Czech This Out!

The Retroversion of the CZ 98/22 to a GEW 98

By Curt-Heinrich Schmidt und Johannes Wolf

In reenacting the Great War, we living historians are given the choice of using originals or, where available, reproductions. Certain items are not available and originals *must* be used. Items such as the *Kochgeschirr* (mess tin), *Seitengewehr* (bayonet) and, most importantly, *Gewehr 98* (rifle) are not currently being reproduced.

While the purpose of this article is not to discuss the use of original items, there is an alternative to using an original GEW 98: the "retroversion" of the CZ 98/22 – it is possible to alter this weapon with a few modifications and addition/substitution of a few key parts. The word "retroversion" is a blending of "retro fitting" and "conversion". A retro fitting is backdating an item to an earlier appearance; a conversion is taking one item and converting it to another.

After the War, the Czechoslovakians adopted the GEW98 rifle as their standard arm. The CZ 98/22 used the GEW98 as the basic design with a few key differences, those being the upper hand guard and rear sight. Otherwise, the rifles are identical. The conversion process will involve altering the upper hand guard and the retro fitting process will involve replacing the sight with the correct Lange sight.

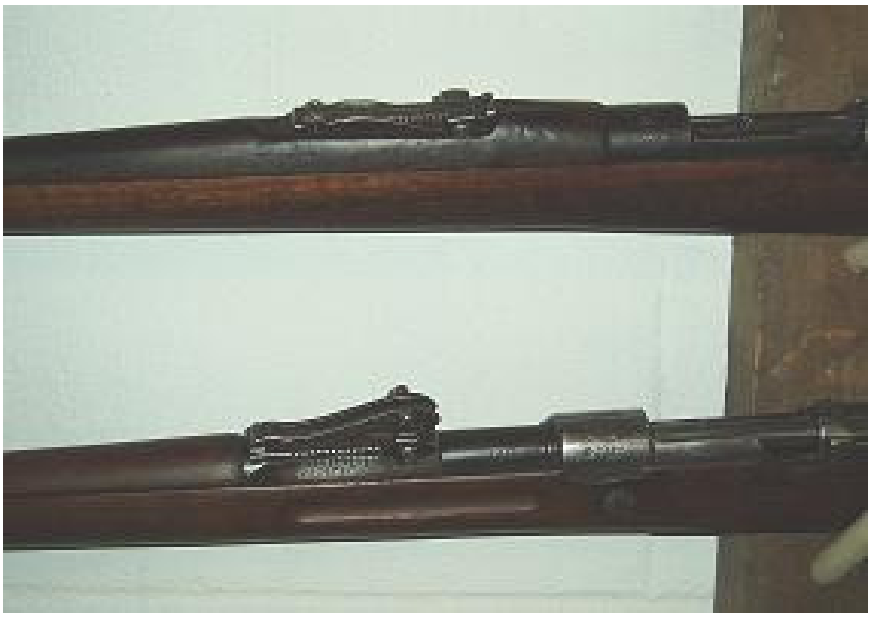


Fig. 1 Comparison of CZ 98/22 (top) to Gew. 98 (bottom).

Note the differences in sight and hand guard.

Phase One - Disassembly

The CZ 98/22 (Fig 1) was based heavily on the Gew.98. The differences are slight – the sight is a flat sight and slightly longer than the Lange sight, the upper hand guard extends back to the receiver rather than to the front of the sight, and the entire barrel is blued.

The first step is to take it apart in preparation for conversion (a take down guide is available in the Handbook supplement). The procedure is basically the same as that of

the GEW98. The only difference is that the springs tend to be a **lot** stiffer. For the pieces converted in this article, to remove the bands required the use of a clamp to hold the spring down and a small dowel tapped with a mallet to slide it up.

Two of the rifles had a surprise. The top hand guard had a clip that held the back end to the barrel. Rather than risking cracking it on taking it out, I carefully cut it as the back half of the hand guard was being removed anyway. (*Fig. 2*)

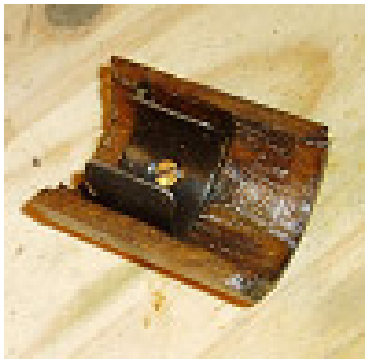


Fig 2. Barrel removed from stock and the upper hand guard ready to be removed and the spring on the rear of the hand guard.

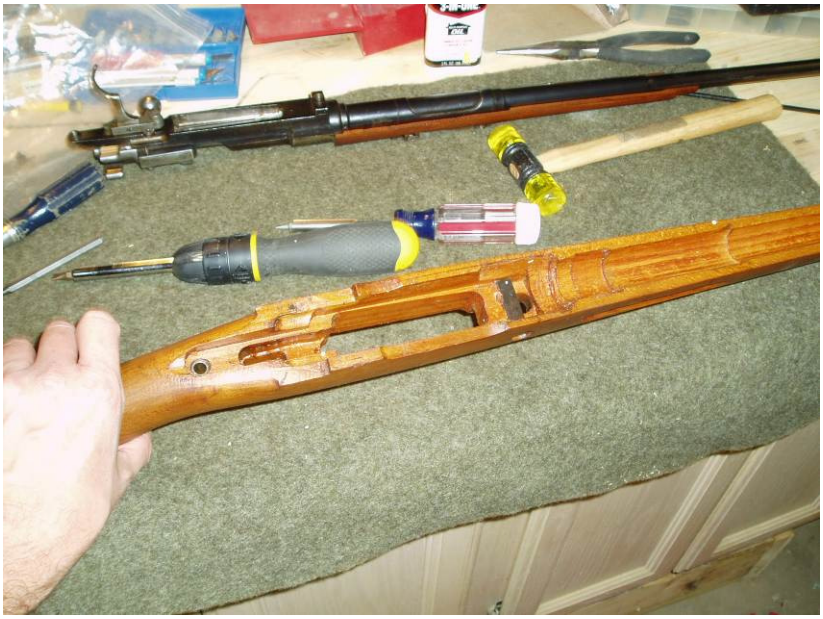
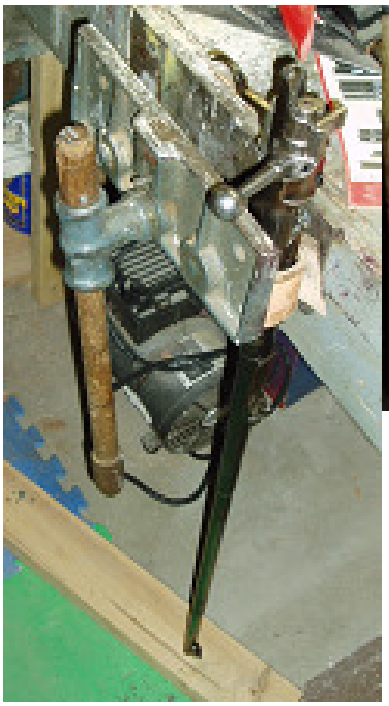
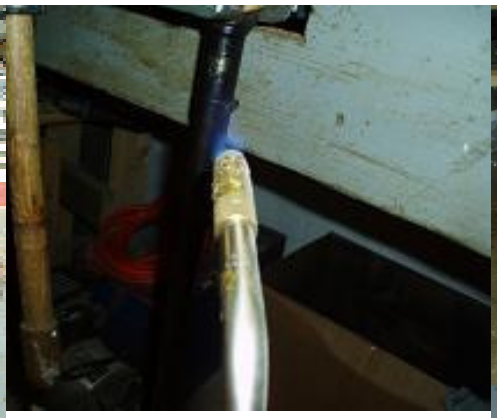


Fig 2A. The stock stripped down. Note the barrel above – it's entirely blued.

Phase Two – Metal Work

The next step was to remove the Czech sight. The sights are soldered on, and after a few minutes of heating with the propane torch, oil trapped underneath bubbled out of the seams followed by several tiny droplets of solder. (*Fig. 3*)





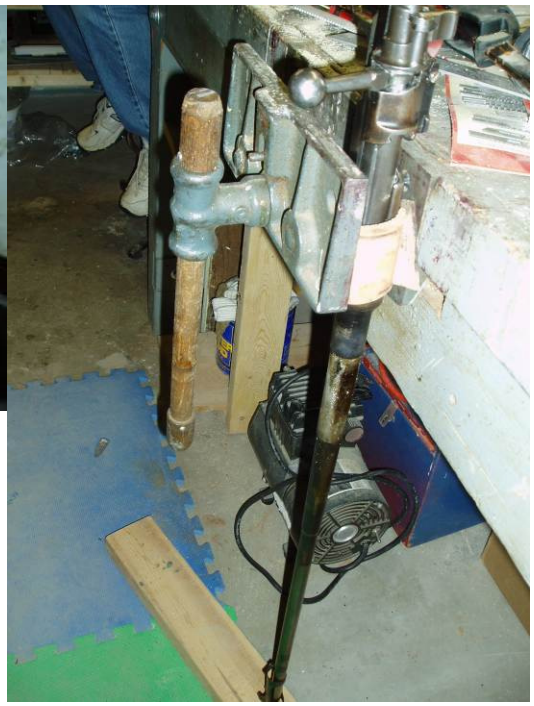


Fig 3. Using a propane torch, the barrel and sight are heated to loosen the solder. Be sure to heat the barrel evenly (above and below the sight) to prevent warping.

A few taps with the mallet loosened it up to the point where it could be completely removed. The sight was put on prior to the barrel being set in the receiver; so cutting of the lower bands was necessary. To cut the bands, it was slid to the muzzle and shimmed to keep it away from the barrel (*Fig. 4*). Carefully using the cutting wheel of a dremel tool, the bottom bands were cut and then bent slightly with pliers to be able to slide over the front sight. (*Fig. 5*) Note – you will have to cut the Lange sight base to install it.

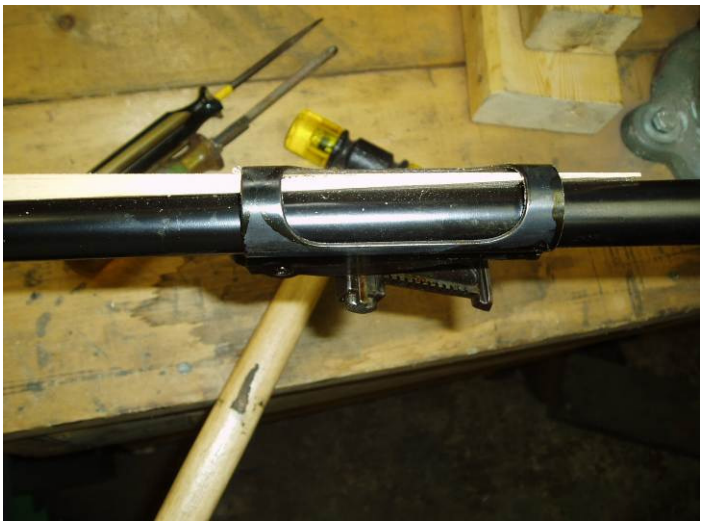


Fig 4 Sight shimmed to protect barrel

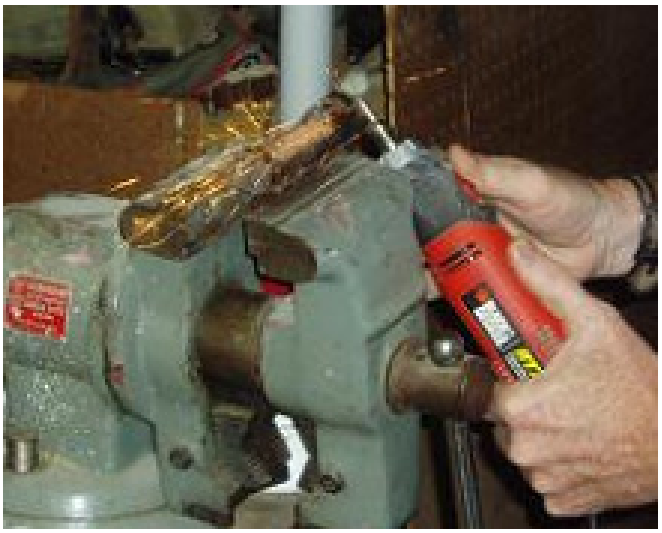


Fig. 5 (Above) Using a dremel fitted with a cutting disk, the bottom of the band is cut, allowing the band to be removed.

The CZs reworked for this article were entirely blued, bolt included. GEW98 receivers and bolts were not blued – so at this point these parts need to have their bluing removed. I ended up using a combination of hand buffing, a bluing removing agent and

mechanical buffing with the dremel to remove the arsenal bluing. When working with the chemical stripping agent, take precautions, such as gloves and eye protection.
It is also a great idea to restore the bluing on the parts that are to remain blued. There are several processes that you can use to blue these parts, but I will only discuss the two most applicable ones.

Heat Bluing

The period method was to 'heat blue' the parts. The process of heat bluing is fairly simple and straight forward, in theory, but takes some practice. In heat bluing, the metal is heated to a bright orange and then quenched in oil. The result is an inky black finish, and one that is more durable than chemical bluing alone. The finish **is** susceptible to normal wear.

When doing the oil bluing, be sure to follow several important steps: First, do it in a well-ventilated area, as it will create a bit of an odor! Second, be sure to put something down on the floor to catch the oil drips. (*Fig 6)*

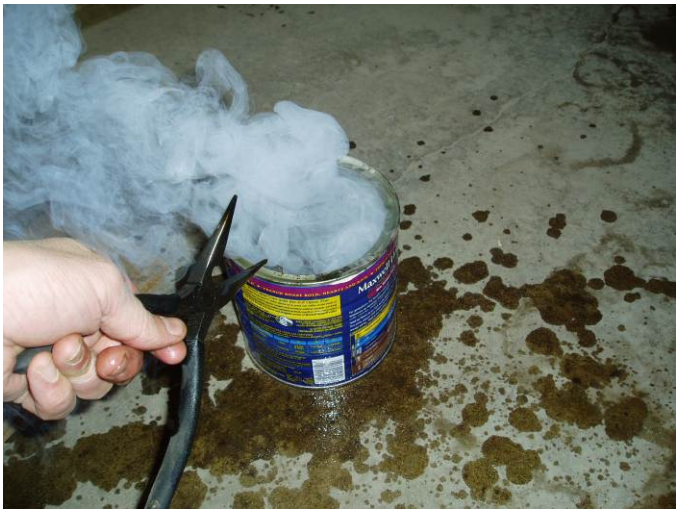


Fig 6 – Heat bluing.

After the process is done, I wash the parts off in kerosene to remove the excess oil. Before reinstalling the parts, I do give them a light oiling with my gun oil.

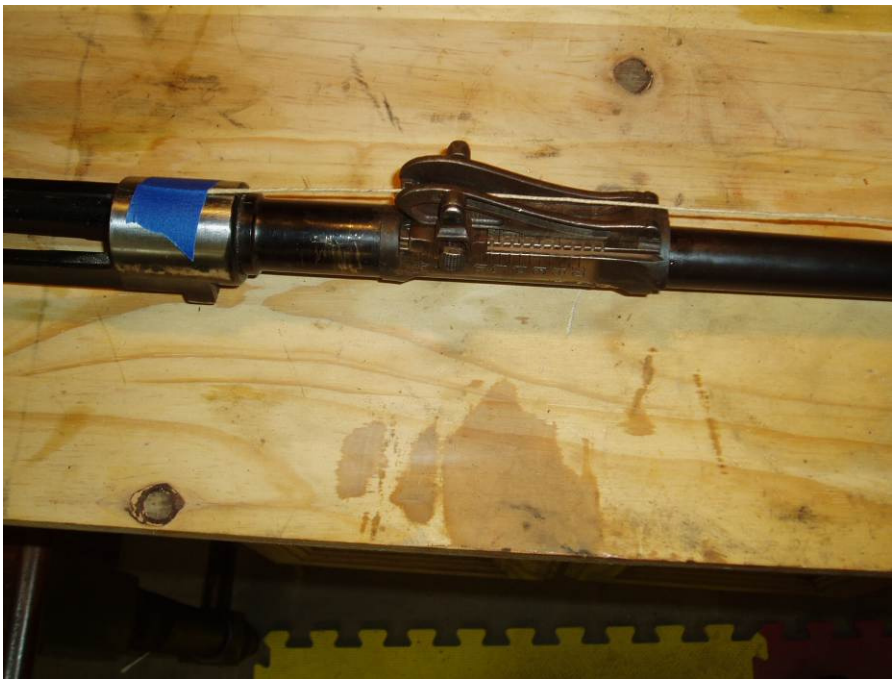
From research, the sight (that is now completely blackened as seen in Fig. 6) needs to have the gradient markings brightened, the rest of the sight left in the black. **Carefully** buff the markings to restore the brightness. With luck, the numbers should remain dark. Don't worry if they don't, as they can be touched up with some careful application of bluing solution and then carefully buffing around the numbers again.

Chemical Bluing

Heat bluing is a good solution for rebluing smaller parts, but rebluing the barrel is a bit trickier and will call for the second method mentioned earlier and is a more modern method – chemical bluing. Chemical bluing (such as Birchwood Casey's Bluing) can be used - be sure to follow the instructions.

The barrel from the receiver ring forward needs to be blued. Fortunately, most of the barrel was still blued and only required touching up. I used a bluing agent from Brownell's – highly recommended – to reblue the barrel. Follow the instructions and do several applications to achieve the perfect look.

I also touched up the heat-blued parts I did earlier as the heat bluing was not 100% effective in getting the look I wanted.



With the barrel and sight now blued, the Lange sight needs to be installed. This will need to be cut (as previously mentioned) to allow it to slip over the front sight. Carefully align it – I used a string run from the breech to the front sight and a level to get it as close as possible. I used the alignment mark (notch) on the receiver. (*Fig. 7.*)

Fig. 7. Aligning the new sight

I should note here that you may need to purchase some additional parts to complete your conversion. The upper band may be lacking the sling hook and on the butt of the stock, the rear sling attachment may need replaced. One of the rifles reworked had a flat bar with a nut welded to it! Parts may be found through Numrich Arms or through online sources, such as e-bay.

Phase Three – Wood Work

With the metal work done, next we will address the stock work.

Part I – Cleaning/stripping the Stock

The first step here will be to get the stock down to the 'bare wood' and ready for sanding out the various dings. Depending on the rifle, it may be coated with Cosmoline or other gunk. That will need to be removed first before the finish can be stripped. Looking around on the Internet, there are a variety of methods that are recommended as 'the' best way. I experimented with three of them.

Commercial strippers:

There are many commercial strippers available, popular ones like Formby's are mild strippers and don't really do that good of a job. Others may be too harsh and will damage the wood. One good choice would be Strip-X by Klean Strip as it is designed for wood and will strip finishes and pull grease and dirt from the wood as well as wood stains. Be sure that the stripper you use is designed for wood and follow the instructions. Multiple applications can be expected, as years of oil and dirt have to be pulled deep from the wood.

Kerosene: The next stock was scrubbed with kerosene (also used to clean off the metal parts) before being stripped. It did remove a lot of the gunk, but in the end, I feel the process took just as long overall.

Easy Off: Believe it or not, Easy Off works as well as a stripping agent, capable of removing many finishes as well as dirt, grease, and other contaminants. However, do not use water to clean up, clear alcohol is a better choice. In addition, this method can be hard on the wood. With this project, it also worked about the same in the end.

Now that you have the stock cleaned off and any finish removed, the next step is to sand, sand and then sand some more. I start with a heavy grit (80 grit) and work down to a finer grit (600). 3-M has an excellent sandpaper product – the different grits come in a variety of colors. Also, buy more than you think you'll need – despite the applications of stripping agents, there was still enough junk to clog the paper.

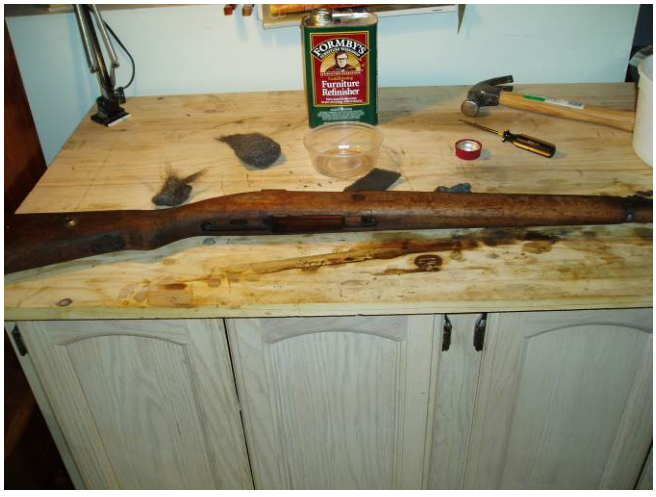


Fig. 8. Before

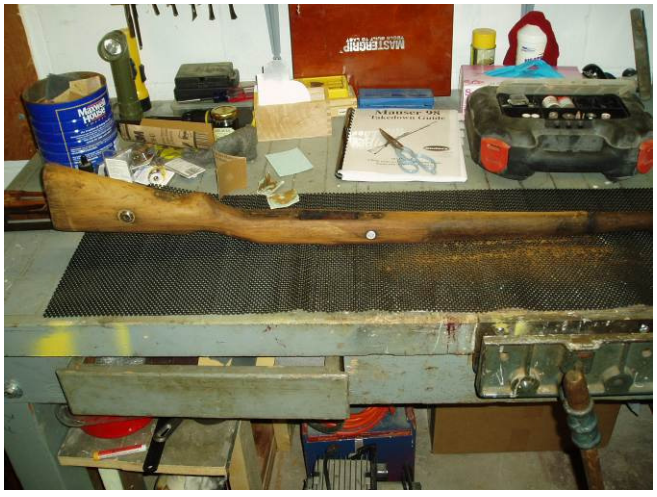


Fig. 9. After

I used a brush to clean the 3-M paper on occasion and get a little more use out of it. Take care to not over sand and leave dips or depressions! If you have a deep gouge, you may have to leave it in. The best way to address it is to make longer strokes rather than concentrating on the immediate area. This will help blend in any depressions.

Part II – Altering the CZ Handguard to fit the GEW98

Looking at the difference in the two handguards (see Fig 10), the upper hand guards are very different. Fortunately, it can be overcome!

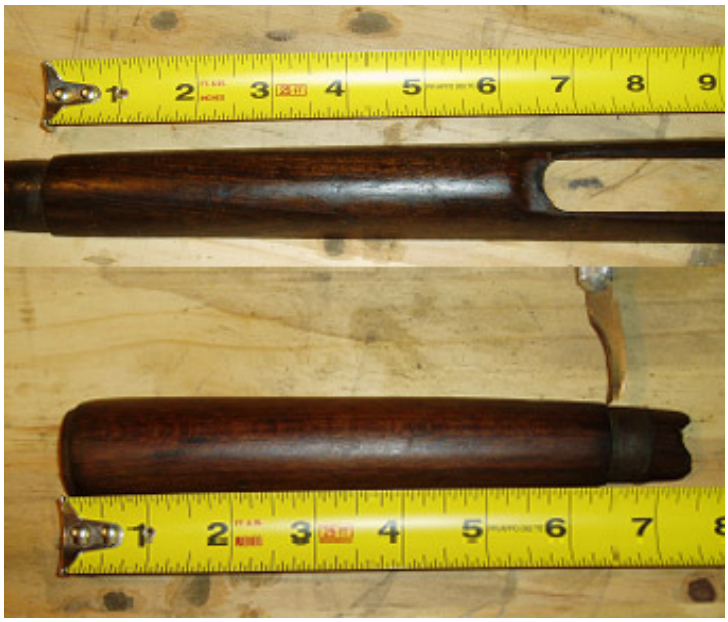


Fig. 10. CZ handguard (top), original GEW98 handguard (bottom)

The biggest difference in the hand guard is the overall length. The Gew98 hand guard (see below) only covers the barrel from the rear band to the front of the Lange sight. The Cz98/22, on the other hand, goes from the rear band to the receiver with a cut out for the sight.

By taking careful measurements, measure from the back of the rear band lip to the back of the rear sight lip (or the meaty part in the middle!) The measurements *should*, in theory, be the same, however, there may be slight differences in the location of the rear sight and you don't want to cut the piece too short.

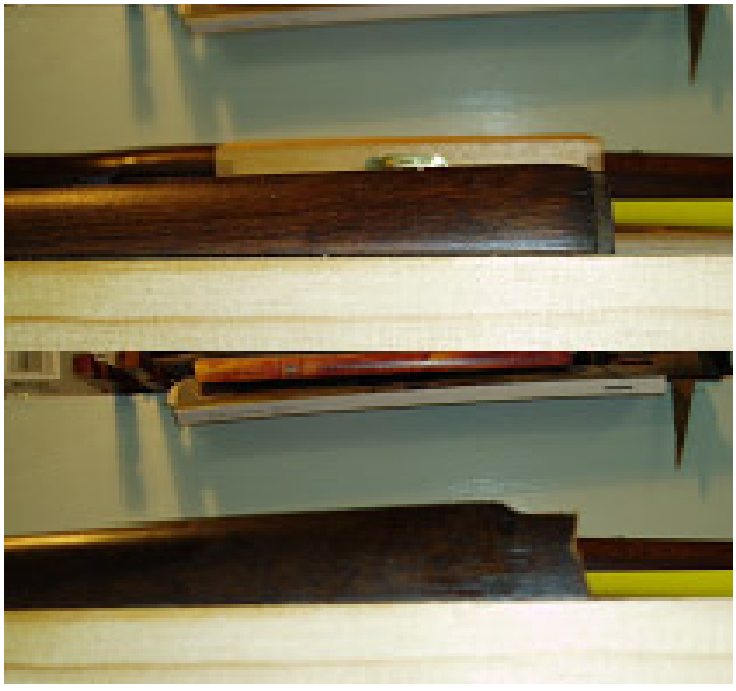


Fig. 11. The original hand guard profile (top) and the initial Cz98/22 profile (bottom)

Cut the Cz98/22 guard cautiously. It's better to leave it longer and gradually work it back than to cut it too short. It's easier to remove wood than to add wood. Go slowly and carefully here, removing a little bit of wood, refitting and checking the alignment, removing more wood and so on. Gradually cut back the wood to form the lip for the rear sight. Use a file to maintain a rounded profile and test fit it often.

Not only do you need to be aware of the fit for the lip of the rear sight, but you also need to make sure that the front lip (for the rear band) lines up with the stock.

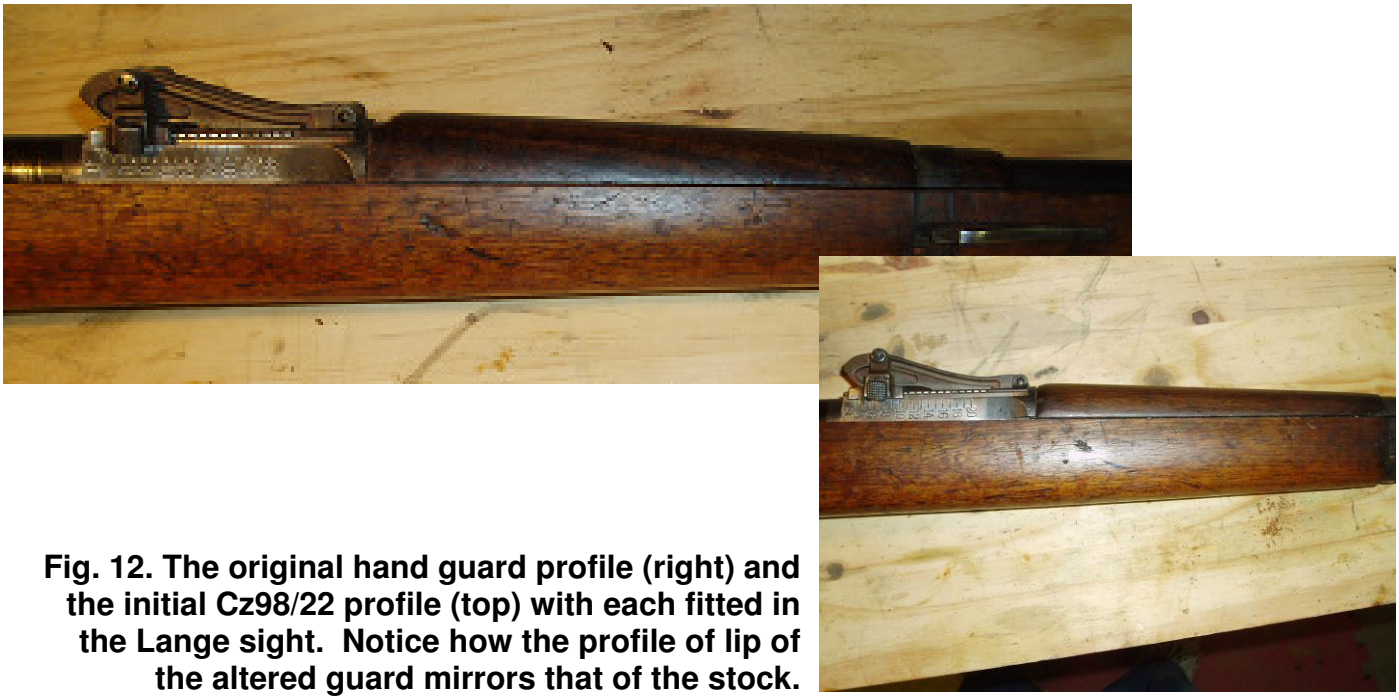


Fig. 12. The original hand guard profile (right) and the initial Cz98/22 profile (top) with each fitted in the Lange sight. Notice how the profile of lip of the altered guard mirrors that of the stock.

Having achieved the fit of the guard to the Lange sight, the last step is to match the shape of the Gew98 guard. The Cz98/22 guard has a 'step' in front of the sight and the shoulders are meatier than the Gew98. See Fig. 12.

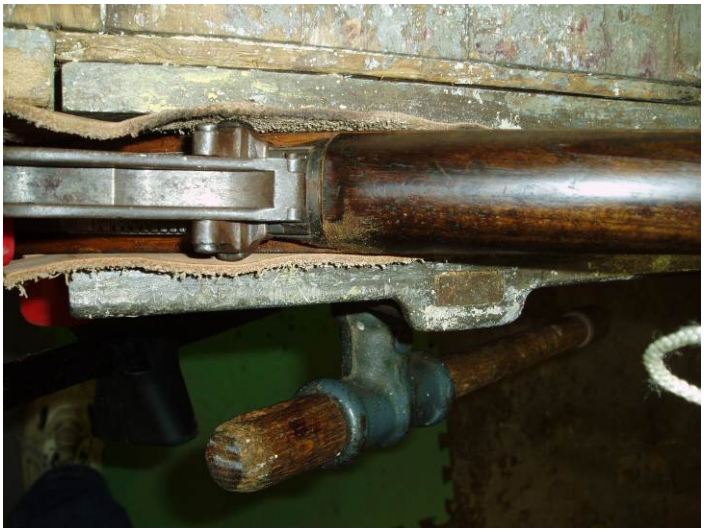


Fig. 13. – Shoulder before filing

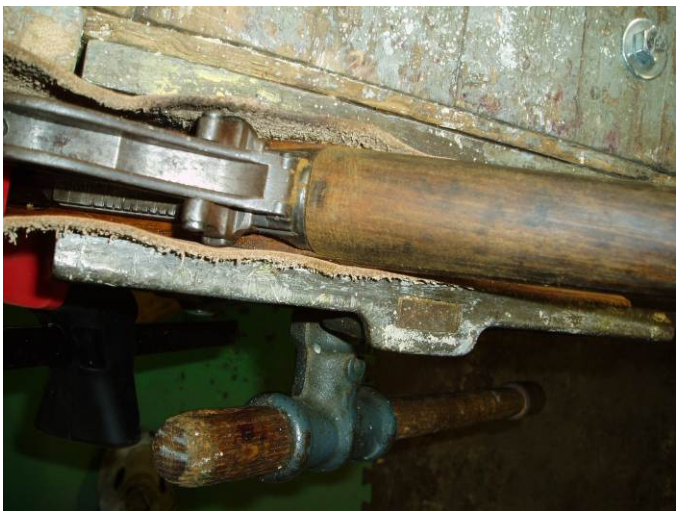


Fig. 14. Shoulders after sanding. Notice the dark spot in the center (the 'dip' from the original guard).

Slowly and carefully use rasps, files and finally sand paper to reshape the shoulders to a rounded appearance, blending it in to the end of the front sight. Removing the 'dip' in front of the Lange sight is very difficult to do and I recommend blending it in as best you can.

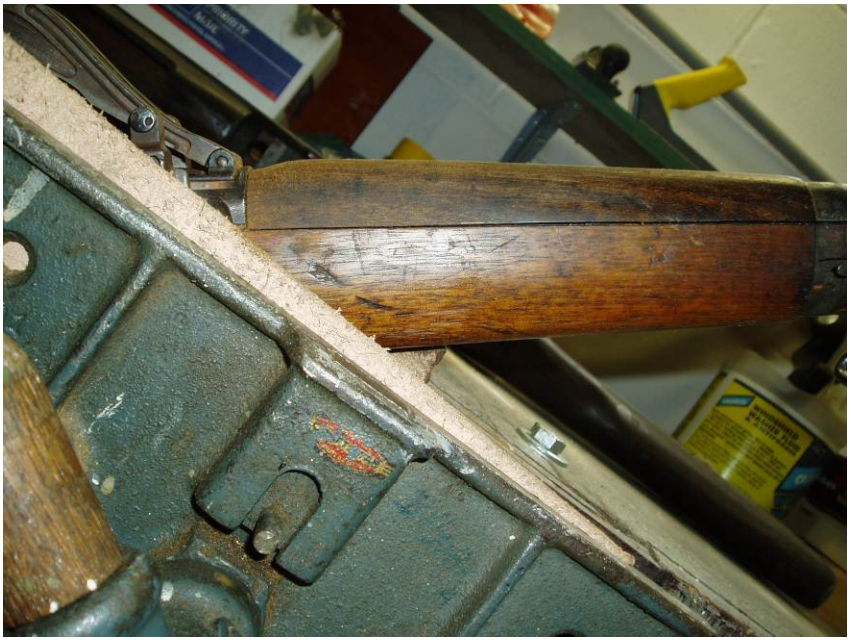


Fig. 15. Profile of guard after sanding. The angle of the 'slope' in front of the Lange sight is slightly more radical than the original.

Part III – Finishing

At this point, the woodwork should be complete. Do your final sanding here and check the wood once more. Now, you're ready to apply a finish.

I have used several finishes over the years, and my personal favorite is one passed down to me by Herr Schmidt. It consists of equal parts of spar varnish, boiled linseed oil and turpentine. I refer to that as Finish No. 1. Finish No. 2 takes No. 1 and cuts it in half with turpentine. This allows it to permeate the wood deeper. I apply several coats of No. 2 before several coats of No. 1. Put your first coat on, let it set for a minute and wipe off the excess. You most likely will need to 'whisker' the stock – the application of water or the finish will raise some grains (or whiskers). A light sanding with some very fine sand paper will remove them. You may need to do this more than once.

An option given to me by Herr Schmidt is to take the finish and add Permalyn sealer to it (from Laurel Mountain Forge.) This will help it to dry as well as giving it a better waterproof protection. The finishes (No. 1 and No. 2) above are not waterproof. This deviation from a "period" finish is to help protect the rifles better from the elements and is not noticeable.

Phase Four - Reassembly

At this point, everything should be completed and you can reassemble your retroverted Gew98! But, before you begin, I recommend taking an added precaution for the care of your rifle. I use Silencio's ***RIG*** Universal ***Grease***, which can be found at gun shows or through an online search, to protect the metal laying against the wood. I apply it to any of the areas in the stock where the metal will lie to protect the metal from moisture. The original rifle I have has pitting on the top under the hand guard. It's still a good idea to occasionally disassemble your rifle for a thorough cleaning, especially after a rainy event!

After that, follow the assembly guide and congratulations! You now have a Gew98 that looks like one as issued and one that you can 'use' at Neuville without worrying about trashing an original.

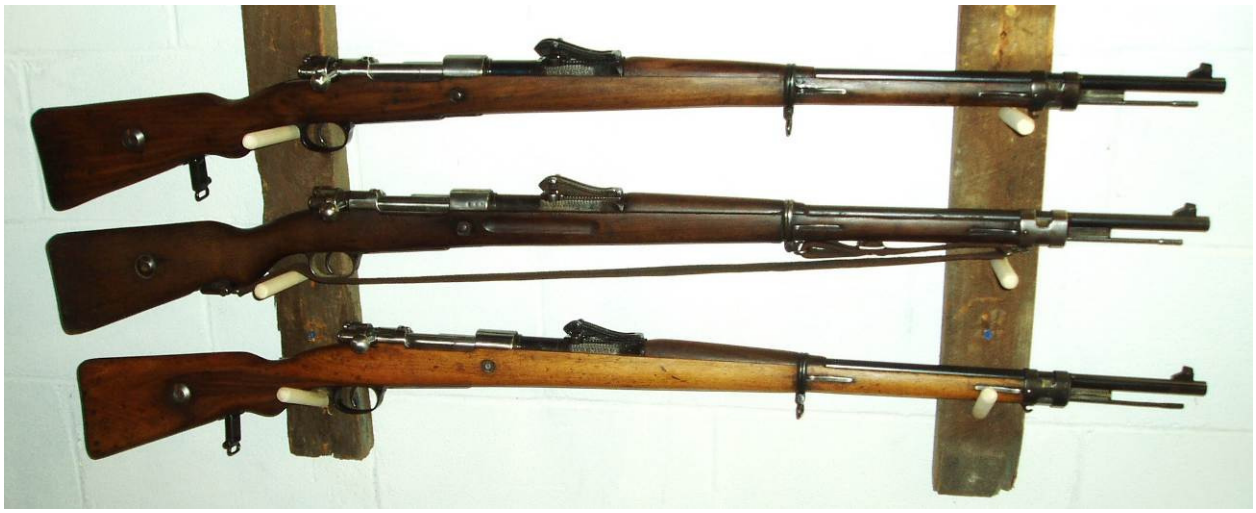
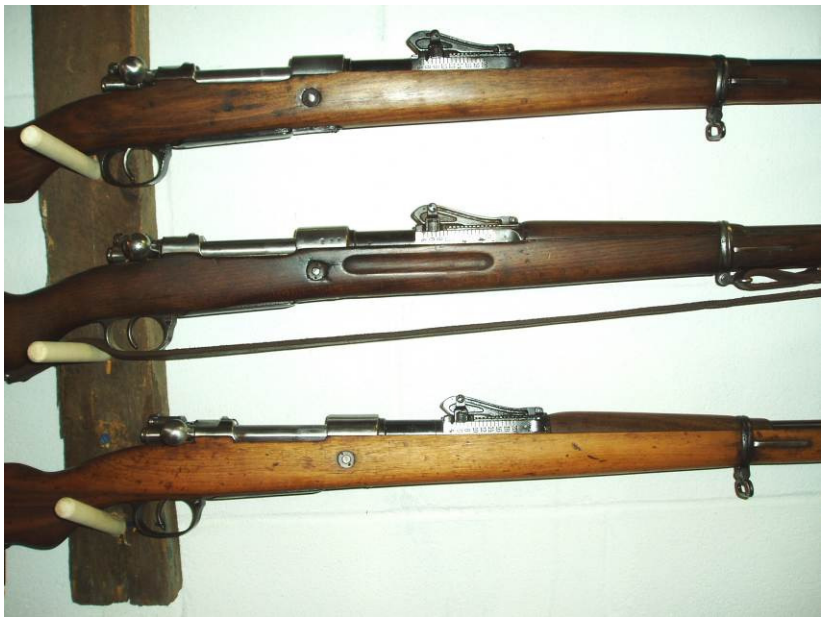


Fig. 16 (Above) and Fig. 17 (Below) Top: Retroverted Gew98 with walnut stock. Center: Original 1917 dated Obendorff Gew98. Bottom: Retroverted Gew98.



Conclusion

With the diminishing supply of available WW I dated Gew98s as well as the inherent issues in using original rifles for the hard service in the Neuville shale, there IS a viable alternative, with a little bit of work. Original rifles can still be found in a variety of conditions. Obviously, a pristine or mint original should **not** be used.

Ones that were used by the Turks can be restored, however, as is the case with the three that Herr Schmidt and I picked up years ago, the actions on them are worn from the years of service.

Retroverting the Cz98/22 Mauser will result in a rifle that is a step away from being it's cousin, the Gew98 (adding correct stampings on the receiver, for example) yet one that can be used in the field without any pangs of guilt that would accompany an original. Collectors may argue against 'altering' an original and the 'value' of one over the other, but that isn't part of the scope of this article!

Cz98/22s should be found at gun shows or online auctions at a reasonable price. The benefit of it will be a weapon that should, provided it hasn't been abused, have a much tighter and smoother action and a sturdier weapon. Of the three altered in this article, the actions were all comparable to an original 1917 Eddystone and Mk III No. 1 Enfield, both which were reworked for service in WW II where as the three originals had some play in them.

Good luck!