	1.67 ~1.73	1.96 ~2.04	2.20 ~2.31	2.43 ~2.57	2.90 ~3.11	3.36 ~3.65	3.81 ~4.21	4.70 ~5.34	6.42 ~7.70	8.8 ~11.5	12.5 ~18.9	21.2 ~51.4
F/5.6	0.72 ~0.72	0.80 ~0.80	0.93 ~0.95	1.44 ~1.50	1.66 ~1.74	1.94 ~2.06	2.18 ~2.33	2.41 ~2.60	2.86 ~3.15	3.31 ~3.72	3.75 ~4.29	4.60 ~5.48	6.21 ~8.03	8.4 ~12.3	11.7 ~21.0	19.0 ~72.1
F/8	0.72 ~0.73	0.80 ~0.80	0.93 ~0.95	1.44 ~1.50	1.65 ~1.76	1.92 ~2.09	2.15 ~2.36	2.37 ~2.65	2.81 ~3.22	3.23 ~3.82	3.65 ~4.43	4.44 ~5.72	5.93 ~8.57	7.9 ~13.7	10.7 ~25.4	16.4 ~182.2
F/11	0.72 ~0.73	0.79 ~0.81	0.93 ~0.96	1.41 ~1.54	1.63 ~1.78	1.89 ~2.12	2.11 ~2.41	2.32 ~2.71	2.74 ~3.32	3.14 ~3.96	3.53 ~4.62	4.27 ~6.05	5.61 ~9.36	7.3 ~15.9	9.6 ~34.5	14.1 ~∞
F/16	0.72 ~0.73	0.79 ~0.81	0.92 ~0.96	1.41 ~1.57	1.60 ~1.82	1.85 ~2.18	2.05 ~2.49	2.25 ~2.81	2.64 ~3.49	3.00 ~4.21	3.35 ~4.98	4.00 ~6.70	5.14 ~11.8	6.5 ~21.7	8.3 ~85.3	11.3 ~∞

Distance Scale F setting	Ext. Tubes 2, 3 @ 45cm	Ext. Tube 2 @ 45cm	Ext. Tube 1 @ 45cm	0.45 m.	0.8 m.	1.5 m.	3 m.	5 m.	10 m.
F 1.8	cm. 22.0 ~22.0	cm. 24.4 ~24.5	cm. 28.8 ~28.9	m. 0.45 ~0.45	m. 0.79 ~0.81	m. 1.46 ~1.54	m. 2.84 ~3.19	m. 4.55 ~5.54	m. 8.35 ~12.5
F 2	22.0 ~22.0	24.4 ~24.5	28.8 ~28.9	0.45 ~0.45	0.79 ~0.81	1.46 ~1.54	2.84 ~3.19	4.55 ~5.54	8.35 ~12.5
F 2.8	22.0 ~22.0	24.4 ~24.5	28.7 ~28.9	0.45 ~0.45	0.79 ~0.82	1.44 ~1.57	2.76 ~3.29	4.36 ~5.87	7.69 ~14.3
F 4	22.0 ~22.0	24.4 ~24.5	28.7 ~29.0	0.44 ~0.46	0.78 ~0.82	1.42 ~1.60	2.67 ~3.43	4.13 ~6.35	7.0 ~17.5
F 5.6	22.0 ~22.0	24.4 ~24.6	28.6 ~29.0	0.44 ~0.46	0.77 ~0.83	1.38 ~1.65	2.55 ~3.64	3.86 ~7.12	6.26 ~25.2
F 8	21.9 ~22.1	24.3 ~24.6	28.5 ~29.1	0.44 ~0.46	0.76 ~0.85	1.34 ~1.71	2.40 ~4.01	3.52 ~8.71	5.4 ~∞
F 11	21.9 ~22.1	24.2 ~24.7	28.4 ~29.3	0.43 ~0.47	0.74 ~0.87	1.29 ~1.80	2.24 ~4.59	3.17 ~12.1	4.6 ~∞
F 16	21.9 ~22.1	24.2 ~24.8	28.2 ~29.5	0.43 ~0.48	0.72 ~0.90	1.21 ~1.98	2.00 ~6.07	2.72 ~34.8	3.7 ~∞

When using extension tubes, the distance is measured from the front ring of the lens;
otherwise, the distance is measured from the film plane.

SELF-TIMER



Turn the self-timer cocking wheel (S) clockwise as indicated by the arrow mark until it stops. When you depress the self-timer release (t), the shutter will release in about 10 seconds. If you depress the release button after turning the wheel (S) about 50 degrees, the shutter will release in about 5 seconds. The cocking wheel can be turned before or after you cock the rapid wind lever of the camera. Remember that the shutter will release when the "V" mark on the side of the wheel (S) comes to the front. So, you always know when the shutter releases when taking your own self-portraits. *The self-timer is built in the H3v model only.*

FLASH SYNCHRONIZATION



The Honeywell Pentax has two sets of terminals—FP and X. The table below 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 about 1/50 of a second, and this indicates the highest shutter speed at which Honeywill Strobonars or other electronic flash units may be used.

Shutter speed Flash terminal	$\frac{1}{1000}$ H3v ONLY	$\frac{1}{500}$	$\frac{1}{250}$	$\frac{1}{125}$	$\frac{1}{60}$	X	$\frac{1}{30}$	$\frac{1}{15}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	1	B
FP		FP Class (screw base)											
		FP Class (bayonet base)											
X							F Class						
							M Class						
							Electronic flash						

INTERCHANGEABLE LENSES

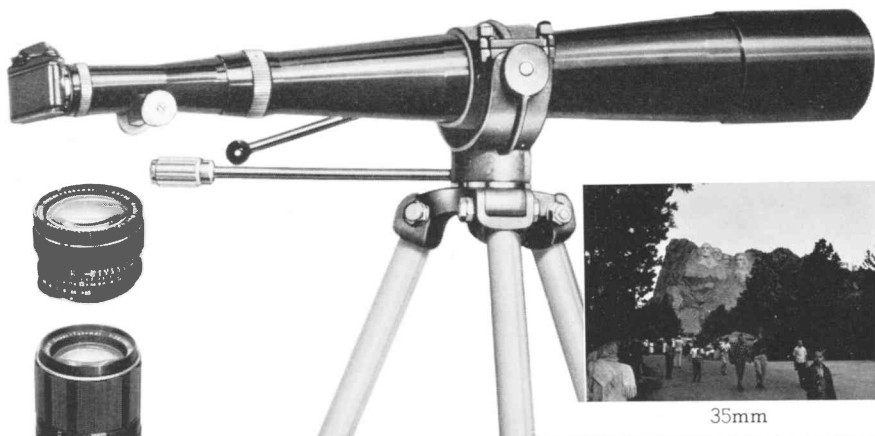
The Honeywell Pentax offers many interchangeable lenses, all of which are widely respected by professional and amateur photographers for their fine resolution. The photographic coverage of the various Takumar lenses is illustrated on page 16. With focal length longer than 55mm, the subject image is seen through the viewfinder larger than its life size. Regardless of the lens selected for your Honeywell 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 ①. When attaching a lens, filter, or lenshood, do not screw it too tightly, as you may find it difficult to unscrew.



DIFFERENCE OF ANGLE OF TAKUMAR LENSES

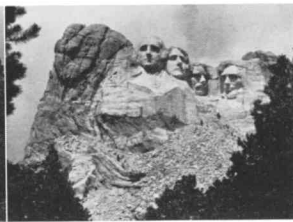
All photographs were taken from the same location and distance from the subject.



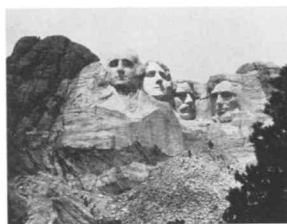
35mm



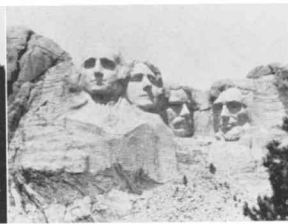
55mm



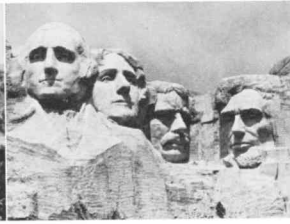
85mm



105mm



135mm



200mm



300mm



500mm

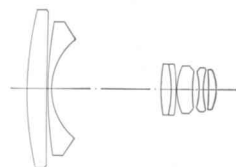


1000mm

Super-Takumar 28mm f/3.5

A new super-wide-angle lens of 7 elements, designed and produced to meet the most exacting of the professional requirements, this is *the* lens you professionals and advanced amateurs need to shoot more artistic photographs. Equipped with fully automatic diaphragm; ideal for architecture, fast-action and *artistic* photography.

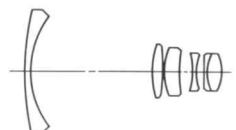
Lens element.....	7
Minimum aperture	f/22
Minimum distance	1.3 ft. (40 cm)
Angle of view.....	75°
Weight	9.2 ozs. (260 gr.)



Auto-Takumar 35mm 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.

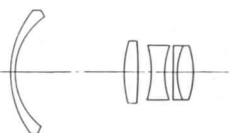
Lens element.....	6
Minimum aperture	f/22
Minimum distance	1.5 ft. (45 cm)
Angle of view	63°
Weight.....	11 ozs. (310 gr.)



Auto-Takumar 35mm f/3.5

A medium speed lens with extremely high resolving power, this is an excellent general purpose wide-angle optic which will prove highly useful for scenic, industrial, and architectural photography. Compact and light in weight.

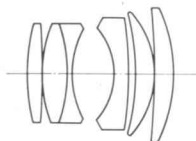
Lens element.....	5
Minimum aperture	f/22
Minimum distance	1.5 ft. (45 cm)
Angle of view	63°
Weight.....	5.2 ozs. (147 gr.)



Super-Takumar 55mm f/1.8



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. Equipped with fully-automatic diaphragm.

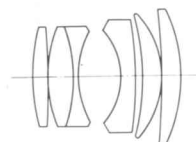


Lens element	6
Minimum aperture	f/16
Minimum distance.....	1.5 ft. (45 cm)
Angle of view.....	43°
Weight	7.6 ozs. (164 gr.)

Super-Takumar 55mm f/2



Razor-sharp, fully corrected, high-speed standard lens, using rare-earth glass, designed by top lens designers. Bright f/2 aperture makes viewing and focusing extremely easy. Razor-like and brilliant resolution is widely acclaimed by professional and discriminating amateur alike. Equipped with fully automatic diaphragm.

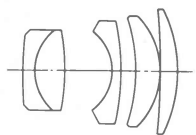


Lens element	6
Minimum aperture	f/16
Minimum distance.....	1.5 ft. (45 cm)
Angle of view	43°
Weight	7.6 ozs. (164 gr.)

Auto-Takumar 85mm f/1.8



A new, ultra-fast 5-element lens which produces an image slightly larger than the standard lens. Perfect for available light portraiture, nature studies, and sports coverage. Used as a standard, general purpose lens by many photographers. Equipped with semi-automatic diaphragm.

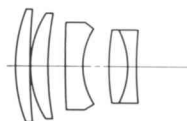


Lens element	5
Minimum aperture.....	f/16
Minimum distance.....	3 ft. (85 cm)
Angle of view.....	29°
Weight	12 ozs. (340 gr.)

Super-Takumar 105mm f/2.8

A quality medium telephoto lens of 5 elements, with well corrected aberrations. Light-weight design for portability and easy handling. Recommended for scenery, portrait, news photos, other moderate telephoto effects. Equipped with fully automatic diaphragm; supplied with special lenshood.

Lens element 5
Minimum aperture f/22
Minimum distance..... 4 ft. (1.2 m)
Angle of view..... 23°
Weight 10.2 ozs. (290 gr.)



Takumar 105mm f/2.8

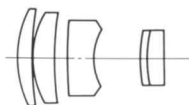
Exactly same as Super-Takumar 105mm; except this is equipped with pre-set diaphragm. The pre-set diaphragm ring ①, is set at a desired aperture before focusing. Turn the actual diaphragm ring ② to f/2.8 to focus with the diaphragm fully open. After accurate focusing has been achieved, turn the diaphragm ring ② which automatically stops at the preselected aperture setting. Supplied with special lenshood.



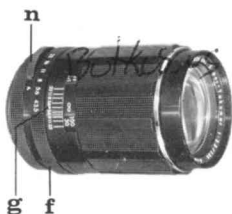
Takumar 135mm f/3.5mm

Produces a brilliant image in all corners of the picture even with the diaphragm fully open. Indispensable for distant subject matter and for portrait. Ideal for close-ups of animals or plants even at a distance. Recommended as the ideal long telephoto lens for hand-held camera operation. Equipped with pre-set diaphragm.

Lens element 5
Minimum aperture f/22
Minimum distance..... 6 ft. (2 m)
Angle of view..... 18°
Weight 10.6 ozs. (300 gr.)

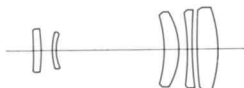
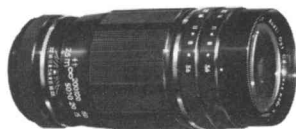


Super-Takumar 135mm f/3.5



Identically same as Takumar 135mm f/3.5 lens in its specifications; except this is equipped with fully automatic diaphragm and weighs 12.1 ozs. (343 gr.). As explained on page 10, turn the diaphragm ring ① and match the desired f/setting to the index ②. The diaphragm closes down to this preselected aperture and reopens automatically when the lever ③ is in 'A' (automatic) position. Turn the lever ③ to 'M' (manual) position to visually check the depth of field at different apertures.

Takumar 200mm f/5.6



Small, compact and light weight... that's the new Takumar 200mm f/5.6 lens. It weighs only slightly more than Super-Takumar 135mm. Still it produces professional quality resolution in hand-held telephotography. Equipped with pre-set diaphragm; supplied with special lenshood.

Lens element..... 5
Minimum aperture f/22
Minimum distance 9 ft. (2.5 m)
Angle of view 12°
Weight..... 13.1 ozs. (370 gr.)

Takumar 200mm f/3.5



A bright 4-element telephoto lens for hand-held 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. Equipped with pre-set diaphragm; supplied with special lenshood.

Lens element..... 4
Minimum aperture f/22
Minimum distance 9 ft. (2.5 m)
Angle of view 12°
Weight..... 26.5 ozs. (900 gr.)

Takumar 300mm f/4

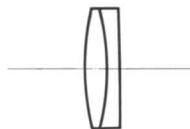


Light enough for hand-held picture taking, this lens is considered to be the most ideal for spectacular telephotographic effects. Even with the diaphragm fully open, the aberrations are corrected to the greatest extent possible. Gives needle-sharp resolution to every corner of the picture. Equipped with manual diaphragm; supplied with special lenshood.

Lens element 3
 Minimum aperture f/22
 Minimum distance 25 ft. (7 m)

Angle of view 8°
 Weight 48 ozs. (1.36 kg.)

Takumar 500mm f/5



Perfect ultra-telephoto lens for sports, scenic and wildlife photography. Bright f/5 image simplifies aiming and focusing. Produces edge-to-edge coverage of high resolution. Comparatively light and small for its performance. Equipped with manual diaphragm; supplied with special lenshood.

Lens element 2
 Minimum aperture f/22
 Minimum distance 35 ft. (10 m)

Angle of view 5°
 Weight 6 lbs. 5 ozs. (2.85 kg.)

TAKUMAR 1000mm f/8



Photographs subjects which are too far away to be seen by the naked eye. The ultimate in fine optics for the photographer who specializes in news, sports, scientific or wildlife photography. Fast, accurate focusing with manual diaphragm. Furnished with built-on lenshood, rigid metal tripod and in wooden cases.

Lens element.....	3
Minimum aperture	f/22
Minimum distance	98 ft. (30 m)
Angle of view	2.5°
Weight of lens	16.5 lbs. (7.5 kg.)
Weight of tripod	26 lbs. (11.8 kg.)

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 camera movement. 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 f/8 or f/11.

LENSES	DIAPHRAGM	LENS ELEMENT	MINIMUM APERTURE	MINIMUM DISTANCE		ANGLE	WEIGHT		FILTER SIZE	LENSHOOD SIZE
				Feet	Meters		Ozs.	Gr.		
Super-Takumar 28mm f/3.5	Fully automatic	7	f/22	1.3	0.40	75	9.2	260	58	60
Auto-Takumar 35mm f/2.3	Semi-automatic	6	f/22	1.5	0.45	63	11	310	65	65
Auto-Takumar 35mm f/3.5	Semi-automatic	5	f/22	1.5	0.45	63	5.2	147	46	46
Super-Takumar 55mm f/2	Fully automatic	6	f/16	1.5	0.45	43	7.6	164	49	49
Super-Takumar 55mm f/1.8	Fully automatic	6	f/16	1.5	0.45	43	7.6	164	49	49
Auto-Takumar 85mm f/1.8	Semi-automatic	5	f/16	3	0.85	29	12.0	340	55	55
Takumar 105mm f/2.8	Pre-set	5	f/22	4	1.2	23	10.2	290	49	49*
Super-Takumar 105mm f/2.8	Fully automatic	5	f/22	4	1.2	23	10.2	290	49	49*
Takumar 135mm f/3.5	Pre-set	5	f/22	6	2.0	18	10.6	300	46	46
Super-Takumar 135mm f/3.5	Fully automatic	5	f/22	5	1.5	18	12.1	343	49	49*
Takumar 200mm f/5.6	Pre-set	5	f/22	9	2.5	12	13.1	370	49	49*
Takumar 200mm f/3.5	Pre-set	4	f/22	9	2.5	12	26.5	900	67	*
Takumar 300mm f/4	Manual	3	f/22	25	7.0	8	48.0	1360	82	*
Takumar 500mm f/5	Manual	2	f/22	35	10.0	5	6 lbs. 5 ozs.	2850	46	*
Takumar 1000mm f/8*	Manual	3	f/22	98	30.0	2.5	42 lbs.	19000	46	*

(* Supplied with rigid metal tripod.)

(* Special lenshoods supplied with these lenses.)



Taken with Honeywell Pentax. At $1/8$, $1/60$ sec.
Extension tube No. 2

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 of 55mm 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: #1, #2 and #3; 9.5mm, 19.0mm and 28.5mm respectively. These rings may be used in combination as desired. Ring #1 is suited for moderate close-up work as in copying documents. When all extension tubes are used simultaneously with 55mm lens, the subject may be enlarged on the film to a magnification of 1.04 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.

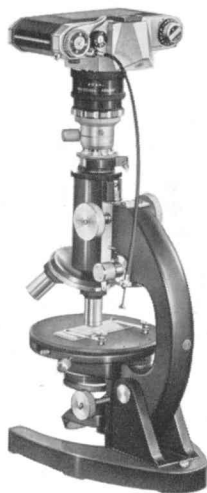


MICROSCOPE ADAPTER

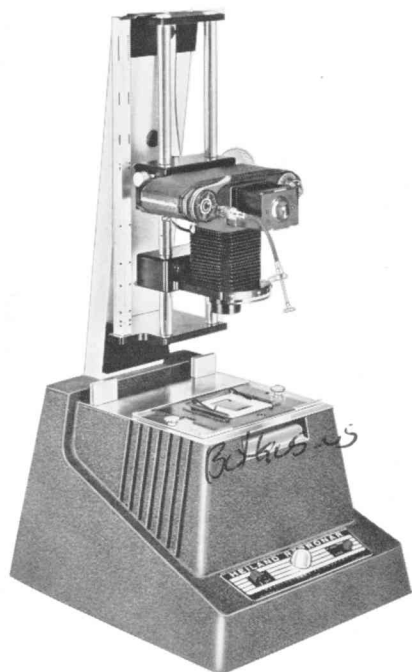
By inserting this adapter between the camera body and the microscope tube, photomicrography can be easily and simply accomplished with the optics of the microscope.

BELLOWS UNIT

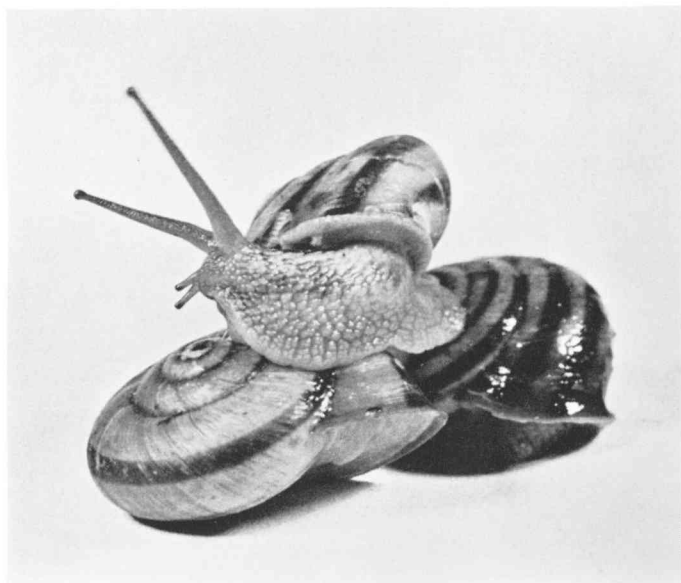
An extremely flexible accessory for ultra-close-up photography. Permits use of the camera's own lens with a special calibrated gear shaft.



HONEYWELL REPRONAR



A desirable accessory for the Honeywell Pentax owner who specializes in colour transparencies, the Repronar incorporates a specially modified Honeywell Pentax camera with a precision $f/3.5$ copying lens and a Strobunar electronic flash light source. It enables the user to duplicate original transparencies, correct for exposure errors and color balance, crop and enlarge portions of original transparencies, create special effects, and perform many other processes in color or black and white. Focusing and composition are quick and easy, and a built-in exposure scale takes the guesswork out of camera settings. Complete with filters, slide holders, lens cap and dust cover.



LEICA MOUNT ADAPTER

ADAPTER 'A' - For use of Leica-mount lenses on the Honeywell Pentax camera body. Leica-mount lenses may be used on the Honeywell Pentax camera body with this adapter ring *ONLY for close-up photography*. The following table illustrates the film plane-to-subject distance that can be covered by Leica-mount lenses when using this adapter.

ADAPTER 'B' - For use of Takumar lenses on Leica-mount camera bodies. Primarily for use with Leica lens mount enlargers.

Focal length of Leica mount lens	Film-to-subject distance		Size of area to be photographed	
50mm	10^{15}_{64} in.	26cm	$2^{61}_{64} \times 3^{15}_{16}$ in.	6.7×10 cm
85mm	22^7_{16} in.	57cm	$4^{11}_{64} \times 6^{19}_{64}$ in.	10.6×16 cm
105mm	32^9_{32} in.	83cm	$5^{15}_{64} \times 7^7_8$ in.	13.3×20 cm
135mm	48^{53}_{64} in.	124cm	$6^{11}_{16} \times 10^1_{32}$ in.	17.0×25.5 cm

(When lens is focused at infinity).



A



B

LENS MOUNT CAP

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



BODY CAP

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



LENS LEATHER CASE

for standard lenses

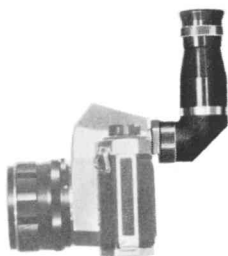


When using an accessory lens on your camera body, put your standard lens in this leather case for protection.

FILM MAGAZINE

For use in loading bulk film.





90° FINDER (Refconverter)

A convenient accessory viewfinder to be attached to the viewfinder frame of the Honeywell Pentax, for low-angle close-up, photo-micrography, etc.



ACCESSORY CLIP

Attach this to the Honeywell Pentax viewfinder window for mounting a folding flash gun, etc.



MAGNIFIER

2-power magnification. Most convenient for critical focusing in close-ups, macro-photography, copying works, etc.



CABLE RELEASE

Use a cable release to prevent camera movement.



3/21 EXPOSURE METER

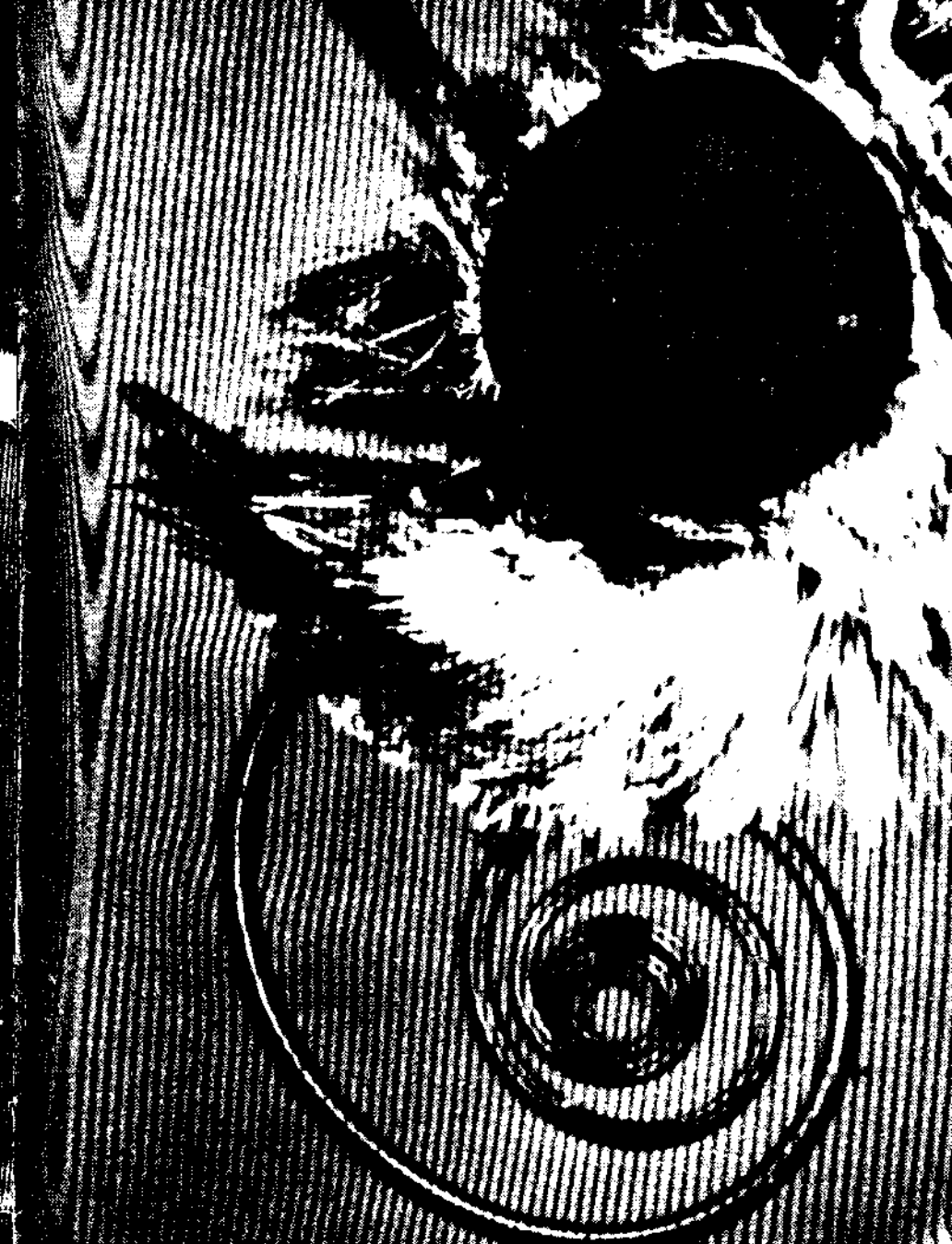
A new concept in reflected light meters. Has own optical reflex viewing system and offers unsurpassed selectivity and accuracy. Light sensitive element (CdS) covers an angle of only 3°, defined in the centre of a viewing screen with a 21° of view. Light intensity is read directly on the viewing screen, and exposure is calculated on movable rings on the lens barrel. Operates for a full year on one 1.3v mercury battery and one 22.5v dry cell.



Portrait of a circus clown.

Taken with an Auto-Takumar 105mm f/2.8,

second.



Profile of a butterfly.

Taken with an Auto-Takumar 55mm $f/2$, at $1/22$, $1/30$ second, with long combination of extension tubes and electronic flash.





"Karate" practice.

Taken with an Auto-Takumar 55mm f/1.8, at f/8, 1/125 second. Mini-copy film was used to produce strong contrasty effect.

ASA-DIN FILM SPEED CONVERSION TABLE

ASA	DIN	Relative Exposure Needed
800	30°	1
640	29°	1.3
500	28°	1.6
400	27°	2
320	26°	2.5
250	25°	3.2
200	24°	4
160	23°	5
125	22°	6.3
100	21°	8
80	20°	10
64	19°	13
50	18°	16
40	17°	20
32	16°	25
25	15°	32
20	14°	40
16	13°	50
12	12°	63
10	11°	80
8	10°	100
6	9°	125
5	8°	160
4	7°	200
3	6°	250
2.5	5°	320
2	4°	400

ASA=American Standards Association

DIN=Deutsche Industrie Normen

FEET-METER CONVERSION TABLE

Feet/inches to metric units		Metric units to feet/inches	
1/8 in.	0.32 cm.	0.5 cm.	3/16 in.
1/4 in.	0.64 cm.	1 cm.	3/8 in.
3/8 in.	1.27 cm.	2 cm.	13/16 in.
1 in.	2.54 cm.	3 cm.	1 1/8 in.
2 in.	5.08 cm.	4 cm.	1 5/8 in.
3 in.	7.62 cm.	5 cm.	1 7/8 in.
4 in.	10.2 cm.	6 cm.	2 1/8 in.
5 in.	12.7 cm.	7 cm.	2 3/8 in.
6 in.	15.2 cm.	8 cm.	3 1/8 in.
7 in.	17.8 cm.	9 cm.	3 5/8 in.
8 in.	20.3 cm.	10 cm.	3 7/8 in.
9 in.	22.9 cm.	12 cm.	4 3/4 in.
10 in.	25.4 cm.	15 cm.	5 7/8 in.
11 in.	27.9 cm.	20 cm.	7 7/8 in.
1 ft.	30.5 cm.	25 cm.	9 1/2 in.
2 ft.	61.0 cm.	30 cm.	11 3/4 in.
3 ft.	91.4 cm.	40 cm.	15 3/4 in.
4 ft.	1.22 m.	50 cm.	19 3/4 in.
5 ft.	1.52 m.	60 cm.	23 3/4 in.
6 ft.	1.83 m.	80 cm.	31 1/2 in.
7 ft.	2.13 m.	100 cm.	39 1/2 in.
8 ft.	2.44 m.	1.5 m.	4 ft. 11 in.
9 ft.	2.74 m.	2 m.	6 ft. 7 in.
10 ft.	3.05 m.	2.5 m.	8 ft. 3 in.
15 ft.	4.57 m.	3 m.	9 ft. 10 in.
20 ft.	6.10 m.	4 m.	13 ft. 2 in.
30 ft.	9.14 m.	5 m.	16 ft. 5 in.
40 ft.	12.20 m.	10 m.	33 ft. 0 in.
50 ft.	15.24 m.	15 m.	49 ft. 2 in.
100 ft.	30.48 m.	20 m.	66 ft. 0 in.