

19th Century Single Shot Cartridge Rifles

Hopefully, some of the following will be of some assistance to some folks who are thinking about delving into those old rifles and cartridges of the yesteryear buffalo runners, for fun plinking, silhouette steel, paper targets, and/or hunting.

I started with these kinda rifles lotsa years ago, getting my toe in the waters with an H&R Buffalo Classic in .45-70 and loading lubed bullets over smokeless powders. This involved case resizing, casting .459" 1:30 alloy bullets, dip lubing, charging the brass with Trail Boss, Unique, then finally the better AA5744 smokeless powder (made for these old cartridges) - and having some fun at the range with the iron barrel sights at 100 yards. The Buff Classic has serious limitations that were fully resolved with Pedersoli replicas of Remington rolling block and Sharps falling block rifles, using Super Grade vernier micrometer soule tang and spirit globe front sights from gunsmith Lee Shaver. I was still loading AA5744 smokeless powder under lubed bullets, but now I was using the fire formed brass and no longer resizing. All of this collectively was a serious improvement in consistent accuracy and I no longer frequented the 100 yard range (just too short a distance for the .45-70 to stretch out its legs) in favor of 200 and 300 yards as the norm, with much longer distances as they became available to shoot at. I began shooting local club matches and doing pretty well for an old guy.

But something was missing. I was missing the point of these guns and cartridges. The answer was black powder. The .45-70 and all the myriad of late 19th century metallic cartridges were designed to use gunpowder, not the smokeless powder that hadn't yet been invented. Back in the day, before the turn of the 20th century, no one called powder "black powder", it was simply "gunpowder" because that was the only propellant that worked for all manner of firearms. Having been a lifelong flintlock muzzleloader since the 50's, I had to get into the secret fraternity of black powder cartridge rifle shooters (BPCR). It was easier than I thought in many ways.

Sadly, the day of the H&R rifles is over and long out of production. Currently, there are no similar, inexpensive iron sighted rifles offered by any manufacturer that fills the Buffalo Classic slot.

CVA offers their offshore built, plastic stocked Hunter break open cartridge rifle in the .45-70 caliber. It is not a competitive BPCR rifle and can be had for under \$300. However, it comes with a scope base and no front sight for its short 25" barrel, so it will take some gunsmith work and money to add the appropriate minimal iron sights required for BPCR. It's single trigger is going to be too heavy a pull, as well.

There is also the Henry USA built .45-70 break open single shot rifle that is street priced at something under \$400. It will never be a competitive rifle mainly because, like the H&R Buffalo Classic and CVA Hunter, it's a break open action and the tang and barrel are on two different moving planes that can easily affect

vernier tang sight settings. Also, the single trigger is far too heavy in pull weight, and the 22" lightweight barrel is, well, too short and too light. The Henry trigger pull can be easily lightened by installing a new 31# trigger spring, and if so that would not make a good, fun .45-70 rifle for range plinking or hunting - but again, and like the H&R, it wouldn't be competitive if target shooting was the aim of your game.

There is also the Tippmann Armory USA built rolling block .45-70 rifle, based on the Remington rolling block action and offered for \$1000. It has a good action, but a heavy trigger and short, lightweight barrel. Perhaps a good hunter, but a heckuva lot of money, and just not a rifle for BPCR target work.

One could easily invest in \$2500 to \$3000 for a new onshore built Sharps rifle from Shiloh or C.Sharps, or a Stevens 44-1/2 from CPA. Besides the cost there will be a wait time from a half year to two years, or longer. There are a few vendors that have ready-to-buy rifles from these gunmakers - expect to pay a premium. One could also look for a used rifle built by one of these manufacturers, but they do hold their value and it would be difficult to find a good one for less than \$2000.

The solution for me, and many others, is an offshore BPCR gun from the noted Italian gunmaker, Davide Pedersoli. I have had personal experiences with Pedersoli replicas of rolling block and falling block rifles, at least 4 of each action type. I currently have one of each for competition, and would not hesitate to recommend a Pedersoli gun as more than worthy of being a life time rifle that's match worthy. One vendor for these guns is Dixie Gun Works, and the price tags for such rifles with match grade barrels and double set triggers begins under \$1200. While these Pedersoli guns do come with barrel sights that are fine for hunting, quality tang and front sights are a requirement for any form of target shooting, and will add \$300 or lots more to the overall cost.

I primarily use the .45-70, and although this article exclusively addresses that cartridge, the following can pertain to most any cartridge used in 19th century rifles, single shot or lever action. .45-70 commercial cartridges are costly and, for the most part, are powerful (read that as: a good bit of felt recoil). Recoil can be greatly softened with a good add-on shock absorbing butt pad such as the lace-on Kick Killer. I use one and can shoot full house black powder loads all day long with no lasting effects of recoil.

Building cartridges is the way to go for the .45-70 as it will be very cost effective, rounds can be tailored for specific functions (low recoil, target, long distance, hunting), and are easy to build with minimal tooling. Very low recoil, but accurate, cartridges begins with a sized brass case that's primed with a standard large rifle primer, add 10 to 13 grains of Trail Boss smokeless powder, and seat a Lee 340 grain bullet (Lee mould 457-340-F). The bullet is cast with 1:30 or 1:20 tin:lead alloy and dip lubed with any black powder bullet lube. The bullet is seated in the case to a predetermined cartridge overall length (OAL). This cartridge affords extremely low recoil and is accurate to 200 yards. A more powerful long range .45-70 cartridge would just need the powder substituted with the more powerful

smokeless such as AA5744, and a much heavier and longer bullet such as the Lyman 532 grain Postell (Lyman mould 457132).

Building a quality black powder long range cartridge begins with a fire formed .45-70 case. If the case is new, I'd run a BACO (Buffalo Arms Company) .460" straight wall expander plug (set inside a Lyman "M" die body), to simulate fire formed brass. I like to uniform the case flash hole with a Lyman flash hole uniformer tool. A standard large rifle primer is used. Some folks use magnum primers, some use large pistol primers, some use a primer wad inside or outside the brass. All this has it's plus and minuses, so best to start at the beginning with a simple large rifle primer that's well seated.

The alloy bullet, typically 1:30 thru 1:20 tin:lead, is cast and lubed. The bullet is critical. While some can be purchased for testing purposes, it will always come down to casting your own. A good mould is critical and will not be cheap. One can get their feet wet with a Lyman Postell mould and that'll be just fine for starters, but a custom mould is the way to go later on, and at more than twice the cost. Lubing can be done with a pan, dipped and cookie cut, or use a lubrizier - but pan and dip lubing are easy, fast, economical, and perhaps the best way to go. For most .45-70 rifles, the barrel groove diameter will be .458". Depending on how the bullet casts, the need to size the bullet may not be required - typically, it will not if it drops at .458" to even as large as .460". If sizing is required, an economical Lee bullet sizing die will get the job done fast and cheap.

The simplest basics of black powder cartridge loading is about compacting the powder, then compressing the powder. There shouldn't be any air space between the powder, wad, and bullet. Powder is compacted by dropping it from a height of a few feet, via a drop tube, directly into the primed case. A wad is pushed into the case mouth and pushed down onto the powder. For a .45-70, this wad pushing/seating/compressing can be done old-school, as the buffalo runners did, by hand with a 7/16" dowel, but for a consistent compressed powder column height, a BACO compression plug set inside a Lyman "M" die body is the more consistent way to go.

How much powder should be weighed and loaded into the case? The answer to that is, what cartridge OAL is required?! In order to determine that, as with most any cartridge gun, a dummy round needs to be created. Engrave the rifling, or set before the rifling? As usual, it's what the gun wants, so a bullet barely touching the rifling might be good for starters. This OAL measurement can be done by building a dummy round and constantly adjusting the bullet seating die depth down into the case until the round will chamber easily. There is also a Hornady cartridge OAL jig that will instantly determine the cartridge max OAL. Once the target OAL is determined, measure the length of the dummy cartridge, measure the length of a bullet, and difference the two to determine how deep the bullet seats in the case. A simple way to adjust the case powder charge is to either use a bullet sized much smaller in diameter than the case mouth, or a piece of 7/16" dowel that's the exact length of the bullet, drop tube the powder into the case, check the cartridge OAL using the undersized bullet or dowel cut to bullet length.

You want the charged case with undersized bullet or dowel to be a tad longer than the target OAL. Record the weight of the powder used to achieve the target OAL.

Wads are necessary to separate the powder from the bullet base as well as seal the gas. Wads can be bought or punched out of milk carton or tablet card, veggie fiber, cork sheet, hard felt, low density polyethylene (LDPE), and other materials. A typical wad thickness can be .025" to .060". Gas sealing is important to prevent bullet distortion upon ignition, and it might be best to start off with a .060" LDPE wad as it's gas sealing ability is typically quite good.

Remove the undersized bullet or dowel, place the card wad into the case mouth with a thumb push. Push the wad down onto the powder with a dowel or with a die mounted compression plug. Put the undersized bullet or dowel into the case and measure the OAL. Adjust the OAL by adding and/or compressing the powder. Once the desired target OAL is achieved, mark the dowel for its compression depth, or set the die compression plug.

Fouling control and black powder cleanup is not difficult nor rocket science. A blow tube (a foot long length of 7/16" OD neoprene tubing) used between shots adds moist air into the barrel to keep the black powder residue soft. Arguably, the better and definitely more consistent method of addressing fouling control is wiping between shots - 1 or 2 damp or wet patches followed by a dry patch. Just fired brass should be dropped into a jug of plain water, or water with a bit of dish soap. Later the dirty brass can be dumped out and water washed, primers removed, the brass cleaned just as always in a dry vibratory, or wet tumbler, or ultra-sonic cleaner. It's more important for black powder loaded brass to be inside cleaned than outside, because any inside the brass residue will give purchase to the black powder on detonation and tend to stretch cases. Rifle cleanup is easy, with jagged patches wet with a mix of water and water soluble oil, followed by drying patches and an oily patch.

Lubed bullet black powder cartridges were actually the lesser way these cartridges were built back in the later 19th century. The predominant round used for sporting, hunting, and military use was the paper patched cartridge. This type of black powder cartridge, with its patched bore riding slick bullet, can be as accurate (if not more so) and easier to build than a "greaser" cartridge. Really. Interested? Read more ~ <http://www.BuffaloRifles.org/ppb/ppbcartridges.pdf>

There are a LOT of variables with any smokeless cartridge build, just more so with a black powder cartridge build. As always, change one variable at a time and thoroughly test that variable before making any other changes. Building good target or hunting black powder cartridge rounds is just one aspect of enjoying these classic, timeless cartridges and guns.

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