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HONEYWELL PENTAX

**Welcome to the exciting world
of systems photography.**

HONEYWELL PENTAX

The standard—or “normal” lens which comes with your camera—is usually 50 or 55mm. Essentially, this lens’ perspective is about the same as your eye sees. And, as the child’s picture indicates, it will produce an acceptable photograph. The *image size* is slightly larger than the normal eye sees. *Depth of field* is adequate at this shooting distance, the entire subject is in sharp focus. Overall an excellent amateur photograph.



Shot with a Honeywell Pentax Spotmatic II with standard 50mm f/1.4 Super-Multi-Coated Takumar lens. 1/1000 sec., f/4.0 at 20 feet.

Now compare the photo below, shot with a *longer focal length*, 135mm lens.



Taken from same location with 135mm f/3.5 Super-Multi-Coated Takumar lens. 1/1000 sec., f/4.0.

You can change a Honeywell Pentax camera from a photographic microscope into a photographic telescope in a few seconds by unscrewing one lens or attachment and substituting another.

There is virtually no limit to the photographic effects you can achieve with the one basic camera and the hundreds of interchangeable lenses and accessories that match it. This is what *systems* photography means. Volumes have been written on this fascinating subject.

In this small booklet, we have attempted to answer some of the basic questions you may have about the application of interchangeable lenses:

1. “Of all lenses, which one is the most versatile?”
2. “Can I use my 35mm camera for close-up photography?”
3. “What’s the difference between fully-automatic and manual lenses?”
4. “What does lens coating do?”
5. “Why does there seem to be such a big difference in lens prices?”

The effects of focal length

The basic difference in lenses and the image they record, lies in their focal length. This governs three key factors: Perspective, depth of field, and image size.

The “normal” focal length for a 35mm camera should be approximately equal to the film negative’s diagonal, or about 45mm. As we mentioned earlier, the 50 or 55mm “standard” gives a slightly larger image size and a perspective more nearly like the human eye.

Shorter than normal lenses are called wide angle. The “normal” lens, at minimum distances, tends to lend a false perspective by enlarging objects nearest the camera, and therefore is not recommended for extremely close portraiture. A wide angle, short focal length lens, exaggerates this and is often used for such effects as the automobile with a hood that seems to be several times its normal length.

Perspective from a long focus or telephoto lens is just the opposite of the wide angle. Instead of the effect of great distance and spaciousness, a long lens causes foreshortening. Recall the familiar newspaper picture of a row of cars on a busy street. The cars several blocks away seem as large as those in the foreground. This perspective is effective when a compressed effect will add to the picture’s impact.

Depth of Field is simply that portion of a scene which will be in sharp focus in the finished picture. At any specific distance and f/stop, depth of field becomes shallower as lens focal length increases. To illustrate, let’s compare the depth of field of 3 Super-Multi-Coated Takumar lenses, each focused on an object 10’ away and with aperture settings of f/11. The 28mm lens will show everything in sharp focus from 4 feet to infinity. Depth of field for the 50mm lens will have a range of 7 to 15 feet. But the 135mm lens will have a depth of field of only 9½ to 10½

feet. Without changing focal length, depth of field can be varied for any subject distance by changing aperture. For example, by focusing a 50mm lens at 10 feet, depth of field is from 9½ to 10½ feet at f/1.4, 8½ to 12 feet at f/4.0 and 6 to 28½ feet at f/16. The vast area of sharp focus offered by the wide angle 28mm lens is a great asset in such situations as indoor architectural photography, or for shooting panoramic scenic views. The relatively short depth of field available with the 135mm lens helps eliminate distracting background and adds to the effect of exceptional sharpness on the subject in sharp focus.

Image size, the third factor controlled by focal length, follows one inflexible rule: the longer the focal length of your lens, the larger the image size in relation to the so-called "normal" lens. Sometimes, when shooting graduations, weddings, sports events or other situations, you can't step back or get as close as you'd like in order to get your subject within the confines of your negative. Changing lenses to a different focal length will let you fill the frame and your picture will have a true professional quality. And that's what systems photography with lens interchangeability is all about!

Lens diaphragms and how they operate

Takumar lenses for Honeywell Pentax cameras are divided into three groups: manual, pre-set and fully automatic.

The *manual* diaphragm is opened and closed by a single control ring. For viewing and focusing it is turned manually to the widest aperture and then returned manually to the required taking aperture prior to exposure.

The *pre-set* diaphragm has two control rings. The front ring, engraved with f/stop diaphragm numbers rotates with a series of click stops. The second ring rotates freely and is turned to the lens' widest aperture for viewing and focusing, then, for exposure, is returned in the opposite direction until it stops when it reaches the aperture selected with the click stop ring.

If you've used the Honeywell Pentax SLR, you know that one of the benefits is the through-the-lens viewing method that lets you see your subject as the film sees it. Particularly in dim light, you want to focus with the brightest possible view, i.e., with aperture at its widest.

The *fully automatic* lens diaphragm is always open to the widest possible setting for focusing and composing. A moment before the exposure, the instant return mirror snaps clear of the film plane and the diaphragm closes down to the pre-determined f/stop. After exposure, the mirror returns to its normal position and the diaphragm instantly re-opens to maximum aperture, again providing the brightest possible screen image, automatically.

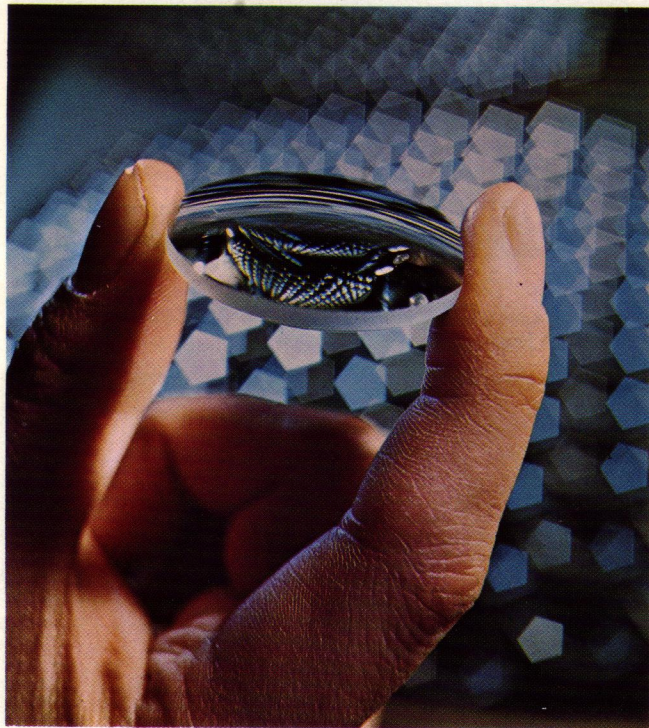
All Super-Multi-Coated Takumar lenses under 400mm are fully automatic (with one exception, the pre-set 100mm Bellows-Takumar). The three extremely long focal lengths, 400mm, 500mm and 1000mm, are manual.

ASAHI OPTICAL world leader in fine cameras and lenses

Asahi Optical began manufacturing specialized lenses in 1919, and has been producing lenses for general photography since 1932, twenty years before the Pentax—first SLR camera from Japan—was manufactured.

Painstaking hand craftsmanship, the finest raw materials and the latest technological know-how are combined in the manufacture of Takumar lenses. In the beginning, lens design required logarithmic tables, slide rules—and great patience. It often took three competent designers several years of steady work to complete the computation of a single 4-element lens. Today, Asahi utilizes the most modern electronic computer equipment which performs extremely complicated calculations very rapidly and with great accuracy.

Fine optics alone cannot make a superior lens; the mechanical components are equally important. Lens barrels of Takumar lenses are precision machined for accurate positioning of all elements. Tolerances are so tight you have to break a vacuum to disassemble some elements. Each Takumar has dust and moisture-proof seals and a special diaphragm damper that cuts down wear, vibration and bounce so you get consistent aperture openings.



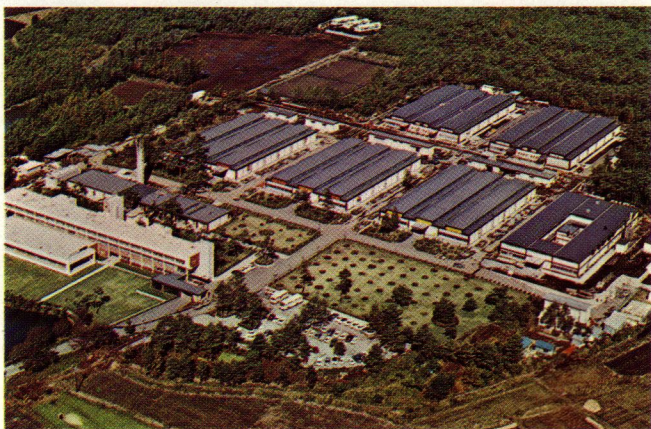
Takumar lenses are guaranteed against defects in manufacture for a full year. Equally important, should you ever need it, you can depend on the most expert service... world-wide.

Takumar lenses are not "cheap." But in no other industry is it truer that "you get what you pay for." There are many so-called bargain lenses that will fit your Honeywell Pentax camera. If you use them infrequently, if you expect only limited use, or if reliability isn't important to you, you may find an inexpensive lens to satisfy your particular needs. But when repairs are necessary, there may be no manufacturer or distributor willing to *make good on manufacturing defects*.

As systems photography fans, we can appreciate the temptation to get started with cheaper accessory lenses. We strongly recommend you wait to get a lens as fine as your camera. And Pentax and Takumar are recognized world-wide as true standards of excellence in the photo industry.



Asahi Optical Company's newest plant is located in a scenic area 87 miles from Tokyo. Other plants are located in Saitama Prefecture and Tokyo.



SUPER-MULTI-COATING: why Takumar lenses are among the finest in the world...

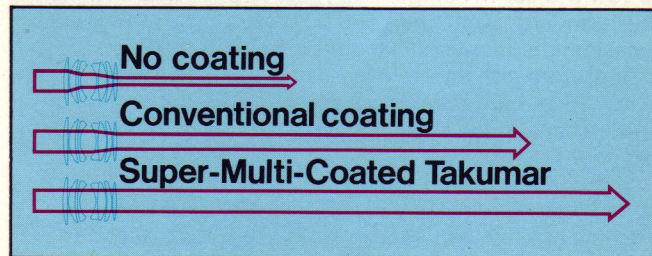
No conventionally coated lens in the world can match the flare-taming and color-capturing ability of the Super-Multi-Coated Takumar.

To understand why this is the greatest breakthrough in lens manufacture in 30 years, you need to know a few basics.



All lens elements have a common problem — reflection at every air-to-glass surface. This means light transmission is lost, and light scattering inside the lens causes flare and ghost images.

As recently as 1940, no coating was used on photographic lenses, and less than half the light entering was transmitted through the lenses.



Over the years, leading manufacturers (and Asahi was among the first) developed methods of depositing a thin film of magnesium fluoride on lens surfaces. This was followed by 2 or 3-layer coatings which further reduced reflections.

With the advent of the space age, researchers started work on ways to cut reflection on instrument cover glasses for high performance aircraft and for viewing windows in Mercury, Gemini, Apollo and LEM spacecraft.

This research was the basis of the multi-coating system used exclusively on Takumar lenses that cuts surface reflection to a phenomenal low of 0.2%. Ghost images are eliminated or drastically reduced, even when shooting into the sun as the comparison pictures below show. Reduced flare means greater contrast, much truer color, much more detail in both highlight and shadow areas.



Photos shot simultaneously with two Honeywell Pentax Spotmatics, bolted together so centers of lenses were 2½" apart. Left picture shows difficulty of shooting under harsh lighting conditions with ordinary lenses.

As you will see in comparison views of pictures taken with the "standard" 50mm lens and lenses of shorter and longer focal lengths, many special effects can be achieved with a variety of interchangeable lenses.

But we certainly don't mean to underestimate the built-in capability for fine photography of your "standard" lens.

In the following series of pictures, all shot with a "standard" Super-Multi-Coated Takumar lens, there may be some tips that will help you take even better pictures.



The "standard" lens gives this livingroom scene a realistic look; a wide angle lens would not have captured the "normal" effect desired. Lens was Super-Multi-Coated 50mm f/1.4, shot at 2 sec., f/16. Photo: Gene Wentworth.

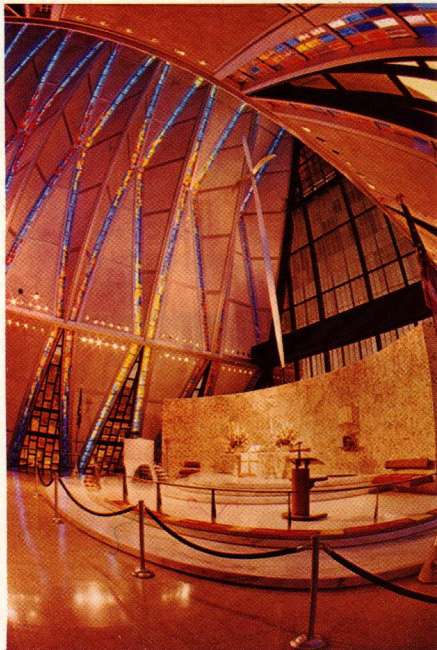
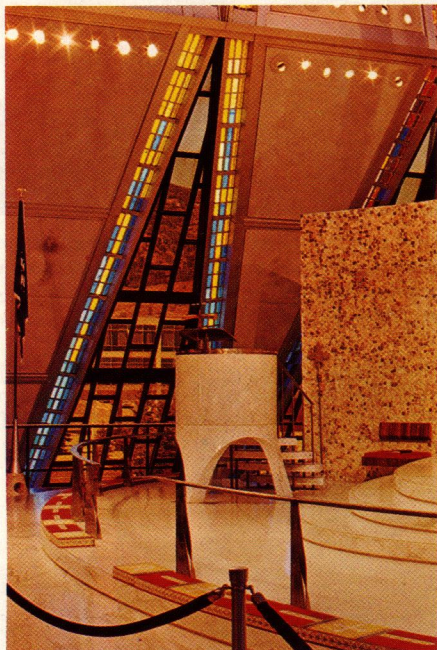
A telephoto would have shown only part of the trunk, and a wide angle lens wouldn't have captured the realism the photographer wanted. Lens was Super-Multi-Coated 55mm f/1.8, shot at 1/125 sec., f/11. Photo: Gene Wentworth.



Sunset as seen from the Space Needle in Seattle. The "standard" lens had the desired lens speed. Lens was Super-Multi-Coated 50mm f/1.4, shot at 1/8 sec., f/1.4. Photo: Gene Wentworth.



Taken with standard 50mm Super-Multi-Coated Takumar,
4 sec., f/8.



From same location with 17mm Super-Multi-Coated Takumar,
4 sec., f/8.



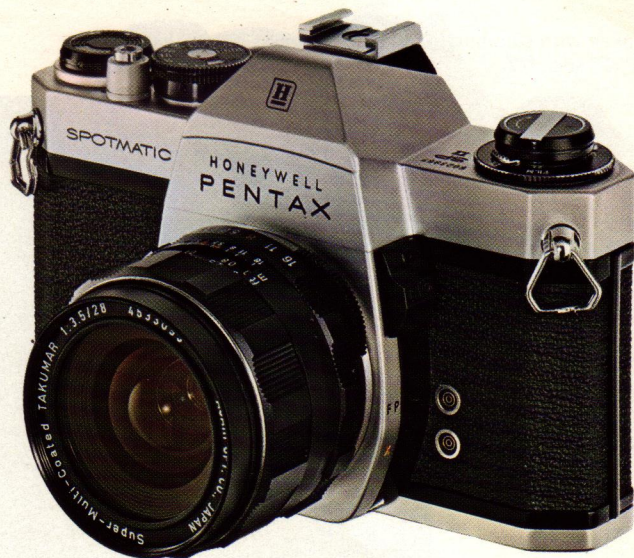
17mm Super-Multi-Coated-Takumar f/4.0.
Fully automatic. 11 elements.
Minimum aperture f/22, minimum focus 7.8'
160° angle of view.
Weight: 8.1 oz. UV, Y2 and O2 filters built-in.
Cat. No. 7251.
\$319.50.

This extreme wide-angle, full-format Fish Eye lens, with its 160° angle of view and enormous depth of field can bring out the creativity in every photographer. Whether you want to create an artistic effect, capture sharp in-focus images within limited shooting distances or add a new dimension to a scenic shot, this is the Fish Eye that gives you the added benefits of normal through-the-lens viewing, composing, focusing and metering. You need no special viewfinder or other optical accessories, as you need with many other Fish Eyes. Case included.

Taken with standard 50mm Super-Multi-Coated Takumar,
1/30 sec., f/4.



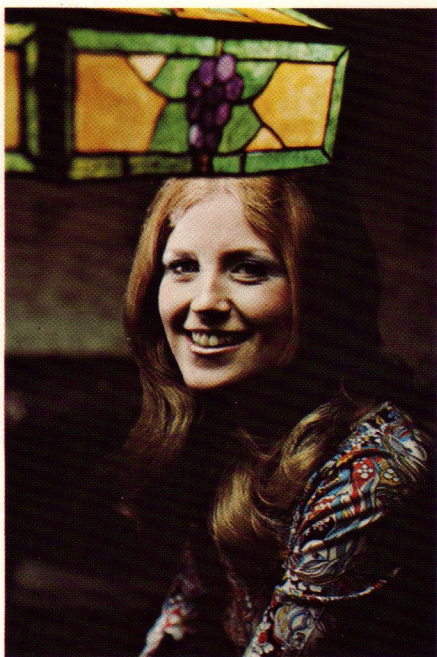
From same location with 28mm Super-Multi-Coated Takumar,
1/30 sec., f/4.



28mm Super-Multi-Coated Takumar f/3.5.
Fully automatic. 7 elements;
Minimum aperture f/16; minimum focus 15.8"
75° angle of view. Filter size – 49mm.
Weight: 7.5 oz.
Cat. No. 7254.
\$199.50.

We believe this is the finest general-purpose wide-angle lens available today. This lens closely matches the angle of coverage of your eye when fixed on the one subject, and the color performance of this Super-Multi-Coated Takumar is superb. A great lens for shooting in congested areas; possibly the best lens of all for candid shots because the wide-angle coverage and depth of field give good results even when your shooting situation doesn't permit careful composition and focus. Case and lenshood supplied.

Taken with standard 50mm Super-Multi-Coated Takumar,
1/125 sec., f/2.



From same location with 85mm Super-Multi-Coated Takumar,
1/125 sec., f/2.



85mm Super-Multi-Coated Takumar, f/1.8.
Fully automatic, 6 elements,
Minimum aperture f/16, minimum focus 2.7'
28.5° angle of view. Filter size—58mm.
Weighs 12.5 oz.
Cat. No. 7248.
\$264.50.

Here's where the longer-than-standard focal length begins. The soft-focus effect of this lens in areas just beyond its depth of field make it ideal for portraits—indoors or out. The moderate distance between you and your subject make this lens particularly effective for pictures of children or pets. Also an excellent lens for night street scenes, illuminated buildings or for theatre or graduation pictures. Case and lenshood supplied.

Taken with standard 50mm Super-Multi-Coated Takumar,
1/1000 sec., f/4 at 20 feet.



From same location with 135mm Super-Multi-Coated Takumar,
1/1000 sec., f/4.



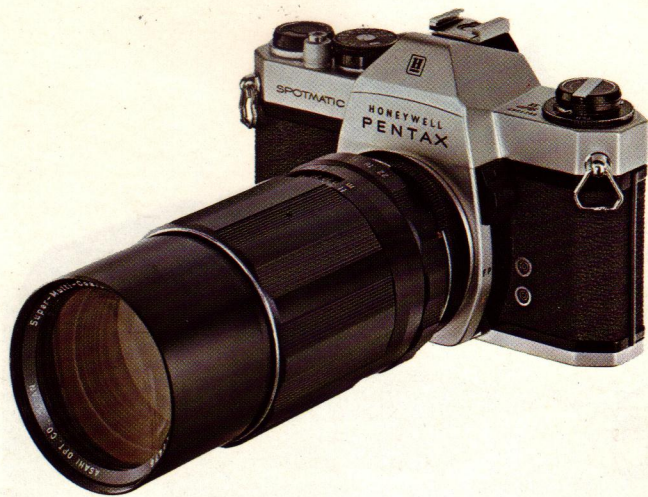
135mm Super-Multi-Coated Takumar f/3.5.
Fully automatic, 4 elements.
Minimum aperture f/22, minimum focus 5'.
18° angle of view. Filter size — 49mm.
Weights 12.1 oz.
Cat. No. 7266.
\$179.50.

This is the first accessory lens added by many new owners of a systems camera. There are several good reasons. This is one of the most versatile lenses — good for distant subjects and excellent for close-ups, sporting events, landscapes and portraits. You can shoot from as close as 5 feet or from long distance, under just about any average light condition. Case and lenshood supplied.

Taken with standard 50mm Super-Multi-Coated Takumar,
1/125 sec., f/8.



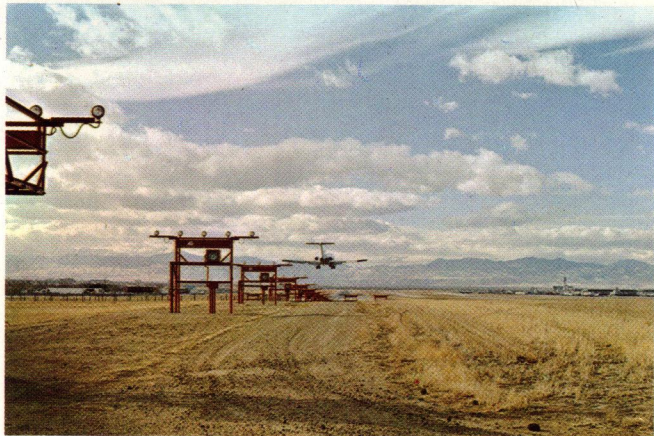
From same location with 200mm Super-Multi-Coated Takumar,
1/250 sec., f/5.6.



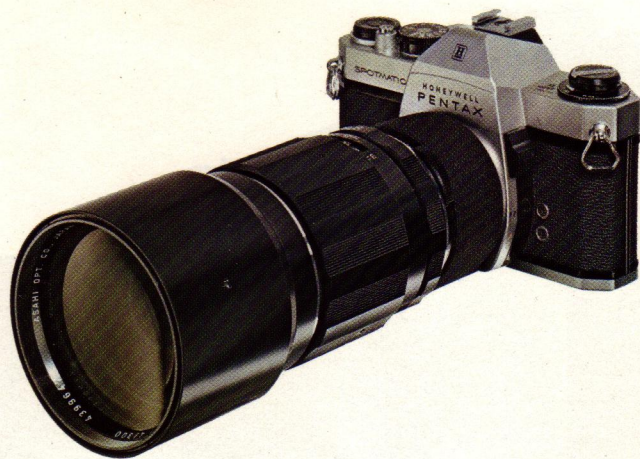
200mm Super-Multi-Coated Takumar f/4.0.
Fully automatic, 5 elements.
Minimum aperture f/22, minimum focus 8.2'.
12.0° angle of view. Filter size – 58mm.
Weight 19.6 oz.
Cat. No. 7269.
\$239.50.

This is a very light, compact and easy-to-use telephoto lens. Excellent for wildlife, sports and news action photography — light enough for hand-held telephoto shots. Case and lenshood supplied.

Taken with standard 50mm Super-Multi-Coated Takumar,
1/500 sec., f/4.5 at 200 yards.



From same location with 300mm Super-Multi-Coated Takumar,
1/500 sec., f/4.5.



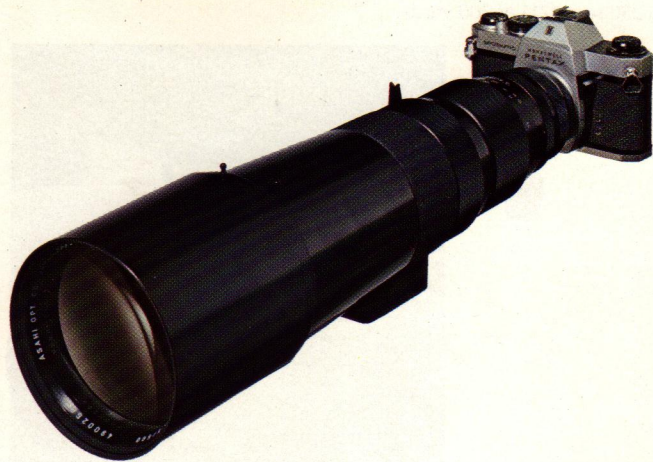
300mm Super-Multi-Coated Takumar f/4.0.
Fully automatic, 5 elements.
Minimum aperture f/22, minimum focus 18'.
8° angle of view. Filter size — 77mm.
Weighs 33.5 oz.
Cat. No. 7271.
\$429.50.

This is the choice of many professionals and serious amateurs who want exceptional versatility in one long-focus lens. Largest of the Takumar lenses with fully automatic diaphragm, this lens makes a perfect general purpose super-telephoto optic. Has a built-in tripod socket, but hand-held shooting is possible because it weighs less than 34 ounces. Case and built-in lenshood supplied.

Taken with standard 50mm Super-Multi-Coated Takumar,
1/500 sec., f/5.6 at 100 feet.



From same location with 500mm Super-Multi-Coated Takumar,
1/500 sec., f/5.6



500mm Super-Multi-Coated Takumar f/4.5.
Manual diaphragm; 4 elements.
Minimum aperture f/45; minimum focus 33'.
5° angle of view. Filter size - 49mm.
Weighs 7 lbs. 11 oz.
Cat. No. 7274.
\$739.50.

This is that special lens for use when you need a good closeup and your subject is at the other end of a football field. It is an extremely sharp super-telephoto lens, excellent for nature photography or any time your subject is a few hundred yards away and inaccessible. With a maximum aperture of f/4.5, it is easy to focus under most lighting conditions. Case and built-in lenshood supplied.

Taken with standard 50mm Super-Multi-Coated Takumar,
1/250 sec., f/11 at 700 yards.



From same location with 1000mm Super-Multi-Coated Takumar,
1/250 sec., f/11.



1000mm Super-Multi-Coated Tele-Takumar f/8.0.
Manual diaphragm; 5 elements, rack and pinion focusing.
Minimum aperture f/45; minimum focus 98'.
2.5° angle of view. Filter size — 49mm.
Weight 12.3 lbs.
Cat. No. 7275.
\$1,595.50.

The ultimate telephoto, so powerful you can identify a person from 600 feet away—subjects actually too far away to be recognized by the naked eye. Focusing is by rack and pinion; diaphragm is manually operated. This lens is used primarily for special news (such as Apollo launches), sports coverage, criminal investigation and wildlife photography. Case, built-in lenshood, tripod and tripod case supplied.



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1. Cat. No. 7252 **20mm** Super-Multi-Coated Takumar f/4.5; fully automatic; 11 elements; min. aperture f/16; min. focus 7.8"; 94° angle of view; weight 8.1 oz.; case and lenshood; filter size—77mm. \$299.50.

2. Cat. No. 7253 **24mm** Super-Multi-Coated Takumar f/3.5; fully automatic; 9 elements; min. aperture f/16; min. focus 10"; 84° angle of view; weight 8.7 oz.; case and lenshood; filter size—58mm. \$269.50.

3. Cat. No. 7255 **35mm** Super-Multi-Coated Takumar f/2.0; fully automatic; 8 elements; min. aperture f/16; min. focus 15"; 63° angle of view; weight 8.5 oz.; case and lenshood; filter size—49mm. \$269.50.

4. Cat. No. 7256 **35mm** Super-Multi-Coated Takumar f/3.5; fully automatic; 5 elements; min. aperture f/16; min. focus 1.5 ft.; 63° angle of view; weight 5.3 oz.; case; filter size—49mm. \$149.50.

5. Cat. No. 7249 **50mm** Super-Multi-Coated Takumar f/1.4; fully automatic; 7 elements; min. aperture f/16; min. focus 18"; 46° angle of view; weight 8.1 oz.; filter size—49mm. (Standard lens for Spotmatic F and ES II.)

6. **55mm** Super-Multi-Coated Takumar f/2.0; fully automatic; 6 elements; min. aperture f/16; min. focus 18"; 43° angle of view; weight 7.5 oz.; filter size—49mm. (Standard lens SP1000.)

7. Cat. No. 7250 **55mm** Super-Multi-Coated Takumar f/1.8; fully automatic; 6 elements; min. aperture f/16; min. focus 18"; 43° angle of view; weight 7.1 oz.; filter size—49mm. (Standard lens for Spotmatic F and ES II.)

8. Cat. No. 7264 **100mm** Super-Multi-Coated Bellows-Takumar f/4.0; preset; 5 elements; min. aperture f/22; min. focus 6" from lens rim with Bellows II; 24.5° angle of view; weight 4.9 oz.; case and lenshood; filter size—49mm. \$184.50.

9. Cat. No. 7262 **120mm** Super-Multi-Coated Takumar f/2.8; fully automatic; 5 elements, 4 groups; min. aperture f/22; min. focus 3.9"; 20° angle of view. Weight 11 oz.; filter size—49mm. \$209.50.

10. Lenshoods

Honeywell Pentax Lenshoods are recommended for use whenever possible for added protection against off-angle light which can cause loss of detail in your pictures. A lenshood is also an effective and inexpensive way to protect the front of your lens from damaging bumps or falls. Most wide-angle Takumar and all telephoto Takumar lenses are supplied with a lenshood.



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1. Cat. No. 7261 **85-210 Super-Multi-Coated Zoom Takumar**, f/4.5; fully automatic; 11 elements; 28.5°—11.5° angle of view; min. aperture f/22; min. focus without closeup attachment lens, 11.5 ft.; with closeup attachment lens, 6.2 ft. Uses 58mm filter. Weight 24.9 oz. Lenshood, closeup attachment lens are supplied. \$599.50.
2. Cat. No. 7265 **105mm Super-Multi-Coated Takumar** f/2.8; fully automatic; 5 elements; min. aperture f/22; min. focus 4 ft.; 23° angle of view; weight 10.2 oz.; case and lenshood; filter size—49mm. \$194.50.
3. Cat. No. 7267 **135mm Super-Multi-Coated Takumar** f/2.5; fully automatic; 5 elements; min. aperture f/22; min. focus 5 ft.; 18° angle of view; weight 15.5 oz.; case; filter size—58mm. \$239.50.
4. Cat. No. 7268 **150mm Super-Multi-Coated Takumar** f/4.0; fully automatic; 5 elements; min. aperture f/22; min. focus 6 ft.; 16.5° angle of view; weight 11.3 oz.; case and lenshood; filter size—49mm. \$209.50.
5. Cat. No. 7273 **400mm Super-Multi-Coated Tele-Takumar** f/5.6 manual diaphragm; 5 elements; min. aperture f/45; min. focus 27 ft.; 6° angle of view; weight 45 oz.; case and lenshood; filter size—77mm. \$469.50.
6. Cat. No. 7088 **85mm Ultra-Achromatic Takumar** f/4.5; fully automatic; 5 elements; min. aperture f/22; min. focus 2 ft.; 29° angle of view; weight 8.7 oz.; case and lenshood; filter size—49mm. \$1,400.00.
7. Cat. No. 7089 **300mm Ultra-Achromatic Takumar** f/5.6; fully automatic; 5 elements; min. aperture f/22; min. focus 16 ft.; 8° angle of view; weight 29 oz.; case and lenshood; filter size—58mm. \$1,600.00.
8. **Filters**
There are fourteen different Pentax filters to cover a wide variety of applications. Filter sizes range from 49mm to 77mm. Prices range from \$13.00 to \$35.00.
 - Cat. No. 7272 **135-600mm Super-Multi-Coated Zoom Takumar**, f/6.7; fully automatic; 15 elements; min. aperture f/45; min. focus without close-up attachment lens, 22 ft.; with close-up attachment lens, 11 ft.; 4°-18° angle of view; weight 8.9 lbs.; filter size—49mm rear filter. Lenshood, close-up attachment lens are supplied. (Not shown in picture). \$1,995.50

Care of Lenses

Dry dust will accumulate on any lens under normal use. To clean, it is best to use a soft camel-hair brush or blow it off with a small rubber syringe.

Avoid touching the lens with your fingers. The normal perspiration on hands and fingertips contains acid which, if left on the lens surface, can etch itself into the lens coating. If you should accidentally touch the lens surface, remove the mark with a lens cleaning tissue moistened with a drop or two of commercial lens cleaning fluid.

To help protect their fine quality, all accessory Takumar lenses come with both front and rear lens caps and a custom leather case. It is particularly important to use the rear cap when the lens is not in use because it protects not only the outer lens surface but also the diaphragm pin and the all-important precision threading used to attach the lens to the camera. This screw-in method assures quick, positive attachment and detachment.



Macrophotography and Photomicrography

The world of close-up photography is fascinating. There are many accessories in the Honeywell Pentax system that can bring you into macrophotography (extreme close-up) and photomicrography (photos taken through a microscope). Macro photographs are pictures of moderate enlargement—usually from .5 to 10 times life size. The camera lens itself is generally used. In shooting photomicrographs—objects magnified from 10 times life size up to millions of times magnified—the microscope functions as the camera lens.

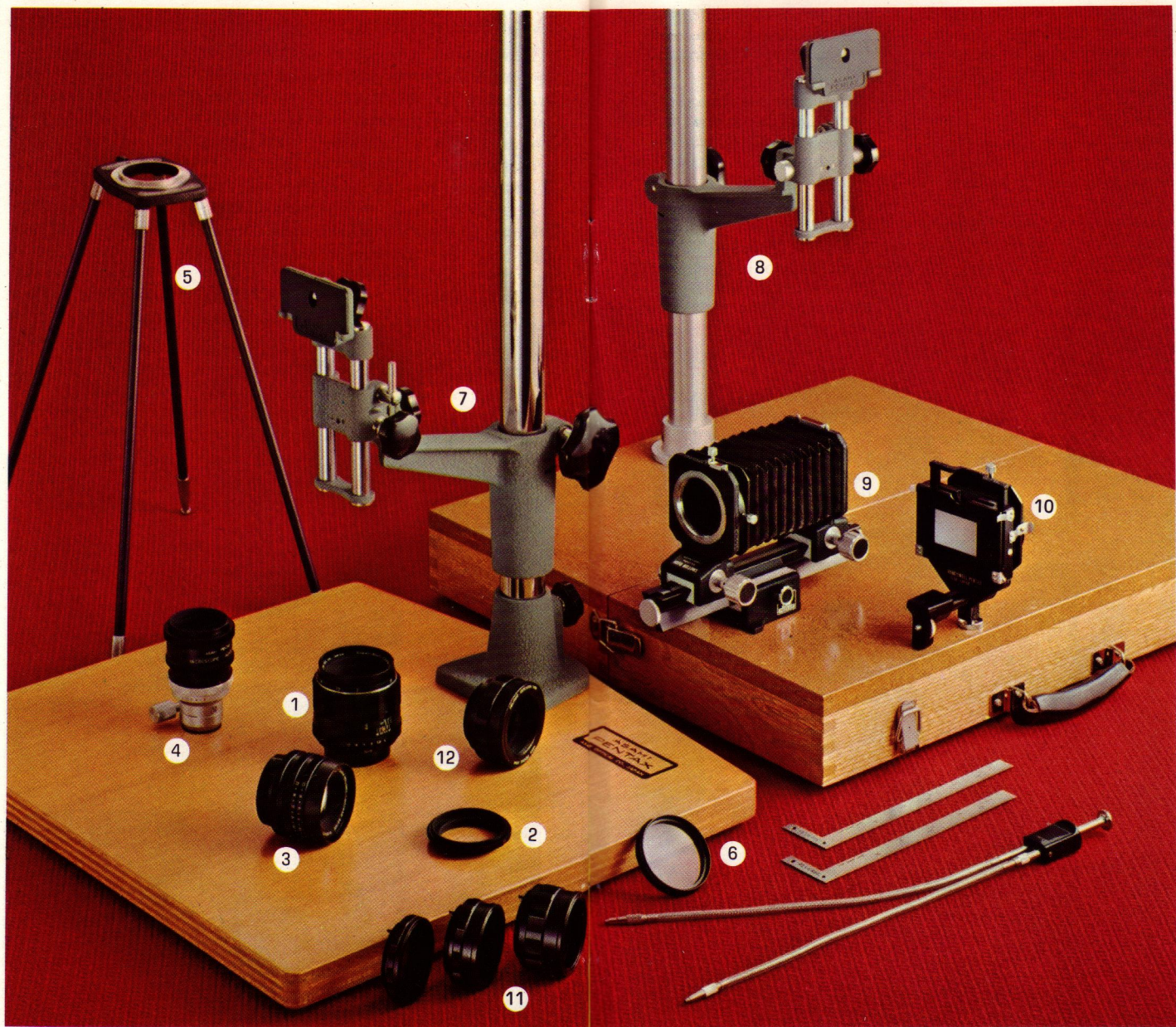
Getting in close with your Pentax

Macro, or close-up, photography is not as confusing or as difficult as it is sometimes made to sound. The optical center of a lens is a certain distance from the film. This distance is called "focal length." A 50mm lens is 50mm away from the film when focused at infinity. As a lens is focused on something closer than infinity, the lens is screwed out farther away from the film. All lens mounts have limitations as to just how far they will expand, and this is "minimum focusing distance." By inserting extension tubes or bellows between camera and lens, the distance between lens and film is increased. You now have the ability to get in much closer than before. The greater the distance between the lens and the film, the closer you can get and the greater the magnification.

Visit a Honeywell dealer. He'll be happy to help you get started in this exciting facet of photography.



Lens was 50mm f/4.0 Super-Macro-Takumar shot at 1/15 sec., f/16. Lens was selected because of close minimum focusing distance.



1. Macro lens 50mm Super-Multi-Coated Macro-Takumar f/4.0; fully automatic; 4 elements; min. aperture f/22; min. focus 9.5"; 46° angle of view, weight 8.7 oz.; lenshood not required as lens is recessed into mount. Cat. No. 7258; filter size—49mm. \$189.50

2. Close-up lens Fits all Takumar lenses which accept 49mm filters. Thread mounts to front lens frame for really crisp photomacrography with a magnification of 0.32 to 0.15 at a subject to film plane range of 11" to 18-1/2". Cat. No. 821. \$15.00

3. Bellows lens 100mm Super-Multi-Coated Bellows-Takumar, f/4.0; preset; 5 elements; min. aperture f/22; min. focus 6" from lens rim used on Auto Bellows; 24.5° angle of view; weighs 5 ozs.; filter size 49mm; lenshood is supplied. Cat. No. 7264. \$184.50.

4. Microscope adapter Fits between the Pentax camera body and the microscope tube, using the microscope optics instead of the camera lens. Use with any 25mm microscope tube. Set includes adapter, main tube and light-sealing tube. Cat. No. 7091. \$34.00

(over)

5. **Copipod** Portable copy stand for all Pentax cameras. Lens board with adapter rings for 46mm and 49mm lenses, and 4 calibrated telescoping legs. With pouch case. Cat. No. 717. \$42.00
6. **Reverse Adapter** Allows standard 50mm or 55mm lenses to be used on Bellows I, Bellows II or extension tubes in reverse position for better macro results. Cat. No. 755. \$4.00.
7. **Copy stand** Deluxe Copy Stand II quickly and accurately aligns any 35mm Pentax for copying documents, specimens, art work. Cat. No. 7101. \$132.00.
8. **Portable copy stand** Base plate becomes a box to contain all components of the kit, plus room for a camera, extension tubes and some small accessories. Cat. No. 7171. \$229.50.
9. **Pentax auto bellows** Front lens board can be reversed to mount lens in reverse

position. Double cable release triggers camera shutter and lens automatic diaphragm. Cat. No. 7095. \$174.00.

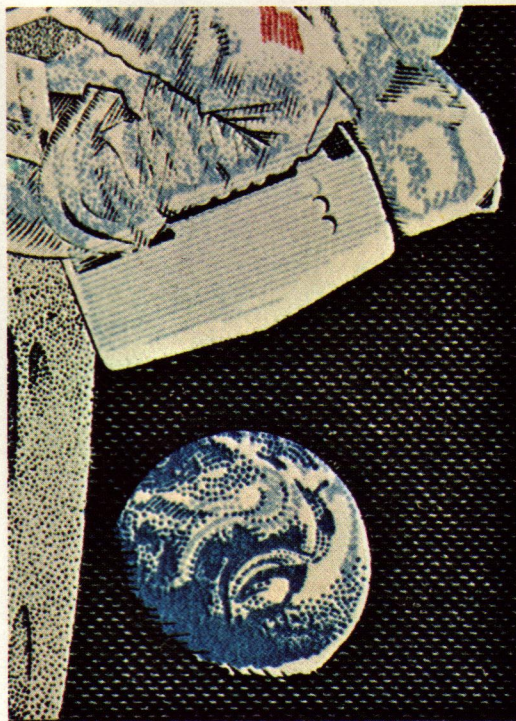
10. **Slide copier** Precision slide copier attaches to front of Auto Bellows for quick, accurate slide duplication. Cat. No. 7090. \$55.00.

11. **Auto extension tube set** Consists of three rings of 9.5mm, 19.0mm and 28.5mm. Used singly or in combination. When three are used simultaneously, with standard 55mm lens, subject is enlarged on film to 1.17 life size. Cat. No. 7094. \$33.00.

12. **Focusing extension tube** Permits variable extension from 16.8mm to 30.6mm. With standard 55mm lens, permits magnification from .3X to .71X. Cat. No. 7105. \$47.00.



No camera lens was used. Camera with microscope adapter was used to shoot through microscope lens. Magnification is 100X.



STATES

100mm f/4.0 Bellows Takumar, shot at 1/4 sec., f/8. Because of its excellent flatness of field, the 100mm Bellows lens was used to get sharpness in all corners.