Scope mounting for accuracy and precision. By Jim See

If you have been shooting for any length of time you have had a scope ring or base loosen up. Proper mounting of the optic system can eliminate the problem from the start. Obviously we need to use quality components, if your rings and bases were under $100 you are probably ok for a hobby rifle but in a precision competition rifle you can, and should, spend twice that or more for quality hardware.

Scope base:

The very first thing to do is check the very front screw hole on your receiver, IF you see barrel threads in the bottom of that hole you MUST check the length of the front hole base screw. If the screw is too long it will bottom out on those barrel threads before tightening the base to the receiver. The pressure created on the thread tenon will deform the barrel threads in the bottom of the hole. This can cause serious problems if that barrel needs to be replaced someday. The screw pressure can also affect the thread engagement of the barrel to receiver causing stress which can adversely affect your rifles accuracy. Don't forget this important step or everything you do afterwards is for nothing.

What I like to do is start by using a little brake cleaner or solvent to de-grease and clean my scope base screw holes as well as my screws. I then mount my base applying a very, very small amount of blue lok-tite to each mounting screw. When your assembly is degreased a little lok-tite goes a long way. Use the manufacturers recommended torque settings per your screw size. Over tightening your base screws can actually stretch the screw and cause the screw to loosen over time. On some factory Remington 700 I may also epoxy bed my picitiny rail if I find that it does not sit perfectly flat on the receiver, which is common on factory receivers but uncommon on 99% of the well know custom actions.

Video Link; https://www.youtube.com/watch?v=aoW5bHQqgis

Rings:

I used to lap my rings; it was a messy job that is not all that precise especially when you consider your lapping bar changes dimensions every time you perform the task.

I now epoxy bed my scope ring bottom halves. If your rings are bad, and your scope binds going in, you may have to lap them to make clearance. The process involves; clamping the lower half of the rings to your pic rail, make sure the ring mates with the pic rail properly and that the cross bolt is not held up somewhere. I apply release agent to the scope tube in prep for bedding so the scope can be easily removed from the epoxy after curing. Then mix and apply a thin layer of 5 minute 2 part epoxy to the ring bottoms. Carefully set the scope on the lower halves. Next put the upper halves on and tighten the clamp screw with about 3 inch pounds, just enough to seat the scope and squeeze out the excess epoxy, do not tighten them excessively or in this step you would be defeating the purpose of creating a stress free epoxy bed. Now do not try and wipe up the excess. After 20 minutes remove the tops, pull the scope, trim the squeeze out with an exacta- knife and clean off the release agent. Now install the scope as normal, you will find that the gasket of bedding is a perfect fit and will reduce scope slippage

compared to bare aluminum. I also apply a small amount of anti-seize on only the ring top screws. (Steel screws into aluminum with no lube may oxidize and you will never get them apart down the road.)

Video link; https://www.youtube.com/watch?v=Y9sml-LslDM

When mounting your scope for final fit, make sure you level the reticle to the rifle, and set your eye relief accordingly. Finish up by tightening the scope ring retention screws to the scope manufacturers torque specifications. Excessive clamp pressure on the scope tube can cause a pinch on the gimbal of the erector housing which may lead to tracking errors with your scope, so do not over-tighten.