

SUPER-TAKUMAR FISH-EYE 17mm F4

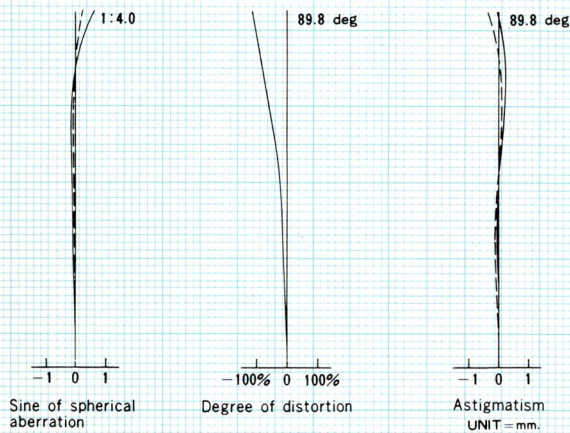
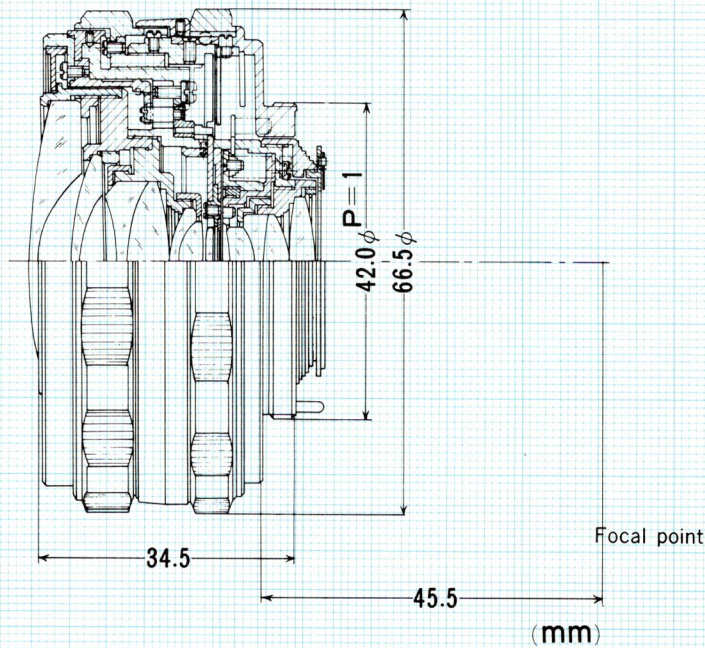


The magic world of the fish-eye lens

The 180° angle of the 17mm fish-eye lens gives you a new view of the world — you see things exactly as your lens sees them when you look through the viewfinder. And the maximum aperture of f4 makes this one of the world's brightest fish-eye lenses. It has the excellent resolution for which all Super-Takumar lenses are famous, and is equipped with a fully automatic diaphragm, and focuses through the viewfinder to as close as 20cm. Bring out the magic in photography with the Super-Takumar fish-eye.



SUPER-TAKUMAR FISH-EYE ● 17mm F4



■ Features ■ This unique Takumar fish-eye lens lets you view the image in the focusing screen without keeping the mirror up. Its angle of view is a full 180° diagonally across the frame, and the fully automatic diaphragm opens up to f4, giving a bright focusing image right down to 20cm. The specially designed 11 lens elements in 7 groups eliminate all aberration except for the degree of distortion and give edge-to-edge sharpness even with the diaphragm fully open.

Three filters are built into the lens — UV, Y2 (Y48), and O2 (O56) — as well as an adaptor for a gelatine filter at the back of the lens, making this a high-performance fish-eye lens that can hold its own in any company.

■ Main uses ■ The distortion and great depth of field make this a lens ideally suited for adding a fascinating new dimension to scenics, ordinary snapshots and commercial photography. Its fine color reproduction also recommends it to all color specialists.

Focal length	17mm	Dimensions	
Maximum aperture	F4	Maximum diameter	66.5mm
Lens elements	11 in 7 groups	Length	30mm
Diaphragm	Fully automatic	Weight	0.50lb (228g)
Angle of view	180°	Filters	3 built-in filters
Minimum focusing distance	0.66ft.(0.2m)	Additional features	Gelatine filter frame
Minimum aperture	F22		

Super-Takumar Fish-Eye 17mm f4

An ultra wide-angle lens, and as such undoubtedly one of the most advanced of its kind in the world. More commonly known by photographers as 'Fish Eye' this designation is hardly surprising when considering the incredible 180° angle of acceptance (film diagonal). Asahi have achieved rare distinction in lens technology in that this lens may be fully employed in conjunction with the mirror and Pentaprism of the camera body, with normal through the lens viewing/composing, focusing, and in the case of Spotmatic, metering. For the record it may not be generally appreciated that with lenses of similar specification from other manufacturers this is quite impossible, as the rear projection of the back component prohibits the normal movement of the mirror mechanism, thereby forcing one to resort to the use of an ordinary optical accessory viewfinder. This has only been made possible due to the almost unbelievably compact and lightweight design which can be regarded as an optical breakthrough by the Asahi design group. Further the lens has not only fully automatic diaphragm, but also boasts the luxury of built-in filters, three in total, comprising UV, Y2, O2, selected by means of a rotating filter control ring.

Alternatively, an adapter is provided enabling the use of gelatine filters to be employed at the rear of the lens.

It is worth noting that even at full aperture standard of definition is remarkably good.

It is a lens primarily employed by those seeking imaginative and unusual photographic effects. Asahi

have created this unique lens and opened up completely new fields of possibilities. Those seeking new means of photographic expression will themselves be the architects of unique and impressive achievement. Add to the general specification the fact that this lens will focus from infinity down to an incredible 20 cms. plus the brilliantly sharp image produced by the 7 groups of 11 individual elements and it is not difficult to see why it is in constant demand and use the world over.

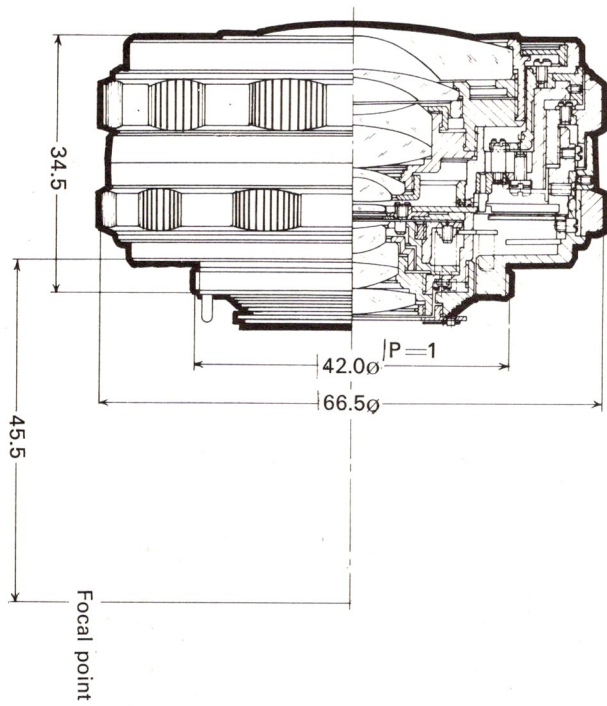
Principal Uses

The almost unbelievable depth-of-field and fascinating degree of distortion both help make this lens the ideal objective where a new dimension is desired for the presentation of all scenic work and unique aspects of commercial and pictorial photography. The superb colour rendering should be of particular interest to all colour specialists.

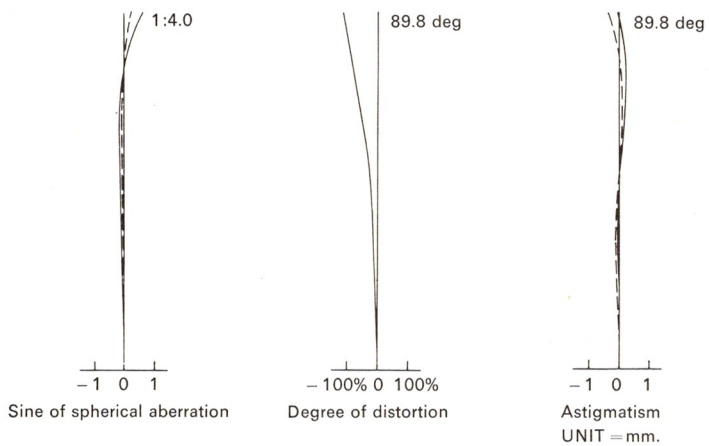


Focal length	17mm
Maximum aperture	F4
Lens elements	11 in 7 groups
Diaphragm	Fully automatic
Angle of view	180°
Minimum focusing distance	0.2m
Minimum aperture	F22
Dimensions	66.5mm
Length	30mm
Weight	228g
Filters	3 built-in filters
Additional features	Gelatine filter frame

Super-Takumar Fish-Eye 17mm f4



(mm)



SUPER-TAKUMAR 20mm F4.5

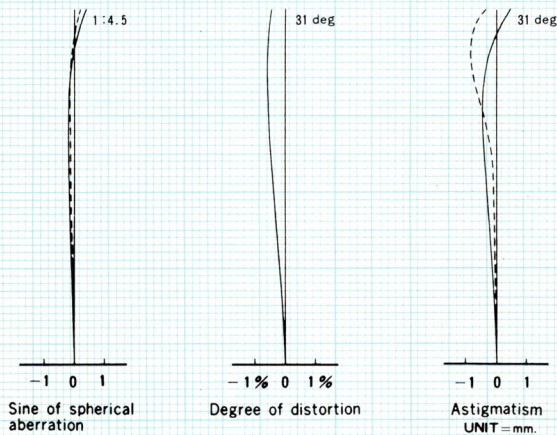
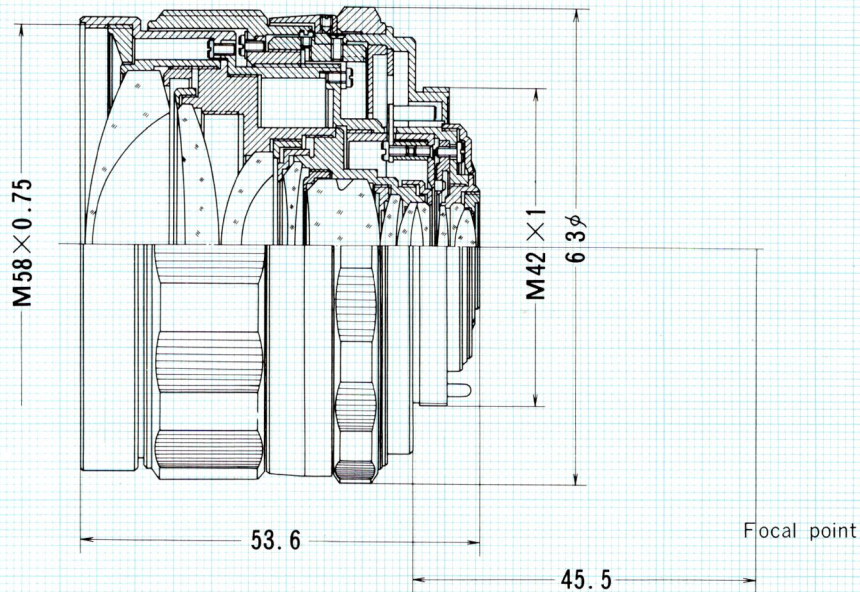


A super-wide-angle lens of superb perspective and least distortion

The new Super-Takumar 20mm f4.5—the widest of the Takumar wide-angle family—lets you view and focus at a 94° angle of vision without keeping the reflex mirror flipped up. Superb perspective effect and a minimum focusing distance of 20cm also make it one of the most exciting lenses of the whole range. Compact in size and light in weight, this new lens opens up yet another field of dramatic photography to all Pentax users.



SUPER-TAKUMAR ● 20mm F4.5



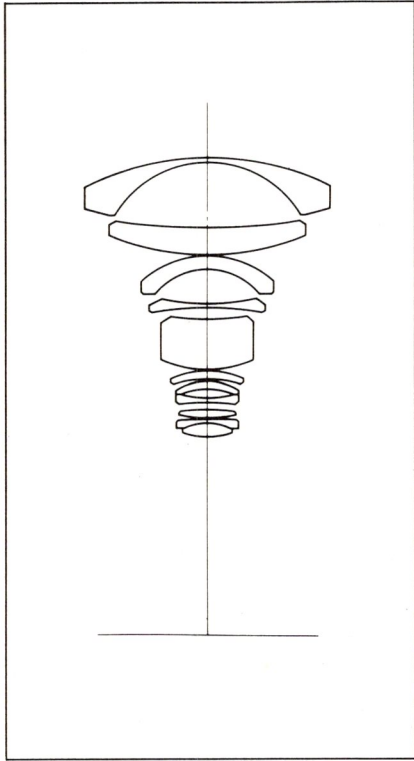
■ Features ■ This is the widest lens of the Takumar wide-angle family. The 11 lens elements are of the retro-focus type and produces pictures of sharp, contrasty image and least distortion.

Its minimum focusing distance of 20cm also makes it one of the most exciting lenses.

■ Main Uses ■ For indoor, architecture and scenery shots, and for all portraits and commercial shots where strong perspective is required.

Focal length	20mm	Minimum aperture	F 16
Maximum aperture	F 4.5	Dimensions	
Lens elements	11 in 10 groups	Maximum diameter	63mm
Diaphragm	Fully automatic	Length	45mm
Angle of view	94°	Weight	0.55lb (250g)
Minimum focusing distance	0.66ft. (0.2m)	Filter size	77mm

Super-Takumar 20mm f4.5



In spite of the super-wide-angle design of 94°, this 11-element lens gives even brightness over the entire picture format. Aberrations corrected from centre to edges. Its short focal length and deep depth of field permit fixed focusing when the lens is set at f8 and 5 metres (15 feet).

Principle Uses

Ideal for photography where space is restricted, architectural work, and because of its deep depth of field, casual shots in poor light when using a flash.

Focal length	20mm
Maximum aperture	F4.5
Minimum aperture	F16
Lens elements	11 in 10 groups
Diaphragm	Fully automatic
Minimum focusing distance	0.2m
Angle of view	94°
Dimensions Maximum diameter	62mm
Length	59mm
Weight	251g
Filter size	77mm screw-in type (onto lenshood)
Lenshood	58mm clip-on type square hood
Lens cap size	58mm

SUPER-TAKUMAR 24mm F3.5

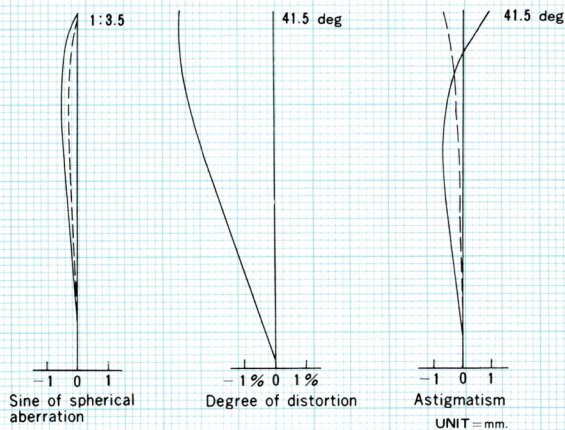
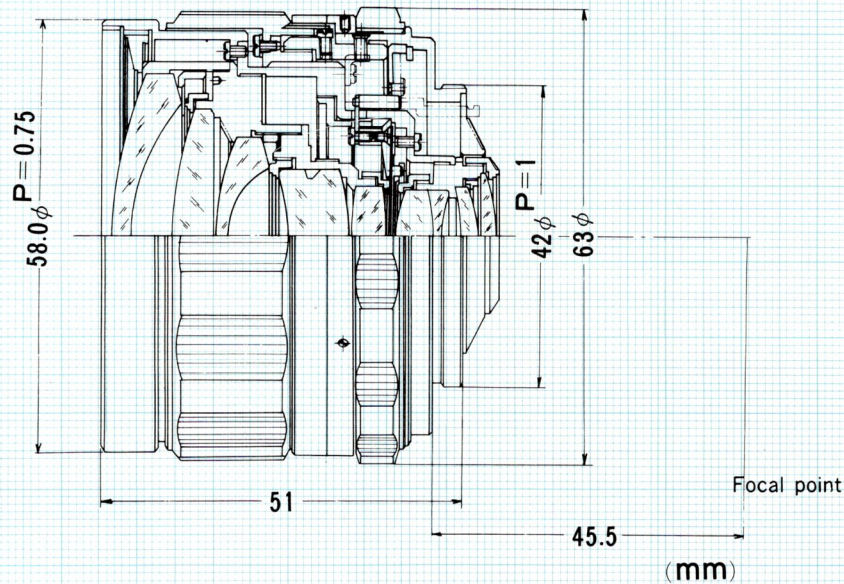


Superb perspective with this super-wide-angle lens

The 24mm Super-Takumar gives you the powerful perspective only possible with super-wide-angle lenses. With an angle of view of 84°, pinpoint focusing down to 25cm and great depth of field — of which Pentax has made full use by incorporating an additional fixed focusing device— this lens meets every professional requirement for creative photography.



SUPER-TAKUMAR • 24mm F3.5



■ Features ■ Though its focal length does not differ greatly from that of a 28mm lens, this lens has an extra-wide 84° angle of view. The resulting wide image and the low level of distortion combine to give the powerful perspective effects which are the hallmark of this lens.

The 9 lens elements, mounted in 8 groups, are of the retro-focus type and give a sharp, contrasty image with none of the loss of quality often associated with wide-angle lenses. The minimum focusing distance of 25cm makes this lens ideal for close-ups, and it is equipped with a fully automatic diaphragm.

■ Main uses ■ The wide-angle effect of this lens makes it ideal for indoor shots where space is limited, for architecture and scenery, and for all portraits and commercial shots where strong perspective is required.

Focal length	24mm	Minimum aperture	F16
Maximum aperture	F3.5	Dimensions	
Lens elements	9 in 8 groups	Maximum diameter	63mm
Diaphragm	Fully automatic	Length	46.5mm
Angle of view	84°	Weight	0.53lb (240g)
Minimum focusing distance	0.8ft. (0.25m)	Filter size	58mm

Super-Takumar 24mm f3.5

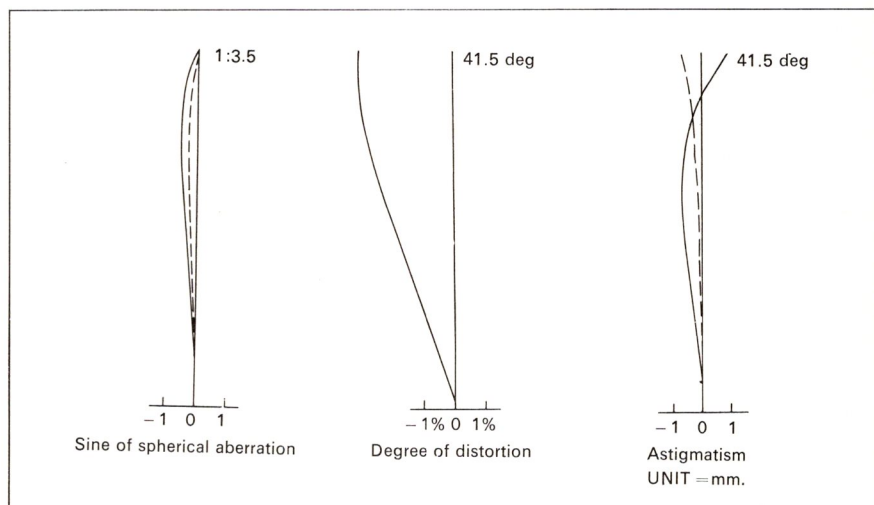
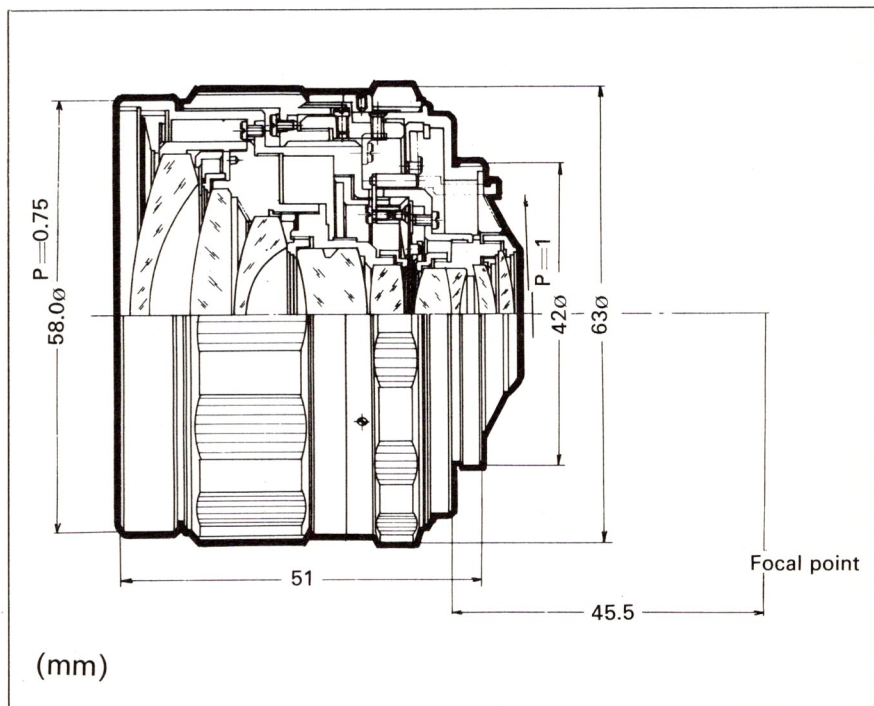
Another ultra wide-angle lens lightweight and compact with an incredible 84° angle of view. The resulting wide-angle image and low degree of distortion produce effects of strong perspective. Construction is of the Retrofocus type with the 9 lens elements mounted in 8 groups, providing a razor sharp and contrasty image of a degree not always associated with wide-angle lenses. For close-up work it is invaluable with a minimum working distance of only 25cm and has, of course, a fully automatic diaphragm.

It should be noted that this lens is used in the conventional manner employing the full facilities of reflex mirror focusing/screen viewing unlike some lenses of other manufacture which, due to their general design and resulting bulk prohibit the free movement of the reflex mirror. The advanced amateur and professional will find this remarkable lens forever providing a never ending range of unusual subject matter.

Principal Uses

Most indoor or outside work, or anywhere where space is strictly limited. All kinds of architectural work, portraits and/or commercial work where strong perspective is of prime importance.

Truly a lens to be used in order to create pictures with dramatic impact.



Focal length	24mm
Maximum aperture	F3.5
Lens elements	9 in 8 groups
Diaphragm	Fully automatic
Angle of view	84°
Minimum focusing distance	0.25m
Minimum aperture	F16
Dimensions Maximum diameter	63mm
Length	46.5mm
Weight	241g
Filter size	58mm

SUPER-TAKUMAR 28mm F3.5

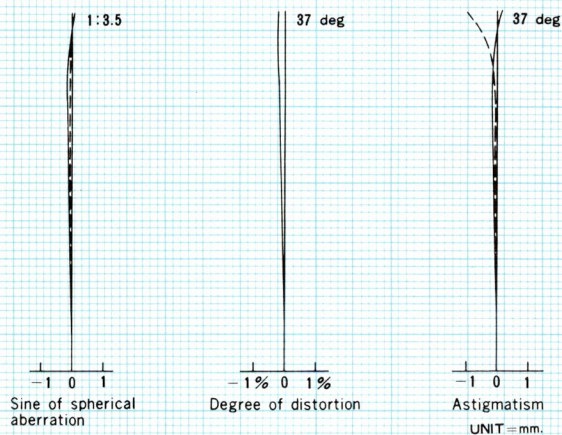
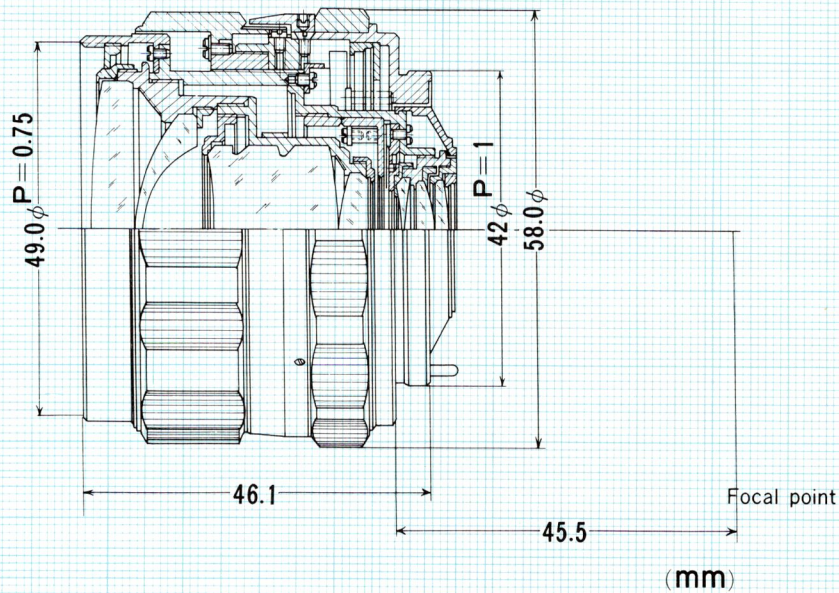


Super-compact general-purpose wide-angle lens

The powerful wide-angle effect and highly compact size of this lens make it the ideal easy-to-operate wide optic. In addition, its high resolving power and fine color performance with all subjects recommend it to every wide-angle enthusiast.



SUPER-TAKUMAR • 28mm F3.5



■ **Features** ■ This is the smallest wide-angle lens available for single lens reflex cameras, and its compactness combines perfectly with the lightweight Pentax to give the ideal general-purpose wide-angle photography system. A special thick meniscus-type lens is used for the third element, resulting in a lightweight optic weighing a mere 207 grams and only 41.6mm in length. Its fine response makes it an ideal lens for color photography. The wide 75° viewing angle and snap marks from 1.5m to infinity are eminently suited to candid shots under all circumstances. The standard 49mm filter size is an added convenience.

■ **Main uses** ■ This lens has an almost limitless range of application from candid snaps to general scenic and formal studies.

Focal length	28mm	Minimum aperture	F 16
Maximum aperture	F 3.5	Dimensions	
Lens elements	7 in 7 groups	Maximum diameter	58mm
Diaphragm	Fully automatic	Length	41.6mm
Angle of view	75°	Weight	0.46lb (207g)
Minimum focusing distance	1.3ft.(0.4m)	Filter size	49mm

Super-Takumar 28mm f3.5

This is another super wide-angle Retrofocus lens of 7 elements with a very useful f3.5 maximum aperture. The 75° (film diagonal) angle of view makes this an ideal lens for architecture, fast action, and special purpose photography.

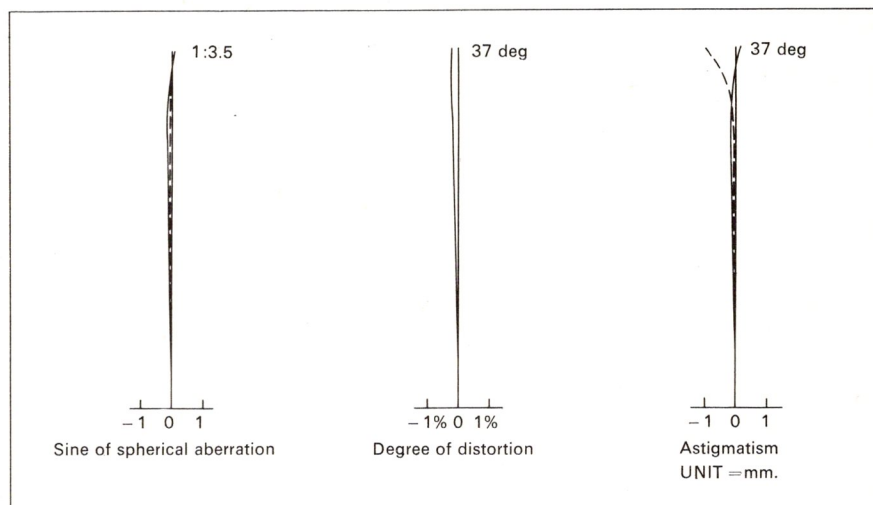
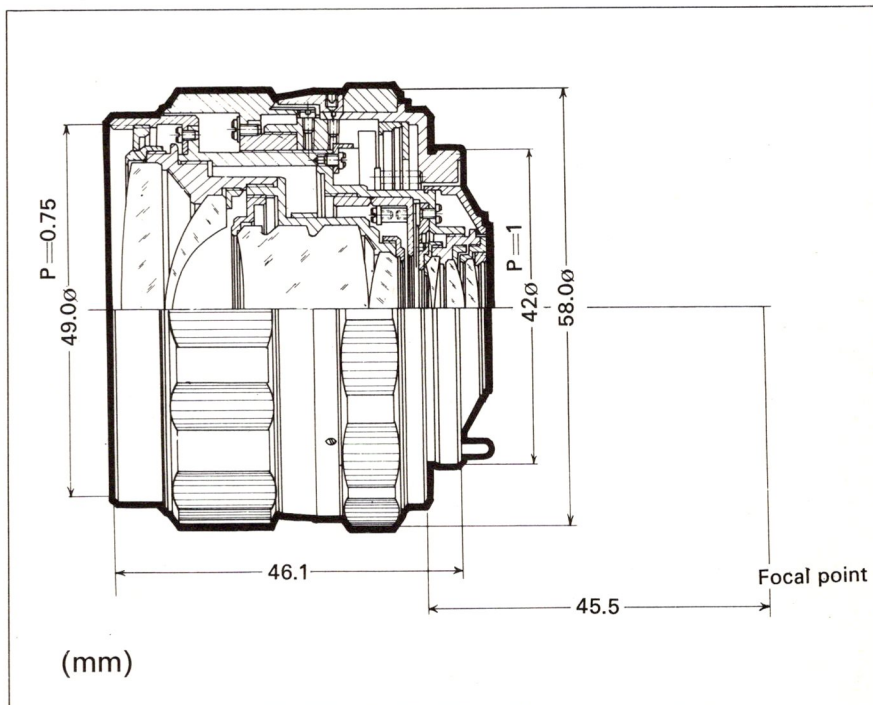
It is also the smallest wide-angle lens in existence for the 35mm SLR which must make it just about the ideal general purpose wide-angle lens available today. The third element comprises a thick meniscus type lens, resulting in a light optic weighing a mere 207 grams and measuring 41.6mm overall.

Focusing is from 1.5m to infinity and standard 49mm filters are employed.

Colour performance is superb. Both advanced amateurs and professionals will find the critical resolution of this lens even at full aperture outstanding. The fully automatic Diaphragm ensures top speed operating technique.

Principal Uses

An almost unlimited range of application, from candid work to general scenic, commercial and pictorial subjects.



Focal length	28mm
Maximum aperture	F3.5
Lens elements	7 in 7 groups
Diaphragm	Fully automatic
Angle of view	75°
Minimum focusing distance	0.4m
Minimum aperture	F16
Dimensions Maximum diameter	58mm
Length	41.6mm
Weight	207g
Filter size	49mm

SUPER-TAKUMAR 35mm F2

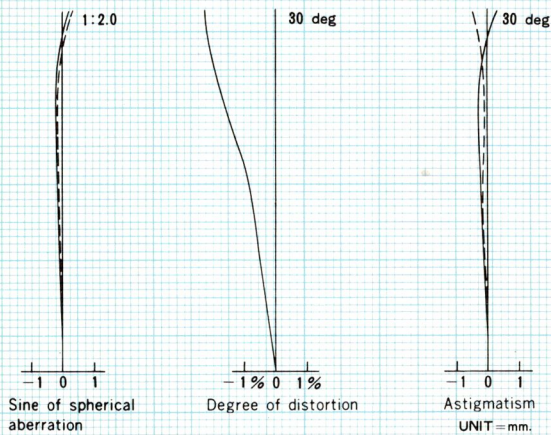
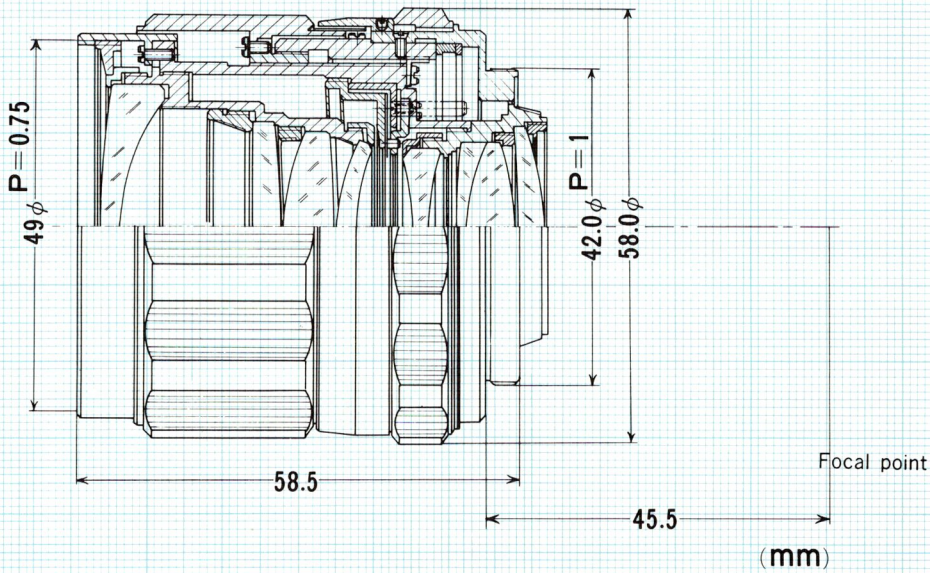


The aristocratic wide-angle lens

This superb lens combines 35mm wide-angle viewing with a large maximum aperture and gives a sharp, bright image at all times through the viewfinder. Despite the large aperture, it has been specially designed to be compact and light in weight. A fine example of Super-Takumar craftsmanship, ideally suited to the most specialized wide-angle photography.



SUPER-TAKUMAR ● 35 mm F2



■ Features ■ This is a fine wide-angle lens with a large maximum aperture of f2. By special design techniques Pentax has succeeded in preserving compactness in spite of the brightness of the lens — filter size is the standard 49mm.

As well as giving a bright image in the viewfinder, the large aperture also makes for easier focusing — this lens is no more difficult to focus than a standard focal length lens. Moreover, all distortion is eliminated, including the coma distortion which so often plagues wide-angle lenses.

■ Main uses ■ The large aperture makes this lens ideally suited to night and indoor photography in poor lighting conditions. With the introduction of this member of the Super-Takumar series, a wide-angle optic with the aperture of a standard focal length lens, Pentax has opened up a new field to the serious photographer.

Focal length	35m	Minimum aperture	F16
Maximum aperture	F2	Dimensions	
Lens elements	8 in 7 groups	Maximum diameter	58mm
Diaphragm	Fully automatic	Length	54mm
Angle of view	62°	Weight	0.53lb (240g)
Minimum focusing distance	1.25ft. (0.4 m)	Filter size	49mm

Super-Takumar 35mm f2

By the brilliant use of completely new design technique Asahi have maintained utmost compactness. In view of the fast f2 maximum aperture this represents optical design/engineering of the highest order. Furthermore, not only does one have the ability to work at high shutter speeds in really poor lighting conditions, but also a brilliant, easy-to-see, fast-to-focus screen image. Moreover, this lens is virtually distortion free, including the coma distortion which plagues most other wide-angle lenses of similar specification.

So, where speed combined with a moderate wide-angle is essential,

this fully automatic 35mm Retro-focus wide-angle lens is undoubtedly the answer. Particularly useful for all subjects where a wider than normal angle of view is required and for available light pictures.

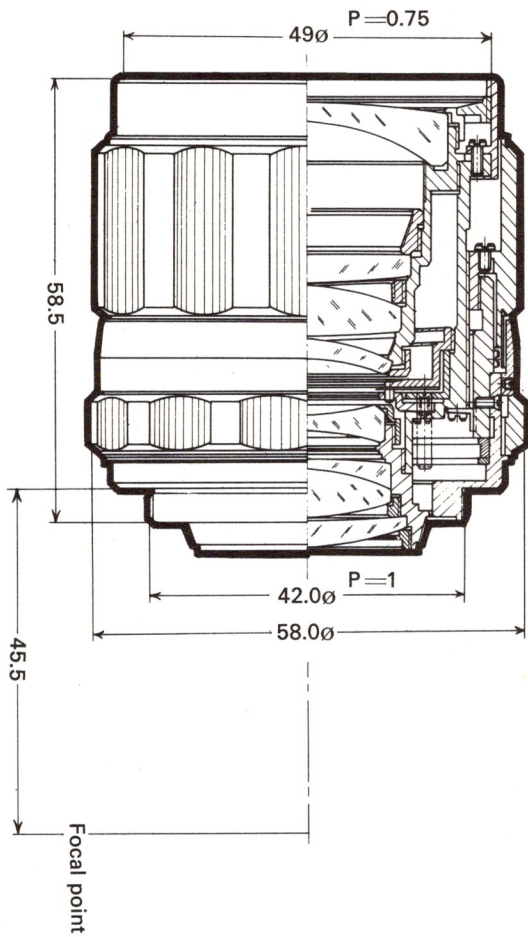
Principal Uses

All types of photography where poor light conditions prevail, including indoor/outdoor day or night shots. This lens can indeed be regarded as a wide-angle objective incorporating the qualities and wide aperture found in a lens of standard focal length.

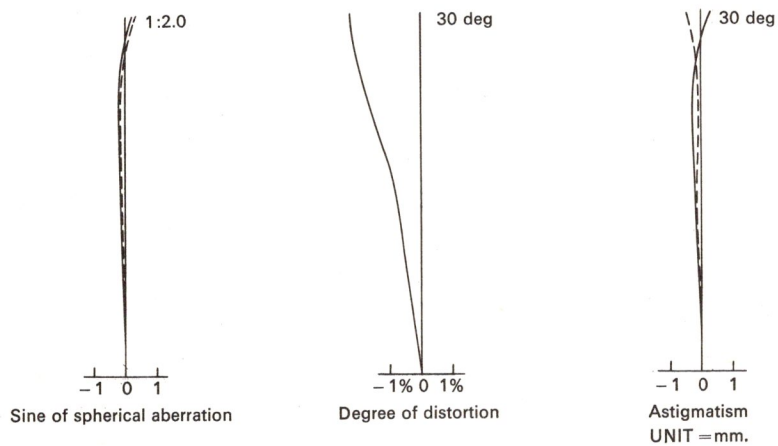


Focal length	35m
Maximum aperture	F2
Lens elements	8 in 7 groups
Diaphragm	Fully automatic
Angle of view	62°
Minimum focusing distance	0.4m
Minimum aperture	F16
Dimensions Maximum diameter	58mm
Length	54mm
Weight	242g
Filter size	49mm

Super-Takumar 35mm f2



(mm)



SUPER-TAKUMAR 35mm F3.5

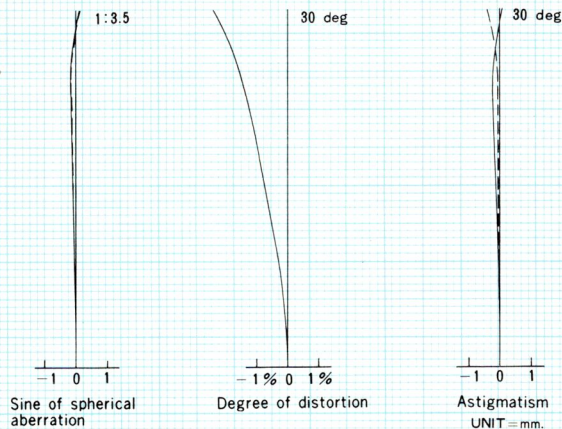
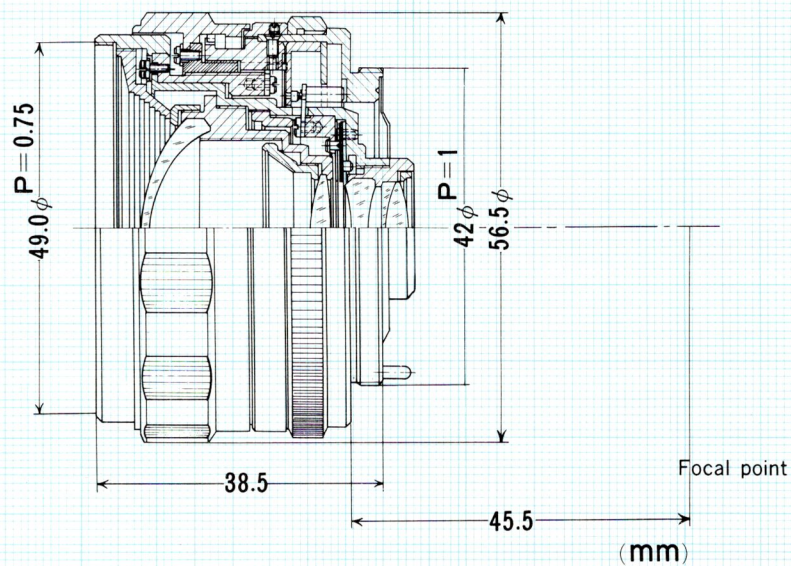


The most popular wide-angle lens

Though this lens has a wide 62° viewing angle, its special design makes it as compact and light as most standard lenses. This fact, together with its maximum aperture of f3.5 — sufficient for all ordinary use — and high resolving power, makes it the perfect general-purpose wide-angle lens for amateurs and professionals alike.



SUPER-TAKUMAR • 35mm F3.5



■ Features ■ This is the famous best-selling wide-angle member of the Super-Takumar family. Its weight of 149g and overall length of 34mm make it the lightest and most compact SLR wide-angle lens in the world, and its inexpensive price combined with its fine performance have accordingly made it a favorite with Pentax enthusiasts everywhere. With an angle of view of 62°, this is the ideal general-purpose wide-angle lens which we readily recommend to all photographers.

■ Main uses ■ Close-ups are the heart of wide-angle photography and this 35mm lens is ideally suited to all such shots. Its versatility and compactness make it the perfect lens for traveling.

Focal length	35mm	Minimum aperture	F16
Maximum aperture	F3.5	Dimensions	
Lens elements	5 in 4 groups	Maximum diameter	56.5mm
Diaphragm	Fully automatic	Length	34mm
Angle of view	62°	Weight	0.33lb (149g)
Minimum focusing distance	1.5ft.(0.45m)	Filter size	49mm

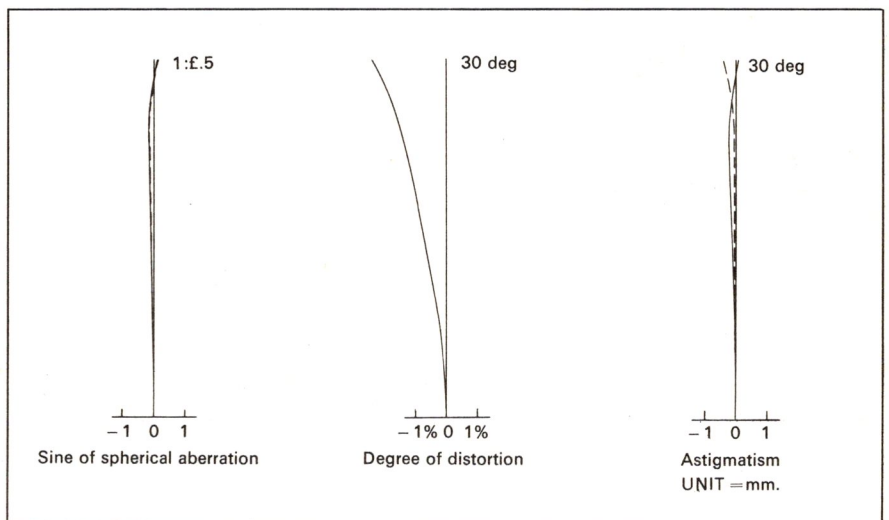
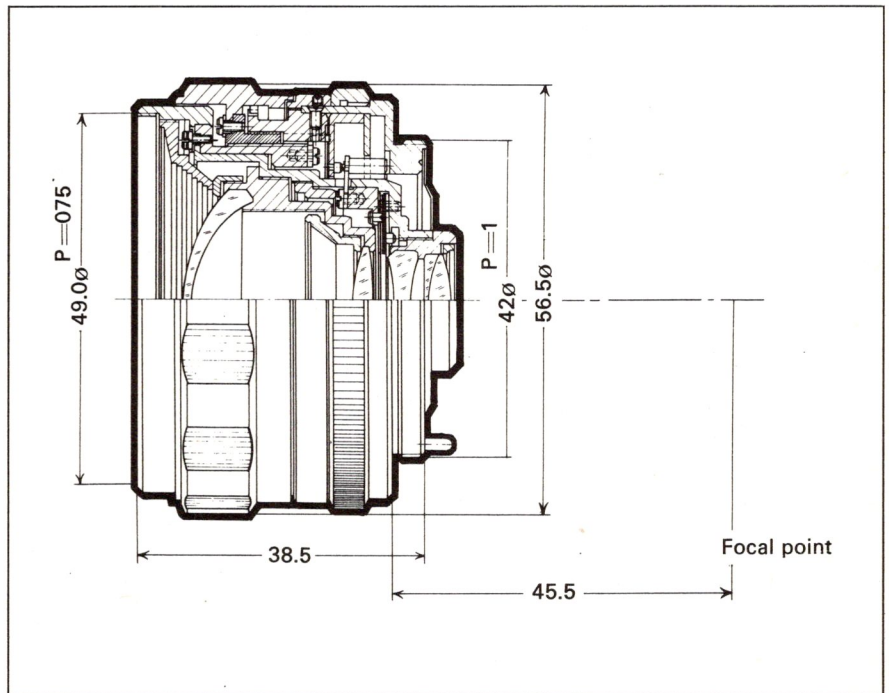
Super-Takumar 35mm f3.5

The impressive performance and high resolving power help make this lens outstanding, particularly when considering the mere 149 grams weight and overall length of 34mm. Little wonder, then, that this high performance lens is the most widely purchased from the whole range of Asahi Pentax wide-angle objectives. The 62° angle of view provides exciting possibilities and as a general purpose wide-angle lens it is recommended to all photographers.

Principal Uses

Compact, lightweight and medium speed, this is an excellent general purpose Wide-Angle Retrofocus lens, a special feature again being the extremely high resolving power. A perfect lens for all pictorial, industrial and architectural and close-up photography.

Ideal when weight and size have to be considered whilst travelling.



Focal length	35mm
Maximum aperture	F3.5
Lens elements	5 in 4 groups
Diaphragm	Fully automatic
Angle of view	62°
Minimum focusing distance	0.45m
Minimum aperture	F16
Dimensions Maximum diameter	56.5mm
Length	34mm
Weight	149g
Filter size	49mm

Section 11
Standard Lenses

SUPER-TAKUMAR 50mm F1.4

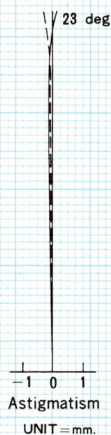
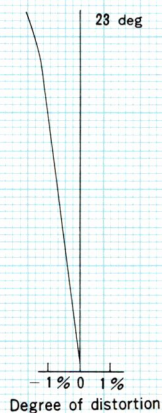
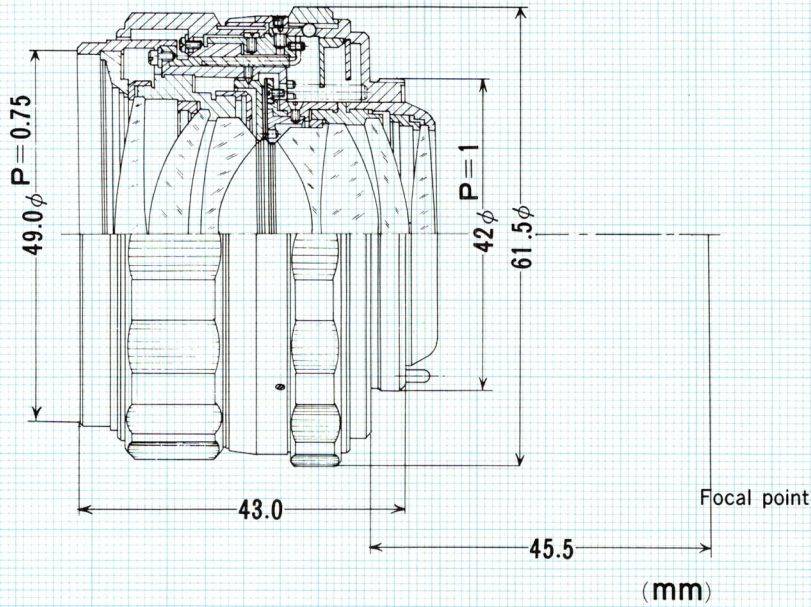


High quality large aperture standard lens

This ideal all-round lens has a maximum aperture of f1.4, high resolution giving a sharp focusing image, and a minimum focusing distance of 45cm. Combined with the Spotmatic, this well-balanced lens makes the perfect optic for general photography.



SUPER-TAKUMAR ● 50mm F1.4



■Features■ This is the brightest of all the Takumar lenses, with a maximum aperture of f1.4. With an angle of view of 46° and a focal length of 50mm, it is one of the fine standard Super-Takumar optics. The newly-designed lens construction and use of special glass make sure that you get a clear, contrasty image even at f1.4.

The minimum focusing distance is as short as 45cm. This close-up capability combines with the brightness of the lens to make this a truly versatile standard optic. Other convenient features are its compactness and light weight, and filter size is the standard 49mm.

■Main uses■ An ideal standard partner for the Spotmatic, this bright lens has almost unlimited uses for all kinds of photography.

Focal length	50mm	Minimum aperture	F16
Maximum aperture	F1.4	Dimensions	
Lens elements	7 in 6 groups	Maximum diameter	61.5mm
Diaphragm	Fully automatic	Length	38.5mm
Angle of view	46°	Weight	0.53lb (240g)
Minimum focusing distance	1.5ft.(0.45m)	Filter size	49mm

Super-Takumar 50mm f1.4

In having an aperture of f1.4 this is the widest of all Super-Takumar optics, and provides an incredibly bright screen image and fast, critical focusing.

A crisp, contrasty image results even when used at full aperture. Add to this the minimum focus distance of 45mm and it is easy to appreciate why this is a lens of rare distinction. Filters remain standard 49mm.

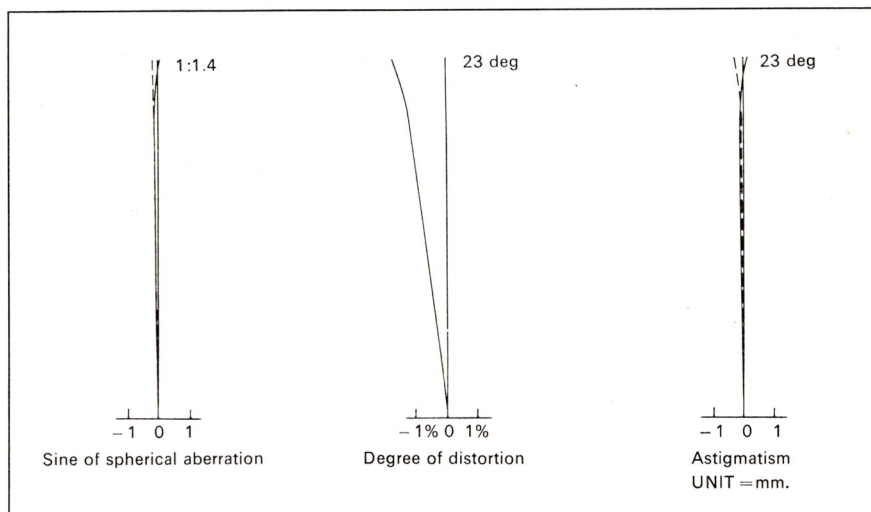
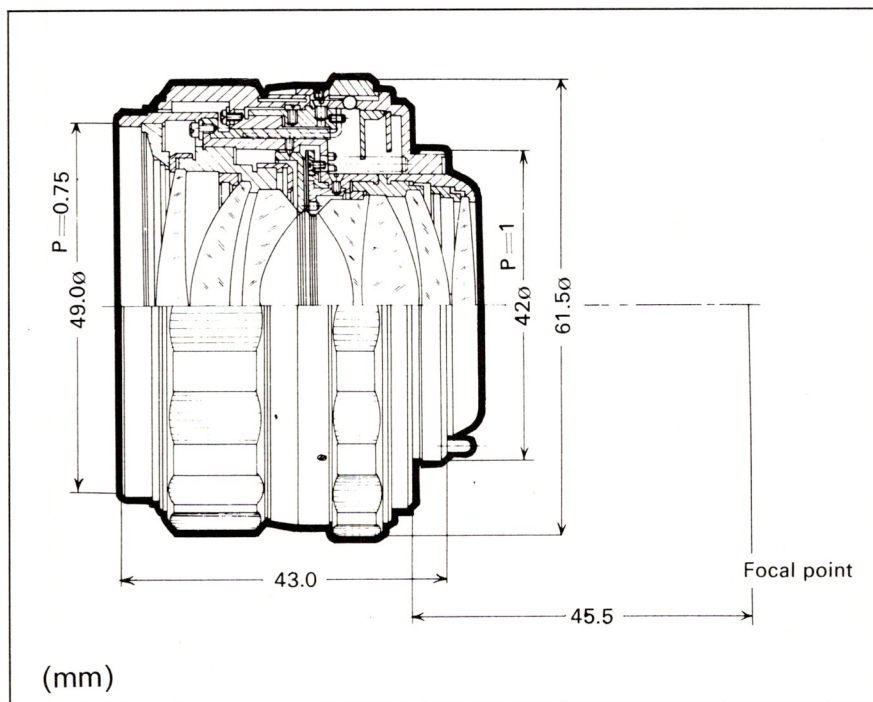
The overall length is a compact 38.5mm and the weight 239 grams.

Principal Uses

This 50mm f1.4 lens is designed especially and aligned for use on the Asahi Spotmatic.*

The high resolution of this 7 element lens will satisfy the most critical professional requirements and may be confidently employed for virtually any task wherever the characteristics of this fully automatic diaphragm lens would suit.

* If using this lens on SV or S1a models, first ensure that either model has engraved on the film rewind knob an orange coloured 'R' mark.



Focal length	50mm
Maximum aperture	F1.4
Lens elements	7 in 6 groups
Diaphragm	Fully automatic
Angle of view	46°
Minimum focusing distance	0.45m
Minimum aperture	F16
Dimensions Maximum diameter	61.5mm
Length	38.5mm
Weight	239g
Filter size	49mm

SUPER-TAKUMAR 55mm F1.8

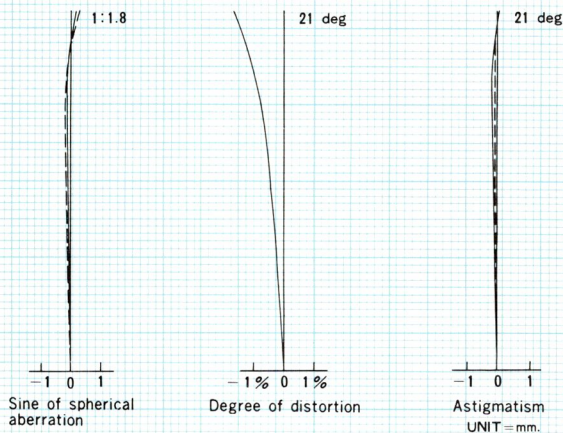
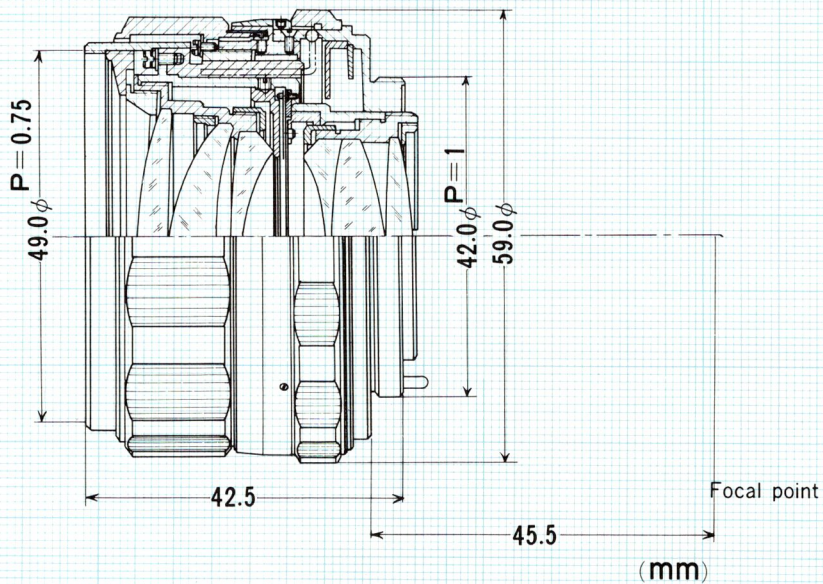


All-purpose standard lens

This is the outstandingly practical standard Super-Takumar lens. The f1.8 maximum aperture and 55mm focal length are admirably suited to all-round photography: this lens gives the same high performance for long shots, at medium range, and for close-ups — its minimum focusing distance is 45cm. This is a lens that has grown up with the Pentax itself and continues to give fine results in all fields.



SUPER-TAKUMAR • 55mm F1.8



■ Features ■ A true standard lens must above all give fine all-round performance and the Super-Takumar 55mm f1.8 has been perfected over the years with this object in mind. Accordingly the lens design is supremely practical — distortion is eliminated, the same even performance is obtained at long or short range, image resolution is high and results with color photography are superb. This is truly an all-purpose quality optic at home in all fields of general photography.

■ Main uses ■ A standard lens is the first step toward an interchangeable lens system. As an introduction to the Super-Takumar range, the 55mm F1.8 can be readily recommended.

Focal length	55mm	Minimum aperture	F16
Maximum aperture	F1.8	Dimensions	
Lens elements	6 in 5 groups	Maximum diameter	59mm
Diaphragm	Fully automatic	Length	38mm
Angle of view	43°	Weight	0.44lb (202g)
Minimum focusing distance	1.5ft.(0.45m)	Filter size	49mm

Super-Takumar 55mm f1.8

The design ensures a high standard of performance throughout whether at long or short range, and a crisp, distortion-free, image at all apertures.

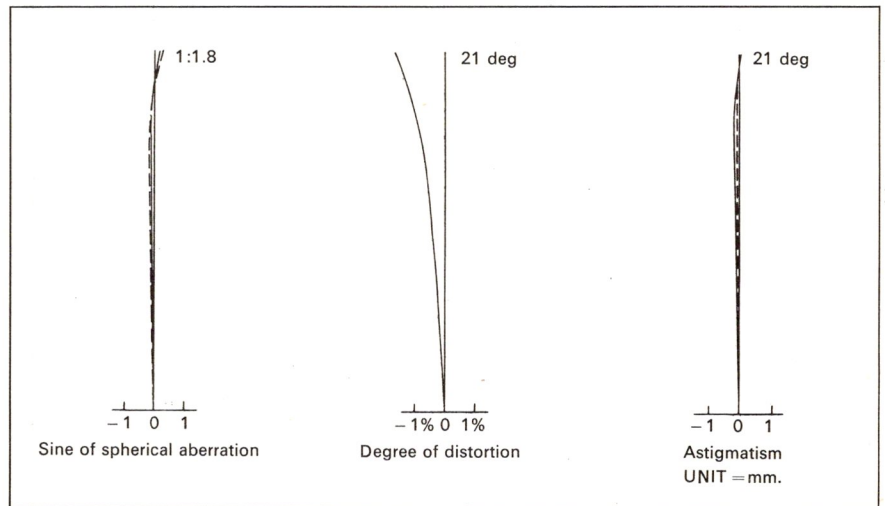
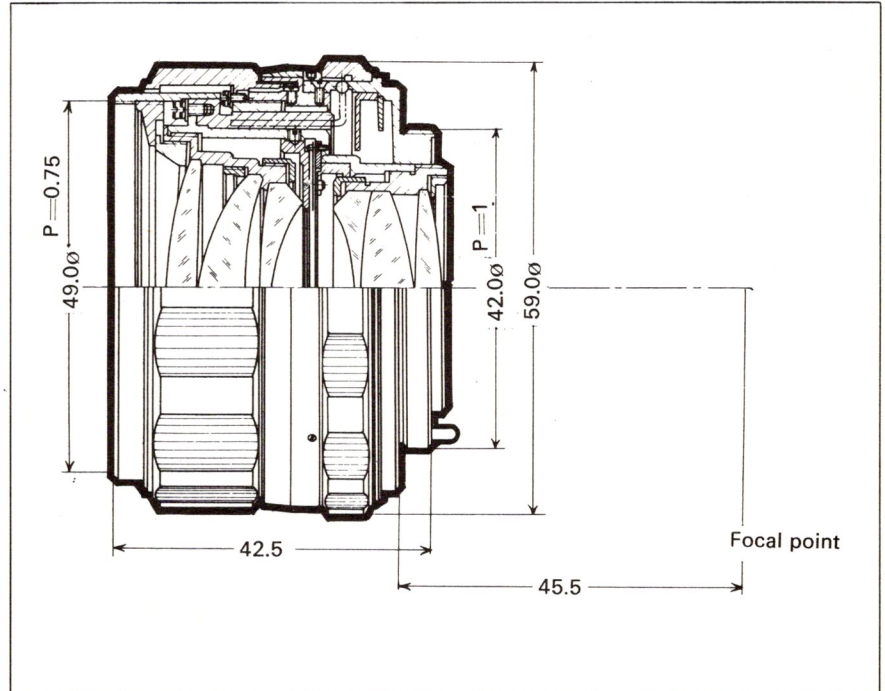
Particularly recommended for superb colour rendering.

Principal Uses

With a 45cm – Infinity focusing range this standard lens is the basic unit around which one can commence to build a system of interchangeable lenses of shorter or longer focal length.

Also there are those who might prefer to employ as a standard lens the marginally longer focal length of this 55mm f1.8 6 element objective with the slightly restricted angle of view of 43° compared to the other 50mm standard lens described overleaf.

High resolving power, minimum bulk and weight, very fast f1.8 maximum aperture, and, of course, fully automatic diaphragm make this a most desirable objective.



Focal length	55mm
Maximum aperture	F1.8
Lens elements	6 in 5 groups
Diaphragm	Fully automatic
Angle of view	43°
Minimum focusing distance	0.45m
Minimum aperture	F16
Dimensions Maximum diameter	59mm
Length	38mm
Weight	202g
Filter size	49mm

SUPER-TAKUMAR 55mm F2

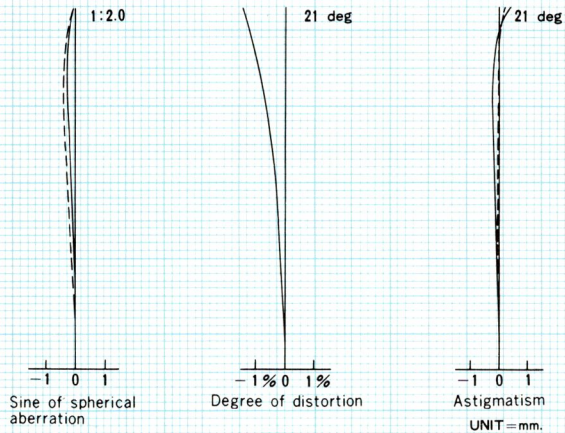
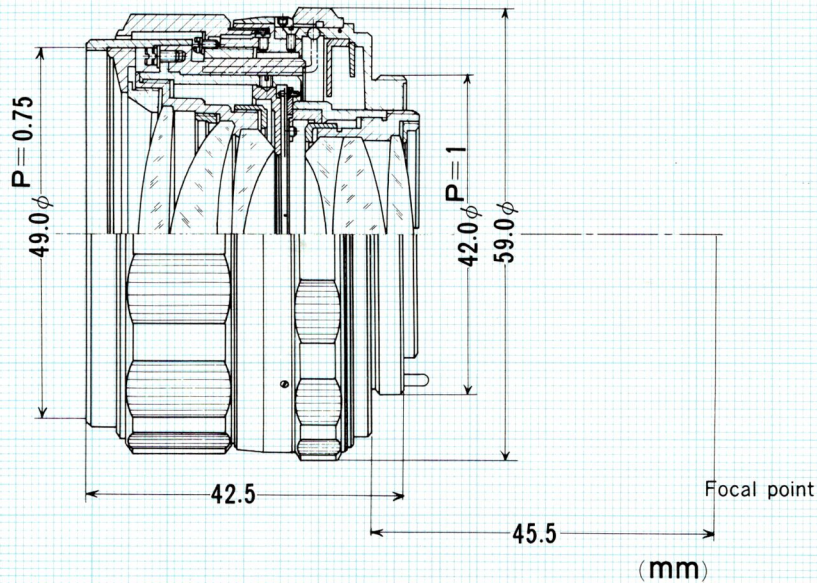


High-performance economical standard lens

Basically identical with the Super-Takumar 55mm f1.8, but with a maximum aperture of f2. Its fine performance for all-round photographic subjects and its inexpensive price make it one of the basic Super-Takumar standards.



SUPER-TAKUMAR ● 55mm F2



■ Features ■ The same lens as the 55mm F1.8 but with a maximum aperture of F2 — ample for all but the most unfavorable lighting conditions in this day of high-sensitivity films.

This economical lens gives a bright, life-sized image in the viewfinder, and the special type of glass guarantees superb color reproduction.

■ Main uses ■ This lens is suited to all general photography, from outdoor scenics to indoor portrait shots.

Focal length	55mm	Minimum aperture	F16
Maximum aperture	F2	Dimensions	
Lens elements	6 in 5 groups	Maximum diameter	59mm
Diaphragm	Fully automatic	Length	38mm
Angle of view	43°	Weight	0.44lb (202g)
Minimum focusing distance	1.5ft.(0.45m)	Filter size	49mm

Super-Takumar 55mm f2

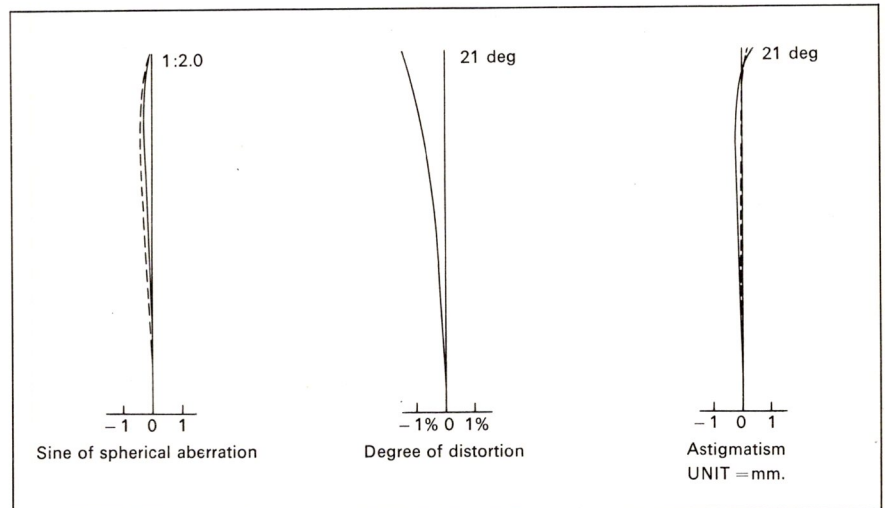
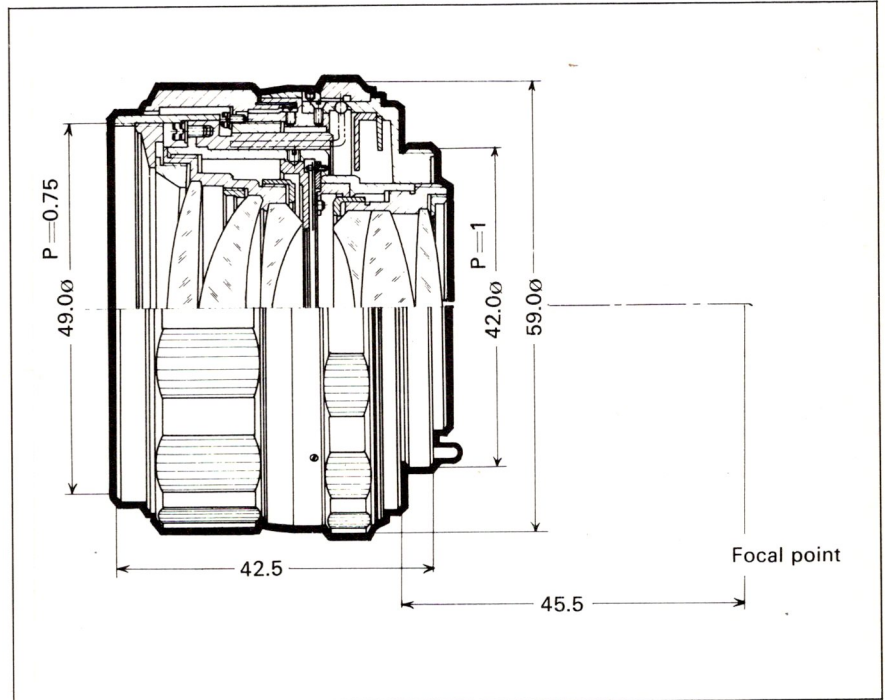
Combining most of the virtues of the 55mm f1.8 this is another famous standard camera objective with fast (f2) maximum aperture.

However, with the wide range of medium and high speed emulsions available today this 55mm f2 lens can be employed in almost any situation other than where light availability is really extremely poor. An interesting point worth noting is that this is virtually the same basic lens as the 55mm f1.8 but with the slightly reduced maximum aperture which conveniently reduces the cost accordingly.

The bright, life-sized image in the viewfinder ensures fast, accurate focusing. Special optical glass has been employed in the manufacture of this lens which guarantees superb colour reproduction.

Principal Uses

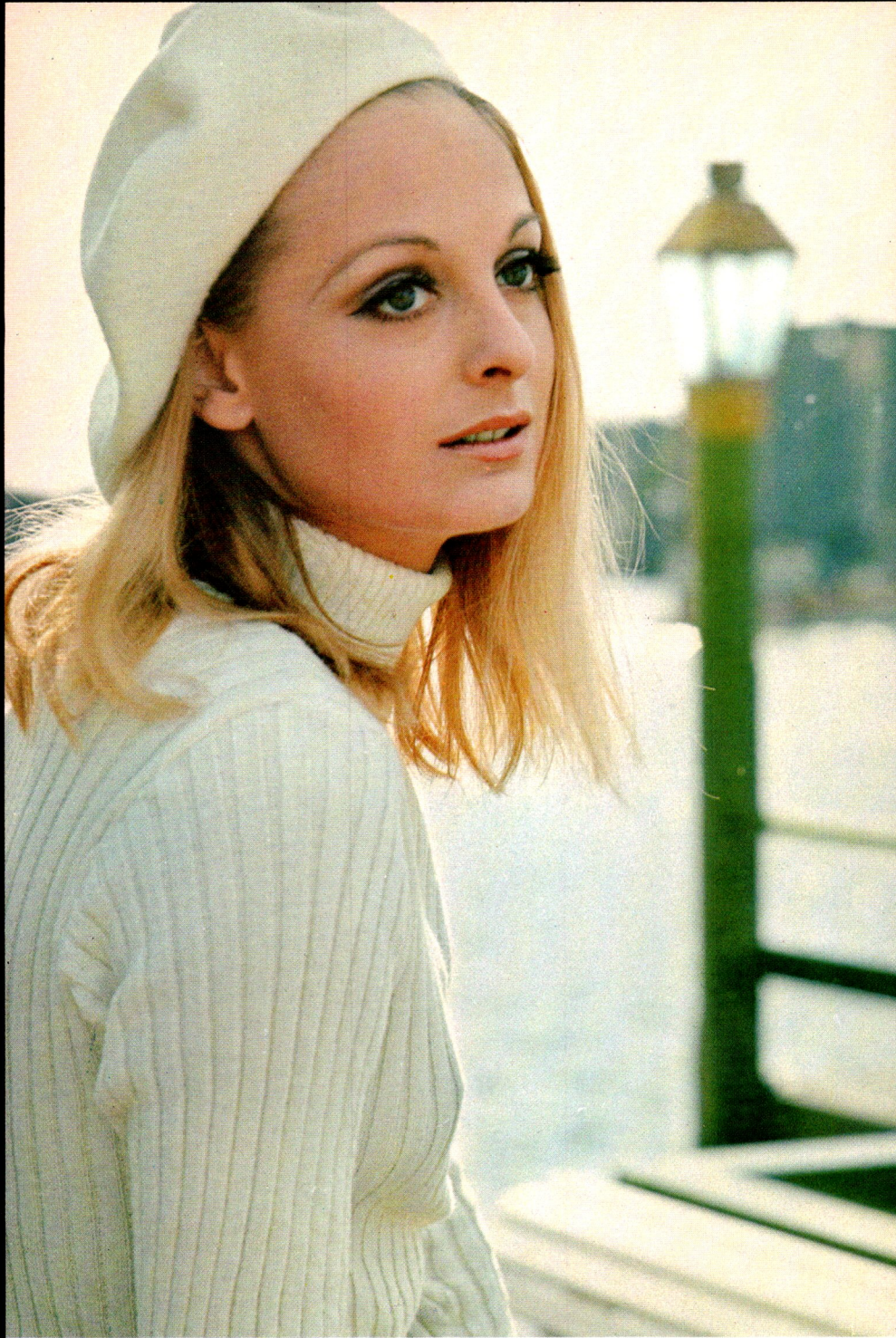
A general purpose lens for all suitable outdoor subjects or interior work, including portraiture.



Focal length	55mm
Maximum aperture	F2
Lens elements	6 in 5 groups
Diaphragm	Fully automatic
Angle of view	43°
Minimum focusing distance	0.45m
Minimum aperture	F16
Dimensions Maximum diameter	59mm
Length	38mm
Weight	202g
Filter size	49mm

Section 12
Long Focal Length
Lenses

SUPER-TAKUMAR 85mm F1.9

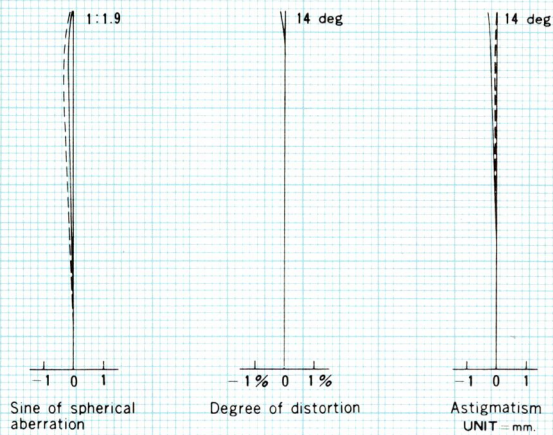
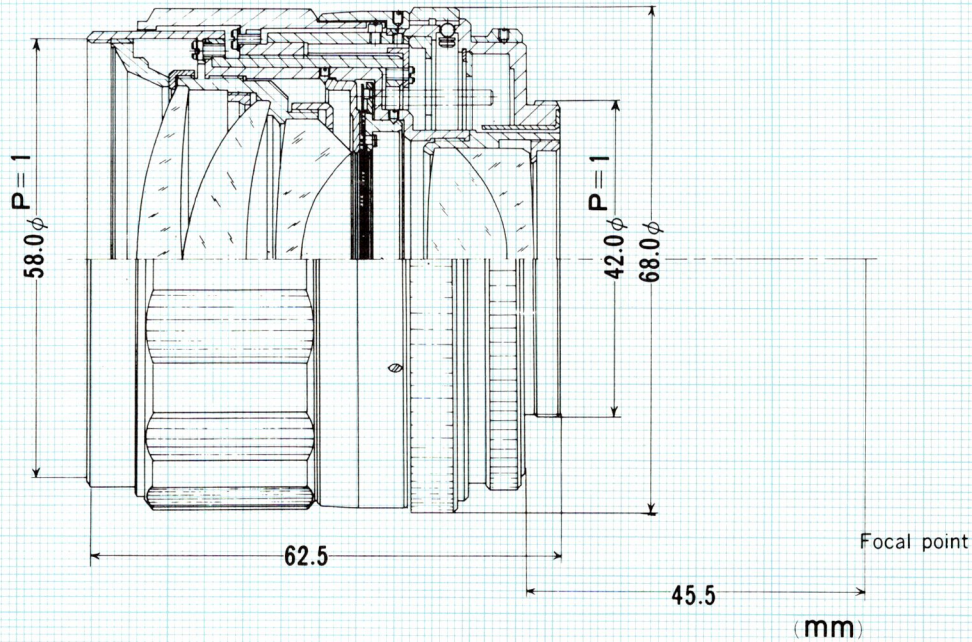


Soft-focusing telephoto lens ideal for portraiture

With a focal length of 85mm, perfect for portraiture, and a maximum aperture of f1.9, this lens gives a natural main image and an attractive soft focusing effect to the out-of-focus range especially with close-up shots. Image resolution and color reproduction even with the diaphragm fully open are first-rate and fine portraits are produced even in poor lighting conditions. And, of course, the same superb results are obtained in all fields of general photography.



SUPER-TAKUMAR ● 85mm F1.9



■ Features ■ This long focal length lens, with an angle of view of 29°, is ideally suited to portraiture. The soft-focus contours and fine image characteristics result from the highly practical design. This focal length brings subjects to life with great vividness and the minimum focusing distance of 85cm means that faces can be completely framed in the viewfinder for close-up portrait effects.

Though this lens is one of the heavier members of the Super-Takumar family, it is the most compact and light-weight optic of its type in the world and balances well with the camera.

■ Main uses ■ This lens is indispensable for portraiture. Its maximum aperture of f1.9 also renders it very suitable for indoor stage shots and outdoor night photography.

Focal length	85mm	Minimum aperture	F16
Maximum aperture	F1.9	Dimensions	
Lens elements	5 in 4 groups	Maximum diameter	68mm
Diaphragm	Fully automatic	Length	58mm
Angle of view	29°	Weight	0.75lb (340g)
Minimum focusing distance	2.75ft.(0.85m)	Filter size	58mm

Super-Takumar 85mm f1.9

The first in the range of the longer-than-standard focal length lenses is this 85mm f1.9 lens with fully automatic diaphragm.

The 85 mm focal length of this lens combined with an ultra wide aperture necessitates a certain degree of weight (340 grams to be exact) but even so it is the most compact (58mm long) and lightest of its kind in existence. When attached to the camera it handles very well and is exceptionally well balanced. The slightly soft focus effect of those areas not in sharp focus makes it admirably suitable as a portrait lens, particularly as the focal length provides a comfortable working distance between camera and sitter, while still producing a really large image to fill the frame.

An ideal long-focus lens for a wide range of applications and a lens that would be in constant use by advanced amateur, professional and news photographers. Whether used in the studio or out of doors it is perfect for portrait work, sports coverage, and nature photography. The fast working f1.9 aperture can be used to very real advantage where, for instance, shallow depth of field is required for maximum impact or concentration of the main subject.

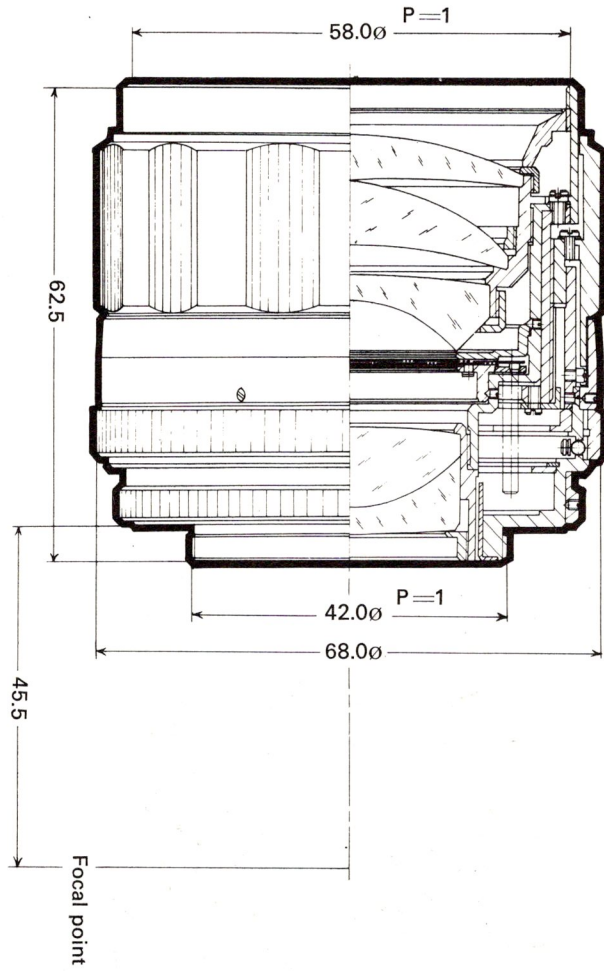
Principal Uses

All forms of human or animal portraiture/indoors/outdoors. Night street scenes, illuminated buildings. Theatre and circus are yet further instances where this lens could prove invaluable.

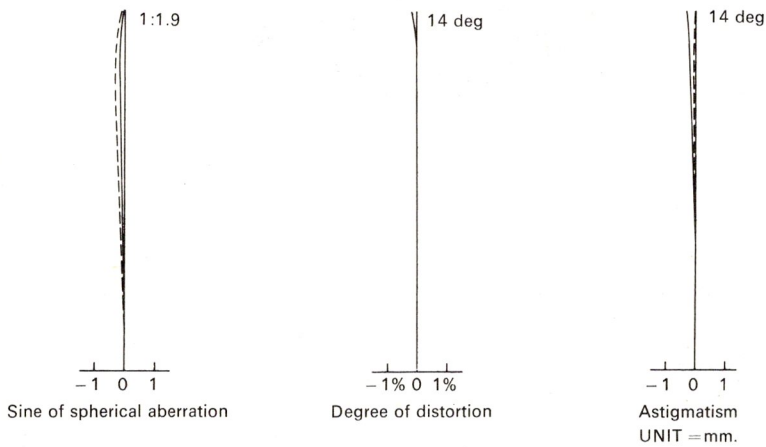


Focal length	85mm
Maximum aperture	F1.9
Lens elements	5 in 4 groups
Diaphragm	Fully automatic
Angle of view	29°
Minimum focusing distance	0.85m
Minimum aperture	F16
Dimensions Maximum diameter	68mm
Length	58mm
Weight	340g
Filter size	58mm

Super-Takumar 85mm f1.9



(mm)



SUPER-TAKUMAR 105mm F2.8

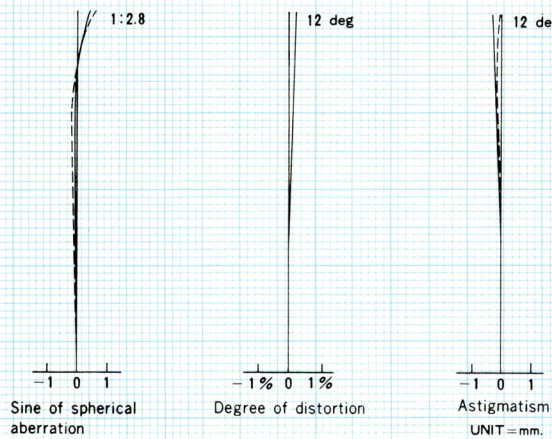
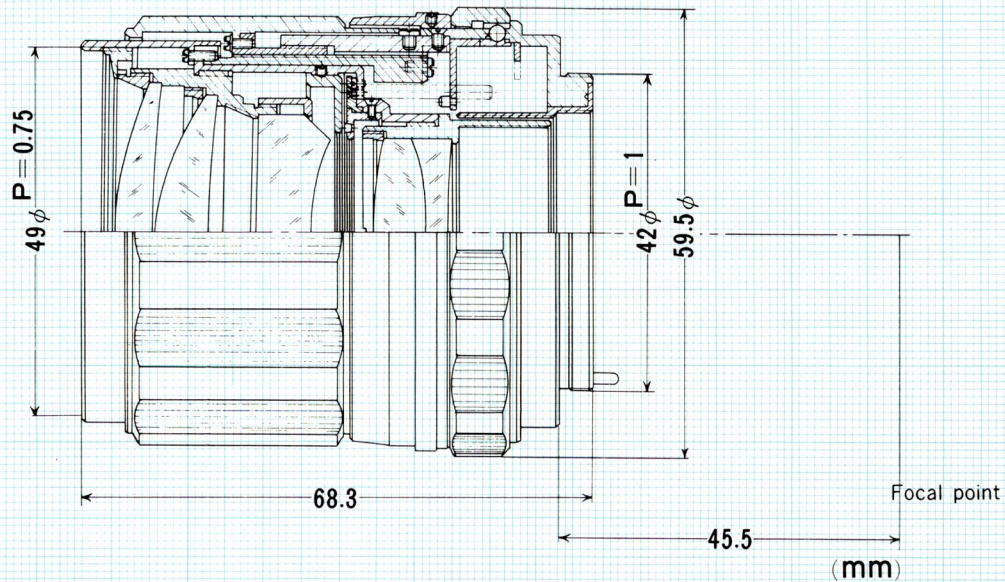


A popular first-choice telephoto lens

With a focal length approximately twice that of a standard lens, this telephoto is light, compact and easy to operate, with a maximum aperture of f2.8. An all-purpose telephoto optic, it is equally suited to professional work and general landscape shots. It is also the ideal first step in building up a set of interchangeable lenses — especially recommended as the intermediate step between standard and 200 mm lenses.



SUPER-TAKUMAR ● 105mm F2.8



■ Features ■ A versatile long focal length lens which forms the ideal link between standard and super-telephoto lenses, this compact optic has a viewing angle of 23° and a maximum aperture of F2.8. A popular member of interchangeable lens systems, the Super-Takumar 105mm F2.8 is well balanced and easy to handle.

■ Main uses ■ Outstandingly versatile, this lens is suitable for all types of subjects. Handy and compact, it affords vividness of image not obtainable with standard focal length lenses.

Focal length	105mm	Minimum aperture	F22
Maximum aperture	F2.8	Dimensions	
Lens elements	5 in 4 groups	Maximum diameter	59.5mm
Diaphragm	Fully automatic	Length	63.8mm
Angle of view	23°	Weight	0.60lb (273g)
Minimum focusing distance	4ft.(1.2m)	Filter size	49mm

Super-Takumar 105mm f2.8

This is a wonderfully compact and comparatively lightweight (290 grams) long-focus lens with fast working f2.8 maximum aperture, ideal for use where moderate telephoto effect is called for. Usually, the first long-focus lens purchased when a planned collection of ancillary lenses is started, acting as an extremely useful and versatile link between the standard and super telephoto lenses.

All forms of sport, photo-journalism, portraiture and many other applications can be covered with this fully automatic lens. One of the most

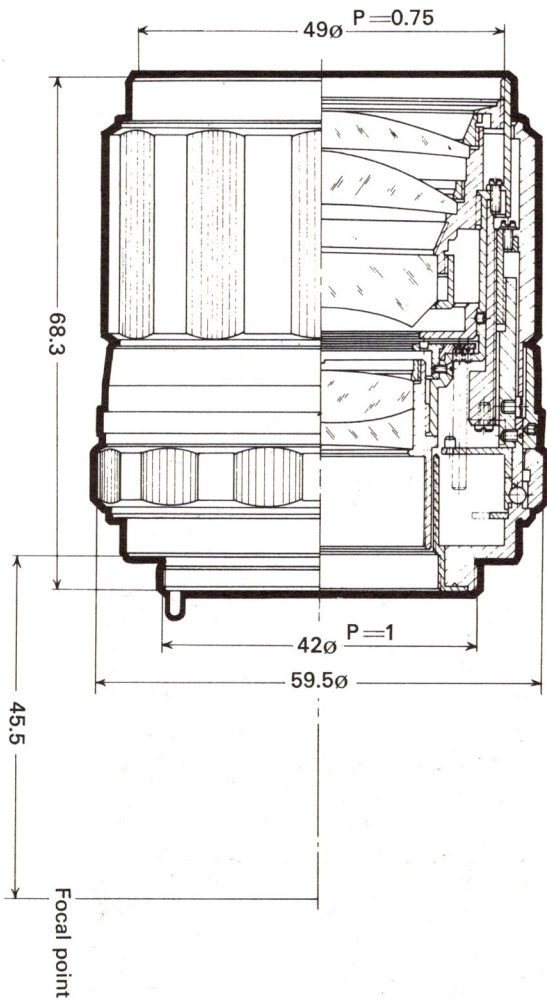
useful features is the convenient working distance that may be established between camera and subject, yet still allowing the frame to be filled. The resultant improved perspective and less obvious camera awareness on the part of the subject – human or animal, is also a very real advantage.

Principal Uses

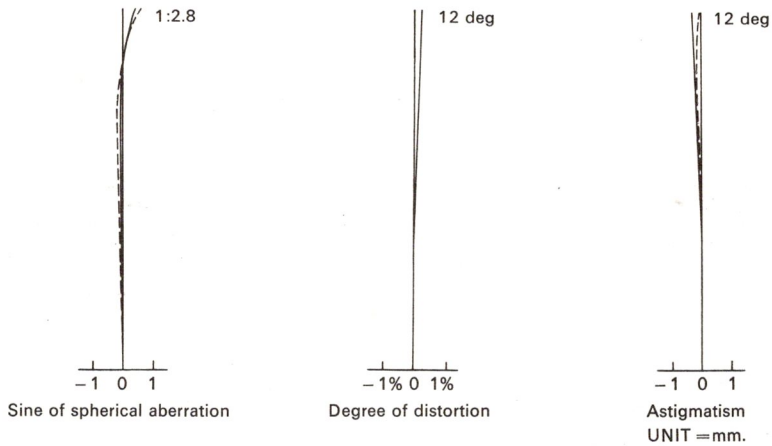
Suitable for a very wide range of subjects and providing that extra degree of magnification approximately double the standard lens, which can be absolutely invaluable on so many occasions.



Super-Takumar 105mm f2.8



(mm)



SMC-Takumar 120mm f2.8

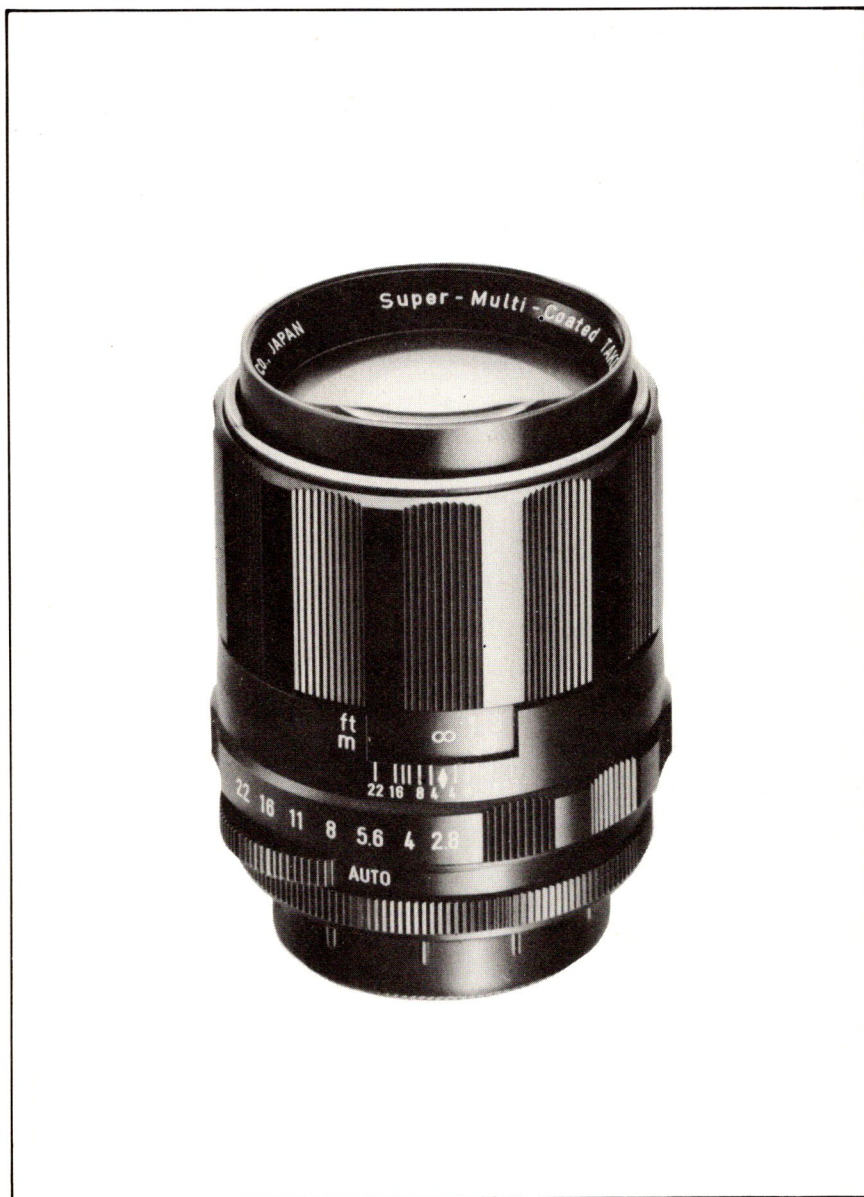
This large aperture Telephoto Lens represents a rare and exciting addition to the already extensive range of Asahi Pentax lenses.

As will be seen from the specification, here is an innovation in that not only does this lens fit comfortably between existing long focus lenses of 105mm and 135mm, but is by far the shortest focal length of any of the true telephoto lenses. Again, an interesting comparison is to be seen in the relative weights of these three lenses, with the 120mm weighing 340g against 444g of the 135mm f2.5 (nearly 25% lighter in fact) or approximately 25% heavier than the 105mm f2.8.

Statistics apart, this addition to the range will attract many enthusiasts who will be eager to possess a lens of such commendable specification, and where overall weight and compactness are important. Obviously, with a relatively 'safe' shutter speed, coupled with a wide working aperture, this lens will probably be used mainly for hand-held exposures, and this is where the Super Multi-Coated Optics will undoubtedly score.

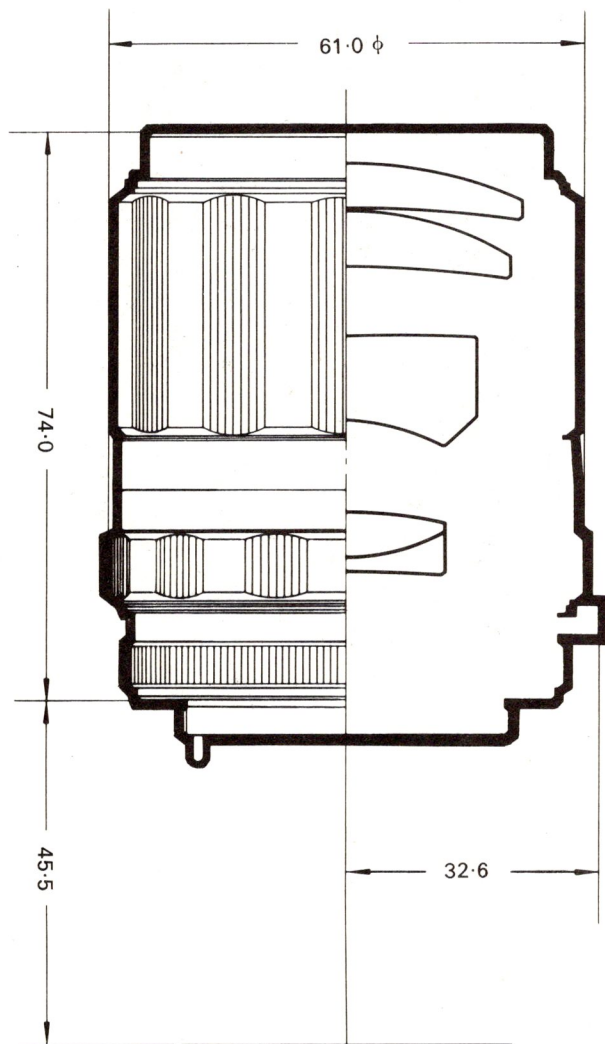
In fact, for all indoor/outdoor work under conditions of brilliant lighting and for sports enthusiasts in particular, where exposures frequently have to be made more or less directly against the main source of illumination, this lens will prove invaluable.

Many other fields of work, including portraiture, theatre work and so on, will all readily fall within the scope of this lens. The multi-coating also ensures really crisp and brilliant colour rendering.



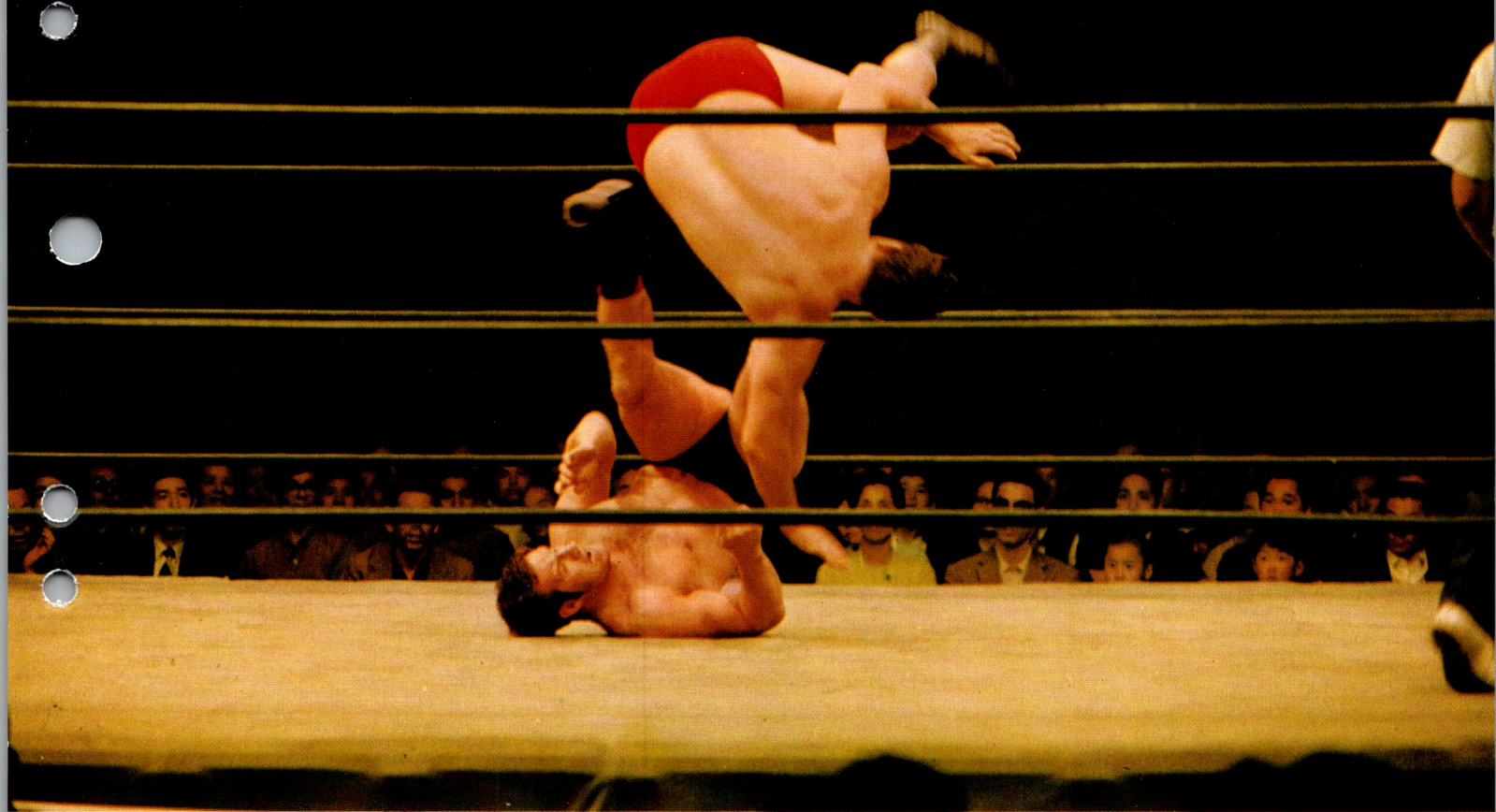
Focal length	120mm
Maximum aperture	F2.8
Lens elements	5 in 4 groups
Diaphragm	Fully automatic
Angle of view	20°
Minimum focusing distance	1.2m
Minimum aperture	F22
Dimensions Maximum diameter	61mm
Length	82mm
Weight	340g
Filter size	49mm

SMC-Takumar 120mm f2.8



(mm)

SUPER-TAKUMAR 135mm F2.5

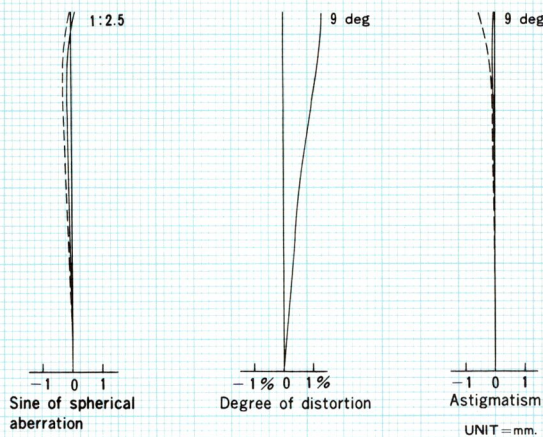
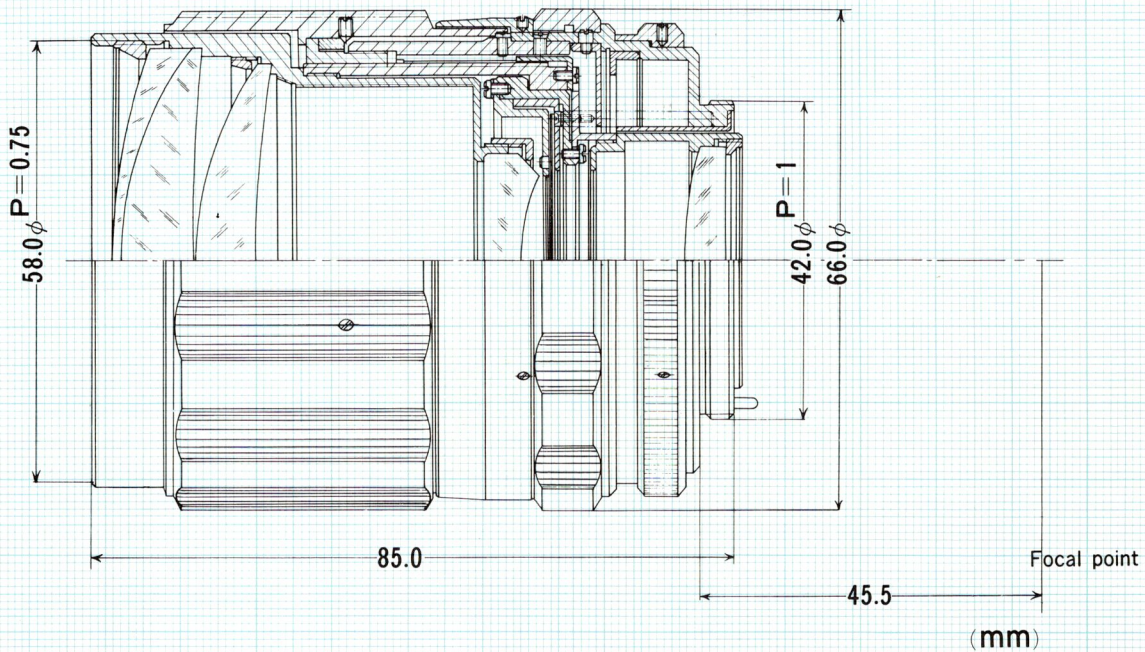


Deluxe version of the most popular 135mm lens

With a maximum aperture of f2.5 and brilliant resolving power, this member of the Super-Takumar range is truly a deluxe lens. Specially designed to meet the most exacting demands of professional photographers, it is the perfect optic for long distance indoor shots, portraiture and stage photography, and gives the same fine results under all lighting conditions.



SUPER-TAKUMAR ● 135mm F2.5



■ Features ■ This large-aperture lens is a new addition to the Super-Takumar family incorporating the latest advances in technique and design. A truly deluxe optic, it has won wide acclaim for both its external styling and fine performance. Though somewhat heavier than its F3.5 counterpart, it is shorter and superbly balanced.

Fine image resolution is obtained with the diaphragm open, and the soft image outlines make it especially suited to color photography—particularly as, like most Super-Takumar lenses, intermediate settings of the diaphragm ring are possible for perfect exposures.

■ Main uses ■ This lens forms an ideal member of a deluxe Super-Takumar lens system with, for example, the 35mm F2, 85mm F1.9 and 300mm F4 lenses. The brightness of this lens also makes it perfect for indoor photography in natural light.

Focal length	135mm	Minimum aperture	F22
Maximum aperture	F2.5	Dimensions	
Lens elements	5 in 4 groups	Maximum diameter	66mm
Diaphragm	Fully automatic	Length	80.5mm
Angle of view	18°	Weight	0.98lb (444g)
Minimum focusing distance	5ft.(1.5m)	Filter size	58mm

Super-Takumar 135mm f2.5

All that has been said regarding the 135mm f3.5 telephoto objective applies here, plus the fact that even greater opportunities now exist due to the quite rare and exceptional maximum aperture of f2.5. This particularly applies when shooting colour under available light conditions, or when perhaps, fast shutter speeds are required for stopping moving subjects. The fully automatic diaphragm further assists in really fast working.

Incorporating the latest in technique and design, Asahi describe this as a 'de Luxe' objective and state that it has won wide acclaim for both optical performance and also external styling.

Little wonder when one considers the specification which is itself almost unique, offering as it does a superb f2.5 maximum aperture combined with a focal length of 135mm. Superb definition at any aperture and particularly recommended for all colour work. A full range of the intermediate settings of the diaphragm ring can be used, ensuring perfect exposure.

Principal Uses

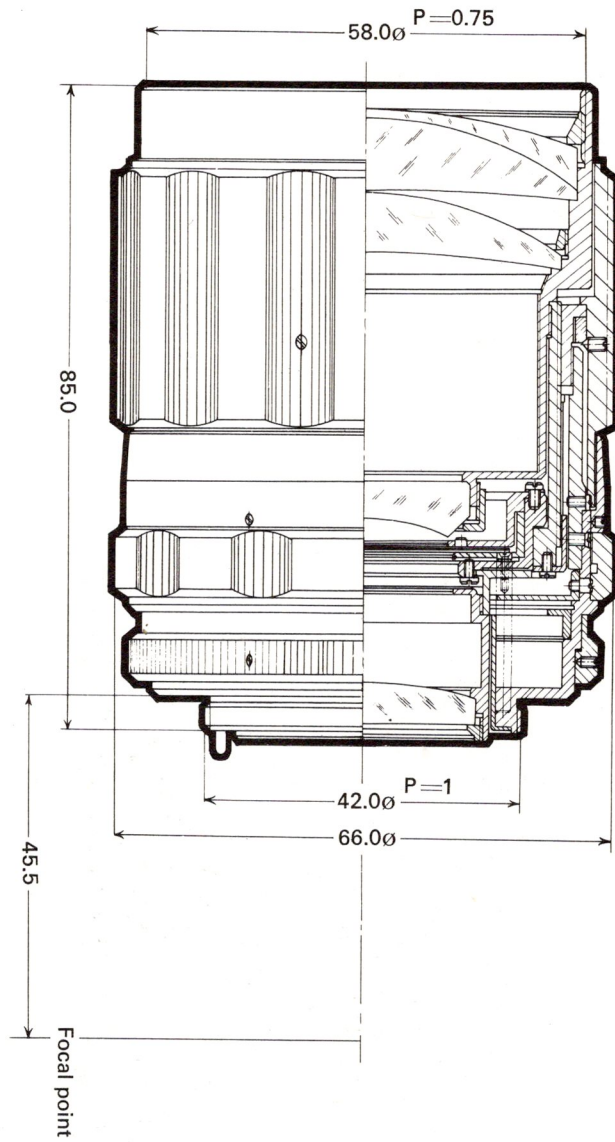
The fast working f2.5 maximum aperture is perfect for indoor work with artificial light and indeed, for a very wide range of subjects wherever the specification of the lens suits the job in hand.

The manufacturers recommend that for those fortunate enough to be building together a lens system this would be considered the perfect intermediary comprising a group of, say, 35mm f2, 85mm f1.9, 135mm f2.5, and 300mm f4.

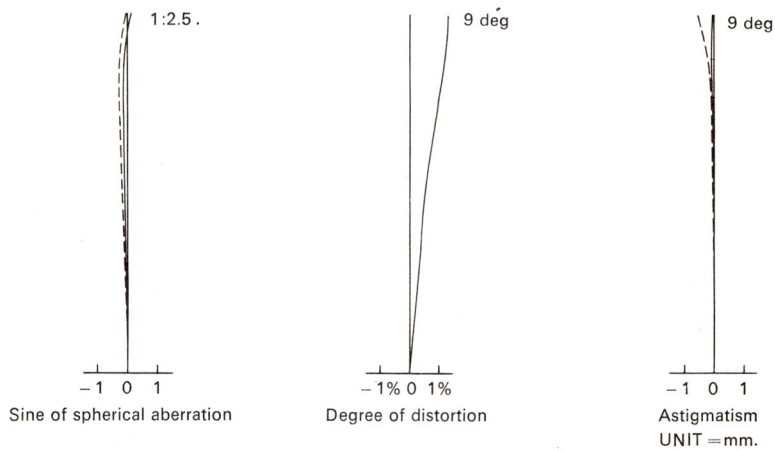


Focal length	135mm
Maximum aperture	F2.5
Lens elements	5 in 4 groups
Diaphragm	Fully automatic
Angle of view	18°
Minimum focusing distance	1.5m
Minimum aperture	F22
Dimensions Maximum diameter	66mm
Length	80.5mm
Weight	444g
Filter size	58mm

Super-Takumar 135mm f2.5



(mm)



SUPER-TAKUMAR

135mm F3.5

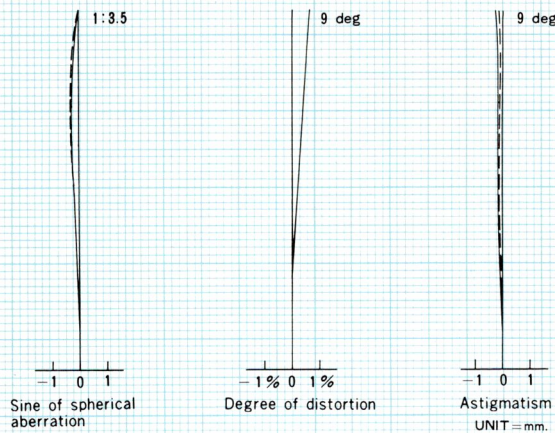
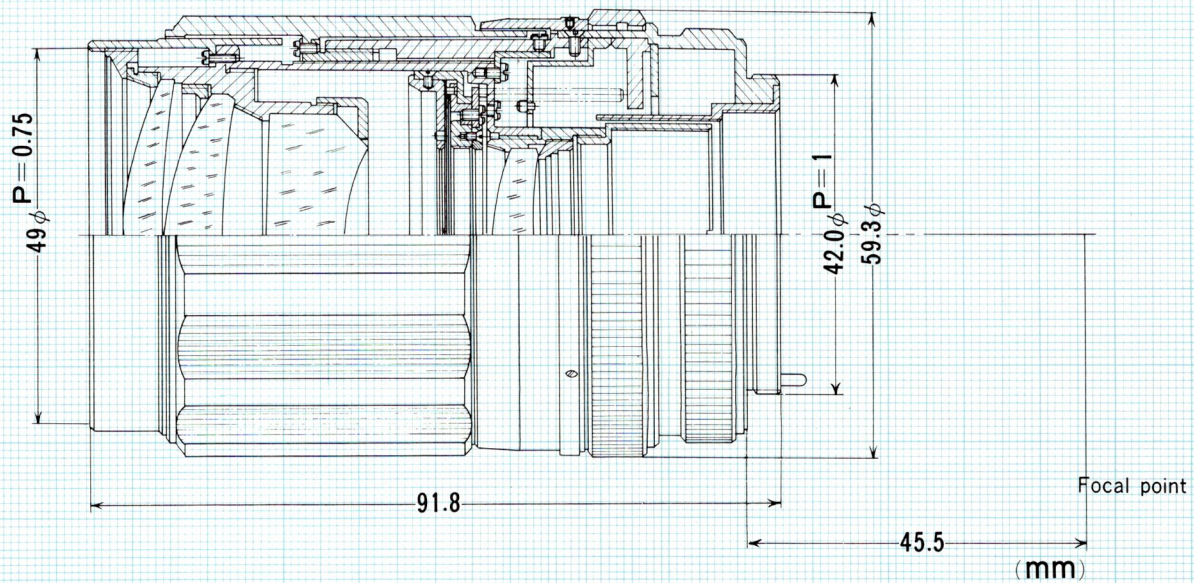


High-performance, best-selling 135mm lens

The Super-Takumar 135mm f3.5 has a long history and an equally long-established reputation. With this lens your Honeywell Pentax becomes the ideal telephoto camera — just look through the viewfinder and you'll see why. Inexpensively priced despite its performance record, this lens can be readily recommended to all photographers.



SUPER-TAKUMAR ● 135mm F3.5



■ Features ■ 135mm is the most popular focal length among telephoto lens enthusiasts, and this old favorite has been giving Pentax users fine service for almost 16 years. It has grown up with Asahi Optical and has been steadily improved over the years with advances in technique and design. The result is a supremely practical optic which, at its economical price, we readily recommend to all photographers.

■ Main uses ■ As the telephoto member of a set of three interchangeable lenses (with a standard and a wide-angle lens), the 135mm F3.5 can hardly be bettered for practicality and economy.

Focal length	135mm	Minimum aperture	F22
Maximum aperture	F3.5	Dimensions	
Lens elements	4 in 4 groups	Maximum diameter	59.3mm
Diaphragm	Fully automatic	Length	87.3mm
Angle of view	18°	Weight	0.70lb (320g)
Minimum focusing distance	5ft.(1.5m)	Filter size	49mm

Super-Takumar 135mm f3.5

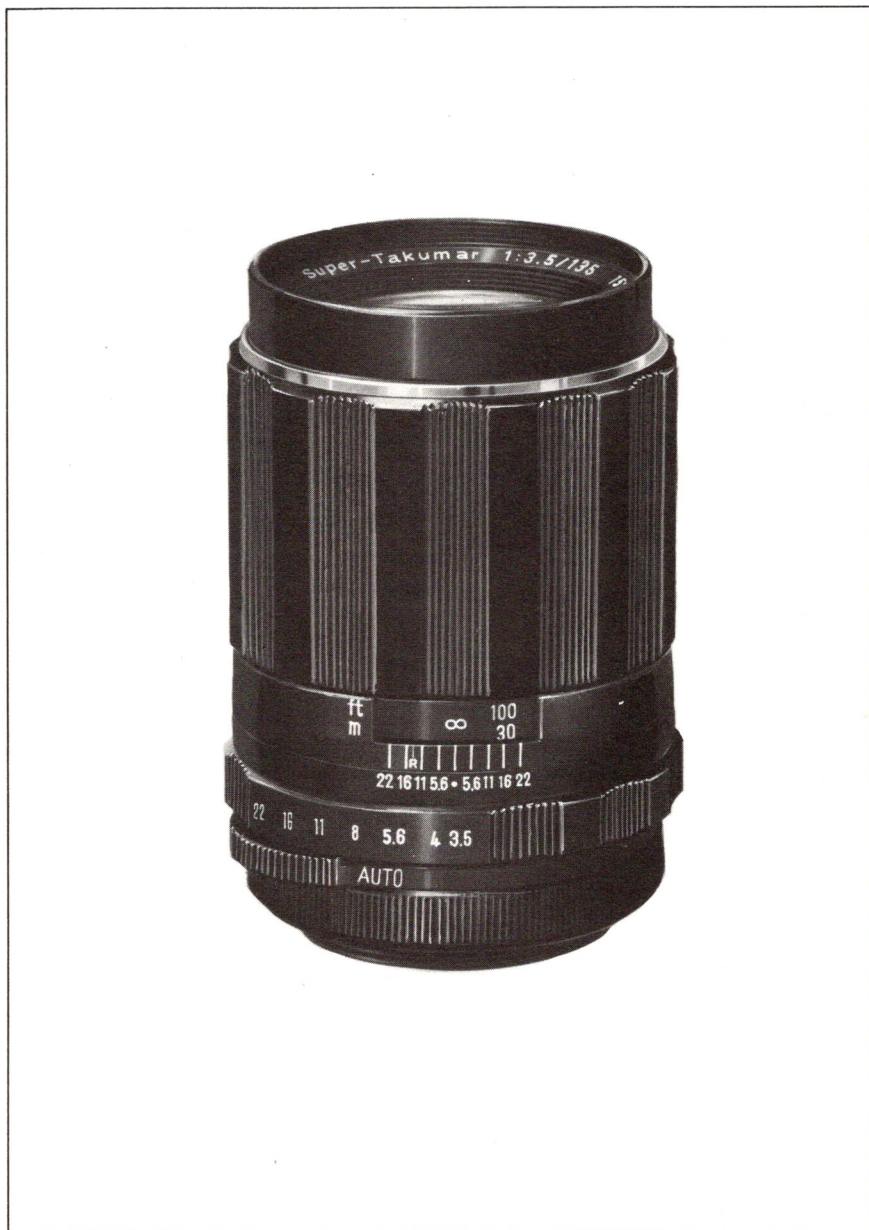
For any 35mm camera system the lens of 135mm focal length has come to be recognised more or less as the 'standard' long focus lens covering the majority of subjects. A lens of this specification has so much to offer and due to the compact construction it is indeed surprisingly small and lightweight.

Whether used for animal and bird studies or portrait work it affords a comfortable working distance, at the same time allowing the subject to fill the frame. The maximum aperture is suitable for working under varied light conditions and used even at full aperture will produce a brilliant, sharp image over the entire film plane. Undoubtedly the most versatile of all accessory lenses.

This lens has, in fact, been in production for more than 17 years, and is firmly established as a firm favourite by Asahi Pentax users the world over. In a sense it has grown up and matured along with Asahi Optical, being steadily improved over the years as advanced design and techniques have been developed.

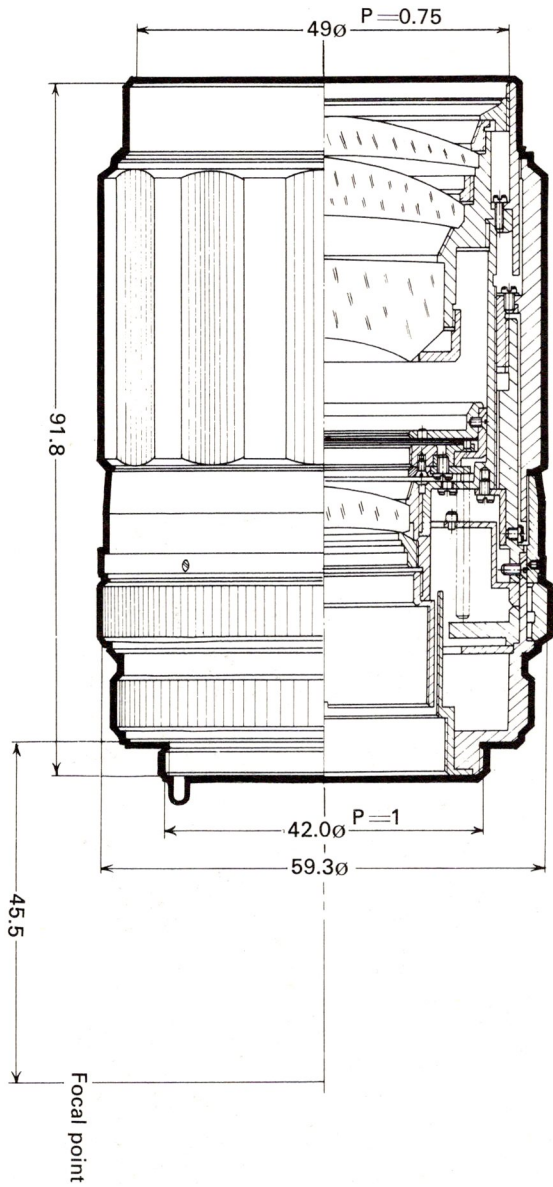
Principal Uses

Inexpensive, this is a telephoto lens for all occasions, comparatively lightweight and comfortable in use. The ideal partner to complement, say, a standard and wide-angle lens.

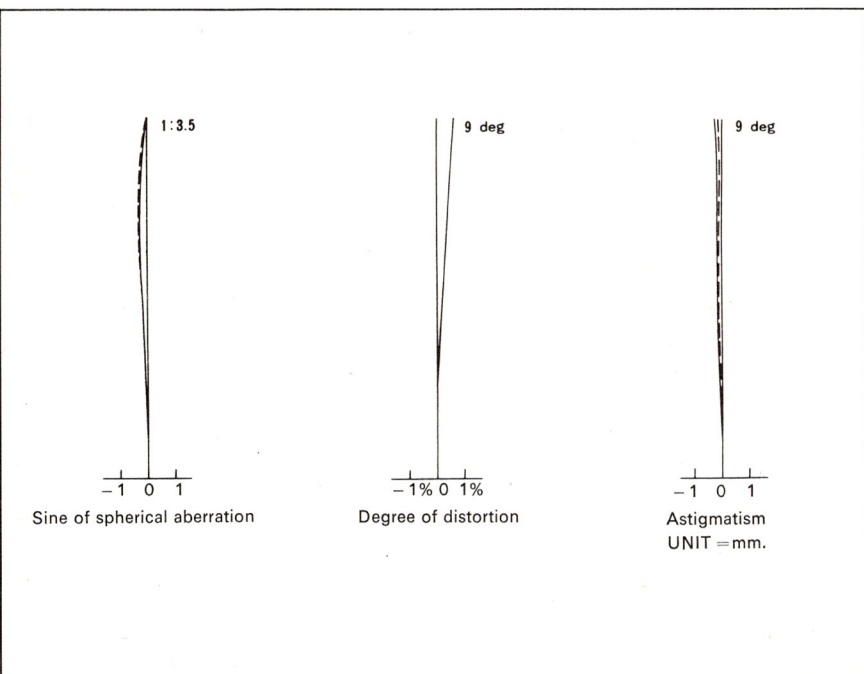


Focal length	135mm
Maximum aperture	F3.5
Lens elements	4 in 4 groups
Diaphragm	Fully automatic
Angle of view	18°
Minimum focusing distance	1.5m
Minimum aperture	F22
Dimensions Maximum diameter	59.3mm
Length	87.3mm
Weight	320g
Filter size	49mm

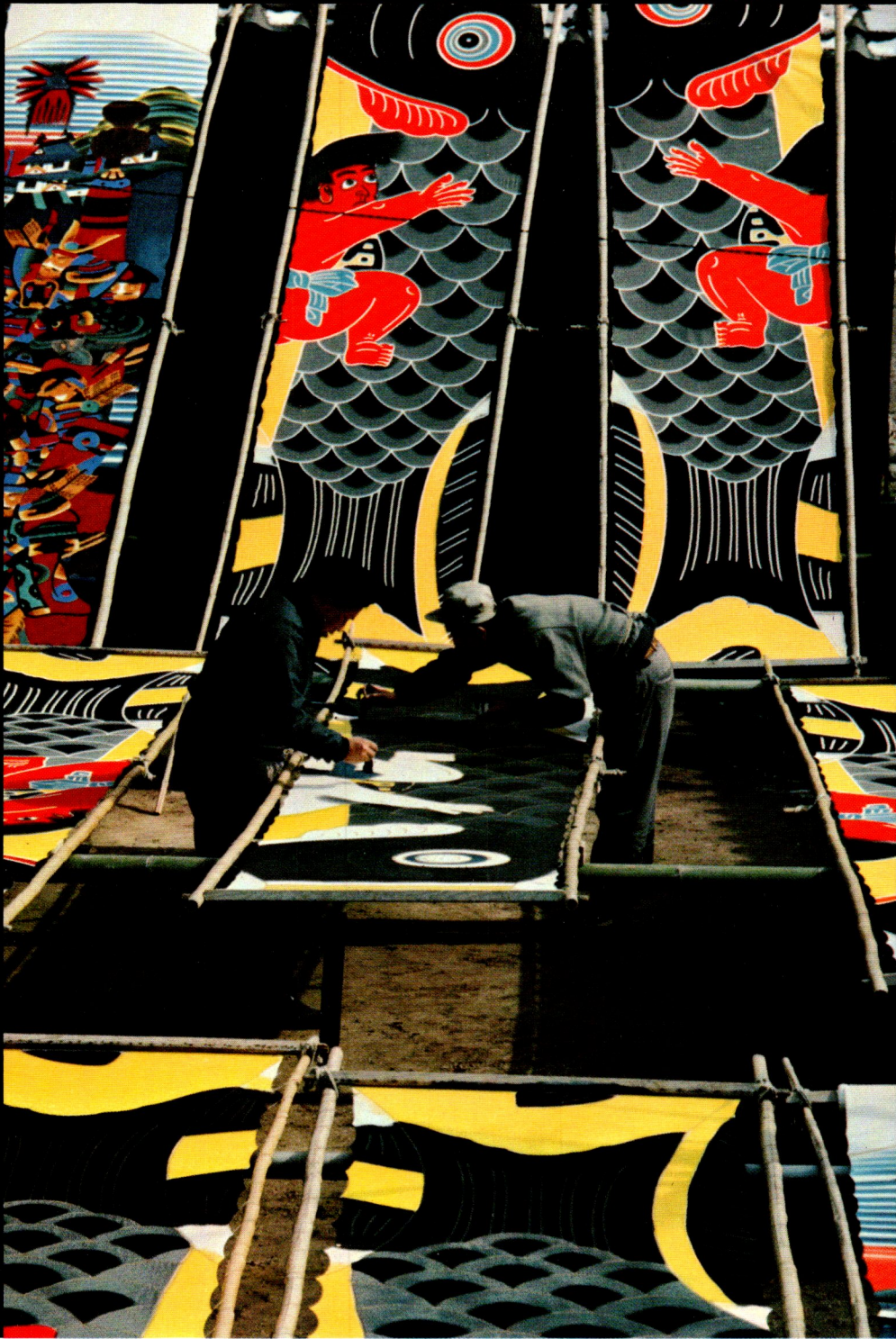
Super-Takumar 135mm f3.5



(mm)



SUPER-TAKUMAR 150mm F4

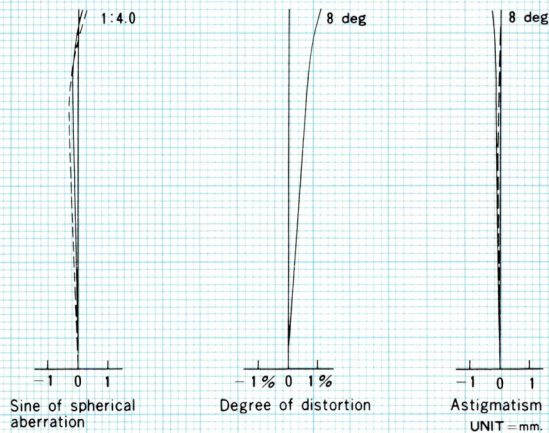
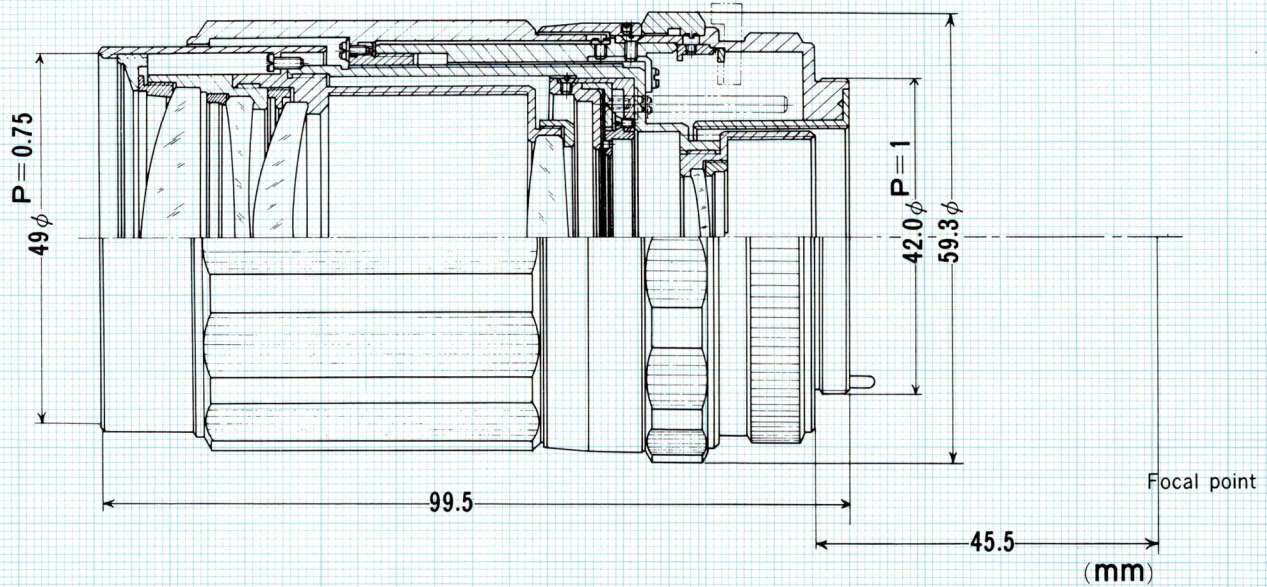


Compact, all-purpose lens equally suited to telephoto shots and close-ups.

No bigger than a 135mm lens but with increased magnification, this is a unique Pentax optic designed with compactness in mind. For extreme long-distance close-ups fit the extension tubes with no loss of resolution. No lens is more suitable for landscapes and scenery than this eminently convenient member of the Super-Takumar family.



SUPER-TAKUMAR • 150mm F4



■Features■ This compact lens has the same diameter and is only a fraction longer than the 135mm F3.5. Nevertheless, it has a focal length three times that of a standard lens — its viewing angle of 17° makes it the ideal optic for those shots halfway between 135mm and 200mm. Its low distortion ratio and high resolving power give fine image quality at all distances. And as an additional convenience, filter size is the normal 49mm.

■Main uses■ As a compact lens of true telephoto power, this is a very practical optic to take on field trips. Combined with extension tubes, it makes an excellent lens for close-ups of small moving objects and is also recommended for plant photography.

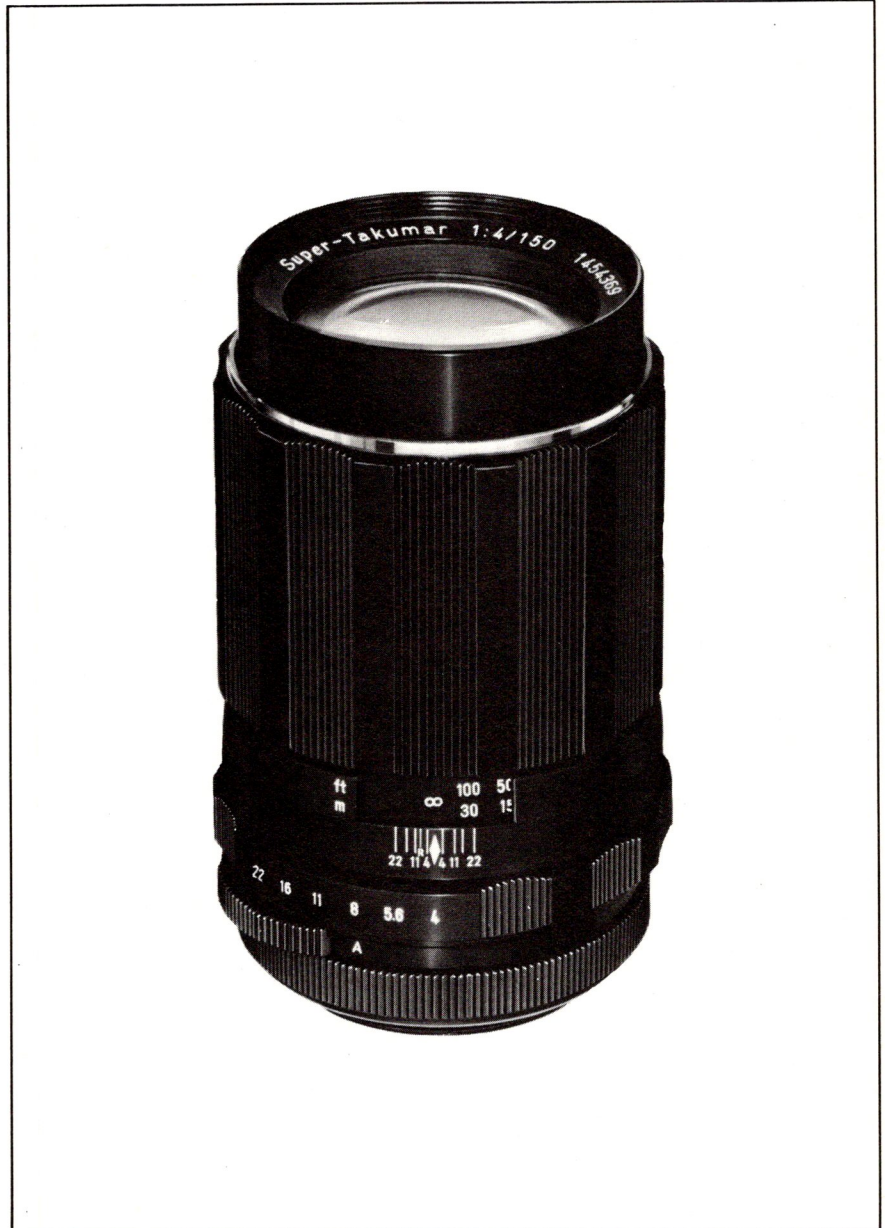
Focal length	150mm	Minimum aperture	F22
Maximum aperture	F4	Dimensions	
Lens elements	5 in 5 groups	Maximum diameter	59.3mm
Diaphragm	Fully automatic	Length	95mm
Angle of view	17°	Weight	0.71 lb (324g)
Minimum focusing distance	6ft.(1.8m)	Filter size	49mm

Super-Takumar 150mm f4

Yet another astonishingly useful and highly desirable telephoto, which although affording a full three-fold magnification in relation to the standard 50mm camera lens, is only 7mm longer than the 135mm long-focus and weighs even less! The low distortion ratio and high resolving power are other noteworthy features of this lens. Standard 49mm filters are used and a fully automatic diaphragm is incorporated.

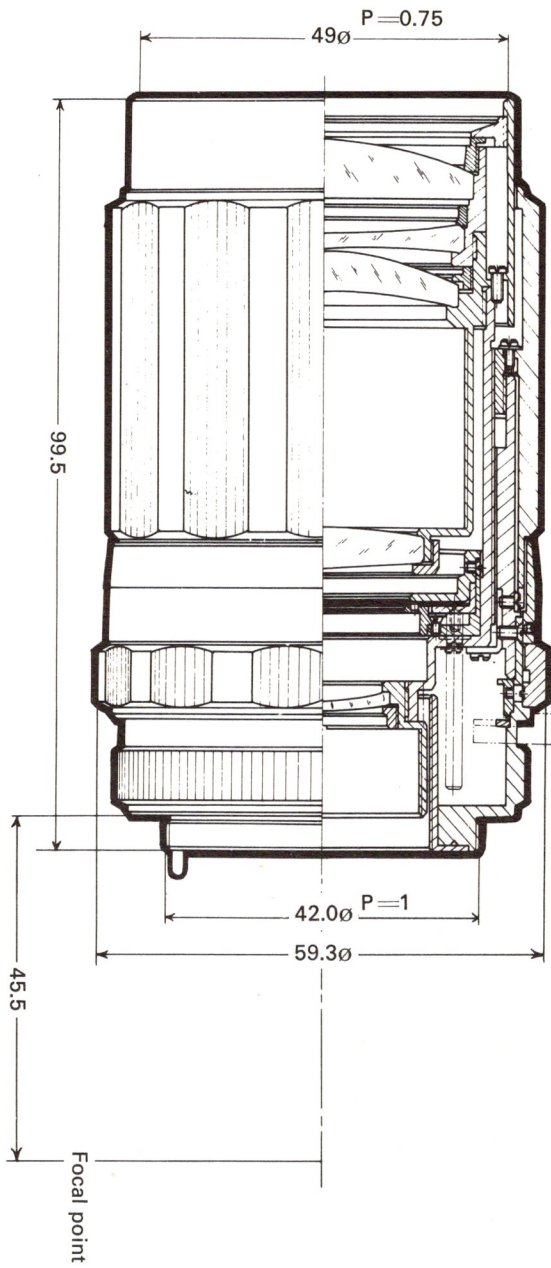
Principal Uses

Once again, in view of the useful 3x magnification in relation to the standard 50mm objective, this is a lens that can be comfortably accommodated when travelling and will certainly prove of value, whether used for landscapes, figure studies, and so on. For almost any form of pictorial, sports, and/or news coverage, theatre, or nature work. Employed with an extension tube an immediate whole new field of possibilities emerges for close-ups of plants, birds or any small objects.

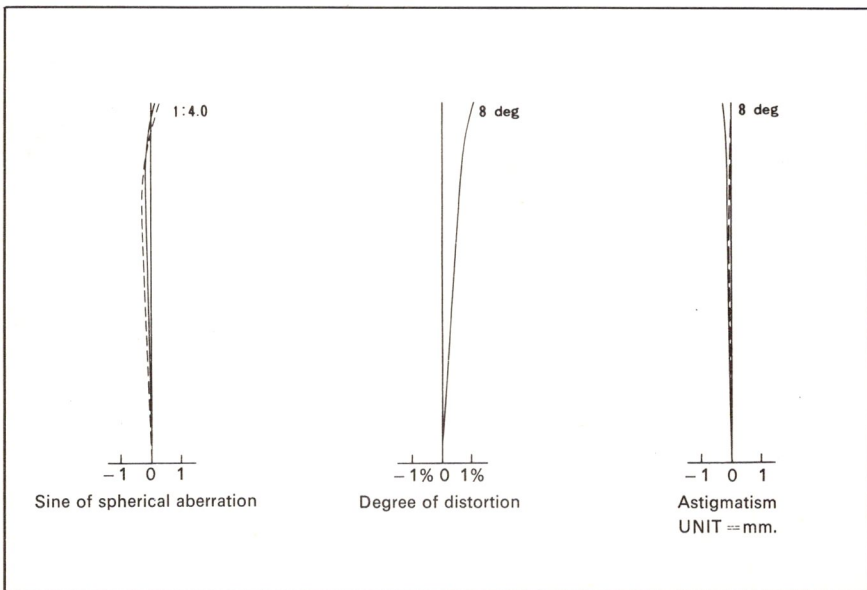


Focal length	150mm
Maximum aperture	F4
Lens elements	5 in 5 groups
Diaphragm	Fully automatic
Angle of view	17°
Minimum focusing distance	1.8m
Minimum aperture	F22
Dimensions Maximum diameter	59.3mm
Length	95mm
Weight	324g
Filter size	49mm

Super-Takumar 150mm f4



(mm)



Section 13
Telephoto Lenses

SUPER-TAKUMAR 200mm F4

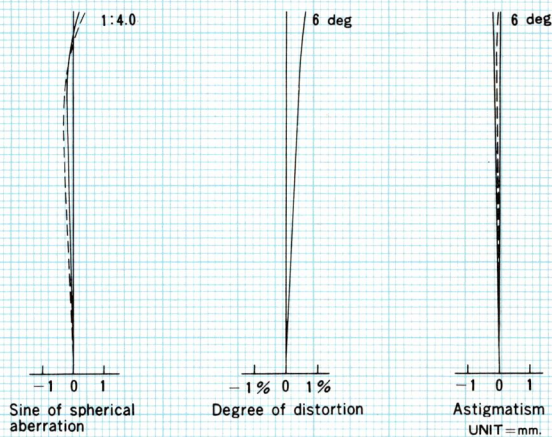
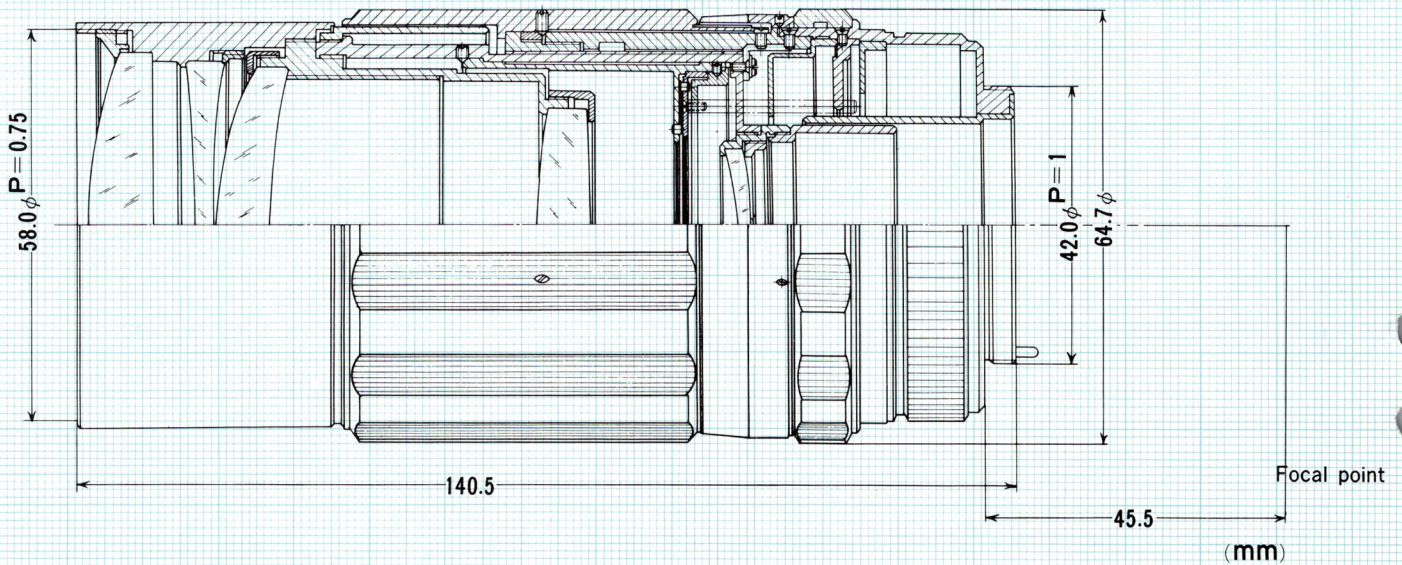


A true telephoto lens for all energetic photographers

In this lens Pentax has combined the powerful magnification you expect of a 200mm telephoto with compactness and mobility. The result is an optic equally at home in sports photography, candid outdoor shots and scenery details. Praised highly by professionals, this is a lens no true telephoto enthusiast can afford to be without.



SUPER-TAKUMAR • 200mm F4



■Features■ This powerful telephoto lens has been designed with hand-held photography in mind. Length and weight has therefore been kept to a minimum, and special emphasis given to camera balance. The low distortion makes for a clear-cut image in the viewfinder and excellent color photography characteristics. All in all, this lens is the perfect answer for powerful telephoto enthusiasts who wish to avoid the tripod.

■Main uses■ The powerful telephoto effect of 200mm lenses brings distant objects to close-up range and effectively brings out those dwarfed backgrounds. This lens is thus ideally suited to scenics and fast-action sports, and is at home in all telephoto fields.

Focal length	200mm	Minimum aperture	F22
Maximum aperture	F4	Dimensions	
Lens elements	5 in 5 groups	Maximum diameter	64.7mm
Diaphragm	Fully automatic	Length	136mm
Angle of view	12°	Weight	1.23lb (558g)
Minimum focusing distance	8.2ft. (2.5m)	Filter size	58mm

Super-Takumar 200mm f4

A 200mm focal length plus an f4 maximum aperture and fully automatic iris diaphragm make this an outstanding telephoto lens by any standard. As with the f5.6 version it possesses excellent light gathering properties, and provides high resolution and good contrast together with compact design and comparative light weight.

One of the major considerations when initially designing the lens was the aim to produce a powerful telephoto lens, yet compact and light enough to be used in the hands without resort to a tripod support. Accordingly this compact masterpiece of technical and optical engineering was devised with special emphasis on lens/camera balance. The low degree of distortion, clear crisp definition and excellent colour characteristics, plus fast working f4 aperture make this an ideal multi-purpose lens.

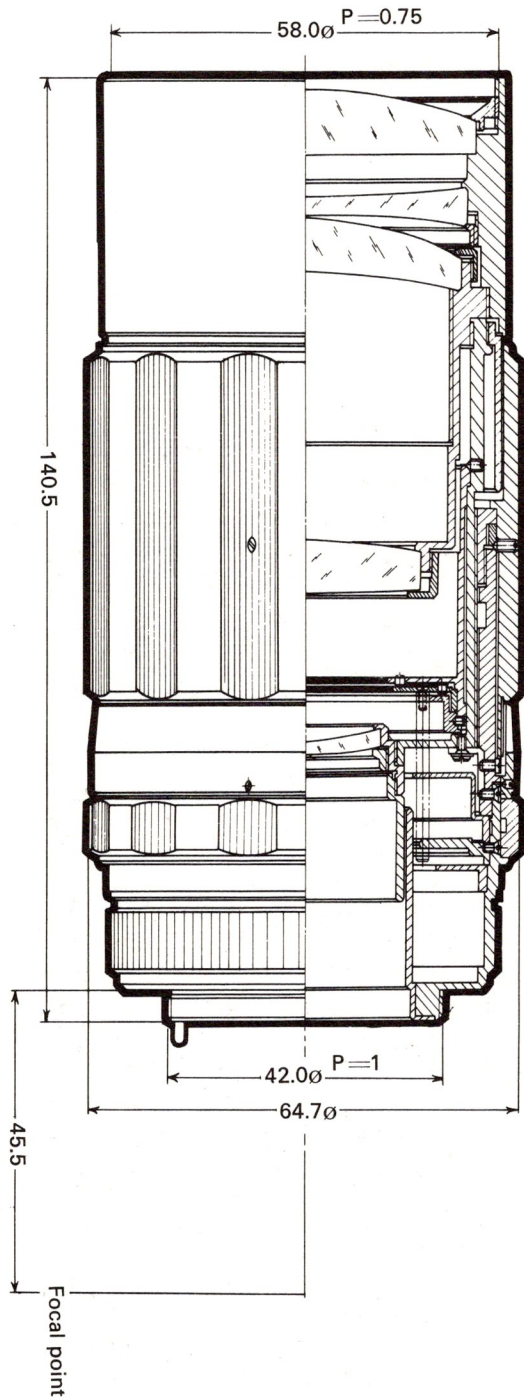
Principal Uses

All kinds of sports photography, candid shots, bird and animal work are just a few of the many varied possibilities, for which this lens would prove invaluable.

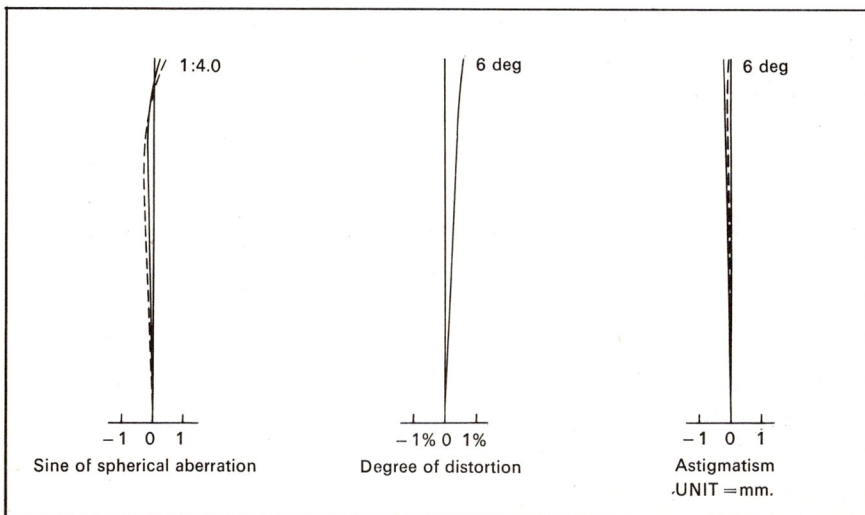


Focal length	200mm
Maximum aperture	F4
Lens elements	5 in 5 groups
Diaphragm	Fully automatic
Angle of view	12°
Minimum focusing distance	2.5m
Minimum aperture	F22
Dimensions Maximum diameter	64.7mm
Length	136mm
Weight	558g
Filter size	58mm

Super-Takumar 200mm f4



(mm)



TELE-TAKUMAR 200mm F5.6

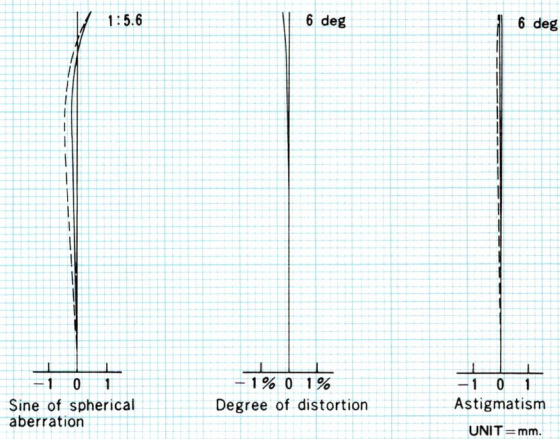
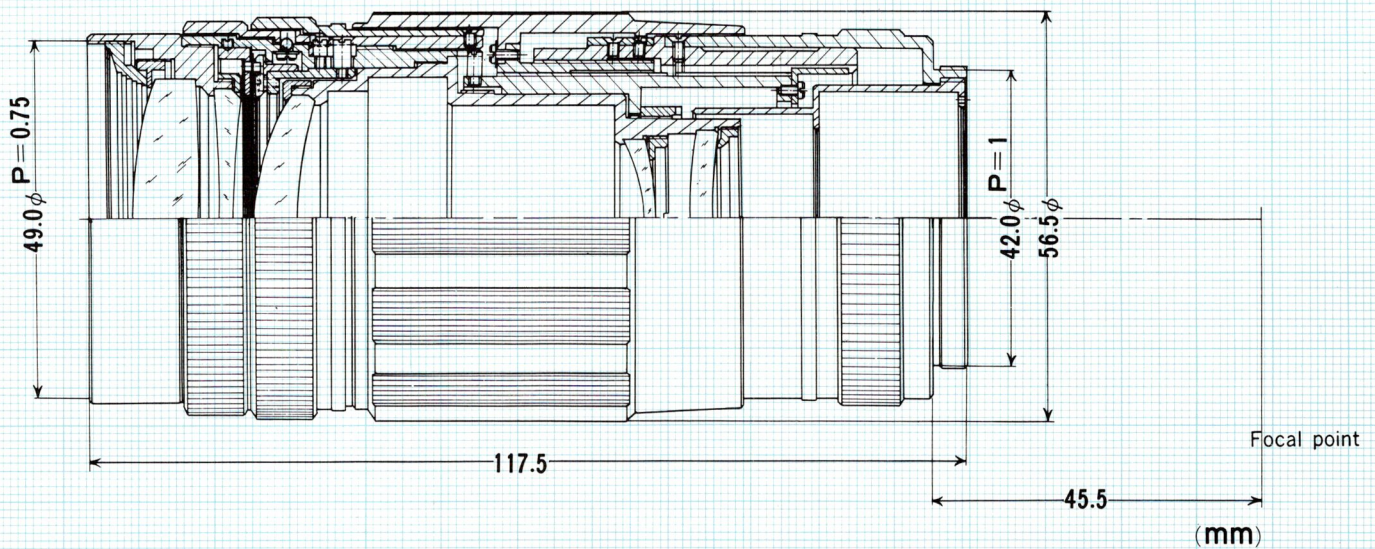


Compact super-telephoto ideal for traveling

This lens is a solution to the problem of carrying unwieldy long-focus lenses around on your travels. You can take this short, light lens everywhere — on long trips, on picnics, on skiing or mountaineering excursions. This portability combined with the usual Pentax performance makes this an outstanding member of the Tele-Takumar range.



TELE-TAKUMAR • 200mm F5.6



■ Features ■ This 200mm lens is above all light and compact. This practicality was achieved by reducing the maximum aperture to F5.6 — sufficient for practically all outdoor photography. Despite its powerful telephoto effect, distortion has been kept to a minimum and image quality is accordingly excellent. Filter size is the standard 49mm.

■ Main uses ■ This lightweight lens makes an excellent traveling companion. Problems of camera shake are eliminated, and though the diaphragm is of the preset type, its economical price and general practicality recommend it as an all-round telephoto lens.

Focal length	200mm	Minimum aperture	F22
Maximum aperture	F5.6	Dimensions	
Lens elements	5 in 5 groups	Maximum diameter	56.5mm
Diaphragm	Pre-set	Length	113mm
Angle of view	12°	Weight	0.89lb (404g)
Minimum focusing distance	8.2ft.(2.5m)	Filter size	49mm

Tele-Takumar 200mm f5.6

A comparatively inexpensive tele-photo enabling even the advanced amateur the possibility of enjoying the thrill of securing pictures that would otherwise be completely unobtainable.

Although the maximum aperture of f5.6 is (by today's standards) quite moderate, nevertheless an enormous variety of subjects can be tackled successfully in conjunction with the use of fast mono/colour emulsions. In sacrificing a little in terms of light transmission (maximum aperture f5.6 compared to f4) it has resulted in an exceptional, compact and lightweight lens.

Minimum distortion and excellent image quality once again ensure first-class results in monochrome or colour.

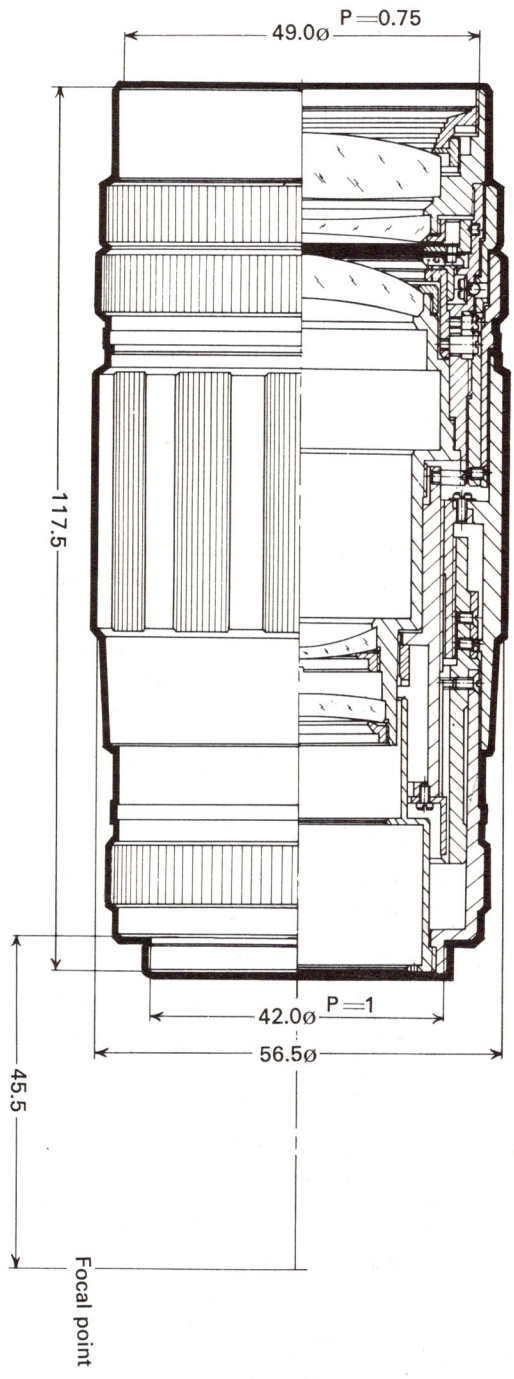
Principal Uses

Due to the wonderfully compact design and coupled with minimum weight, this lens could be a constant companion for all outdoor excursions – walking, sailing, skiing or climbing. Perfect for ornithologists, stalking big game, and numerous other purposes.

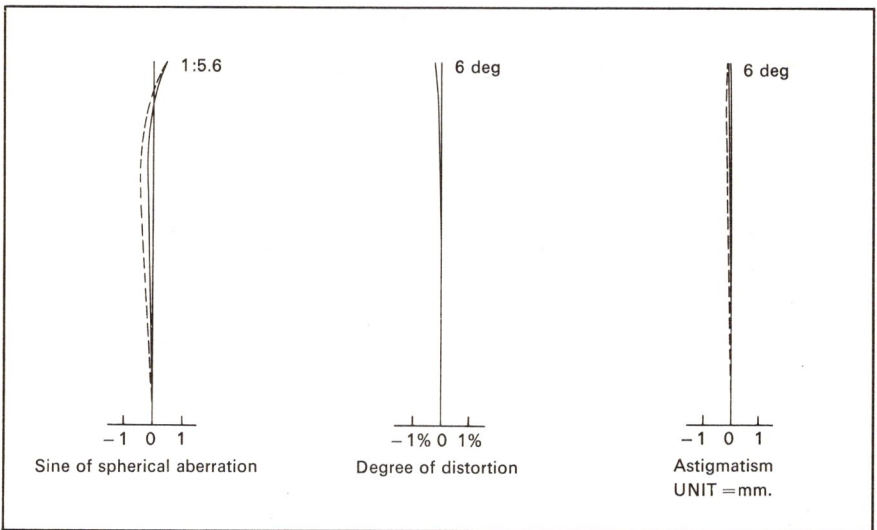


Focal length	200mm
Maximum aperture	F5.6
Lens elements	5 in 5 groups
Diaphragm	Pre-set
Angle of view	12°
Minimum focusing distance	2.5m
Minimum aperture	F22
Dimensions Maximum diameter	56.5mm
Length	113mm
Weight	404g
Filter size	49mm

Tele-Takumar 200mm f5.6



(mm)



SUPER-TAKUMAR 300mm F4

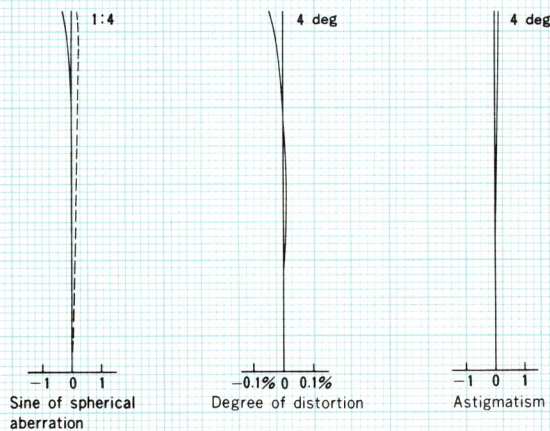
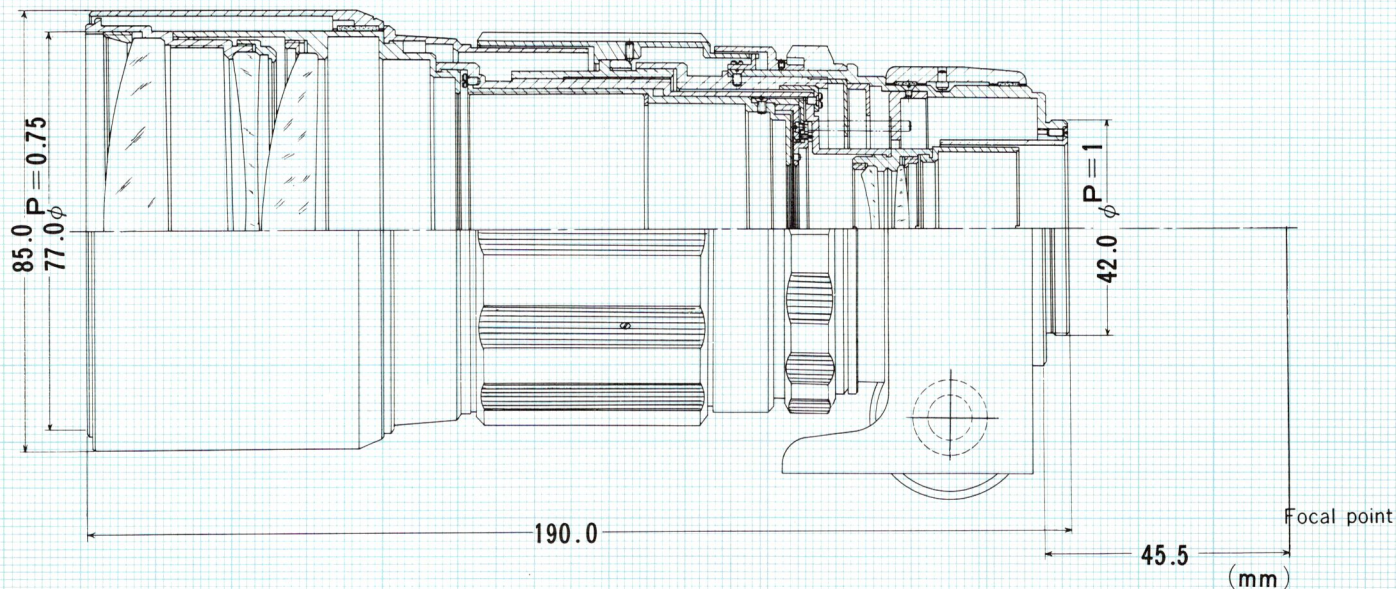


Latest addition to the Super-Takumar range of super-telephoto lenses

This lens combines the speed and convenience expected of a single lens reflex system with the brightness of a normal optic. Equipped with a fully automatic diaphragm, this fast lens has been designed to be light and compact enough for hand-held photography and makes a perfect general-purpose super-telephoto optic.



SUPER-TAKUMAR ● 300mm F4



■ Features ■ This is the brightest of all Takumar super-telephoto lenses and has been specially designed with compactness in mind. Balance characteristics are superb, and a lenshood is built-in. The combination of lens design and distortion reduction result in an optic with fine image clarity and resolution. A tripod socket is built-in, but veterans will be able to use this compact lens hand-held. Equipped with a fully automatic diaphragm, this is a truly deluxe super-telephoto lens.

■ Main uses ■ This lens is at home in all fields of super-telephoto photography. The large aperture and automatic diaphragm render it especially suitable to fast-action sports shots, stage photography and candid snapshots.

Focal length	300mm	Minimum aperture	F22
Maximum aperture	F4	Dimensions	
Lens elements	5 in 5 groups	Maximum diameter	85mm
Diaphragm	Fully automatic	Length	185.5mm
Angle of view	8°	Weight	2.10lb (954g)
Minimum focusing distance	18ft.(5.5m)	Filter size	77mm

Super-Takumar 300mm f4

Offering a full 6x magnification over and above a standard 50mm lens, this Takumar Super Telephoto lens is a remarkable achievement. The compactness is again a design feature together with superb balance characteristics.

An f4 maximum aperture produces an almost unbelievably bright screen image, in turn ensuring ease of subject observation and fast critical focusing.

Minimum distortion and first-class resolution are further qualities of this fine lens.

A built-in tripod socket is provided, but it should not necessarily be assumed that the use of a tripod is an essential factor.

Indeed, with a little experience and a suitably fast shutter speed, little or no difficulty should be encountered when making hand-held exposures.

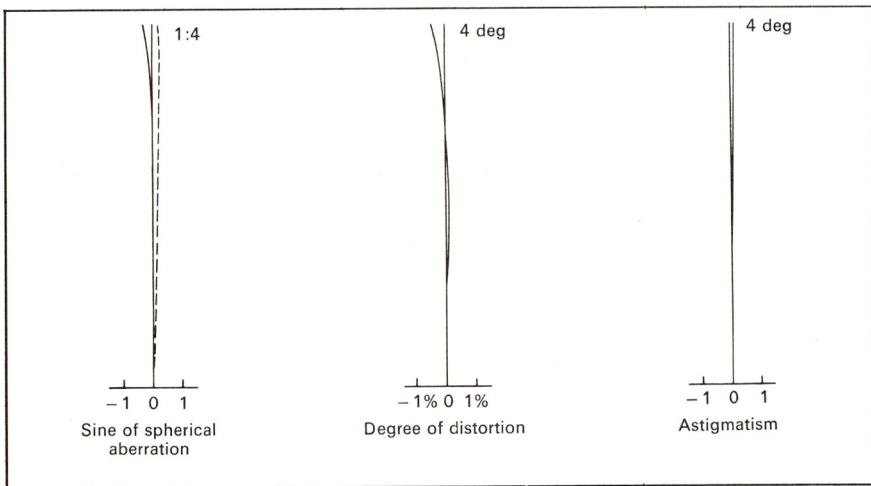
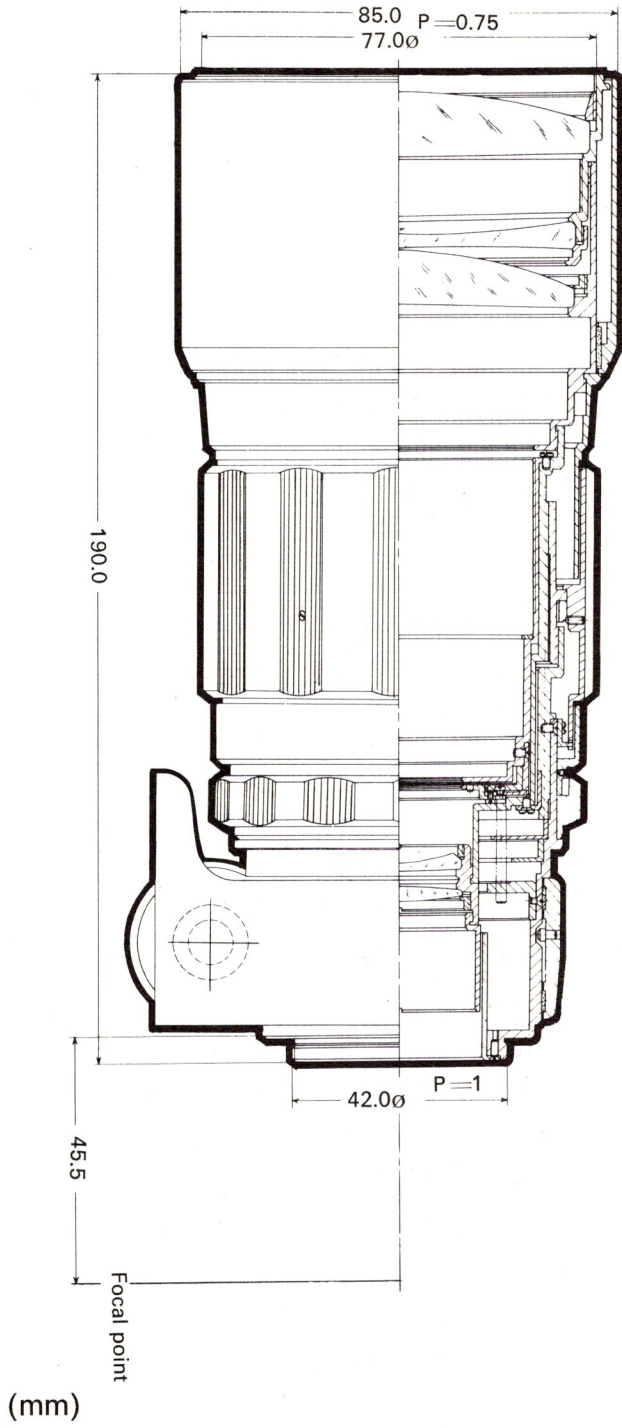
Principal Uses

The admirable balance characteristics, the moderate overall weight and size, together with added luxuries, including fully automatic diaphragm and built-in lenshood make this lens eminently suited for many outdoor activities including fast action shots, and indoor stage photography, among others.



Focal length	300mm
Maximum aperture	F4
Lens elements	5 in 5 groups
Diaphragm	Fully automatic
Angle of view	8°
Minimum focusing distance	5.5m
Minimum aperture	F22
Dimensions Maximum diameter	85mm
Length	185.5mm
Weight	954g
Filter size	77mm

Super-Takumar 300mm f4



TELE-TAKUMAR 300mm F6.3

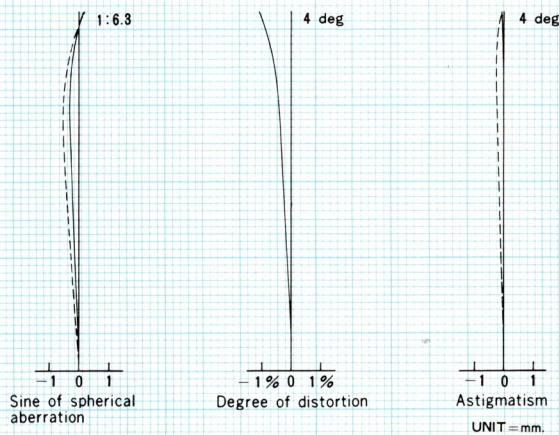
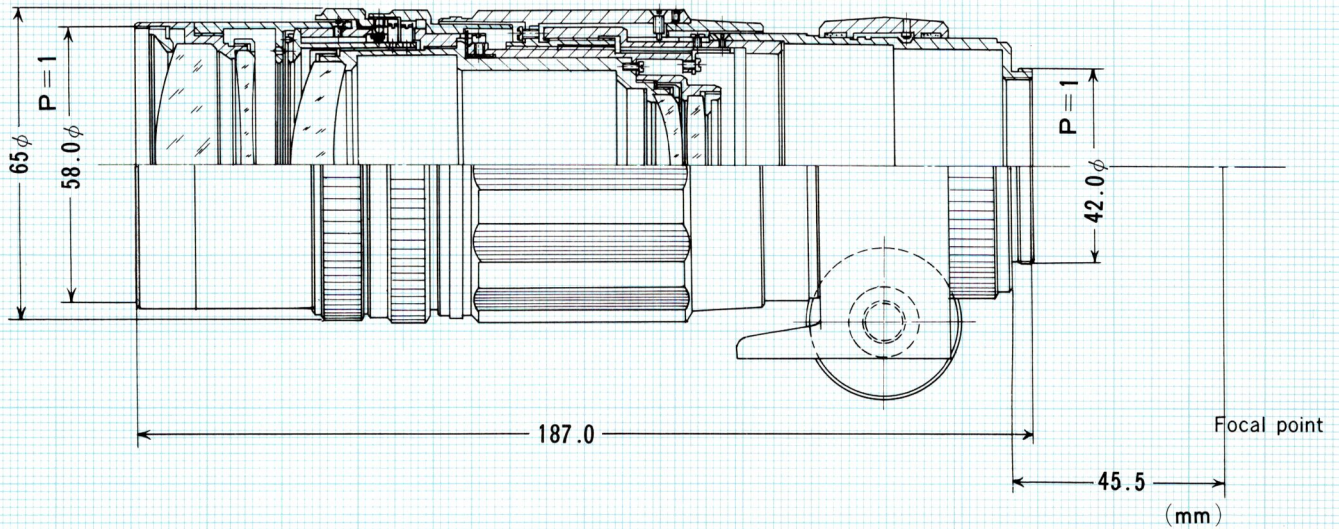


Handy-sized super-telephoto lens

The lightest and most compact member of the Tele-Takumar series, this telephoto can be hand-held just like a 200mm lens. Pentax achieved this practicality by setting the maximum aperture at f6.3 — sufficient for almost all outdoor telephoto shots. This also explains why this fine lens is so moderately priced.



TELE-TAKUMAR ● 300mm F6.3



■ Features ■ This powerful lens is shorter and over 200g lighter than the 300mm F4. The special lens design and smaller aperture result in a sharply resolved image even with the diaphragm fully open — and even F6.3 is bright enough for all normal outdoor photography. The diaphragm is of the pre-set type, resulting in a truly compact, economical super-telephoto lens. A tripod socket is built-in for horizontal or vertical use.

■ Main uses ■ This focal length is ideal for scenics, animal and sports photography. There is no better lens type for pulling in distant details and bringing out backgrounds.

Focal length	300mm	Minimum aperture	F22
Maximum aperture	F6.3	Dimensions	
Lens elements	5 in 5 groups	Maximum diameter	65mm
Diaphragm	Pre-set	Length	182.5mm
Angle of view	8°	Weight	1.55lb (706g)
Minimum focusing distance	18ft.(5.5m)	Filter size	58mm

Tele-Takumar 300mm f6.3

A manually operated diaphragm and moderate (maximum) lens aperture of f6.3 help this lens to be marketed at a price quite within the normal budget allowance of the keen amateur photographer. It is remarkably compact and may be confidently hand held in conjunction with a reasonably brief shutter speed. Absolutely first-class edge to edge definition can be expected even at full aperture. The weight is a mere 729g. and the beautifully smooth helicoidal focusing is indeed a joy to use.

The diaphragm is pre-set which reduces weight and cost. Even so, a bright screen image aids easy viewing/focusing.

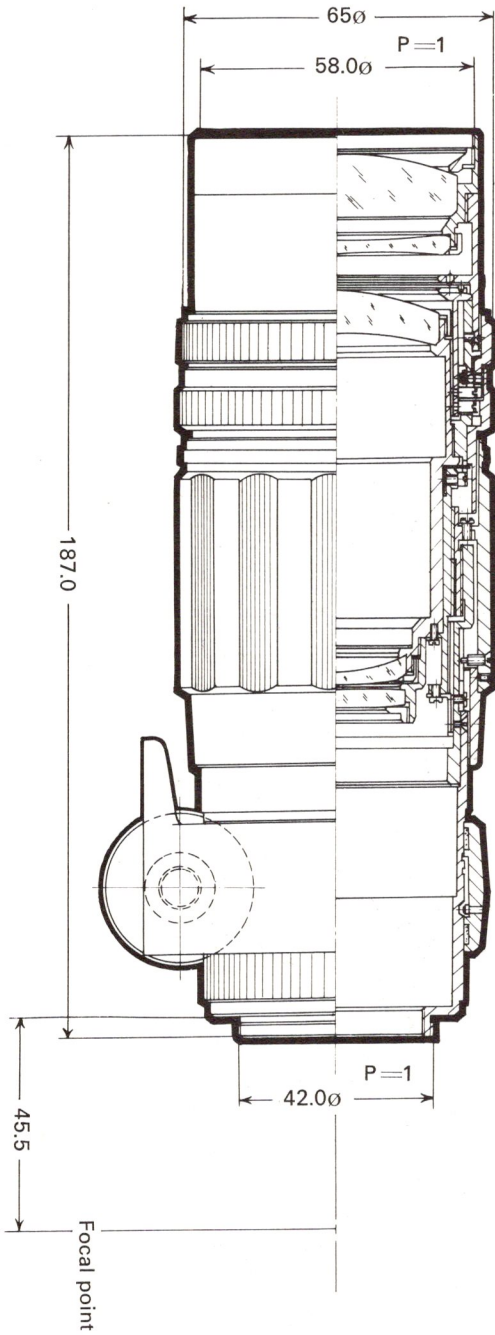
Principal Uses

All scenic and outdoor work, including animal and sports photography.

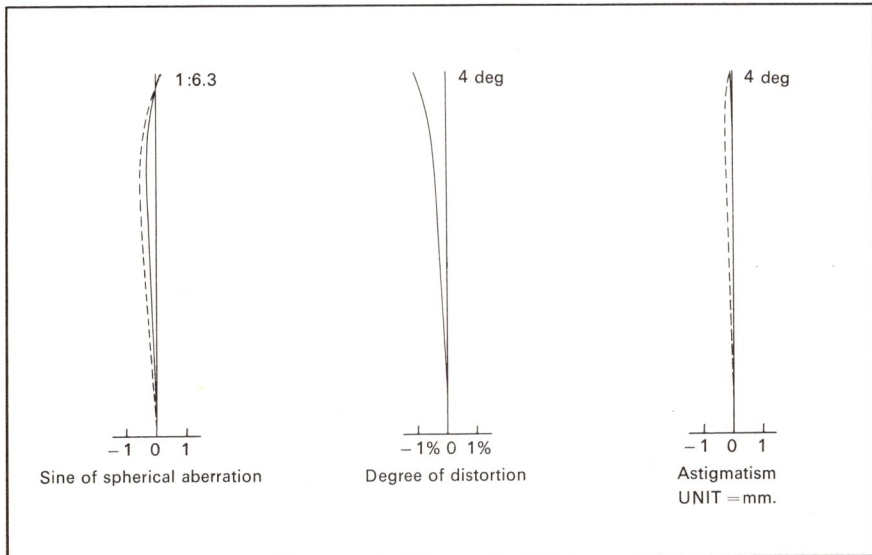


Focal length	300mm
Maximum aperture	F6.3
Lens elements	5 in 5 groups
Diaphragm	Pre-set
Angle of view	8°
Minimum focusing distance	5.5m
Minimum aperture	F22
Dimensions Maximum diameter	65mm
Length	182.5mm
Weight	706g
Filter size	58mm

Tele-Takumar 300mm f6.3



(mm)



TELE-TAKUMAR 400mm F5.6

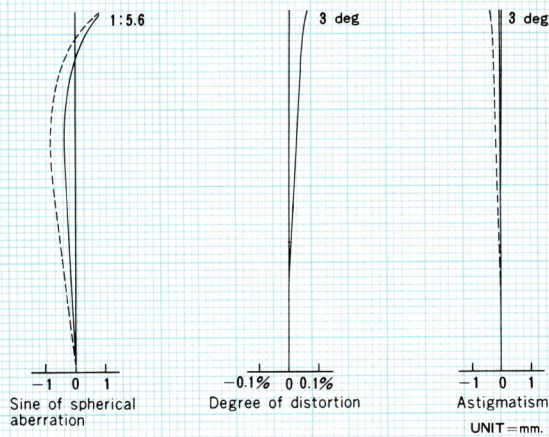
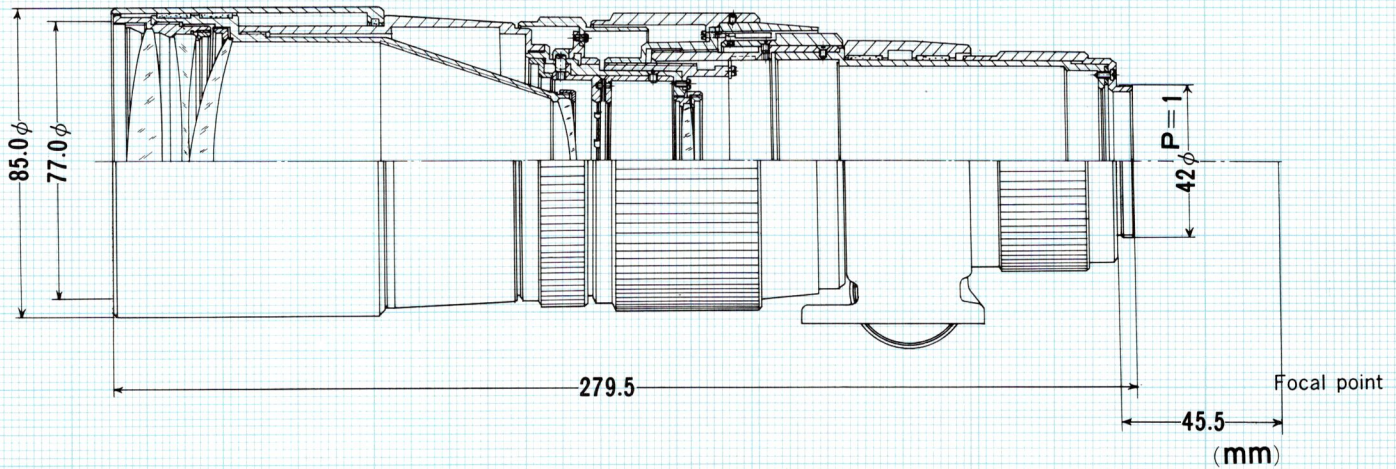


The ultimate in hand-held super-telephoto lenses

Producing long hand-held telephoto lenses for SLR cameras has always presented many problems. To have succeeded in solving them with this lens is a triumph of Pentax research and craftsmanship. Now you can photograph the most action-packed moments in conditions that do not permit the use of a tripod. With this lens Pentax has opened up a new field to the adventurous photographer.



TELE-TAKUMAR ● 400mm F5.6



■ Features ■ This lens has the longest focal length of all the compact Takumar telephoto series. Despite its telephoto power, the ultra-high quality design of this lens results in a contrasty image of high resolution and fine color reproduction.

Lens length is as short as that of a reflector type telephoto lens, and intermediate click-stops and the minimum aperture of F45 make this lens very convenient for extreme telephotography.

This fine super-telephoto lens has a built-in lenshood and is fitted with a tripod socket for high performance under all conditions.

■ Main uses ■ This optic is ideal for hand-held operation with moving subjects. The half-stop click settings also make it a fine performer for color photography. Altogether a fine choice for sports, animal photography and long-range candid shots.

Focal length	400mm	Minimum aperture	F45
Maximum aperture	F5.6	Dimensions	
Lens elements	5 in 5 groups	Maximum diameter	85mm
Diaphragm	Manual	Length	275mm
Angle of view	6°	Weight	2.76lb (1255g)
Minimum focusing distance	26.2ft.(8m)	Filter size	77mm

Tele-Takumar 400mm f5.6

A compact addition to the large range of ancillary lenses is this 400mm telephoto designed for mainly professional use, being particularly suitable for sports and news coverage, nature work, etc. It is so compact that it may be hand held (with appropriate shutter speed) allowing unrestricted use. The incorporation of a click stop diaphragm further assists in really fast working technique.

This 400mm lens is the longest of the compact Telephoto series.

Overall length has been restricted to little more than that of a reflector (mirror) type telephoto lens.

The ultra high quality design of this lens produces a fine contrasty image of high resolution and fine colour reproduction, despite the long focal length construction.

Asahi state that production of a suitable long telephoto lens for hand held operation has always been a problem, but now they feel that their success in solving this is a triumph for their research and craftsmanship.

A built-in lens hood and provision of a click stop diaphragm ring all contribute to making this lens the success it has proved to be.

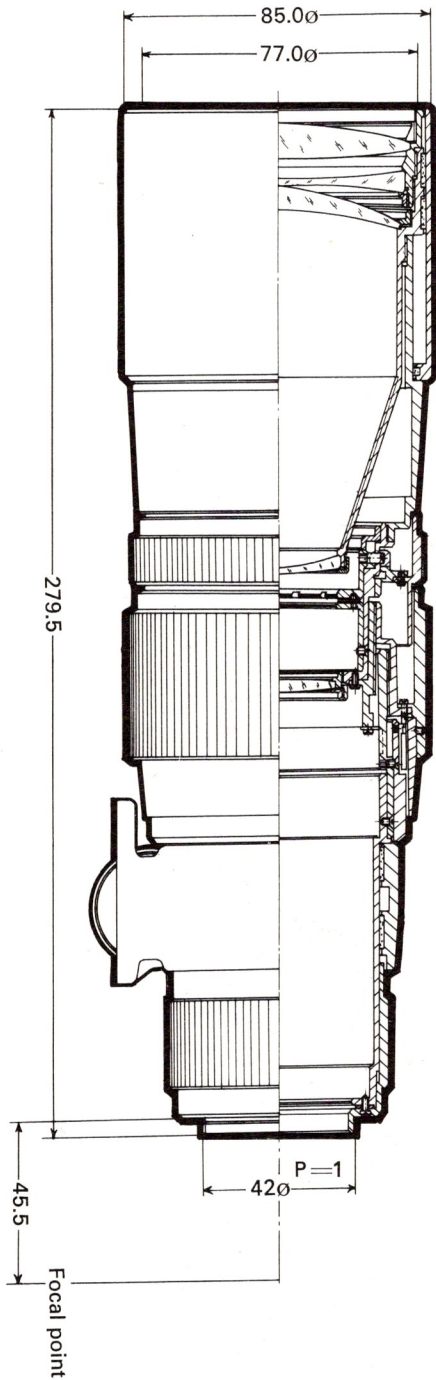
Principal Uses

Many exciting possibilities present themselves, ranging from fast action shots, big game at zoos or on safari, and almost every kind of sporting event, by virtue of the hand held operation of this lens.

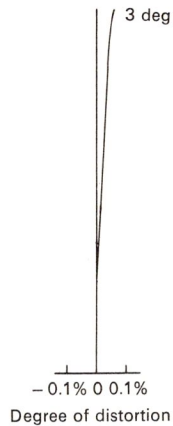
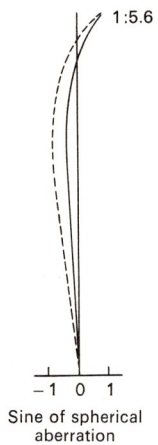


Focal length	400mm
Maximum aperture	F5.6
Lens elements	5 in 5 groups
Diaphragm	Manual
Angle of view	6°
Minimum focusing distance	8m
Minimum aperture	F45
Dimensions Maximum diameter	85mm
Length	275mm
Weight	1255g
Filter size	77mm

Tele-Takumar 400mm f5.6



(mm)



TAKUMAR 500mm F4.5

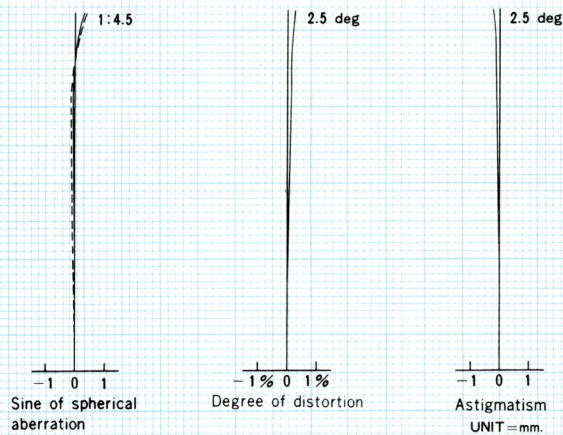
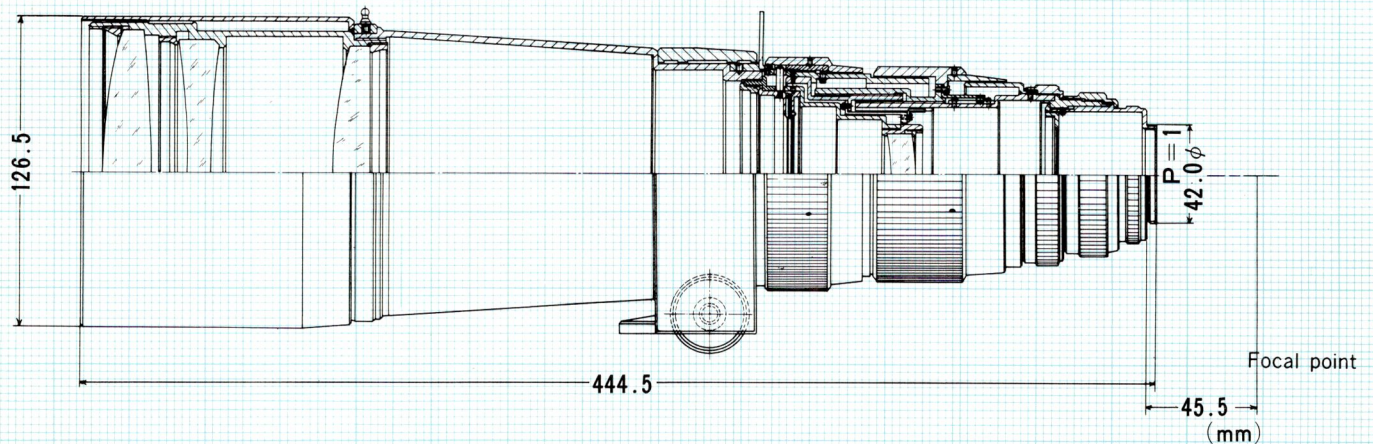


A phenomenal super-telephoto lens

With a focal length 10 times that of a normal lens and a maximum aperture of f4.5, this powerful optic is perfect for all super-telephoto shots, even in poor lighting conditions. Its magnifying power pulls in the most distant objects and there is no more suitable lens for the specialist in search of that extra telephoto effect.



TAKUMAR • 500mm F4.5



■Features■ This is a fine super-telephoto lens with a maximum aperture of F4.5. Pentax has succeeded in overcoming the many problems of design that arise with these long lenses: distortion has been practically eliminated, image quality and resolution are high, and the F4.5 brightness is ideal for long-range color photography.

Since the focal length of this lens is 10 times that of a standard lens, it is equipped with a sighting system for ease of operation. A sturdy tripod is necessary as this lens is 44cm long and weighs 3.5kg, but attachment to the camera body is simple since the rear part of the barrel is removable. By loosening the ring, the lens can be twisted through 90° and clicks into position for horizontal or vertical camera position. A lenshood is built in and filters (49mm) can be fitted to the rear of the lens.

■Main uses■ This lens combines super-telephoto power with brightness, and is therefore ideal for night sports shots, press photography, wild animal studies and many other fields.

Focal length	500mm	Minimum aperture	F4.5
Maximum aperture	F4.5	Dimensions	
Lens elements	4 in 4 groups	Maximum diameter	126.5mm
Diaphragm	Manual	Length	440mm
Angle of view	5°	Weight	7.7lb (3500g)
Minimum focusing distance	32.8ft. (10m)	Filter size	49mm

Takumar 500mm f4.5

Asahi have overcome all the major problems that arise when undertaking the design and manufacture of a complicated lens of this nature. The result is a sophisticated optical and engineering triumph. Virtually distortion-free with high resolution and excellent colour rendering properties.

Image magnification 10x that of a standard lens, necessitating the very practical inclusion of a sighting system for ease of operation.

A really strong tripod is essential, as the lens measures 44cm overall and weighs 3.5kg.

However, the attachment and removal of the camera body is fast and simple as the rear part of the lens barrel is removable for this purpose. A locking ring permits, when loosened, a 90° rotation of the camera body and clicks positively into the vertical or horizontal position.

The lens features a built-in lens hood and a manually operated click stop diaphragm.

Standard 49mm filters are employed. Good contrast and high resolution even at full working aperture are other important features.

Principal Uses

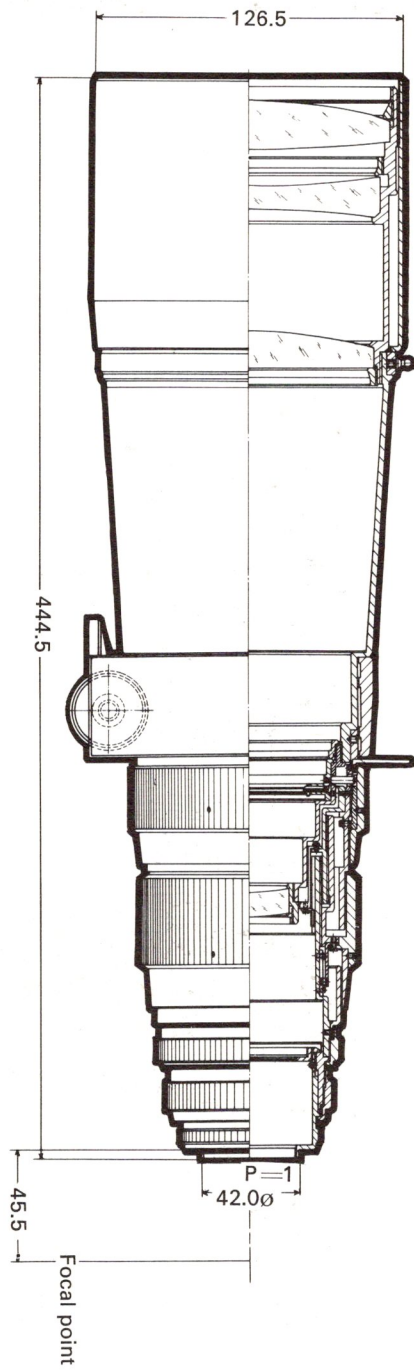
A specialist lens of telephoto construction. The extreme narrow angle of acceptance (5°) helps one visualise the type of subjects for which this would be employed. A true instance of bringing the inaccessible into reach.

Press photographers find these lenses invaluable for long range celebrity work and there are numerous other uses, including big game in zoo or nature reserve, sporting events and so on. It is frequently employed for criminal investigation, and celestial photography.

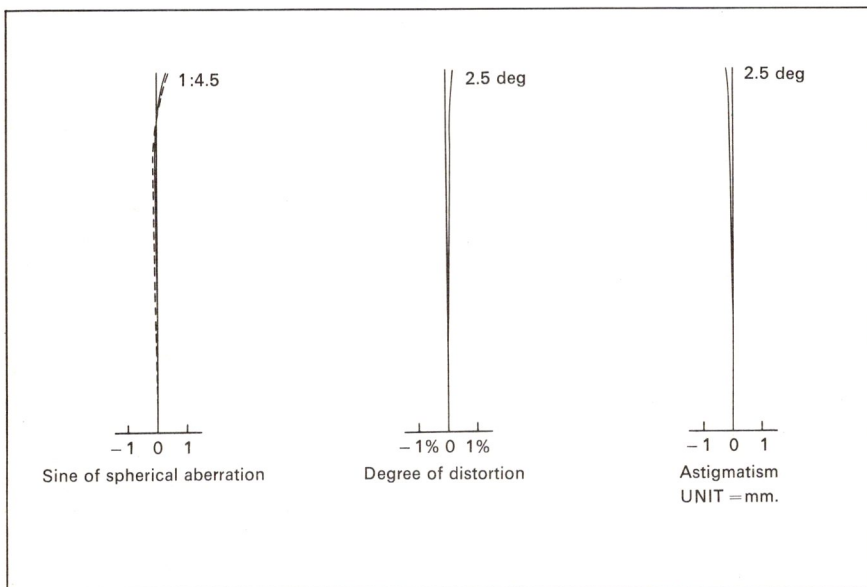


Focal length	500mm
Maximum aperture	F4.5
Lens elements	4 in 4 groups
Diaphragm	Manual
Angle of view	5°
Minimum focusing distance	10m
Minimum aperture	F45
Dimensions Maximum diameter	126.5mm
Length	440mm
Weight	3500g
Filter size	49mm

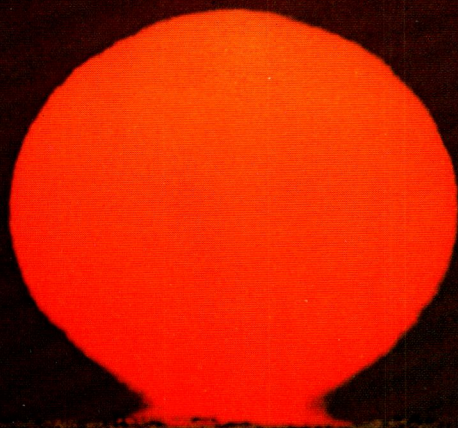
Takumar 500mm f4.5



(mm)

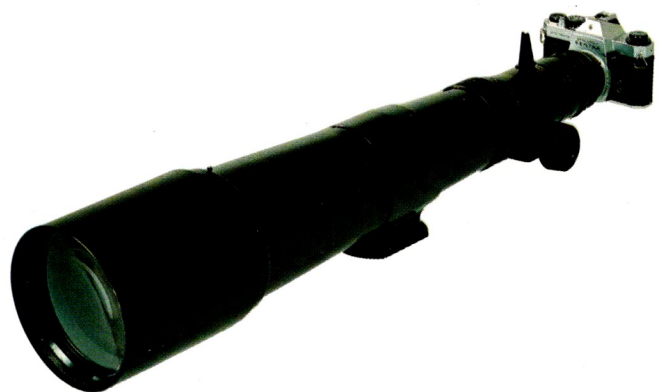


TELE-TAKUMAR 1000mm F8

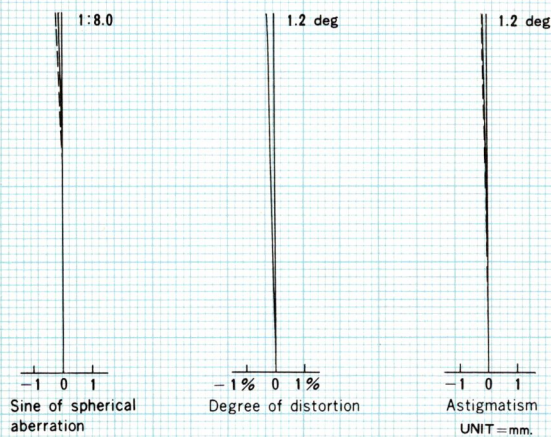
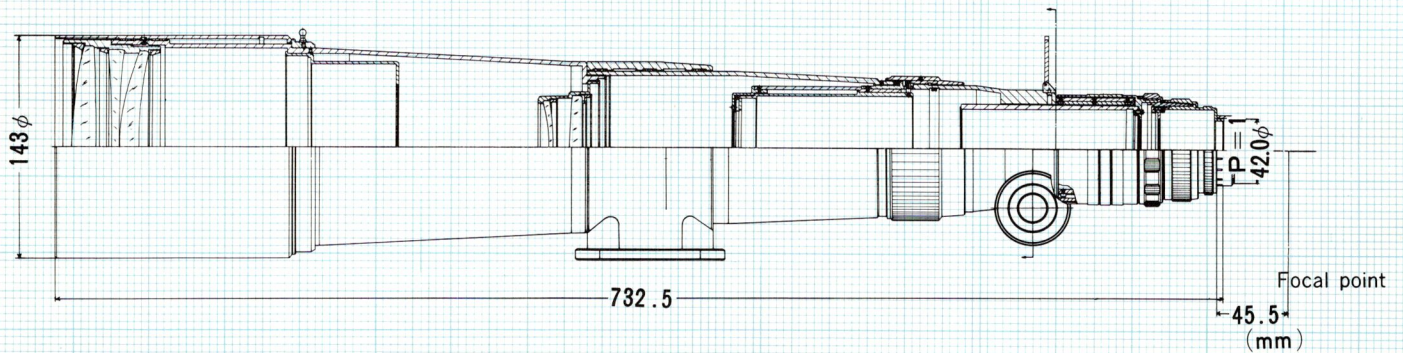


The invisible world of the 1000mm lens

This superb lens photographs subjects that are too far away to be seen by the naked eye — through the viewfinder you can identify a person's face 200 yards away. Reminiscent of telescopic sighting, the 1000mm f8 represents the practical limit in super-telephoto lenses but still retains the compactness you expect from Pentax.



TELE-TAKUMAR • 1000mm F8



■ **Features** ■ This is the longest of all the Takumar lenses. With an angle of view of 2.5° and a focal length 20 times that of a standard lens, it has been telescoped into an overall length of only 728mm and can easily be carried around. The quality lens design gives an image of fine resolution and contrast even with the diaphragm fully open and the rack and pinion type focusing method makes for smooth operation at all times. The minimum aperture of this lens is F45, ideal for super-telephotography requiring great depth of field. Other special features include the built-in lenshood, the 49mm filter fitting at the rear of the lens, and the sighting system.

■ **Main uses** ■ This is the ideal lens for such specialized fields as press photography, animal studies, etc. Its super-telephoto power is perfect for producing those landscapes with big sun and moon backgrounds.

Focal length	1000mm	Minimum aperture	F45
Maximum aperture	F8	Dimensions	
Lens elements	5 in 5 groups	Maximum diameter	143mm
Diaphragm	Manual	Length	728mm
Angle of view	2.5°	Weight	12.1lb (5500g)
Minimum focusing distance	98ft.(30m)	Filter size	49mm

Tele-Takumar 1000mm f8

Truly the 'Big Gun' of the Asahi Pentax system. It is true to say that with the aid of this ultra powerful telephoto lens, subjects may be photographed which are virtually indiscernable to the naked eye. Used in conjunction with a rigid special-purpose metal tripod (supplied) focusing is by means of positive rack and pinion drive. Nevertheless, the whole lens has been contained within a modest overall length of only 728mm and is easily transportable.

Even with the diaphragm fully open, excellent resolution and contrast is obtained.

The small minimum aperture of f45 is a means of achieving great depth of field where and when required.

A built-in lens hood is another feature and the lens accepts standard 49mm filters.

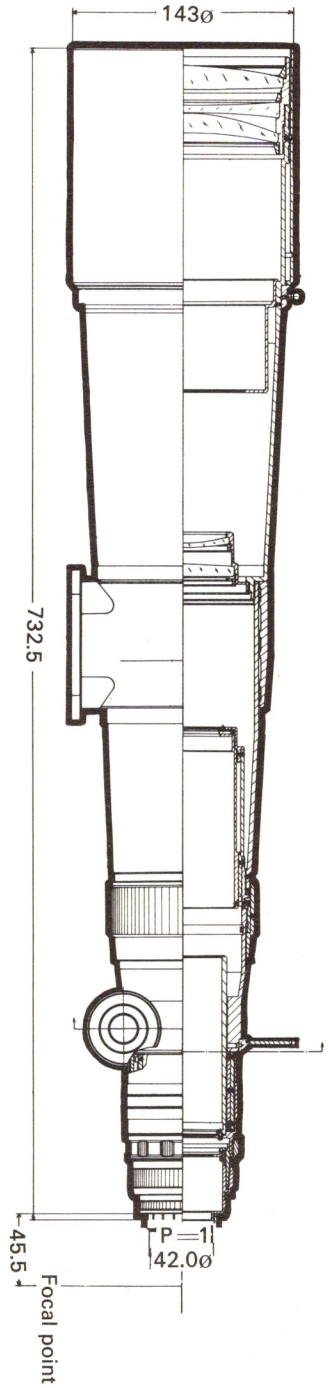
Principal Uses

Primarily for news and sports coverage, criminal investigation, scientific and wild life photography. The powerful telephoto properties make this the ideal lens for producing the charming landscapes seen from time to time with huge sun or moon backgrounds.

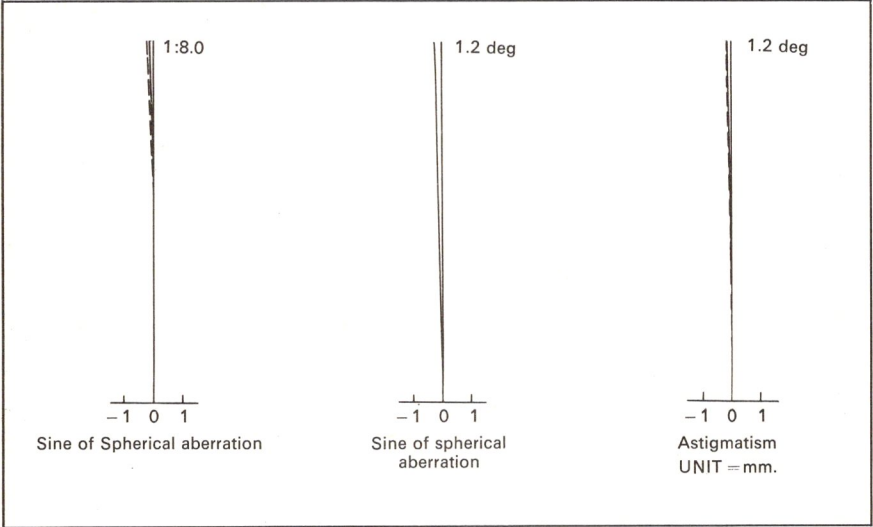


Focal length	1000mm
Maximum aperture	F8
Lens elements	5 in 5 groups
Diaphragm	Manual
Angle of view	2.5°
Minimum focusing distance	30m
Minimum aperture	F45
Dimensions Maximum diameter	143mm
Length	728mm
Weight	5500g
Filter size	49mm

Tele-Takumar 1000mm f8

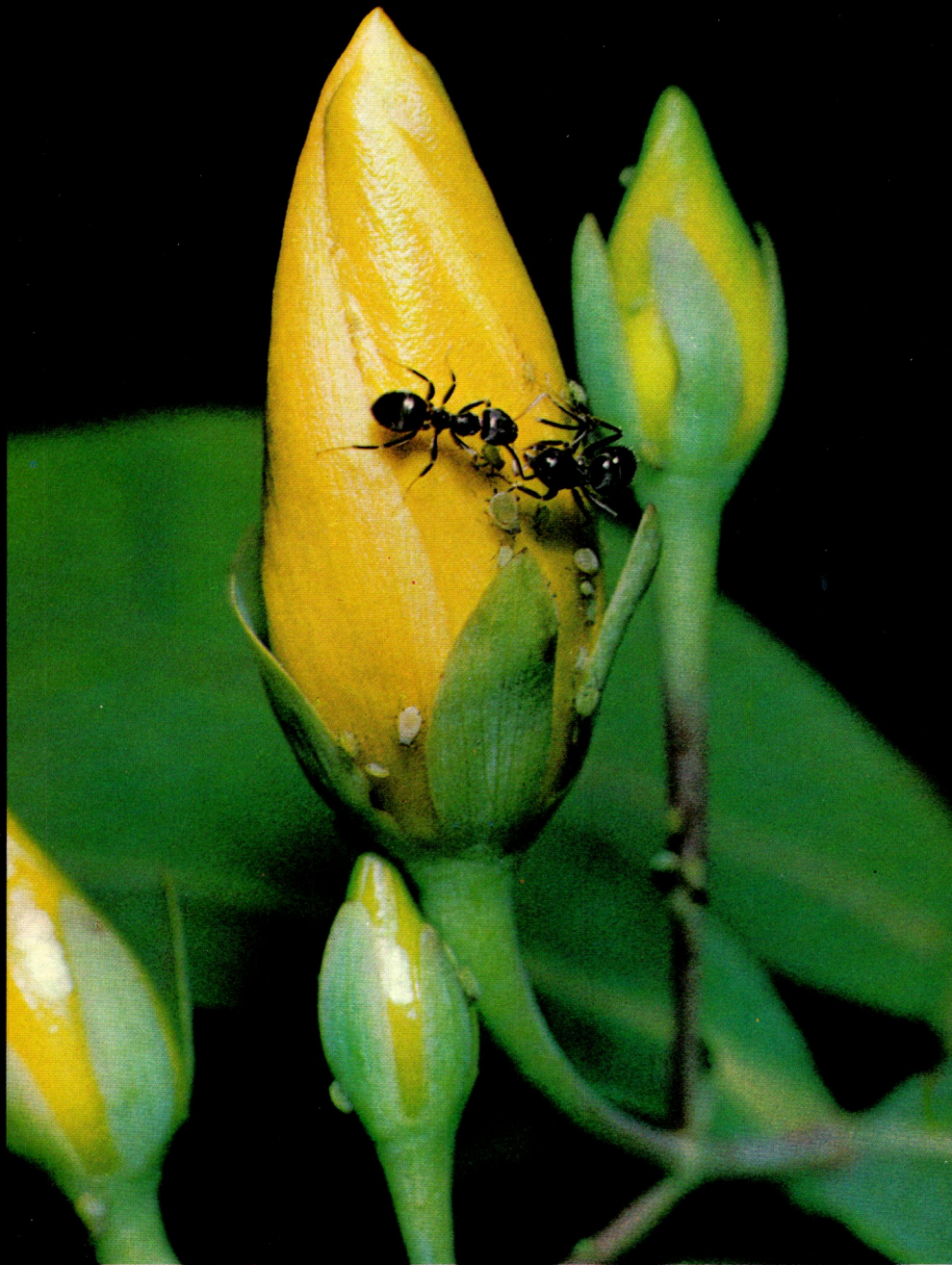


(mm)



Section 14
Specialist, Zoom and
Macro Lenses

SUPER-MACRO-TAKUMAR 50mm F4

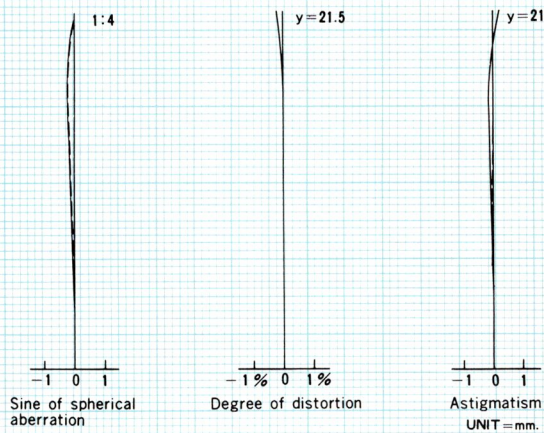
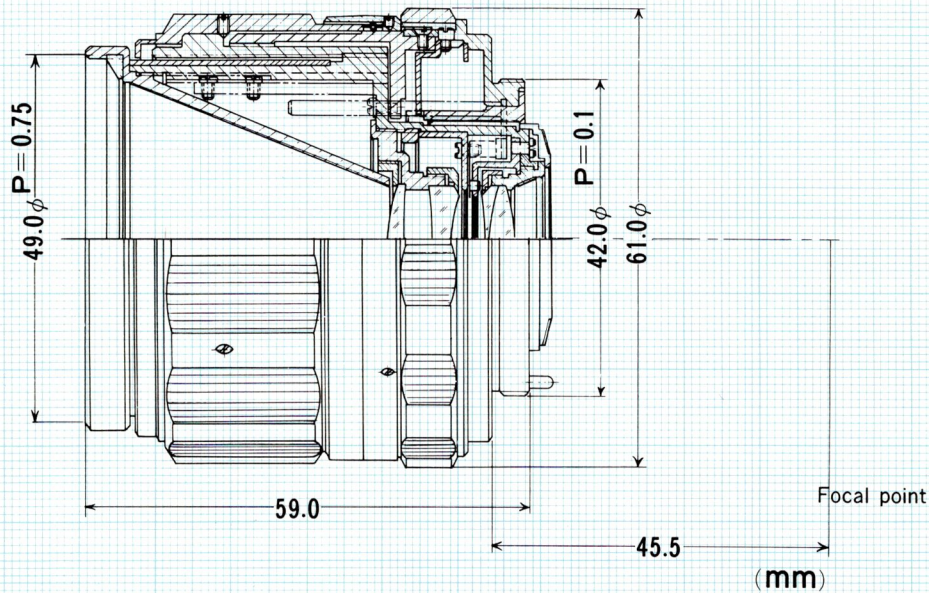


Super-macro high-speed lens with high resolving power

This lens is basically a macro lens equipped with a fully automatic diaphragm — resulting in a fine combination of speed and resolution. There is no better lens for close-up shots of moving subjects — thanks to the brightness of the image in the viewfinder, you can take close-ups of insects, for example, while hand-holding the camera.



SUPER-MACRO-TAKUMAR • 50mm F4



■ Features ■ Basically the same lens as the Macro-Takumar 50mm f4, this optic gives the same fine performance at long range, at middle distance and at close range down to less than 23.4cm. Moreover, it is equipped with a fully automatic diaphragm and therefore shares the speed and brightness characteristics of Super-Takumar lenses. The double helical focusing is effective from infinity down to one-half life-size — if the extension tubes are used, life-size close-up photography is possible.

■ Main uses ■ Because of the automatic diaphragm, this lens can be readily used for long — and middle-distance shots as well as for the close-ups of moving subjects for which it was specially designed. It can therefore be used as a standard lens, particularly where close-ups and copying work are frequently required.

Focal length	50mm	Minimum aperture	F22
Maximum aperture	F4	Dimensions	
Lens elements	4 in 3 groups	Maximum diameter	61mm
Diaphragm	Fully automatic	Length	54.5mm
Angle of view	46°	Weight	0.52lb (236g)
Minimum focusing distance	0.77ft. (0.234m)	Filter size	49mm

Super-Macro-Takumar 50mm f4

A fully automatic diaphragm makes this just about the ultimate in macro-optics when used in conjunction with Spotmatic.

Half life size (23.4cm) to infinity by means of the double helicoid focusing is the normal focusing range, but by the addition of the auto-extension tubes full scale life size is possible.

Principal Uses

One is no longer confined to static objects with this set-up, and even

slow moving insects etc., can be photographed thanks to the ease of operation.

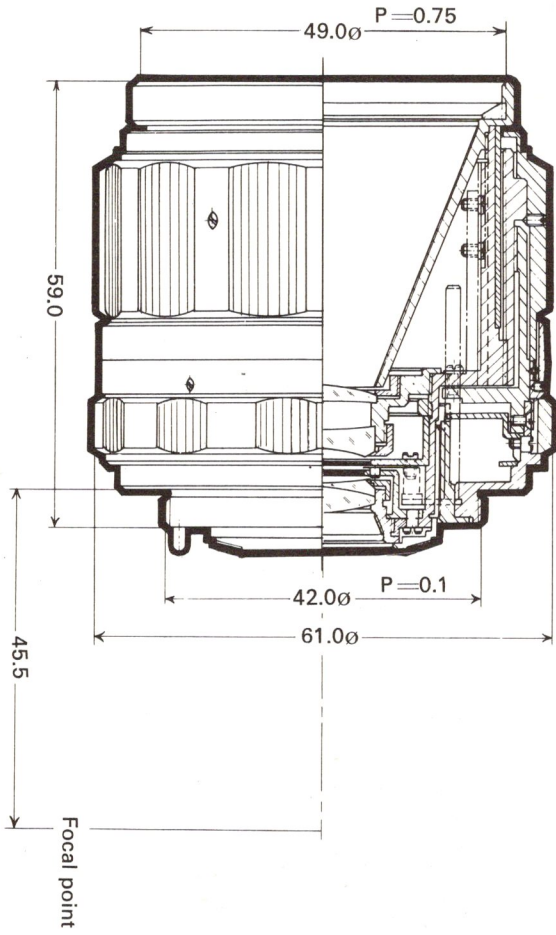
Moreover it can be used for all normal purposes, as one would use a standard lens. The actual theoretical range of possibilities with this objective is limited, surely, only by the degree of resourcefulness of the user.

The double helical focusing is of inestimable value for macrophotography, as are the 'at a glance' magnification and exposure increase factor scales.

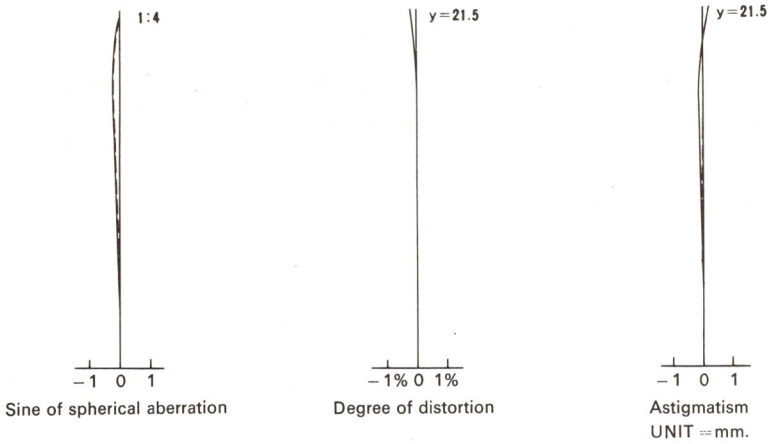


Focal length	50mm
Maximum aperture	F4
Lens elements	4 in 3 groups
Diaphragm	Fully automatic
Angle of view	46°
Minimum focusing distance	0.234m
Minimum aperture	F22
Dimensions Maximum diameter	61mm
Length	54.5mm
Weight	236g
Filter size	49mm

Super-Macro-Takumar 50mm f4



(mm)



Macro-Takumar 50mm f4

A comparatively simple 3 group 4 element lens designed specifically for macrophotography with the highest degree of resolution probably even known for any 35mm camera lens. This lens works almost equally well at full aperture and has high contrast, particularly suitable for copying subjects which tend often to be of rather low contrast. Will photograph from life size to infinity without resort to the use of any accessory. Distortion has been reduced to less than 0.1% which is something in the order of less than one tenth of any normal lens. The diaphragm is pre-set.

Principal Uses

All close up and copying work and all forms of general photography where ultra critical definition and resolving power is essential.

The exposure increase factors are conveniently colour coded in red, orange, yellow and blue around the pre-set diaphragm ring. The calibration for objective image reduction is similarly coded on the front edge of the distance scale ring. The figures from 1 to 50 are coded in red, orange, yellow, blue and white, corresponding to the colours of the exposure factor guide. At the red calibration 1 the image of the subject will be reduced to life-size on the film plane, while at the white calibration 25 it is reduced to 1/25 of the actual subject size (these two calibrations are for use without bellows or extension tubes).

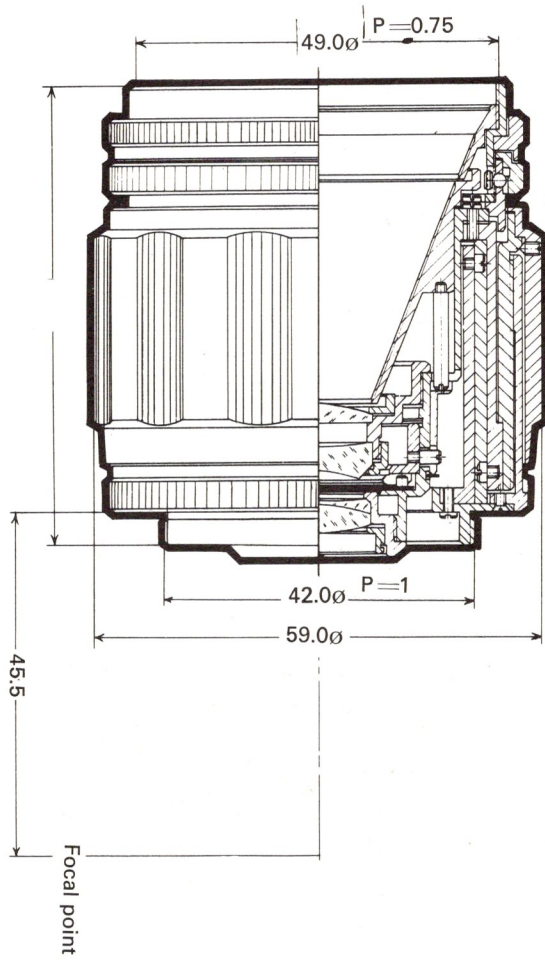
Both calibrations are easy to use. If a red calibration for objective image reduction matches with the index, the pre-set f/stop is moved to the red dot of the exposure factor guide, and the exposure will be automatically increased.

If, however, depth of field is important the pre-set f/stop is not moved. The exposure increase factor is read from the colour coded guide, e.g. 4x and the exposure increased by changing the shutter speed. When using the Spotmatic it is not necessary to refer to this exposure factor guide, as the integral exposure meter of the camera measures the exact amount of light entering the taking lens, making it unnecessary, therefore, for any exposure adjustment.

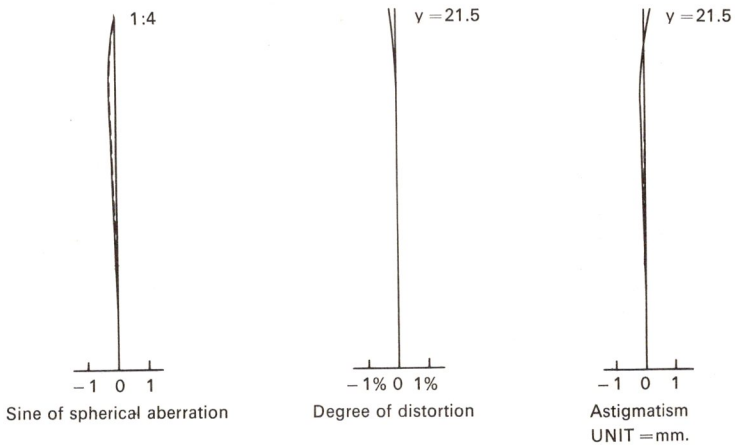


Focal length	50mm
Maximum aperture	F4
Lens elements	4 in 3 groups
Diaphragm	Pre-set
Angle of view	46°
Minimum focusing distance	0.255m
Minimum aperture	F22
Dimensions Maximum diameter	59mm
Length	56mm
Weight	257g
Filter size	49mm

Macro-Takumar 50mm f4



(mm)



SUPER-TAKUMAR-ZOOM 70-150mm F4.5

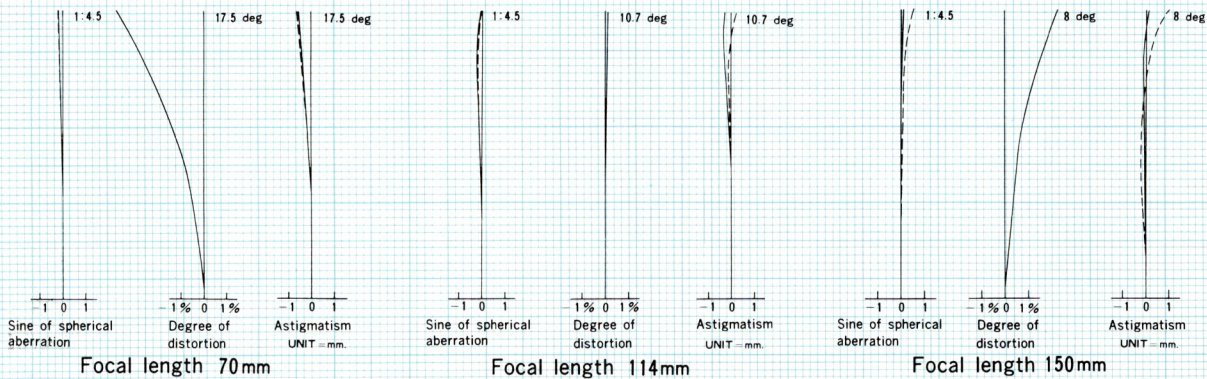
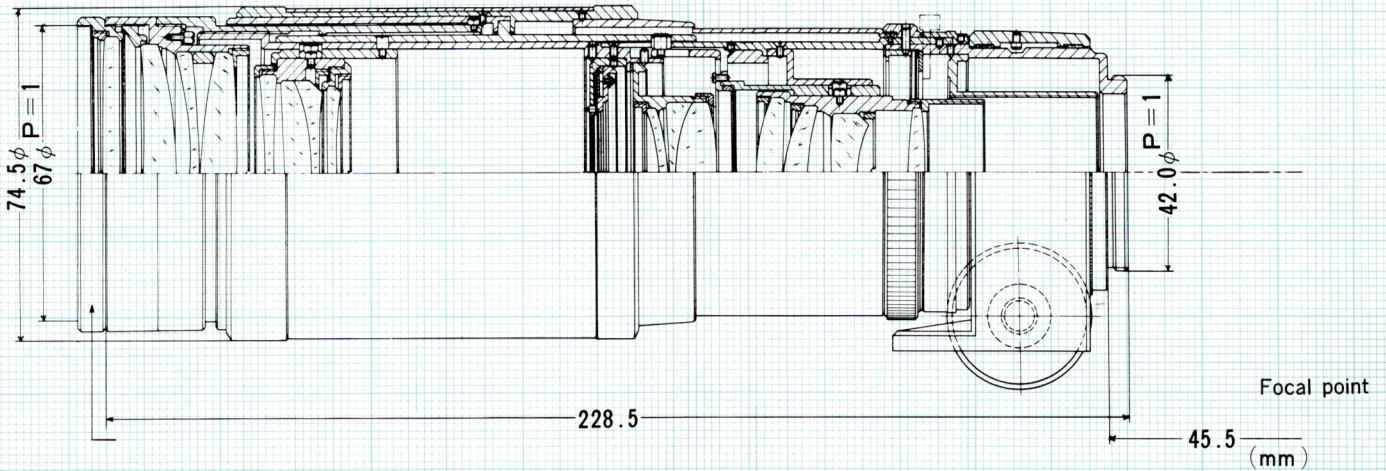


The zoom that does the job of several lenses with no loss of performance

The combined zoom and focusing ring of this lens make for the fast operation so important with zoom lenses: you can double the focal length in a matter of seconds. And the Super-Takumar-Zoom has completely eliminated the loss of sharpness and picture quality usually associated with zoom lenses. In quality as well as in quantity, it is a true combination of Super-Takumar lenses.



SUPER-TAKUMAR-ZOOM ● 70-150mm F4.5



■Features■ This is a superb quality zoom lens with a focal length continuously variable from 70mm to 150mm. Scale markings are for 80, 90, 105, 120 and 135mm, and intermediate settings are of course possible. The viewing angle ranges from 35° to 17°, and zoom ratio is 2. Equipped with a fully automatic diaphragm, this lens has 14 lens elements mounted in 12 groups which give the same fine resolving power and sharp focusing characteristics as individual Takumar lenses.

Turning the zoom ring moves the lens backward or forward for zoom effect — once the lens has been focused, shots of moving subjects can be taken in rapid succession at different focal lengths. Minimum focusing distance is 3.5m, but if the special attachment lens is used, this can be decreased to 1.9m for close-up shots.

■Main uses■ Since this is a zoom lens which combines the functions of several single lenses with no loss in quality, its range of uses is practically unlimited.

Focal length	70~150mm	Zooming mechanism	Rotary helical type (by zoom ring)
Maximum aperture	F4.5	Dimensions	
Lens elements	14 in 12 groups	Maximum diameter	74.5mm
Diaphragm	Fully automatic	Length	224mm
Angle of view	35°~17°	Weight	2.51lb (1140g)
Minimum focusing distance	11.5ft.(3.5m)	Filter size	67mm
Minimum aperture	F22		

Super-Takumar-Zoom 70-150mm f4.5

Without question this is one of the finest Zoom lenses ever made, with a continuously variable focal length ranging from 70–150mm.

A superb lens, the result of painstaking research, optical and mechanical achievement. With satin smooth focusing, the point or plane of focus remains unchanged throughout the entire range when zooming. Individual scale markings are 80mm, 90mm, 105mm, 120mm and 135mm and, naturally, all intermediate settings may be employed.

The lens features a unique single movement – dual action control system operating both focusing and variable zoom control mechanism. This facilitates ultra fast shooting, since once the lens is focused, shots of moving objects can be taken in rapid succession – all at varying focal lengths as required.

A glance at the technical drawing illustration shows clearly the quite formidable internal line-up of lens elements, 14 in total arranged in 12 groups.

Where this Zoom differs from so many on the market is that there is no loss in resolving power and that definition is comparable to that of any other individual Takumar lens. Many zoom lenses are only operable over a restricted focusing range and it is virtually impossible to undertake any reasonable near-distance work.

Takumar engineers have, therefore, perfected a special low powered close-up lens enabling focusing to continue from 3.7m to 1.9m.

Actual distances are indicated with a special close-up scale (provided) when the supplementary lens is being used.

Principal Uses

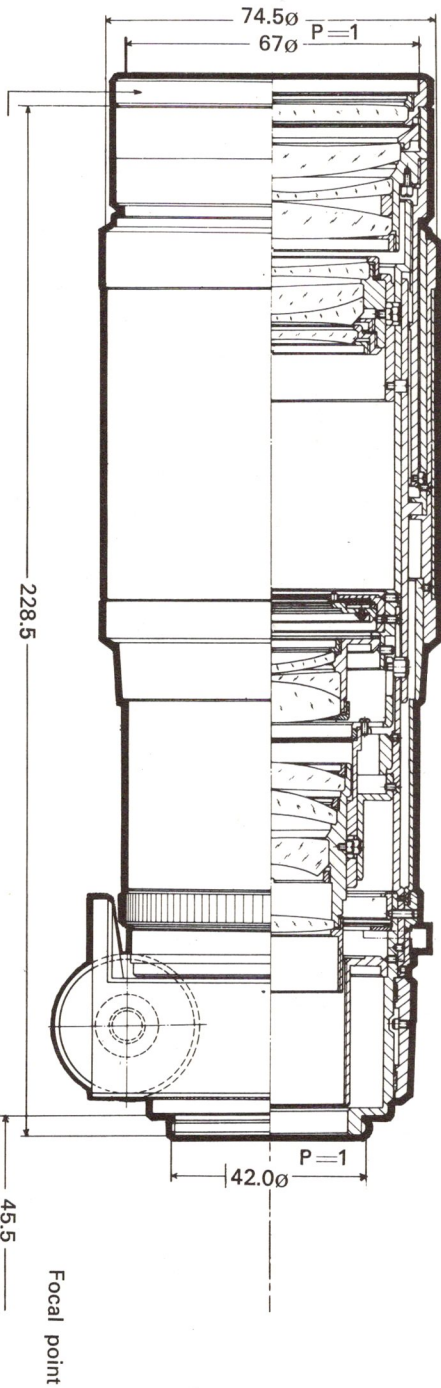
The overall smooth working of the lens and combined ability to focus and zoom simultaneously, makes this a great lens for almost every occasion, particularly when one is wishing to follow action.

Further, with use of the supplementary lens, it is ideal for portraiture.

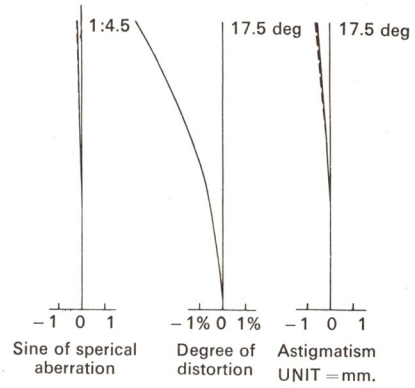


Focal length	70–150mm
Maximum aperture	F4.5
Lens elements	14 in 12 groups
Diaphragm	Fully automatic
Angle of view	35°–17°
Minimum focusing distance	3.5m
Minimum aperture	F22
Zooming mechanism	Rotary helical type (by zoom ring)
Dimensions Maximum diameter	74.5mm
Length	224mm
Weight	1140g
Filter size	67mm

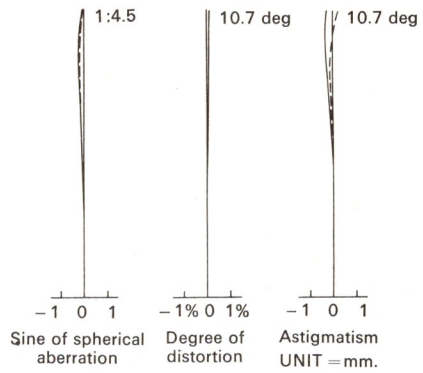
Super-Takumar-Zoom 70-150mm f4.5



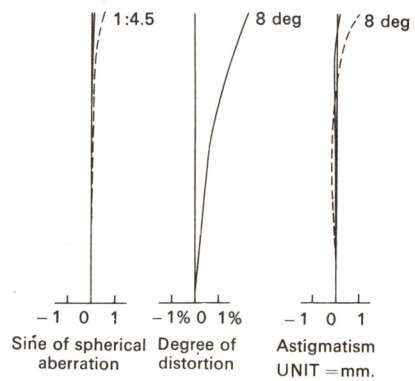
(mm)



Focal length 70mm



Focal length 114mm



Focal length 150mm

SMC-Takumar-Zoom 85-210mm f4.5

This lens replaces the Super Takumar Zoom 70-150mm f4.5 and as can be seen by its prefix, is Super Multi-Coated.

With a variable focal length from 85mm to 210mm it has a zoom ratio of 2.5 with focal calibrations of 85, 100, 120, 135, 150, 180, 210, and any point within this range. The focus can be adjusted simultaneously with the zooming action by turning the zoom-focus ring to focus and at the same time sliding it backward or forward to zoom. This permits fast action shooting even while zooming. The minimum focusing distance is 3.5m (11.5ft) but if closer focusing is required then by fitting an attachment lens, which is supplied, focusing can be made to a minimum of 1.9m (6.24 ft).

Once focused the SMC Takumar lens maintains the focus setting throughout the zoom. With zoom lenses optimum sharpness can be obtained by first focusing at maximum focal length and then zooming back to the desired field of view.

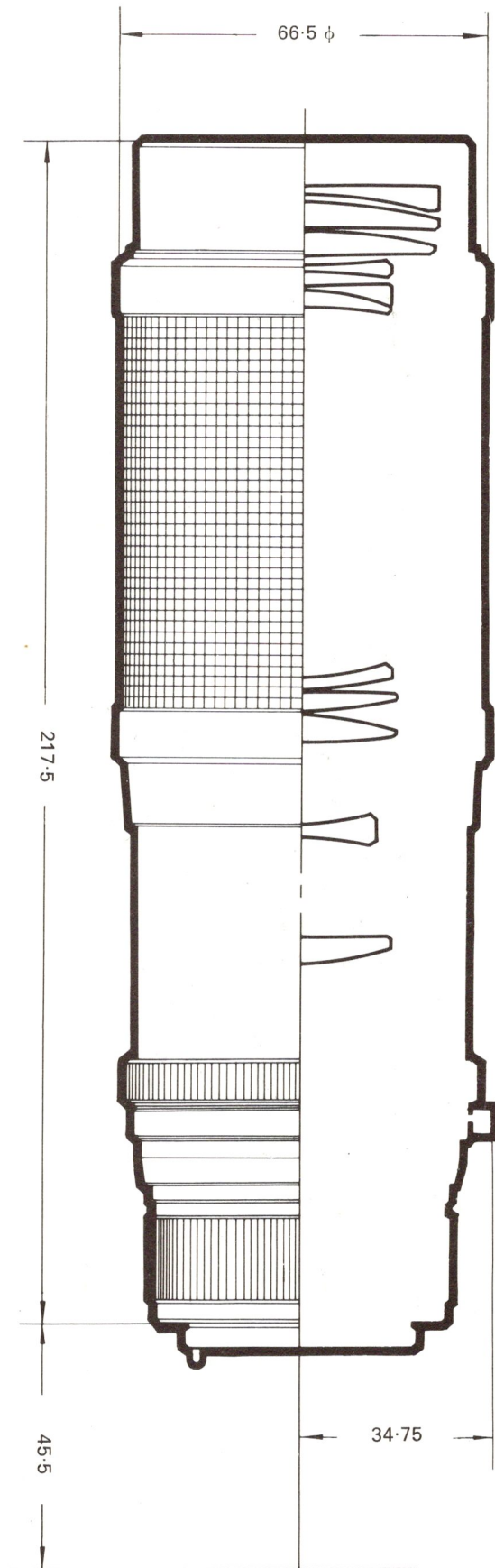
Principal uses

Zoom lenses are generally used in circumstances demanding variation of image size in action situations. The fast handling zoom-focus ring ensures a speedy and smooth operation and the Super Multi-Coating gives bright and flare-free results regardless of a possible variation of light direction when following action. When used with the supplementary attachment lens it can be used for portraiture. To avoid camera shake it is advisable to use a tripod when using this lens at slow speeds.



Focal length	85-210mm
Maximum aperture	F4.5
Lens elements	11 in 10 groups
Diaphragm	Fully automatic
Angle of view	28° 5'-11° 5'
Minimum focusing distance	3.5m
	1.9m with attachment
Minimum aperture	F22
Zooming mechanism	Rotary helical type (by zoom ring)
Dimensions Maximum diameter	66.5mm
Length	217.5mm
Weight	705g
Filter size	58mm

SMC-Takumar-Zoom 85— 210mm f4.5



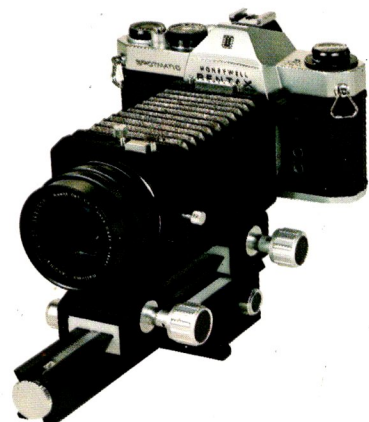
(mm)

BELLOWS-TAKUMAR 100mm F4

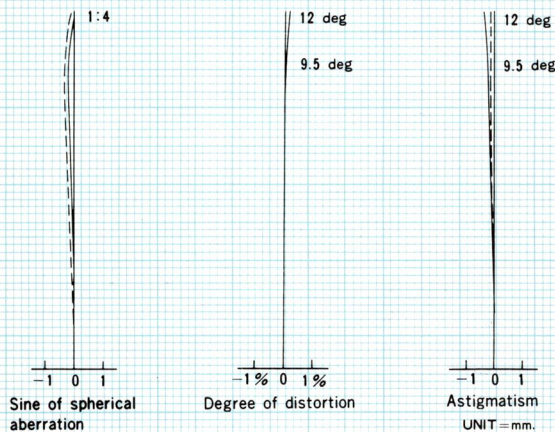


Long-focus macro lens for use with Bellows Unit

This really versatile lens combines all the qualities of a macro lens with the efficiency of a long-focus optic. Since you can expand or contract the Bellows freely, you can focus continually from infinity to magnified close-up. This is the ideal lens for precision shots requiring long focusing and for photographing live animals from a distance.



BELLOWS-TAKUMAR • 100mm F4



■ Features ■ This is a long focal length macro lens to be used together with the Bellows or Auto-Bellows Unit.

Emphasis has been placed on precision at the expense of brightness: distortion has been reduced to practically nil and the same fine results are obtained at all distances down to magnified close-ups. Combined with the Bellows Unit, photography from infinity down to life-size close-ups is possible, while with the Auto-Bellows magnification of up to 1.32 is possible. Thus you can take distant scenics and superb close-ups with one and the same lens. The 100mm focal length makes this lens ideal for studies of insects, small animals and other subjects which are difficult to approach and also for close-ups under difficult lighting conditions: the required magnification is obtained without having to bring the lens close in. This lens also has fine perspective characteristics.

■ Main uses ■ Ideally suited to studies of insects, the natural perspective qualities of this lens also make it a fine choice for all close-ups taken from some distance from the subject.

Focal length	100mm	Minimum aperture	F22
Maximum aperture	F4	Dimensions	
Lens elements	5 in 3 groups	Maximum diameter	54.4mm
Diaphragm	Pre-set	Length	36mm
Angle of view	24.5°	Weight	0.31lb (139g)
Minimum focusing distance	Varies with length of Bellows Unit	Filter size	49mm

Bellows-Takumar 100mm f4

Specifically designed for use in conjunction with the focusing bellows unit, this short mount 100mm f4 lens constitutes an impressive specialist Tele-Macro lens, focusing from life size to infinity. The superior high resolution performance is due to the fact that again this lens is computed for close-up and macrophotography.

Furthermore, the lens will still provide critical definition and resolution for all normal subjects. The fact that one can work with a comfortable lens/subject distance relationship when photographing insects or small animals and the like is particularly valuable when a

closer approach is not possible or desirable for whatever reason. Further, it eases the sometimes difficult problem of establishing adequate frontal lighting.

Distortion is virtually non-existent. The diaphragm is pre-set with a 'click' stop indent control ring and the lens accepts standard 49mm filters.

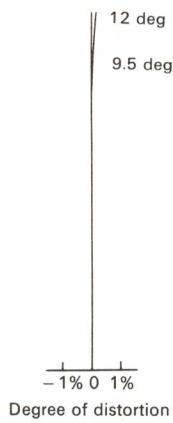
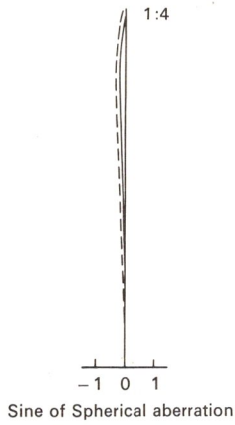
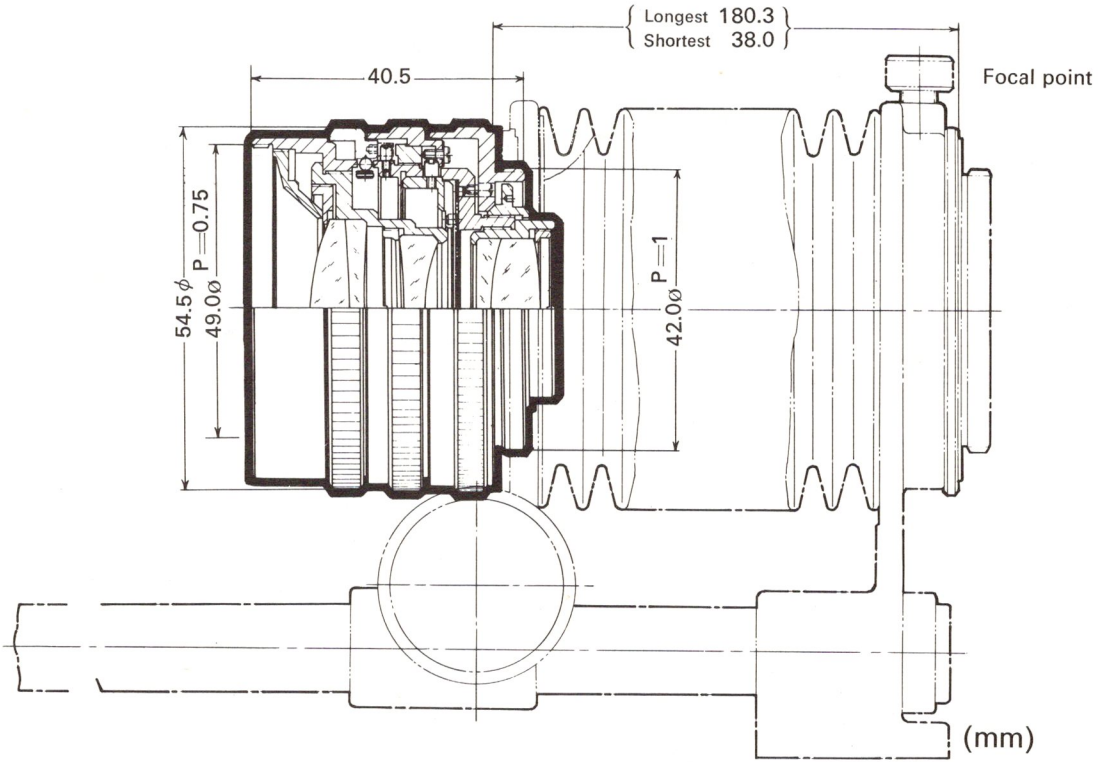
Principal Uses

Ranging from specialist Macro studies, but including a wide range of general purpose applications with all the advantages offered by this unusual lens.



Focal length	100mm
Maximum aperture	F4
Lens elements	5 in 3 groups
Diaphragm	Pre-set
Angle of view	24.5°
Minimum focusing distance	Varies with length of Bellows Unit
Minimum aperture	F22
Dimensions Maximum diameter	54.4mm
Length	36mm
Weight	139g
Filter size	49mm

Bellows-Takumar 100mm f4



ULTRA-ACHROMATIC-TAKUMAR 85mm F4.5

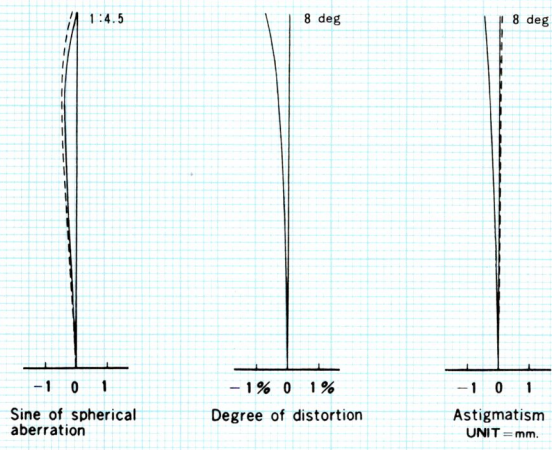
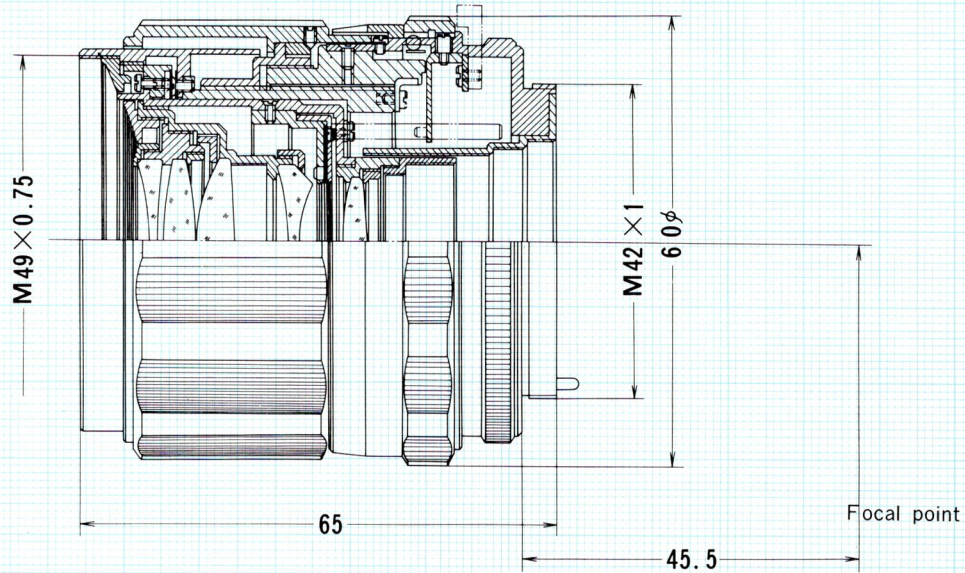
Eastman Kodak Co.	Kodaslide-A Kodaslide Highlux 2 Kodagraph-C Recordak-A,* B,* C, PD, PF, PH, 10-31, 10-31H, 10-31S	200 T8/113 200 T8/49	CGW CHG (100V)
Jack Holloway Keystone Mfg. Co. Labelle Sales Corp.	[REDACTED]	200 T8/49	CHG (100V)
Mansfield Ind., Inc. B. Nicoll Co. Pathe Mfg. Corp. Sears, Roebuck & Co. Society for Visual Education, Inc.	Visomatic Western Union Film Reader Tower 6449 Automatic Diagnostic Skyline 200B	200 T8/113 200 T10/87 200 T8/113 200 T10/87 200 T10/87 200 T10/87 200 T8/113 200 T10/87 200 T8/113 200 B12 200 T10/87 200 T10/87 200 T8/113	CGW CVX CGW CVX CVX CVX CGW CVX CGW BEJ CVX CVX CGW
Eastman Kodak Co.	Kodaslide-A Kodaslide Highlux 2 Kodagraph-C Recordak-A,* B,* C, PD, PF, PH, 10-31, 10-31H, 10-31S	200 T8/113 200 T8/49	CGW CHG (100V)
Jack Holloway Keystone Mfg. Co. Labelle Sales Corp.	[REDACTED]	200 T8/49	CHG (100V)
Mansfield Ind., Inc. B. Nicoll Co. Pathe Mfg. Corp. Sears, Roebuck & Co. Society for Visual Education, Inc.	Golden P-10 E-2 S-222 33	200 T8/113 200 T10/87 200 T8/113 200 T10/87 200 T10/87 200 T10/87 200 T8/113 200 T10/87 200 T8/113 200 B12 200 T10/87 200 T10/87	CGW CVX CGW CVX CVX CVX CGW CVX CGW BEJ CVX CVX

Entirely new Takumar lens made of fluorite

The lens contains no glass!
Using fluorite has allowed the Pentax optical designers to produce an excellent achromatic lens - a lens that is superb for Ultraviolet, Visible Light and Infrared photography. The lens is corrected against chromatic aberration from ultraviolet to infrared wavelength bands. This unique lens answers some of the optical quality and performance problems in ultraviolet and infrared photography.



ULTRA-ACHROMATIC-TAKUMAR • 85mm F4.5



■ **Features** ■ This lens is made of fluorite and quartz, which have never been used as materials for photographic lenses before. An ordinary lens may transmit some ultraviolet rays that are close to visible light, but absorbs most of the ultraviolet rays into its glass to keep them from passing through. The new Ultra-Achromatic-Takumar 85mm f/4.5, however, easily passes ultraviolet rays.

■ **Main Uses** ■ Although this lens is superb for infrared and visible light photography, its main design emphasis is placed on ultraviolet photography at a close distance. Ultraviolet photography is used for inspecting forged papers, paintings, etc., and is increasingly applied for scientific and ecological purposes.

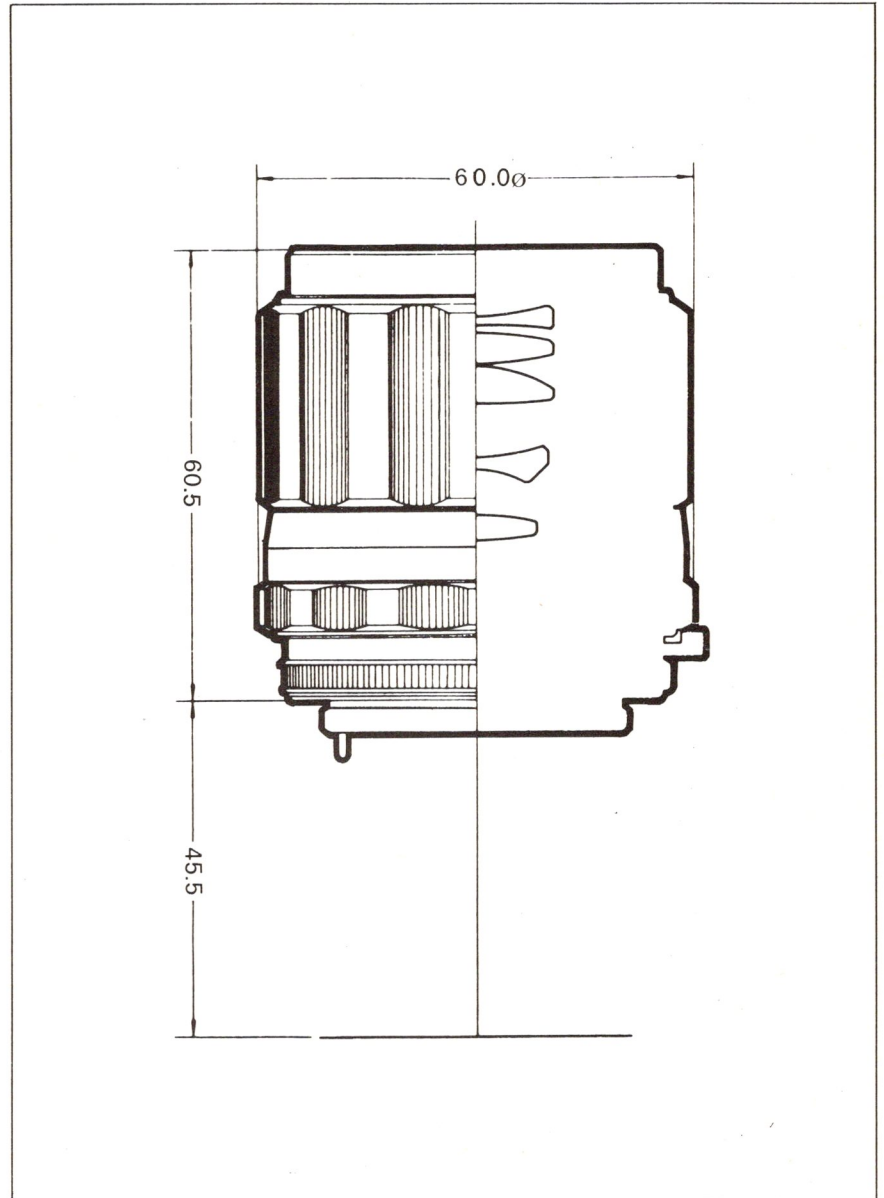
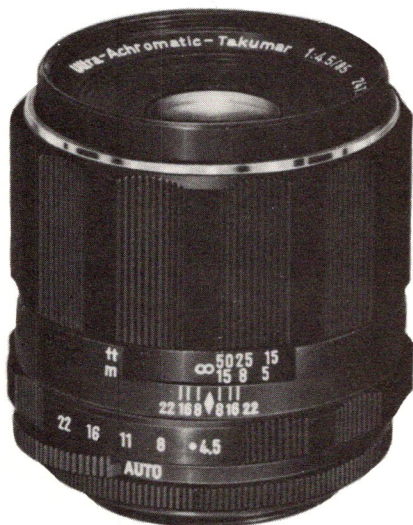
Focal length	85mm	Minimum aperture	F22
Maximum aperture	F4.5	Dimensions	
Lens elements	5 in 5 groups	Maximum diameter	60mm
Diaphragm	Fully automatic	Length	60.5mm
Angle of view	29°	Weight	0.55lb (250g)
Minimum focusing distance	2ft.(0.6m)	Filter size	49mm

Ultra-Achromatic-Takumar 85mm f4.5

The Ultra-Achromatic-Takumar 85 mm f4.5 is corrected against chromatic aberration from ultra-violet to infrared wavelength bands. Not only is it a high-resolution lens for visible light photography, but also it gives unmatched optical performance in ultraviolet and infrared photography.

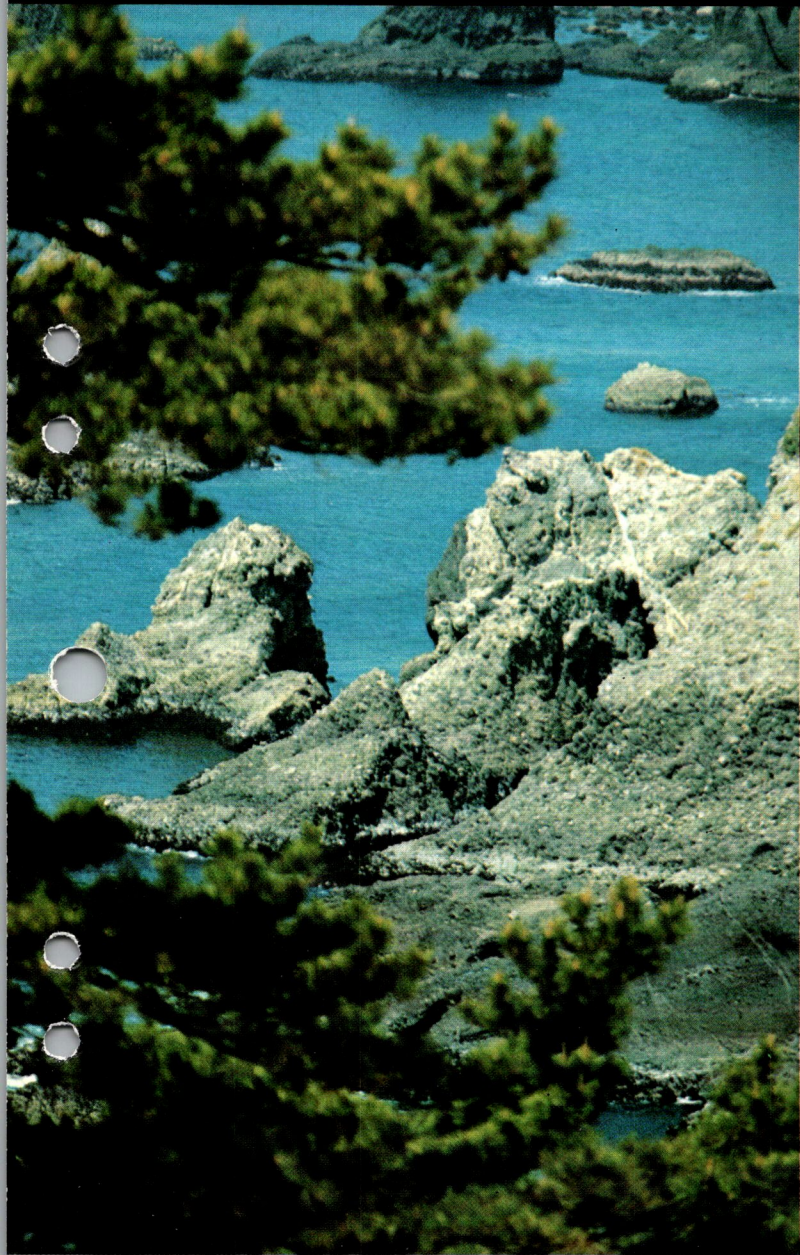
This lens uses no glass; it uses fluorite and quartz. It answers some of the optical quality and performance problems in ultraviolet and infrared photography. Although it is superb for infrared and visible light photography, its main design emphasis is placed on ultraviolet photography at a close distance. It is corrected against chromatic aberration from 250m μ to 800m μ and photographic tests without filters show good results within these wavelength bands.

Although two filters are available against 365m μ and 362m μ special filters may be made against other wavelength bands up to 1000m μ . R62, and R68 filters are also available for infrared photography.



Focal length	85mm
Maximum aperture	F4.5
Minimum aperture	F22
Lens elements	5
Diaphragm	Fully automatic
Minimum focusing distance	0.6m
Angle of view	29°
Weight	248g
Filter size	49mm screw-in type
Lenshood	49mm screw-in type
Lens cap size	60mm
Accessories	Filters for infra-red photography (R62, R66, R68) Filters for ultra-violet photography (662m μ , 365m μ)

ULTRA-ACHROMATIC-TAKUMAR 300mm F5.6

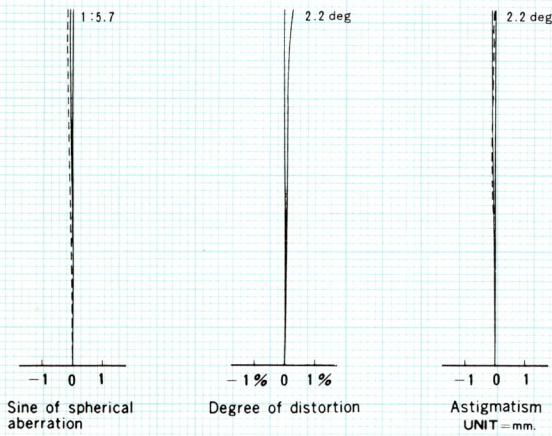
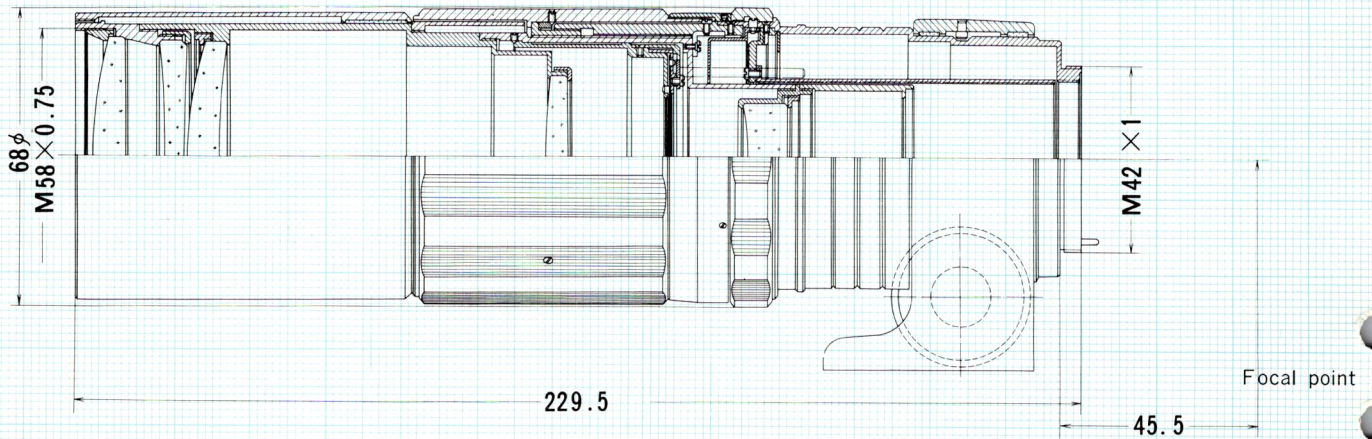


Chromatic aberration-free super-telephoto lens

The new Ultra-Achromatic-Takumar 300mm f/5.6 uses glass and fluorite elements to achieve high resolution and extreme chromatic aberration correction over a wide range wavelength, from 320mu to 850mu. This lens is excellent for telephotography in the visible and infrared portion of the spectrum. The use of fluorite elements allows a design that is very compact for its focal length and sharp in contrast and definition.



ULTRA-ACHROMATIC-TAKUMAR ● 300mm F5.6



■Features■ The Ultra-Achromatic-Takumar 300mm f/5.6 is corrected against chromatic aberration from visible light to infrared wavelength bands. This allows you to take very clear and well colour-balanced photographs in visible light and infrared photography. Even in infrared photography, no focus adjustment is required.

■Main uses■ For visible light and infrared photography where a strict colour purity is required.

Focal length	300mm	Minimum aperture	F22
Maximum aperture	F5.6	Dimensions	
Lens elements	5 in 5 groups	Maximum diameter	68mm
Diaphragm	Fully automatic	Length	225mm
Angle of view	8°	Weight	1.79lb (815g)
Minimum focusing distance	16ft. (4.85m)	Filter size	58mm

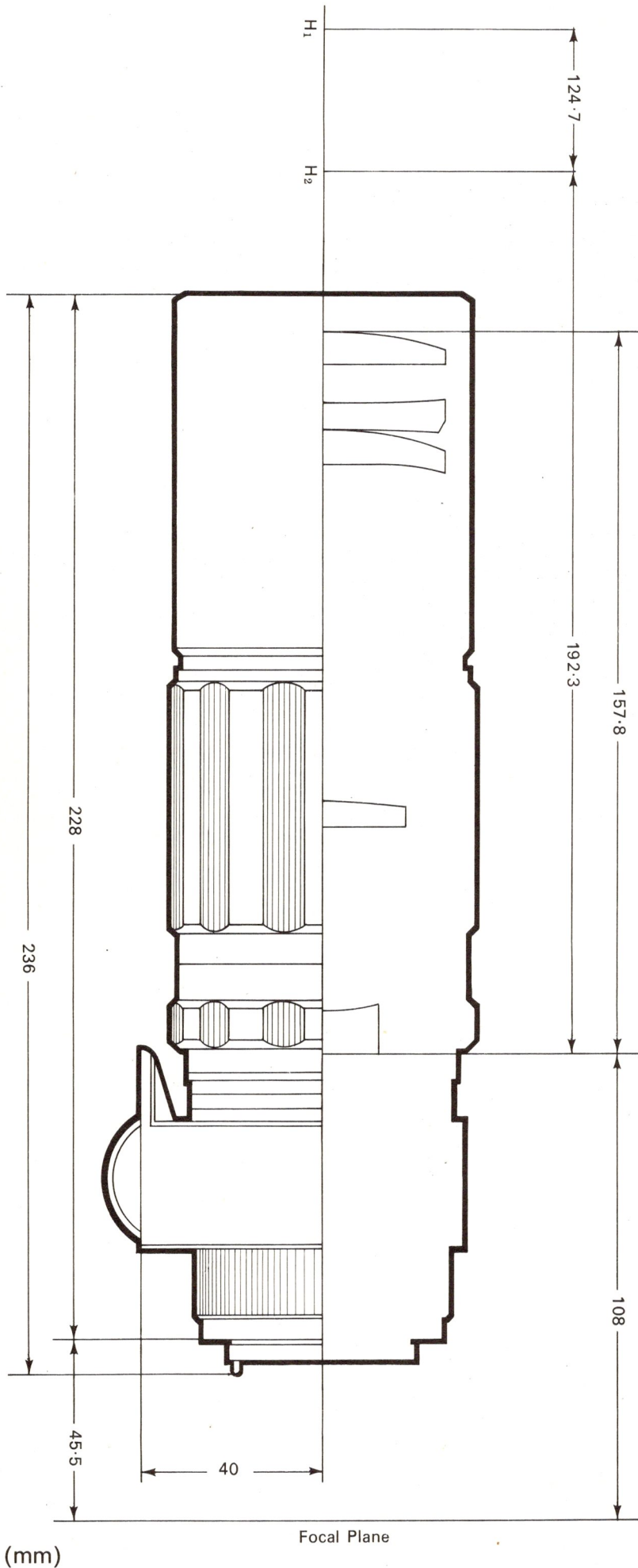
Ultra-Achromatic-Takumar 300mm f5.6

This is a high resolution lens for both visible light and infra-red telephotography. It is made from glass and fluorite and is corrected against chromatic aberration for a wide range of wavelengths from $320\text{m}\mu$ up to $850\text{m}\mu$. Tests without filters show good results within these wavelength bands. The use of fluorite in the manufacture has resulted in a compact lens for the focal length, which gives good contrast and definition. It has an automatic diaphragm with a switch knob for click-stop operation when required. R62, R66 and R68 filters are available for this lens for infra-red photography.



Focal length	300mm
Maximum aperture	F5.6
Lens elements	5
Diaphragm	Automatic with switch knob for click diaphragm
Angle of view	8.2°
Minimum focusing distance	4.85m
Minimum aperture	F22
Dimensions Maximum diameter	68mm
Length	229.5mm
Weight	709g
Filter size	58mm
Lens hood	Pull out type (built-in)
Accessories	Filters for infra-red photography (R62, R66, R68)

Ultra-Achromatic-Takumar 300mm f5.6



(mm)