INTERCHANGEABLE LENSES

Canon FD

The photograph is an invaluable source of instant communication. The way you communicate with your photos greatly depends on the lens you use. Not only does a particular lens influence your vision of the world and that of your audience, but it can also make a particular picture you want much easier to shoot. You are always the master of the way your camera records a certain scene, but you have a lot more freedom with a selection of lenses at your fingertips.

Canon

FD LENSES

As the owner of a Canon single-lens reflex camera, you could not have a better selection of lenses than the nearly forty lenses which comprise the Canon FD lens series. The Canon FD lenses are made to fit your camera perfectly and to mount with perfect ease. They are equipped with all the signals your Canon SLR has to know for taking a picture in the easiest, most straightforward way.

If the FD lenses are without doubt the best buy for your Canon SLR in terms of integration, they are also the best buy in terms of quality and variety. For nearly a decade now, quality in Canon FD lenses has always meant unequalled optical performance – performance which has ranked these lenses very high in the opinions of experts and professionals the world over. You can expect superior sharpness and color balance in every single Canon FD lens – from fish-eye to super telephoto – and in each special lens in Canon's SLR system.
Now Canon has added a new dimension to "quality" in its FD lenses – outstanding compactness

and light weight for extreme handling ease. While maintaining and even further improving optical performance, Canon has been so successful in reducing the size of most of its FD lenses that the standard filter diameter of the series has become a mere 52mm, ranking the FD lenses among the smallest in the world. In the process, Canon has made extensive use of the special materials and techniques – aspherical and fluorite elements, ultra low-dispersion (UD) glass, Rear-group Focusing, Vari-pitch Focusing, the Canon Floating System, the Two-group Zoom System, multilayer coating and others – which have made the FD lenses famous. At the same time, Canon improved the mounting procedure. Mounting is now a matter of simple alignment and a twist of the entire lens; dismounting, a single-handed operation of twisting the lens while pressing a lens release button. Few other lenses can be changed so quickly and so easily.

The miracle is that Canon was able to make all these improvements without changing the lens mount itself. It is the same Canon Breech-lock mount, assuring no wear of lens mount surfaces and perfect signal coupling. The world-renowned FD signals, which can take most of the credit for the extraordinary versatility of Canon's SLRs, are the same as they have always been. The improved FD lenses mount on any Canon SLR without the least bit of adjustment – and, like the former FD lenses, they bring out the best in any Canon SLR.

Unsurpassed in performance, versatility and ease of handling, the Canon FD lenses also come in an outstanding variety – the likes of which few other systems can boast. This guide sorts out the differences between the FD lenses to help you choose the best ones for you.

Contents

The Need for Lens Interchangeability

You can use all of the nearly 40 Canon interchangeable lenses with any of Canon's SLR cameras. Their interchangeability stems from the fact that the more a photographer becomes involved in photography, the less satisfied he can be with only one, permanently fixed lens. The whole idea of interchangeable lenses is to relieve the photographer of the restrictions in his vision and creativity which he runs up against when using only one lens.

When taking pictures of a large crowd indoors, for instance, it may be impossible to get everybody in a single shot unless a special lens for the situation is used. Dividing the people into two or three groups would mean a loss of impact over the original composition. But, with a wide-angle lens, you can take a picture of everyone together and retain the continuity of subject material.

Furthermore, in a dark room, a fast lens without flash can be used to capture the natural effect of the room. Flash would bring light into the picture even in the dark and fail to reproduce the natural atmosphere of the room.

And if you wish to catch the natural expression of people unaware of the fact that they are being photographed or if you want to photograph something inaccessible, you can do so from a distance quite easily with

a telephoto lens.
Interchangeable lenses make it possible to make good photographs in numerous circumstances and under difficult conditions. And if you make the most of the lenses' individual characteristics and experiment in their applications, the creative possibilities are infinite.

Types of Interchangeable Lenses

With the eyes fixed straight ahead, the angle within which the human eye is able to see clearly is about 46°. The kind of lens capable of catching an image within this angle is called a standard lens, and it has a focal length of about 50mm.
Lenses having a wider angle of view are called wide-angle lenses. Among them, Canon classifies those lenses with a focal length of 20mm or less as super wide-angle lenses.
A telephoto lens is one that has a smaller angle of view but a more magnified image than the 50mm lens. A telephoto lens of a focal length of 400mm or more is called a super telephoto lens.
There are also special lenses such as zoom lenses that enable free variation of the focal length, the fish-eye lens that covers a 180° angle of view, the tilt and shift lens enabling easy control of perspective and depth of field, and macro lenses for close-ups with high magnification, etc.

How to Select Lenses

When you select interchangeable lenses, you should have a good understanding of their characteristics and select the one most suited to your photographic purposes and conditions.
Some points to keep in mind are:

- Focal Length and Lens Speed
- Angle of View
- Perspective
- Depth of Field
- Subject and Shooting Distance

• Focal Length and Lens Speed
Focal lengths and lens speeds are clearly specified in the designations of all Canon FD

lenses. For instance, in the designation of the FD 50mm 1:1.4 standard lens, 50mm stands for its focal length and 1:1.4, usually expressed as f/1.4, is the lens speed or maximum aperture. As the focal length of the lens increases, the more magnification of the subject becomes possible; the shorter the focal length, the smaller the subject becomes in the picture. The magnification of the image compared to that of the standard lens can be obtained by dividing the focal length of a given lens by that of the standard lens. For example, the magnification of a 200mm telephoto lens is 4 times (200mm ÷ 50mm) the magnification of the standard lens.

The aperture, in conjunction with the shutter speed, functions to adjust the exposure by regulating the amount of light allowed in to expose the film. The larger the maximum aperture or the faster the lens speed, the more the light allowed in and the more the possibility of shooting subjects without flash in dimmer conditions. When the aperture is reduced by one f/stop, the amount of light let in is halved. Using an aperture of f/1.4 as the standard, the following reductions of light take place.

Lens Aperture	1	1.4	2	2.8	4	5.6	8	11	16
Amount of Light	2	1	1/2	1/4	1/8	1/16	1/32	1/64	1/128

- **Angle of View**

The angle of view changes according to the focal length of each interchangeable lens. It dictates the range of photography for each lens and the image size at a given distance. The series of photographs on the following pages shows the effect of focal length upon angle of view in a sequential change from the fish-eye to the super telephoto while the shooting distance remains the same. The shorter the focal length, the wider the range and the smaller the subject. Thus, with a lens of short focal length, such as a wide-angle lens, the angle of view is wide and the magnification small, while telephoto lenses have narrow angles of view and large images. Angle of view is the basic factor in the selection of a lens. It should be chosen in consideration of the subject to be photographed most often.

Changes in Angle of View

180° 7.5mm

94° 20mm

64° 35mm

180° 15mm

83° 24mm

46° 50mm

104° 17mm

75° 28mm

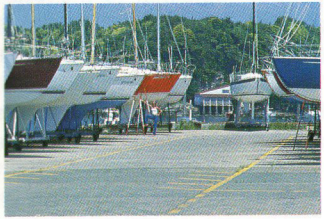
29° 85mm

24° 100mm

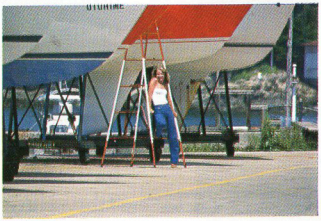
8.3° 300mm

4.1° 600mm

18° 135mm

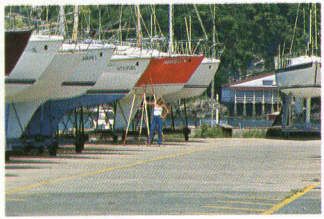


6.2° 400mm



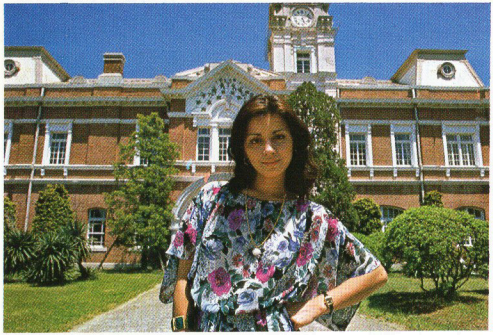
3.1° 800mm

12° 200mm



5° 500mm

2.1° 1200mm



▲ 28mm

▼100mm

● Perspective

Is the photographic effect different when you make the main subject look the same size using a wide-angle and a telephoto lens? A careful study of the illustrations on the left will make the difference clear. When photographed with a wide-angle lens, more background can be seen as compared to the result of using a telephoto lens. In the upper one, the background is smaller and looks more distant. In the other, using a telephoto lens, the background is enlarged and so close to the main subject that there seems to be no distance between them.

The relationship between subject and background is called perspective. Perspective in photography is more stressed the wider the angle of the lens becomes, and less as the lens begins to approach the telephoto range. Consequently, when selecting interchangeable lenses, you should also remember that you can better control the way you express your subject by choosing a lens of suitable perspective qualities.

Lens perspective is also influenced by the shooting angle. If an adult photographs a child from eye level, the child's head looks larger and the feet smaller in the photographic image than in reality because of the perspective effect of the lens. For the same reason, if you photograph a building from street level, the upper part of the building will look smaller and appear to lean backwards.

To avoid distortion when using a wide-angle lens, the film plane and the subject should be parallel. If the subject is a child, the camera should be at the same level as the child's head for the picture to look normal. In the case of a building, it is impossible to shoot from a height equivalent to the middle of the building, so, if possible, you should try to place yourself at more of a distance from it. The farther you are from the building, the less the difference between the distances from the camera to the upper part of the building and the camera to the lower part of the building, so the less the noticeable distortion.

• Depth of Field

Another important factor of photographic expression is depth of field.

Depth of field is the range that is sharp in the photograph when you focus on a given subject. When the area of focus is wider, we say that the depth of field is deep as opposed to the contrary when we say it is shallow. The depth of field is easily controlled by adjusting the aperture.

Depth of field has the following characteristics:

1. With the aperture unchanged, the shorter the focal length of the lens, the deeper the depth of field. Telephoto lenses have relatively shallower depth of field. This is one reason why wide-angle lenses are used for snapshots.
2. The smaller the aperture, the deeper the depth of field. Therefore, if the lens' focal length remains unchanged, the depth of field will be shallower at f/4 than at f/11.
3. With the aperture remaining constant, depth of field becomes deeper the farther you are from the subject.

f/1.4

f/16

4. Generally, at any given aperture, when one point is focused, depth of field is shallower in the foreground and deeper in the background, but it becomes relatively shallower in both areas as the aperture is opened wider.
   A shallow or increased depth of field can help to create additional dimensions in the picture. For instance, at a large aperture, it may be used to stress the subject by blurring the surroundings. At a small aperture, you can get a pretty sharp picture from the closest to the farthest distance.

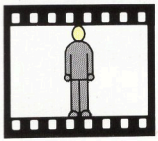
• Subject and Shooting Distance

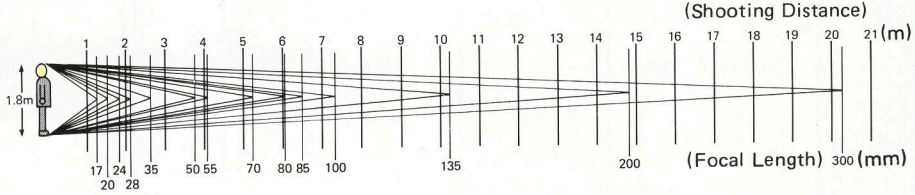
Select the lens most appropriate for your subject. Although there is a wide range of subjects, try to select a lens suitable for the coverage of photographic subjects and distances that you will be using most of the time.

A telephoto lens is especially useful in instances where distance from the subject is an advantage. While children tend to become affected when they know they are being photographed, you can catch them in all their innocence, unnoticed, from a distance with a telephoto lens. Telephoto lenses are also useful in sports photography where obtaining pictures with variety and impact from a close shooting distance would be difficult.

Wide-angle lenses are convenient for photographing everything in a limited space, such as in a room, while the reliable standard lens is suitable for most ordinary situations.

Concerning the relationship between subject size and shooting distance, the chart below indicates the shooting distances for given focal lengths necessary for the subject to take up the picture frame.





*The height of the subject is 1.8m (6 feet).

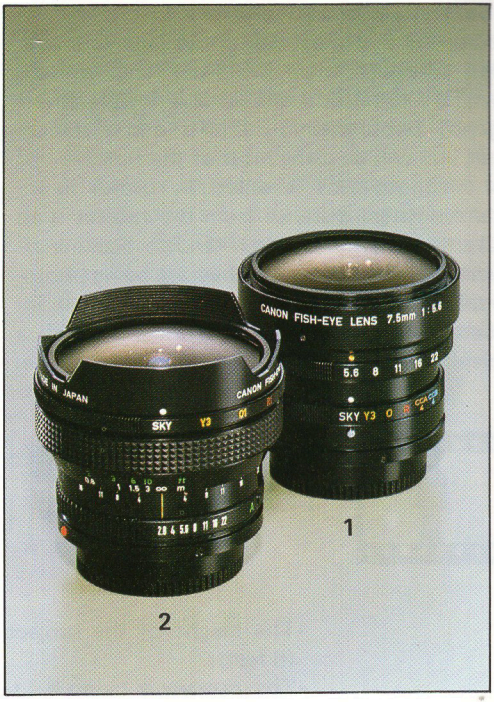
*The camera is being held horizontally.

*The camera angle is equivalent to the center of the subject.

Fish-eye Lenses

With a fish-eye lens, you can photograph a 180° angle of view similar to the eye of a fish, which gives this lens its name. The two Canon fish-eyes have the shortest focal lengths and widest angles of view of the entire Canon line. With equi-distant projection over the entire 180° angle of view, they deliver a circular image. The fish-eye lens was originally developed for academic and research purposes such as astronomical and aerial photography. Since then, photographers have discovered that their unique perspective lends extraordinary artistic effects in creative photography.

1. **Fish-eye 7.5mm f/5.6**
2. **Fish-eye FD 15mm f/2.8**

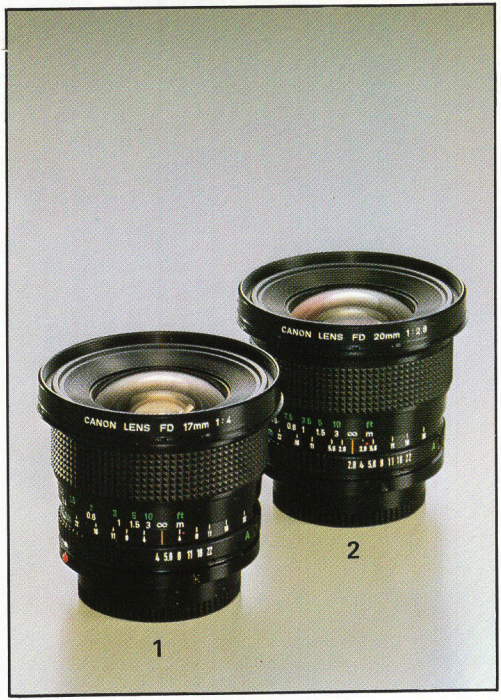


Fish-eye Lens 7.5mm
f/5.6, 1/125 sec. at
f/8, ASA25

Super Wide-angle Lenses

Wide-angle lenses of a focal length of 20mm or less are called super wide-angle lenses. Because super wide-angle lenses have a marked perspective effect, they can exaggerate the main subject in the image or express special effects by distortion. They are also very convenient when taking pictures in a small room or for photographing landscapes and buildings.

1. **FD 17mm f/4**
2. **FD 20mm f/2.8**



FD 17mm f/4, 1/125 sec. at f/8, ASA25

Wide-angle Lenses

Wide-angle lenses are suitable for a wide range of purposes. Because of their deep depths of field, they are very convenient for snapshots and press photography as well as for shooting in confined places. Their perspective effect can be used to exaggerate distances to make a close subject appear unusually large or a distant subject appear unusually small. You can use these lenses to distort the subject intentionally for a dynamic, three-dimensional effect.

1. **FD 24mm f/1.4 L**
2. **FD 24mm f/2**
3. **FD 24mm f/2.8**
4. **FD 28mm f/2**
5. **FD 28mm f/2.8**
6. **FD 35mm f/2**
7. **FD 35mm f/2.8**

FD 24mm f/1.4 L, 1/4 sec. at f/8, ASA25

FD 28mm f/2.8, 1/125 sec. at f/5.6, ASA25

FD 35mm f/2, 30 sec. at f/5.6, ASA25

Standard Lenses

Lenses for 35mm cameras with focal lengths of about 50mm are called standard lenses. This type of lens has an angle of view of about 46° and its focal length is almost the same as the length of the diagonal of the picture frame. It is called a standard lens, because it yields nearly natural perspective and is the most versatile of the lenses. Not only is it the most popular type of lens for general photography, but it can be manipulated to give effects similar to those of wide-angle and telephoto lenses, and it performs well in close-up photography as well.

Canon offers the following standard lenses:

1. **FD 50mm f/1.4**
2. **FD 50mm f/1.8**
3. **FD 55mm f/1.2 S.S.C. ASPHERICAL**
4. **FD 55mm f/1.2 S.S.C.**

FD 50mm f/1.4, 1/60 sec. at f/4, ASA25

Telephoto Lenses

Lenses having from 85—300mm focal lengths are generally classified as telephoto lenses. A telephoto lens is very effective for magnifying a subject at a distance, and its narrow angle of view makes it easier to trim the composition. Their shallow depth of field, which requires precision focusing, can be turned to advantage to emphasize the subject by blurring the surroundings. They remain remarkably light in view of their focal lengths—light enough, in fact, for hand-held shooting at fast shutter speeds. When slow shutter speeds are necessary, a tripod is recommended.

1. FD 85mm f/1.2 L
2. FD 85mm f/1.8
3. FD 100mm f/2
4. FD 100mm f/2.8
5. FD 135mm f/2.8
6. FD 135mm f/3.5
7. FD 200mm f/2.8
8. FD 200mm f/4
9. FD 300mm f/2.8 S.S.C. FLUORITE
10. FD 300mm f/4
11. FD 300mm f/4 L
12. FD 300mm f/5.6

FD 85mm f/1.8, 1/125 sec.
at f/5.6, ASA25

FD 100mm f/2.8, 1/250 sec.
at f/5.6, ASA25

FD 135mm f/3.5, 1/250 sec.
at f/5.6, ASA64

FD 200mm f/4, 1/125 sec. at f/4, ASA25

FD 300mm f/4, 1/125 sec. at f/8, ASA25

Super Telephoto Lenses

Super telephoto lenses are those that have a focal length of 400mm or more. With a super telephoto lens, the characteristics of a telephoto lens are all the more apparent. It has an extremely narrow angle of view and a very shallow depth of field, so focusing must be as accurate as possible. The longer the focal length, the larger the lens, so a tripod and cable release become necessary to prevent blurred pictures. They are effectively used in sports, press, wildlife and landscape photography and, for that matter, all outdoor photography.

1. **FD 400mm f/4.5 S.S.C.**
2. **FD 500mm f/4.5 L**
3. **Reflex Lens 500mm f/8 S.S.C.**
4. **FD 600mm f/4.5 S.S.C.**
5. **FD 800mm f/5.6 S.S.C.**
6. **FL 1200mm f/11 S.S.C. with Focusing Unit**

FD 400mm f/4.5 S.S.C., 1/250 sec. at f/4.5, ASA25.

FD 800mm f/5.6 S.S.C., Double exposure: 1/500 sec. at f/8 for the moon and 20 sec. at f/5.6 for the building, ASA 64.

FL 1200mm f/11 S.S.C., 1/500 sec. at f/16, ASA25

Macro Lenses

Photomacrography involves magnifications from 1x up to about 10x which are usually accomplished by means of a bellows and/or extension tubes to extend the lens. The Canon macro lenses are specially designed to give excellent image results in photomacrographic magnifications at close shooting distances which would affect the performance of a normal lens. Alone, the FD 50mm f/3.5 Macro or FD 100mm f/4 Macro will give magnifications up to 1/2x. When combined with the appropriate FD-U extension tube, magnifications up to 1x are possible with all of the FD lens functions preserved. These multi-functional lenses can be used in general photography with shooting distances up to infinity while they are perfect for photomacrography and especially recommended for the rigorous requirements in copying.

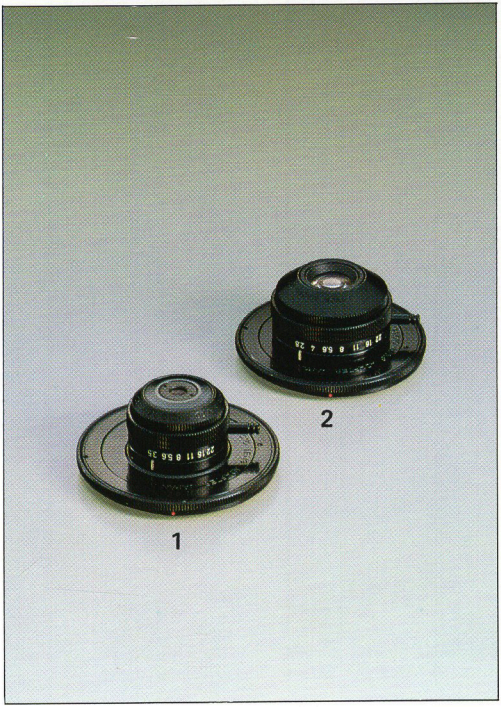
1. **FD 50mm f/3.5 Macro with Extension Tube FD 25-U**
2. **FD 100mm f/4 Macro with Extension Tube FD 50-U**

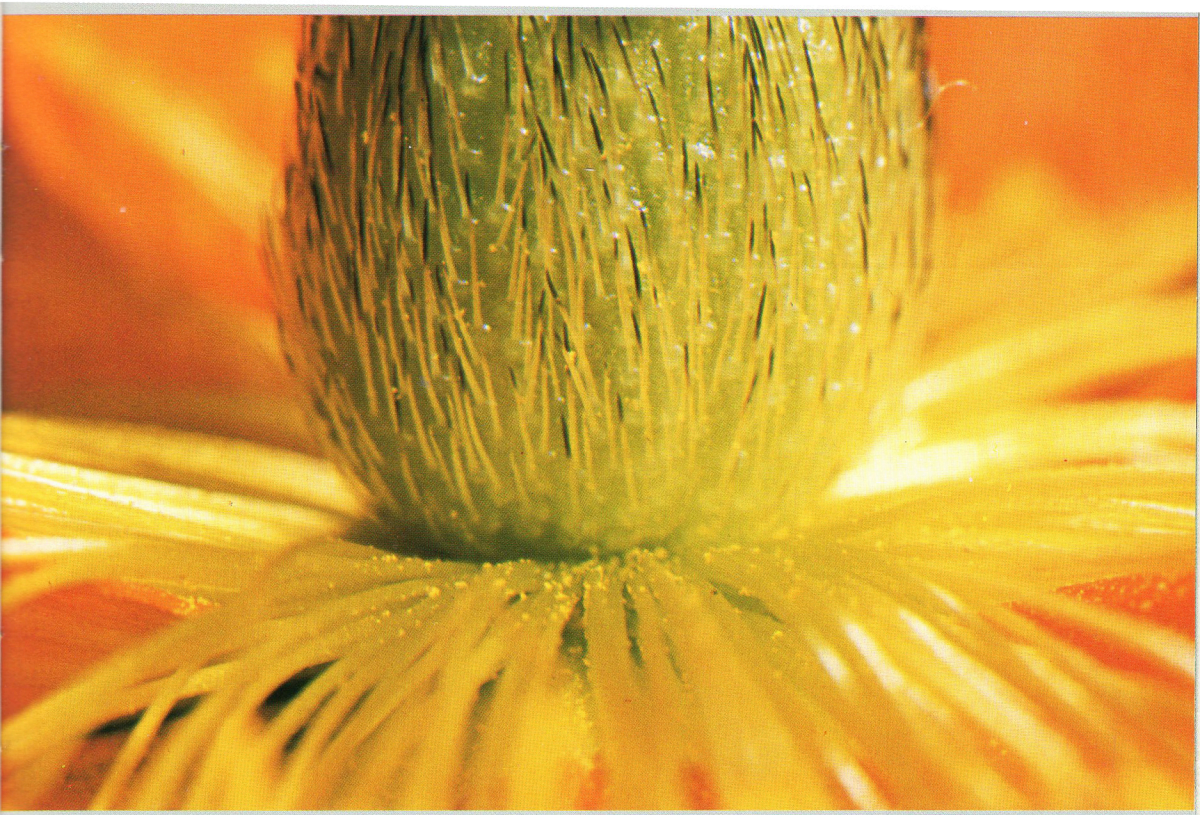
FD 100mm f/4 Macro, 1/60 sec. at f/11, with flash

Macrophoto Lenses

To reach to the limits of photomacrographic magnifications, there is nothing easier than attaching one of Canon's Macrophoto lenses to a bellows. When mounted on a bellows, approximate magnifications of 2x to 10x are possible depending on the lens. And, like Canon's Macro lenses, these lenses are specially designed to handle the problems incurred by high magnifications and abnormally close shooting distances. Coma, in particular, is eliminated for extra sharp images. Their compact design with short lens barrel and gently tapered front end facilitates lighting control, and their short focal lengths permit high magnifications with comparably slight amounts of lens extension. Both have a minimum aperture of f/22 for maximum control over depth of field. Their characteristics make them particularly suited to producing a 35mm slide from movie film.

1. **Macrophoto Lens 20mm f/3.5**
2. **Macrophoto Lens 35mm f/2.8**





Macrophoto Lens 35mm f/2.8 on Auto Bellows, 3X, 1/8 sec. at f/5.6, ASA64.

Zoom Lenses

Zoom lenses offer the freedom of a variable focal length. Because their focal lengths can be changed to suit your photographic needs, the zoom lenses offer unlimited versatility throughout their entire focusing ranges. In effect, they perform similar functions to those of several regular interchangeable lenses combined. One zoom lens can take the place of several interchangeable lenses. A zoom lens is particularly useful when there is not enough time to change lenses, when you want to use an intermediate focal length lying between those of two interchangeable lenses, or when a sequential change from an overall view to a close-up is desired. It maintains the same color balance and an even consistency over a series of shots. It is also very effective in the creation of special effects when zooming is performed during a single shot.

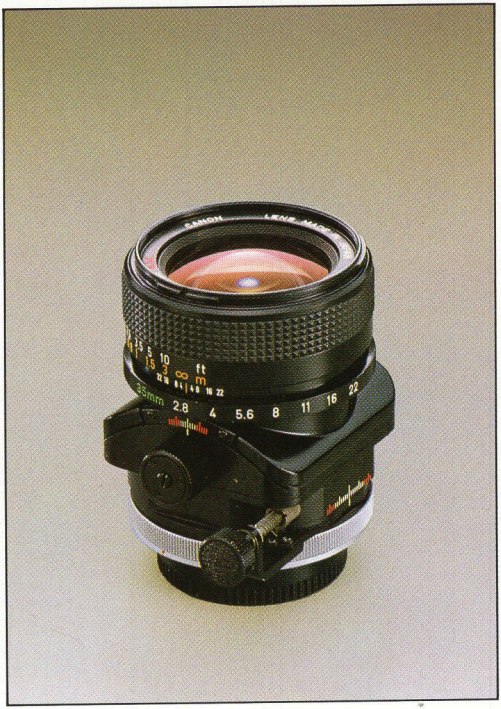
1. **FD 24–35mm f/3.5 L**
2. **FD 28–50mm f/3.5**
3. **FD 35–70mm f/4**
4. **FD 35–70mm f/2.8–3.5**
5. **FD 70–150mm f/4.5**
6. **FD 80–200mm f/4**
7. **FD 100–200mm f/5.6**
8. **FD 85–300mm f/4.5 S.S.C.**

FD 70–150mm f/4.5, 1/8 at f/22, ASA25

Tilt & Shift Lens

This is a very unusual lens incorporating tilt and shift mechanisms which change the optical axis to give optimum control over depth of field and perspective. Using the tilt mechanism, you can control depth of field without changing the exposure. The shift mechanism is especially useful in architectural photography where it can be used to eliminate the "backward-leaning effect" common in pictures of buildings taken with a regular lens. Using both mechanisms together, you can achieve the perfect picture in overall focus and natural perspective. However, they can also be used artistically to create distortions impossible to attain with normal lenses.

TS 35mm f/2.8 S.S.C.



▲Normal

▲Corrected

Extender FD 2x-A

This is a special FD lens accessory. A type of lens itself, it is inserted between the lens and camera body to double the lens' focal length or the zoom range of a zoom lens. It is equipped with all the FD couplings so that, depending on the camera, full-aperture metering, automatic diaphragm coupling and AE photography are still possible. An unexpected advantage of using the Extender is that the minimum shooting distance of the master lens remains usable, enabling closer shooting and correspondingly higher magnifications than with a regular lens double the focal length of the lens in use. Generally lighter and easier to manage, the Extender/lens combination is a viable alternative to buying another lens of double the focal length.

The Extender can be used on all fixed-focal-length FD telephoto lenses ranging from 100mm to 800mm and any FD telephoto zoom lens with a lower zooming limit of at least 80mm.

Introduction to Individual Lenses

Fish-eye Lenses

Fish-eye 7.5mm f/5.6

A circular fish-eye which covers its 180° angle of view in a ϕ23mm circle within the 35mm frame. Despite its very short focal length, its retrofocus design means that the camera mirror, instead of having to be locked up before mounting, remains conveniently in position for viewing. With limitless depth of field, it promises sharp reproduction at any shooting distance or aperture, and, consequently, neither needs nor has a focusing mount. Equidistant projection over its entire angle of view makes it very appropriate for certain types of scientific photography; for the less scientifically-inclined, an exciting special effects lens. With manual diaphragm and six built-in filters (SKY, Y3, O1, R1, CCA4, CCB4).

Fish-eye FD 15mm f/2.8

This is a somewhat less exaggerated full-frame fish-eye which covers its 180° angle of view on the diagonal of the frame. Its characteristic distortion increases outwards from the center line of the image; composition plays an especially important role in the shot. A very compact fish-eye with an exceptional speed which makes it very suitable for available-light shooting. With four built-in filters (SKY, Y3, O1, R1), all the advantages of the FD signals, a newly lighter build and a new minimum aperture of f/22. A rewarding and challenging lens for the creative photographer.

Super Wide-angle Lenses

FD 17mm f/4

With a very wide angle of view, this lens has a strong wide-angle perspective, free of rectilinear distortion, which tends to make a subject in the foreground look much larger than in reality while objects in the background seem to be much more distant. Spherical aberration is at a minimum; a special Canon Floating System corrects curvature of field which is usually common at close distances in compact wide-angle lenses. For extreme wide-angle applications with a goal of em-

phasizing the vastness or depth of the subject. Excellent for close-up mountain landscapes, for instance, or very cramped quarters. This lens shows quite a bit of improvement in weight.

FD 20mm f/2.8

Another lens with quite extreme wide-angle perspective, this lens has exceptional speed in its favor and an edge in compactness and light weight. It, too, has a floating system for edge-to-edge sharpness throughout its focusing range. Portable and easy to handle, it is useful for a subject that requires extra depth and speed.

Wide-angle Lenses

FD 24mm f/1.4 L

Entering into a more moderate wide-angle range, this lens, one of three Canon 24mm lenses, is exceptional in many ways. Not only is it the fastest wide-angle lens in the world, but it is one of the few lenses in the system which Canon has given a specially-ground aspherical element. Canon was the first to create and mass-produce the aspherical lens which corrects spherical aberration common at the maximum aperture of very fast spherical lenses. The result is flare and blur-free reproduction even at f/1.4. The Canon Floating System makes sure spherical aberration does not flare up at close shooting distances too. This is a very high-performance lens for the critical photographer.

FD 24mm f/2

Canon's intermediate 24mm lens, the FD 24mm f/2 is designed for speed and compactness. The floating system assures even definition from the center to the edges of the image throughout the focusing range. Very good for available-light shooting in dim lighting conditions.

FD 24mm f/2.8

Canon's popular-type 24mm lens, this lens has a compactness, light weight and reasonable price which have made it a favorite choice for the wide-angle effect among photographers who use a 50mm lens for general-purpose photography. Like Canon's two other 24mm lenses, it has the floating system for excellent edge-to-edge sharpness regardless of shooting

distance. For interiors, scenery and candid photography where portability and easy handling are especially important.

FD 28mm f/2

Like many other Canon lenses, this lens is unique in that it harmonizes what are normally incompatible, but desirable, characteristics — in this case, extra speed in a compact wide-angle lens. Usually this would lead to a loss of resolution and contrast. Not in this lens. It is remarkably fast, pictures taken even at full aperture have high contrast, and excellent definition over the entire image is assured even at close shooting distances by the floating system. Its speed is great for available-light shooting in dimly lighted, confined interiors. Smaller and lighter for even more convenient carrying.

FD 28mm f/2.8

This lens is next to the FD 35mm f/2.8 only in being the most compact, lightest and most economical wide-angle lens in Canon's system. Added to its handy speed, these features make it the most popular of Canon's wide-angle lenses. Like the 24mm lens, it is especially recommended for those who use a 50mm lens for general-purpose photography for whom the characteristics of a 35mm lens do not make enough of a difference in giving a wide-angle perspective. With its great depth of field and superior maneuverability, it is tailor-made for grab shots. The crisp, sharp images it produces are amenable to considerable enlargement without loss of image quality.

FD 35mm f/2

An angle of view which borders on that of a standard lens and nearly natural perspective make the 35mm lens a popular general-purpose lens in the systems of many photographers. Its speed in particular makes this lens a handy alternative to the 50mm standard. The FD 35mm f/2 has undergone a drastic reduction in size and weight and Canon has given it a new, unusual 10-element, 8-group construction for improved performance. Optical performance is excellent even with the lens wide open, and the Canon Floating System prevents degradation of image quality at close focusing distances.

FD 35mm f/2.8

The emphasis is on practicality and reasonable cost in this popular 35mm lens. A rational lens construction and concentration on aberration correction add up to improved optical performance and maneuverability in this lens which is second only to the FD 50mm f/1.8 in compact size and light weight. Even pictures taken at f/2.8 have high contrast. Like the FD 35mm f/2, this lens has many purposes in as many fields. Hard to match in portability and easy handling, it is another handy alternative to the 50mm standard.

Standard Lenses

FD 50mm f/1.4

You know a lens has got to be extra special when it is the lens against which all the others in the system are measured. Along with its high reputation for outstanding optical performance, this lens can now boast of exceptionally compact size and light weight. Images it produces have high contrast and excellent color balance. With the second widest maximum aperture in the system, it is an easy-to-handle, reasonably priced answer to all kinds of shots in almost any kind of lighting condition.

FD 50mm f/1.8

Canon's popular standard lens, this is the smallest, lightest, most inexpensive lens in the system. It passes lens tests with flying colors, and its speed covers all but the dimmest available-light shooting conditions. This lens has been the faithful friend of millions of photographers who found it attached to their new Canon SLR.

FD 55mm f/1.2 S.S.C. ASPHERICAL

Canon calls this "the perfect lens", and that's no small praise for a lens which, besides having the usual advantages of a standard lens, features an unbeatable f/1.2 maximum aperture for bright viewing, easy focusing and the widest ranging available-light shooting; one of Canon's very special aspherical elements for flare and blur-free results not only at small apertures but even at f/1.2; a floating system for superior performance throughout its focusing range; and Canon's multilayer coating for excellent color balance and the minimum

possible of ghost images and flare in back-lighted situations. An outstanding lens in all respects for the demanding and critical photographer.

FD 55mm f/1.2 S.S.C.

Noted for its high performance, this lens offers just the speed for the broadest possibilities in available-light shooting. It is specially corrected for coma and spherical aberration; even wide open its performance is excellent.

Telephoto Lenses

FD 85mm f/1.2 L

Despite its moderately long focal length, this beautiful little lens has a speed that puts it on a par with the fastest lenses in Canon's system. Its optical performance is beyond reproach throughout its aperture and focusing ranges. Canon blessed it with an aspherical element and a floating system for sharp, flare-free images and excellent field flatness even at f/1.2 and the closest focusing distance of 0.9m (3 ft.). Perfect for available-light portraiture and scenery.

FD 85mm f/1.8

With its convenient speed, nearly natural perspective and its particularly compact, lightweight design, this lens is becoming increasingly popular as a general-purpose lens. Residual astigmatism and coma are retained to give a pleasing soft-focus effect around the edges of the image at large apertures and make this lens especially suited to portraiture. Almost as compact as a standard lens, it has a multitude of other applications, including snapshots and landscapes.

FD 100mm f/2

This is a newcomer to the Canon lens system which is designed particularly for speed and high performance. Its f/2 maximum aperture is excellent for its focal length and very helpful for available-light shooting in less than bright light. Like the FD 85mm f/1.8, it produces an image with pleasingly soft-toned edges at large apertures. Flare is kept to a minimum even at f/2. Just right for portraiture; also excellent for snapshots, buildings, etc.

FD 100mm f/2.8

This moderate telephoto is so compact it could easily be mistaken for a standard lens, yet it gives 2X the magnification. Flare is corrected for sharp images taken with the lens wide open, chromatic aberration is minimized, and optical performance is consistently excellent throughout its focusing range. The shortest and lightest telephoto in Canon's system, it is amazingly small and easy to handle by any standards and comes with a reasonable pricetag to boot.

FD 135mm f/2.8

The stress in this lens is high performance in a light, compact design. Images it produces have very high contrast. This lens is remarkably small for its relatively large maximum aperture. For closing in on a stage or portrait subject and for snapshots from a distance when a little extra speed is critical.

FD 135mm f/3.5

This is Canon's popular answer to the lens which often completes the amateur's system. It is designed for the utmost in practicality. Not only is it the most inexpensive of Canon's telephoto lenses, but it is also one of the smallest and lightest – and not at the expense of optical performance. Right from full aperture it produces sharp, clear results. Hand-held shooting is a breeze. So small it will hardly be noticed in the gadget bag on trips or in a backpack for mountain hiking.

FD 200mm f/2.8

This fast 200mm lens produces excellent definition over the entire image throughout its focusing range – even at its close 1.8m (6 ft.) minimum focusing distance, which, in addition, is close enough to fill the frame with your subject. Despite its wide aperture, it is designed for optimum savings in bulk and weight. It is perfect for news photos, indoor sports and stage photography where its extremely easy handling and speed can mean the difference between getting the shot or missing it.

FD 200mm f/4

This lens features Canon's exclusive Rear-group internal focusing system. Only the small-

diameter rear lens group moves for focusing in a rigid lens barrel. Not only is focusing with this telephoto lens unusually smooth and overall lens balance excellent, but this simpler focusing mechanism permits a slimmer, lighter design. Canon has had particular success in reducing the size and weight of this lens while also drastically reducing chromatic aberration. Even pictures taken at its close 1.5m (5 ft.) minimum focusing distance have very good overall definition. For hand-held shooting in sports and nature photography and snapshots.

FD 300mm f/2.8 S.S.C. FLUORITE

Canon designers outdid themselves with this lens. When this lens' FL predecessor was first introduced in 1969, it was the first lens in the world to have a fluorite element. That was the year that Canon was the first lens maker to succeed in mass-producing artificial calcium fluoride crystals large enough to constitute a lens element; natural fluorite is too small. The advantage of the fluorite element is that it corrects chromatic aberration and the secondary spectrum, which become worse and more difficult to correct with longer focal lengths, to a degree which is simply impossible with normal optical glass. As a result, this superior apochromatic lens produces images with unparalleled resolution and color balance. The fluorite element and its exceptional speed make this the Cadillac of lenses for the uncompromising photographer.

FD 300mm f/4 L

This lens has a feature to solve every problem in a telephoto lens: ultra low-dispersion (UD) glass to correct chromatic aberration and the secondary spectrum for overall image sharpness and vivid colors; Rear-group focusing for excellent balance and more compact design; and a Vari-pitch cam to slow down the focusing motion in the long-distance range for easy, precise focusing on distant subjects. It promises superior performance even at its large f/4 maximum aperture and its close 3m (10 ft.) minimum focusing distance. Superior handling ease makes it the perfect lens for hand-held sports and press shots.

FD 300mm f/4

A popular version of the FD 300mm f/4 L, this lens, too, benefits from the Rear-group internal focusing system and a Vari-pitch cam for smooth, precise focusing even on distant subjects and a well-balanced, compact design. Special attention has been paid to reduction of secondary chromatic aberration.

FD 300mm f/5.6

A moderate speed and good performance in a compact, lightweight design – and at a reasonable price – make this a very popular 300mm lens. Rear-group internal focusing means unusually smooth focusing and excellent overall balance while its Vari-pitch cam makes fine focusing on distant subjects a cinch. The former also accounts for its compactness and compensates aberration fluctuations at close distances for high resolution and contrast even in images taken at its 3m (10 ft.) minimum focusing distance. At 685g, it is good for hand-held shooting, and it has a new minimum aperture of f/32 for added depth of field.

Super Telephoto Lenses

FD 400mm f/4.5 S.S.C.

With a focal length that gives 8X the magnification of a standard lens and a speed that makes it one of the fastest 400mm lenses available, this lens has all the advantages of Rear-group internal focusing, a Vari-pitch cam, and the FD lens signals. Its perfect balance and compact construction make hand-held shooting possible. With low-dispersion glass for sharp results and vivid colors. For super-telephoto applications where fast shutter speeds are required.

FD 500mm f/4.5 L

Canon went all out with this lens, giving it a rare combination of fluorite and ultra low-dispersion (UD) glass to eliminate almost all traces of the secondary spectrum for sharp images and vivid colors; Rear-group internal focusing for smooth focusing and perfect balance; a Varipitch cam which takes effect at 13m for especially easy, precise focusing on distant subjects; an exceptionally large f/4.5 aperture and an unusually close 4m (15 ft.) minimum focusing distance. Curvature

of field is greatly reduced for uniform sharpness from the center to the edges of the image, and all wavelengths are brought so closely to focus that focus adjustment for infrared photography is not even necessary. This is one of the fastest and lightest 500mm lenses around with a performance that even the most critical of photographers will appreciate.

Reflex 500mm f/8 S.S.C.

This lens features the unique characteristics of its catadioptric mirror-reflex design. It has no chromatic aberration, no dispersion, and spherical aberration and curvature of field are reduced to a minimum; it promises super sharpness over the entire image throughout its focusing range. Despite its extra 200mm in focal length, it is very nearly as compact and lightweight as the FD 300mm f/5.6 and just as suitable for hand-held shooting. Its portability, easy handling and fixed f/8 aperture make it perfect for outdoor sports and nature photography. The rings it forms in out-of-focus areas of the image, which are unique to lenses of its type, are a special asset to individual expression.

FD 600mm f/4.5 S.S.C. and FD 800mm f/5.6 S.S.C.

These two lenses are the fastest of their focal lengths in the world and, despite their speeds and focal lengths, have all the advantages of an FD lens. Rear-group internal focusing gives them excellent balance and makes focusing very smooth. Since very long shooting distances are involved, the focusing motion is particularly slow for easier fine focusing. The torque of the focusing motion is adjustable, and the focus can be locked. Both feature low-dispersion glass for correction of chromatic aberration and produce images with high resolution and contrast and fine field flatness.

FL 1200mm f/11 S.S.C.

This is a front-component convertible lens. The focusing mechanism and two rear-most components are housed in a separate focusing mount. Attached to the focusing mount, it gives 24X magnification and a 2.1° angle of view. Curvature of field and chromatic aberration are well-corrected. Canon's biggest "gun" for the farthest subjects.

Zoom Lenses

FD 24-35mm f/3.5 L

The Canon zoom which dips into the widest angles, this lens has several features in favor of remarkable performance which is at least on a par with that of a lens of fixed focal length in its range. It is the only Canon zoom lens and one of the few lenses period graced with an aspherical element for distortion-free images at f/3.5. A floating system promises excellent image quality regardless of focusing distance. Like Canon's other short zooms, this lens also features Canon's two-group zooming system in which the front component functions for both focusing and zooming while the rear component compensates for focusing shifts from zooming. This system makes it possible to reduce the size of the front component, making the whole lens more compact; it permits easier correction of aberrations, and it minimizes barrel distortion at short focal lengths.

FD 28-50mm f/3.5 and FD 35-70mm f/2.8-3.5

These short-focus zooms are particularly noted for their extreme compactness and very high performance. Both have Canon's two-group zooming system and produce uniformly sharp images over their zooming ranges. Each has a close-focusing feature for low close-up magnifications of three-dimensional subjects. The FD 28-50mm focuses to a close 25cm from the film plane, the FD 35-70mm f/2.8-3.5 to 30cm. Both have extremely versatile zooming ranges, hovering around 50mm and extending into wide-angle and, in the case of the FD 35-70mm, even into short telephoto.

FD 35-70mm f/4

A popular version of the FD 35-70mm f/2.8-3.5, this lens loses a little in speed and gains a lot in compactness and lighter weight. From moderate wide-angle to short telephoto, the focus and image quality remain consistently excellent, and it promises edge-to-edge sharpness even at its exceptional 0.5m (2 ft.) minimum focusing distance. This lens offers superior handling ease, a moderate speed and

a very convenient range of focal lengths at a very reasonable price.

FD 70-150mm f/4.5

Designed for high performance and especially easy handling, this reasonably priced, popular zoom has a greate range of applications from portrait lens to sports, nature and scenery. Its compact, lightweight construction and single-ring focusing and zooming make it a genuine delight to use.

FD 80-200mm f/4

Ask your lens dealer and happy Canon customers about this lens, and they are very likely to say it is the best zoom lens on the market. Outstanding performance over a wide zooming range covering some of the most useful focal lengths, a remarkable f/4 maximum aperture and an exceptional 1m (3.5 ft.) minimum focusing distance in a remarkably compact, lightweight design make this Canon's most popular zoom lens.

FD 100-200mm f/5.6

A popular-type zoom covering the most frequently used telephoto range, this lens features a moderate speed and a simple optical design for exceptionally easy handling and excellent performance at a welcome price. With quick, single-ring focusing and zooming. Great for outdoor sports, scenery, snapshots.

FD 85-300mm f/4.5 S.S.C.

With the widest zooming range among Canon lenses, this remarkably compact lens naturally covers the widest range of practical applications. Its handy speed and close 2.5m (8 ft.) minimum focusing distance make it perfect for tight shots of quickly moving subjects, such as sports and animals.

Special-Purpose Lenses

FD 50mm f/3.5 Macro with Extension Tube FD 25-U

FD100mm f/4 Macro with Extension Tube FD 50-U

These are multi-purpose lenses which, besides behaving as typical standard and telephoto lenses at shooting distances up to infinity, have unusually long focusing mounts for close focusing. Alone, the standard macro

focuses down to 23.2cm from the film plane and the telephoto macro to 45cm for a magnification of 1/2X. Attached to their respective extension tubes, it is possible to reach a magnification of 1X (focusing down to 20.5cm and 40cm respectively) with all the advantages of full-aperture metering and AE photography on a suitably equipped Canon SLR. While normal lenses are adjusted for best performance at relatively great shooting distances, these lenses are corrected for aberrations which occur at close distances. Ultra-high resolution and crisp edge-to-edge sharpness even at extremely close distances are guaranteed. Recommended for the best possible results in close-ups, photomacrography and copying. The standard macro has an edge in portability; the telephoto macro permits greater working distances for easier lighting control and greater distance from the subject. The telephoto macro's comparatively natural perspective also makes it most suitable for almost any form of commercial photography. Their performance at normal shooting distances is also very good. In fact, photographers who use them often find their faster normal 50mm or 100mm lenses remain in the gadget bag most of the time. For the critical photographer who has a serious interest in close-up shooting and copying.

Macrophoto Lens 20mm f/3.5
Macrophoto Lens 35mm f/2.8

Limited-purpose lenses designed for attaining higher magnifications with outstanding results in photomacrography. Lacking a focusing mount, they must be mounted on a bellows with which magnifications of 4X-10X with the 20mm macrophoto or 2X-5X with the 35mm lens are possible. Excellent results at magnifications up to 20X are possible with additional extension tubes. Like the macro lenses, these lenses are specially designed to correct aberrations at very close shooting distances. Coma, which is a particular problem in high-magnification photography, is minimized for crisp image sharpness. Both these lenses are incredibly small and taper towards the front for easier lighting control, and both have an f/22 minimum aperture for greater depth of field. Manual diaphragm. For high photomacrographic magnifications with

superior results the easy way.

TS 35mm f/2.8 S.S.C.

This unusual lens has a vertical tilt for altering perspective and a horizontal shift for altering depth of field independant of aperture. It can be rotated on its mount for tilting/shifting in any direction, and it has a floating system for uniform sharpness over the entire image even at its 30cm (1 ft.) minimum focusing distance. It is especially suited to architectural photography where it can be used, for instance, to correct the "backward-leaning effect" of tall buildings, or for oblique shots of walls, shop fronts, trains. It is most appreciated for its ability to stretch depth of field without having to stop down. Since it also has great potential in exaggerating perspective or understating depth of field, it is also a handy tool for exercising individual expression.

Canon Lens Table

Specifications

Type	Lens	Angle of View	Dia-phragm	Construc-tion	Minimum Aperture	Filter Size	Focusing Mechanism	Length (mm)	Length (in.)	Weight (gr)
Fish-eye	New Fish-eye 7.5mm f/5.6	180°	Manual	8–11	22	Built-in	Fixed	62	2-7/16	380
○	New Fish-eye FD 15mm f/2.8	180°	Automatic	9–10	22	Built-in	Double-helicoid focusing	60.5	2-3/8	470
Super Wide-Angle ○	New FD 17mm f/4	104°	Automatic	9–11	22	72	Double-helicoid focusing. With Canon Floating system	56	2-3/16	375
○	New FD 20mm f/2.8	94°	Automatic	9–10	22	72	Double-helicoid focusing. With Canon Floating system	58	2-5/16	320
○	New FD 24mm f/1.4 L	84°	Automatic	8–10	16	72	Double-helicoid focusing. With Canon Floating system	68	2-11/16	450
	New FD 24mm f/2	84°	Automatic	9–11	22	52	Double-helicoid focusing. With Canon Floating system	50.6	2	310
	New FD 24mm f/2.8	84°	Automatic	9–10	22	52	Double-helicoid focusing. With Canon Floating system	43	1-11/16	280
Wide-Angle	New FD 28mm f/2	75°	Automatic	9–10	22	52	Double-helicoid focusing. With Canon Floating system	47.2	1-7/8	280
	New FD 28mm f/2.8	75°	Automatic	7–7	22	52	Double-helicoid focusing	40	1-9/16	210
○	New FD 35mm f/2	63°	Automatic	8–10	22	52	Double-helicoid focusing. With Canon Floating system	46	1-13/16	260
	New FD 35mm f/2.8	63°	Automatic	5–6	22	52	Double-helicoid focusing	40	1-9/16	200
	New FD 50mm f/1.4	46°	Automatic	6–7	22	52	Double-helicoid focusing	41	1-5/8	240
	New FD 50mm f/1.8	46°	Automatic	4–6	22	52	Double-helicoid focusing	35	1-3/8	180
Standard	FD 55mm f/1.2 S.S.C. ASPHERICAL	43°	Automatic	6–8	16	58	Double-helicoid focusing. With Canon Floating system	55	2-3/16	575
	FD 55mm f/1.2 S.S.C.	43°	Automatic	5–7	16	58	Double-helicoid focusing	52.5	2-1/16	510
○	New FD 85mm f/1.2 L	28°30′	Automatic	6–8	16	72	Double-helicoid focusing. With Canon Floating system	71	2-13/16	680
	New FD 85mm f/1.8	28°30′	Automatic	4–6	22	52	Double-helicoid focusing	53.5	2-1/8	350
○	New FD 100mm f/2	24°	Automatic	4–6	32	52	Double-helicoid focusing	70	2-3/4	450
	New FD 100mm f/2.8	24°	Automatic	5–5	32	52	Double-helicoid focusing	53.4	2-1/8	300
	New FD 135mm f/2.8	18°	Automatic	5–6	32	52	Double-helicoid focusing	78	3-1/16	420
Telephoto	New FD 135mm f/3.5	18°	Automatic	4–4	32	52	Double-helicoid focusing	85	3-3/8	360
	New FD 200mm f/2.8	12°	Automatic	5–5	32	72	Double-helicoid Focusing	140.5	5-9/16	700
	New FD 200mm f/4	12°	Automatic	6–7	32	52	Rear-group focusing	121.5	4-13/16	500
	FD 300mm f/2.8 S.S.C. FLUORITE	8°15′	Automatic	5–6	22	34 (drop-in type)	Double-helicoid focusing	230	9-1/16	1,900
	FD 300mm f/4 L	8°15′	Automatic	7–7	32	34 (drop-in type)	Rear-group focusing	208	8-3/16	1,100
	New FD 300mm f/4	8°15′	Automatic	6–6	32	34 (drop-in type)	Rear-group focusing	204	8-1/16	965
	New FD 300mm f/5.6	8°15′	Automatic	5–6	32	58	Rear-group focusing	198.5	7-13/16	685

Type	Lens	Angle of View	Dia-phragm	Construc-tion	Minimum Aperture	Filter Size	Focusing Mechanism	Length (mm)	Length (in.)	Weight (gr)
Super Telephoto	FD 400mm f/4.5 S.S.C.	6°10′	Automatic	5–6	22	34 (drop-in type)	Rear-group focusing	282	11-1/8	1,300
	FD 500mm f/4.5 L	5°	Automatic	6–7	32	48 (drop-in type)	Rear-group focusing	395	1′-3-9/16	2,650
	Reflex 500mm f/8 S.S.C.	5°	Fixed	3–6	–	34 (drop-in type)	Front-element focusing	146	5-3/4	740
	FD 600mm f/4.5 S.S.C.	4°10′	Automatic	5–6	22	48 (drop-in type)	Rack-and-pinion	455	1′-5-15/16	4,300
	FD 800mm f/5.6 S.S.C.	3°06′	Automatic	5–6	22	48 (drop-in type)	Rack-and-pinion	567	1′-10-5/16	4,300
	FL 1200mm f/11 S.S.C.	2°05′	Manual	5–6	64	48 (drop-in type)	Rack-and-pinion	853	2′-9-9/16	6,200
Zoom ○	New FD 24-35mm f/3.5 L	84°–63°	Automatic	9–12	22	72	Front-element focusing. With Canon Floating system	86.6	3-7/16	500
Zoom ◎	New FD 28-50mm f/3.5	75°–46°	Automatic	9–10	22	58	Front-element focusing	99.5	3-15/16	455
Zoom ◎	New FD 35-70mm f/2.8-3.5	63°–34°	Automatic	10–10	22	58	Front-element focusing	120	4-3/4	560
Zoom	New FD 35-70mm f/4	63°–34°	Automatic	8–8	22	52	Front-element focusing	85.5	3-3/8	315
Zoom	New FD70-150mm f/4.5	34°–16°20′	Automatic	9–12	32	52	Front-element focusing	132	5-3/16	565
Zoom	New FD 80-200mm f/4	30°–12°	Automatic	11–15	32	58	Front-element focusing	161	6-5/16	790
Zoom	New FD 100-200mm f/5.6	24°–12°	Automatic	5–8	32	52	Front-element focusing	167	6-9/16	660
Zoom	FD 85-300mm f/4.5 S.S.C.	28°30′–8°15′	Automatic	11–15	22	Series IX (82)	Front-element focusing	243.5	9-9/16	1,695
Macro	New FD 50mm f/3.5	46°	Automatic	4–6	32	52	Double-helicoid focusing	57	2-1/4	240
Macro ◎	New FD 100mm f/4	24°	Automatic	3–5	32	52	Double-helicoid focusing	95	3-3/4	480
Tilt and Shift	TS 35mm f/2.8 S.S.C.	63° (Shift 79°)	Manual	8–9	22	58	Double-helicoid focusing. With Canon Floating system	74.5	2-15/16	550
Macrophoto	Macrophoto 20mm f/3.5	–	Manual	3–4	22	–	–	20	13/16	35
Macrophoto	Macrophoto 35mm f/2.8	–	Manual	4–6	22	–	–	22.5	7/8	60

◎ indicates that marketing starts in the third quarter of 1979.
○ indicates that marketing starts in the fourth quarter of 1979.

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