Proper Riflescope Mounting

By David Rainer, Staff Writer

Confidence is one of the key elements in a successful hunter. When it comes to white-tailed deer, hunters must be sure their equipment performs as well as possible, which includes all aspects of the weapon of choice.

For the archer, that includes bow, arrows and sights. For the rifle hunter, that includes firearm, ammunition and, most often, a riflescope.

**PROPER MOUNTING ESSENTIAL FOR ACCURACY**

If the scope is not properly mounted on the rifle, the best firearm and ammunition in the world will not overcome that deficiency. That is one reason Russ Sockwell at Mark’s Outdoors in Birmingham spends a great deal of his working time mounting or remounting scopes for people who are having trouble with accuracy.

On a typical scope-mounting task, there are three components – the base (which comes in one- or two-piece forms) that attaches directly to the firearm; the rings, which attach to the base; and the scope, which is mounted inside the rings.

“One of the things a lot of people overlook is they don’t degrease the screws before mounting the bases,” Sockwell said. “The other thing I see most often is the front screw on the base is too long, which leaves the base actually loose on the gun. With the rear screw the only screw holding it down, you end up with major accuracy issues. You either have to pull the screw and grind it down to make it fit or find the correct screw to be able to pull the base down tight.

“Another thing I see is that nobody puts any Loctite on the windage screws. I usually put a little bit of blue Loctite, which will make the screws stay put unless you intentionally move them. Your gun vibrates or your truck vibrates on the way to the hunting camp. This makes sure the windage screws don’t move after you’ve zeroed in the gun. It’s essential to degrease the windage screws as well.”

When tightening down all the screws involved in scope-mounting, Sockwell uses his many years of experience to know when it’s tight enough. For others, he said to get them good and snug, but don’t overdo it.

American scope manufacturer Leupold recommends 14 inch/pounds for the base screws, 15-17 inch/pounds for the ring screws and 45 inch/pounds for the windage screws.
“You want them tight, but you don't want them stripped,” Sockwell said. “It doesn’t take much to get them tight at all. If you actually put a torque wrench on it, you’d say it wasn't tight when it got to spec. I go to where it feels good and just give it just a little more.”

For the dovetail on the front ring, Sockwell recommends a small amount of grease to ensure the base of the ring doesn’t gall when it’s rotated into the base.

“When it comes to setting the scope in the rings, I set the scope in without any windage screws,” he said. “You let the scope determine where it wants to sit. No matter how many times you do this, most of the time the front ring won’t be quite square. I put a little blue Loctite on the windage screws and just get them snug. You still want to be able to move them when you get to the range.

“I have shot some guns on which people have mounted the scopes themselves. I shot one one time that the scope actually flew off when I pulled the trigger. That was interesting. That wasn't something I was expecting.”

Sockwell snugs the ring screws down before the trip to the range and checks to ensure the crosshairs are in the proper position.

**EYE RELIEF ALSO IMPORTANT**

One common mistake Sockwell encounters with the do-it-yourself crowd is the eye relief, the optimal distance between the rear of the scope and the shooter’s eye that gives the proper sight picture.

“Most people forget they’re going to be wearing a heavy coat most of the time when they’re out deer hunting,” he said. “It ends up that they set the scope up too far forward. Most of the time, trust your gunsmith on that. We’ve done so many that we know where they’re supposed to be. Nine times out of 10 they’re going to be far back or all the way back. A good
place to start is the end of the action."

If the eye relief is not correct, the shooter doesn’t get a full sight picture when the gun is mounted to the shoulder, and all sorts of problems ensue, including failing to see the target in the scope, not to mention the accuracy issues.

“When you’re too far away from the scope, what you’re getting is tunnel vision, and you can’t find your target,” Sockwell said. “At that point, the scope needs to be moved back or your stock needs to be shortened. I see that a lot with women and children. The dad says, ‘Well I’ll just let them shoot my gun to see if they’re interested.’ Then Junior can’t see through the scope, so he puts the stock under his arm so he can see. When he shoots, the scope comes back and hits him. Then he loses interest.”

Once he gets the eye relief set, Sockwell looks through the scope to try to get the crosshairs square to the action.

“Everybody holds their gun differently and everybody looks through them differently,” Sockwell said. “You really can’t be sure unless the person is there. If the customer is here, we set it up for him. If the customer isn’t here, we set it up square to the action. If you throw the gun up and the crosshairs are crooked, you’re going to inherently straighten it. So if we get the crosshairs square to the action, you’re going to be more accurate.”

When Sockwell tightens the ring screws, he alternates between each side to make sure the rings apply the same pressure on both sides. Once the rings are tightened down, he checks to make sure the gaps on each side of the ring are similar. Then he shoulders the gun again to make sure the crosshairs are in the same position.

As far as Sockwell is concerned, bore-sighting with a tool is overrated, although every gun that leaves the shop is bore-sighted to meet the customers’ expectations.

“When you get to the range, the best way on a bolt-action rifle is to remove the bolt and look down the barrel and make the crosshairs and barrel look at the same thing,” he said. “I generally do that at 40 to 50 yards so you don’t have trouble seeing the target.

“The thing with a boresighter is it’s designed to get you on the paper, but it doesn’t get you ready to go to the woods. Sometimes you get lucky and get it real close. But I have taken a boresighted gun to the range and it wasn’t even on the paper. You don’t ever know until you get there. For boresighting, we charge what it’s worth – nothing. It gets you close most of the time, but that’s about it.”

ADDITIONAL ISSUES

On occasion, when all the proper techniques and equipment have been used, there are a few rifle-scope combinations that cause headaches for both the shooter and gunsmith. Most of the time, it turns out that the scope is actually moving inside the rings when the rifle is fired.

“I’ve had more issues with scopes moving in the rings or breaking free from the screws on guns with muzzle-brakes, more than anything else,” Sockwell said. “I don’t know if it’s the concussion or what, but it causes something to break. The more magnum the caliber, the more problems you see.”

Some ring manufacturers supply a type of grip tape that is used under the rings to help keep the scope from moving, but that doesn’t always work, according to Sockwell. Sometimes more drastic measures are required.

“On guns with scopes that have had repeated issues, what I’ve had to do is cut grooves in the rings and epoxy the scope in the ring,” he said. “I know that sounds bad. That’s hardcore, but at that point I don’t have any more trouble.”

Sockwell did say that with the use of lighter material in the manufacture of scopes, the problems with scopes moving have decreased. The heavy steel construction of the past has been replaced with aluminum and composite material.

Although he’s seen many problems with scopes improperly mounted over the years, the majority of the deficiencies involve the screws for the bases and rings.

“Most of the time, it’s the base screws that are wrong, either in length or mismatched,” Sockwell said. “I’ve seen them stripped out or broken off. I’ve seen some where the screws were too long and locked the bolt down, or they put the wrong screws in the wrong base. A lot of these screws are set up to be used with a certain base. Like the Savage, the screws for the rear base are 3/8-inch long and the screws for the front base are 1/4-inch. If you get them mixed up, you may not hit the target, and you’ve wasted your time going and coming from the range. Then you have to take it to somebody who knows to fix it.

“I’ve seen bases put on completely backwards with the front base on the rear, which makes it look really funny with the windage screws on the front. I’ve also seen where people have tightened down the rings so hard in the rear that you can’t turn the power ring on the scope. As a matter of fact, two of my test scopes are two that people had tightened down too far. They bought new scopes because they weren’t confident in those anymore.”

There’s that word “confidence” again, and most hunters know that the more comfortable they are with their gear, the better the hunting experience.

As Sockwell says, “A lot of shooting and hunting success has to do with the six inches between the ears.”