

Collecting and Shooting the Military Surplus Rifle



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**SHOOT YOUR
MARTINI HENRY
RIFLE**
BY JERRY SIMON AND R. TED JEO

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Article by Jerry Simon and R. Ted Jeo

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WARNING!

This article deals with hand loading ammunition for shooting in rifles made on the other side of the globe over 100 years ago. You assume all responsibility in terms of the safety of your person and property. The load data presented are not optimized and nor, obviously, tested in the various types and models of these rifles. Again, you assume all responsibility.

WARNING!



Figure 1

This is a fine example of a Martini Henry rifle. Dated 1875, it is an updated Mk I to a II model.

The Martini Henry rifle...nothing evokes images of pith helmeted British soldiers or Zulu warriors like this rifle can. Pushing nearly 150 years of age, these rifles were not all that available until recently when thousands of them were "found" in Nepal and brought out to the public light. As the recipient of one of these, we could go on and on about the history of the rifle. Instead let's talk about the ammo.

In 1871 when the Martini Henry rifle was adopted to replace the .577 Snider-Enfield rifle, coiled brass ammo was the state of the art. These coiled brass cases were made by rolling a sheet brass case body around a "Japanned" (lacquered) iron base (case head). These are cartridge collectors items, go to www.martinihenry.com (source of lots of Martini Henry rifle info) for photos of these types of cartridges.

Wikipedia....Japanning

Almost like enamel paint, something that is Japanned is essentially varnished with a resin base similar to shellac. It is applied in layers and gives a smooth glossy finish. The technique originated in India, China and Japan, it was used to decorate pottery. In the late 17th century, Italy came up with a production technique that yields gold designs on a black color base. Although initially used as a method for artistic expression, in the 19th and 20th centuries, this lacquering technique was used for protecting wood and industrial metal objects. Hence it came into being used for protection (from the elements) of rifle shells.

<http://en.wikipedia.org/wiki/Japanning>

The first ammo to be used in trials of the Martini Henry rifle were known as "long chamber". This round proved to be too long causing it to be awkward to load. It was loaded with 85 grains of black powder. We make the assumption that if these rounds were made of solid drawn brass, they would be similar to the 45-90 type case. To solve these problems, the .577 base was used and the coiled brass body was bottlenecked to a caliber of .450. This case was able to contain the same 85 grains of black powder in a shorter package. It became known as the "short chamber" and was adopted. Today, we would call it a short magnum. In 1885, a drawn brass case was developed and adopted to resolve extraction problems.



Figure 2

Looking more like an artillery shell

.45 Colt on the left, .577/45 Martini Henry and a .22 Long Rifle just to get a feel for sizes.

So, okay, why does this concern us, the modern day mil-surp shooter? Basically all you have to do is find a source of .577/45 (or .450 Martini Henry) ammo for sale. After you

catch your breath and notice you did NOT make an error in reading where the decimal point in the price tag is, you will realize that, in order to shoot your .577/45 Martini Henry, it will cost over \$5 a pop (20 rounds are currently running well over \$120). Obviously, this sort of pricing makes the Martini Henry a prime candidate for reloading. BUT, this is no standard sized case, and unfortunately, you cannot use just standard reloading tools. Fortunately, Lee Precision Inc. (very likely the mil surp shooters BEST reloading friend), can provide the proper tools at a very reasonable price. And, on top of that, the techniques for reloading are not too difficult...after all, WE did it successfully!

Sources:

1. www.martinihenry.com
2. 'Martini-Henry .450 Rifles & Carbines', D. Lewis, Excalibur Publications

The Special Tools



Figure 3

Lee Precision Inc, as usual, is probably one of the best friends a Mil-Surp shooter can have!

As eluded to and as required whenever you load any ammo, you need some specialized equipment. In this case, you will (obviously) need to get a hold of a set of .577/45 dies (Lee #90902) and the Lee large cutter and lock stud (Lee #90401). Nothing special, right? Wrong. In order to use the .577/45 dies, you will also need a reloading press that will handle "super sized" dies, because the .577/45 dies are 1 ¼ x 12 threads not the standard 7/8 x 14 size. Lee makes just such a press, the Classic Cast Press (Lee #90998). This particular press can actually handle both sizes of dies, simply by removing a threaded adapter on the press.

(see a review of this press at: <http://www.surplusrifle.com/reviews/leepress/index.asp>)

All of these items can be obtained directly from Lee, or through standard reloading suppliers such as Midway. Obviously these big dies are much more robust than Lee's standard dies, but do not balk at the cost until you compare Lee's cost to other manufacturer's dies cost.



Figure 4

The Lee Classic Cast press is a great press for the value. Equally usable by both novice or advanced reloader. Plus it will handle both standard and .50 BMG size dies.

Lets take a look at the parent brass for the .577/45 case. In this project, we used 24 gauge brass shotgun shells, obtained from Magtech (a Minnesota company by the way <http://www.magtechammunition.com/>). These shells are nearly perfect to use for the conversion (Magtech #SBR24). The base is correct in size and the rim is nearly perfect as well. The one little problem is that the rims are slightly undersized and do not fit absolutely perfectly in the shell holders, however, they will work. Supply of these shells can be obtained from various sources such as Cabelas or Midway as well. At only \$25 or so per box of 25, you can already see where the savings are going to occur.

Case Trimming

The actual method that we used took some time to perfect. Several of the cases ended up being "sacrificed" to figure out the best ways of proceeding through the process. First

up was addressing the overall length of the case.

Our target trim length is 2.34 inches. The 24 gauge brass case is 2.5 inches in length. Normally, you could use a case trimmer to shorten the brass, but you will find that standard trimmer shell holders will not fit the 24 gauge brass. The standard Lee case trimmer is too small to trim this brass also. We came up with a fairly easy way to trim off the required length in a manner that could be useful on other trim projects. Our method uses a drill press and Forstner bit.



Figure 5

Two blocks of wood, a 5/8" drilled hole between them and a base make a good brass holder. Otherwise you will find the brass spinning as you try to trim it.

A shell holder will need to be made first. This is to provide a stable means of holding the case in place as it is being trimmed. Take two 3/4" pieces of wood. Sandwich the two pieces together and drill a 5/8" hole centered between the pieces of wood. Cut a 1/4" piece of plywood to be used as a base to support the brass. This base should be the same length and roughly 1 7/16" wide.



Figure 6

Here you can see what we mean by drilling the hole between the two pieces of wood. This actually works

really well to hold the brass in place.



Figure 7

The wood blocks hold the case securely for trimming without running the risk of crushing it.

Place a case between the two pieces of wood, make sure that the base of the case is flush to the base of your shell holder. Place the shell holder you made in the drill press vice or clamp it to the table. Install a 1" or larger Forstner bit into the press. This is your cutting blade. Make sure that it is adjusted so that it will cut a straight edge off the case. The Forstner bit does not have to be perfectly centered on the brass. Matter of fact, it is better in the long run if the bit is not used exactly on the same spot as it will dull faster. Adjust the cutter depth on the drill press so that it will stop when you have attained the 2.34" length needed. Set the drill speed as slow as possible, 200 rpm is what we used. Start trimming the brass slowly.



Figure 8

The Forstner bit makes fast work of trimming the brass. This method may come in handy on other projects!



Figure 9

You will only need to trim less than 0.2" or so.

Case Annealing

After trimming the brass to the correct length, you will have to anneal the case. If you try to size the brass without annealing, it will buckle and fold in the sizing die. By annealing the case, you will soften it enough so that it can be "squeezed" down in size. Correct annealing takes some practice. You need to control the heat, area to be annealed and the time it is heated. We did come up with a way that takes care of many of the variables and is easy to learn. The equipment you will need are a propane torch, lazy susan type device (made of plastic \$5 from WalMart) and a round cake pan. Our recommendation is to either get new items or use old items and that neither will be used in the kitchen.



Figure 10

Using a lazy susan and pan of water, you can control the amount of heating that occurs on the case.

Fill the pan with $\frac{3}{4}$ " to 1" of water. The water has two jobs. First, it will act as a heat sink and make sure that you do not heat too much of the case, instead, it will help concentrate the heat on the neck/shoulder area. Secondly, the water is used to instantaneously cool

the case and complete the annealing process.



Figure 11

The water in the pan acts as a heat sink. Here you can see the distance between the flame and brass. This case is just about done, the discoloration at the top of the case has started.

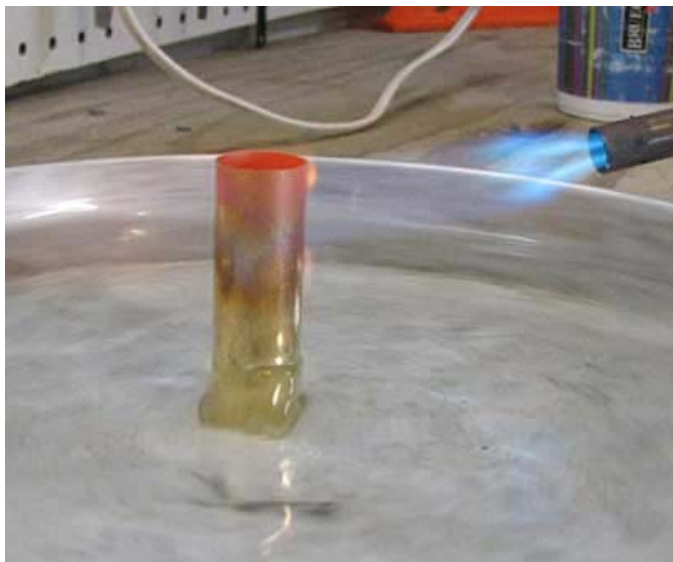


Figure 12

Next heat the mouth of the case. We only heated it half the time as the lower section. This photo shows when the case is ready to be tipped. You do not want to over heat it. NOTE: Do not wait until the case is cherry red. The photo shows it JUST at the point of tipping it over. View the video for the best idea of how long to heat it.

[Annealing Video - Windows Media Video - 1.20 MB \(1,266,513 bytes\)](#)

Place the pan on the lazy susan and place a case in the center of the pan. The idea is that you will hold the propane flame such that the tip of the flame is just off of the case. Do not use the very hottest part of the flame. Start heating the case near the water line, spin the lazy susan and give it a 10 count. You will notice the area right above your heated zone will begin to discolor. At the end of the 10 count, immediately move the flame up to the top ½ of the case, continuing to spin the lazy susan, heat the case for a 5 count. At this point, the case will just begin to color red. Quickly flip the case over into the water to cool. After cooling, remove the case, dry it off completely, inside and out, before proceeding to the next step.

Case Sizing

Before starting the sizing process, you will need to clean the sizing die. Take the die apart and remove the decapping pin. Any good solvent can be used to completely degrease the die, a can of brake cleaner (used in a well ventilated area) works well. Set up the sizing die as per the instructions included with the die set.



Figure 13

A .577/45 die next to a 30-06 die. These things are big chunks of metal!

An important point to note at this juncture is that a very sturdy reloading set up is a must. The amount of pressure you will be exerting on the press is considerable. The typical bench that we started out with (work bench) could handle full size rifle cartridges with no issue, but once we started to form these 24 gauge shells, the bench kept tipping. You will need to have the table as stable as possible so that you have complete control of the operating handle. We had to attach the bench to the wall to alleviate the issue.



Figure 14

The reforming of the case takes some effort. Make sure that the press is securely mounted to a table that will not tip when you apply handle pressure. This table ended up being bolted to the wall.

One of the most important items that we found was that a good quality sizing lube is very important in this process. We used Redding Imperial sizing wax. We found that if you slightly warm the case, using a 100w light bulb or hair dryer, the wax spreads easier and you get more complete coverage. You only need to use a bare minimum, enough to spread on with your finger tips. Spread the wax along the entire length of the case.



Figure 15

We used Redding Imperial Sizing Die Wax to excellent results. A little of this stuff goes a long way!



Figure 16

After every cycle through the press, remove the case, spread the existing lube around with your fingers.

Insert the case into the shellholder and run the case slowly up into the die. Once you hit some resistance, stop and extract the case. Remember this rule. Once you hit some resistance, stop and extract the case. Remove the case, re spread the lube with your finger tips and run it into the die again. Go easy, go slow. If you try to size too much at one time, you will buckle and fold the case.



Figure 17

First pass usually is quite easy and you can see the beginning of the neck/shoulder forming.



Figure 18

After a few passes, you will see how the shoulder moves down the case.



Figure 19

Some of the sacrificed cases. All the issues are where the brass folded over. There are several reasons. Not enough lube, lube not spread appropriately, not annealed correctly, and, the big one, being overzealous one how far you ran the case into the die at one time!



Figure 20

A closer view of some of the failed cases. The cases on the left most likely were either test cases not annealed at all. The case on the far right is most likely from being too zealous when forming the last part of the neck and trying to ram too much case into the die at one time causing it to fold right in the shoulder area.

You will have to make about 30 to 50 passes, probably sizing no more than 1/16" of the case with each pass. Each time you back the case out of the die, remove it and re spread the lube and rotate the case. If you run the case up into the die and it does not want to move, do not force it. Now you can see why so many cases were "sacrificed" in the making of this article! Clean all the lube of the case before proceeding to the next step.



Figure 21

The progression of case forming from right to left. To do this will take between 30 to 50 passes through the sizer. What we found is that we actually work hardened the case as we sized it.

Final Trim

After the final forming, the case will need a very slight trim in length. This is where the Lee large case trimmer comes into play. You will not need to use a drill. Insert the case into the shell holder, lock it down as best as you can, and insert the cutter. A couple of spins by hand will do the trick. As normal, you will need to de burr and chamfer the case mouth before proceeding.



Figure 22

The standard Lee case trimmer is not big enough to handle trimming this case. Both the shell holder and the cutting blade is too small. This is the same cutter you would need for .50 BMG reloading.



Figure 23

Lock the case in as best as you can. We found the shell holder was a bit loose owing to the rim thickness issue. A few quick turns and you are at the right size.



Figure 24

We used the Lee de burring and chamfer tool to finish the mouths of the cases.



Figure 25

After de burring the case, you will need to chamfer the mouth as well.

Loading

Our intent with the article is to provide a means of converting readily available brass into workable .577/45 Martini Henry brass and ammo. The original military load used a 480 grain bullet, 85 grains of black powder and some sort of wad material to compress the powder with the bullet. The evolution of the military round used all sorts of different wad materials, including cotton fiber and beeswax plugs. We decided that we wanted a reasonable black powder load that would 1) test the rifle, 2) test the integrity of the brass conversion, 3) fire from the brass to the rifle and 4) utilize readily available materials and techniques. Not having (nor wanting) to take an original round apart to see how it was loaded, we settled on sacrificing a "modern" reload round provided by a fellow Martini Henry owner in town.



Figure 26

The top bullet is the Lee 457-405F mould bullet that we used. The bottom bullet is from a pulled "manufactured" round. It is 525 grains. Both mic out at .455". The Lee bullet has Bore Butter in the lube grooves.

After taking it apart we found 100 grains of black powder that was slightly compressed by a 525 grain lead bullet that was 1.327" in length with a wad card. Being that we only had "standard" 45/70 bullets available to us using a Lee mould (Lee #457-405F) we cast 405 grain .45 bullets. These we left un sized at a diameter of .460" and had a length of 1.10". At first, the bullets were lubed using Lee Alox, but this was replaced with Bore Butter to get lube into the lube grooves. Again, there are better choices out there, at this juncture we were on track on just seeing if the brass could be formed and fired.

You will have to use the priming device that comes with the Lee press. The Magtech brass takes a large pistol primer, so use the appropriate priming arm for the press device. Priming is accomplished as normal. Traditionally, a black powder drop tube would be employed to get the black powder into the case, however, that was something that we did not have on hand at the moment. So the 85 grains of FFg blackpowder was measured by volume using a standard blackpowder measurer and the powder was poured into the case. What we found was that the 85 grains did not even come up into the neck area of the case. Ideally, one would want to place a card in the case followed by the bullet and seat the bullet down such that some powder compression would happen. That would not work in our case as the top of the powder was still in the ".577" sized portion of the case, that is to say, below the shoulder of the case. What we did was try to mimic the military load that used a cotton wad between the powder and the base of the bullet. A cotton ball was stuffed into the case and compacted down. This was followed by a vegetable fiber .45 card (now that the case was filled up into the neck area) and then the 405 grain bullet was seated. The bullet was seated to the top of the highest lube groove.



Figure 27

The parts of our cartridge.

Range Time

One snowy Friday recently, we both had the day off, so to the range we went. There was some initial interpretation...after all we are talking about pulling (squeezing) the trigger on a 100+ year old rifle mere inches from our face. Okay, to alleviate that fear, we sandbagged the rifle into a rifle mount and attached a string to the trigger. A round was chambered and we cleared the site. BOOM! The old war horse was back in action. Two more shots with it sand bagged and we were convinced that the ol' girl was doing alright.



Figure 28

Loading sequence 1. Open the lever action which will drop the bolt and open the breech.



Figure 29

Loading sequence 2. Slide a shell into the breach.



Figure 30

Loading sequence 3. Use your thumb to slide the shell all the way into the chamber and make sure it seats flush.



Figure 31

Loading sequence 4. With the shell pushed all the way into the chamber, you are almost ready to shoot.



Figure 32

Loading sequence 5. Close the breach by lifting the lever. Note: there is no safety on these rifles.

No issues with opening/closing the action, no evidence of damage to the wood or metal and no issues on the brass. The primer was nicely hit, no gas leakage occurred around the primer. Perhaps the one issue that may be resolved later was the fact that the case neck was blackened by powder. This could be caused by two reasons. First, being that the bullet was not crimped, there was not enough resistance to maintain gas pressure upon firing to have the brass seal the neck. Secondly, (most likely) the neck area of the chamber is overall large to handle powder fouling making it easier to load in the heat of battle.



Figure 33

You can see the powder residue around and down the neck of the case. This is most likely caused by not crimping the bullet and/or an oversized neck area in the chamber.

Jerry fired the first shots (being it was his gun!) off the bench. First shot was high at 12 noon right at the edge of the paper. I chalked it up to "nerves" because his following 3 shots formed a nice tight group on the target.



Figure 34

The first shot at the top center of the target I attribute to "nerves", the following three shots off the bench yielded the group. Subsequent shots we did from offhand, all of which were easily kept inside the 7 ring of the SR-1 target at 50 yards.

The recoil of the gun was stout, especially off the bench. But, unlike modern smokeless ammo, the recoil is more like a shove to the shoulder rather than a sharp slap. After that, we fired the rest of the shells that were made ala offhand style. Offhand firing made the recoil more manageable. Fouling of the barrel and/or chamber was typical of blackpowder...namely dirty dirty dirty and downright filthy. But there appeared to be no leading in the barrel.



Figure 35

Jerry started shooting off the bench. The recoil was pretty stiff from this position.



Figure 36

Once we switched to offhand, recoil was much easier to handle.



Figure 37

The capital investment is not so great that you cannot enjoy making your own shells for your Martini Henry.

Okay, now remember, these are blackpowder cartridges. The rifle had to be scrubbed almost immediately upon return home. Hot water and some detergent, just like scrubbing out a modern muzzle loader, were used and a light coating of oil will keep the rust at bay. Being that the Martini Henry is a breach loader, cleaning is very easy and straight forward.



Figure 38

Remember that the blackpowder is also corrosive to the brass. One way to help clean the brass is to drop the fired shells directly into a jug with soapy water and shake away. Rinse well with hot water.

The Bottom Line

Well, it took a bit of time, but we successfully accomplished what we set out to do. Here is a rifle, that traveled from half way across the globe, from the dusty highlands of the Afghan desert to the frozen tundra of Minnesota. It probably had not been fired for at least the last 20 years of its life, if not more. Yet, after being simply cleaned up, it went right back to doing what it was meant to do. You can probably bet that not every owner of a Martini Henry will be as lucky.



Figure 39

This old war horse is back in the saddle again. Shooting it at your range is bound to make people do a double take (after the smoke clears!)

The bottom line is that we now have the ability to form our own brass, shoot it and then reload it.

A short addendum:

Originally, we had finished this article a month earlier for publication, but at the last minute, we found a reference in the 2007 Hodgson Annual Manual (see *Trail Boss- It's not just for Cowboy Action Shooting*, by Charles Petty, page 34) for reloading, among other calibers, the 577/45 Martini Henry using their Trail Boss powder. This powder is specifically designed for low velocity lead loads, primarily used in cowboy action shooting. However, there was a load developed for the Martini Henry. So we decided to try it out.

The results were, well, interesting. We used the same weighted bullet at 405gr (the same Lee mould that is mentioned in the article above) and put it over the 12.0 grains of Trail Boss, no filler. The brass was the same brass that we tested with the black powder loads above, sized and primed as normal. The bullet was crimped into place for the same overall length.

I was standing right behind Jerry when we fired the first round. I had been looking down at something and heard a very weird sound. I guess I was expecting more of a boom and smoke cloud like we had with the black powder. Nope. It sounded more like a cap gun. Matter of fact, I looked up and asked, gee...did you already shoot and if you did, I think you may have a problem. Well, no he had shot and no there was no problem, he had seen/heard the bullet impact the berm with a large SPLAT. Turns out the Trail Boss is so clean firing there was little smoke and practically no recoil to mention. Shooting over the chrony, we clocked the rounds going out at an average of about 710 feet per

second for 6 shots.

The article written by Petty had clocked rounds at 882 fps for a similar weighted bullet. With a little investigation, we found that we were losing power by gas blow back on firing. Apparently, the rifle we are using has a over sized chamber. This combined with a very light load was causing gas to leak past the neck of the case, evidenced by a streak on the case. Accuracy was impressive. Like the black powder cartridges that we used previously, this load and rifle could actually shoot nice groups at 50 yards off the bench.



Figure 40

Seen here, the black streaks are indicative of gas blow by of the cartridge neck. This is most likely caused, in this case, by a roomy chamber as well as the lower power of the powder load.



Figure 41

A 5 shot group using the Trail Boss powder and 405gr .45 bullet at 50 yards off the bench

More work will need to be done on this particular load for this particular rifle. Still, the results would lead us to believe that the Trail Boss is an interesting and useful powder for this load. And the story continues. Stay tuned for an article on using Trail Boss for other calibers of interest.

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