# A Primer On AR-15 Problems

***Despite decades-old war stories, AR-15 rifles are rugged and reliable. However, not all ARs are created equal and even the best can have their moments.***

*by RK Campbell*

During the past decade I have dealt extensively with AR 15 type rifles. With a son in the military and my experience with patrol rifles, I have collected quite a body of information on the subject. In fact, one of my abstracts is cataloged by the National Institute of Justice. Even the occasional AR-10 and Magnum types have crossed my bench. Having wrestled with the sea stories and myths, I have found the AR-15 to be a reliable system, but we must begin our quest for knowledge with the fact that not all ARs are created equal.

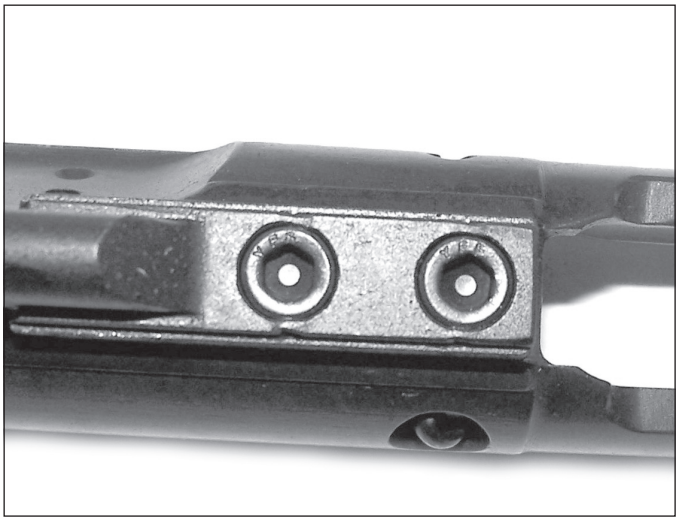
For starters, parts guns in particular are suspect. Some do not have properly heat treated components and others may not have properly staked bolts. A quality rifle such as the Armalite, Bushmaster or Colt will run a long time given proper maintenance but some of the others can cause concern. There are many problems that crop up with the AR 15 but most of them are caused by poor maintenance. Firing the rifles a lot without cleaning is a big problem you will see often. Some brands of ammunition can be worse than others. The least expensive rounds are often blamed for problems but the truth is their low cost allows the shooter to fire more. If the rifle is not maintained and the next session is undertaken with merely a squirt of lubricant and no real cleaning the ammunition is not totally to be blamed. All ammunition is not created equal, but all rifles must be cleaned.

***Above:*** *The modern AR-15 rifle may be highly reliable but it is subject to mishandling and broken parts just like any other mechanical device.*

When approaching a troublesome AR I always have a few questions on hand for the owner. They are: "Has the rifle previously malfunctioned?", "Was it reliable at one time or has it always been a problem?", "Is this a production gun or one made up from parts?", and "Is the rifle in the break in stage?"

If we have suspect parts coupled with amateur assembly there is an obvious track to take in our study, but if it is a quality rifle that begins malfunctioning we have another route to take. Decide which path will be the most profitable in locating the problem. Keep an open mind. Many problems are ammunition related. Handloads and even loading dies cause problems. I cannot help but wonder why a nation issuing the 5.56mm round would ever declare thousands of rounds surplus and not simply shoot them in practice. Global economics may demand the stuff be sold for a pittance, but from the quality of some of the surplus ammunition I have tested if I were


***Left:*** *The function of the safety must be troubled checked when a rifle with suspect parts is brought into the shop.*




***Above left:*** *The carrier key must be properly staked or the rifle is subject to serious malfunction.* ***Above right****: The action pins must be tight and flush with the receiver or trouble is looming.*

to receive Winchester or Federal ammunition on US assistance, well, I would dump my home grown ammunition as well — or grind it into fertilizer. But that's me. This is food for thought for those who purchase surplus ammunition, wherever it is manufactured.

Some ammunition is lacquer coated which can cause a powder residue and lacquer to become baked into the chamber. If the rifle is dry, then sloppy maintenance is another issue. A firing test will be undertaken at some point. For what it is worth, I keep on hand Winchester USA 55 grain "White Box" ammunition for firing tests. It is neither the cleanest nor the dirtiest ammunition but if the rifle does not work with Winchester it is sick and need treatment.

A thorough cleaning is first followed by lubrication. Then we get into the basics of trouble shooting. If I find a certain problem then I also have a cure.

1. A failure to eject. Check the extractor spring and the ejector spring.

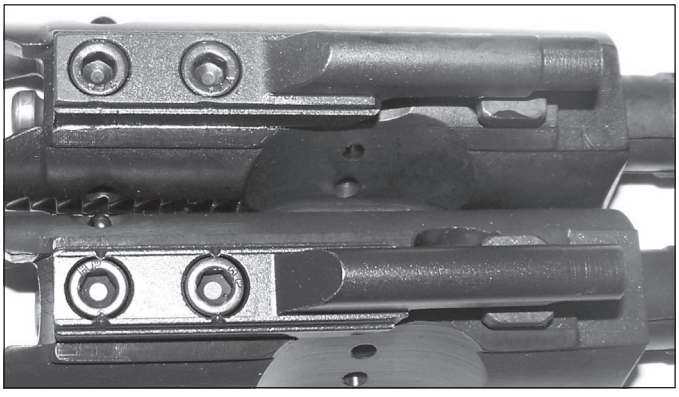
2. Short stroking. If short stroking is not caused by friction from a lack of cleaning, then there is a gas leak. In one of my recent examples, the bolt carrier key was a culprit in this type of problem. As it turned out, the bolt carrier key was not properly staked in a parts gun.

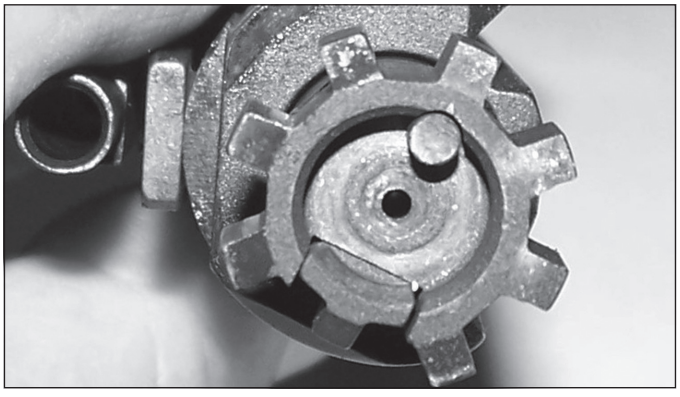
3. Staking. Take a look at the carrier. The key is held in by two hex head screws and must be staked in. Nothing else is acceptable as no amount of Loctite will solve this problem. I have done the operation with a punch and hammer, punching the key around the knurled screw heads. I have seen several cases where a loose key actually allowed the case to stick to the chamber and the case had to be beat out with a cleaning rod. Avoid this!

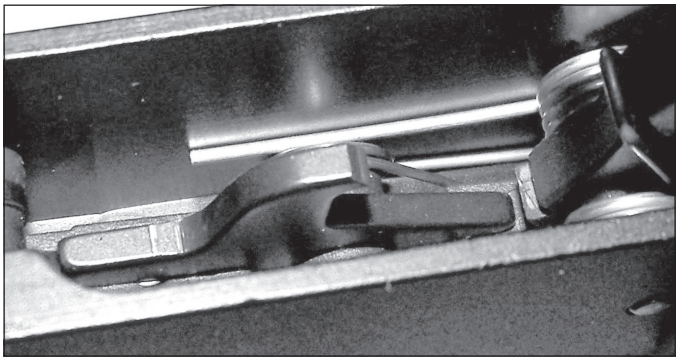
4. Gas rings. A common problem is a broken gas ring and usually shows up on high round count rifles. Keep an eye on the gas ring and keep several on hand.

5. The bolt. The gas tube is built onto the bolt unlike the system used with the M1 Garand and M14/M1A1 rifles. The tappet-style gas system of the M1 Carbine was an evolutionary

***Below left:*** *The carrier key at the bottom is properly staked the one at the top is not. This is trouble waiting to happen.* ***Below right****: Check the bolt ejector and extractor closely. These can be real trouble spots.*








***Above left:*** *The hammer springs must be in the proper position. This is the first step of the internal checks.* ***Above right****: This is proper extraction. Often a firing test is mandated.*

step toward the AR-15 as a low maintenance rifle. They are low maintenance, not no maintenance.

6. The gas block. The gas block is on the barrel and should be a snug fit. Aftermarket gas blocks are not always the right fit. I am not picking on aftermarket parts but original parts are often the best bet, particularly if the rifle is destined for critical use. In checking the gas block, screw it down and hope for the best. The main area of concern is that the gas block inlet and barrel gas port are properly aligned.

## Ejection/Extraction

The extractor pulls a case out of the chamber and the ejector kicks it out. The AR ejector actually causes the case head to pivot on the extractor hook and to be forced out of the ejection port. Too little spring pressure and the spent case is caught in the ejection port. The usual signs of extractor/ejector trouble are trapped cases, heavily dented cases and erratic ejection. When the rifle is functioning properly with standard loads the AR-15 is a very consistent rifle. When bench resting one of these rifles for accuracy I often find a neat stack of brass a few feet from the rifle. Extractor problems put a kink in this performance.

There are ways of adjusting tension if the cases are being ejected too vigorously. As a rule I do not like clipping springs but clipping a coil on the ejector spring is an option when extraction is erratic. Interestingly, carbine-length AR-15 firearms require more ejection strength than rifles, so keep the springs full length with the short barreled versions.

A common problem with the AR-15 rifle is the extractor. Early M16 rifles had problems caused by an unfortunate combination of poor powder choice and a lack of maintenance. Today, foreign produced ammunition and poor choices in handloads may partially recreate theses problems. When addressing extraction issues the first thing we need to understand is that extraction difficulty may or may not be due to mechanical factors. If the extractor is leaving a pronounced imprint on the cartridge case or actually taking a gouge out of the brass, it is the extractor is doing the business. The chamber may have been cut rough or become rough from corrosion or a lack of cleaning. Remember too that the gas impingement system of the AR-15 may allow dirt into the chamber. When addressing chamber inspection we need to thoroughly examine the chamber and determine if a cleaning or polish is needed. Because a clean chamber is so important, I begin maintenance

***Below left:*** *You may go as fancy with the AR-15 as you wish, but in terms of proper function the same rules apply.* ***Below right****: There are many types of magazines and it takes a lot of shooting to isolate the best of the best. These magazines have all been proven reliable for hard use.*

*Left: A simple function check includes looking at "hang on" accessories. If not installed properly these can alter the harmonics of the rifle and may affect function and accuracy.*

by using a .38 caliber brush to thoroughly swab the chamber.

I look to other problems as well. As an example I use small base RCBS dies for loading the .223 and recommend these dies to all shooters shooting AR-15s, but any number of handload related problems still crop up. Just the same, experience indicates a properly sized cartridge case feeds and extracts just fine with most standard die sets. Improperly sized brass fails to feed and hangs up on the top of the chamber. Some 5.56mm loads are pretty hot and I have seen factory loads blow primers although it is not common. The higher pressure loads produce greater chamber adhesion presenting more problems. The case is designed to expand but not remain expanded to the chamber as extraction begins. If the customer is an enthusiastic handloader or long range competition shooter, a hard look at his ammunition is in order.

If stronger loads are desirable or mandated then a stronger buffer string, such as available from W C Wolff (gunsprings.com), is needed. Often this single addition solves many shooting problems. The extractor spring has gotten much attention here and Buffer Technologies offers an extra power spring that solves other problems. The objective of such springs is to keep the extractor tight against the cartridge case and the bolt. My normal recommendation is to utilize an extra power spring, however, in some cases this extra effort may limit the flex of the extractor as it snaps over the case rim and may even lead to higher pressure. The jury is still out if this extra power spring should be a standard re-fit, but if the rifle in question is a quality rifle and it is currently working I vote to leave it alone. If there are extraction issues, then fit the kit.

There have been cases of cartridge case shoulder set back from too much extractor tension or the extractor failing to snap over the case rim at the proper point in the feed cycle. If you have a rifle displaying excess pressure signs without much in the way of explanation, make a point to live fire a round and then check the chambered round for case shoulder set back. It just may be extractor related. A standardized step that often reaps benefits is to carefully address the extractor itself with good old fashioned handwork. This includes polishing just the leading edge of the extractor. The leading edge should be clean and smooth, burr free.

Finally, check the magazines! There are a lot of crappy, poor quality magazines on the market, too many to enumerate. I recently ordered a case from Bravo Company. They have worked fine and so have the plastic Lancer magazines. Possibly the top of the tier is the excellent Heckler and Koch magazine.

## AR-15 Check List

This is my checklist for every rifle that comes in. Even in the case of a rifle with an obvious problem this checklist will still help you spot the less obvious. I begin by clearing the rifle and field stripping it. Bring the cocking handle and the bolt back to look into the receiver. Examine the hammer springs. Both should be firmly on the sides of the hammer pivot, intact and unbroken. The hammer and trigger pins in the receiver should be a flush fit. If they are not, a securing spring is out of place. Examine the receiver for dirt, crud, and other debris. Moving to the bolt and bolt carrier, check the carrier key for movement. There should be none. If there is, the the key needs to be restaked. Check the bolt. The lugs should be sharp and clean. No chips or cracks are acceptable. Make sure they are oiled and greased. The ejector should not move at all with hand pressure. The extractor must have a bit of flex but a tool of some type is needed to check this flex, as it should not be finger tight. The extractor is vital to functioning. The gas rings should be checked. An easy way to check them is to extend the bolt as assembled inside the carrier and then stand the bolt on a bench or other flat surface. If the carrier collapses toward the bench the rings are worn.

## Function Testing

Pay attention to detail here as we expect different things from the rifle during this test.

Clear the rifle and cock the bolt. Let the bolt drop on an empty chamber. The hammer must not fall. Place the safety on safe and hold the trigger back with about ten pounds of force. The hammer must not fall. The hammer must not fall when the rifle is placed off safe either. Move the safety to the fire position and release pressure on the trigger. The hammer should not fall. Now repress the trigger to drop the hammer. Keeping the trigger pressed, cock the bolt. You should hear a reset or light click as the hammer resets on the disconnect hook and into the sear notch of the trigger. Hold the trigger down and rack the bolt several times to check for disconnect function.

These tests and checks are simple but important and go a long way toward detecting problems with America's Black Rifle. AG