

Cleaning the DSC-P200 CCD

A PDF guide by Ed Murphy

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Introduction to 'the dust bunny'

Exactly what is the problem?

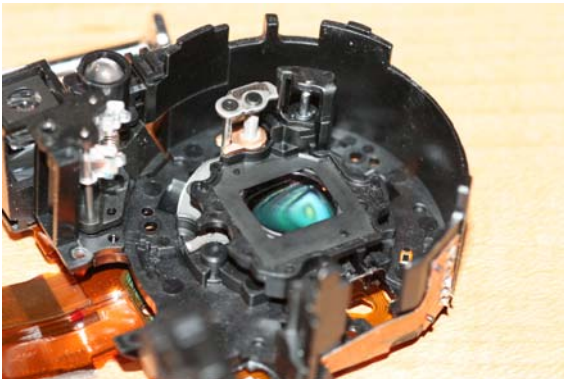
Owners of the Sony DSC-PXXX and DSC-WX series cameras have complained about dust problems pretty much since their introduction. These problems manifest in the form of dark patches in your images. The location of these patches will be consistent from image to image; they do not move in relation to the frame, except when zooming.

See the image at right for an example of the problem. The contrast has been modified to bring out the splotches. That's not exactly pretty, now is it?

If your camera exhibits similar effects, then you too have got a dust bunny.



Why does the problem exist?



Well, in my highly overrated opinion, the design is utterly horrible. There is no sealing of any form between the outside world and the CCD compartment. Now, Sony, come on already. Surely you guys know better than that.

See the image at left for an illustration of just why this occurs. You are looking at the very heart of a DSC-P200. The lens barrel has been removed, and that last piece of glass is the element that moves to focus the image on the CCD (which is visible as the green apparition underneath that element).

Now, the lens barrel literally fits inside of that unit.

The problem? Well, you tell me. Do you see any sealing of any kind whatsoever? No? Well, that's because there isn't any. That's right: anything that gets down between the concentric rings of the zoom lens will drop directly into this chamber! Now, perhaps you agree with me - horrible design, isn't it?

What can I do?

Well, that depends on a few things. One: how brave are you. Two: how stupid are you. Three: how mechanically and electronically inclined are you? I've always contended that there is a fine line between bravery and stupidity anyway, so that leaves the last item. How good are you at handling small electronics and their associated mechanical counterparts?

If you decide you are up to the task, then one of your options becomes cleaning the CCD and focus element yourself. If you decide you are not up to the task, then you are better off either living with the problem or having the problem fixed for you.

Preparation

What tools do I need?

Well, first, the obvious: a small #0 Phillips head screwdriver. Do not try to use a flat head to remove Phillips head screws, please. It won't work and will probably render the screws useless. You can find these screwdrivers at your nearest electronics store, like Radio Shack. After all, you've got questions... they've got answers.

You might also find a small flat head screwdriver useful. Not to remove any screws, but there are two steps which would be made significantly easier through possession of one, so I suggest you grab one.

Last, you need instruments to clean the camera. After all, cleaning is what this is all about. A microfiber cloth is very high on my list of things to have for any photographer, and here is no different. A can of compressed air is another useful addition, if you use it properly.

Optional for this assignment are: a soldering iron (in case you decide to go the extra mile on your own), and some form of alcohol. No, the alcohol is not for the camera.

Any useful tips to remember?

Yes. First, make sure you remove the battery before you so much as remove a screw. Likewise, make sure that replacing the battery is the last thing you do. I suffered my only noteworthy casualty (DSC-F828) by forgetting this. I've been inside cell phones, MP3 players, play stations, stereos, laptops, and of course, computers. The 828 was the first thing I lost, all because of the battery. And as a side note, the 828 was serviced under warranty. So as I said, you can get Sony to service something as long as you don't visibly and undeniably damage something inside the camera. Ethics? Who needs 'em.

Next, that can of compressed air. If you choose to use this to clean your camera, perhaps you should practice first. These things are wonderfully proficient at getting dust lodged in every single nook and cranny in your camera. If you aren't careful, that's what you'll accomplish. Canned air can also leave a thin film on things if vapor comes in contact with the surface. While this isn't exactly detrimental to the surface (we're talking about modern day optical coatings here - you'll need a scouring pad to get them off), it's a bear to remove.

Get yourself a few small magnets if you have them lying around. Ones from the fridge will do just fine. These are very useful to keep the small screws from vanishing into thin air. And trust me, these things can vanish better than Houdini ever could.

DISCLAIMER

I am fairly sure this didn't need to be said. But whatever you break is your own problem. I am providing this guide as a service to people who have bought a camera with inferior sealing. I am not providing my service directly, and I claim no liability to whatever you screw up. If you aren't confident in yourself, or in my direction, then stop now.

As a side note, if the camera is still under warranty, you will technically void your warranty by doing this. I say technically because even though it is against warranty terms to perform the following operation on your camera, if you don't physically damage anything you can probably pull a fast one on Sony and still claim warranty service if something else happens.

Continue at your risk, and assume all responsibility for your actions.

Exorcising the Dust Bunnies

Opening up the camera

First thing is first. Lets get inside. See the image at right, and loosen all of the screws that are circled in yellow. Set the screws aside, preferably on a magnet so they don't just vanish.



Next, take a small flathead screwdriver as shown below, and pry up on the plastic trim piece that goes the whole way around the camera. This trim piece is not held on by any screws but instead by little plastic clips that protrude from its



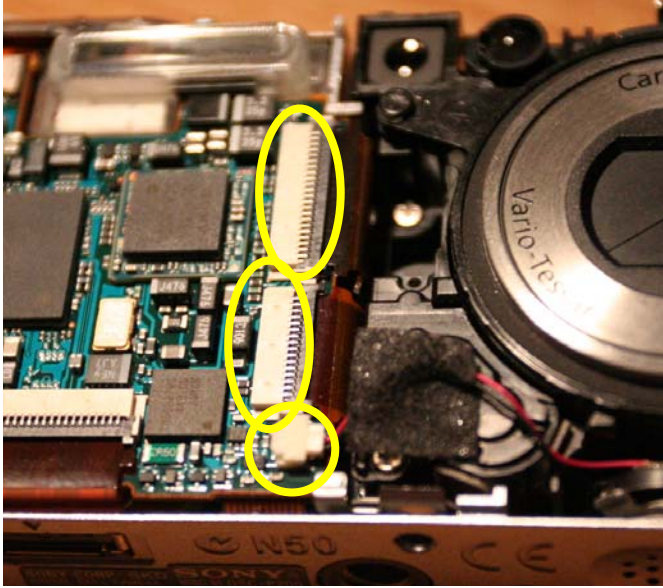
underside (see above). Take care to not damage any of these clips. If you do, that means a call to Sony to replace that trim piece.

Next, set the camera upright, and remove the screws along the top, as shown below. Once again, take care not to lose any of these screws. Once you have removed those screws, remove the metal clip on the side of the camera, as shown below right. This should be placed with the screws so it doesn't make off with the dish and spoon.

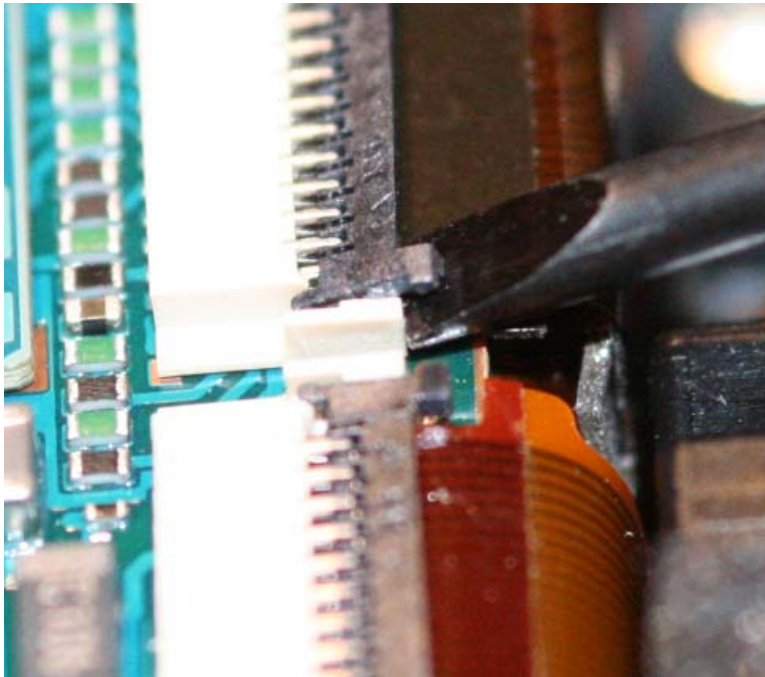


Separate the front and rear halves of the camera, and voila! You are now inside. Set these two pieces off to the side. Take care to set the rear shell down so that dust cannot collect on the inside of the polycarbonate window for the LCD.

Speaking of that LCD, be careful with it. It is the most fragile part that you'll come in contact with throughout this whole guide. Get something soft to set the camera down, since you'll be resting the camera on the LCD itself.



Next, take a look at the shot to the left. There are three connectors which will need to be dismantled. The bottom one is a simple pull-out plug. Do this gently, but firmly. You can use a flat head screwdriver to work the plug loose.

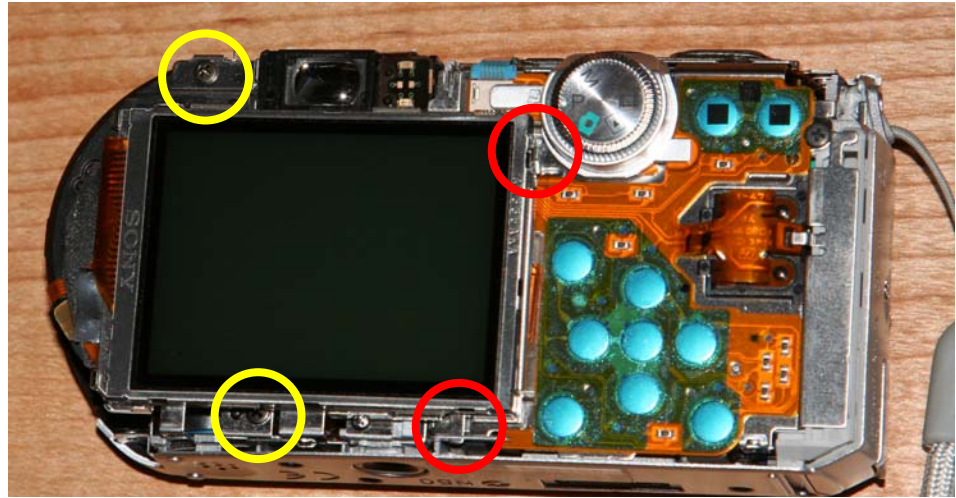


As for the other two plugs, take a look at the image at the left. I have included this as a fairly high resolution image in an attempt to best illustrate how to loosen these plugs. Slide a flat head screwdriver, as shown, under the levers at both ends of the plugs. once that's complete, the retainer will lift up and you can remove the ribbon cable.

Once again, these plugs are very small and very fragile. Use care when dealing with them.

To replace these later, simply pushing on the levers with your finger will do fine.

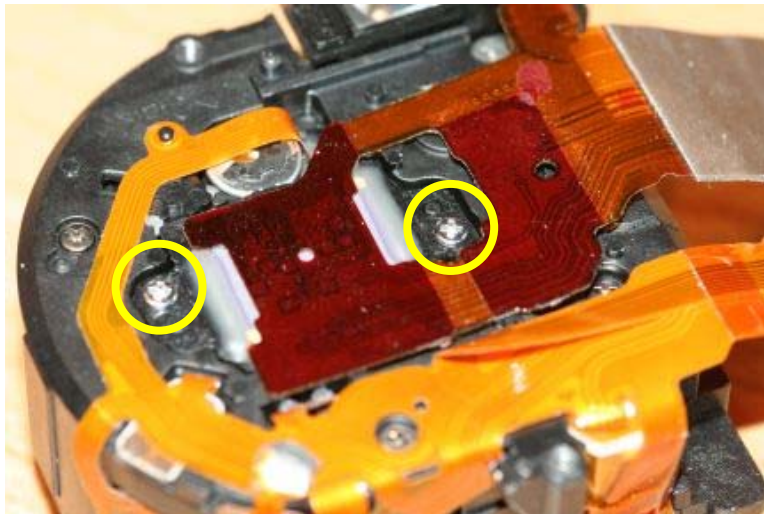
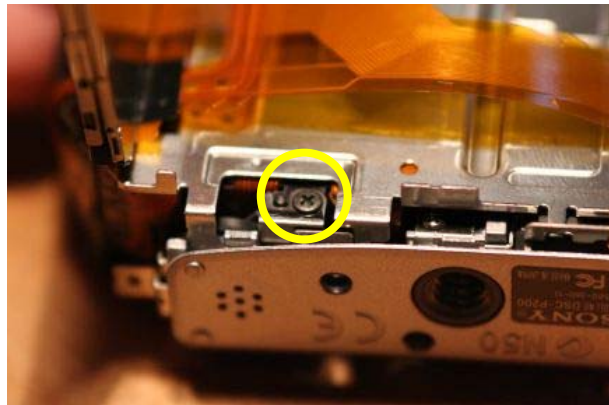
Now for a fairly tricky part. Referring to the image below, there are four things highlighted: two yellow, two red. The two yellow ones are the locations of screws that must be removed. The two red ones are the locations of pins that hold the LCD frame in place. The top pin is essentially a clip, and the bottom one is a pin on the frame that fits into a groove in a metal tab from the camera itself.



The problem is that the LCD rests partially on top of that bottom screw. So, remove the top screw first. Set it aside. Now, work the LCD

free of the top clip first, and then slide the bottom pin out of its groove. Holding the LCD out of the way, remove that bottom screw (right). Set it aside, and replace the LCD so it doesn't flop all over the place while being held by its ribbon cables.

Now, turn the camera back over, and work the CCD/Lens assembly loose. It rests in there fairly tight, but rest assured with some gentle coaxing it will release. Pay attention to the speaker (in the bottom of the camera; attached to the red-black plug you pulled earlier) so as not to damage it.



Now that you've got the lens/CCD assembly in your hand, turn it over (see left). The two screws will need to come out. Now, I will warn you. When you loosen those screws, you will be removing the CCD from the camera. Be very careful with it. Don't scratch it, don't drop it, and don't lick it.

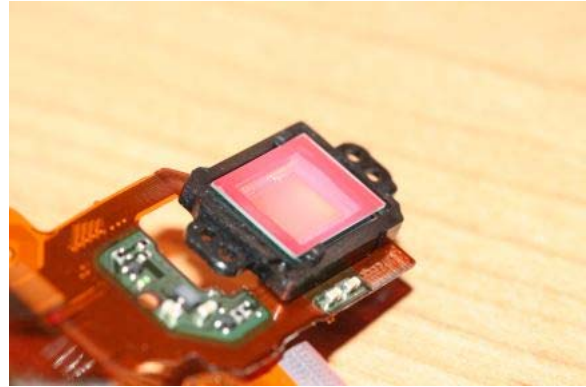
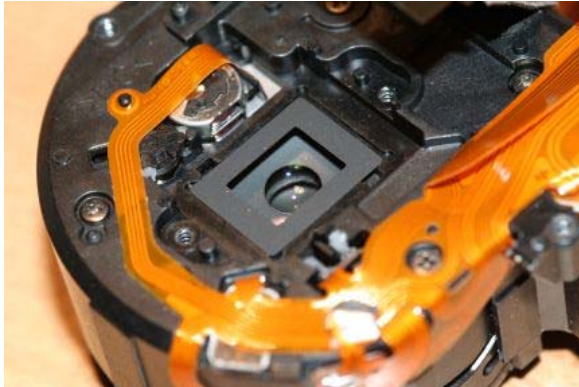
Once you've removed the CCD, you are ready to clean house.

Cleaning

This is a fairly delicate part of the job, since you are now manhandling two very important parts in the optical path. Both of these parts are shown below. On the left, you are looking at the backside of the piece of glass that I showed you in the introduction. This is the focusing element. On the right, well, if you don't know what that is, you shouldn't be this far inside your camera. The pink tone comes from the IR filter.

On the left, you may notice that there is a small black matte around the glass element. Remove this and set aside. If you don't remove it now, when you hit it with your compressed air, it will be airborne.

You should now be able to visibly confirm the particles that were interfering with your images.



First take your can of compressed air, and gently blow off whatever dust you can from these parts. Let me stress that: GENTLY. If you have a soft lens cleaning brush, that will work here too. Your microfiber cloth can also be called in for duty.

Whatever method you use, use it gently.

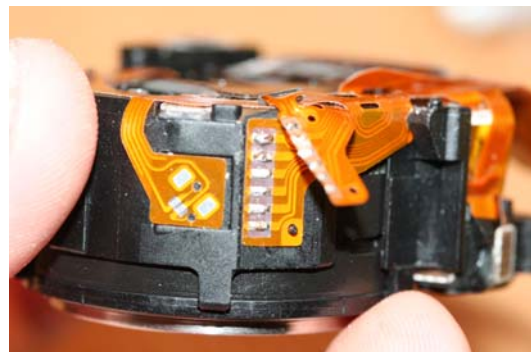
Once you are satisfied that you have evacuated all of the dust from the camera, you can begin to reassemble.

Going the extra mile

What if there is dust on the other side of that glass element? Well, for most people, I would answer that question with "you are SOL." You can try to hit it with your compressed air. However, if you are convinced that you want to tear into this thing even deeper, then by all means do so. I will not be guiding you there however, because things get very icky from here on out, and I suspect there would be a fairly high rate of failure beyond this point.

I'll give you a few hints though. First, you will need to de-solder the ribbon shown at right. Once you've got that loose, you'll need to get the zoom gearing out of the way, and the viewfinder optics. When you're finally ready to pull the lens barrel off, be sure that you work the ribbon cable that controls the iris loose, or else you will shear it with minimal force.

The way I figure it, if you are good enough to continue here, you shouldn't require very much help.



Appendix

Questions, Comments or Suggestions?

You can contact the author three ways: on AIM under the screen name 'monky9000,' on the Sony Talk Forum at dpreview.com under the name 'monky,' or via email at ed.murphy@zoominternet.net.

Thanks

Want your name here? If you have any suggestions, please let me know!