

Introduction

Having shot or owned most .22 rimfire rifles over the years I was getting bored with Ruger's, Remington's and CZ's and fancied something different. After considerable research I settled on the Buck mark carbine with the standard barrel as I thought this little rifle might be quite fun.



Purchasing

The Buck mark is imported into the UK through the larger dealers and FN Browning in Herstal, Belgium. I wanted the heavy target barrel version but in the end could only find the sporting/light barrel model out of York Guns Ltd and I must say there appeared to be not many new rifles in circulation.

I purchase the standard model with a view that in the future I might upgrade the rifle with the heavy target barrel. This plan came to pass sooner rather than later as I found the light barrel to be quite inaccurate. Approaching York Guns I found out that this was going to be impossible as FN Browning in Belgium refused to import the heavy target barrel into the UK. I must say I was not impressed, so buyers beware. The UK gun industry never fails to amaze me with its poor service.

Upgrade

Now I had a rifle that was inaccurate, not to be outdone, this was a challenge that was not going to beat me, so I decided this was an ideal opportunity to upgrade the gun is to something both accurate and different.

Standard Buck Mark Carbine

It is not my intention in this article to go into great detail concerning the Buck mark carbine itself, you can find that elsewhere, on the internet for example, however I would like to describe items which gives the reader an overview of this little carbine. The picture above shows the rifle in the basic format, I have added a Nikon 3-9x40 scope which I had spare, Leupold quick release rings, cleaned the bore and lubricated the bolt mechanism, otherwise this carbine was straight out of the box.

General

I must say for an American rifle of this value the build quality is good unlike other certain US designs, the wooden furniture was well finished with a pleasant grain. The carbine is easy to strip and functions reliably with all ammunition types except some standard target velocity fodder such as Eley club. With standard ammo, rounds will often fail to eject clearly from the breech causing a misfeed. The one thing that I did find disappointing was the accuracy. I purchased a wide range of ammunition and found that high velocity rounds such as Remington, Magtech, PMC sidewinder to be the most inaccurate with groups at 2-2.5" at 25yds. Standard velocity rounds such as CCI standard and Eley Sport were the best at 1-1.5" at 25yds.

Another point on the ammunition front with H/V rounds is the "Splatter" or residue that is released from the breach on semi automatics. I noticed this quite often and especially with H/V ammo. Various guns are affected in different ways with different types of ammo but it is disconcerting with the Buck mark as the

breech is fairly close to the face. Shooters using H/V ammo might wish to wear shooting glasses to protect their eyes, if they have any concern.

Scope base

The Buck mark comes with a good scope base, suitable for all weaver style rings, however If you want to fit the scope low to achieve a good cheek weld you will have to remove the rearsight. Secondly you cannot clean the Buck mark without removing the scope base. Blowback firearms require regular cleaning to function reliably therefore standard weaver rings will not suffice. You will need to purchase a good quality set of quick release rings if you want to avoid re-zeroing every time you clean the carbine.

Pistol Grips

Whilst manufactured from good wood and well fitted, the grips on my carbine flexed and creaked a bit, making a noise when you operated the gun. Not a big issue but it does distract from the quality a bit.

Forend

This is secured to the barrel via a single screw, so therefore the barrel cannot “float”. It is not a bad fit but it is not a good fit either and therefore in my opinion contributes to the poor accuracy of the carbine. Having said that, I did test the accuracy of the carbine with the forend removed and found no difference, so the problem lies with the barrel.

Trigger

The gold plated effect on the trigger is typically US and in my opinion tacky, however the trigger is wide and for a factory trigger not bad especially as it is originally a pistol trigger and with a long linkage. It is certainly better than some factory triggers found on other American designs such as Ruger and Remington rifles.

Upgrade-Stage one

One of my principle thoughts concerning poor accuracy of this carbine was barrel harmonics, so part of stage one was to fit the forend correctly. This involved bedding the forend so if it was going to touch the barrel it would do consistently along its length rather than at indiscriminate and random points.



I also noticed that when holding the forend like a rifle I had this feeling that fitting a forend/pistol grip would aid my stability and shooting stance. Therefore I removed a section of the forend and fitted a short 2” Picatinny rail which in turn I fitted a Combat Arms folding forend grip.

Fitting the forend grip successfully achieved two results. It did aid the shooting stance and in turn produced better and more accurate results when shooting standing and unsupported. Lastly it added what I like in all my guns, individuality, something different.

Finally I fitted a set of quick release Leopold’s 25mm rings to overcome the stripping issue together with a Sightron S1 3-9x32 fine cross hair scope which I thought would complement the small dimensions of this carbine nicely.

Results of stage one upgrade

Bedding the forend did marginally improve the grouping, $\frac{1}{4}$ " at best, however the most obvious difference was that the forend felt solid which gave a more solid feel to the whole rifle package.

The Sightron scope straight out of the box was impressive. I have read numerous articles on these scopes and always being the sceptic, I thought I would try one out for myself before I comment. The first thing you notice is the solid one piece tube design, finish is good, engraving is good and even on the budget models, adjustment is by drums rather than coin slots.

The fine cross hairs were precise and suited to this carbine where engagements were typically 25-50yds and not going to exceed 70-75yds.

The long and short of this scope is that the build quality is as good as more expensive models and at £140.00 I will be purchasing more scopes from this manufacturer.



Upgrade-Stage two

Another process that I felt would improve accuracy would be to crown the barrel. I must point out that Browning carries out this practice as standard on these carbines but it did not distract from the fact that even with a factory crown, out of the box, the carbine was struggling to better 2" groups at 25yds. If I was going to re-crown the barrel the option of altering the barrel length also presented itself. A shorter more rigid barrel length would also change the barrel harmonics which again should improve the carbine accuracy.

Pistol grips

The pistol grips were replaced by rubber after market Browning designs whose primary purpose was to add grip and to remove the annoying squeak every time you gripped the pistol. However the grips were originally designed for the pistol and do not fit the carbine without some modification.

After fitting, the grips worked very well, no squeaking, handling was far superior to the original wooden model and far more robust.



Cheek Pad

The cheek pad was a minor upgrade, the purpose of which was three fold, keep your cheek from staining or marking the wood, adding a degree of cheek grip for consistency and finally for the cosmetic appearance.

The pad is available from Lymans and is called PAC SKIN, it is self adhesive and comes purpose made or in rolls and I find it a very handy product. In my case I purchased the purpose made cheek piece designed for a rifle and not surprisingly found it a little big for the carbine. PAC SKIN is easily cut using a scalpel and a suitable sized plate and if done skilfully compliments the carbine nicely



Results of stage two upgrade

I cut and crowned the barrel at 14", with 12" being the UK minimum barrel length. Fourteen inches was for a number of good reasons, firstly there can be no confusion with the authorities and avoids all the hassle that may result, secondly .22 standard ammunition is all burnt at around 12" therefore we do not have any unburnt powder exiting the bore and lastly with the fore grip fitted it keeps those little pinkie's away from the muzzle.



The muzzle was given an 11° concave crown which I have found to be the most effective and at 25yds with .22 Eley Sport I was regularly achieving 10mm groups or 5rds each touching each other.

Due to the misfeed's with Eley ammunition I needed to source a suitable round that would cycle the action reliably but without the breech splatter of the high velocity rounds. Also remember that this was originally

a pistol and I feel high or hyper velocity rounds place the guns mechanism under undue and unnecessary stress.

I finally settled on two rounds, Eley subsonic for hunting and CCI standard for target work as they both function well with the Buckmark. Neither round drove the breech block back with such force it pummelled the recoil post and the gun cycled like a well tuned engine.

Stage three

The last modification to the carbine was to thread the muzzle so I may fit a moderator or a muzzle brake. The principle reason for threading the barrel was to fit a muzzle brake, with the moderator being the secondary role, thus providing me with the option of a moderator should I ever want to go hunting.

I was very sceptical about fitting a .22 rimfire with a brake, I just didn't feel there was going to be any noticeable benefit but as I had not done it before, I thought it would make a good experiment. The muzzle brake was my own design which I borrowed from my centre fire designs. It was scaled down for the carbine and an extra baffle was added to maximise the limited gases generated by the .22 cartridge.



After testing down the range I was most impressed with the guns performance but as I suspected, felt recoil was reduced only slightly. The most obvious difference was the improved stability of the carbine, with notably less time out of the aim. Accuracy at 25yds also appeared to be improved with two, sometime three rounds striking the same spot. This was attributed to two factors, the brakes extra weight and the barrels harmonics with

both issues improving on the barrel performance. I also tested the brake to ensure that no gases hit the shooters hand when he was holding the front grip as this was an obvious safety issue.

Whilst not performance enhancing I also felt the muzzle brake added to the overall aesthetics of the carbine, giving it a more thoroughbred appearance.

Summary

What started off as an alternative fun gun for down the range turned into a labour of love, definitely a failing of mine when it comes to modifying firearms. The little carbine feels and in my humble opinion looks right when you handle it and function flawlessly with the vast majority of ammunition. When I fired the rifle for the first time straight out of the box accuracy was poor and no chopping and changing of ammunition distracted from that fact. However with the minimum of work the rifle has turned into a regular tack driver.

Definitely a rifle that will be staying in my collection for a long time to come.