

Introduction

A little while ago I had the pleasure of building a replica No4T for a customer, more recently I rebuilt a replica Springfield 1903A4 and currently I am re-stocking a Mauser K98 Sniper. I do not "slap" these rifles together, the mounts are clocked parallel with the bore and the work is done on a lathe and milling machine. Original Sniper rifles are becoming extremely expensive due to their increasing rarity and out of the reach of most humble shooters and there are a lot of fakes out there. Both the rifles pictured on the right are not originals but are very good rifles built with a combination of original and good quality replica parts in the spirit of the original. I will build them as replicas, I do not claim them to be anything else, end of story.

The No4T I built has an original No32 scope and mount but the pads and cheek piece are replicas. The rifle is a No4 Mk1 selected out of a batch that shot above average groups. The Springfield has a 1903A3 receiver, new barrel, original 1903A3 woodwork and original Lyman Alaskan scope. Both rifles are in superb condition, almost "as new" are in better condition and shoot better groups than the originals.

I would love to own an original sniper rifle, I cut my teeth on these rifles as a young Armourer but I can't afford the £3000-£5000 price tag, therefore what can you do. If you are like me and for a half the price I am more than happy to own a replica made from original or replica parts as it is all about enjoying the spirit of these fine rifles. I do not want to run the risk of buying a fake, so therefore I intend to build my own.

It is my wish to keep these rifles along similar lines to the original. Therefore there will be no scopes in a modern format, I will consider replica scopes as long as they are similar to the original, I will consider scopes that are manufactured in the 1950's rather than the 1940's as these are considerably cheaper but are not far removed from the original and I will utilise good quality replica mounts, bases and rings so the rifle maintains its correct appearance.

Selecting a Mauser K98

K98's in the UK (2011) are becoming less common as a result can command prices starting at around £600.00. Parts are easily available and there are lots of aftermarket accessories but more about that later.

There are a number of options open to you with regards to a donor rifle, the cheapest option is a Yugoslavian M48 Mauser at around £300.00. This is the cheapest base option and believe it or not these rifles can shoot very well. The next option is genuine but captured K98's that originate from Russia, because these rifles have Russian stampings they are less sought after and thus command a lesser fee. Finally you can source a genuine K98 but as they are less common they will cost you £600.00 or more. For my donor rifle I utilised another source, which was a Norwegian K98. These rifles were surrendered by the German's at the end of the second world war and were rebuilt with new 7.62mm NATO barrels (.308W) to supply the newly rebuilt Norwegian Army. The reason for my decision in using this rifle is that it was fitted with a new barrel, had less recoil compared to the 8x57 cartridge and huge choice of reloading components for the .308 cartridge, all of which would assist in improving the accuracy of this rifle. As these rifles had recently come out of war stock, their condition was excellent with no wear, 100% bluing and had good woodwork.

In the case of this particular rifle it even had all the original matching numbers, manufactured by J.P Sauer & Sohn, not a necessity but nice to have all the same.

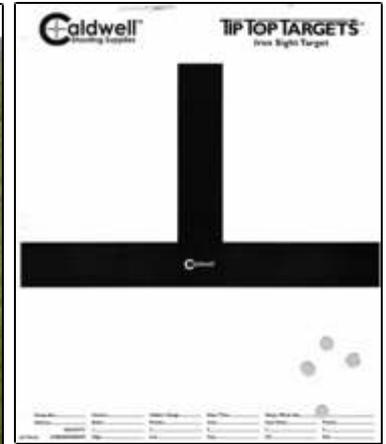


Iron sight Range test

Like most military sniper rifles of the time the K98 has to pass a selection test which would identify it as more accurate than other rifles in its production run. The war time specification was three rounds whose mean point of impact had to lie inside a 80 x 140mm rectangle and all three shots must be located in a 120mm circle at 100m utilising iron sights only.

For my test I simplified matters a little by ensuring all three rounds achieve a group no larger than the 120mm circle, that's roughly a 5" group. I used good quality ammunition and shot from a bench utilising a rest thereby removing as many human failures as possible.

The target on the right as depicted in the photograph was shot on a windy day with a 10mph crosswind. I had not zeroed the rifle but achieved the depicted group which was 40mm centre to centre.



Next steps - Mount selection

Accumount in the US manufactures high quality reproductive mounts, they are not cheap but are good quality and therefore are worth every penny. There are various types on offer, LSR (Long side rail) SSR (Short side rail) and the turret mounts. My choice was the LSR mount as it was more efficient than the SSR and looks superior cosmetically and in theory you can remove the scope when not in use. The SSR mount is not a design I intend to fit as the small metal to metal base is more prone to movement which entails loss of accuracy.



The turret mount was another option which has the advantage that you do not need to modify the woodwork to fit them, however that was not a concern that influenced my decision on this occasion. If funds permit I will build a Mauser utilising the turret mounts at another time, maybe one of the M48's. All of the above mounts are manufactured to take the original 26.5mm scope tube. However Accumounts provides steel inserts with these mounts to reduce the diameter to the modern tube size of 25mm or 1" if you wish to fit a modern scope.



Scope Selection

This is largely down to the size of your wallet. Original scopes are available but you are looking at around £500.00 to obtain one. Magnification varies from x 2.5 to x 4 but mainly x 4 and the scopes only have an elevation drum with windage being adjusted via the mount. Quality may vary depending on the age, source and the scopes previous use. Therefore potentially you can purchase a number of problems, which to rectify will cost you a fair sum of money on top of what you have already spent.

As I said earlier I had no intention of fitting a modern scope, so my research turned to the older Pecar, Zeiss or Habicht Scopes. Being German scopes they provided some heritage and I had two Pecar's in my scope collection that were dated from the 1950's and the 1960's. Magnification was x 4 so the sight picture was going to be similar to the Ajack and Ziess scopes. With the exception of the windage drum and the tubes sometimes being made from aluminium these scopes didn't differ too much from their 1940 cousins. Lens quality was good, tube diameter was 25 or 26mm and there was no nitrogen gas in sight. Therefore I felt mounting this type of scope was in keeping with the spirit of the rifle, would incur little in the way of technical problems and at half the price of an original scope. Please also remember it was my stated intention from the very beginning to make these rifles more accurate than their original cousins. My final choice of scope was a Habicht 4 with a steel 26mm tube and a 32mm object lens as depicted in the R/H photograph above.

Trigger selection

The specification for trigger pressure on a scoped K98 is 1.5 - 2.5kg. As a result there are three options open to you:

1. Tune the original trigger.
2. Timney trigger unit.
3. Huber or Dayton Traister trigger.

Tuning the original trigger was how the Wehrmacht armourers did it as they never had access to the modern aftermarket options we have today but there is a limit to how much you can tune the original trigger before it becomes unsafe. The Timney trigger is good and you can achieve some really light trigger pressures, however for this exercise I do not intend to use it as you have to remove too much wood from the stock to accommodate it.

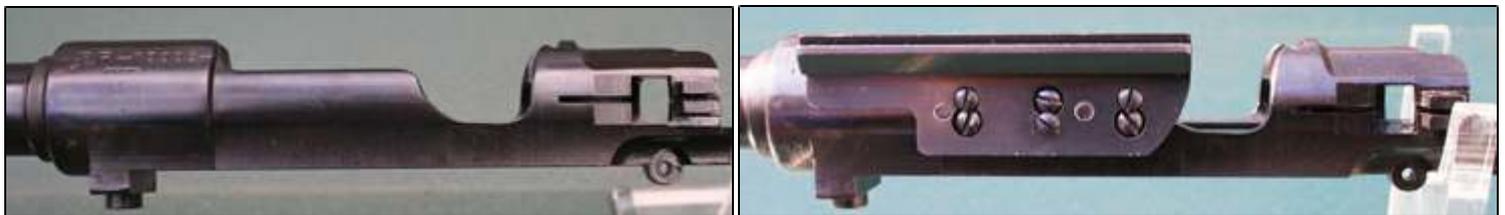
Huber triggers are good and cost around £100.00 in the UK and they are more suitable for this conversion as you only have to remove a small amount of wood from the stock to accommodate them. On this occasion I intend to use the Traister trigger as it is slightly less expensive, £70.00 or so, can be set to 15oz but unlike the Huber you have to remove more wood to get them to function correctly. As I have never used it before, it will also provide good experience as to whether I will utilise it again. The trigger is a simple one-for-one replacement with the original, using Traister's replacement compression spring and was replaced with absolute ease.

Adjustment for trigger pull is by altering the screw with the locking nut, again all very neat and tidy and I must say much easier than the Huber design.

Fitting the scope base & mount

Accumount provide the base and mount as a kit which includes the pins, screws, drills and taps and potentially you can "slap" it on with a hand held electric drill. Total horror, this is not a non-gunsmithing kit, how do you know the base is parallel with the bore, how do you know that the drill is square to the job? so therefore this job is not for the amateur. Take it to a gunsmith or an armourer that knows what he is doing and get it done properly. As an example of why this is not a job for the amateur I measured the drill bit and the locating pins provided. The pins were twelve thousandths bigger than the drill and as a result they simply would not fit, forcing them would only damage the pins and or the receiver.

Strip the rifle as shown below, degrease, clean and polish the mechanism and then secure it to the bed of a milling machine. The rifle is then clocked to the bed, the base is then drilled and tapped ensuring it is parallel to the bore both in the vertical and horizontal axis. Whilst the main mounting screws have locking screws I still used Loctite Studlock to secure the mount as I do not want the base to come loose. I will add that if you use Studlock, you cannot remove the screws unless you apply heat. You should consider this, because if you want to remove the base in the future then you will be better using a grade of Loctite like 243. The original mounts were numbered to the rifle and I'm unsure whether to continue the practice. This mount is matched to this particular rifle but I am concerned if this will be perceived as an attempt at producing a fake. My solution is to number the mount but to add TVG (Thames Valley Guns) before the serial number. All my restored rifles are stamped TVG as proof of my work but usually on the woodwork so this is a good alternative and does not cause any confusion as to the rifle's origin.



Woodwork

The stock has to be relieved to accept the scope mount so therefore a small amount of wood has to be removed from the left-hand side of the stock as seen below. Ensure this is done correctly, there should be no metal-to-wood contact with the scope base, otherwise when you fire your first shot a chunk of wood will fly off - be warned. Secondly, it should be noted that the woodwork fitting for the LSR and SSR base is considerably different with more wood having to be removed for the LSR base. The receiver should be in contact with the stock between the tang and the large ring, but the barrel should not touch the stock until it reaches the bayonet lug bracket and the front band. You may also note in the picture below that the woodwork is darker. This is how it should be, not white as in previous pictures.



These are military rifles and white or light-colored wood may be nice for the target shooter but is not tactical and for a sniper, a death sentence.

Bedding and Crowning

I have made it clear from the beginning that I plan for all my Sniper rifles to be more accurate than the originals therefore I have every intention on bedding the action and crowning the muzzle. Both processes are discreet as I do not want to distract from the original profile of the rifle, but if you look closely you can definitely see the work.

I bed in two areas, around the recoil lug and around the tang. Like the Enfield No4 the K98's barrel does not float, however there should be no wood contact between the the rear of the barrel (chamber) and the bayonet stud and the front barrel band. Bedding the action ensures a perfect fit and minimises any movement so ensuring consistency between shots.

Mauser muzzles have a round crown which is typical of the era. As these are military rifles it is not uncommon for the crown to be damaged and so therefore I add a small 11° crown which will guarantee an equal dispersion of gas from around the muzzle.

Building the Rifle

Once the rifle had been bedded it was simply a matter of rebuilding the rifle correctly and finishing the stock. I had ordered a replacement handguard from Europe as my stock and handguard were not matching. You can identify this by looking at the front sling/barrel band and the handguard and stock not aligning. There are two solutions, purchase a new longer handguard or purchase a longer spring clip and adjust the stock so the two are parallel, the latter is far more difficult to achieve and requires considerable skill if done by hand.

My stock had been refinished previously by someone else, whether it was the Norwegians or buy someone privately I do not know but it was very light almost white in colour so therefore I wanted to apply a slightly darker stain to bring it into line with the rifle stocks of the period with the final finish being done with a matt oil.

Assemble of the rifle is fairly standard with no special fitting or tuning required as I have fitted an aftermarket rigger. I headspaced the rifle and check the firing pin protrusion to ensure there were no problems and once the action is secured into the woodwork I function check the mechanism to ensure the rifle feeds and extracts correctly. Final check is the operation of the trigger and safety catch, because I have had to remove some wood, ensure the trigger doesn't bind or when you release the safety, the sear is not released.



Lead

If you want the best accuracy out of a classic rifle you must measure the lead. Military rifles where of this period were functional, efficient working tools, not precision instruments and therefore the lead can be considerable compared with today's designs. If you reload measure the lead and seat your bullets approximately 0.025 off the rifling. Two words of caution however, never seat the bullet directly on the rifling as this dangerously increases the pressure and secondly ensure the rounds seat correctly in the magazine, too long and they will jam or misfeed.

Scope Alignment

Most German scopes from the 40's did not have windage adjustment and so therefore adjustment was built into the mount. This adjustment is coarse so it is best to align the mount to the bore prior to going down the range. Failure to do so even with a scope with windage adjustment could be a frustrating experience as you could be so far out of alignment that it will be a long drawn out exercise and expensive in terms of ammunition consumption to zero.

Range Test

When I started this conversion, I accuracy tested the rifle for suitability using it iron sights and it achieved a group size of 40mm at 100m, so its fair to say after all this effort the rifle must better that group.

Wehrmacht specifications stated the rifle must fire five rounds and that three rounds must group within a 70mm circle. Using the same equipment and ammunition as the previous iron sight test the rifle shot a 15mm group.

Having shot a number of rounds I check the rifle for functioning, safety and to see if the action, scope or mount has not worked itself loose, its usually a good idea when you get the rifle back to the workshop to clean it that you also check the main action screws. One fault I did identify was the handguard, it was bearing against the barrel. As a result I had to remove it and remove to some wood. If you refer to a previous paragraph specifications state that no wood is to touch the barrel. Failure to do so would affect accuracy and ultimately crack the handguard.



Summary

Having sorted out the wood and having zeroed the scope I shot a few more rounds just the pleasure of it. The rifle cycled through the rounds with out fault and I enjoyed shooting the rifle immensely.

Historically I have always turned my nose up a little bit with K98's as I felt accuracy wise they had little capability when matched against other long barreled Mausers, Enfield's and Springfield's. However with a bedded barrel, decent trigger, good scope and mount this rifle was achieving a 15mm group at 100yds, which I must say was very hard to beat.

Whilst I built this rifle for demo purposes, I will add it to my small but growing collection of replica sniper rifles.

