



DSLR SENSOR CLEANING

Simon Cotter September 2005

WHY DO YOU NEED TO CLEAN THE SENSOR?

Almost inevitably after time any Digital SLR (DSLR) user (with the possible exception of some Olympus and Sigma users) will find that they've got dust on their sensor. This becomes visible as random dark spots that show up against bright uniform backgrounds (e.g. sky) at small apertures.



Sensor Dust Spots

These spots are actually caused by dust, pollen and other airborne contaminants getting stuck on the Anti-aliasing/Moiré filter that covers the sensor chip (for ease I'll refer to this combination as the Sensor). Although the majority of dust enters when you change lenses it's possible it can get in through other routes, e.g. the battery chamber and memory card slots.

Many people just live with this, cloning out the spots in Photoshop (*TIP The Healing Brush and even better, the Spot Healing Brush, tools are very useful for this*).

However it's likely that over time the contamination build is going to get worse and you're going to have to get the sensor cleaned.

CLEANING OPTIONS

Bulb Blower

The first port of call for many people is to use a bulb blower (e.g. Hurricane or Rocket) to blow the dust off the sensor. **DON'T USE COMPRESSED OR CANNED AIR THIS MAY DAMAGE THE SENSOR AND MAY INCLUDE IMPURITIES THAT CAN BE DEPOSITED ON THE SENSOR.** This is the only DIY cleaning solution approved by Canon and Nikon but personally I've had limited success with this and have found that in many cases it can actually introduce more dust! (It probably comes from within the camera chamber). It's recommended that you blow **ACROSS** the sensor rather than directly at it.

Service Clean

You can opt to get your DSLR cleaned by an authorised service centre (this is the route required by Canon and Nikon). This can take anything from 24 hrs to a few weeks and can cost up to £50 (it should be free if done by your camera manufacturers authorized service centre whilst under warranty). There are a number of reports of cameras coming back with sensors dirtier than when they left!

D.I.Y.

**THIS IS METHOD IS ONLY SANCTIONED BY KODAK AND FUJI AND MAY
INVALIDATE YOUR WARRANTY!**

There are a number of different products on the market for cleaning the sensor yourself, ranging from:

The Copperhill Method

Commonly called the Copperhill method after the chap who's championed it on the internet, this the cheapest D.I.Y. method that involves making your own sensor cleaning wand from lint-free PecPads, a plastic spatula and a pure methanol cleaning fluid such as Eclipse. This works out at about £15 for 100 cleaning wands.

Manufactured Sensor Swabs

Purpose built clean-room manufactured sensor swabs, e.g. Sensor Swabs, Digi-Pads, DSLRClean that are generally used with Eclipse and typically cost between £25 and £45 for 10 -12 pads and cleaning fluid (which will probably last for hundreds of cleaning sessions).

Sensor Brushes

Pioneered by Visible Dust these special brushes are used dry and are supposed to pick up the dust from the sensor by electrostatic charge (you charge the brush by blowing it with clean compressed air). These cost around £50 - £60 but they should be capable of being re-used a number of times although you'll also need to budget for canned air! I haven't tried this method but it seems to have a lot of support especially for day-to-day cleaning.

MY METHOD

**WARNING: THIS PROCEDURE MAY INVALIDATE YOUR CAMERA'S WARRANTY
AND YOU PERFORM IT AT YOUR OWN RISK.**

Despite the "government health warning" above this is a tried and tested method with only a limited number of cautionary tales (mainly involving either dirt or contamination on the sensor swab damaging the sensor or too much cleaning fluid causing smearing or in a very limited number of cases getting between the Anti-aliasing/Moiré filter and the sensor chip

Before starting this procedure you must ensure that you either have a fully charged battery or you are powering your camera through a mains adapter.

Equipment

- Lint-free, clean room packed sensor cleaning pads, e.g. Digi-Pad, appropriately sized for your DSLR's sensor.

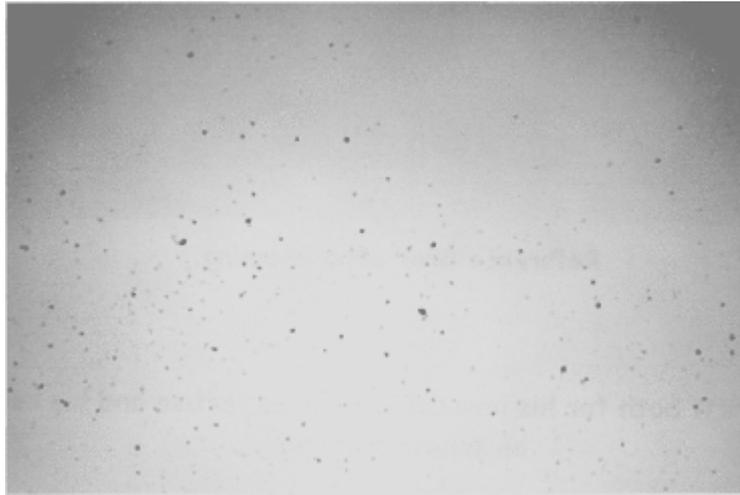
- Cleaning fluid, e.g, Eclipse.

Environment

It's best to carry out this procedure in a dust-free, well lit environment (some people recommend the bathroom, even running the shower before hand to help remove dust from the room but beware of the danger of condensation).

Step-by-step Procedure

1. Take a *reference* image before starting. Manually focus on infinity, select a small aperture of f 16 or smaller and shoot a uniformly bright subject, e.g. the sky or a blank white monitor. (*TIP - View the image in Photoshop and use the AutoLevels command to really see the little beggars!*).



Reference Shot before cleaning

2. Remove the lens.
3. Carefully clean the inside of the camera's chamber with lens cloth or tissue making sure not to touch the mirror or sensor.
4. Set your camera to its self-cleaning mode (DON'T USE THE BULB MODE).
5. Remove a sensor pad from its packaging and lightly moisten with 1 or 2 drops of cleaning fluid - DON'T OVER MOISTEN - then wipe the sensor pad across the sensor with a firm but not hard pressure from one side to the other then discard the pad
6. Repeat the process with a second moistened pad wiping across the sensor in the opposite direction. Some people suggest simply turning the first pad over and using the other side but personally I've found this seems to perform an inferior clean to using a second pad.
7. Turn off the camera's self cleaning mode.
8. Clean the rear of the lens with a blower brush and/or cleaning cloth and then replace it on the camera and the job's done!
9. Take another reference shot and hopefully you'll find that the sensor is much cleaner than before. If you're still unhappy with the contamination you can repeat the procedure but I've found it's almost impossible to remove all of the dust (probably the cleaning procedure itself introduces some contamination).



Reference Shot after cleaning

USEFUL LINKS

Thanks to Chris Pomfrett both for his invaluable video expertise and his help and suggestions on sensor cleaning.

www.cleanindigitalcameras.com - Just about everything you wanted to know (and probably quite a bit you didn't!) about cleaning DSLR's.

www.pbase.com/copperhill/ccdcleaning - Comprehensive site on DIY sensor cleaning

www.warehouseexpress.com - UK site selling Sensor Swabs (Kodak and Fuji approved), Digi-Pads, PecPads and Eclipse fluid.

www.visibledust.com - Manufacture the Sensor Brush

www.intemos.com - Manufacture the DSLRClean cleaning sticks and IOptic cleaning liquid.

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