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# How to Properly Zero a Rifle in Five Steps

Words by Craig Boddington

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It doesn't matter whether you're going hunting or planning a fun day at the range; you want to hit what you're aiming at, so the first step is to make sure your rifle is properly zeroed. Here's how I do it:

## **1. Get on Paper**

If your rifle is an old friend, this step may have been handled long ago, but if it's a new rifle or you've changed scopes, then the first thing you must do is get the rifle on paper. In order to do this, you must get your barrel and scope (or sights) in rough alignment. A collimator or laser boresighter will enable you to do this quickly, and these devices are really the only option for actions (semi-autos, levers and pumps) where it's not possible to look down the barrel from the breech.



A boresighter, such as this one from Bushnell, is a helpful tool to get you on paper quicker, especially if your rifle doesn't have a bolt that can be easily removed.

With bolt-actions and single-shots, I generally achieve rough alignment by boresighting. Remove the bolt, or on a single-shot, open the action and set the rifle in a solid, steady rest. Put up a target at short range—25 or 50 yards. A bull's-eye target is probably best for this because it's easier to align the round target within the round view through your barrel. Line up your barrel on the target, make sure it's steady and then look through your scope or sights. Using the adjustments, move the scope or sights until you're seeing the same "picture" as through your barrel.

Now it's time to shoot. I'm pretty darn good at boresighting, and once in a while I get it spot-on—but it is not a perfect science, and neither collimators nor laser boresighting devices are perfect, either. So I start with a big, clean target! If you have some confidence, you can start at 50 yards, which is what I usually do—but if you've just clamped a scope on something like a lever action, where it's impossible to look down the barrel, better start at 25 yards with plenty of clean target—sometimes you can be way off! Shooting and making adjustments, I try to get the rifle more or less zeroed at short range. The legend is that a 25-yard zero will be about right at 100 yards, but this is not true. It depends on the trajectory of the cartridge and the height of the scope, but generally speaking, a perfect zero at 25 yards will be too high at 100 yards, so if you start at 25 yards with a scoped rifle, you'll usually save some ammo by making that initial short-range zero about an inch low. When I start at 50 yards I try to make it "point of aim, point of impact"—and then I'm ready to move out to longer range.

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## 2. Make Your Decision



Determine which load you plan to use before proceeding to the zeroing process. If you zero with one load and plan to hunt with another, your point of impact may be different, resulting in misplaced shots.

Now that the rifle is roughly in zero, there are three basic decisions to make before fine-tuning: distance, load and point of impact. For distance, I believe in zeroing at 100 yards. Less is not precise enough, and while I know some good riflemen zero at 200 yards and more, I prefer to sight in at 100 yards so I remove as much human error as possible and minimize effects such as wind. If you plan to shoot at longer ranges, it's a good idea—and maybe essential—to practice at longer ranges, but for sighting in, I prefer 100 yards.

If you've already decided what load you intend to use, then you're ready to move ahead. But all rifles display different levels of accuracy when you change brands, bullets, propellants or anything else. So if you're still working on what load you want to use, I recommend postponing achieving a perfect zero and just shoot groups. At this point it doesn't matter where they land on

the target. You may ultimately select the most accurate load that you try, or you may compromise a bit between optimum accuracy, bullet performance and even velocity.

Once the load is selected, you need to decide exactly where you want your 100-yard point of impact. For short-range hunting situations—like close-cover hunting or for dangerous game—you may well want a 100-yard zero. For shooting at longer ranges you're probably going to want your point of impact to be a bit high. I like a zero that's maybe 2 to 2.5 inches high at 100 yards. Depending on the cartridge, this will put me dead-on at maybe 200 to 225 yards. These days, with long-range shooting all the rage, a lot of guys sight in to be 3 inches high at 100 yards. That's your choice, but the mid-range rise may exceed 5 inches, and the most common aiming error is to hold too high rather than too low, so as Jack O'Connor advocated a generation ago, about 2.5 inches high at 100 yards is just fine.

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### **3. Use Good Technique**



To get the most accurate zero, your best bet is to remove the possibility of human error as much as possible. This is most easily accomplished with a rest that requires very little personal contact with the rifle.

Sighting in is just like shooting groups—it has nothing to do with how well you can shoot; it's all about the rifle, so you want to eliminate human error. Use a good, steady rest, and take your time. The bench accentuates recoil, so don't hesitate to pad yourself or use recoil-absorbing shooting aids like the [Champion Performance Shooting Rest](#). Settle down, really concentrate and squeeze the trigger, and then adjust your sights and do it again until you have reached your desired zero.

When I'm shooting from a bench rest, I try to get the rifle perfectly steady, and I let the sandbags or rifle rest do the work. I use my supporting hand to snug the butt into my shoulder, with my trigger finger the forward-most contact.

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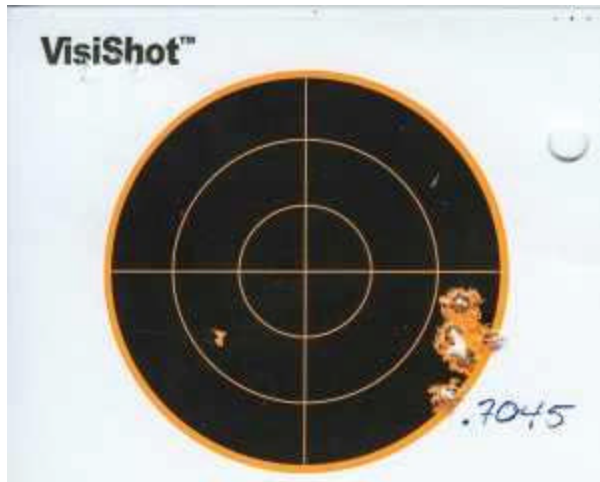
To get the most accuracy from your rifle when zeroing, it's best practice to clean it after no more than 20 shots. Once finished, you should fire a few fouling shots to ensure that you've maintained your zero.

#### **4. Cold and Clean**

If you're lucky you might get the rifle "pretty close" in three or four shots. Sometimes it takes quite a few more! Relatively few riflescopes have truly precise and consistent adjustments, so it isn't uncommon to go back and forth a bit to get it right. That's perfectly OK, but you have to take your time and make sure the barrel doesn't get too hot. Once you think you're there, let the barrel cool completely and then check again. Depending on how many shots were fired, there's a good chance it's now time to clean the rifle. There is no set rule, and all barrels are different, but for optimum accuracy it's probably best to clean the barrel after no more than 20 shots. Now a freshly cleaned barrel will often have a different point of impact than the same barrel after a couple of shots, so I clean at the range, and if that's my last zero session before taking a rifle hunting, I clean the barrel and then fire a couple of "fouling shots," thus checking the zero one more time.

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You should always re-check your zero. This is especially true if you've traveled with your rifle, as it may have lost its zero somewhere along the way.

### **5. Double-Check, Then Check Again**

OK, now the rifle is zeroed perfectly just where you want it. But wait—as they say in the infomercials—there's more! Do you use a bipod in the field? It's a great tool, especially in open country, but some rifles will have a different point of impact with an attached bipod than over sandbags. This is the one I've noticed, but I suppose the same could be true of just about any field shooting aid. So once you're all zeroed, fire a couple of shots off your bipod or other shooting aid. You may not be quite as steady, so the results may not be as perfect—but if there's a significant difference, you should notice it.

Finally, if you're hunting away from home, make sure you check zero one last time when you arrive in your hunting area. I've found it fairly rare for a well-mounted scope to come out of zero while traveling, but it can happen, and Murphy's Law applies. Check your zero before starting your hunt. This is not always easy; I can't tell you how many times I've checked zero in the dark, using car headlights on a target. Whatever it takes, the level of confidence that lies in absolutely knowing your rifle is ready is worth the effort.

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Read more: <http://www.gunsandammo.com/shoot101/how-to-properly-zero-a-rifle/#ixzz46aluDKkU>