

Collecting and Shooting the Military Surplus Rifle



Tech  **CLASSIC GI APER SIGHTS FOR THE**
SIGHTS www.Tech-SIGHTS.c

OUR SPONSORS **Please make certain to visit our new Showcase of Sponsors!**
[More!](#)

 **MOJO, Baby!!!**
Smartest \$ you'll ever spend on your m



Mil-Surp Target Shooting Fault Diagnosis & Correction:

Keeping Them In The Black!

Article Written by: Mark Trope and R. Ted Jeo

[Adobe PDF Downloadable Version of Article](#)

Shooting the Mil-Surp rifle is a different experience from shooting a commercial sporter, and a *very* different experience from shooting a match rifle. Some of the differences are a matter of design; the Mil-Surp, as we shall see, is a specialized tool. The various periods in which Mil-Surp rifles were conceived are reflected in their construction methods and form. Bolt guns & wood stocks have given way to semi-autos & synthetics.



Two different breeds of cat!
Tikka Sporter (right), fully adjustable stock & variable power, AO scope, this rig adapts to the shooter. Turk Mauser is a different story, the shooter adapts to the rifle.

Mil-Surp arms weren't designed to be MOA (minute-of-angle) bench guns. They were designed to engage an enemy soldier. However, I have seen bolt-action Mil-Surp guns cut MOA groups. It's not impossible. I've even shot a few (very few) MOA Mil-Surp groups myself. However, I know keen eyed shooters who can do it on a regular basis.

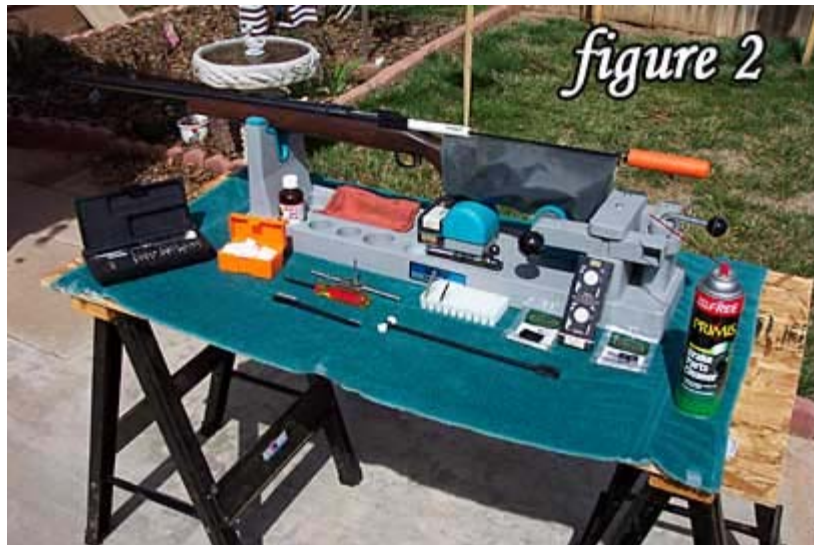
Before you go on, you have to ask yourself what you think you can get out of this rifle, and how much time you want to spend on it. Do you want just a safe shooter, an average day-to-day rifle that the average grunt carried? Or do you want to tweak and play around with the rifle, and try to squeeze out that extra accuracy, like squeezing out a couple extra horsepower out of your car? The time and effort you spend on doing all the steps MAY give you that few more horsepower...or it may not. Doing some basic checking, cleaning and test firing of the rifle FIRST, to see if it has potential may be the first thing that the doctor orders.

With that in mind, let's look some of the issues surrounding Mil-Surp accuracy.

Action, Bolt & Barrel Cleaning: All too often, a fellow runs right from the gun show to the range with his new Mil-Surp rifle and a fistful of ammo to try out his new treasure. After acquiring a new Mil-Surp arm, the *last* thing to be done is shoot it.

See articles on this site that address rifle disassembly and complete cleaning.

The barreled action should be separated from the stock and **the barrel given a thorough cleaning**. It's amazing the amount of powder & jacket fouling and/or grease that accumulates in succeeding layers in Mil-Surp barrels! Each layer reduces accuracy. In badly fouled barrels it can even raise pressures to an uncomfortable level. A quick scrubbing with powder solvent just won't do. A completely cleaned barrel is what you want to start with.



Get it properly cleaned prior to shooting, these are the right tools:

Gunsmith Screwdriver Set, Cleaning Patches, Solvent, Tap & Tap Handle, Bore Brushes, Acton Cleaning Tool, Brush, Bases & Rings, Spray Solvent, Bore Guide With Solvent Port (Inserted In Action), Stock Protector, Bore Tech Cleaning Rod

Disassemble and clean the bolt. Very often grease has dried in the mainspring, causing misfires or soft primer strike. I saw a fellow on the range once shooting a Mauser. He had misfires and hang fires. Accuracy was dismal on the shots that did go off. Looking at his brass showed a shallow firing pin strike. Disassembly of the bolt disclosed plenty of dried grease around the mainspring & firing pin. A cleaning and a coat of light oil cured the problem.



Plenty of dried grease in this Mauser bolt; it needs to be cleaned!

Triggers & sears: Triggers and sears can suffer the same problem. Dried grease or grit can contribute to gritty or stiff triggers. A cleaning with spray solvent will often do the trick. If rust is present on the trigger, sear or the pins, then use 00 steel wool and WD40 to polish it off. In extreme cases naval jelly should be used. Don't use sandpaper! Triggers and sears are case hardened. You don't want to get under the case.

Locking lug recesses: Lug recesses should be cleaned as well. Crap in the lug recesses can lead to actions that open and close only with a bit of effort. We want the locking lugs to seat metal-to-metal, not metal-to-crud! A simple, effective and inexpensive tool is available from [Midway USA](http://www.midwayusa.com), part # 109-658, the Tipton Action and Chamber Cleaning tool Set.



Chamber & locking lug recesses need attention. In the next picture notice the crud the tool removed.



Tipton Action and Chamber Cleaning tool Set, part # 109-658.



This “Grease Turd” was pushed from the barrel of a 03/ Springfield received from the CMP!

Stocks, Stock Fit & Cracks: While the action is out of the stock for cleaning, it's time to give the stock a critical examination. Often stocks are mismatched to actions. Arsenal rebuilt rifles are very prone to be mismatched, Turk Mauser's and the various CZ's in particular. The bug-a-boo here is bedding. If the action is shifting in the stock after every shot, then only mediocre accuracy will result. Any cracks in the wood mean a misfit. Repairing cracks isn't hard, this article tells you how, <http://www.surplusrifle.com/shooting/fillingcracks/index.asp>. Although not necessary all the time, you could glass-bed the recoil lug to keep the action from moving.





Notice the poor wood to metal fit

Many countries mixed parts while the rifles were in arsenal or depot rebuilding programs.

Another critical point of stock and action fit concerning Mauser & Mauser type rifles is the required gap between the top of the magazine well and the bottom of the action. These two points should not touch! Often, stocks have compressed or shrunk over the years, or parts have been swapped. If these two points are touching once the rifle is assembled, then the gap must be reestablished. The easiest way is to place a shim under the trigger guard. Alternately, the top of the magazine well could be filed shorter. (Source: "Converting Military Mausers, P.O. Ackley, Guns & Ammo, Peterson Publishing Co., April 1972) (Source: The Mauser Bolt Actions A Shop Manual, Jerry Kuhnhausen, VSP Publishers, McCall ID, 1991)



Look carefully and you can see there is no gap between the magazine box and bottom of the action.

Paul Mauser found that rifle barrels have 3 distinct vibration points. He also found that the continuous firing of magazine after magazine of ammo would cause the barrel to expand longitudinally. By putting steps in a barrel, the vibration was reduced. Stepped barrel

Mauser rifles require a small amount of clearance between the front of the step and the recess in the stock to allow for the longitudinal expansion during rapid firing. The clearance allows the barrel to expand without jamming into the wood. Often, dried grease, grit or a combination of both will have worked their way into the clearances. Carefully scrape it out. If a stock has been swapped, the clearance may not exist at all. If that is the case, use a Dremel tool or scrapers and relieve the stock. (Source: "Mauser Bolt Rifles" 7th Ed, Ludwig Olson, F. Brownell & Son, Montezuma, Iowa, 1976)



Look carefully and you can see gaps between steps in the barrel and the stock.

Once a rifle has set up for years and not been fired, or been separated for cleaning, it usually takes 5 to 7 shots to settle it back into the stock before it performs. So, don't put too much consideration into targets produced by the first couple of magazines from a rifle.

Sometimes the stocks are so oil soaked that the wood's gone soft. Such a rifle simply won't group; the action is shifting with every shot. Glass bedding is usually called for in this situation, or simply replace the stock.

Some designs don't have lock screws to keep the action retaining screws from loosening

up during firing. The Russian Mosins and Finn 39 guns are subject to this problem. Many Mauser types also lack locking screws. Keep the screws tight and have a correctly fitting screwdriver with you at the range.

<http://www.surplusrifle.com/reviews2005/wepscrewdriver/index.asp> has the full story on a complete gunsmith screwdriver set.



No locking screws, keep the guard screws tight!



This action has locking screws!

Different geographical areas of the country will also play havoc with screw tightness. A wood stock will absorb moisture and humidity like a sponge and expand, then constrict in times of dryness. This is less a problem in the consistently dry climate of the west. I can't count the number of times a fellow is shooting either a Mil-Surp or sporter on the range, and having shots going wild for no apparent reason. A quick check of the screws found action, and often scope mount screws, loose! Just be aware that checking screw tightness before shooting is *always* good practice.

Two Stage Trigger Pulls: The Mil-Surp two stage trigger is a safety device. Putting a raw, jumpy recruit in a combat situation with a slick, light, one-stage trigger is bad

business. The chances of an accidental discharge are *very* real. In winter weather, the soldier will be wearing gloves, decreasing the amount of trigger feel. The long first stage greatly reduces the chance of an accidental discharge. When we are shooting our Mil-Surp's today, the best way to use the trigger, and maintain best accuracy is to take up the first stage slack until firm pressure is felt. Then slowly apply pressure until the sear releases. If you see the sights wandering, release pressure until you are back on target.

Slow Lock Time and Long Firing Pin Strike: As we said, Mil-Surp rifles are specialized tools using slow lock times and long firing pin strikes on purpose. Remember, rifles will have to work in desert heat and arctic freeze. Ammo will have to fire under adverse conditions. Speaking of ammo, ammo produced under the stress of wartime production may not be of the best quality. A long, heavy firing pin strike will help insure consistent ignition. But, that long, heavy strike isn't conducive to accuracy work. The best way to work with this condition is to hold the rifle as tightly as possible against the shoulder, pulling backward with the non firing hand into the shoulder. This will maintain sight picture and give enough time for the shot to clear the barrel. On that note, when resting the rifle on a sand bag or other front support, rest the forestock on the bag, not the barrel. This allows the barrel movement that is natural to obtain its accuracy.

Mil-Surp Sights: Check over the sights and make sure that they are tight. Check for any loose adjustment screws. Clean out the crud that can accumulate in the notches of a rear "V" or in the peep sight. Often, rear sights have a worn pivot pin, pivot hole or there is considerable gap between the sides of the sight frame and the sight body, causing the rear sight to shift with every shot. I once had an old type 93 Mauser like that. Both the pin and pivot hole were badly worn. I drilled through the original holes and put in a new, slightly larger pin. In the case of gap between the sides of the sight frame and the sight body, small spring washers fitted on both sides will do the trick. The best place to get small hardware like pins, spring washers, etc. is a home center or well-stocked hardware or farm store. They have drawer after drawer of pins & other hard to find small items.



The Mauser style rear sight is the most common found on mil-surps.

Front sight blades can be knocked loose by shooting as well. The cure is to remove the front blade, and using a small center punch, raise a lot of dimples on the bottom of the front blade slide. This will tighten it up. If that doesn't work, the dovetail in the front sight ramp can be coated with release agent and epoxy used to take up the clearance. Most Mil-Surp rifles aren't set to a 100 yard zero; see these articles for the fix,

<http://www.surplusrifle.com/sights/frontsight/index.asp>,

<http://www.surplusrifle.com/shooting/mosinfrontsight/index.asp>,

<http://www.surplusrifle.com/shooting/frontsightfix/index.asp>.

Mil-Surp Sling Swivels: Mil-Surp sling swivels are sturdy! They need to be, running & jumping in the field could tear out simple posts. However, sling swivels bumping into the sand bags *will* deflect a shot. Position the rifle & bags so they don't rest on the bags or run into them during recoil. Alternately, the rear swivel can be removed during target shooting.



No doubt about it; this will hold a sling. It will also deflect a shot if it bumps a sand bag!



This may be your best bet when shooting off the bags.

Mil-Surp barrels, leades & chambers: Some of the very old, (pre 1893) milsurps had some fascinating production procedures. Some even put the last two digits of the serial number on screw heads! While this is fantastic attention to detail, it is something that would only be done in peacetime production. Unfortunately, some other items on the

same rifles were left to chance, namely land & groove size! In the days of the black powder military rifles, there was a wide variation in land & groove sizes. Though the books may give “nominal” sizes, often rifles will be found several thousands on both sides of nominal. The SMLE, a fine battle rifle, is one of the more modern designs that often display this tendency. Barrel making during the press of war is more concerned with quantity than quality. Also barrel-making machines were much better by WWII. Barrel making machines these days are holding tolerance to the 4th decimal place. Matching the bullet to barrel size is called for. See the article on this site:

<http://www.surplusrifle.com/reloading/slug/index.asp> to get the full story on pairing up bullets & barrels for best accuracy. You can only tell so much by squinting down a barrel. Barrels that are badly rusted badly pitted or the rifling all but worn off may never group well. On the other hand, as long as the rifling is strong, don't be too concerned about a bore that is dark and not shiny. If the rifling seems good, there is a fair chance the leade of the barrel (the area directly in front of the chamber that leads to the rifling proper) is either badly worn, or was simply made that way at the factory. Long leades cause the rifle to develop less pressure, but aren't conducive to best accuracy. One tip off to a long leade is when you use the procedure we outlined in the article:

<http://www.surplusrifle.com/shooting/oal/index.asp> to set your bullet seating depth, and the bullet would be seated out too far to have a 0.030 gap, then the barrel may have a very long leade. If you suspect an abnormally long leade, the way to verify it is to make a chamber cast as outlined in the article:

<http://www.surplusrifle.com/shooting2005/chambercast/index.asp>. One last consideration is an off center chamber. It can, and does happen occasionally. A chamber cast will also reveal this.

Barrel crowns and the first inch or two of rifling at the muzzle of Mil-Surp arms are often worn from improper cleaning procedures. An otherwise good barrel can scatter shots because of this. The cure is to have a damaged crown re-cut, or if the rifling is worn at the muzzle, then the barrel can be “back bored”. A last resort is to have the barrel cut back and recrowned.

Mil-Surp Ammunition: Most Mil-Surp ammo is really quite good. I personally saw a fellow take 5 rounds of Turk 8X57 and put it into one inch at 100 yards. However, not all ammo can be counted on to do as well. If you have accuracy problems and are only shooting surplus, then give that rifle a good cleaning and treat it to some fresh commercial ammo. You may be surprised at the increase in accuracy. Of course after you acquire a quantity of reloadable brass it's time to start reloading.

Start by reading <http://www.surplusrifle.com/reloading/index.asp> to get the basics on reloading.

Front Rest's: A front rest *must* be stable! An unstable front rest will scatter the occasional shot. That's the shot you really felt good about, and the wind wasn't blowing, but it went out of the group, and left you scratching your head.

All else being equal, the heaviest rest with the larger footprint is the most stable. Personally, I now use a Bald Eagle Rest for the majority of my shooting. However, I also

have aluminum Caldwell "The Rock" rest from [Midway USA](#). It has a fairly wide footprint, and is really very good. I put small shot bags filled with sand across the legs of the rest to give it additional weight & stability. A fellow I know turned his aluminum Caldwell rest over, and poured lead into the open areas on the backside of the legs. It's plenty heavy now.



This small footprint rest has been bolted to a steel "T" to make it more stable.



This plastic rest is light, a few sand bags give it stability.

I've seen some novel ideas other fellows have come up with to deal with a rest that has a small footprint. One fellow welded a large "T" out of 1 inch thick by 2 inch wide steel stock and drilled & tapped it so he could screw the legs of his small footprint rest down. Another did the same with a one inch thick piece of aluminum plate, about 15 inches square. Both these rests are now *very* stable and designed for serious bench rest shooting. Plastic rests definitely need to be sand bagged down. Alternately a front rest that is all bag can be used. Caldwell has the "Deadshot" rest, see Ted's review of this item in the article <http://www.surplusrifle.com/reviews2005/deadshot/index.asp>.



Bald Eagle & Caldwell front rests.



Bald Eagle Bunny Ear bag & Caldwell all leather Rabbit Ear bag.

Rear Sandbags: Commercial rabbit & bunny ear rear sand bags need a very stiff base or they tend to rock. A rocking rear bag will also throw shots. An inexpensive "Bag Stabilizer" can be acquired, or a homemade wood tray will work.



Bag powder & extra front bag.

Powder For Front & Rear Sandbags: Leather bags can drag on stocks, *especially* in damp climates. This will be another cause of thrown shots. The cure is simple. Dust the bags with talcum or baby powder and the stock will glide along the bags.

BUT...the “nut” behind the bolt will ultimately be the last link in the chain. Inconsistent or improper trigger control or a flinch can affect the shot placement more than you would think. Let’s face it, although all us MACHO Mil-Surp shooters LOVE to be kicked by the recoil mule...you cannot disagree that it will eventually have an affect on your shooting ability. To counter the recoil, a few pointers:

- ▶ As stated before, make sure the butt of the rifle is solidly placed into your shoulder
- ▶ Consider either a slip on or other type of recoil pad on the rifle stock
- ▶ Use a “hussy pad” type recoil shield; you can wear it under your shirt if you like to hide it!
- ▶ Take your time! A lot of shots are wasted because the shooter was just plain in a hurry and takes shots that he would normally not take. This is supposed to be FUN! Enjoy it! Savor it like a good shot of your favorite beverage!
- ▶ Pay attention to your eyes, not just your sight picture. Rest them if need be. An up coming article about eyes and shooting will address in depth the issues surrounding these gelatinous orbs mounted in the front of your head.

Provided the barrel is in at least fair condition, most Mil-Surp rifles are mechanically capable of keeping 5 shots in the 6 inch black area of a standard 100-yard target. Many can do much better then that, some amazingly so! Attention to the details presented in this article can bring a shot scattering rifle into the black, or tighten up the groups of one already in the black.

[Adobe PDF Downloadable Version of Article](#)

Article Written by: Mark Trope and R. Ted Jeo