

THE MAUSER MONTHLY
The newsletter for fans of Mauser rifles - the REAL "Riflemen's Rifle!"
Editor/Publisher - Ward M. Clark, Aurora, Colorado, USA

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Reader's comments

Hi there:

I just received the actual snail mail, phone and fax addresses of the Yugoslavian Zastava arms company, which are well known for their Mausers sold under the "Interarms" importer brand name:

Zastava Arms
Mr. Stevo Basaric, Marketing Director
Trg topolivaca 4
YU-34000 Kragujevac
YUGOSLAVIA

Telephone: ++381 34 67 996
Telefax: ++381 34 69 211

And for the US readership would be of interest:

Zastava Impex d.o.o.
Foreign Trade Organization
Crnogorac Svetozar, Direct of Export-Import Dept.
29. novembar St. No. 12
YU-11000 Beograd
YUGOSLAVIA

Telephone: 3220-534
Telefax: 3220-432, 3227-097

Regards, Alexander Eichener (c96@oi nk.rhei n.de)

Ward:

Keep sending the newsletter, It is great! By the way, one of your readers talked about the short FN 30-06's recently imported and advertised as I recall "very good". I ordered one(my FFL licensed dealer ordered another one and gave me the pick of the two) and the one I got had excellent metal, but the stock was at best "good" but the dings aren't very deep. The one he kept I would have had to rate as only "good" as there was rust on the action and bolt and the wood was pretty bad. All numbers on the one I took, including the stock, were matching. I took it out to shoot and the thing shot

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5-6" groups. I was very disappointed to say the least. I thought I had an "action" gun.

I went to clean it and discovered both action screws were loose. I tightened them both up, took it back out to the range and now it shoots like a dream! With the open sights on it, I shot a group slightly over 1" at 100 yards off the bench with surplus military ammo made by Remington in about 1954. I've got a keeper! Now my plan is to lightly sand the stock to get through the shallow dings and refinish it.

My receiver is unmarked except for a proof mark on the far left side. The left locking lug guideway in the receiver extends forward through the diaphragm in the receiver ring as mentioned in "Mauser Bolt Rifles" by Ludwig Olson. This book shows and talks about an "L" or a "B" on the top of the receiver when made for the Belgium army, but mine does not look like the top of the receiver has been ground off, yet my rifle is described here in every other way.

As an interesting aside, I saw a rifle just like mine, only in near new condition, at a gun shop recently, except that rifle had a barrel that was about 6 inches longer. The interesting thing was that the stock was the same short stock I have and the front sight was the same distance from the bolt, but the barrel extended @ 6 inches beyond the front sight! It actually was rather odd looking. The gun dealer said that his rifle had been made for the Belgium form of the National Guard. So, could these other short rifles like mine and your other reader's have been made for this organization as well?

Thanks again!
SAI LOR4451@aol.com

Dear Ward,

I would like to pose another question for Mauser collectors concerning the Mauser Anti-Tank rifle. In Ludwig Olson's book, Mauser Bolt Rifles, he states, concerning the production of the 13mm Mauser Anti-Tank rifle, that "... 15,800 were produced." Now my question is this: The one I have is dated 1918, the last year of the war and has a serial number just over 5000. If one assumes that they were number sequentially and mine was produced on the first of January 1918, that would mean that over 10,000 would have to be produced between Jan and Nov. of 1918. Does this seem to be reasonable? Could the number in Olson's book be wrong? Does anyone have any data that will corroborate or refute the numbers presented by Olson? Does anyone have or know of a Mauser Anti-Tank rifle with a 5 digit serial number? Does any know the year that the rifle was put into production? What is the date year on the receiver of a very low serial numbered rifle? Any info would be appreciated. Thanks.

Bill Cogger (Erma9mm@aol.com)

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As a point of interest, I just bought a Chilean from SAMCO for \$89.98 and wondered what I was getting into. This long barreled honey is more like velvet than steel. I have never had such a smooth working bolt in my life and that includes my Swede 38. Metal is very good and bore looks worn but bright. The stock is pretty beat up but has dents rather than tears so would refinish nicely if I chose to do that. I had a new Chilean stock that I bought long ago at a club auction for a couple of bucks and the barreled action fit like a child to his mother's breast.

Friday I had the opportunity to shoot it, and even with the pitiful military sights and my ancient eyes it did 1 « and 2" groups with Winchester and Remington ammo; this with no time to float the barrel or do any fitting what-so-ever. It does shoot about 12" high with lowest sight setting but that is easy to fix.

Talk about an inexpensive shooter's high!

God Bless!
Norm Johnson (njohnson@nosc.mil)

I recently bought 5 of the Chilean contract Mausers in .308Win. from Century. Three of the five had matching bolt numbers. All were nearly devoid of blue and stock finish, but clean and free from rust. The bores are mirror bright. As usual, when something nice comes in, they were sold out when I called back. I've only fired one of the non-matching pieces at the range and it turned in a respectable 3" group at 100yds. This with Argentine surplus ammo. The bolts are straight and the maker is Loewe, Berlin. They are set up identical to the 98k, save for the straight bolt handle. I'm hoping that some more will surface. They had them in 7mm Mauser also, but I will always take a 308 over a 7mm Mauser. The alleged Nazi marked, Russian reworked 98k rifles now floating around are very suspect. My guess is that the Russkies have the stamps for the receiver markings and waffenampts and are rebuilding and restamping these rifles. Suspicion #1: In every 5 piece order that I've received, all of the makers codes and dates are the same. #2 the markings are too clear and crisp. One can get cut fingers, running them over the markings. Anyone else have any info on this batch. They started at \$150 and are now down to \$120! Does anyone know the drill for creating 7.65 Argentine brass from 30-06 cases? Steve in Md. (steven@universe.digex.net)

"Thunder Speaker" - a .338 Winchester Magnum 1908 Brazilian Mauser
by: Ward M. Clark (WCLARK1046@aol.com)

I've always wanted a "heavy" rifle. I know what is considered a heavy rifle here in the States is known as a medium bore in some parts of the world, but here in the Rocky Mountain West, the .338 Winchester Magnum is considered a heavy rifle. That was the cartridge I had decided on, and a Mauser action, of course.

My original intent was to use one of the large ring '98 actions I had in the shop, fit a new barrel, stock, bolt handle, etc., which would have entailed no small expense. Fate chose to intervene at the August, 1996 Tanner Gun Show in Denver.

While sitting at my table, trying in vain to part with a few of my surplus Mausers, when a gentleman walked by with a rifle slung over his shoulder, the sign on it reading: "Mauser rifle, .338 Win Mag."

Like a trout faced with a well-placed dry fly, I rose to the bait.

The rifle was a 1908 Brazilian action, with a teardrop bolt handle, Buehler safety and Weaver bases. The 26" heavy sporter contour barrel was Mag-Na-Ported, a plus when you are talking about .338 Mag recoil levels. The stock was nicely done, a black walnut stock with a rather narrow and thin Pachmayr butt pad. I bought it, drawing a sideways look from my wife, who was pointedly examining my table full of unsold rifles.

The project then got interrupted by an involuntary trip to Europe, courtesy of Uncle Sam.

Upon my return, the .338 was first up on my plate. Since the barreled action was already in good shape, I made few changes - I just replaced the military two-stage trigger with a Bold modular, added a Bell & Carlson Kevlar stock and a Simmons Aetec 2.5-10X scope. I loaded up some ammo with W-W brass and 225 grain Barnes X boattails.

The first trip to the range was enlightening. Between the Mag-Na-Porting, and the straight-line design of the Bell & Carlson stock, the .338 didn't seem to have any more perceived recoil than a lightweight .308. Very pleasant to shoot; I ran through all 20 rounds I had loaded before I realized it. Even more pleasant were the results on the other end of the lane; groups averaged about 1 1/4", with the largest going just over 2". The new Simmons Aetec scope proved superb, very bright and clear.

I have named the rifle "Thunder Speaker" after an old Plains Indian totem spirit I read about in a book somewhere. It seemed appropriate. My new "heavy rifle" will no doubt serve well on future outings after elk, moose and bear.

The 7.62 CETME - NOT a .308!
by: Kyrie Ellis (KYRIEELLI@aol.com)

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The 7.62x51 CETME (used in the M-1916 Spanish Mausers, often advertised as .308 Win) uses a 113 grain bullet propelled at 2493 FPS, with a maximum chamber pressure of 42,500 CUP. Identical bullet configuration with the 147 grain 7.62x51 NATO bullet is due to a plastic filler in the nose of the CETME bullet.

The CETME round is frequently (and incorrectly) referenced as a "light" or "lower power" version of the NATO cartridge. The truth of the matter is that the 7.62x51 CETME and 7.62x51 NATO are not related in any developmental sense.

A bit of history (and please forgive me if I tell you things you already know!)...

Following WWII, German small arms engineers (including Ludwig Vorgrimmer of Mauser) went to Spain to work with Spanish engineers at the Spanish government research facility CETME (Centro de Estudios Tecnicos de Materiales Especiales) in a cooperative effort to develop a next generation assault rifle. Early prototypes appear to have been a continuation of the development of the MP-44, and were chambered for the 8 m/m Kurz (7.9x33). (As an aside, Spanish production of the 7.9x33 cartridge continued into the 1980's).

It appears that the Soviet Russian development and deployment of rifles chambered for the 7.62x39 were viewed with interest by the research folks at CETME, as they began development of the 7.9x40 cartridge in 1950. A number of very interesting 7.9x40 cartridges were developed, including some loaded with very long projectiles and at least one which was a sub-caliber bullet with driving bands. The object of this development effort was an assault rifle cartridge (an cartridge of intermediate power, which would be controllable during full automatic fire at ranges to 300 meters) which also retained the penetrative characteristics of the 8x57 out to a range of 800 meters.

This goal was apparently realized with the 7.9x40, and a rifle was developed to employ the 7.9x40. This rifle was submitted in the German Army trials of 1955, and was rejected due to the cartridge; a version modified to fire the 7.62x51 NATO was later accepted by Germany as the G3.

This acceptance of the rifle and the rejection of the 7.9x40 cartridge is thought by some to be the impetus for the Spanish to begin to consider a longer (51 m/m) cartridge. It has been suggested that Spain was interested in foreign military sales, and wanted a cartridge which was competitive with the 7.62x51 NATO for the foreign military market.

Be all of this as it may, the development of the 7.62x51 CETME cartridge began in 1955. Interestingly enough, the 7.62x51 CETME is simply a 7.9x40 with a slightly smaller (in diameter and length) bullet in a lengthened case. Ballistically it remained almost identical to the 7.9x40, and resembled the 7.62x51 NATO only in its external dimensions. (Reportedly, firing the CETME rifle in either 7.9x40 or 7.62x51 CETME generates a felt recoil similar to that of a heavy

9x19 sub-machine gun.)

While all this R&D was taking place with the 7.62x51 CETME, Spain adopted the CETME rifle, chambered for the 7.9x40, in 1958.

Something interesting happened in about 1960, but no one seems to know just what (opinions abound <g>). Whatever this event may have been, Spain apparently began to develop a variation on the Modelo 1958 (the Modelo C) which would be chambered for the 7.62x51 CETME. This rifle would be capable of at least limited use with 7.62x51 NATO, but would require modification (a different bolt carrier) to become so capable. At roughly the same time, Spain began to cast around for a replacement for the hodge-podge of squad level machinerguns (most of which were chambered for the 7.9x57 Mauser). The cartridge chosen for this new machine gun was the 7.62x51 NATO.

In any event, Spain began general production of the 7.62x51 CETME in 1963 at Pirotecnica Militar de Sevilla, the Fabrica Nacional de Toledo and the Fabrica Nacional de Palencia.

Production of the 7.62x51 NATO began in 1964 Fabrica Nacional de Palencia. Production of same at Sevilla and Toledo begun at some later (unspecified) date.

So by 1964/1965 we had the makings for the confusion about which cartridge what Spanish firearm is chambered for. As of 1965, Spain used both the 7.62x51 CETME (in its rifles), and the 7.62x51 NATO in its SAWs. Adding to this confusion are the folks who claim that Spain adopted the 7.62x51 NATO in 1955, having mistaken the 1955 *German* acceptance of a modified CETME rifle in 7.62x51 NATO for either the 1958 Spanish acceptance of the Modelo 58 in 7.9x40 or the adoption of the "C" in 7.62x51 CETME.

Robert W. D. Ball, in his book ""Mauser Military Rifles of the World", seems to have made a similar mistake in his comment:

"SPANISH SPECIAL PURPOSE RIFLES, FR7 AND FR8: During the 1950s, a limited number of Spanish Model 1916 and Model 43 Short Rifles were arsenal converted to transition training rifles for the CETME rifle. These SP rifles are handy, lightweight, and reliable, and apparently saw considerable troop use with Spanish Special Forces. Both rifles retained their stock configuration, but were shortened to 38.8 inches overall, with an 18.5 inch barrel; the weight was reduced to 7.5 lbs, and the barrel is fitted with a flash suppressor. The tube under the barrel holds the bayonet adapter and is also used to store cleaning equipment. The rifles have been converted to fire the .308 Winchester round."

There are several problems with this paragraph, not the least of which is that Spain didn't begin the manufacture of *either* 7.62x51 cartridge until the 1960's. He may have been confused about the date of manufacture of the FR-8's by their chamber dates. Most of the FR-8's I've seen have

been M1943

Mausers made in the mid 1950's and bear mid '50's chamber dates. It may be that he assumed these chamber dates indicated the year of conversion rather than the year of original manufacture. The reference to the ".308 Winchester" is more problematical. The .308 Winchester is dimensionally similar to both the 7.62x51 CETME and the 7.62x51 NATO, but is loaded quite differently. The Spanish military has never, to the best of my knowledge, either produced or used a cartridge which generates the kind of pressures associated with the .308 Winchester.

Additionally, the reference to "Spanish Special Forces" is likely the Spanish Foreign Legion in the Spanish Sahara, as this is the only report I have of Spanish Armed forces usage of the FR-8. If this is the case, the usage of the term "Special Forces" is a bit confusing as it refers to foreign nationals in the service of Spain rather than the specially trained troops with which we normally associate the term.

Even Ezell seems to have been caught up in the confusion. In his "Small Arms of the World", he fails to distinguish between the 7.62x51 CETME and 7.62x51 NATO. In the section dedicated to Spanish Small Arms, under the heading "Characteristics of Spanish Rifles", the CETME Model 58 is listed as firing the "7.62mm NATO" cartridge, and having a muzzle velocity of "2493 f.p.s." (consistent with the 7.62x51 CETME, and not the 7.62x51 NATO).

In the same section, under the heading "Characteristics of Obsolete Spanish Machine Guns", the only references to small arms which fire a 7.62 mm cartridge are the FAO Model 1959 and the ALFA Model 55. The caliber of both of these arms is given as "7.62 NATO". The muzzle velocity given for the FAO Model 59 is "Approx. 2800 f.p.s.", while the muzzle velocity provided for the ALFA Model 55 is "2825 f.p.s.". This is consistent with the 7.62x51 NATO, rather than the 7.62x51 CETME.

I, personally, find it a bit hard to believe that Mr. Ezell was unaware of the difference between the 7.62x51 NATO and the 7.62x51 CETME. I'd prefer to believe that he just considered this to be trivial information, and not worth the explanation it would require to fully differentiate between the two cartridges. But whatever the reason, the lack of a reference to the CETME cartridge in this section has added to the confusion.

In any event, the bottom line to all of this is that the course of hand loading for your Spanish Mausers is a very wise approach. Fired with ammunition which does not generate chamber pressures in excess of 42,500 CUP will no doubt allow you to enjoy them for your life time, and to pass them down to your children to enjoy during their life times.

As an aside, I consider the ".308 Win" marking applied to the Spanish Mausers to be especially unwise. While the U.S. loading of the 7.62x51 NATO has a max spec pressure of 50,000 PSI, the SAMMI maximum pressure for the .308 Winchester is 60,000 PSI. To put this into

perspective, the Spanish loading of the 7.92x57 cartridge for which the FR-8's were originally chambered has a maximum pressure of *less* than 49,805 PSI. A .308 Winchester cartridge which reaches 60,000 PSI in a Spanish FR-8 is right up there in the range of a proof load!

High pressure loads in the 96 Swede
by: Kyrie Ellis (KYRIEELLI@aol.com)

(The first paragraphs of this article are responses to a rec.guns newsgroup discussion, reproduced here for background. -WC)

#> Your advice has the potential to damage rifles and get people hurt.
#What advice? This all started with me supporting the position
#that Remington could have achieved the same end as the .260 Rem by
#introducing a +P 6.5x55.
If you had stopped there, you would have been in good shape. It's
when you began talking of Mauser actions that you got out of your depth.

#I have never advocated repeated firing of 55,000 PSI loads in an
#unmodified Swedish Mauser. For the record, don't do it! But I do think
#that the idea of a 55,000 PSI load splitting the action ring is pretty hard
#to swallow.

You have made several mistakes here. One is the implication that
repeated firing of loads which generate 55,000 PSI in a modified Swede
Mauser is safe. Another mistake is the insinuation that firing even one
cartridge which generates 55,000 PSI in a Swede is safe. An equally
dangerous mistake is the assumption that a split action ring is the only
kind of dangerous failure which can happen. The penultimate mistake is
assuming that a Swede can be modified to make it safe to fire cartridges
which generate 55k PSI.

Brett:>>> I have never seen a bolt action which lacks a gas port in the
#>>locking lug raceway, but maybe you have.

Kyrie:>> I can only assume that you are either joking, or have little
#> experience with Mauser and Mauser type actions.

Brett>Well, you see, on my Mexican Mausers and Model 70s there's this
hole in the side of the receiver ring, and if you look in it and work the
#bolt you can see the bolt! It's really cool! And the Mexican Mausers
#even have one on either side, although I believe the Swedes only have
#one.

OK, now I understand. You have little experience with Mauser actions and have made
some bad assumptions based on what little you do know. So let's go back to basics.

The first step is to forget your Model 70 and all other current production bolt
action rifles when the subject of Mausers comes up. The rifles produced by Winchester, Remington, Ruger, Sako, et. al. use a very different steel (chrome, chrome/moly, etc. alloys) and a very different method of heat treatment (homogeneous to depth) than did the Mausers (low carbon steel, case hardened). This different steel allows the different method of heat treatment and these two things, taken together, produce an action which has *very* different characteristics than does a Mauser action.

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These differences are well documented in a large number of different sources (including Kuhnhausen and your favorite, Ackely) and I won't go into them in detail. But I will stress the differences which have the most significance for this discussion. But before doing so, there is a concept which you must understand before the rest of this discussion will make any sense.

We talk about "action strength" as if that were just one thing. In reality, an action has many different types of strengths, and may fail in different ways as these different types of strengths are exceeded.

When we speak of an action's ability to withstand the pressure imposed by firing a cartridge, there are two types of strengths which are of primary importance; yield strength and ultimate strength. The "yield strength" of a material is the point past which the material will fail by deforming (bend, warp, fold, twist, expand, collapse and so on). The "ultimate strength" of a material is the point past which the material will fail by coming apart (tear, rupture, shatter, etc.).

The material/heat treatment of your Winchester produces an action which has yield and ultimate strengths which are relatively close together, and relatively high. In practical terms, this means that the action will show no signs of a yield failure until it is fairly close to an ultimate failure. The good news here is that both strengths are high enough that even a few rounds of *extremely* over pressure ammunition will not produce either a yield failure or an ultimate failure.

The material/heat treatment of a Mauser produces an action which has yield and ultimate strengths which are relatively far apart. The ultimate strength of a Mauser action is generally *higher* than the ultimate strength of your Winchester. But its yield strength is much *lower* than your Winchester. The thing to remember here is that this extraordinarily high ultimate strength is gained *only* at the cost of the relatively low yield strength. In practical terms this means that a Mauser action is *almost* impossible to "blow up" (ultimate failure of shatter, split, etc.), and is likely to suffer only a yield failure when your Winchester would likely suffer an ultimate failure. The flip side of this is that the Mauser will suffer a yield failure (lug set back, stretched action ring, ballooned receiver, etc.) at pressures which your Winchester can handle with ease.

This is one of the basic differences between any Mauser and any current production turn bolt rifle. It is also the reason that conversion of Mauser actions to cartridges different from the original chambering carries an element of risk. If a Mauser action has withstood many years of use with 8x57, 7x57, or 6.5x55 we can reasonably assume that the pressures generated by the original cartridge is within the yield strength of the action. But this only tells us what pressure is *below* the yield strength of the action - it does *not* tell us what the yield strength of the action *is*.

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The truth is that we do not and cannot know the yield strength of a specific Mauser action without destructively testing that action. This is the reason that Kuhnhausen specifically warns *against* rebarreling a Mauser action to a cartridge which generates pressure beyond that produced by the original chambering. It's not necessarily that the conversion is known to be dangerous - it's that the conversion is not known to be *safe*. This whole situation is made even more complicated by the unfortunate fact that not all Mausers were created equal. Some were heat treated harder to a greater depth than others, creating a Mauser action which has an atypically higher yield strength and an equally atypical lower ultimate strength. Others were heat treated to a lower and/or more shallow surface hardness than others, creating a converse situation (an atypically higher ultimate strength and an equally atypical lower yield strength).

All of these are well known characteristics, which have caused damaged rifles and injured shooters among those who did not understand the significance of these characteristics, or underestimated the dangers of a yield type of failure.

Which is where and why the subject of the reheat treatment of Mauser actions comes up. Like the rest of this topic, reheat treatment is not a simple issue. The short story on reheat treatment of Mauser actions is that there are two different types of reheat treatment, which have different goals.

The least dangerous type of reheat treatment is performed on Mauser actions where the original heat treatment is suspected to have produced an inadequately hard surface. The intent here is to produce an action which has a heat treatment identical to what the original heat treatment should have been. This type of heat treatment can produce internal flaws which make the action dangerous at any pressure, but this is very rare. Still, I do not recommend this process to anyone. When Mauser actions can be had for under \$100, I just can't see taking a chance on an action which is questionable from the start.

The most dangerous type of reheat treatment is performed on Mauser actions in an attempt to give them the same type of through and through hardness found in current commercial actions. There are several problems here. First is that low carbon steel is *not* going to produce the same combination of hardness and flexibility which can be attained with a chrome or chrome/moly alloy steel. Attempts to do so are very likely to result in an action which has an ultimate strength which is both lower than it was before reheat treatment, and lower than an identical action made from a chrome or chrome/moly alloy. This attempt is likely to succeed only in raising the yield strength of the action to a point very close to the ultimate strength of the action. In practice, this means that we have an action which will suffer an ultimate failure at a lower pressure than before reheat treatment, and will give

Less warning that the pressures involved are dangerous due to the increase in yield strength. Please keep in mind that the above is the *best* case scenario. In the worst case scenario the reheat treatment may introduce hidden flaws into the action which make it subject to ultimate failures at pressures which were safe before the reheat treatment.

OK, that's a vest pocket description of the differences between Mauser and current actions. This is why it's unwise to judge the capabilities of a Mauser action based on one's experience with a Model 70.

Unfortunately, it's also unwise to generalize to all Mausers from your experience with your Mexican Mausers. There are a number of variations of Mexican Mausers, and some of these variations are quite different from Swede and German (FN, Czech, Yugoslav, etc.) Mausers. When you conclude that "the Swedes only have one" receiver ring gas ports because your "Mexican Mausers even have one on either side", you have been lured into an error by your limited experience with an atypical Mauser type rifle - Swede Mausers generally have zero receiver ring gas ports. The use of receiver ring gas ports had been pretty much discontinued by Mauser as of 1896 - it's unusual to find one on a German made Model 96, and quite rare in a German made Model 98 (small ring 98's excepted).

I hope all of this helps make clear why you are on dangerous ground with your assertion that "...even a small ring action can withstand 50,000 PSI safely, and enough 55,000 PSI loads to wear out the throat if the lugs are lapped and the steel is the correct hardness. Both the barrel and the action could probably withstand a 60,000 PSI load, although they might be damaged ...".

There are any number of small ring actions which have suffered yield failures at *less* than 50K PSI. The Swede Mauser, quality piece of work that it is, may suffer a yield failure with a single round of ammunition which generates 55k PSI, much less 60k PSI.

Which brings us to another point worth discussing. Your comment "...where are you getting all these case failures?" seems to indicate that you do not have a grasp on the symptoms of a yield failure; your comment that a M93-M96 "...action could probably withstand a 60,000 PSI load, although they might be damaged ...", indicates to me that you do not understand how dangerous a yield type of failure can be. So let's talk yield failures, their symptoms and potential consequences.

As indicated earlier, a yield failure is when the material deforms. The most common kind of yield failure IME is lug set back. While people talk about "lug set back" as if it were a simple thing, there are degrees and types of lug set back.

The most common type of lug set back IME is a gradual set back. This occurs when a number of rounds

of ammunition are fired, each of which just barely exceeds the yield strength on the bearing surface for the locking lugs in the receiver ring. This is an insidious type of failure, and its only symptoms are a slowly increasing head space, and a slowly decreasing case life for reloaded cases. It cannot be readily detected before the head space become excessive because it is so gradual; there is no build up of a ridge of material in the receiver ring to give the "sticky bolt" sensation.

Another type of set back which I rarely see myself but am told is quite common is sudden or dramatic set back. This occurs when one or more rounds of ammunition which sharply exceed the yield strength of the bearing surfaces are fired. In this type of set back the lugs may be set back quite deeply, resulting in a "sticky" feel to the final engagement/initial disengagement of the lugs in the receiver ring. Another symptom is a sudden and dramatic decrease in the case life of reused cases. Unlike gradual set back, sudden set back will generally produce excessive head space on a single round, and this excessive head space may be quite large - the third lug may even begin engaging.

One commonality between these two types of set back is the creation of excessive head space. Excessive head space is dangerous in two different ways; it can produce case failures and, in extreme events, bolt failures.

Case failures are pretty easy to understand. What happens is that the distance between bolt face and shoulder becomes so long that the case cannot expand to fill it without suffering a yield failure itself. This cartridge yield failure will most commonly take the form of a separation just in front of the case web, which will in turn dump high pressure gas into the receiver ring, receiver rails, bolt body, magazine well, and stock. Damage to the rifle may range from nil, to shattered stocks, to ballooned actions, to ultimate action failures (this last especially with reheat treated Mauser actions). Most case failures which do not result in ultimate failures of either the action or the stock also do not result in injuries to the shooter or bystanders. The exception to this are bystanders which are sharing the same shooting bench and are forward of the rear receiver bridge. Injuries to bystanders who happen to be positioned in line with and close to any gas release port are likely.

In those cases where the gunstock suffers an ultimate failure due to the high pressure gas released into it via the juncture of the magazine box and receiver, injuries to the shooter are generally limited to penetrating injuries to the off-hand forearm, if it is forward of the rear receiver bridge; the thigh or thighs, if shooting from a kneeling or sitting position. If the shooter is firing from a sitting position he may suffer injuries to the groin if the magazine floor plate is blown out and the magazine contents are expelled by the gas. Injuries to bystanders are rare, and generally only occur to people who are at the same shooting

bench and are positioned even with or slightly ahead of the magazine box (as is all too common with some spotters).

Another (very rare) cause of excessive head space is receiver ring stretching on the long axis of the receiver. This occurs when the portion of the receiver ring ahead of the locking lug raceways is pulled forward and stretched by a combination of excessively high chamber/bore pressure and the bore resistance to the bullet's passage, communicated to the receiver ring via the barrel/receiver threads. I doubt I've seen this more than three or four times, and mention it only to illustrate that set back is not the sole cause of excessive head space in a properly chambered barreled receiver.

Bolt failure due to excessive head space is another rare bird. I've seen only two rifles where I strongly suspected this. What happens here is that the chamber shoulder is too far forward for the case shoulder to make contact, and the case is held to the rear only by extractor tension on the extraction groove. When the primer is struck by the firing pin, the case is driven into the chamber. The pressure builds, the case expands to fill the chamber, but does not "get a grip" on the chamber walls (due to oil on the case or chamber walls, bleed back, or pure bad luck). When this happens, the same pressure which is forcing the bullet down the bore acts to slam the case back against the bolt face. While the bolt is capable of withstanding the thrust imparted to it by a case resting against the bolt face, being suddenly hit by a case with considerable velocity can be too much (the difference between being pushed hard and punched hard). In both of the rifles where I suspected this had happened, there was really severe lug set back, one or both of the locking lugs were cracked at their base, and the safety lug was fully engaged with set back. Interestingly enough, once I got the bolt open the case extracted normally and was intact, without deformation. In neither case did the shooter report anything unusual about the round fired - the shooter comments were in the vein of "it just locked up, but nothing else unusual had happened".

The most devastating yield failure which I personally witnessed was a yield failure of the front action ring where the action ring stretched on the *short* axis, at the receiver threads. In this case the barrel could not be retained by the receiver and was literally blown free of the action (complete with the stock fore end). The unfortunate thing about this one was that the barrel flew down the shooting line rather than down range, and struck another shooter across the side of his head. He survived though he did lose the sight in one eye. As an aside, let me tell you that having to wrestle with a fellow who is semi-conscious, has an obvious depressed skull fracture, and is combative, in order to get him transported to the ER is the stuff from which nightmares are made. The shooter was uninjured, but shocky as could be. He kept repeating over and over that he hadn't meant to hunt anyone. But be that as it may, I had a very brief

chance to look over the remains of the rifle. I could screw the barrel back into the receiver with just hand pressure, and the case (intact and apparently undamaged!) was on the shooter's bench. The rifle involved was a Spanish Model 1916 (M95 Mauser type action) which had been converted to 7.62x51 CETME, in which the shooter was firing .308 Winchester ammunition. This incident is an especially grim indicator that M93-M96 Mauser type actions are *not* universally safe to fire with ammunition which has a SAMMI maximum of 60K PSI.

The subject of Mausers and what is, or is not, safe has been hotly contested for generations. It's also very complex, and I've simplified much of what I've written and left much out. And the blasted note has still taken hours to type <wry smile>. So I'm sorry to have taken up so much bandwidth on a subject which few people may find interesting. But I thought it was important that you in particular and folks in general understand that it *is* a complex topic, and the cost of not understanding, being mistaken, or just not having enough information is *high*.

Reader's Ads

I need a receiver for my 03-A3 would prefer a Smith-Corona, but Remington is okay. Have FFL, in order to receive guns. Willing to buy outright or trade for a Mauser.
Steve Ashe in Md.: phone 410-239-7282 fax: 410-343-0149
steven@uni.verse.digex.net
Thanks

FS or trade: Browning Hi-power clone, by FEG, pre-ban, hi-capacity legal, with 15 round mag and an extra 10 round mag. NIB, with papers. Blued with walnut grips. Hammer drop safety. May be fired double or single action. Have two of these am keeping one. What have you got to trade?

Same as above in compact .380. Sell or trade.

Will ship to FFL address. Must have hard copy of FFL and can supply mine.

I collect military long guns, but will consider anything of value in trade.

Thanks,
Steve Ashe: phone, 410-343-1215 fax, 410-343-0149 or E-mail,
steven@uni.verse.digex.net

Publisher's comments
by: Ward M. Clark (WClark@aol.com)

March was quite an interesting month. I gave up my consulting business to accept a full-time job; a lot of new demands on my time, but I always find time for my Mauser trivia. Colorado big-game tag applications are due April 2nd, mine got mailed March 29th; Elk, mule deer, black bear, antelope. I have

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accepted a challenge to bag an antelope with my 91 Argentine sporter, 7X57mm, Redfield peep sight. All of you have been reading this newsletter for a while will remember the story of the Arizona javelina hunt with this rifle; I have since been experimenting with a nice mild load using the Nosler Ballistic Tip bullet that performs well in this gun. (Incidentally, take a look at my Web page at <http://members.aol.com/wclark1046/clark1.html> and you can see a picture of me, the javelina in question, and the '91.) The 91 has been refitted with a flat butterknife bolt handle, and will be getting some checkering cut before hunting season.

My thanks to Kyrie Ellis for sharing his seemingly endless store of Mauser knowledge with us this month. Also my thanks to all of you who sent in notes and comments. I'm sure there are a million more shooting stories and tech tips out there, so keep the articles and letters coming!

And a final note - I've got a "mystery" Mauser large ring 98 action. I got it with a batch of 98/22 CZ actions from Turkey; this one appears to be a standard length 98 large ring, stamped on the top of the receiver ring is a large case "A" with a large case "F" superimposed, so that the crosspiece of the "A" forms the top bar of the "F". The year 1954 is stamped under this. Anyone have any idea what this is? Neither Olson or Kuhnhausen offers a clue. The markings on the side of the receiver are "Mod. 98" and "Th." This action is at present headed towards becoming a heavy-barreled 6mm Remington, but I'd sure like to know where it came from!

Good Shooting!

Ward