Lightweight Fixer-Upper: Resurrecting A Remington

By Bobby B. Pitchford

Above: Our test gun was a .30-06 Remington 700 Mountain Rifle.

A certain class of guns generally poses the greatest accurizing problems—lightweight, or mountain rifles. These 6- and 7-pound guns are designed to be carried at high altitudes, where an ounce here and an ounce there makes a big difference in the hunter's stamina and comfort. However, less weight carries with it a tradeoff: a thin barrel contour and reduced weight in other metal parts. Good steel generally provides whatever accuracy a gun can produce—whether in the trigger, receiver, bolt, or barrel—and most gunsmithing is designed to maximize the metal's performance. When there's not as much metal to work with, tune, or refine, the gunsmith faces a difficult challenge. So it was with a .30-06 Remington 700 Mountain Rifle that came into the Briley Manufacturing shop recently. The owner complained that the gun's best groups with factory ammo ran about 2 inches, and he wanted those groups reduced to the 1 to 1.25-inch range if possible. Moreover, he wanted to see these improvements made as economically as possible, which meant that rebarreling wasn't an option. In this case, I had to work with the gun as is, and tune the components enough to produce the accuracy the customer desired, and keep the total project cost in the $200 range.

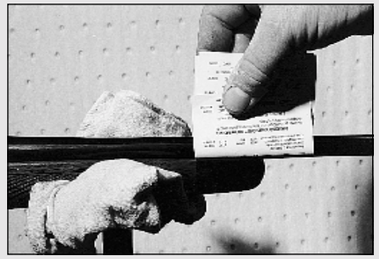
Above: The gun shot 2-inch groups with factory ammo before we tweaked it. Now, it shoots cold-barrel groups smaller than an inch, and hot-barrel groups near an inch. The total project cost was around $225.

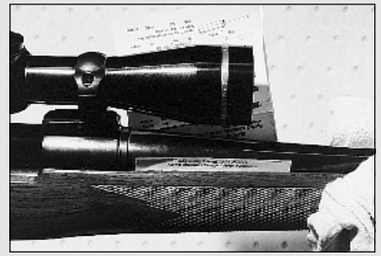
When I examined this Mountain Rifle, I learned the good news and the bad news. The good news was that the rifle was mechanically sound overall; there were no major parts groups that had to be replaced. The bad news was that the trigger was extremely heavy and creepy with excessive overtravel. Also, by passing a folded piece of paper under the barrel, I could tell that there was heavy pressure on the barrel just behind the forend cap, but the rest of the barrel was unsupported all the way back to the recoil lug. Excessive pressure on the forend can cause point-of-impact changes when the barrel heats up, or when the stock swells from temperature and humidity variances. These problems are magnified by the light barrels found in the 700 Mountain Rifles and Model 70 Featherweight Winchesters. They have a lot of flex and are sensitive to bedding changes.

Before I began fixing these problems, I gave the rifle a good scrubbing with Shooters Choice solvent. I have solved many accuracy problems by cleaning a rifle thoroughly, using a tight-fitting bronze brush, a copper-removing solvent, and a bore guide to prevent damage to the throat area of the bore. I went to the range and found perfect conditions: bright sun, 50-degree temperatures, and no wind. After firing a couple of sight-in shots, I learned that the gun was on the paper, and that the 2.5X to 8X Leupold scope was tracking properly. I waited 15 minutes so the barrel would be cold to the touch, and fired my first shot in the center of the bullseye.

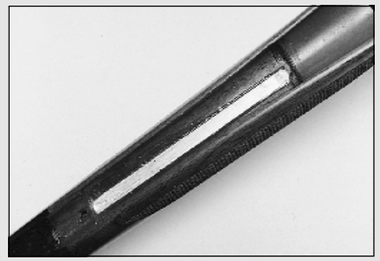
In 1-minute intervals, I shot three more rounds. I pulled the first shot to the left, which I attributed to the poor trigger pull. The remaining two rounds nonetheless clustered with the first to form a 5/8-inch group. I was surprised by how accurate the rifle was. Still, when the barrel got hot, the groups would open up. I needed to make the gun shoot more consistently, but not alter its inherent accuracy.

Above: We were able to fire cold-barrel 5/8-inch groups with factory ammo once the barrel had been scrubbed.

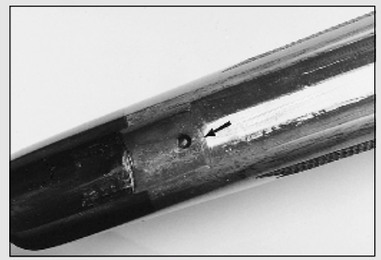




Above, left and right: Passing a folded piece of paper under the barrel showed there was pressure on the barrel just behind the forend cap, but there was no support around the recoil lug. Pressure on the forend can cause inaccuracy when the barrel heats up. We solved the problem by removing the forend pressure point and glassing in the recoil-lug area.



Above: To make the forend stiffer and more resistant to flexing, we routed a channel in the forend and bedded in a high-strength aluminum rod into the channel.



Above: The stiffer forend allowed us to reinstall an effective pressure pad (arrow) that reduces whippiness in the .30-06 Mountain Rifle's light-contour barrel.

I began this process with the bolt and trigger. I disassembled the rifle, taking the trigger group and bolt apart for degreasing. I then inspected the bolt for rust and metal chips left over from machining. With the bolt apart, I polished the striker to prevent it from rusting further, and to allow it to fall consistently shot to shot. I reassembled the bolt after lubing it internally. On the trigger, I polished the sear surfaces (without changing angles on the metal surfaces), reassembled it dry, installed it in the action, and adjusted it to break at 3 pounds with minimum overtravel.

Next, I began work on the barrel and stock. I pillar-bedded the stock using aluminum pillar sleeves on the front and rear action screws. I Acraglased the pillars in place, as I did the action from the front of the magazine well to about 2 inches in front of the receiver. After letting the glass cure for 24 hours, I removed the barreled action from the stock and routed out the front of the barrel channel to remove the pressure point. I then sealed the stock with a urethane finish. I reassembled the rifle at this point and took it to the range.

Test groups from that session fell within the 5/8-inch to 11/16-inch range, but barrel heating still opened up the groups. The barrel just didn't have enough diameter to prevent it from heating quickly. To solve this problem, I routed a 5/8-inch channel down the length of the forend with a ball-end mill. The channel started at the front of the bedding, in front of the recoil lug. It ran to the back of the forend cap. Then I bedded a high-strength aluminum rod into the channel. I milled the top of the rod flat to clear the barrel. Using metal-reinforced Acraglas, I then bedded new pressure points into the forend of the stock.

My cold-barrel results, shooting the same lots of Remington 150-grain Core-Lokt ammunition I had used previously, stayed in the 3/4-inch range. Even more pleasing to me, three- and four-shot rapid-fire groups consistently came in at or slightly above an inch. Though it's difficult to get whippy-barreled, lightweight rifles to shoot well, it is possible.

Pitchford is a rifle gunsmith in Houston, Texas.