WHY YOU SHOULD LOVE YOUR GEAR.

TAKE CARE OF YOUR GEAR so your gear will take care of you.
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Introduction

It Just Makes Sense...

Many of us photographers are guilty of neglecting our camera equipment; We place everything in our gear bag, walk out the door to our next photo shoot, and once on site, rip through our bag and begin snapping photos for clients, family, and friends. By the time we’ve taken that thousandth picture of our niece and her adorable golden retriever, our gear has been through the dirt, humidity, and bumps that come with taking great photos. That’s why we’ve created the ultimate resource for maintaining your photography equipment, troubleshooting camera problems and finally, finding solutions.

These are our tools. If we take good care of them, then in return, they will take good care of us.
Types of Cameras

As you work through this guide it will be helpful to identify the kind of camera you have. We’ve listed the most common types of digital cameras below.

TYPES:

Digital SLR (DSLR)

A “Digital Single-Lens Reflex,” or DSLR camera, essentially allows the user to see what the camera lens sees (via a series of mirrored images reflected through the viewfinder). DSLRs come with a large sensor, which can contribute to the reduction of “noise” and helps create crystal clear photos. There are more controls (which also means more buttons,) and they focus faster, which enables the user to take multiple shots in rapid-fire bursts. DSLRs also allow for the use of different lenses for optimizing and framing a desired shot.

Mirrorless

Removing the mirrors from a traditional DSLR camera reduces bulk, and that’s the main draw of the mirrorless camera. Mirrorless cameras also produce less mechanical noise than their DSLR counterparts. The imaging sensor of a mirrorless camera is constantly active prior to each shot, which generates a digital preview on its screen, (rather than a viewfinder.) In addition, mirrorless cameras allow the user multiple lens mounting options – just like DSLRs.

Point & Shoot

Also known as compact cameras, point-and-shoot cameras contain a minuscule sensor with a fixed lens; it’s your basic, run-of-the-mill camera. They’re great for beginners due to automated flash, focus, and exposure features, but they’re limited in their use and generally not used by professionals for their final work – so we won’t be focusing on point & shoots in this guide.
Common Camera Issues & Failures

If you’re a pro — chances are you’re always on the go. Weddings, portrait sessions, and other jobs keep us on our toes. All that use can cause massive amounts of changes and potential damage to our cameras. By the end of an event-filled shooting season, our trusty sidekick has been through the gauntlet: spilled drinks, accidental drops, and rainy, windy weather all wreak havoc on our cameras. And the more use your camera gets, the more chances there are of dirt, dust, and other pesky particles finding their way inside of it. Here are the most common camera problems (and how to fix them):
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**ISSUE:** Spots on Your Images

You’re seeing gray or black spots on your photos in the same locations in your finished images, particularly shots taken outdoors.

**Troubleshooting**

If you’ve ever changed your camera lens, you’ve probably experienced a dirty sensor. Frustratingly, airborne particles (like dust) are great at penetrating your camera and are common culprits of dirty sensors. You can easily test for sensor dust by shooting single color objects that are brightly lit (like the sky) at small apertures (like f/16 or smaller.) Smaller apertures increase the depth of what’s in focus in your image and will more readily reveal imperfections on the sensor than wider apertures. If spots are showing up consistently in the same places in your photos with these test shots, you most likely have a dirty sensor.

**Prevention**

Although dust will almost always find a way inside your camera, you can reduce the frequency of it happening by keeping your lenses in their cases when not in use. And speaking of lens cases, you’ll want to make sure they’re clean before putting your lenses in them. Any dust already in your lens bag or case will make it inside your camera eventually. A simple tip to prevent dust is to change your lenses indoors or when it’s not windy outside, so that debris blown up in the air can’t get into the camera’s apparatus. If that’s not possible, you can use your body to shield your lenses from the breeze.
Solution: Cleaning Your Sensor

If you’ve ever changed your camera lens, you’ve probably experienced a dirty sensor. Frustratingly, airborne particles (like dust) are great at penetrating your camera and are common culprits of dirty sensors. You can easily test for sensor dust by shooting single color objects that are brightly lit (like the sky) at small apertures (like f/16 or smaller.) Smaller apertures increase the depth of what’s in focus in your image and will more readily reveal imperfections on the sensor than wider apertures. If spots are showing up consistently in the same places in your photos with these test shots, you most likely have a dirty sensor.

Cleaning sensor dust that is stuck on the sensor can be an arduous task, and by doing so, you risk damaging the sensor and effectively ruining your camera.

That being said, it can be done. Let’s take a look at the steps to cleaning your camera sensor.
How to clean your camera sensor successfully.

You’ll need to purchase an air blower, a sensor scope (to magnify and see the dust particles), a cleaning solvent, and some swabs.

Cleaning sensor dust that is stuck on the sensor can be an arduous task, and by doing so, you risk damaging the sensor and effectively ruining your camera. That being said, it can be done. You’ll need to purchase an air blower, a sensor scope (to magnify and see the dust particles), a cleaning solvent, and some swabs. First, set the camera on a flat surface in a clean room with adequate lighting and still air. Remove the lens and use the blower to remove “unstuck” dust from the sensor. Do not use compressed air – the propellant used in most cans of compressed air can cause significant damage to your image sensor.

Drop some solvent on your swabs and let sit, careful not to let anything touch the swab. After a few seconds when the excess solvent is absorbed completely, take the swab and swipe the sensor in one clean pass. After swabbing the surface make sure to take some test shots at wider apertures against a solid colored background, as the cleaning process can leave behind unwanted streaks or pieces of lint. Repeat with a new swab as necessary until your test shots show no spots or streaks.

*DO NOT USE* compressed air — the propellant used in most cans of compressed air can cause significant damage to your image sensor.
Sensor cleaning is a specialized task. It requires the right tools, a steady hand, and someone who knows what they’re doing. If you do it on your own, you risk damaging the sensor and voiding your camera’s warranty.

If you decide cleaning your sensor on your own isn’t for you, we’d love to help. At Perfect Image, we’ve been servicing camera since 1978, and cleaning sensors since the first digital cameras were introduced a few decades later. We offer affordability and quickness so you can get to shooting great photos in a snap! (If you’re anywhere within the continental US, you can ship us your camera and we’ll clean it and ship it back the following business day.)
Blurry photos can be frustrating, but lucky for you, we know some great techniques for troubleshooting sub-par camera focus.

Everything seems to be just right: the lighting is perfect, your subject is still, and you’re at a seemingly perfect range. But when you take your shot, somehow the photo didn’t turn out how you imagined - what a bummer!

**Troubleshooting**

**Autofocus Switch**

Check to make sure your autofocus switch is turned on on your lens and in some instances there is a switch on the camera body as well.

**Too Close To Target**

Were you too close to your target? Try moving a few feet back and see what happens. All lenses have a minimum focusing distance meaning they will not focus properly (or even allow you to get a shot at all) unless your selected focus area is beyond that minimum focusing distance. You can find the minimum focusing distance for each lens in its documentation, or sometimes it’s printed on the barrel of the lens in feet and meters.
Camera is having trouble auto focusing

Sufficient Light On Subject
Was there enough light in the scene to achieve proper focus? In dim conditions your camera may have a tough time “seeing” an area contrasty enough to target for autofocus.

Clear Definition From Background
Was your subject clearly defined from its background? Complex background items can also cause errors in autofocus. Most cameras use what is called contrast-detection system to decide on focus and if your background is very contrasty (say a very twiggy bush or a chain link fence) your camera can misinterpret where it supposed to achieve focus.

Autofocus Mode
Try a different autofocus mode like single point autofocus. Sometimes your camera has an easier time achieving focus if you narrow down its options to choose from.

If these troubleshooting tips don’t resolve your issue, your lens or camera may have a mechanical problem that requires professional inspection and service.
Troubleshooting

If your photos turn out extraordinarily dark or if you see dark bars on the top or bottom of your photos, you might have a damaged shutter. If you’re not completely sure, you can check the shutter’s performance by turning the camera off of auto mode, looking through its lens, and pressing the shutter release. You should see some type of movement—if you don’t—your shutter may be damaged.

Solution

So what’s the deal? A faulty shutter can occur for a number of reasons. First, extended use over a long period of time can cause shutter failure. Every camera is rated for a certain shutter count life which gives you an idea of how long your shutter should last under normal use. You can find a camera’s expected shutter life in your camera’s documentation. The other major cause of shutter damage is impact damage such as drop from standing height.

If your shutter needs replacement service, this can only be done by an experienced service center. Because it is one of the most common failures in cameras, we’ve literally replaced thousands of camera shutters over the past 40 years.
**Troubleshooting**

Over time, your camera’s sensor may develop hot pixels, which can vary in color and brightness. A hot pixel manifests itself by showing up in your images in the same spot and the same color all the time, regardless of the photos you take. Hot pixels can be the result of—you probably guessed it—when the sensor overheats or is taxed by overuse.

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**Solution**

Most modern DSLR cameras have pain free solutions for this common issue. For Canon and Nikon cameras just find and run the “Sensor Cleaning” mode in your menus and activate this mode in a well lit room WITHOUT a lens attached to the camera. These cameras run a pixel mapping program in sensor cleaning mode that will remove any hot/stuck pixels and use interpolation to fill in the missing information in your photos going forward. Make sure to do this in a dust free environment to protect your sensor from getting dirty!

Modern Sony cameras actually perform this pixel mapping on a regularly scheduled basis without any interaction from the camera owner.

If after performing the pixel mapping your camera still have hot/stuck pixels, your sensor may have a more serious issue and you may want to consider sending it is to a repair facility so they can perform a more advanced diagnostic.
Camera is giving you a “Lens Error” message

When your camera has a problem with the lens it will tell you with a coded error message.

Troubleshooting
As camera technology continues to accelerate, cameras become more intuitive. Much like the computer systems in cars, advancements in tech means we can more quickly diagnose camera issues. The vast majority of lens errors are a byproduct of physical damage to the lens that prevents it from functioning normally. Other common issues include: sand or fibrous material getting stuck in the lens mechanism or obscuring the communication contacts, and failures of electric systems and boards inside of the lenses.

Solutions
First, make sure your batteries are fully charged so that the camera has enough power to operate the lens. Some lenses require a certain amount of power to operate correctly, and if your battery falls below that threshold, your camera may still have enough juice to stay on, but there might not be enough power in the battery to power the lens.
Second, you want to make sure the lens contacts are clean. The contacts are a series of metal contacts on the mount of your lens that foster the communication between the lens and the camera.

If the contacts are dirty then that communication can be interrupted. You can gently clean these contacts if necessary with a q-tip and alcohol (80% alcohol content and above) making sure not to leave any alcohol or fibrous material behind.

Lastly, for some of the newer lenses they may want to look to see if there is a firmware update available. Firmware is software inside of your lens that helps control its operations. Go to the manufacturer’s website and check to see if they have a download for updated firmware.

If you still have lens errors after these troubleshooting tips...

you may have a series of problems that only a repair center can address such as: a bad aperture control unit, internal mechanical damage, or a failing control board.
Grinding is no good!

If you’re hearing noises you shouldn’t be, there’s most likely sand or grit where it shouldn’t be. What happens most often is sand gets stuck around the barrel of the lens, and into the zoom mechanism. We suggest you get your camera inspected by a professional.

Let’s say someone spilled a drink on your camera at a wedding and now you have sticky buttons. How frustrating! Thankfully, most camera repair professionals can quickly and cheaply find a fix, so you can “push your buttons” once again. There are also a few options you can try on your own – and at your own risk. Dip a Q-tip in rubbing alcohol and carefully swipe around the problem button. Quickly dry the affected area with the camera’s buttons vertical to the ground.
Troubleshooting

First, we’ll want to determine if there is memory card damage, or if there is an issue with the memory card slot on your camera. If multiple cards are demonstrating the same error when inserted into your camera, then it’s likely your memory card slot is damaged or faulty. If you’re using a camera with a CF card slot look inside to see if one of the contact pins is bent over. If so, you’ll need to have a repair professional correct the issue. If you have an SD card slot make sure that there are not obstructions inside the slot, such as a broken off section of a memory card. If you don’t see any obstructions but you’re still having problems with multiple memory cards, the card slot may be faulty or damaged and will need to be replaced by a repair professional.

If the card errors are isolated to one card, your memory card may have some form of corruption. It’s best to stop using this card immediately. You can still recover images from a corrupted memory card, but it is important that once you find that the card malfunctions do not do anything else to the card. Any further action taken on the card (deletions, overwriting, formatting) reduces the risk of recovering the maximum amount of data from the card.
To get the very best out of your photo equipment, it’s best practice to keep all of your lens and camera surfaces free of dirt and debris. Dirty optics can affect your photos and dirt and grim built up on your camera over time can affect vital camera functions.

**Solutions**

The best tip for keeping your lenses free from spots, smudges, and specks is to keep them away from potentially dusty situations in the first place – but more on that later. To clean your lenses, you’ll need a hand blower or a brush, some cleaning solution, and a cleaning cloth (we like microfiber). Using anything else can diminish the lifespan of that lens—or worse—damage it outright. First, remove all debris by blowing it off, then swipe the surface clean with a high-quality lens brush. Next, drop some lens cleaner on the cloth—not directly on the lens—and gently wipe in circular motions from the center, working your way towards the edges. Please note that it’s not advisable to clean your lenses too often. If done improperly, you can add new smudges and drastically increase the chance of a permanent scratch.
Troubleshooting

If you’re having issues with soft images, there’s a few tactics you can try to sharpen them up:

First, make sure your shutter speed is fast enough given your method of stabilization. For hand held shots anything below 1/60 of a second (and depending on how steady your hand is, some say 1/125 of a second is a better rule of thumb) should be your minimum shutter speed with the expectation of a “sharp” shot. Any shot below 1/60 of a second should require some method of stabilization (such as a tripod or monopod) to facilitate a sharp photograph.

Second, make sure your aperture is set to achieve a depth of field that will ensure your subject is sharp. Wider apertures such as f/2.8 and even f/4 can provided limited areas that are in focus and can provide “softness” or out of focus where they are not intended.

Third, make sure your camera is focusing where you want it to. If you are in a full autofocus mode, your camera may be picking the wrong area to focus on. You can switch your camera to a more selective autofocus mode such as single point AF to limit your camera’s choices when in comes to focus or even try manual focus.

Solution

Keep in mind that some lenses will never be razor sharp no matter what precautions you take. This may be due to bad build quality or inferior construction materials. If after doing some basic troubleshooting your shots are still “softer” in all parts of the photo than would be expected for a particular lens, factory service by the manufacturer or an experience camera technician may be required to re-align interior elements or repair damage to the lens casing.

If there are some areas in your photo that are sharp, but it seems that your autofocus system is “missing” where it should be focusing on, then read on to learn about camera and lens calibration.
There’s an unpleasant truth about our cameras: They’re not perfect. Today’s high-resolution cameras amplify detail in our photos – but they also amplify our camera’s flaws, including errors in their autofocus systems. Our cameras were made to be used, and through that use, their autofocus performance does slowly change over time. The good news is if your equipment, new or old, is not focusing where you feel it should be, your camera and lens pairings can be corrected through autofocus calibration.
Camera and Lens Calibration

So you’ve spent thousands of dollars on your camera, lenses, and other equipment, but you can’t seem to get a single shot in focus. Chances are it’s not “user error.” Poor auto-focus can be caused by a handful of things: wear and tear of gear over time, impact damage, and even small variances in gear that occur naturally during the manufacturing process.

Recalibrating your camera requires setting adjustments to change the way your lenses calculate the proper distance to achieve proper autofocus. In order to properly judge if your camera and lenses need calibration you will need to test each combination individually. If you’re consistently getting poor results no matter what lens you use, there may be problem the camera’s autofocus system. If however, you’re getting exceptional results from all but one or a select few lenses, those lenses may need to be calibrated to your camera body.

If you plan on doing this yourself, most cameras have built-in auto-focus correction features (usually called either AF Fine Tune or AF Micro Adjustment) within the camera’s settings. There are multiple testing tools that you can use to calibrate your camera and choosing one can be difficult. We recommend purchasing Spyder Lenscal or LensAlign due to their accuracy and time saving capabilities, but there are some free options available, too.
How in-camera calibration works

After you’ve picked out your setup, you’ll need to mount it on a flat surface, parallel to the camera (which should be mounted on a tripod). Next, you’ll need to distance your camera to about roughly the same distance of where you shoot in the field. (If you shoot from multiple distances you’ll have to repeat the setup and testing for each.)

The following step requires setting your auto-focus setting (either AF Fine Tune or AF Micro Adjustment) to zero, and taking multiple exposures, following the directions of the calibration system you picked out. From there, you’ll turn the auto-focus setting up or down a few notches – depending on how “off” your focus is. Rinse and repeat until you have perfectly recalibrated focus. (You should test this for each lens at every distance you shoot from, then take it out in the field and test it in the real world!)

Still getting poor results?

If after calibration you are getting consistently poor results no matter what lens you’re using, the camera is probably at fault. At this point, you should contact a camera repair facility, where they can help you get to the root of your problem.
Lens Calibration Can Be Frustrating

If you decide calibrating your own equipment isn’t for you, we’d love to help.

At Perfect Image, we’ve been servicing cameras since 1978, and calibrating DSLRs since the AF fine tune feature was first introduced.

Our technicians have calibrated thousands of lenses and benefit from that experience to make sure each one is adjusted to pair accurately with each camera combination. (If you’re anywhere within the continental US, you can ship us your camera and lenses and we’ll calibrate them and ship it back the following business day.)
Tips For Storing Your Gear

Putting away your camera properly takes only a few minutes but can save you time and money on service down the line. Unfortunately, you can use all the tips and tricks and still end up with minor problems—but if you follow these guidelines—you can help avoid a major camera crisis.
Storage Tips

Cameras

Always consult your camera’s handbook for proper storage, but most manufacturers suggest turning your camera on every-so-often to keep everything working smoothly. Also, if your camera or flashes or inactive for longer periods of time, it’s best to remove any batteries and store them separately, as they can decay over time and corrode a battery compartment.

Lenses

Lenses are expensive—sometimes more than the camera itself—so proper lens storage is absolutely necessary. Many people invest in a “dry box” for their camera and its gear; it keeps out dust, humidity, etc., and it also provides natural lighting to prevent fungus and mold growing on your lenses. If a dry box is not a viable solution for you, just use a ziplock bag (or two) for longer term storage. Make sure your lenses completely dry and free from debris before storage.

Batteries & Memory Cards

As a general rule, always take the batteries out of your camera when it’s not being used. Batteries can leak, are combustible, and are especially prone to being affected by rapid changes in temperature. This will also keep your batteries from draining.

The same goes for SD cards: when inside your camera, they’re more easily corrupted. And why have unnecessary components inside your camera that can potentially damage it if you don’t absolutely have to? Always shut your camera off before removing any components.
In The Field

Mother Nature creates beautiful environments for us to take photos, but she also creates a harsh atmosphere for our cameras. Completely avoiding hazardous weather is impossible—after all, cameras are meant to be used—but by utilizing proper storage techniques, we can keep our cameras safe and extend their lifespans. Here’s a few ways to properly care for your camera in the field.
Camera Bags

The most basic form of protection for your camera is its bag. Your camera’s “home” will keep it out of direct sunlight and will also keep foreign particles from entering your camera via wind.

A cam-bag can also keep your camera dry from rain or accidental spills. However, the main pro of using a camera bag is its cushioning, which protects the camera from unnecessary drops, bumps, and nudges.

Be careful to clean out your camera bag on a regular basis, especially if the soft material inside it is prone to pilling; you don’t want the fibers (or the sand and grit those fibers attract,) getting into your camera. calibrate them and ship it back the following business day.)
Tripods

We spend a lot of time and research when deciding what tripod to invest in, and they’re vital to professional photographers, so keeping it in ship-shape fashion is a must.

Ideally, you’ll want to keep your tripod away from moisture and dirt—which depending on where you shoot—can prove to be a tough task. The main takeaway for tripods is to wipe down the joints so they’re clean and dry after each and every use. This will prevent it from being fussy in the future. And if the tripod is submerged in mud or sand, we recommend a thorough cleaning via disassembly. To prevent warping, don’t carry your tripod with the camera attached, and don’t expose it to rapid changes in temperature.

Constant, extreme heat can cause the lubricant on the joints to dry up. If you need to reapply lubricant to the threads, you should consult your user manual for what type of lubricant to use. Never apply too much; a little bit goes a long way, and lubricant can attract dirt and grime over time. When you reassemble the tripod, make sure the bolts and screws are tight, but not too tight as to damage it.

Still having issues?

If you’re having issues with your tripod and cleaning it up doesn’t do the trick, camera repair professionals can diagnose and fix the issue for very little cost.
Insurance

When facing the possibility of theft, loss, or destruction of your camera, insurance can help soften the blow. If photography is your profession, insurance on your gear is a basic necessity.

Thankfully, there are several ways to insure your equipment; you can insure everything you use, to your camera and a couple lenses, or simply the camera itself. Some insurance plans offer low, monthly fees, while others can reach up to $500 per year. There’s no one-size-fits all when it comes to insurance, so depending on your financial situation, what gear you use, how often you shoot, and where you shoot, should all be taken into consideration when deciding on insurance. Also, be sure to take detailed inventory of your gear: the purchase date, the make and model, and the serial number.

When you buy a new camera and gear, the first photos you should take are of the camera and gear – this will prevent you from being denied if you ever have to make an insurance claim on them.
Conclusion

If you’re having camera problems and haven’t been able to find a fix for them, we’re here to help. Since 1978, we’ve been in the business of helping photographers excel in theirs. If you’re in the continental United States, you can ship us your camera and we’ll calibrate it, repair it, and clean its sensor and lenses. Plus, from training seminars to one-on-one sessions, we offer tutorials to help you be a better photographer, too.

www.perfectimagecamera.com

Helping you create amazing photos from snap to print.