

## AR-15 Issues... You Never Know What's Going to Walk Through the Door

By John Siers a/k/a "Gunsmith Jack"

As a gunsmith, I have to love the AR-15 just because of all the business it brings me. Probably a third of the customers that walk through my door are bringing me an AR with some silly problem or other. Of course, there are a lot of ARs out there, and a lot of unqualified people trying to assemble and/or "customize" them. That's a little scary, but so far most everything I've seen has been a "fail safe" problem – in other words, no shooters were injured in any of the incidents described here. The most dangerous issue I came across involved a customer who assembled his own lower receiver and failed to make sure the secondary sear could move freely. It had a tendency to stick in the disengaged position, giving him an unreliable (and illegal) full-auto rifle. He brought it to me after being booted off his local shooting range for violating their prohibition on full-auto fire. I solved his problem with a little fitting and polishing to get it working properly.

Most of the issues I see are less dangerous, like the customer who brought me two AR uppers. One was a traditional .223 / 5.56, while the other was a .300 Blackout. Both had the same issue: they simply would not cycle... at all. No eject, no feed, no movement of the bolt carrier when fired. They could be cycled just fine with the charging handle, but did nothing at all when fired except wait to be manually cycled. In short, they were behaving like bolt-action rifles.

OK... obviously a gas system problem and when I pulled the front end apart, this is what I found (see picture). Now, what could possibly be wrong here? Hmm... isn't that hole in gas tube supposed to be on the BOTTOM?

Both of the uppers had the same problem – an upside-down gas tube – and in fairness it was not the customer's fault. He had built his own lower, but had purchased both uppers completely assembled with barrel and handguard from a well-known internet vendor.

On the other hand, some problems are definitely caused by user error. One customer tried to replace the A2 sight-ramp gas block on his rifle with a quad rail block. No problem – just knock out those two pins on the bottom, unpin the gas tube, and it should slide



right off. Unfortunately, nobody told him those two pins on the bottom were **tapered** and he managed to drive them about halfway out **in the wrong direction** before he figured out they wouldn't come out that way. Then, of course, he bent them while trying to drive them back in. At that point he brought it to me. I had to cut off the pins, then drive them back out. Original gas block was pretty much ruined, but the barrel was OK, so I was able to install his new gas block without a problem. The good news about the AR platform is that just about everything is fixable / replaceable with a minimum of fuss, as long as the lower receiver shell isn't damaged or defective.

But what if it is? I recently ran across a problem that's probably not very common, and I had to come up with an uncommon solution. The gun was a cobbled-together mess that matched a brand-name lower (clearly marked .223 / 5.56 caliber) with a no-brand upper and a 7.62x39 barrel (first time I'd worked on an AR that speaks Russian). That's OK, as long as the bolt, magazine, and buffer are suitable for the cartridge (which they were).

The customer hadn't built this one – he'd traded an old flat-bed utility trailer for it, but after his first trip to the range he was beginning to think the other guy got the better of the deal. He got a whole bunch of misfires and failures-to-feed – not jams, bolt just didn't pick up the next round from the magazine, giving him a resounding “click” as he pulled the trigger on an empty chamber.

The first suspect was the cheap, steel-cased Russian ammo he was shooting (the trailer deal included about 300 rounds of it). I looked at some of his misfires and saw light firing pin impressions on primers that were obviously set too deep in the case. Mil-Spec for .223 calls for primers to be no more than .008” below flush, and these were running as much as .015” – probably not a problem for an AK-47, which has more firing pin protrusion than an AR. I also noticed that the junk ammo wasn't feeding smoothly in the magazine (though it was marked as being for 7.62x39). *This is going to be an easy fix*, I thought, and I took the gun to the range with some good-quality Focchi ammo, brass-cased and properly primed stuff that I use with my own AK-47.

Turns out I was **half** right. The misfires disappeared with the good ammo, but the missed feeds did not. OK... back to the shop. A look at the magazine showed the quality ammo was feeding properly when stripped off by hand. No problem there. The magazine was a very tight fit in the mag well, but when shoved all the way in it would feed and chamber the round just fine. The problem seemed to be just a little bit of play in the magazine catch, that would allow the magazine to move downward just a little bit after a round or two was fired. Spring tension pushing the rounds upward against the bottom of the bolt would tend to push the magazine down, but because it was such a tight fit that wouldn't happen until several rounds were fired... and then the bolt would miss picking up the next round. The first suspect was the magazine itself, but that wasn't the problem. The slot in the magazine was properly cut and positioned.

Nor was the magazine catch itself the real culprit. The first photo shows the stock catch installed in a typical lower receiver shell. This is the way things are supposed to look, as I'm sure most of you have seen many times. It's a nice snug fit, with just enough clearance to let it slide straight out to release the magazine.



The next picture shows the magazine catch installed in the *customer's* gun, and now the problem is obvious. The slot in the lower receiver shell is cut too wide – not by much, just maybe a sixteenth of an inch or so – enough to let the catch pivot downward, allowing magazine to drop just enough that the bolt will miss picking up the next round.

This was a factory defect. When I pulled the mag catch out and looked at the slot, I could see faint marks in the bottom where it appeared the tool had slipped a bit. The top part of the slot was cut correctly and the hole was properly positioned, but then some extra metal got taken off the bottom.



So, what do we do about this? I can almost hear Bob saying “you just need to TIG weld a little bit of metal on the bottom of the slot, then re-cut it to the proper dimension....” Unfortunately, my skill at TIG welding aluminum rates poor to zero, and I don't have the equipment to properly mill out that slot again. I need a better solution than that. Of course, I could just tell the customer he needs a new lower receiver... “and fortunately, I have one in stock. Now, just fill out this Form 4473 because according to ATF I am actually selling you a new gun.”

No... I came up with a better idea, one that doesn't require modifications to the lower at all. I got out my tube of Plastic Steel Epoxy. If you've never worked with this stuff, it is basically powdered metal mixed with epoxy resin. Like all such products, you mix it with a hardener and will stick to just about anything (including cleaned and degreased steel or aluminum). When fully cured, it can be machined like metal and even drilled and tapped – great stuff for fixing stripped-out screw holes in a gun frame.

In this case, I just ran a little bead of it along the bottom of the magazine catch – just the pin end, not the catch end. The catch that engages the magazine slot itself was the correct size, so I didn't want to change it. I just needed it to be supported enough to maintain the correct position. These pictures show what it looked like after curing and then filing and fitting to match the slot.



Filing and fitting took the most time, but I was pleased to note that the cured product matched the color of the part almost perfectly. Once installed (see picture below), the fix was almost invisible.

It looked OK, but did it work? On the bench, it seemed to be good with the magazine latching properly when pushed all the way in, and no movement of the mag once the latch was engaged. But I wasn't going to be satisfied until I actually tested it, so back to the range again (and again with the good ammo).

Perfect! Feed, shoot, cycle – no problems. Ran several magazines through it without a single feed issue or misfire. Took it back to the shop and cleaned it up, and also removed and checked the magazine latch to make sure it wasn't showing any problems. Called the customer and gave him the good news (and my bill).



Yes, I have to love those ARs. I never know what I'm going to see tomorrow but I've yet to find a problem with one that couldn't be fixed. Some fixes just require a little more creativity than others.