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HEADSPACE TUTORIAL

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tomcatshaas
Moderator

Contributor

Posts: 1413
Joined: Fri Dec 02, 2005 7:23 am
Location: Minnesota



HEADSPACE TUTORIAL

by tomcatshaas » Sat Mar 31, 2007 4:54 pm

EDIT

QUOTE

This is **NOT anything more than an explanation** of the way I check headspace on my barrel/bolt combinations. If you have a bad experience after checking headspace the same way I check it, **You bare the full responsibility.**

This article is for the **MG42 only**, using either 8 x 57mm barrels (8mm Mauser), or 7.62 x 51mm, which is slightly longer than .308 specs. Rifles using rimmed ammo are headspaced in a completely different method, and even the definition of headspace for them is different.

Yes, headspace gauges are expensive  so are hospital bills and blown up guns. You decide whats important.

Headspace with the MG42 can be checked easily with the barrel and bolt OUT of the weapon.

Definition of terms:

Headspace - As defined in manual HDV 181/7, the German MG42 Armorer's Manual: Headspace is the distance between the upsweep of the Chamber and the front Face (impact base) of the Bolt Head with a locked Breech.

Firing Pin Holder  I use the term that the Germans call it in their manuals. Some people call it a striker sleeve.

GO Gauge  This gauge is to check that the chamber will accept the cartridges made to maximum SAAMI specifications.

NO-GO Gauge  This is used by most gunsmiths as a maximum headspace gauge when checking headspace. If a firing pin holder goes fully forward on a NO-GO gauge, it may still be within the SAAMI tolerance. Next, it should be checked with a FIELD gauge. If the NO-GO gauge allows the firing pin holder to go fully forward, it is NOT necessarily out of specification.

FIELD or REJECT Gauge  If the firing pin holder goes fully forward on the FIELD gauge, its chamber is dangerously close to, or longer than the SAAMI maximum chamber size.

Its my experience that a little long on headspace doesnt seem to be a problem with the MG42. A little tight on headspace is a MAJOR problem, and leads to out of battery explosions (blowing out the side or rear of the cartridge wall with the bolt not completely closed = very bad). Again, you get to decide what youll accept, this is only an explanation of how I check things.

Check all barrel and bolt combinations. I have one barrel that is too tight with one bolt, but that bolt works OK with all other barrels, and the barrel works with all the other bolts. Write it down and tape it inside a barrel carrier with that barrel.

credits to Jbaum

Basically... In short:

Install the **GO gauge**And it should GO or TH.

The **NO-GO gauge** should **not allow the bolt to close** with the gauge in the chamber.

The **Field gauge** or "**Reject gauge**" is the longest that a chamber should be and a Field/Reject gauge **should not close**.

If a **field gauge** closes in your barrel...**Do not use that barrel & bolt combination !**

Fixing that sort of condition is beyond the scope of this tutorial and you'll need to consult a professional gunsmith.

"**Closing the Bolt**" with an MG42 means that the bolt rollers are fully out in the grooves on

the barrel extension, not half way, not most of the way... **ALL the way!**

This can only be checked with the barrel and bolt out of the gun.

heres how

Put the **GO gauge** in the bolt head under the extractor,
insert the bolt head holding the **GO gauge** in the chamber,
check to see if the rollers to go to the outside-most "LOCKING" position on the barrel extention.

With the MG42, too little headspace seems to be the major danger... There are lots of guys who don't worry about a loose fit, and the guns (FA) seem to run just fine. If headspace is too tight, it's possible to be right on the borderline where the rollers may go out far enough to allow the firing pin to hit the primer, even though the cartridge isn't completely contained within the chamber. That produces a very embarrassing (expensive, dangerous, bloody, you choose) situation called an **Out Of Battery explosion** or **OOB** and is to be avoided.

The gages are about \$30 each . Buy a set for **SM Mouser** , and a set for

.308 from MidwayUSA or Brownell's. (7.62NATO) would be special order if you can find them.

Just write on a piece of tape to use barrel # 1234 with bolt #5678,

and stick it on the inside of the barrel carrier. Even the SA Mg42s are too expensive to be screwing around taking chances..... and hospital bills aren't cheap either.

Once Again

The bolt must close and lock fully on the "**GO**" **gauge** to insure proper positioning of the bolt to close fully and **fire the weapon safely**.

The "**NO-GO**" **gauge** is the beginning of something bad that could happen and **the bolt should not close and lock on the "NO-GO"**.

The "**FIELD**" **gage** is the **maximum length** before problems really start to happen and if the bolt closes and locks on that one then you are about to be in real trouble if you continue to use that combination then you might be looking for a new gun in short order.

Also remember if you have a MG 3 barrel it is chambered in 7.62mm NATO.
The winchester .308 is not the same headspace as 7.62 NATO.

You must use the correct gages or your efforts would be of limited value for determining safe headspace for firing .

PLEASE SEE TECHNICAL DATA AT THE END OF THIS TUTORIAL REGARDING 7.62 VS. .308

Examples of Forster Headspace Gages .

Top 3 are 8MM Go, No-Go, Field .
Bottom 2 are .308 Go, No-Go, Field is not pictured. (coming soon)



This picture is to illustrate that you should check all your barrels and bolt combinations and write down the results.
That way you can pair up good bolt to barrel combinations.



THE FOLLOWING TUTORIAL IS DONE IN 8MM.

This is to illustrate the GO Gauge installed and the proper position of the Firing pin holder (real name is Striker

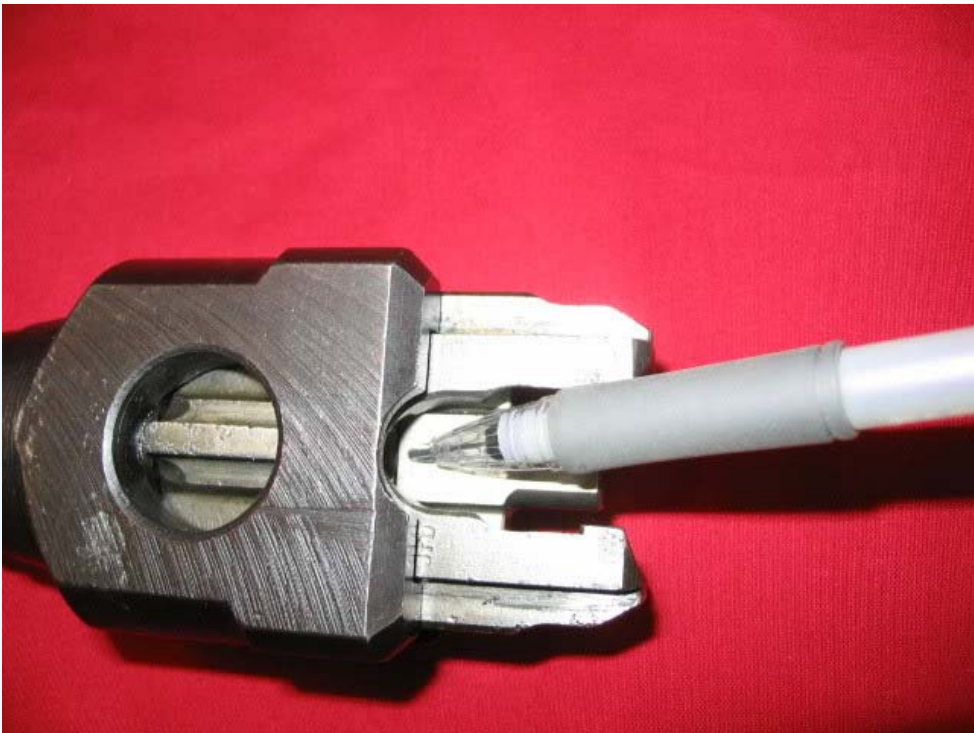
Sleeve) and locking rollers in the bolt head. The striker sleeve is what pushes the locking rollers out into the barrel extension.



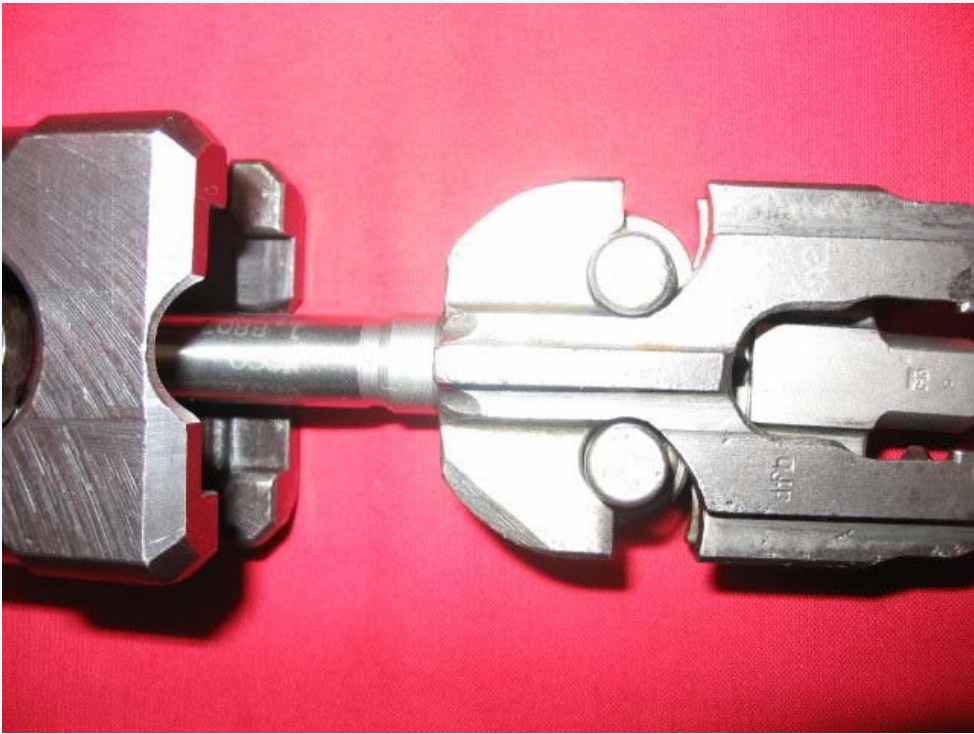
The striker sleeve should bottom out with the **GO Gauge** and the locking roller snap in and lock into the barrel extension.

This checks that there is not a short chamber situation.





Next is to check that the chamber is not too long with the NO-GO Gauge .



This is to illustrate that the NO-GO Gauge should NOT GO or striker sleeve does not bottom out.



Check all your barrel bolt combinations to find suitable combinations that will work.

Do not despair if one or more of your barrels fails the NO-GO test. You can then check for serviceability with the Field Gauge which is the last ditch effort. However, The Field Gauge SHOULD NOT GO/ OR BOTTOM OUT the Firing Pin holder/striker sleeve (IE fully lock the bolt rollers.)

The next pictures are to illustrate a barrel that fails the NO-GO Gauge test with a NO-GO Gauge installed.



This picture illustrates this barrel failing the NO-GO Gauge test.

Note the Firing Pin holder/striker sleeve bottoming out with NO-GO Gauge installed.



This next picture is to illustrate that this barrel Passes the Field Gauge test by the Gauge NOT GOING . Which means the Striker sleeve NOT bottoming out. Thus this barrel would be safe to shoot with this bolt, But you would want to keep an eye on it.



However, If you run into a short chamber situation. Here are some suggestions

If your barrel is not chromed, you can use a finishing reamer to set the headspace to close on a go gauge.

If it is a chromed barrel one option is to remove the barrel extension and add a shim between the barrel shoulder and the extension. (for too short of chamber situation). Or turn the shoulder down (for too long chamber situation)

It depends on whether you have a loose chamber or a tight chamber. Or you can find a bolt head that will close on a go gauge. Which is what I ended up doing in all my cases.

7.62NATO AND .308 TECHNICAL DATA SECTION

Here is some Technical Data on 7.62x51 and .308

If you're shooting mil-spec ammo 99% of the time, 1.635 is good.
That's only .001 over minimum for 7.62x51
In fact, 1.634-1.637 is perfect for 7.62x51

Most folks will see 1.632-1.634 because of the possibility of shooting commercial 308.

The .308 Winchester cartridge can be fired in chambers between 1.630" and 1.638" without problems and I would be comfortable shooting it in a chamber up to 1.640". This is not a recommendation though. The 7.62X51 MM can be fired in chambers from 1.634" to 1.644". Field reject is 1.6455". The no-go of 1.638" was used by the military to determine if a rifle was servicable for overseas shipment. Even the MTU found that 1.638" was suitable for match rifles, but cautioned that the barrel throat may shoot out early with the longer head space. I have found that head space in the 1.632" to 1.634" range will shoot NATO spec ammo just fine. 1.630" HS will often fail to lock up the bolt when using NATO spec ammo. Most of the M14 rifles that gunsmiths build have HS in the 1.632 to 1.634 range and they seem to shoot anything.

The shooter should always know what their rifle is chambered for and stay within those limits.

I do **strongly recommend** that HS should be kept to the published SAAMI and Mil Spec dimensions for liability concerns. It's always best to error on the safe side.

So, it really depends on what ammo the customer will shoot 99% of the time.
Surplus ammo is cheap compared to commercial stuff.

308-----7.62x51

1.630-----GO-----1.6355
1.634-----NO-GO----1.6405
1.638-----Field-----1.6455

YOU CAN USE .308 WIN. GAUGES TO CHECK HEADSPACE FOR NATO.

Remember that we are shooting for 1.632 - 1.634 to shoot both 7.62 NATO and .308. So just

ignore the Go, NOGO, and FIELD marking and look at the actual numbers. So in a sense the

NOGO becomes our SAFE GO gauge, and the field now becomes the NOGO for checking NATO. In

Fact, a .308 FIELD GAUGE may even go because remember 1.634 - 1.637 is perfect for 7.62NATO and 1.638 is still within specifications for 7.62NATO.

The **ONLY** way to know for sure what your chamber is, you can spend the money and get a

complete National match set of headspace gauges for .308 which are 11 gauges at .001 inch increments, so you know exactly what your chamber is. THIS IS THE ONLY WAY I KNOW OF TO GET THOSE GAUGES. I HAVE YET TO FIND A VENDOR TO SELL THEM INDIVIDUALLY.

I want to thank everyone involved with the making of this sticky. Drooling Idiot, Jbaum, DARIVS ARCHITECTVS. This has taken some time to put together.

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DARIVS ARCHITECTVS
Field Marshal



Administrator



TS-1C



Posts: 2583
Joined: Tue Aug 30, 2005 11:24 pm
Location: Minnesota



Re: HEADSPACE TUTORIAL



by **DARIVS ARCHITECTVS** » Sun Dec 21, 2008 2:59 pm

Attached is the edited and printable MS Word version of this article, with corrections made to spelling, diction, format, and personality flaws imbued by its original writer. TC: please review this document for correctness of content.

ATTACHMENTS

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