

Thames Valley Guns

Armourers Report

Steyr 1895 Naval Carbine

Introduction

In 2015 I stumbled across this unusual Dutch carbine, I knew they were manufactured by Steyr, utilised the Steyr charging clip mechanism and was in an unusual calibre and that summed up pretty much my entire knowledge.



If I was going to restore this rifle, I wanted to know if I could shoot it, otherwise I was not interested. Therefore I wanted to know if there was brass, bullets, clips and dies available. The calibre was 6.5x53R, so I needed to verify if the bullet diameter was .264 and if round nose bullets were available. The answer to all of the above was a resounding yes. My next point of call was the dealer and the question, was the rifle in salvageable condition? His response was a good barrel with all matching numbers and so I went ahead and ordered a little carbine that I knew very little about.



Upon receipt, the woodwork was a little battered as you can see from the images but the otherwise the barrel and action were immaculate and with all matching parts.

The carbine is 37" in length and weighs a very handy 7lb 10oz unloaded with the sling. The rifle is a manually operated rifle with a split bridge receiver, using a rotating bolt and feeds from the Steyr five round charger clip system. The charger clip is essential to the rifle's function, without it, the rifle is a single shot action only. The 18" barrel has four grooves and right hand concentric rifling. The rifle can be fitted with a bayonet and like all Steyr rifles of the period is extremely well made.

History

Some of the best names in Firearms design were, John Moses Browning, Paul Mauser and Ferdinand Mannlicher. With regards to firearms, Ferdinand Mannlicher was a design genius and was employed by Steyr throughout his career and produced more firearms designs than any of his contemporaries. One of his most famous designs and one that most shooters will be familiar with, including myself is the model 1895 Mannlicher straight pull rifle. This rifle was used throughout the Austro-Hungarian empire and was to become the most widely used straight pull rifle design in history and was in service for nearly sixty years. I have worked on and restored a few straight-pull Mannlicher 1895 rifles over the years and can speak from experience that they are extremely well made rifles. However their 8mm calibre with a .329 diameter bullet and the need to acquire stripper clips makes their popularity in the UK somewhat limited.

At the end of the 19th Century, the Dutch turned to Steyr for their replacement rifle and chose the M1895 Mannlicher rifle in 6.5x53R. Whilst the rifles had the Steyr clip mechanism and the same designation as the Austrian/Hungarian rifle described above, it was a substantial different design and use a rotating bolt. Like many military forces at the time, the Dutch utilised carbine derivatives for specific branches of its armed forces such as Cavalry, Artillery and Engineers, however the Dutch took carbine derivatives to an whole new level and if my research is correct produce eighteen versions which make identification somewhat confusing. After the cessation of hostilities after WW1 large numbers of

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As WWII was appearing on the horizon, the Dutch sought to re-arm their military but instead of producing new rifles, they converted large numbers of war stock rifles into carbines and the original 1895 rifles were reduced in length and their stocks modified accordingly.

My research leads me to conclude this Carbine is the Naval version, which is best identified by the foresight protector. It is similar to Carbine No3 old model which was used by Artillery and Engineers and had a long upper handguard.

On the side of the receiver is "Steyr 1896" which is the place and date of manufacture. Forward of the Steyr 1896 is a further stamp, M1914 and on the butt is Hembrug 1940. As the stock has been professionally modified, I am assuming that the rifle was manufactured in 1896 as a Carbine No3 old model, then upgraded at Hembrug in 1940 to a naval version. The serial number is 9232N and initially I thought it may be possible that the naval carbines have the "N" prefix to indicate naval service, however I am thinking in English, not Dutch, where the word for Navy is Marine. The upper handguard is a long version where naval carbine models discussed on the Internet had the shorter handguard, however this rifle has all its original parts and has matching numbers throughout including the upper handguard which highlights its originality.

Publication & research information

There are a number of books available that discuss both Steyr and the Dutch Carbines such as Scarlata's Mannlichers Military Rifles and Mowbray & Puleo's Bolt Action Military rifles of the World. However information is limited and the following website seems to be more informative, when it comes to identify the wide range of carbine models.

<http://candrsenal.com/a-quick-and-dirty-guide-dutch-mannlichers/>

Receiver

Like all Steyr rifles of the period, the rotating bolt models were extremely well made. The receiver was a split bridge design as can be seen in the image below, with the straight bolt handle passing vertically through the receiver. The



receiver is designed to work with a charging clip as an integral part of the mechanism and therefore, there is no internal magazine as can be found on the Mauser for example. To help the reader understand more clearly how the receiver design assists the rifle's function, it may be prudent to describe the charger clip system.



The bolt is rotated and withdrawn to the rear, the charger clip which holds five cartridges is inserted into the ejection port, compressing the elevator arm and is pushed down until it clips in place. This positioning of the clip is crucial as it provides the correct height for the bolt to strip the cartridge from the clip and feed it into the chamber. As there is no magazine, the charger clip serves several functions, which would have otherwise been provided by the magazine. The elevator places the cartridges under tension and forces them upwards, therefore the clip keeps the cartridge in alignment and the charger clip lips provides the correct feed angle.

As the bolt is pushed forward the first round is driven from the clip at the same angle as the clip's feed lips into the chamber and the rifle is fired. The empty case is extracted, ejected and the cycle is repeated with the elevator forcing the remaining cartridges up through the clip, being correctly aligned and positioned at all times. When the last cartridge is exhausted the empty clip ejects through the bottom of the rifle. If the clip doesn't eject, the following clip which is inserted will force out the previous empty clip.

As with most military rifle of this generation, the barrel traditionally screws into the front of the receiver onto its

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Shoulder. Directly behind the barrel face is the receiver's twin locking lugs, which the bolt rotates and locks into. The ejection port is also the feed port for the charger clip system and is 2.25" long. The split bridge serves two functions, it supports the bolt rib and therefore assists in the bolt's alignment during the feed and eject cycle, plus it also supports the cocking piece rib, thereby keeping the cocking piece in position when the bolt is rotated.



On the exterior of the receiver is Steyr's name and the date of manufacture, which is 1896. To the left of this is what I believe to be an upgrade date but I maybe wrong. I do not believe it to be a previous serial number as the rifle's master serial number on the top of the receiver is consistent throughout the rifle's various parts.



To the left and to the rear of the receiver is the bolt release and bolt stop, a very popular and effective design which has remained in use with many rifles to this day.

On the underneath and at the front of the receiver is the recoil lug, which the front master screw secures into. To the rear of the recoil lug is the feed guide and the charger clip well.



The trigger is a simple and very effective design, consisting of only three major parts, the trigger, sear and trigger spring. As with many trigger systems of the time, the first and second pull is obtained by two cams situated at the top of the trigger.

At the rear of the receiver is the tang and the second master screw. The tang has a seating surface which engages in the rifle's stock and together with the front recoil lug provides an even and consistent seating with the stock. On top of the tang is a channel which serves three functions, it permits the cocking piece bent to engage with the sear, acts as a guide for the cocking piece and prevents the cocking piece from rotating, similar to the cocking piece rib.

Trigger Guard & Elevator Assembly

Although a completely separate component, the trigger guard and elevator mechanism is an essential part of the feed/charger clip mechanism. In the 1909 textbook of small arms this component is referred to as the magazine. I couldn't disagree more as it doesn't hold ammunition, the charger clip does. This housing contains the elevator, its main spring and the charger clip catch.



The charger clip catch holds and positions the clip and releases the clip when the rifle needs to be emptied. The elevator doesn't touch the charger clip at all, if you place an empty clip into the mechanism it would pass all the way through. The elevator arm places pressure on the bottom cartridge in the clip and then that spring pressure is transferred through the five cartridges until it is passed into the clip through its lips.

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Bolt Assembly

Build quality of the bolt, as with the rest of the rifle is superb and in my opinion contains a number of novel features



for the time period. As can be seen in the images all the bolt components are numbered and therefore matched. The bolt locks into the receiver using the two large locking lugs at the front of the bolt body similar to the Mauser. However what is different and in my opinion superior, is the bolt head can be removed and therefore cartridge headspace can be adjusted without replacing the whole bolt body, which is a cost effective solution. Another concept/feature, which today is common on modern rifles is the combination of both extractor and



ejector in the bolt head. As the bolt is withdrawn to the rear, the floating ejector strikes the bolt stop, is forced forward and therefore pivots the empty case on the extractor and away from the rifle.

The bolt cocks on opening and by rotating the bolt, forces the cam on the cocking piece to push the cocking piece rearward until it locates on a bent in the bolt body. The bolt continues to the rear until it strikes the bolt stop. Pushing the bolt forward, the bolt face strips a round from the clip and using the clips lips, guides the round up the feed ramp and into the chamber. The bolt comes to a stop when it strikes the barrel

face. The bolt is then rotated to the right and locks in the corresponding locking lugs in the receiver body. At the same time the cocking piece is released from the bent and held by the sear. Depressing the trigger releases the cocking piece, which being attached to the firing pin, allows the firing pin to strike the primer. Unless the bolt is fully locked, the firing pin cannot strike the primer, thereby maintaining mechanical safety. On the locking lugs, there are some angled faces which act as cams when opening the bolt, this strong camming action provides primary extraction and the empty case can be withdrawn.

Manual safety is provided by the flag type safety catch at the rear of the bolt assembly. It can only be applied with the bolt on the cocked and fully locked position. By rotating the catch 90° to the right, the cocking piece bent is disengaged from the sear and the bolt is locked in the closed position.

Stock

As with the rifle, build quality of the stock is exceptional. Years of grime, transit marks and years of use, tends to hide the beauty of the wood but by restoring the woodwork, the high quality walnut and its lovely grain can be appreciated.



The stocks were originally built by Steyr but were upgraded by Hembrug in 1940 as can be seen by the Hembrug stamp on the stock.

As discussed at the beginning of this report, I believe this rifle was

originally an old model No3 Carbine and the only upgrade was the fitting of a new ex-rifle stock, the repositioning of the rear and front sling swivel and the fitting of a fore sight protector.

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The image to right show the blanking plugs which suggests this was originally a rifle stock. The machine work is to a very high quality and unlike Mauser's and Nagant's where the recoil block passes completely through the stock, the Steyr's sits in the centre and is secured with a screw. Another example of quality is the metal plate which supports the barrel at its front bearing point. On most rifles/carbines of the period this was a simple wood bearing surface.

Although the carbine lacks a pistol grip type butt, handling is really good both coming into the aim and for maintaining hold during recoil.

Whilst the stock is retained by the two master screws the upper handguard is only retained by two spring clips which in combat I think would lack any great strength. However like the rest of the rifle, the upper handguard is extremely well made and the front extension gives the carbine its unusual, yet distinctive look. Why the upper handguard has this extension, I am not sure. My thoughts are two fold, it could reflect the thinking of the time when most rifles had wood covering most of the barrel or it could assist in the dissipation of heat and therefore protect the sight picture.

Whilst not really part of the stock I will quickly mention the leather sling. It is a simple leather strap, which is a permanent fitted and is riveted in place and can only be removed by removing the bayonet boss and the rear sling swivel, which probably explains why its is still in place. It was very dry when I restored the rifle and was starting to perish but a good soaking in Neatsfoot oil remedied the problem.

Barrel and sight assembly

Being a carbine the barrel is light and measures only 18" long, its profile is traditional and has no unusual or special distinguishing features.

I was very fortunate when purchasing this carbine, as the barrel is in perfect condition. A lucky find indeed considering its age and also very unusual how it has escaped use over the years. If only this carbine could talk!!!

Although I will discuss in more detail later in the report, the short barrel belays its surprising accuracy. Many countries converted their rifles into carbines and in my experience the practice generated carbines with reduced accuracy, increased recoil and excessive muzzle flash, something this carbine does not suffer with.

The foresight assembly consists of a foresight block with a dovetail blade and protected by a stout foresight protector. To adjust for windage, the foresight protector must be removed, the blade adjusted and the foresight protector refitted, making the zeroing process fairly clumsy.



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I assume there are different size blades to allow for fine elevation adjustment, but there is no marking to indicate this feature, so I am unsure.

The rearsight is quite a novel and in opinion a clever and robust design. The two rearsight protectors are 4mm wide, extremely solid and graduated from 300 - 2000m. By depressing the two spring loaded side plates on the elevation ramp, the rearsight can be elevated or depressed as the user requires. As with many rifles of this period the longer range graduations are not for direct fire but for indirect volley fire which was very effective against men and horses out in the open before the advent of heavy machine gun fire.



One minor criticism at this point concerning the carbine sights. The sight picture is poor with the sights set at the minimum range of 300. This is due to the combination of the foresight blade being too thick and the rearsight V notch is too small. Re-profiling the foresight blade, would reduce this problem.

Reloading 6.5mmx53R Ammunition

Reloading classic military rifles with the more obscure calibres can be problematic in the UK and require considerable research before proceeding. The 6.5mmx53R is a good example with no factory ammunition being available. Reloading is the only option if you want to shoot this calibre. Brass is available from two sources, the cheaper of the two sources is to convert .303 British, however this is labour intensive and I do not have luxury of time. The other option is Bertram Brass from Australia, it is expensive at £3.65 per case (2018 prices) but saves a lot of time and trouble. Bullets are .264 diameter and therefore you may think are more obtainable. However further research is still required as the bullets of the period were 160gr round nose and the carbine's feed mechanism is designed for this bullet profile. Modern .264 boat tail bullets have problems as they have insufficient length, incorrect profile and therefore tend not to feed reliably. Round nose bullets are less popular these days and therefore are becoming less common. Hornady's 160gr round nose is a good example and has been discontinued and therefore the only suitable bullet I could obtain was Lapua's round nose 155gr Mega bullet.



The Quickload interior ballistic programme is indispensable when reloading obscure calibres as reloading data is simply not available. When reloading these old rifles I like to achieve a balance of good powder density, moderate pressure, moderate to medium velocity and good obturation. For powder use I tend to always stick to Vihtavuori and in this case to obtain the powder density I wanted, N160 appeared a good choice. Normal chamber pressures vary between 75% and 84% and therefore with these old guns I always start slightly below 75% and gently work my way up. When I say slightly below this figure, I mean just that, as I wish to avoid secondary explosive effect but also one must remember that Quickload is a software programme and as Quickload warns it

cannot be a substitute for conventional hand load development.

Another source of data is Frank Barnes, Cartridges of the World. In my opinion, it is not a reloading manual but does provide some historical information and some load data which I treat as a maximum load and with caution. In this case it specifies a small range of loads and I have highlighted the following ; 156gr bullet, loaded with 38gr of IMR4350 at 2510fps, which I assume is for a rifle. However if you enter this specification into Quickload it screams Danger, exceeding maximum load therefore highlight the need for caution. Having worked up my data, I settled for 36grs of

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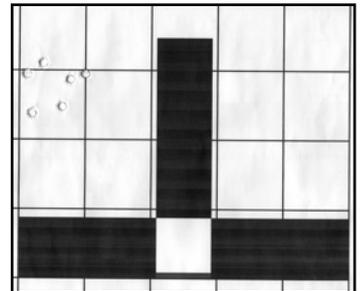
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Vihtavuori N160 which generates a sedate 1957 fps, keeps pressures at moderate levels and obtains good obturation. Another requirement unless you want a single shot rifle is the correct charger clips. In the US charger clips are still fairly prolific, however due to the UN restrictions on the movement of military firearms, charger clips are classified as a magazine and are therefore subject to restrictions and are therefore difficult to get out of the US. In Europe, clips are more rare, which is driving up prices but a few can still be found from Militaria dealers.



As charger clips are quiet expensive, fairly rare and essential to the carbine's effective operation, the clip should be treated with care. Loading the clip correctly is important. The three inner cartridge seat flush and to the rear, touching the clip. The two outer cartridges and their rims, seat forward of the three inner cartridges.



Range Test

Initially my first trip to the range was to chronograph, test my load development and to check the carbine was functioning within safe parameters and therefore I didn't pay much attention to accuracy. However having found a suitable load, I reloaded and headed back to the range to zero and accuracy test.

My experience of military carbines which have been converted from a long rifle is one of reduced accuracy, excessive recoil and muzzle flash, with the M44 Mosin Nagant carbine being a classic example. However my work with the Lee Enfield No5 produced remarkably accurate results and this Steyr 1895 Carbine was no exception. Admittedly I am not using military grade ammunition which reduced felt recoil and muzzle flash, but accuracy at 100yds was a excellent 45mm or a fraction under 2", the rifle handled very well and was a real pleasure to shoot.

When loading, I found I had to "feel" the clips in, which I am sure would improve as I got more proficient at handling the carbine. Once loaded the carbine fed and extracted without fault, with my only minor criticism being a poor sight picture.

Summary

Restoring these old rifles is a labour of love, whilst the rifle itself may be moderately priced, making up the ammunition can be expensive. If you have the luxury of time, you can convert more modern cheaper brass cases into these old cartridges, making matters more economical, but finding charger clips and more importantly the right bullets, is in my opinion, the limiting factor to restoring and shooting these old guns.

Finding this "gem" was a real boost for me, restoring the rifle and doing the research is one of the reason why I still enjoy being an Armourer after all these years. However with many of these classic rifles reaching nearly hundred years old, finding a "good one" is becoming increasingly difficult. As these old rifles becoming more rare there is an increasing number of dealers, who are selling guns and using terminology such as "shootable barrel" which really means pitted and worn. Therefore buyers have got to be increasingly aware of being ripped off.

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