

## Caring for and cleaning your camera

Remember your camera is a tool and while you can and should treat all tools with care and respect. It obviously makes good sense to care for your camera so that it's in prime condition to do its job of taking photographs, it's important not to get to the point that you worry more about getting your a bit of dirt on the camera than about taking a good photograph.

### Protecting your camera

#### Padded camera case or bag

A decent camera bag or case will afford your camera some degree of protection from knocks and bumps while it's being carried and it will also give you somewhere it put spare batteries, memory cards and the odd filter to two.



#### Camera Strap

If your camera has a neck-strap, then use it! It will prevent you from dropping your camera.



#### Lens Cap

When not actually taking photographs keep the lens cap on, this will help protect the lens from dust and debris in the air and reduce the risk of damage.

Many lens caps come with a detachable lanyard to prevent the cap falling off and being lost, but allowing it to be completely removed easily as required. If your lens cap does not have such a strap, then these can be purchased very cheaply.



#### UV or Skylight Filter

The front element of your lens is exposed to all sorts of hazards can be easily scratched and or covered in dust, debris and grease from your fingers. All of these can affect the quality of the photos that your lens is exposed to all sorts of hazards can be easily scratched and or covered in dust, debris and grease from your fingers. All of these can affect the quality of the photos that you take.

Most bridge and SLR cameras have the facility to put a screw in filter over the lens. I recommend that you permanently have a clear UV or Skylight filter in place, if the filter gets dusty or greasy you can clean it easily, if it gets scratched you can throw it away any buy a new one for a couple of pounds.

It's much cheaper than buying a new lens, or camera

Screw fit filters have to be purchased in a size to fit the lens. Most lenses will say on the front of the lens what the filter thread diameter is, depending to the lens this is normally between 52 and 62mm in this case, its 58mm (notice the  $\phi$ 58 marked on the outside of the lens). If your lens is not marked with a filter size then consult the manual.



### **LCD Screen protector**

The LCD screen on the back of most cameras is prone to damage, especially from scratching on belt buckles and the like. Simple cost effective protection is available for most cameras. Clear self-adhesive, flexible, protectors are available at low cost. More robust glass protectors are also available, while some cameras can also be fitted with clip-on polycarbonate protectors.



### **Camera Armour**

If you want to protect your camera “out of the case” then one option is to use “Camera Armour”, this is essentially a custom made rubberised jacket that fits around the camera protecting it, while still allowing access to all the controls. The only trouble is it’s only available for a limited range of cameras



### **Changing lenses**

The beauty of a DSLR camera is the ability to change the lens. A DSLR is at its most vulnerable however, when the lens is removed as dust from the air can get into the camera body. To minimise the risk you must use common sense. Hold the camera body with the lens facing the ground, and change lenses as quickly as possible. Keep the rear element of the lenses clean by making sure the end-caps are quickly replaced. Obviously avoid changing lenses in “hostile environments”, such as on the beach or anywhere there are high levels of dust.

## Cleaning your camera

### Cleaning the camera Body

Most dust and crud that collects on the outside of your camera can be cleaned off with a dry cloth. Microfibre cloths are very good as they actually trap the dirt in the cloth and don't just spread it around. Persistent grubby marks can be removed by dampening the cloth a little with water or lens cleaning fluid – do not use any solvents or polishes of any sort – it may damage the camera finish. Always drip a few drops of fluid onto the cloth – never but the fluid directly into the camera. You may also find that a soft toothbrush is useful for gently cleaning along the groves in the rubberised grips on some lens barrels.

### Cleaning the Lens, LCD and eyepiece

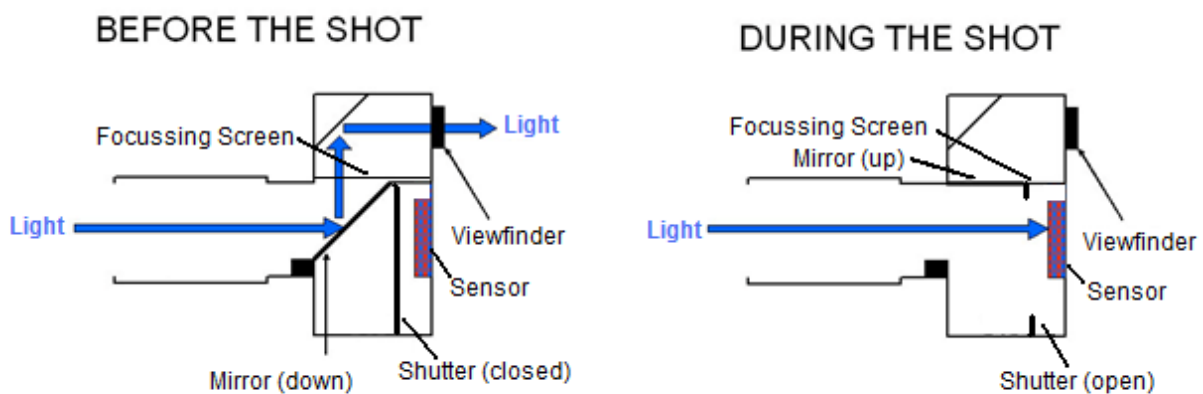
Don't just wipe the glass with a dry cloth, the this can result in the various bits of debris scratching the surface. Try to blast dust off the lens, LCD and eyepiece with a blower or canned air. A soft brush can also be used. Persistent dirt and marks should be removed with soft optical lens cloth (not the same cloth that you have used on the camera body), onto which a couple of drops of cleaning fluid have been dropped Always drip the fluid onto the cloth and then wipe the lens; never put fluid directly onto a lens. Never use the sort of LCD cleaning fluids or cloths designed for LCD computer screens and TVs on the lens or eyepiece, the solvents in these, while perfectly safe on LCD screens can affect the delicate optical coating found on many lenses any eyepieces.

### Internal cleaning of DSLR Cameras

If you have a compact or bridge camera than that got it covered, if you have a DSLR camera tough, you also need to worry about the inside occasionally. Two areas may occasionally need attention, the mirror and focussing screen that are used to view the image through the eyepiece, and the sensor. In both events do not do this routinely – only when it needs it, and if you are in any way unhappy about any of it, have it done professionally. Before you begin any internal cleaning make sure that you have cleaned the camera externally and that you are working in as clean and as dust free an area as is possible – if you don't want to make matters worse. Do not use any canned compressed air to clean inside the camera, it can contain moisture, or even worse, oil residues, that are very difficult to remove.

### Cleaning the mirror and focussing screen

While the mirror and focussing screen let you see the image, they have no effect on the image that is recorded on the sensor as when you take the photo the mirror flips up out of the way just before the shutter opens, as shown below



If you can see specks through the viewfinder but these don't appear on your image then unless they are large or very distracting its best to leave well alone – it won't make any difference to your photos and you may just move dust onto the sensor where it will make its presence felt on your images. If you must then use a hand held blower on the mirror and screen. The mirror is very delicate, so don't be tempted to touch it, even with a soft brush or cloth. A fine soft brush (which the hairs do not drop out of), can be used on the focussing screen above the mirror, but don't allow it to touch the mirror.

## Cleaning the Sensor

Again the overriding advice is to do this as little as possible and if in any doubt, get it done professionally.

Let me first point out that while I am going to refer to this as “cleaning the sensor” it is in actual fact not the actual sensor that is being cleaned – let me explain.

The Sensor, the light sensitive CCD or CMOS chip is actually protected by a precision piece of optical glass sometimes referred to as the low-pass, dichroic or moiré filter. This filter serves many purposes, not the least of which are cutting out unwanted infra-red light and protecting the even more delicate sensor behind. The low-pass filter in modern DSLRs is often externally coated with either ITO (Indium Tin Oxide) or fluorite to prevent static build up and to shed dust easily. This external coating makes it even more vital that it is treated with great care as it can be easily damaged.

The first step is to determine if cleaning is actually needed. The best way to determine this is to set your camera to use as small an aperture as possible ( f22 or f32 for example), as this will make any dust spots more visible, and point it at something far away, light an even in colour, a nice blue sky or a white wall is ideal. Don't worry about a slow shutter speed and camera shake, indeed its actually better to move the camera a bit, the image may be blurred but this will only make the dust spots more visible, as they will move with the camera and remain sharp. Take several shots pointing the camera in a slightly different place each time (just in case there is a bird in the sky or mark on the wall that you might mistake for a dust spot).



Look at the image on a large screen (not on the camera's LCD) and if you see blobs occurring in the same place on multiple images then you have dust on the sensor. If you have photoshop, use the Image->Adjustments->Levels tools and you can make the spots (sometimes referred to a “Dust Bunnies”) really stand out.

So once you are sure that the sensor need cleaning then there are a number of options open to you.

### Self-Clean Option

The first thing to try is the camera's own anti-dust system. Most modern DSLRs have a self-clean feature that vibrates the sensor rapidly to shake off any dust, with varying degrees of success. With some cameras this happens automatically on start-up, with others you have to select a special menu option. This is a safe option to try – it will not do any harm and it may cure the problem, if not then more drastic action is needed.

### Cleaning Mode

To use any of the following methods you must put your camera into “cleaning mode”, this usually involves making sure that you have a fresh set of batteries and selecting “cleaning mode” from the menu. This will lock up the mirror and open the shutter so that you can see the sensor. A fresh set of batteries is required as the shutter must be kept open, if the batteries fail, then the shutter will close and mirror will drop – which may cause expensive damage if something is in the way when this happens.

### Blowing

This should be your second line of attack. Use a good hand blower such as the Giotto “Rocket Blower”. On no account should you use your mouth to blow onto the sensor, or use any of the compressed air products, both can lead to contamination of the sensor.

If you use this method then clean out the blower first by squirting it in the open air a few times first. Be careful not to put the tip of the blower anywhere near the sensor or mirror, ideally keep the tip outside of the camera body. It's best to hold the camera upside-down as shown opposite, and get the force of gravity on your side.



**DISCLAIMER: Note that many manufacturers draw the line at this point. They do not support users using any of the following cleaning methods all of which involve physical contact with the sensor, and may void your warranty if you try them. They recommend that you return your camera to a service centre for cleaning rather than attempt it yourself. You attempt the following procedures at your own risk.**

### Brush methods

OK let's start by saying don't use any old brush, not even a soft blower brush, only use a brush which has specifically been designed for cleaning sensors, otherwise you can do more harm than good.

Respected sensor brushes include Sensor Brush™/D-SLR Brush™/Arctic Butterfly™/Sensor Sweep™ and BrushOff™. The method is the same whatever the brush used.

A brush used to sweep off and/or extract the dust. With some models the brush is energised to attract dust by blowing air through it creating a static charge, others are earthed to discharge the static that can cause dust to “stick” to the sensor.

If used with a recommended brush then this method normally works very well, but it cannot remove “welded on” dust and of course, it's important that the brush itself is kept clean and free of contaminants.



### Adhesive based Methods

I have to say that the very thought of touching the sensor with any kind of adhesive, however gentle and safe it claims to be, is not very appealing to me. My concerns are that some of the tacky adhesive must get left behind and if this does not itself show up on your photos, surely it will attract dust that will. I also fear that it may damage the external ITO (Indium Tin Oxide) or fluorite surface coating found on many modern sensors. That said the manufactures claim these products are safe (but they said that of the Titanic). Perhaps is just me being paranoid, after all can it really be worse than smearing your sensor with liquid, which is the other alternative?



### Wet method

The wet method is best used for stubborn and "welded on" dust. Swabs are available to suit most DSLR sensors. These comprise of (better than), surgical quality lint free gauze on a flexible wand. Different sizes of swabs are available, normally designated Type 1 (20mm), Type 2 (17mm) and Type 3 (24mm) for use with different sizes of sensor.



A few drops of special cleaning fluid are then placed on the swab and the swab drawn over the sensor. This method is very effective but should be the choice of last resort as it involves physical contact with the sensor.

There are two types of cleaning fluid available. For older DSLRs a methanol fluid is normally recommended (sometimes sold under the brand name "eclipse"). Newer cameras tend to have a ITO (Indium Tin Oxide) or fluorite surface coating and Methanol alone is normally considered to be too aggressive to use on such sensors so a different formulation is generally recommended comprising a mixture of ethanol, methanol, and isopropyl alcohol (IPA) and retailed as "E2". You should choose the correct solution and swab size for your camera.

## So what to the Camera manufactures use themselves?

According to [cleaningdigitalcameras.com](http://cleaningdigitalcameras.com).only Kodak, Leica and Fuji support the consumer in using the same method that they themselves use for cleaning the low pass filter. All the others manufacturers only support their cameras self-clean system and non-physical contact use of a hand blower.

If Canon, Nikon, Olympus, Pentax or Sony, can tell that you have touched the low pass filter, your warranty is void. On the other hand, Photographic Solutions Inc, guarantees that you won't damage your camera, if you use their Sensor Swabs™ and Eclipse/E2 fluid

**Canon** - Blower and a Kimwipe/Pec\*Pad, held by tweezers. They do not like to use fluid but when necessary they use either 90% isopropyl alcohol or a 50/50 mixture of isopropyl alcohol and Windex.

**Fuji** - Photographic Solutions Sensor Swabs™ and Eclipse™

**Kodak** - Photographic Solutions Sensor Swabs™ and Eclipse™

**Leica** - Photographic Solutions Sensor Swabs™ and Eclipse™

**Nikon** - A commercial grade lens tissue wrapped around a chopstick style piece of wood with medical grade methanol. Several forums have posts where readers have been to Nikon Service outside the USA and reported seeing the technicians using Sensors Swabs and Eclipse/ E2™

**Olympus** - A Kimwipe/Pec\*Pad held by tweezers and Olympus Proprietary Solution (dries quickly without streaks and is bio-degradable).

**Pentax** - A special lint free cloth (provided from Japan) folded into a small square and held with a pair of tweezers as a swab moistened with a Freon derivative.

**Sigma** - Uses a special vacuum cleaner that was provided by Japan.

**Sony** - Uses Sensor Swabs™ and E2™ by Photographic Solutions.