

## John Barsness

**A**mong the rifles accompanying me to the range a few years ago was a “parts gun” based on what had originally been a Remington 700 Varmint-Target Rifle (VTR) .204 Ruger. With its triangular barrel and olive green, injection-molded stock, the VTR was no beauty contest winner, but it was very accurate and had served as my primary prairie dog rifle for four years until the barrel became triangular toast.

Fortunately, new Remington 700 barrels are common and “affordable,” thanks to rifle loonies who buy 700s to turn their actions into custom rifles, selling the factory stocks and barrels. I bought a new stainless .204 barrel for \$80 from an Internet site, screwed it on and found the headspace was within specifications. Unfortunately, the silver barrel made the “Tupperware” stock unbearably ugly, so I searched the Internet again and found a walnut stock from a 700 CDL for \$100.

The cobbled-together .204 Ruger shot very accurately throughout prairie dog season, whereupon it was put away until the following March – when it shot like an iron-sighted .30-30 Winchester. Now, there’s nothing wrong with iron-sighted .30-30s, but they’re not ideal for shooting prairie dogs.

Long experience had convinced me that scopes were the most common reason for rifles to start

# Troubleshooting Rifle Ailments



# Remember the Basics



grouping erratically. The 3-15x 42mm Weaver Super Slam on the .204 Ruger had worked perfectly for years, tracking precisely when dialed up and down for shooting prairie dogs out to 600 yards – but they were hard years.

I felt mournful, partly because the Super Slam had worked so well for so long, and partly because I didn't want to spend money on another scope. The following day, I decided to run a reticle-tracking test with a collimator. The Weaver tracked perfectly, suggesting the rifle itself was probably the problem. When starting to take the stock off to check the bedding, the

action screws were found to be a little loose.

Well, *Duh!* The stock had been purchased from a guy living in a state south of the Mason-Dixon line, where it is very humid, and after a cold winter in Montana, the wood had shrunk. I tightened the screws and returned to the range, where the rifle shot tiny clusters.

Here it should be mentioned that not all action screws should be really tight. Some bolt rifles have a third screw between the standard pair at the front and rear of the action. If *really* tightened, the middle screw can bend the action slightly, causing accuracy problems. The most common actions with middle screws are Winchester Model 70s with two-piece floorplates and Remington 700s with ADL-style blind magazines. In both rifles, the middle screw simply holds the front of the trigger guard in place, so it should be just tight enough to do that, and no more. If nervous about the middle screw backing out, apply a little blue Loc-Tite to the threads.

Other screws that shouldn't be really tight are those on scope-mount rings. They should be slightly snugger than middle action screws, but not much, because a scope is essentially a thin tube containing many parts. Reef on the ring screws, and the scope tube can be slightly crushed, upsetting the relationship of the moving parts inside. The range symptoms of overly tightened ring screws often resemble those of loose action screws, but I've also seen overly tightened ring screws turn variable-power scopes into fixed powers, and even break reticles.

In the case of the .204 Ruger "parts-rifle," there were a couple of excuses for jumping to an incorrect diagnosis. It had been a while since I had first acquired a walnut stock from a soggy section of America. Second, over the decades, 17 different brands of scopes (not just individual scopes) have failed while on my rifles, so it



*Scope tubes are of relatively thin aluminum. If ring screws are turned too tightly, the rifle might start grouping as if the action screws are actually loose.*



*If a rifle starts grouping poorly, the problem is not always something serious. First, check the tightness of the action screws!*

was natural to suspect the scope when accuracy went sour.

However, when there's any mechanical trouble, "Rule No. 1" is to check the basic stuff first. Replacing a scope without first checking screw tightness is like automatically replacing your pickup's battery when the engine won't turn over. Instead, check the battery cables.

Still, scopes are indeed a common problem with rifles – and just because they're new doesn't mean they work perfectly. A reader once contacted me, saying he had been trying to get his new Browning A-Bolt (known for accuracy) to shoot with a handload I had suggested: any accurate 165-grain bullet combined with around 57.0 grains of either IMR-4350 or H-4350. He had used Hornady InterLock Spire Points which, like A-Bolts, normally shoot well, yet 100-yard, three-shot groups averaged over 2 inches.

I asked about some basic stuff,



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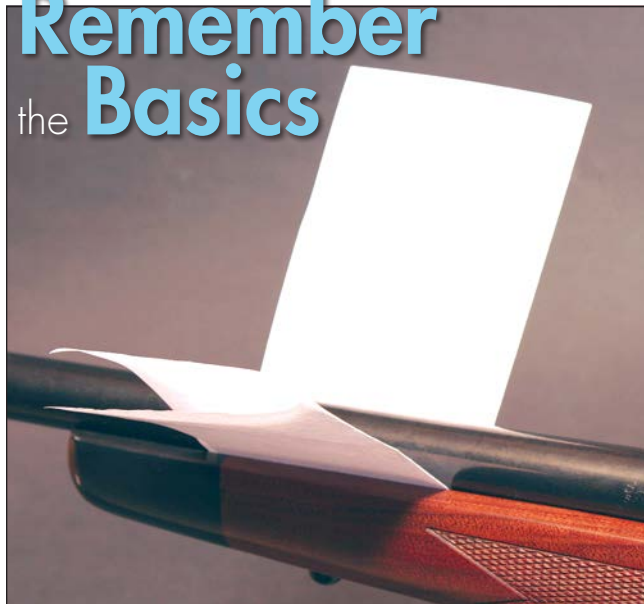
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# Remember the Basics



*When all stocks were made of wood, forends were stiff enough to test for a free-floating barrel channel by slipping a piece of folded paper between the barrel and forend.*

including (yes) checking the action screws or trying another scope. He had rechecked the screws more than once and already tried another scope, so I suggested checking the stock bedding from the forend to the magazine box – he had done that, too. Finally, I suggested the rifle might be possessed. He found my comment only mildly amusing and said he might trade the .30-06 in on something else.

Six months later he contacted me again, saying that after “safecuring” the rifle for a while, a new thought occurred to him: Both scopes he had tried were brand new. He mounted a well-proven 4x scope, and the rifle shot under an inch with the same load. One of the subrules of rifle diagnosis is to never mount a brand new scope on a brand new rifle, because if accuracy is poor, it is not known whether the problem is with the rifle or scope.

Shooters of a certain age often assume there is something wrong with the rifle, not the scope, because many of them grew up when new rifles often needed “tweaking,” and scopes were so simple they usually didn’t cause any trou-

ble. Fifty years ago, most hunters used fixed-power scopes, usually 4x, and you almost never heard of a 4x Leupold, Redfield or Weaver acting up.

Today, the situation is somewhat reversed. Most rifles, even “affordable” models, come from the factory with free-floated barrels, stable action bedding and decent trigger pulls. Meanwhile, many “affordable” scopes are variables, often with elevation turrets designed to be twirled in the field. Some relatively inexpensive tur-

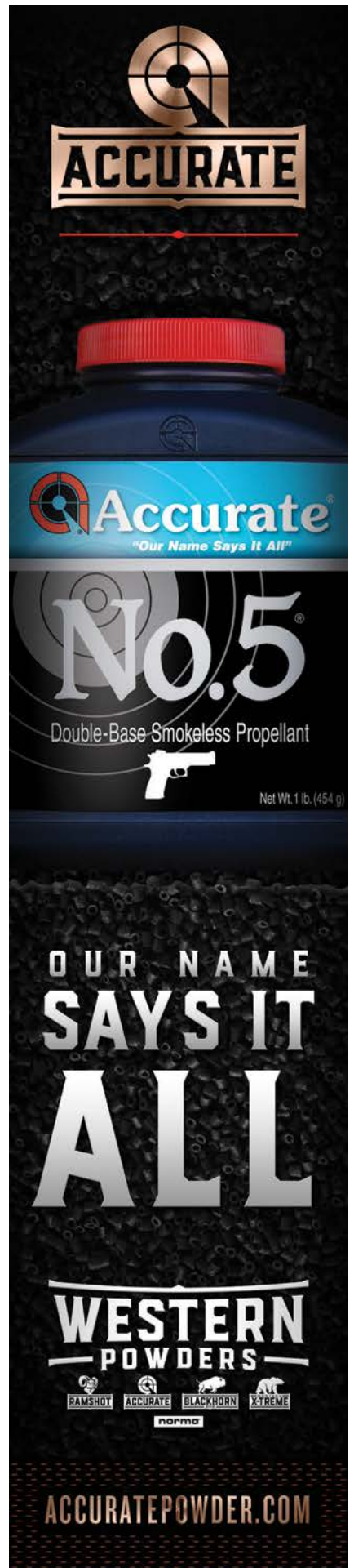


*Forends on many of today’s injection-molded stocks are flexible. To test for clearance, grab the barrel and forend tip and squeeze. If the forend touches the barrel, more space is needed to float the barrel during firing.*





Many shooters don't clean their rifles' barrels very often, thanks to anti-fouling products, like DYNA-TEK Bore Coat and other options, and decoppering agents in powders.



ret scopes are reliable, but not all are, especially when mounted on hard-kicking magnum rifles that also were in the minority 50 years ago.

Still, I always check out new rifles, because sometimes basic things can be wrong. I first pull the bolt to see whether all the locking lugs are seating in their recesses. This can usually be determined by looking closely at the rear surface of each lug. If it shows no wear, then that particular lug isn't seating at all. Such rifles sometimes shoot okay, but sometimes they group as erratically as rifles with loose action screws.

Most trouble with new rifles occurs in the forend. Modern synthetic stocks are supposedly stable

– bypassing the tendency of wood to shrink and swell with moisture – but can still shift enough to cause problems. The forends of inexpensive, injection-molded stocks are often so bendable that, even when the barrel is supposedly free-floated, the stock can make contact with the barrel during firing.

Back when wood was the only stock material, forends were pretty stiff – which is why the basic technique for testing a free-floated barrel was sliding a folded piece of paper between the barrel and forend. If the paper slid easily all along the forend channel, the barrel was adequately free-floated.

With the increased flexibility of some synthetic stocks, a better test is squeezing the barrel and tip of the forend in your hand. If the forend touches the barrel, it isn't floated enough. Luckily, this is easily solved in a couple of minutes with a round wood rasp, another basic solution. Some riflemen prefer more complicated solutions, including stiffening a floppy forend by

*Actions used to be cleaned each time the barrel was cleaned but are now often neglected. Modern cleaning sprays and pressurized gas can help clean out tiny corners easily, such as those in bolt faces.*





# Remember the Basics

filling it with epoxy bedding compound and cut-down, graphite arrow shafts. (Exactly why this might be preferable to rasping off a little plastic, I don't know.)

Many shooters also assume any expensive synthetic stock is impervious to warping. This is usually true, but not always. One of my custom rifles has a "lay-up" synthetic stock made by a highly-regarded company. It is constructed of various synthetic fibers inside oven-cured epoxy. I decided recently to change the scope on the rifle so took it from the safe, inadvertently grabbing the tip of the forend and barrel. For whatever obsessive-compulsive reason, I squeezed the forend tip and found it *already* in firm contact with the "free-floated" barrel. I ended up rebedding the action to refloat the barrel – so no, we can't totally assume synthetic stocks are always more stable than wood.

Another "basic" many shooters forget is cleaning any part of a rifle other than the bore. When I first started shooting, many guys obsessively cleaned their entire rifle every time they shot it. Today, however, there are so many reasons *not* to clean rifles, many shooters don't clean them very often.

*Place a rifle's forend on a padded rest with the sling-swivel stud close to the sandbag, and the stud can bump the rest during recoil, causing a flyer.*



*One of the basics of accurate shooting is keeping pressure on the pulled trigger (left) until the bullet hits the target. Many shooters don't get enough practice, and one common affliction is jerking the finger off the trigger (right) as soon as it is pulled.*

Stainless steel barrels weren't unusual on hunting rifles a generation ago, but today they're common, and theoretically don't rust. I say "theoretically," because the stainless alloys used in most barrels can still rust when exposed to salt, whether in seacoast air or a saddle scabbard thoroughly salted by sweaty horses. Aside from stainless steel, there are now bore treatments that practically eliminate bullet jacket fouling, and more powders contain decoppering agents.

When bores used to be cleaned far more frequently, most shooters also cleaned and oiled the action, but these days many shooters (including me) sometimes don't clean the bore for hundreds of rounds. Meanwhile, gunk builds up in the actions from dust and moisture, and tiny bits of cartridge brass stick to the bolt face, often around the extractor or ejector. Eventually the rifle's action malfunctions in some way; sometimes the issue is as basic as the bolt not sliding easily, and sometimes it's as serious as the extractor breaking. Even if a stainless barrel – treated with DYNA-TEK Bore Coat and only shot with decoppering powders – shoots accurately for hundreds of rounds, it helps to clean the action more frequently, including the bolt face.

That job is thankfully much easier today because of modern cleaning sprays and even other

sprays. Like many other twenty-first century Americans, I keep cans of compressed gas around to dust off electronics. Spraying the face of a bolt with a modern solvent, then with compressed gas, gets rid of stuff our grandfathers could only remove with time-consuming labor. It also doesn't hurt to do the same thing to modern "enclosed" triggers at least once a year.

Most Americans live in metropolitan areas, where it is difficult to get to a range very often, so forget basics, such as following through – maintaining consistent contact with the rifle until the bullet hits the target. This can

*Erratic scope adjustments can often be "fixed" by twirling each turret completely through its adjustment range several times.*





be something as small as what my friend Tim Fallon, owner of the FTW Ranch in Texas, calls the "booger flicker," flipping our forefinger off the trigger as soon as the firing pin drops.

Even the impact of the front sling swivel stud on the front shooting bag can cause a "flyer," yet many shooters place the forend on the rest so the stud is right in front of the bag. Remember, when recoil begins, the bullet is still in the bore, and any little inconsistency in the rifle's position can affect the bullet's flight.

Twenty years ago, trips to any public rifle range were often filled with the sound of metallic clicking, due to shooters tapping the tops of their scope turrets with an empty cartridge case. This was supposed to "settle" the adjustments, and often did, because the springs in many older scopes were not strong enough to always push the erector tube around inside the scope. As a result, the point of impact didn't move until after a shot or two had been fired, when the recoil jarred the erector tube into place.

Thanks to field-adjustable turrets, these days many scopes have stronger adjustment springs, but some can still require a little help. One common trick is to turn the turrets a few clicks beyond the preferred adjustment point, then back again, but hesitant adjustments can often be fixed by turning the turrets completely through their adjustment range a few times. This often prevents problems with new scopes and can even help well-used scopes. I have a turret scope on a CZ .17 HMR, but on the first rodent shoot last year it acted weird. Eventually, I had another *Duh!* moment and took a minute to whirl the elevation adjustment up and down a few times. After that, the scope behaved itself.

None of these basics are as fun to discuss (or obsess over) as buying a 6.5 Creedmoor or \$1,200 scope, but they can make far more difference in the success or failure of our shooting. R

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