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Carrying 2533 copies of 363 lenses



"This lens is soft" and other myths

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One of the most common examples of Anti-logic we see at Lensrentals is the statement **The lens is soft/frontfocuses/backfocuses**. Now don't get me wrong, there are bad copies of lenses out there, as best we can tell ranging from 3% to 7% of lenses. And we know, despite our checkout procedures, that 1 of 400 lenses or so will be damaged in shipping and arrive not functioning. Sometimes there's actual damage or misalignment of an element in the lens, although the vast majority of the time that's not the case. Usually the subject of the photograph is soft because the lens is not focusing precisely.

Three to 4 times a week we have the following conversation:

“The lens you sent me frontfocuses, its not good.”

“OK, we'll overnight you a replacement.”

Then the first lens comes back and its perfectly fine when we check it out. But the customer is very happy with the replacement lens, it worked great even though the first one didn't. So what has happened? Its rather simple, actually, and like most examples of Anti-logic it stems from a wrong assumption: the customer knows his/her camera is 'fine' because it works with fine with their other lenses – none of them front focus or back focus.

The key to the puzzle is the definition of 'fine'. Most people assume that 'fine' means 'perfectly calibrated'. In reality cameras are like any other manufactured item, calibration is within a given tolerance range. We don't have privvy to what the actual tolerance range Canon, Nikon, or the other manufacturers (except Zeiss and Leica) consider acceptable, so lets arbitrarily say the manufacturer will consider a camera or lens to be 'in specifications' if its + or - 3 'focus units' from perfect. We can assume they reached this number because anything within + or - 3 focus units will be within the depth of field of a wide aperture (probably f2.8) lens.

Lets consider that I have a camera body that is -2 focus units from perfect, and a lens that is +2 focus units from perfect. Both are considered 'fine' according to the manufacturers definition, although they certainly aren't perfect. However, the combination of a +2 lens on my -2 camera will be absolutely perfect, I'll love the lens *on my camera*. After my experience with this one lens on one camera, I will write Sonnets on the various online forums about how great it is, and will tell anyone who doesn't like it that they must be a bad photographer. I will have become the most dreaded online lifeform, a **FLAO (Fanboy with Loss of All Objectivity)**.

But what if the lens was -2 focus units from the theoretical perfect and I put it on my -2 focus units from perfect camera? Well it depends. If the lens is say an f4 maximum aperture, probably not much: the depth of field from an f4 aperture lens may well mask a bit of front focusing or back focusing. You might notice

the lens frontofocuses 3 feet in front of the subject at 20 feet if you pixel peep, but since the depth of field is 10 feet the subject is still in focus and the lens seems fine. I will probably describe the lens as very good, but not descend to complete FLAODom.

But if its an f1.4 lens with a very shallow depth of field, the front focusing will be noticeable: the subject will be out of focus and soft. If I know how to do a front/backfocus test I may have figured out the problem, but here's the kicker: if I sent the lens in to the manufacturer to fix the problem they would check the lens out, say it was fine (because it is fine, its within specifications) and send it back. Only if I send the camera and lens together to be calibrated would the fact that the two together are out of focus be apparent, and then the manufacturer would be able to fix the calibration.

Ah, but there's no free lunch. If the camera calibration was adjusted as part of the fix, I might find that another lens in my kit that used to be great, now backfocuses a bit. In the past, many full time pros who were aware of these issues, would send their entire collection of cameras and lenses to the manufacturer to be calibrated together. This was one of the original reasons Canon and Nikon formed their Professional Services groups. Most of the rest of us just made do, or sent copy after copy of a given lens back until we got one that was sharp *ON OUR CAMERA*.

The bad thing is many, many people who did this then hopped on their online camera forum and made blanket statements like "I had to try 3 copies before I found one that was calibrated right". In reality what they should have said was "I had to try 3 copies before I found one that was calibrated right *FOR MY CAMERA*". Those other two copies might well have been fine on someone else's camera.

When you have a few dozen copies of each lens and each camera like we do, you quickly find out this is just a fact of camera reality. And the funny part of all this is the more expensive wide aperture lenses are the one's most likely to show the problem, because their depth of field is so narrow and the in-focus portion of the picture is so sharp compared to the out of focus portion. That \$200 f5.6 zoom is not going to show a minor front focus problem because the depth of field is about half a mile. The \$2,000 f1.4 prime has a depth of field of a few inches and any problems are immediately evident (and the owner 10 times more invested in wanting a perfect lens).

The good news is newer cameras have taken all this into account and the fix is right at your fingertips. The following cameras all have a "lens microcalibration" feature: Canon 1DIII, 1DsIII, 5DII, 50D; Nikon D3, D3x, D300, D700; the Pentax K20D, the Olympus E-30 and E-620, and the Sony A900. I'm surprised at how many people don't take advantage of this feature – its a bit time consuming to do, but once done each of your lenses is locked in the camera's memory and it will automatically compensate so that each lens is at a nearly perfect focusing plane whenever you mount it on the camera. I find the feature makes such a huge difference for most of my better lenses that I consider this feature alone makes the upgrade to one of the above bodies worthwhile.

Bad lenses (and cameras) will still exist, but the vast majority of front and backfocus issues will be a thing of the past. And for those of you who don't have this feature, we will continue, as we always have, to do our best to get you a lens that works great on your camera, even when it means sending a replacement.

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Addendum I recently saw the greatest real life example of this ever, in an online forum where the poster states 'Canon's New XX camera sucks' (I'm eliminating names so the bots don't pick this up and repeat it.) He goes on to say he had a body for several years, and a *hand picked collection of lenses that he knew were perfect because he'd gone through several copies of each to get the sharpest one*. Now he bought a new body and all his lenses sucked, and he'd now exchanged bodies twice and they still all sucked. So here is the perfect example of a person starting with a camera at the edge of tolerance, choosing through multiple selection a set of edge-of-tolerance lenses, and now generalizing that all the new bodies suck. The sad part is the new body has microfocus adjustment and he never even tried it. Just sent copy after copy

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