Getting to grips with macro photography

Macro photography opens up a whole new world, and can be especially tricky when shooting outdoors. Here are some words of wisdom, gathered from around the web.

1. Use a tripod

In macro photography, even the very slightest movement of the camera during the exposure can result in camera shake. Use a sturdy tripod with an infrared remote or cable release to keep it steady while you shoot. Of course, those wild flowers on the ground can get tricky to photograph so look for a tripod with short 'folded' size, or look for a specialist one that allows you to get right down to ground level. Try it out in the shop, just lie down and photograph some shoes – you won't look silly. Honestly.

2. Shutter speeds

Faster shutter speeds reduce the risk not only of camera shake, but also of blurring caused by subject movement, especially when you're shooting flowers outdoors in even the slightest breeze. However, the trade-off is larger apertures (see below). The only way to improve (shorten) shutter speeds is to either have a fast lens or work with a higher ISO. But that introduces unwelcome digital noise into your shot – best not to go above ISO200 or 400 (but you'll know how well, or otherwise, your camera deals with Noise so make your own judgement).

3. Aperture settings

At their closest focus settings, to maximise magnification macro lenses have a tiny depth of field, so anything more than a few millimetres in front of or behind the focus point will be blurred. Using a smaller aperture will give you a greater depth of field, but will require you to use a slower shutter speed.

4. Sensitivity

In order to keep the shutter speed reasonably fast, while also using a fairly small aperture of around f/11 to f/16, increase the camera's sensitivity (ISO) as necessary, but don't go above ISO400 unless you have a Full Frame camera, due to increased Digital Noise.

5. Mirror Lock-up

Available in your camera's Custom Settings menu, Mirror Lock-up enables the viewfinder mirror to flip up as a separate function, before the shot is taken. This avoids camera shake caused by 'mirror bounce'.

6. Get flash

Flash can really bring out the detail in small objects and provide more flexibility for shutter speeds and apertures. However, the closeness of the lens to the subject can obscure the light from the camera's pop-up flash, so a separate flashgun is essential. A specialist ring flash that fits around the end of the lens is the best solution to this problem.

7. Manual focus

Focus is critical when shooting with tiny depths of field, so it's usually impossible to auto-focus on a selected point and then adjust the camera position to recompose the shot. Instead, switch to manual focus and selectively focus on the area that you want to appear sharp.

8. A bug's life

People who shoot flowers in macro mode often develop a fascination with bugs. Look out for creepy crawlies, which can turn into amazing alien beings through the power of a macro lens.

9. Spray it

The appearance of flowers, drinks bottles and other objects can be much improved with a sprinkling of water droplets. Hand-held sprayers are ideal.

10. Move indoors

Try shooting flowers and other little objects indoors. Here, the small depth of field can work to your advantage, because the background will automatically be thrown out of focus, isolating the main subject of the shot.

Now for some further explanation

From the texture strawberry skin and veins in leaves to the patterns left by rain on a window pain, embracing macro photography will allow you to see textures and pattern that are often overlooked in everyday life. The world looks so different up close – your breadth of subjects is only limited by your imagination. Here we equip you with the key technical knowledge you need to shoot killer close-ups.

Get the gear to get close

If close-up photography is your thing, then you'll want to invest in a dedicated macro lens, which will not only let you get staggeringly close but provide bitingly sharp results. Equip yourself with all the knowledge you need to buy the right macro lens for you

Macro lenses come in various focal lengths, but the most common lenses tend to be 50mm, 60mm, 100mm, 105mm and 180mm. What difference does this make? Lots. Firstly, the shorter the focal length, the lower the cost – that rule of thumb applies across all brands, although a fast aperture (large aperture – lower number, remember) will push the price up. As well as being cheaper, however, the lower the focal length, the smaller and lighter the lens will be. So, is a lower focal length better? For your wallet and back yes, but not always for your photography. The most important factor to consider, in terms of photography itself, is that the lower the focal length, the closer you need to get to your subject. If you know you'll only be shooting static subjects, then it's not such a big deal but anyone who's eager

to shoot insects and other small creatures should consider spending a little more and going for a 100mm or 105mm lens. It's seriously frustrating when you're continuously scaring potential subjects away because you have to get so close. Zoom lenses (which are generally not so fast and optically slightly inferior) can force you to be a really long distance from your subject. Not necessarily a problem in itself but it also means that your depth of field (the amount in sharpest focus) may be a lot greater than you want, possibly bring the background into focus when you ideally want it soft and blurred. Zoom lenses usually have a smaller maximum aperture, like f3.4 or f4, which also increases DOF automatically.

More about Equipment

If you're serious about capturing the world up close sooner or later you'll feel restricted by your normal lenses and start to think about investing in a dedicated macro lens. This investment will see you discover a whole new miniature world and you'll be glad you took the plunge. What to look for in a Macro lens:

About macro lenses

Normal lenses are optimised so that sharpness and contrast get better towards infinity focusing, macro lenses are the opposite – providing brilliant sharpness, contrast and high general image quality up close. Macro lenses are generally bitingly sharp bits of glass, which is why many pro photographers use them as portrait lenses (although sometimes they can be too sharp for this!). As well as the ability to capture truly stunning close-ups, they're capable of shooting anything else you come across. I'm looking to buy a 55mm Macro lens one day, when I get rich.... it makes a great portrait lens on a APS-C camera (most DSLRs).

Magnification ratio
The magnification ratio, or reproduction ratio as it's also known, is a crucial feature. True macro lenses offer a magnification ratio of 1:1, meaning your subject will be the same size as the image sensor it was taken on. 1:2 means the subject will be double the height and width and so on. If magnification is less then 1:1, it's unlikely to be a true macro lens.

Focusing mechanisms
All modern macro lenses have an auto-focus facility, but if you're buying a used lens you could consider an old model that only has manual focus – not a problem for macro, but inconvenient if you want to use it more generally too. Auto-focus lenses will either have 'silent' motors or older screw-driven ones - you'll pay more for a silent lens, but it maybe worth it if you're concerned about noise scaring subjects.

It's also worth noting whether the lens focuses internally – if it does it won't extend in length as you change focus, but a variable-focus lens will. This is largely down to personal preference and if you have a sturdy tripod any change in the centre of gravity caused by lens movement should be combated anyway.

Vibration Reduction
Is Vibration Reduction (VR) important on a macro lens? If you're planning to use a tripod at all times then no. If you may do some spur-of-the-moment hand-held work or are planning to use it generally then you'll probably want a VR lens. My camera has VR built-in to the camera body, so I don't need to pay the extra for a new lens with VR. (For me, I wouldn't

often need it in Macro or Portraits, as they'd be with a tripod 90% of the time).

You don't *need* a dedicated macro lens to get really close - reversing rings, extension tubes and close-up filters all work well and are cheaper options.

Reversing Rings

Reversing rings are a low-cost, yet effective way to get into macro photography – they really do give impressive results. A reversing ring is simply a metal hoop with a bayonet fitting, to match your lens's filter thread, on one end and a screw fitting on the other. As the name suggests, they work by mounting the lens directly onto the camera body, introducing a short extension, which makes the lens focus close and gives a high but fixed magnification. Your working distance also becomes fixed.

You'll get life-sized images that are razor sharp in the middle, but softer at the edges than you'd get with a macro lens. Only a select few offer electronic coupling too – be prepared to go Manual!

Pros: Inexpensive, very small, life-sized results can be used with tubes or bellows to get closer than 1:1.

Cons: Fixed magnification, fixed focus point, usually only work in Manual or Aperture Priority modes.
Price range: From around $50 for a known brand.

Extension Tubes

Extension tubes are basically metal tubes with bayonet fittings on both ends, so they fit between the camera and lens and extend the distance from lens to camera sensor. The tubes are available in a variety of lengths and can be bought singularly or in a set of three. If you opt for good quality tubes, they'll connect your camera's electronics with those of your lens, enabling you to retain control of both the aperture and auto-focus. Plus, lens quality will remain unaffected. One thing to consider when using tubes is that the longer the combined length of the tubes, the longer the exposure – your DSLR's auto modes will compensate for this, but the amount of light getting to your sensor will be of a similar reduction to 'closing down' by two or three 'stops'. If you're interested, ask at your normal photographic supplier.

Pros: Good quality results, varying degrees of magnification, lightweight.
Cons: More fiddly than other methods, the longer the lens you're using, the more extension tubes you'll need.
Price range: For branded tubes around $100 each or $200 for a set of three.

Close-up Filters

Close-up filters, also known as close-up lenses or macro filters, attach to the front of your lens or lens adapter. They have dioptre ratings stretching from +1 to +10 and can be bought individually or as sets. You can stack the filters for increased magnification, but when you do so you have to put the strongest filter closest to the lens and work down.

Close-up filters decrease your depth of field, so you have to work with small apertures to push that back up again. Quality isn't as good as with a reversing lens or extension tubes, but they're a good first step into the world of macro, especially for occasional use.

Pros: Small, light, cheap and easy to use.
Cons: Quality isn't as good as other methods, depth of field is severely reduced.
Price range: Hoya sets cost around $120.

Macro lenses

If you're serious about close-up photography, and want professional-looking results, a dedicated Macro Lens is the obvious choice. The quality you'll get from a macro lens is second to none, because they're manufactured solely for this purpose. Whereas normal lenses are optimised so that sharpness and contrast get better towards infinity focusing, macro lenses are the opposite – providing brilliant sharpness, contrast and high general image quality up close. Macro lenses are generally bitingly sharp bits of glass, which is why many pro photographers use them as portrait lenses (although sometimes they can be too sharp for this!). As well as the ability to capture truly stunning close-ups, they're capable of shooting anything else you come across.

Pros: Superb optical quality, lenses double as a general purpose lens.
Cons: Most expensive option for close-ups.
Price range: From around $300 for good quality – can be much more.

Focus manually

Auto-focus does not work with macro photography – it's as simple as that. In other types of photography you could use spot-metering – focus, half-press the shutter and recompose. However, you really don't want to be holding the shutter when you actually take the picture – the risk of extra camera movement is too much. Also, due to the nature of macro photography you'll be working with tiny depths of field, so it'll be almost impossible to use auto-focus and then adjust your camera's position to recompose the shot. You need to switch to manual focus and selectively focus on the most important part of the image (the area which you want to appear pin sharp).

Use a tripod

There is nothing more frustrating than getting amazingly close to your subject then not getting it pin sharp – just as your subject is magnified, so is the tiniest amount of camera shake. This is why a tripod is absolutely essential for macro photography.

Sturdy tripods are best for macro work (the lightweight aluminium models can get blow about a bit outside). Here are three things to look out for when choosing a tripod for macro photography:
1) Legs that are individually adjustable, in all directions – this makes getting close in on awkward angles much easier.
2) Screw tightening legs – generally much sturdier than clip legs.
3) A centre column that goes down to ground level – so you don't miss out on that bugs eye

view.

Banish shake

Although your tripod will always be your main defence against camera shake, there are other simple things you can do to help in the fight against shake:

Use a remote release: Get for long exposures as well as macro work, with a remote release cable you're not physically pressing to shutter button, so you can't cause any movement.
Use your self-timer: If you don't have a remote release cable and you are working with static subjects your self-timer is a good alternative and you won't have to physically touch your camera when the shot is taken.
Use Mirror Lock-up: Mirror Lock-up enables the viewfinder mirror to flip up as a separate step, before you shoot and so avoids camera shake caused by 'mirror bounce'. Find the Mirror Lock-up function in your DSLR's Custom Settings menu. Most cameras will lock the mirror prior to exposure with either a remote release or timer.

Aperture / shutter speed trade-off

Using a fast shutter speed will reduce the risk of camera shake and blur caused by subject movement (especially handy if you're shooting outdoors in a slight breeze). The trade-off however is larger apertures, which give you a small depth of field. On the other side of the coin, using a slow shutter speed will give you greater depth of field, but will leave you open to a bigger risk of camera shake.

ISO know-how

Although there is obviously no way around the aperture/shutter speed trade-off completely, knowing how to use your ISO can help. To keep your shutter speed reasonably fast while using a fairly small aperture of between f/11 and f/16 you can increase your cameras ISO sensitivity – just remember the higher the ISO the more digital noise you'll see in your images.

Banish background distractions

Even though your background will be out-of-focus it can still be distracting – blobs of bright colour can really take the attention away from your subject. Which obviously isn't what you want. If you're photographing flowers and bugs outside don't make the mistake of thinking you have to keep the background natural – some simple coloured card works really well and will give your macros a modern look.

Get the light right

Quality light is essential in all genres of photography and macro is no exception. For macro work quantity is an issue as well as quality as the main draw back is loss of light – small apertures and long shutter speeds will let the light in though. The longer focal lengths you get with more expensive macro lenses make letting the light in easier because 1:1 magnification is achievable from further away.

When it comes to projecting more light on your subjects a reflector can’t be beaten in terms of cost and ease of use. You can get a set of a couple of small reflectors, around 6” in diameter, very cheaply from most camera shops (the full-size reflectors are very expensive and you only need a few square inches of reflection). If you’re shooting in harsh directional sunlight a diffuser will soften the light and will also come in handy if you’re shooting indoors. If you are working indoors a few simple desk lamps can achieve the same effects you’d get with pro lighting kit – just alter your white balance to suit.

If you’ve got an external flash it’ll be invaluable – you’ll get around the problem of loss of light and you’ll be able to use much shorter shutter times too. Flash guns do often get in the way of small subjects though and often can’t reach the ideal angle – an off camera cord makes everything a lot more flexible and is a good idea.

A ring flash is considered to be the wholly grail of macro lighting and produce even light from a circular shaped flash tube, but are expensive. Light tents are worth considering and good value if you’re shooting relatively small objects and want even lighting.

The pop-up flash on top of your camera will not do a very good job – they are too harsh and too directional – you'd 'flood' the subject with too much light..... and quite possibly cast a shadow from the end of the lens onto the subject.