

# Canon EOS

## *Close-up System*



With the advanced Canon EOS system,  
close-up photography has never been easier



# *The Fascination of Close-up Photography*

Photography is like a large gallery with many rooms. Landscapes are in one, portraits in another, sports photography in a third. But for many people, one of the most fascinating subjects of all is close-up, or macro photography. Even mundane subjects — a coin, a stamp, an insect — seem suddenly intriguing when shot at very close range. Yet as anyone who has tried to take similar pictures knows, macro photography requires special equipment. For fundamental optical reasons, standard lenses are not designed to focus down very close to the subject. The EOS system provides various options to increase magnification, from popular zoom lenses that permit a limited macro focusing capability to special, high-performance macro lenses that produce “life-size” images. Once you decide on the equipment you need and begin experimenting, an entirely new world of fascinating visual subjects becomes available. Probably nothing short of a photo safari to Africa can be as stimulating as investing in close-up equipment. After all, when shooting close-up, even a simple suburban backyard becomes as exotic as a wild-animal game park!







EOS-1 • EF 100mm f/2.8 Macro • 430EZ • ISO 100





# Familiarity with these close-up fundamentals helps you choose the right equipment

Close-up photography was formerly done primarily by scientists and professional photographers, because of the specialized equipment it required and the sometimes arcane knowledge of mathematics and photographic theory that was involved in making a sharp, well exposed picture. With the introduction of modern 35mm autofocus SLR cameras such as the Canon EOS series, successful close-up photography is now within the reach of anyone who is willing to look through the viewfinder and start exploring. But even with modern conveniences like evaluative metering, programmed fully automatic exposure and TTL flash, it still pays to learn at least the basic terminology of close-up photography. Once you understand how each type of close-up accessory works, you'll be in a good position to make an intelligent choice that satisfies your needs.

## Magnification

In basic terms, close-up photography refers to being able to focus on subjects that are very close to the lens. Physical proximity results in magnification, of course, since the closer your camera gets to something the more it fills the 35mm frame. You can think in terms of ratios: If the image of the subject on film is exactly the same size as the subject itself, then the ratio is 1:1. This "one to one" relationship is commonly described as "life-size" and often stipulated as "1X." A ratio of 1:2 means that the image on film is half the size of the actual subject, and this is defined as 0.5X. Normal close-up photography covers the range from 0.1X to 1X, or 1/10 life-size to full life-size. When the image on film becomes larger than the actual size of the subject, the term "high-magnification photography" is used.

## Lens Focal Length

To a certain extent, lens focal length determines magnification. A subject photographed from the same distance

with a 100mm lens will produce an image which is twice as large as that produced by a 50mm lens. Move up to a 200mm lens and the image becomes four times as large. You might think that all you need to do in order to shoot close-ups is use a telephoto lens. Unfortunately, the longer the focal length, the farther away the minimum focusing distance becomes. For example, the closest focusing distance of the EF 50mm f/1.8 is 0.45 m/1.5 ft. while that of the EF 200mm f/1.8L is 2.5 m/8.2 ft. Thus, in terms of doing close-up photography, the 4X gain in magnification offered by the telephoto lens is erased by the loss of minimum focusing distance.

## Depth of Field

Depth of field refers to how much of the subject from front to back is acceptably sharp. This is also called the "zone of focus." Depth of field decreases rapidly as subject magnification or aperture size increases. Conversely, stopping down the aperture and reducing the magnification increases depth of field. Thus, with any lens there is far less depth of field at 0.5X magnification than there is at 0.25X. Similarly, at any given magnification there is far more depth of field at f/16 than there is at f/2.8. Learning how to control depth of field through the balance of magnification and aperture value is a very important part of close-up photography.

Most fixed focal length EF lenses have depth of field scales. Also, certain EOS models, including the EOS-1, 10/10s and 100/Elan have a depth of field preview function that enables you to see the zone of focus through the viewfinder in any exposure mode with any EF lens.

Another approach to depth of field control is through the Depth of Field AE mode found on most EOS cameras. In this case, you control the zone of focus in non-flash photography by using the autofocus system to establish the near and far limits of depth of field according to your preference (and the limits of your lens). Though not appropriate for

every close-up situation, the Depth of Field AE mode can be very useful under certain conditions.

## Lighting Considerations

Since most close-up work is done with the lens stopped down in order to maintain an adequate zone of focus, less light enters the lens. Similarly, close focusing involves extending the lens further than normal from the film, which also reduces the amount of light reaching the film. As a result, close-up photography often requires slow shutter speeds and the use of a tripod or flash. In the past, accurate exposure for close-ups was extremely difficult due to the complex calculations required to compensate for lens extension. However, the EOS system features TTL metering and automatic exposure which completely eliminate these problems. There's even a special flash — the Macro Ring Lite ML-3 — for use with EOS macro lenses.

## Camera Settings

Close-up photography requires special care in terms of maintaining adequate depth of field. For this reason, selecting the best aperture for your shooting conditions is important. Setting your EOS camera on Aperture-priority AE or manual exposure permits total control of the aperture value setting. Keep in mind that if you're photographing natural things outside — flowers, for instance — then you have to be careful of shutter speed, too, since even the slightest puff of breeze can blur your picture if the shutter speed is too slow. As with much in photography, it's a trade-off. But knowing what's happening is half the battle. All current EOS cameras feature full-information viewfinders and external data displays that show you the shutter speed and aperture settings in every exposure mode.

Several EOS cameras, such as the EOS 10/10s, 100/Elan and 1000/Rebel series, feature a fully automatic program for doing close-up photography without flash. By selecting the "flower" icon on the camera's Command Dial, you automatically set the camera to the optimum settings for hand-held close-up photography — One Shot AF, partial metering and single frame advance. This setting also sets a special program that emphasizes high shutter speeds to reduce the risk of unwanted blur due to camera shake.



# These are the basic accessories for close-up photography with your EOS

The equipment you select depends on what your ultimate goals are. If close-up photography seems like it might become a major part of what you want to do, then investing in specialized lenses and other accessories is probably the wisest choice. On the other hand, if you're just curious about what shooting "up close" is like, you might want to keep your initial costs minimal. Whichever way you go, the Canon EOS system has exactly what you need for your proposed level of endeavor. The following pages provide more detailed information on each of these products.

## Close-up Photography with EF Zoom Lenses

Many Canon EF zoom lenses have a continuous macro function that lets you get closer to your subject. By using this feature you can achieve magnification ratios of about 0.25X — roughly 1/4 life-size — depending on the lens. This is a pleasingly affordable way of getting started with close-up photography since you can use these zoom lenses for much of your standard shooting as well.



## Supplementary Close-up Lenses & Extension Tube EF25

CU lenses screw into the filter ring at the front of many EF lenses to provide a simple, inexpensive way to increase magnification by reducing subject distance. Extension tubes also increase magnification by reducing subject distance. But they are mounted between the camera body and the lens, thus physically "extending" its focusing ability. The Extension Tube EF25 works with most EF lenses and is very useful for lenses with unusually large or small filter sizes.



## EF Macro Lenses

The EOS system features two high-quality macro lenses that provide extremely bright, clear images even under demanding close-up shooting conditions. The EF 100mm f/2.8 Macro can shoot life-size 1:1 images. Adding the Life Size Converter EF to the EF 50mm f/2.5 Compact Macro brings the magnification of that lens to 1:1, too.



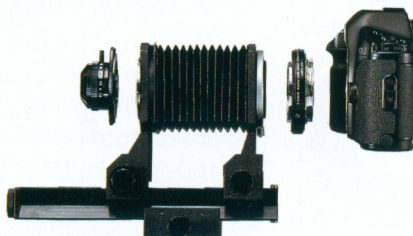
## Macro Ring Lite ML-3 & Off-Camera TTL Flash Accessories

The skillful use of electronic flash in close-up photography is often essential in achieving the highest possible image quality. Canon's extensive Speedlite system is specifically designed for EOS cameras to provide simple operation with high performance. The special Macro Ring Lite ML-3 is designed to work specifically with EF Macro lenses.



## FD-EOS Macro Lens Mount Converter & Specialized Accessories

There are times when even life-size images are too small for the photographic effect you're after. If you find that you've run into this situation, Canon offers several specialized accessories that transform your EOS camera into an amazing tool that can produce spectacular high-magnification images.





# You may already have some basic close-up equipment

## Zoom Lenses with Macro Capabilities

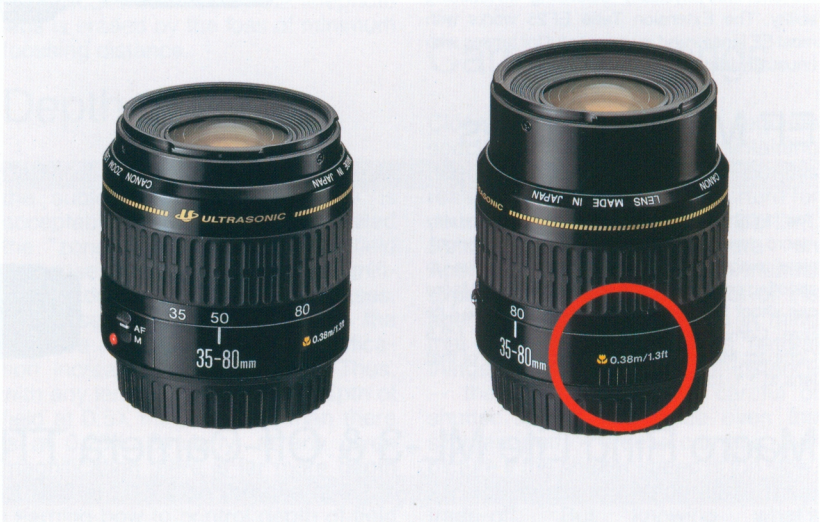
Zoom lenses have become a popular choice for many photographers, because they eliminate the need for carrying several lenses. But another reason to select a zoom is its ability to shoot close-ups. Most Canon EF zoom lenses have a Macro function that provides maximum magnification ranging from 0.15X (about 1/7 life-size) to 0.26X (about 1/4 life-size) depending on the lens (see chart). EF zoom lenses with a macro function can be identified by a flower icon, printed either on the distance scale or the lens barrel.

Using a zoom lens this way gives you a chance to experiment with close-up photography without investing in extra equipment. For example, the EF 35-80mm f/4.0-5.6 USM has a minimum focusing distance of about 0.38 m/1.3 ft. By shooting at this distance and setting the lens focal length to 80mm, you can achieve an on-film magnification ratio of about 0.25X (i.e., 1/4 life-size). Our sample photo was taken exactly this way. For maximum stability, we used a tripod and the camera's selftimer.

Zoom lenses with macro capability are also extremely convenient for casual close-ups of flowers, butterflies or other similarly sized subjects, particularly when you're out on a photo "safari" and find something small that would make a very interesting shot. Telephoto zooms like the EF 75-300mm f/4.0-5.6 USM, 100-300mm f/4.5-5.6 USM or 100-300mm f/5.6L provide plenty of working distance, thus enabling you to be more discreet.



Sample photo taken with EF 35-80mm f/4.0-5.6 USM • ISO 50, f/16 @ 1/4 sec.



EF Zoom Lens with Macro Capability	Closest Macro Shooting Distance	Maximum Magnification
28-80mm f/2.8-4.0L USM	0.5 m/1.6 ft.	0.20X
28-80mm f/3.5-5.6 USM	0.5 m/1.6 ft.	0.18X
35-80mm f/4.0-5.6 USM	0.38 m/1.3 ft.	0.25X
35-105mm f/4.5-5.6 USM	0.85 m/2.9 ft.	0.16X
35-135mm f/4.0-5.6 USM	0.75 m/2.5 ft.	0.15X
70-210mm f/3.5-4.5 USM	1.2 m/3.9 ft.	0.17X
75-300mm f/4.0-5.6 USM	1.5 m/4.9 ft.	0.25X
80-200mm f/4.5-5.6 USM	1.5 m/4.9 ft.	0.16X
100-300mm f/4.5-5.6 USM	1.5 m/4.9 ft.	0.20X
100-300mm f/5.6L	1.4 m/4.6 ft.	0.26X



# These small accessories can make a big difference in your results

## Close-up Lenses

Close-up lenses are an excellent way to get started exploring the world of the very small. Extremely light and easy to carry in your gadget bag, these simple diopters (magnification lenses) screw into the front filter threads of many standard EF lenses to reduce their minimum focusing distance and thereby increase magnification. You lose no light when using close-up lenses, which is not the case with macro lenses or extension tubes. Moreover, most camera functions are maintained, including autofocus confirmation.

Best of all, Canon's Close-up Lenses are double-element achromats, producing picture quality approaching that of true macro lenses when used with top quality prime lenses such as Canon's EF series.

Canon manufactures three types of close-up lenses: 52mm CU 240, 52mm CU 450, and 58mm CU 500T. The 52mm CU 240 and 450 close-up diopters fit all EF lenses with 52mm filter threads, while the 58mm CU 500T is primarily designed for telephoto lenses with 58mm filter threads. The numbers 240, 450, and 500 refer to the maximum possible focusing distance in millimeters from the front of the close-up lens to the subject when the prime lens is set at infinity. That is, if you mount the 52mm CU 240 on an EF 50mm f/1.8 lens, then the *maximum* distance your subject can be from the front of the lens is 240mm, about 9 inches. This produces a magnification of 0.21X, or a little larger than 1/5 life-size. You can increase the magnification to 0.36X by focusing the EF 50mm f/1.8 to its closest range and moving about 3 inches closer to the subject.

The chart on pages 16 & 17 lists magnifications for compatible EF lenses.

The 52mm CU 450 lens is very good with medium telephoto lenses which have 52mm filter threads, like the EF 135mm f/2.8 and 80-200mm f/4.5-5.6, especially when you're looking for a little less magnification than the CU 240 lens provides. The 58mm CU 500T performs a similar function for telephotos with a 58mm filter thread. The 58mm CU 500T close-up lens is particularly suitable for EF telephoto zoom lenses, such as the 70-210mm f/3.5-4.5 USM, 75-300mm f/4.0-5.6 USM, 100-300mm f/4.5-5.6 USM or the 100-300mm f/5.6L. Using the 100-300mm f/5.6L at the 300mm focal length, the minimum focusing distance without a close-up lens is 1.4 m/4.6 ft., producing a magnification of 0.26X.

52mm Close-up Lens CU240



52mm Close-up Lens CU450



58mm Close-up Lens CU500T



Extension Tube EF25



# Supplementary Close-up Lenses & Extension Tube EF25

Adding the 500T and setting the zoom's focusing scale to infinity reduces the maximum focusing distance to 500 mm/19.7 inches from the front of the lens, at a magnification of 0.59X. Setting the focusing scale to its minimum distance increases magnification to 0.98X, or virtually life-size, at a lens-to-subject distance of about 300 mm/12 inches. In fact, there is enough working distance with the 500T to use a camera-mounted Speedlite such as the 430EZ. (In this case, we recommend manually setting the 430EZ's internal zoom mechanism to the 24mm position for best results.) As you can see in our sample photo, the optical quality of this combination is outstanding.

Another benefit of using supplementary close-up lenses with telephoto zooms is the ability to use the zoom function of the lens as a magnification controller. For instance, when using the EF 100-300mm f/5.6L with the 500T close-up lens, you can freely vary the magnification from 0.98X to 0.33X without changing the camera position, simply by zooming the lens from 300mm to 100mm. Similar "magnification control" is possible with any EF zoom lens.

## Extension Tube EF25

Use of close-up lenses isn't always possible. Canon doesn't manufacture close-up lenses big enough to be used with certain large-aperture lenses or single focal length telephoto lenses such as the EF 300mm f/2.8L, for one thing. Close-up lenses also may not produce sufficient magnification or allow a convenient working distance for some applications. When you can't use a CU lens, the Extension Tube EF25 is an excellent alternative.

The EF25 is mounted between the camera body and the lens. It adds 27.25mm of extension and is provided with a full set of electronic contacts which allow shooting data to pass freely between the camera and lens. Manual focusing is recommended, but the EOS autofocus system can be used for focusing confirmation. All camera exposure modes can be used, but EOS-1 spot metering is not possible. The EF25 is compatible with the EOS-1, EOS 10/10s and EOS 100/Elan. Use with other EOS cameras can result in exposure metering errors and is therefore not recommended.

The EF25 is particularly useful with telephoto lenses to reduce their minimum focusing distance. For example, the normal minimum focusing distance of the EF 300mm f/4L is 2.5 m/8.25 ft., which produces a magnification of 0.13X. The addition of Extension Tube EF25 reduces the minimum focusing distance to 1.6 m/5.4 ft., and nearly doubles the magnification to 0.24X. With shorter lenses, the magnification increase is even greater. The EF 35mm f/2 increases its maximum magnification from 0.23X to 1.0X (life-size) by adding the EF25. It's possible to use the EF25 with most zoom lenses, but be aware that unlike conventional shooting, changing the zoom ring also changes the focusing distance.

Certain EF lenses are not usable with the Extension Tube EF25 for various reasons such as insufficient working distance between the lens and the subject, or lack of manual focusing capability. The chart on pp. 16 and 17 lists magnification factors and compatibility for all current EF lenses when used with the Extension Tube EF25. For best results, mid-range aperture settings are recommended, along with the use of a tripod or Speedlite.







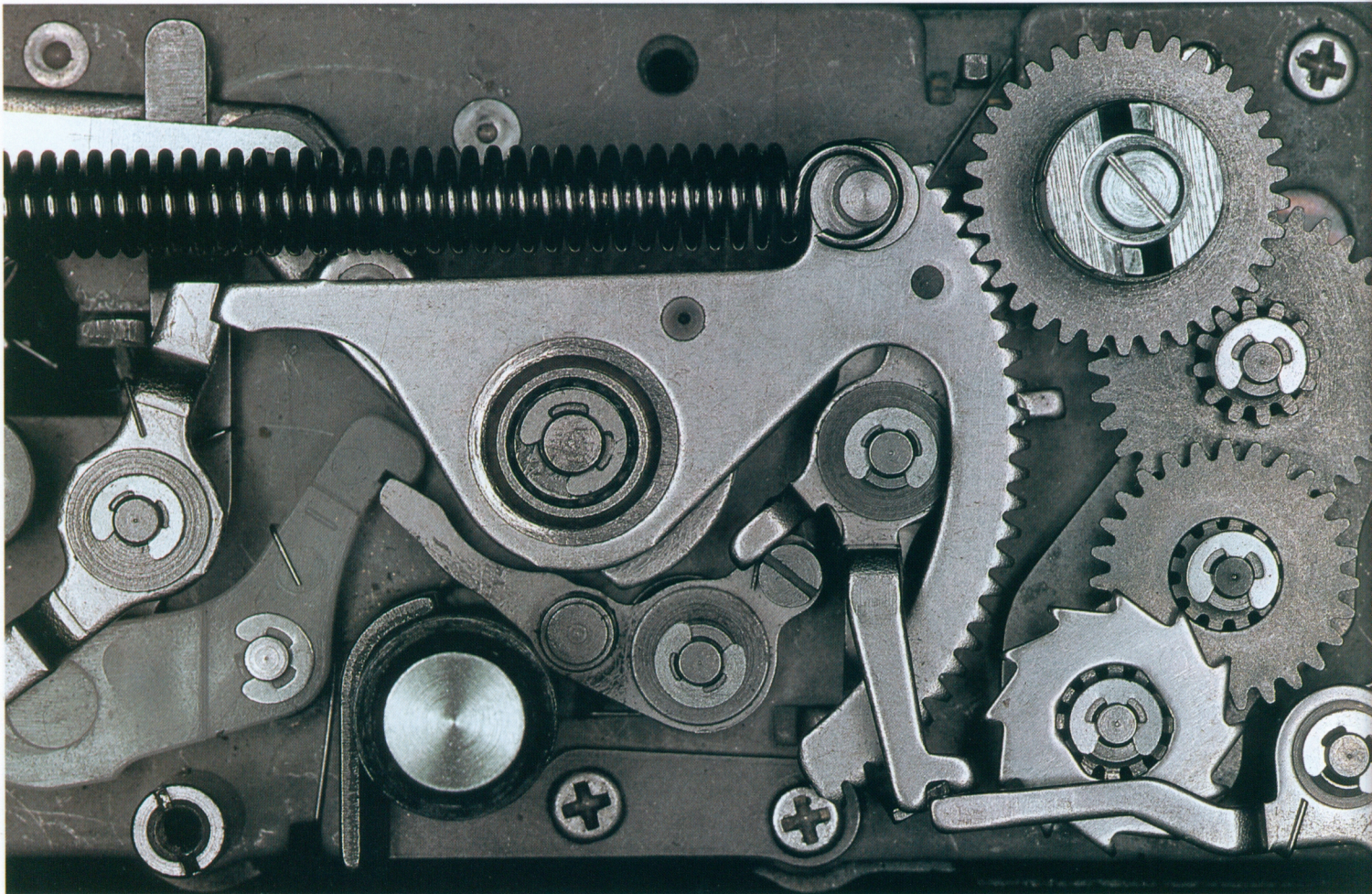
The photo above was taken with the equipment shown here. It's a good example of the quality level you can achieve with the combination of an EOS camera and an EF telephoto zoom lens, the 58mm CU 500T Close-up Lens, plus the Speedlite 430EZ.

When you shoot this way, be sure to set the coverage angle of the 430EZ to the 24mm setting for optimum lighting quality. Medium speed films (Between ISO 50 and 200) provide high quality results. Try setting the camera on manual mode while leaving the 430EZ in the TTL automatic mode. As a starting point, try an aperture setting of about  $f/11$  or  $f/16$  at a shutter speed of  $1/60$ .

The petrified wood photo on the left is a good example of 1:1 life-size magnification you can achieve with Extension Tube EF25 and a standard focal length lens such as the EF 50mm  $f/2.5$  Compact Macro.







EF 50mm f/2.5 Compact Macro with Life Size Converter EF and Macro Ring Lite ML-3

## Nothing surpasses a true macro lens for close-up quality and convenience



Up to this point, we've been talking about zoom lenses and close-up accessories. However, Canon also manufactures special macro lenses designed for superb close-up photography. Unlike conventional lenses fitted with supplementary close-up diopters or extension tubes, EF macro lenses can focus from infinity to extreme close-up range without accessories. This characteristic makes them very convenient and easy to use for a wide variety of shooting situations. The EOS system offers several choices for you to consider.

### EF 50mm f/2.5 Compact Macro

The EF 50mm f/2.5 Compact Macro lens focuses from infinity to 9 inches, for magnifications up to 1/2 life-size. Its advanced optical formula adjusts for changes in focusing distance through use of a fixed rear group, maintaining superior image quality at all times. The large f/2.5 maximum aperture makes it easy to blur backgrounds for more effective close-up shots. And its autofocusing speed is quite good due to a powerful AFD focusing motor. It's a smart choice for photographers who tend to shoot at focal lengths other than 50mm but may want to use a standard lens occasionally. In addition to its remarkable macro photography capabilities, the EF 50mm f/2.5 Compact Macro is also an easy lens to carry on shooting expeditions.





EF 100mm f/2.8 Macro

## Life Size Converter EF

The Life Size Converter EF is specifically made for use with the EF 50mm f/2.5 Compact Macro lens. More than a simple extension tube, it contains its own optics which increase the effective focal length to 70mm. This approach produces superb optical quality and improved AF speed compared to an extension tube. With this accessory, the focusing range becomes 0.25X (1/4 life-size) to 1.0X (full life-size) with full autofocus and automatic exposure capabilities.

## EF 100mm f/2.8 Macro

The EF 100mm f/2.8 Macro covers a broad shooting range, from infinity all the way down to 1X magnification without accessories.

The medium-telephoto focal length produces a pleasing perspective with small three-dimensional subjects, creating a noticeably different visual effect compared to the EF 50mm Compact Macro. The extra focal length also provides more working room between the front of the lens and the subject, making it ideal for close-up photography of subjects like insects or flowers. The extra distance provides more room for supplementary lighting equipment, such as the Macro Ring Lite ML-3. For improved operability, a focusing limiter switch controls the working distance range from 1:4 to infinity, 1:1 to infinity, or 1:1 to 1:4.

## Which EF Macro is Best For You?


Both the 50mm and 100mm EF Macro lenses are designed to produce professionally sharp images, and both are optimized for

close-up photography, so which one should you select? A good way to decide is to determine what your main applications will be. If you plan on shooting flowers or small creatures like butterflies or other insects, especially with flash, the extra working distance of the EF 100mm Macro makes it the best choice. If on the other hand you're more concerned with photographing inanimate subjects like stamps, coins, small photographs or drawings, etc., the EF 50mm Compact Macro makes more sense. Its reduced working distance makes it easier to use under these conditions.

Another way to choose between the two macro lenses is to think of secondary applications. For example, the EF 100mm Macro doubles as a superb portrait lens, while the EF 50mm Compact Macro is an excellent standard lens. Still can't decide? You can easily solve that problem and get the best possible results by purchasing both!



# When working with the fine tolerances of close-up photography, light control becomes crucial



Close-up shooting places unusual demands on the entire photographic process. Precise control of lighting is essential since there is less room for error. In particular, when shooting with stopped-down apertures in order to maximize depth of field, additional lighting often becomes necessary. Even when shooting conditions don't seem so demanding, a flash can provide the illumination necessary to provide true colors. For example, shooting a flat subject requires less depth of field and can thus be achieved with an open aperture and comparatively fast shutter speed, yet "natural" light may not result in sufficiently bright or true colors.

## Macro Ring Lite ML-3



The specially designed Macro Ring Lite ML-3 provides an excellent way to handle the tough lighting demands of close-up photography. Designed for use with the EF 50mm f/2.5 Compact Macro and the EF 100mm f/2.8 Macro, the ML-3 fits directly around the end of the lens barrel using a special built-in attachment ring. Twin flash tubes are mounted on each side of the ML-3's "ring." The two tubes can be fired together, or each can be fired separately to create shadows in order to bring out details. The ML-3's flash head rotates, so you can control the placement and angle of shadows. Since the ML-3 is an EOS

Speedlite, automatic flash exposure is handled effortlessly with TTL control, even when doing extreme close-up photography. For added confidence, the ML-3 is equipped with an exposure confirmation signal lamp. The Macro Ring Lite ML-3 also has 2 built-in miniature lamps that aid automatic focusing in dark conditions. As with most close-up work, this Speedlite works best with EOS cameras that permit Aperture-priority AE and manual exposure control.

Because of its compact size, coupled with superlative lighting quality and precise TTL exposure control, the Macro Ring Lite ML-3 is ideal for many close-up photography applications. In addition to nature photography, other valuable uses include scientific and medical photography. A standard doctor's office kit might consist of an EOS camera with manual exposure control, an ML-3 and an EF 100mm f/2.8 Macro lens. This combination can produce incredibly high picture quality with point-and-shoot simplicity, even at full life-size 1:1 magnification.

## Off-Camera Close-up Flash Photography



If you try to shoot a close-up using the built-in pop-up flash of your EOS camera, you may run into a very simple problem — the lens barrel casts a shadow over the bottom half of your image. On the

other hand, if you shoot too close with a Canon Speedlite mounted normally on your EOS camera, the illumination from the flash may miss your subject completely. In either case, the lighting angle is insufficient for the extremely close distances involved. A simple way to get around this is by making use of the EOS system's off-camera flash capabilities. By mounting a Speedlite on the Off-Camera Shoe Cord 2 then moving it off to the side, you control the lighting angle while still taking advantage of the EOS system's integrated A-TTL exposure capabilities. For irregularly shaped subjects, this could result in shadows that are too strong. But you can solve this problem by mounting two or more Speedlites and connecting them to the camera. In addition to your Speedlites, you need a TTL Hot Shoe Adapter 3 placed in the camera's accessory shoe, an Off Camera Shoe Adapter and Connecting Cord for each Speedlite, and a TTL Distributor to link the system together. For distances of 60 cm/2 ft. or less, the Connecting Cord 60 is best. The Connecting Cord 300 is 3 m/9.8 ft. in length, for larger set-ups. Any EOS Speedlite can be used for multiple flash photography. In close-up work where very little power is typically required, the compact and economical Speedlite 200E is a good choice. For even greater lighting quality with small 3-dimensional subjects, the Macro Ring Lite ML-3 can be used together with other Speedlites in a multiple flash configuration for close-up photography.



EOS-1 • EF 35-80mm f/4.0-5.6 USM • Speedlite 200E • Off-camera Shoe Cord



EOS-1 • Macro Ring Lite  
ML-3 • EF 100mm f/2.8 Macro



# Use these specialized accessories to get results that are larger than life



EOS-1 • FD-EOS Macro Lens Mount Converter • Auto Bellows • 35mm f/2.8 Macrophoto Lens

## FD-EOS Macro Lens Mount Converter

While limiting the focusing range to close-up shooting distances, the FD-EOS Macro Lens Mount Converter can be used to attach any lens or accessory with an FD mount. (See chart on page 18 for listing of compatible EOS models.) This converter facilitates high-magnification photography with specialized FD system macro accessories, such as the Auto Bellows, 20mm and 35mm Macrophoto lenses, and the Photo Micro Unit F. Because these FD accessories have no electronic contacts, certain EOS functions such as autofocus confirmation, automatic diaphragm control, and spot metering (on the EOS-1) are not possible. However, stop-down metering is possible in other patterns such as evaluative, partial and center-weighted averaging.

## 20mm f/3.5 & 35mm f/2.8 Macrophoto Lenses



FD-EOS Macro Lens Mount Converter



It's hard to believe that these tiny lenses can produce magnifications from 2X to over 10X. But with the FD system Auto Bellows, for instance, the 20mm f/3.5 Macrophoto lens produces magnifications from approximately 4X to 11X, while the 35mm f/2.8 Macrophoto lens covers the range from approximately 2X to 6X. Though unusable for ordinary photography, these specialized optics are much better corrected than conventional lenses for image-degrading problems such as coma and spherical aberration often encountered in high-magnification work. These are the lenses you need for those spectacular photos of an insect's eye or an exquisite high magnification view of just about anything else!



## FD System Close-up Accessories

The following FD System accessories can be used on EOS cameras in combination with the FD-EOS Macro Lens Mount Converter.

### FD System Auto Bellows

A bellows unit fits between the camera body and lens and functions in the same way as an extension tube. Unlike an extension tube, the focal length of a bellows unit can be finely adjusted to achieve very precise amounts of magnification. The FD system Auto Bellows allows continuously variable extension between 55 mm and 191 mm on EOS cameras through use of the FD-EOS Macro Lens Mount Converter, and forms the heart of a flexible high-magnification photographic system. Its reversible front standard contains a threaded socket for use with a supplied Canon Double Cable Release.

### FD Macro Lenses

The FD 50mm f/3.5 Macro, 100mm f/4 Macro and 200mm f/4 Macro lenses can be used with EOS cameras via the FD-EOS Macro Lens Mount Converter either directly on the body or with the FD system Auto Bellows.

### Duplicator 35-52R

This useful accessory is exclusively designed for use with the FD system Auto Bellows and the FD 50mm f/3.5 Macro lens. You can use it to copy 35mm slides or filmstrips. Special features include a bidirectional shift mechanism and an auxiliary bellows system for selective cropping, plus a diffusion screen for even illumination and a built-in filter drawer for color compensation. It is supplied with an optional Roll Film Stage for holding unmounted filmstrips. Magnifications from 0.8X to 3.6X are possible.

### Photo Micro Unit F

At magnifications greater than 11X, the FD system Auto Bellows and Macrophoto lenses are simply not powerful enough. At this point, it makes sense to consider using a microscope as your camera lens. The Photo Micro Unit F (in combination with the FD-EOS Macro Lens Mount Converter) is a fixed-length tube for connecting your EOS camera, either directly or with a bellows, to a microscope with an outer sleeve diameter of 25mm. Photomicrography is possible with or without the microscope's eyepiece lens. (Using the eyepiece lens increases the magnification.)



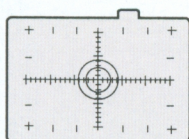
## Viewing Accessories

### Angle Finder B & Magnifier S

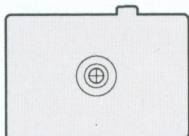


Mounting a camera vertically for copywork or photomicrography (photography through a microscope) results in an awkward viewing angle. Attaching the rotatable Angle Finder B lets you adjust the viewing angle while providing a full screen image that also shows exposure data. Another accessory, the Magnifier S, is a high quality loupe that magnifies the center of the viewfinder image by 2.5X for critical manual focusing confirmation. Both Angle Finder B and Magnifier S are provided with built-in dioptric adjustment for variations in eyesight.

### Focusing Screens



Ec-H (Laser-matte with scale)



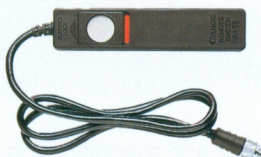
Ec-I (Laser-matte with double cross-hair reticle)

If you own an EOS-1, interchangeable focusing screens can also be helpful for close-up photography. There are 7 screen types available, including Type Ec-H which contains a built-in millimeter-scale ruler to aid in estimating the size of your subject, as well as Type Ec-I, which contains a central aerial-image section with a double cross-hair reticle, suitable for use during photomicrography. A similar set of focusing screens, designated Type E, is available for earlier EOS models including the EOS 620, 600/630, 650 and RT.

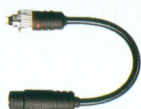
## Remote Control Accessories

### Remote Switch 60T3

This is an electromagnetic cable release fitted with a 60 cm/2 ft. cord and a three-pin terminal that allows independent control of light metering and shutter release. This device and all other T3 accessories are compatible with the EOS-1, and may be used via Grip 20 with the EOS 620, 600/630, 650 and RT.



### Remote Switch Adapter T3



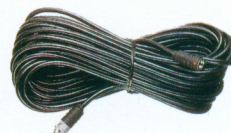
This is a small adapter that enables use of remote control devices with 2-pin subminiature jacks, such as the LC-1, with compatible EOS cameras.

### Cable Release Adapter T3



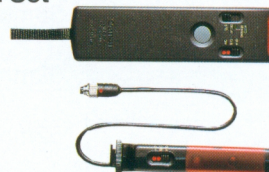
This small adapter enables the use of mechanical cable releases with compatible EOS cameras.

### Extension Cord 1000T3



This 10 m/33 ft. cord can be used with any other T3 accessory for extension.

### Wireless Remote Controller LC-2 Set



This matched transmitter and receiver set employs a pulsed IR beam for remote control up to 5 m/16.4 ft. Two channels are available, and there is a choice of instant shutter release, 2-second delay, or an exclusive Auto Sensing Mode that fires the shutter when an object breaks the path between the transmitter and the receiver. The LC-2 receiver is equipped with a T3 terminal for direct connection to compatible EOS cameras.

### Wireless Remote Controller RC-1



This is a miniature IR transmitter for use with the EOS 10/10s and EOS 100/Elan. It operates at ranges up to 5 m/16.4 ft., and may be set for either instant shutter release or 2-second delay. The RC-1 may also be used to activate the EOS 10/10s and 100/Elan's mirror lock and bulb shutter functions.

### Command Back E1



This interchangeable back for the EOS-1 contains a self-timer and intervalometer that are programmable up to 23:59:59 in 1-second increments. The intervalometer is designed for time-lapse photography, such as capturing the cycle of a blooming flower or the emergence of a butterfly from its chrysalis. The Command Back E1 can also imprint data in the picture, such as date, time, frame count, or a personal code.



# Magnification and Compatibility Charts for CU Lenses & EF25

EF LENS	Filter Size	Focusing Distance	Normal Magnification	Extension Tube EF25	CLOSE-UP LENSES		
					52mm 240	52mm 450	58mm 500T
14mm f/2.8L USM	Gelatin	∞		NR	NC	NC	NC
		0.25m/9.8in.	0.10X	NR	NC	NC	NC
15mm f/2.8 Fish-eye	Gelatin	∞		NR	NC	NC	NC
		0.2m/7.9in.	0.14X	NR	NC	NC	NC
20mm f/2.8 USM	72mm	∞		NR	NC	NC	NC
		0.25m/9.8in.	0.14X	NR	NC	NC	NC
24mm f/2.8	58mm	∞		1.11X	NC	NC	0.05X
		0.25m/9.8in.	0.16X	1.22X	NC	NC	0.20X
24mm f/3.5L TS-E	72mm	∞		1.10X	NC	NC	NC
		0.3m/11.8in.	0.14X	1.21X	NC	NC	NC
28mm f/2.8	52mm	∞		0.95X	0.12X	0.06X	NC
		0.3m/11.8in.	0.13X	1.09X	0.24X	0.19X	NC
35mm f/2	52mm	∞		0.77X	0.15X	0.08X	NC
		0.25m/9.8in.	0.23X	1.00X	0.36X	0.30X	NC
45mm f/2.8 TS-E	72mm	∞		NR	NC	NC	NC
		0.4m/1.3ft.	0.16X	NR	NC	NC	NC
50mm f/1.0L USM	72mm	∞		NR	NC	NC	NC
		0.6m/2.0ft.	0.11X	NR	NC	NC	NC
50mm f/1.4 USM	58mm	∞		0.53X	NC	NC	0.10X
		0.45m/1.5ft.	0.15X	0.68X	NC	NC	0.25X
50mm f/1.8 II	52mm	∞		0.53X	0.21X	0.11X	NC
		0.45m/1.5ft.	0.15X	0.68X	0.36X	0.26X	NC
50mm f/2.5 Macro	52mm	∞		0.54X	0.21X	0.11X	NC
		0.23m/9.0in.	0.50X	1.04X	0.68X	0.60X	NC
85mm f/1.2L USM	72mm	∞		0.33X	NC	NC	NC
		0.95m/3.1ft.	0.11X	0.42X	NC	NC	NC
85mm f/1.8 USM	58mm	∞		0.32X	NC	NC	0.17X
		0.85m/2.9ft.	0.13X	0.44X	NC	NC	0.31X
90mm f/2.8 TS-E	58mm	∞		0.31X	NC	NC	0.17X
		0.5m/1.6ft.	0.29X	0.60X	NC	NC	0.50X
100mm f/2 USM	58mm	∞		0.28X	NC	NC	0.19X
		0.9m/3.0ft.	0.14X	0.42X	NC	NC	0.35X
100mm f/2.8 Macro	52mm	∞		0.27X	0.42X	0.22X	NC
		0.31m/1.0ft.	1.00X	1.38X	1.42X	1.22X	NC
135mm f/2.8 with SF	52mm	∞		0.20X	0.56X	0.30X	NC
		1.3m/4.3ft.	0.12X	0.34X	0.72X	0.44X	NC
200mm f/1.8L USM	48mm DI	∞		0.14X	NC	NC	NC
		2.5m/8.2ft.	0.09X	0.23X	NC	NC	NC
200mm f/2.8L USM	72mm	∞		0.14X	NC	NC	NC
		1.5m/4.9ft.	0.16X	0.31X	NC	NC	NC
300mm f/2.8L USM	48mm DI	∞		0.09X	NC	NC	NC
		3.0m/9.8ft.	0.11X	0.21X	NC	NC	NC
300mm f/4L USM	77mm	∞		0.09X	NC	NC	NC
		2.5m/8.2ft.	0.13X	0.24X	NC	NC	NC
400mm f/2.8L USM	48mm DI	∞		0.07X	NC	NC	NC
		4.0m/13.2ft.	0.11X	0.19X	NC	NC	NC
400mm f/5.6L USM	77mm	∞		0.07X	NC	NC	NC
		3.5m/11.5ft.	0.12X	0.21X	NC	NC	NC
500mm f/4.5L USM	48mm DI	∞		0.05X	NC	NC	NC
		5.0m/16.4ft.	0.11X	0.17X	NC	NC	NC
600mm f/4L USM	48mm DI	∞		0.05X	NC	NC	NC
		6.0m/19.7ft.	0.11X	0.16X	NC	NC	NC

These charts have been designed to provide compatibility and magnification data for all current EF lenses when used with the Extension Tube EF25 and the close-up lenses 52mm CU 240, 52mm CU 450, and 58mm CU 500T. For more information on these accessories, see pp. 6-9. For a basic definition of magnification, see page 4.



EF LENS	Filter Size	Focusing Distance	Normal Magnification	Extension Tube EF25	CLOSE-UP LENSES		
					52mm 240	52mm 450	58mm 500T
20-35mm f/2.8L @ 20mm	72mm	∞		NR	NC	NC	NC
		0.5m/1.6ft.	0.05X	NR	NC	NC	NC
20-35mm f/2.8L @ 35mm		∞		0.80X	NC	NC	NC
		0.5m/1.6ft.	0.08X	0.92X	NC	NC	NC
20-35mm f/3.5-4.5 @ 20mm	77mm	∞		NR	NC	NC	NC
		0.34m/1.1ft.	0.08X	NR	NC	NC	NC
20-35mm f/3.5-4.5 @ 35mm		∞		NR	NC	NC	NC
		0.34m/1.1ft.	0.13X	NR	NC	NC	NC
28-80mm f/2.8-4L USM @ 28mm	72mm	∞		0.94X	NC	NC	NC
		0.5m/1.6ft.	0.07X	NR	NC	NC	NC
28-80mm f/2.8-4L USM @ 80mm		∞		0.35X	NC	NC	NC
		0.5m/1.6ft.	0.20X	0.62X	NC	NC	NC
28-80mm f/3.5-5.6 USM @ 28mm	58mm	∞		0.94X	NC	NC	0.06X
		0.5m/1.6ft.	0.07X	1.08X	NC	NC	0.12X
28-80mm f/3.5-5.6 USM @ 80mm		∞		0.36X	NC	NC	0.15X
		0.5m/1.6ft.	0.18X	0.39X	NC	NC	0.32X
28-105mm f/3.5-4.5 USM @ 28mm	58mm	∞		0.94X	NC	NC	0.06X
		0.5m/1.6ft.	0.07X	1.1X	NC	NC	0.12X
28-105mm f/3.5-4.5 USM @ 105mm		∞		0.27X	NC	NC	0.2X
		0.5m/1.6ft.	0.19X	0.59X	NC	NC	0.67X
35-80mm f/4-5.6 USM @ 35mm	52mm	∞		0.75X	0.14X	0.08X	NC
		0.38m/1.3ft.	0.12X	0.99X	0.25X	0.19X	NC
35-80mm f/4-5.6 USM @ 80mm		∞		0.35X	0.32X	0.16X	NC
		0.38m/1.3ft.	0.25X	0.74X	0.52X	0.39X	NC
35-105mm f/4.5-5.6 USM @ 35mm	58mm	∞		0.75X	NC	NC	0.06X
		0.85m/2.8ft.	0.05X	0.73X	NC	NC	0.14X
35-105mm f/4.5-5.6 USM @ 105mm		∞		0.27X	NC	NC	0.22X
		0.85m/2.8ft.	0.16X	0.44X	NC	NC	0.42X
35-135mm f/4-5.6 USM @ 35mm	58mm	∞		0.75X	NC	NC	0.07X
		0.75m/2.5ft.	0.05X	0.86X	NC	NC	0.12X
35-135mm f/4-5.6 USM @ 135mm		∞		0.21X	NC	NC	0.27X
		0.75m/2.5ft.	0.15X	0.47X	NC	NC	0.33X
35-350mm f/3.5-5.6 LUSM @ 35mm	72mm	∞		0.75X	NC	NC	NC
		0.63m/2.1ft.	0.07X	0.84X	NC	NC	NC
35-350mm f/3.5-5.6 LUSM @ 350mm		∞		NR	NC	NC	NC
		2.2m/7.2ft.	0.15X	NR	NC	NC	NC
70-210mm f/3.5-4.5 USM @ 70mm	58mm	∞		0.38X	NC	NC	0.14X
		1.2m/3.9ft.	0.07X	0.47X	NC	NC	0.20X
70-210mm f/3.5-4.5 USM @ 210mm		∞		0.13X	NC	NC	0.41X
		1.2m/3.9ft.	0.17X	0.35X	NC	NC	0.51X
75-300mm f/4-5.6 USM @ 75mm	58mm	∞		0.35X	NC	NC	0.21X
		1.5m/4.9ft.	0.07X	0.39X	NC	NC	0.23X
75-300mm f/4-5.6 USM @ 300mm		∞		0.09X	NC	NC	0.58X
		1.5m/4.9ft.	0.25X	0.39X	NC	NC	0.91X
80-200mm f/2.8L @ 80mm	72mm	∞		0.33X	NC	NC	NC
		1.8m/5.9ft.	0.05X	0.37X	NC	NC	NC
80-200mm f/2.8L @ 200mm		∞		0.14X	NC	NC	NC
		1.8m/5.9ft.	0.13X	0.27X	NC	NC	NC
80-200mm f/4.5-5.6 USM @ 80mm	52mm	∞		0.33X	0.34X	0.18X	NC
		1.5m/4.9ft.	0.07X	0.39X	0.45X	0.27X	NC
80-200mm f/4.5-5.6 USM @ 200mm		∞		0.14X	0.79X	0.44X	NC
		1.5m/4.9ft.	0.16X	0.33X	1.03X	0.63X	NC
100-300mm f/4.5-5.6 USM @ 100mm	58mm	∞		0.26X	NC	NC	0.21X
		1.5m/4.9ft.	0.08X	0.37X	NC	NC	0.28X
100-300mm f/4.5-5.6 USM @ 300mm		∞		0.09X	NC	NC	0.58X
		1.5m/4.9ft.	0.20X	0.35X	NC	NC	0.91X
100-300mm f/5.6L @ 100mm	58mm	∞		0.27X	NC	NC	0.20X
		1.4m/4.6ft.	0.09X	0.34X	NC	NC	0.31X
100-300mm f/5.6L @ 300mm		∞		0.09X	NC	NC	0.59X
		1.4m/4.6ft.	0.26X	0.39X	NC	NC	0.98X

NR = Not Recommended  
TS-E = Tilt-Shift Lens for EOS

NC = Not Compatible  
DI = Drop-In Filter

L = L-Series Professional Lens  
USM = Ultrasonic Motor



# Compatibility Chart for EOS Cameras and Close-up Accessories

■ = Compatibility      NR = Not Recommended      NC = Not Compatible  
 ▲ = Requires FD-EOS Macro Lens Mount Converter  
 ▼ = Requires Grip GR-20 with T3 Remote Control Socket

	EOS-1	RT	5 A2/A2E	10 10s	100 Elan	1000* Rebel	620 650	600 630	700	750 850
EF Close-Up Accessories										
Extension Tube EF25	■	NR	■	■	■	NR	NR	NR	NR	NR
52mm Close-up Lens 240	According to EF Lens									
52mm Close-up Lens 450										
58mm Close-up Lens 500T										
FD Close-up Accessories										
FD-EOS Macro Lens Mount Converter	■	■	NR	NR	NR	NR	■	■	NR	NR
Auto Bellows	▲	▲	NR	NR	NR	NR	▲	▲	NR	NR
Duplicator 35-52R	▲	▲	NR	NR	NR	NR	▲	▲	NR	NR
20/3.5 & 35/2.8 Macrophoto Lenses	▲	▲	NR	NR	NR	NR	▲	▲	NR	NR
FD Macro Lenses	▲	▲	NR	NR	NR	NR	▲	▲	NR	NR
Photo Micro Unit F	▲	▲	NR	NR	NR	NR	▲	▲	NR	NR
Remote Control Accessories										
Remote Switch 60T3	■	▼	■	NC	NC	NC	▼	▼	NC	NC
Remote Switch Adapter T3	■	▼	■	NC	NC	NC	▼	▼	NC	NC
Cable Release Adapter T3	■	▼	■	NC	NC	NC	▼	▼	NC	NC
Extension Cord 1000T3	■	▼	■	NC	NC	NC	▼	▼	NC	NC
Grip GR-20 with T3 Remote Socket	NC	■	NC	NC	NC	NC	■	■	NC	NC
Remote Controller RC-1	NC	NC	NC	■	■	NC	NC	NC	NC	NC
Wireless Controller LC-2 Set	■	▼	■	NC	NC	NC	▼	▼	NC	NC
Command Back E1	■	NC	NC	NC	NC	NC	NC	NC	NC	NC
Flash Accessories										
Speedlite 480EG	■	■	■	■	■	■	■	■	■	■
Speedlite 430EZ	■	■	■	■	■	■	■	■	■	■
Speedlite 300EZ	■	■	■	■	■	■	■	■	■	■
Speedlite 200E	■	■	■	■	■	■	■	■	■	■
Macro Ring Lite ML-3	■	■	■	■	■	■	■	■	■	■
Transistor Pack E	Transistor Pack E and Compact Battery Pack E are compatible with Speedlits 480EG** and 430EZ									
Compact Battery Pack E										
TTL Hot Shoe Adapter 3	■	■	■	■	■	■	■	■	■	■
Connecting Cord 60	■	■	■	■	■	■	■	■	■	■
Connecting Cord 300	■	■	■	■	■	■	■	■	■	■
TTL Distributor	■	■	■	■	■	■	■	■	■	■
Off-Camera Shoe Adapter	■	■	■	■	■	■	■	■	■	■
Off-Camera Shoe Cord 2	■	NR	■	■	■	■	■	NR	■	■
Viewing Accessories										
Angle Finder B	■	■	■***	■	■	■	■	■	■	■
Magnifier S	■	■	NC	■	■	■	■	■	■	■

\* This information also applies to the EOS models 1000F/Rebel S, 1000N/Rebel II and 1000FN/Rebel SII.

\*\* Combination of 480EG and Compact Battery Pack E is not recommended due to insufficient power.

\*\*\* Requires exclusive Angle Finder Adapter Ed



## CLOSE-UP ACCESSORIES THAT CAN BE COMBINED WITH THE MACRO LENS MOUNT CONVERTER FD-EOS

1 Macro Lens Mount Converter FD-EOS

2 Close up Lenses 450/240

3 FD 50 mm f/1.4

4 Extension Tube FD 25U · 50U

5 Extension Tube M Set

6 Macro Auto Ring\*

7 FD 50mm f/3.5 MACRO

8 Macro Hood 2\*

9 Macrophoto Adapter MA-52 · 55 · 58\*

10 Macrophoto Lens 35mm f/2.8

11 Macrophoto Lens Adapter

12 Macrophoto Lens 20mm f/3.5

13 Copy Stand 5

14 Roll Film Stage\*

15 Duplicator 35-52R

16 Slide Duplicator Attachment Ring\*  
for 48, 52, 55, 58

17 Auto Bellows

18 Macro Stage\*

19 Focusing Rail

20 Copy Stand 4\*

21 Photomicro Unit F

22 Extension Tube M5

23 Attachment Ring for Handy Stand F\*

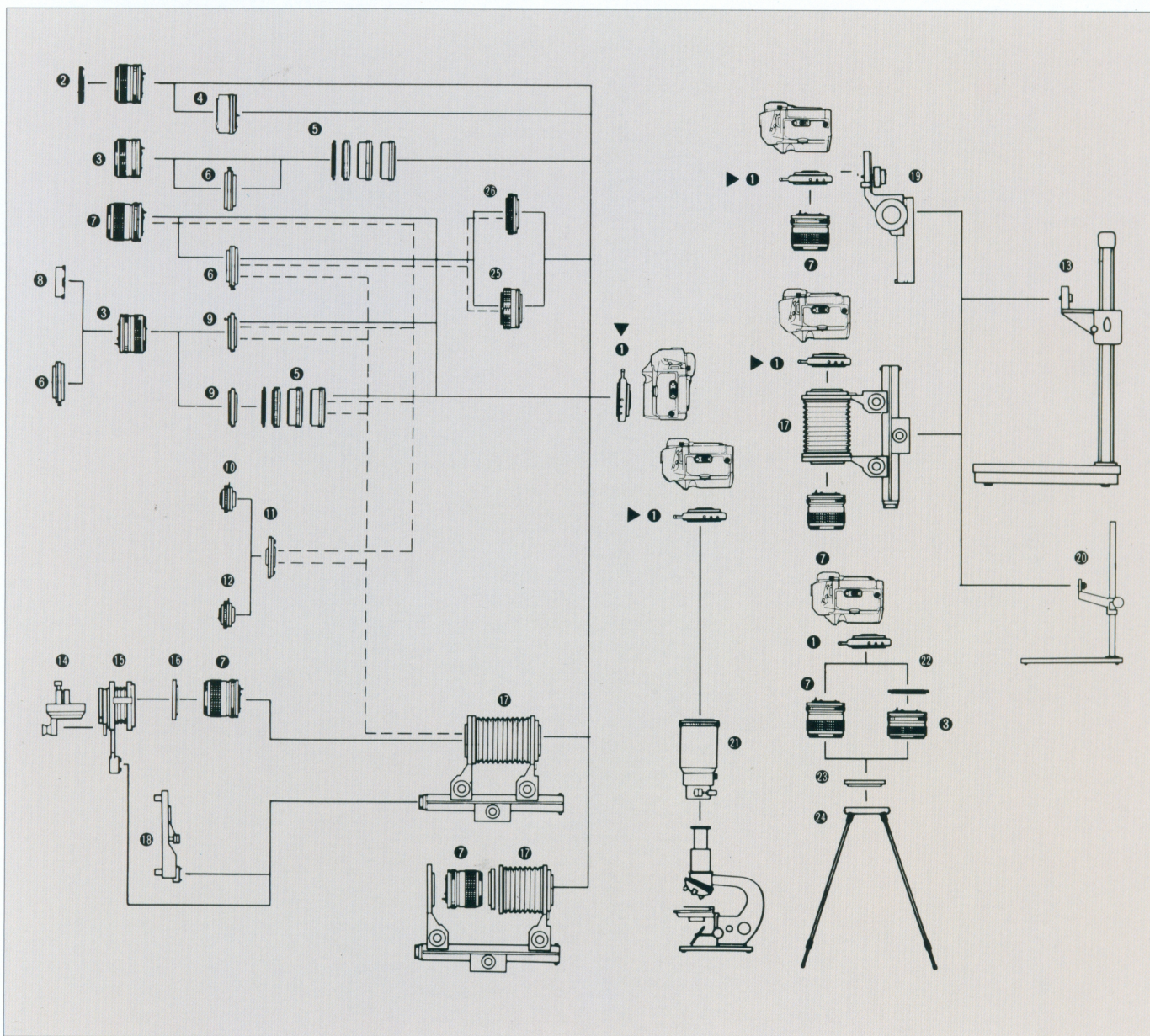
48 · 52 · 55 · 58

24 Handy Stand F\*

25 Vari-Extension Tube M30-55

26 Vari-Extension Tube M15-25

\* Indicates discontinued products. Availability varies from area to area.







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