

Care of Lenses & Camera Bodies – Graham Cam

Interchangeable camera lenses are often affectionately referred to as 'glass' by photographers. Camera lenses are perhaps the most valuable investments you will undertake as a photographer. Unlike a camera body, which depreciates after a few years due to technological advances, your 'glass' is a longer-term investment. The rule of thumb is to purchase the best 'glass' your budget can afford; if your budget extends to the purchase of professional quality lenses, these lenses will provide a lifetime of exceptional service.

In today's market-place, all lenses are complex in their design and are engineered to a high standard. The 'price-point' often distils to the light-gathering f -number (the lower the number, the larger the front lens element, the better the light gathering properties and the greater the precision required for its manufacture), the number of internal glass elements, the type and quality of the glass, the materials used in the manufacture of the body and the degree of weather proofing engineered into the lens body. Auto focus (AF) and image stabilisation technology add further sophistications to a lens, ultimately raising the purchase price. The pro-telephotos such as the 400mm to 800mm $f4$ tele-lenses are extremely expensive, but keep in mind that each lens undergoes an extensive quality assurance process, which frequently translates to a 12-month manufacture and assembly chain; it is not uncommon for the assembly and testing of a specific lens to be undertaken by a single senior technician at the point of manufacture.

Having established that lenses are complex and expensive photographic tools I continually observe many lenses that would deliver images with greater clarity, if they were to receive just a little tender loving care. Let's take a look at caring for lenses.

Clean Glass

One would think that clean glass should be an obvious requirement for tack sharp images. However, when I look at a person's spectacles, I'm not surprised that the issue of clean glass is often overlooked. Spectacle lenses are regularly covered in dust, grime, fingerprints and oily smudges. Whilst the human brain may well cope with such optical distractions, the camera sensor records the quality of light that reaches its receptors. A front glass element soiled with oil, dust and general grime is unlikely to produce the best image, and in some cases a 'softness' or blurring may result in specific regions of the image.

A question I am often asked is how to safely and effectively clean a lens element or filter.

The front and rear elements of a photographic lens are not 'plain' glass; there is always a coating or series of proprietary coatings applied to the glass. The same applies to filters. These coatings vary in their ability to withstand physical and chemical abuse and thus should be treated with the utmost care.

My preferred steps for cleaning

1. Gently apply the brush end of a LensPen to dislodge any free foreign material on the glass.
2. Remove this dislodged dust, sand grains and any other material with a robust blowing action from either a LensPen Hurricane blower or a Giotto blower.

3. If there is a foreign object stuck to the glass and which appears to have a raised edge, proceed with the 'aqueous approach'. In other words, assume this object is water soluble in the first instance. Take a soft tissue, roll the corner into a taper and moisten with clean water. Hold this moistened taper on the object for 30-60 seconds and then attempt to dislodge the object with the tip of the taper. In most instances you will find that the object can be removed in this fashion. Repeat the process as many times as required to remove the object either as a whole or the sum of its parts.
4. If the object refuses to move it may be hydrophobic, that is, it repels water. It may be soluble in an organic solvent rather than water. The safest solvent to preserve the optical coatings and not damage the body of the lens is isopropyl alcohol. Zeiss make a safe single-use optical lens cleaning wipe pre-moistened with isopropyl alcohol. Alternatively, isopropyl alcohol can be purchased in 250ml bottles from Bunnings. If you proceed with the solvent approach you should only moisten the end of a cotton bud and use the lightest pressure. I prefer a soft tissue rolled into a taper for this step. The isopropyl approach is ideal for stubborn finger prints, sunscreen and other oily contaminants. If the object is neither dissolved nor dislodged almost immediately it is likely that the contaminant requires a longer application of a water-moistened soft tissue.

Completing steps 3 and/or 4 should leave the glass relatively clean and ready for the next step. Partial fingerprints can be removed in this step, especially if steps 3 and 4 were not required.

5. To remove finger prints, use a LensPen pad and a dedicated microfibre cloth. Read the instruction for the LensPen prior to application. This essentially involves a gentle circular motion of the Lenspen's carbon-coated pad applied to the fingerprint or remaining oily smudge. Once the contaminant has been removed apply the pad to the entire lens, initially starting at the centre and with a circular motion extend this to the outer edge of the front element. Repeat this process moving from the outer edge of the front element to its centre. Next, take a clean microfibre cloth and form a pad like structure and gently clean the entire glass using the reflected light to highlight any remaining blemishes.
6. Use a blower to propel any fine specks of dust from the surface of the glass.
7. Blow away any dust from the inner surface of the dust cap and fit the cap to the lens.

The front element of your lens should now be clean. The same process can be applied to the rear element of a lens and unless you have placed a finger on that rear lens element, all that should be required is a light brush with the LensPen and then a gentle blowing action to remove any minor dust particles. DO NOT apply a robust blowing action as in some lenses, especially zoom lenses with a push-pull action, you can blow dust into the internal lens body. *For the rear element, 'gentle' is always the best policy.*

For those photographers who use screw-on filters, the cleaning for the filter is essentially the same except that both sides of the filter require cleaning. Prior to re-installing the filter ensure the front element of the lens is clean and dust free.

Tips for keeping your lenses clean in the field.

Keep the dust cap in place when not in use

Do not change lenses in the open, particularly in windy weather. Wherever possible, change lenses inside a vehicle or inside a waterproof 'dry-bag'.

When travelling in the outback and on gravel roads keep the camera and lens in a dry-bag. A camera bag is not always dust proof.

Regularly clean your microfibre cloths and have several of these available for interchange (see how a microfibre cloth works and the cleaning regime later in this article).

Read your camera/lens manual and be aware of any weatherproofing issues, especially where water is concerned.

Should your lens get wet from rain, DO NOT wipe it dry. Use a paper towel or highly absorbent cloth to blot the water from crevices, buttons and switches. The same advice applies to your camera body.

If your lens or camera is splashed with salt water, dry immediately by blotting the water away. Later, remove any dried salt crystals with clean tap water and dry as above.

At the end of each day's use, clean any dust, mud, sunscreen etc from the lens and camera body with a moistened tissue or cloth and then dry with a clean cloth. Complete the drying process overnight at room temperature before storing the lens/camera body.

Tips for storing Lenses.

Next to dust in field applications, moisture is the element that has the greatest impact on lenses. If you live in a dry environment moisture is less of an issue, UNLESS you use an evaporative cooler in summer, as these coolers pump moist air (and dust from the environment) throughout the house. A good practice is to store the camera and lens in a dry-bag with desiccant, and even better purchase a Pelican Case to store the lens/camera body with desiccant.

Ensure that there is desiccant, in the form of silica gel, in the storage container to absorb moisture from the air inside the container. This prevents the growth of moulds either on the lens body or glass. Whilst most lenses are nitrogen or argon filled, I have occasionally observed the growth of mould internally in some less expensive lenses.

Use silica gel that has a moisture indicator and can be regenerated by heating (see the product guide at the end of this article).

Tips for lenses with IS and VR.

If you own a Canon or Nikon lens, you should know the meaning of these two terms. Both terms apply to image stabilisation technology that is built into lenses; they will have 'IS' or 'VR' printed over one of the switches towards the rear of the lens. Image Stabilisation (Canon) and Vibration Reduction (Nikon) operate by detecting horizontal and/or vertical movement and compensate for such movement by a motor drive repositioning a rear lens element to achieve the sharpest focus possible. The technology works exceptionally well enabling a sharp image to be captured at slow shutter speeds. Maintaining a smooth and effective operation of this technology is dependent on user care and this is generally not explained in product manuals. The issue arises when the rear lens element is able to rattle

around through excessive or continual motion. Excessive motion can be jumping down from a four-wheel drive with lens in hand and whilst a one-off action is not an issue, repeated actions may contribute to wear and tear. Travelling on corrugated roads and simply carrying the lens for extended times overland in a backpack or in hand are an issue. I can't speak for Canon but I can tell you that the advice from Nikon Service Australia is that when you are not using the lens or transporting the lens, the VR should be switched to OFF to lock that lens element in place and thus prevent 'wear and tear'. A lens being carried in a car or a backpack should always be switched to OFF.

Steps to disengage VR.

The lens must be attached to a camera body.

The camera body must be switched to ON.

Depress the focus button, listen for the VR motor to engage and then disengage and switch the VR button on the lens to the OFF position.

Remove the lens from the camera if required or store as a combination. The VR component of the lens is now safely locked in place.

Tips for camera sensor care.

Sensor cleaning is by far the most overlooked camera maintenance issue. I'm always amazed at the number of photographers who have never cleaned their camera sensor. If you own a camera body with interchangeable lenses and have changed lenses from time to time, it is highly likely that the sensor in your camera requires cleaning. Learning the technique of sensor cleaning is not overly difficult but it is not recommended for the inexperienced photographer, as a scratch to the sensor is a costly exercise to rectify. My recommendation is to send your camera back to the manufacturer's service department or take it to a reliable local service agent or camera store. A camera sensor should ideally be cleaned once annually, more often if you operate in dusty conditions and frequently change lenses in the field.

If you store your camera body without a lens attached, as I frequently do, the recommendation is to position the body face-down so that any dust particles that might be dislodged over time fall onto the body cap rather than onto the sensor.

A tip for using cameras in hot/humid environments.

Travelling in Australia or overseas in summer in hot-humid environments can be an issue if moisture builds-up in the lens or camera. Rarely does this result in damage to the camera or lens but some years back, an electronic component in my D300 failed due to such an occurrence. When travelling, it is not uncommon to stay in a cool-airconditioned room or caravan where your gear equilibrates to that cool temperature overnight or for an extended period. When you move outside into a hot-humid environment, moisture condenses on the lens or camera body. It is not uncommon to see this moisture as a film covering the front lens element. To avoid condensation, store your gear in a Pelican case or dry-bag. If you use a dry-bag let your gear remain in the dry-bag (with desiccant) and equilibrate to the outside temperature for 15-20 minutes prior to removal from the bag. This requires a little more

organisation but should prevent the disappointment and inconvenience of potential gear failure. An old adage – better safe than sorry!

PRODUCT DETAILS

LensPen

The kit I regularly use is the LensPen Elite DSLR Cleaning Kit – available in black or white. The kit contains three pens, one for the front and rear lens elements, one for lens filters and the third and smallest pen for viewfinders. LensPen is designed in Canada and uses an invisible carbon compound which is dusted on the tip of the pen and is capable of absorbing oils due to the high surface area of the activated carbon. A mere 3g of carbon has the equivalent surface area of a standard football field. Hence, with care each pen should be capable of at least 500 applications according to the manufacturer. I have pens that are over 5 years old and still perform efficiently. *(Browse the internet for the best price and availability).*



Air Blower

Fitted with a one-way valve, both of these air blowers deliver a 'blast' of air capable of cleaning most surfaces of loose contaminants. The Giotto blower is on the left (three sizes are available; this is an image of the largest size and my preference). When traveling abroad I carry this in my hand luggage rather than checked luggage for obvious reasons. The blower on the right is the LensPen Hurricane, which also comes in the LensPen Sensor Klear Loupe Kit. *(Browse the internet for the best price and availability).*



Pelican Cases

These cases come in a wide variety of shapes, sizes. And colours. Pelican cases are made from a high-impact structural copolymer and are virtually unbreakable and waterproof.

They will float in seawater for at least 6-12 months. Cases can be ordered with dividers, foam or with no internal components and those with wheels have a retractable handle. I have four large size cases in total: one case for medium size lenses, one case for camera bodies, one case for spotting scopes and one case for accessories. I use the desert tan colour; the black absorbs too much heat in summer, especially if used in the field. When traveling by road, I transport my gear in these cases and I choose not to have internal foam or dividers; I do however line the cases with either 3mm or 5mm closed cell neoprene purchased from Clark Rubber stores. In addition, my gear is 'wrapped' in LensCoat and large microfibre cloths (the latter purchased from auto stores). (*Browse the internet for the best price and availability, or go to <https://www.gtcases.com.au/>*).



Silica Beads/Gel

Silica beads are an amorphous and porous form of silicon dioxide and can be clear or impregnated with a moisture indicator. Methyl violet is a non-toxic indicator that turns from orange to green when the beads are saturated with water. Blue beads contain cobalt chloride, which is toxic and should be avoided. When the orange beads turn green, they can be reactivated by placing in a metal tray in an oven at 120° C for 1-2 hours, until the colour of the beads reverts to orange. Higher heat will eventually break down the beads and should be avoided. The time interval between activations will depend on the humidity of the environment in which the camera/lens is housed.

<https://www.silicagelstore.com.au/orange-indicating-silica-gel-beads>



The beads should be used in combination with ~90 x 90 mm nylon mesh pouches with draw-strings that ensure a secure closure of the pouch. Use only synthetic pouches – other fabrics hold moisture. The pouch ensures the beads are not crushed by the camera and lens during transport. This type of mesh pouch can be obtained from many gift stores or on-line. Spotlight has these bags in packs of 10.

Microfibre Cloth

Microfibre cloths are highly efficient in cleaning applications and absorb grease and oils due to their extensive surface area. The vast majority of microfibre cloths are a blend of polyester and polyamide and have split fibres which are especially efficient in absorbing water-soluble contaminants and waxes. There is an unsubstantiated report that cloths for removing skin oils, sunscreens and insect repellents from cameras and lenses without smearing are specialised 2 µm non-split polyester filaments. Therefore, I recommend only using the high-end microfibre cloths designed for eyeglasses and photography. The effectiveness of the cloth resides in its cleanliness. As soon as I notice smearing by the cloth, it is soaked in warm water and dishwashing detergent for an hour and then washed a second time on a gentle cycle in a washing machine before air drying. Rotating 5-10 cleaning cloths will ensure there is always one cloth that is relatively clean; use one cloth to remove the bulk of the oily film and then another for the final gentle polish. If you use these cloths in combination with a Lenspen, as detailed above, always use a clean cloth after the LensPen.

LensCoat

When I started following the North American Nikon Ambassador for bird photography, Moose Peterson, I noticed he used LensCoat on all his gear. I soon became a convert and some 25+ years later I continue to be a convert. LensCoat protects all my equipment from knocks and scratches thus preserving its resale value. LensCoat is made from 100% closed cell neoprene which is waterproof and provides a thermal barrier on frosty winter mornings and the hottest summer days (which is especially important if the camera and lens are in direct sunlight). Products are available in a variety of colours and camouflage patterns; whilst the patterns are more suited to the northern hemisphere, the Realtree Max4 and Max5 colours are a perfect blend in the Australian bush. <http://www.lenscoat.com/>



Dry-bags.

This style of bag is sold at any of the outdoor stores throughout Australia. Sea to Summit is one brand of dry-bag and is available in a range of sizes. The bag should be considerably longer than the length of the lens and camera combined. This ensures that the top of the bag can be folded several times to ensure a water-tight/air-tight seal.



A final tip: ***look after your gear and it will deliver years of dependable service.***