

# **Winchester Models 75S & Model 69A Bolt Shim Kit**

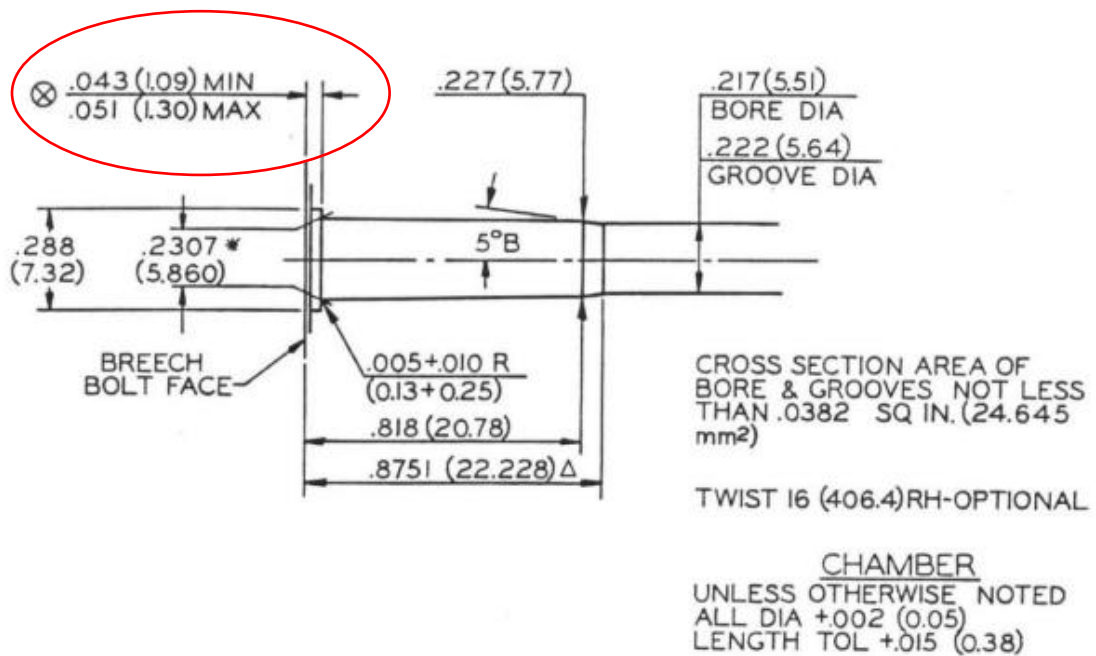
**by J. Rouleau**

## **Symptoms of excessive headspace in the 22LR**

When the bolt action rifle's bolt locking surfaces become worn or repairs are made to the bolt, it is important to check the headspace. Increases in the headspace can cause light firing pin strikes, poor ignition (misfires), looseness of the bolt, and loss of accuracy. It has been my personal experience with a Winchester 75S that excessive headspace caused the bolt to feel loose. In addition to this bolt feel, firing pin strikes were so light that two were required to ignite any 22LR cartridge. The locking surfaces of my rifle did not appear worn, so the rifle may have been serviced with a new bolt handle. It was confirmed with gauges, the headspace was not correct.

## **Headspace and Its Measurement**

Headspace is a dimension of the chamber in your rifle. In rimfire rifles, it is typically the thickness of the rim allowance in the chamber. This chamber measurement is defined by SAAMI for the 22LR as shown in figure 1. Most rifles chambered for the 22LR cut this rim allowance into the bolt face. If the bolt does not close snugly, the space for the rim will be too large (excessive headspace). This allows movement of the cartridge upon the firing pin strike. The problems of ignition and accuracy loss are the result. In the 22LR, headspace issues are not usually hazardous as they may be in centerfire cartridges due to the 22LR's relatively low operating pressures.



**NOTE**

B = BASIC

(XX.XX) = MILLIMETERS

$\otimes$  = HEADSPACE DIMENSION

\* DIMENSIONS ARE TO INTERSECTION OF LINES

$\Delta$  = REFERENCE DIMENSION

ALL CALCULATIONS APPLY AT MAXIMUM MATERIAL CONDITION (MMC)

Figure 1 22LR Chamber Dimensions from SAAMI Z299.1 – 2015 (R2018)

The measurement of headspace is commonly accomplished with 3 chamber gauges: GO, NO GO, and FIELD. A typical gauge set represent +0.003" for the GO, +0.006" for the NO GO and +0.009" for the FIELD gauge. Each gauge is placed into the chamber and the bolt is closed on the gauge. A bolt should close properly on the GO gauge. It should not close on the NO GO or the FIELD gauges. (There is no need to force the bolt closed! We are looking for clearance between the front of the bolt and the front of the rim.) If the bolt does close on a NO GO or a FIELD gauge, the excessive headspace can be corrected with a bolt shim kit from [TriggerShims.com](http://TriggerShims.com).

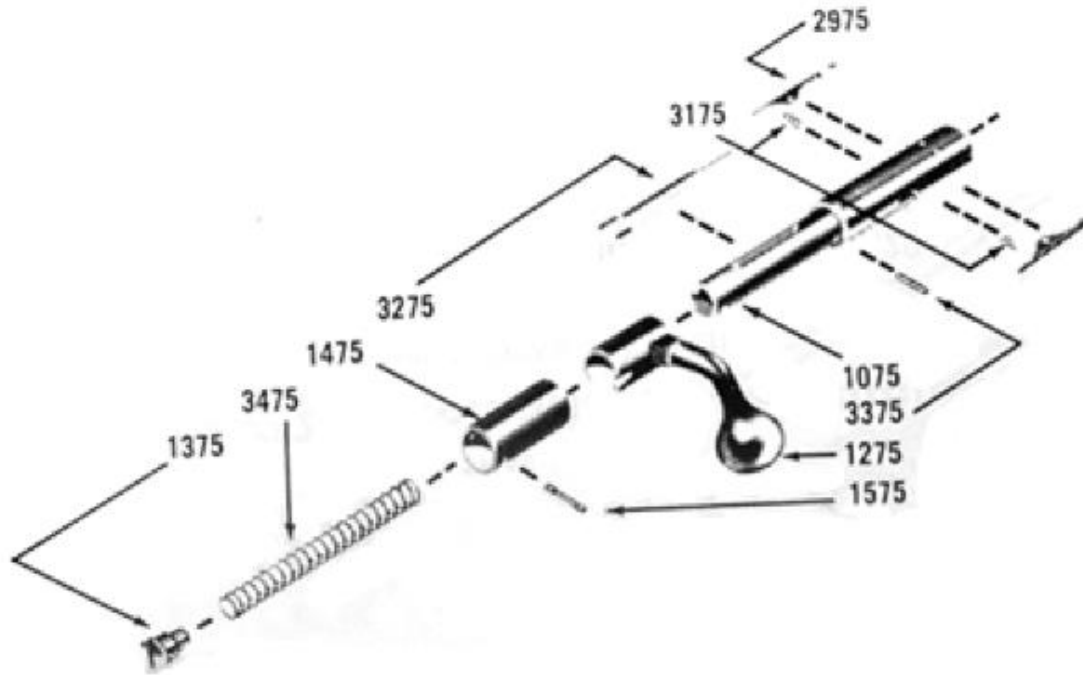
If chamber gauges are not in your toolbox, do not despair! The common thickness gauges can be used to evaluate the headspace of your rifle. This is done by closing the bolt and measuring any gap between the locking surfaces of the bolt. I was able to close the bolt gently with a shim placed between the locking surfaces as shown in Figure 2. In figure 2, the arrow points to the thickness gauge. Make a note of the gauge thickness as it will be used to select the shim(s) for installation.



*Figure 2 Using a Thickness Gauge to Select Shim Size*

## Breech Bolt Parts

The breech bolt assemblies of the Winchester 69A and 75S are of identical construction. See figure 3 for an exploded view of the Winchester Breech Bolt Assembly.



*Figure 3 Exploded Model 75S Breech Bolt from Winchester Repeating Arms*

1175 Breech Bolt Complete comprises:

- 1075 Breech Bolt
- 1275 Breech Bolt Handle with Cocking Sleeve
- 1375 Breech Bolt Plug
- 1475 Breech Bolt Sleeve
- 1575 Breech Bolt Sleeve Pin
- 2875 Extractor Right Hand
- 2975 Extractor Left Hand
- 3075 Extractor Pin (2)
- 3175 Extractor Spring (2)
- 3275 Firing Pin
- 3375 Firing Pin Stop Pin
- 3475 Firing Pin Spring

## Steps to Disassemble the Breech Bolt

There are only two tools required to disassemble the Breech bolt. These are:

- a small drive punch
- a small hammer

Eye protection is necessary because the assembly contains compressed springs.

1. Using a small punch and hammer, drive the 1575 Breech Bolt Sleeve Pin from the Breech Bolt Assembly. Allow the punch to remain in the hole and capture the 3475 Firing Pin Spring and 1375 Breech Bolt Plug. This is shown in Figure 4.



*Figure 4 Removal of the Breech Bolt Sleeve Pin*

2. Beware! Extracting the punch from the Breech Bolt Assembly will release 1375 Breech Bolt Plug and allow the compressed 3475 Firing Pin Spring to be released. Placing a shop towel over the assembly before extracting the punch will prevent the 1375 Breech Bolt Plug from being launched across your shop. The uncompressed 3475 Firing Pin Spring is shown in Figure 5. It is advisable to mark the relative radial orientation of the 1475 Breech Bolt Sleeve and 1075 Breech Bolt at this step. Lacquer (fingernail polish) makes an excellent, temporary marking and is easily removed



with acetone. This marking will make reassembly easier if the hole through the 1475 Breech Bolt Sleeve is not drilled exactly on center.



*Figure 5 Uncompressed Firing Pin Spring*

3. Remove the 1475 Breech Bolt Sleeve. The 1275 Breech Bolt Handle with Cocking Sleeve can be slid back to reveal the 3375 Firing Pin Stop Pin. The 3375 Firing Pin Stop Pin will slide from the cross bore and allow the 3275 Firing Pin to be removed. The 1275 Breech Bolt Handle with Cocking Sleeve may need to be rotated to maximize the slot length and allow the 3275 Firing Pin to be removed. The removal of the firing pin is shown in Figure 6. The slot in the 3275 Firing Pin to accept the 3375 Firing Pin Stop Pin is clearly visible.



*Figure 6 Removing the Firing Pin*

4. With the 3275 Firing Pin removed, the 3375 Breech Bolt Handle with Cocking Sleeve will now slide from the 1075 Breech Bolt. The disassembled Breech Bolt is shown in Figures 7 and 8.



*Figure 7 Plug, Spring, Sleeve, and Bolt Handle*



*Figure 8 Firing pin, breech bolt, and pins*

## Shim Installation Instructions

1. Select the appropriate shim(s) from the shim package. The recommended thickness of the shim(s) is 0.001" less than the maximum thickness gauge on which the bolt will close. Figure 9 shows the shims ready for installation.





*Figure 9 Shim(s) Selected for Installation*

2. Place the shim(s) on the 1075 Breech Bolt and slide the 3375 Breech Bolt Handle with Cocking Sleeve into place. The assembled shim(s) are shown in Figure 10.
3. Slide the 3275 Firing Pin into the 1075 Breech Bolt.



*Figure 10 Shim(s) and Bolt Handle on Breech Bolt*

4. Pull the 3375 Breech Bolt Handle with Cocking Sleeve back to reveal the cross bore for the 3375 Firing Pin Stop Pin and reinstall it. This reinstallation is shown in Figure 11. Sliding the 3375 Breech Bolt Handle with Cocking Sleeve forward to the shims will capture the 3375 Firing Pin Stop Pin in place.



*Figure 11 Installation of the firing pin stop pin*

5. Place the 1475 Breech Bolt Sleeve back onto the 1075 Breech Bolt being careful to align the hole for reinstallation of the 1575 Breech Bolt Sleeve Pin. Use the marking made in the disassembly to ensure the proper orientation of the 1475 Breech Bolt Sleeve. The assembly will appear as shown in Figure 12.





*Figure 12 Preparation for Breech Bolt Sleeve Pin installation*

6. With the 1375 Breech Bolt Plug inserted in the 3475 Firing Pin Spring, compress the 3475 Firing Pin Spring into the breech bolt and place a punch in the pin's hole as shown in Figure 13. This is easily accomplished by placing the 1375 Breech Bolt Plug onto the bench and forcing the 1075 Breech Bolt down onto the 3475 Firing Pin Spring.



*Figure 13 Compressed spring captured with a punch*

7. The 1575 Breech Bolt Sleeve Pin can carefully be driven into the hole forcing the punch from the assembly.
8. Lubricate the Breech Bolt Assembly with gun oil. Be sure to place a drop of oil on the shim(s). The Breech Bolt is complete as shown in Figure 14.





*Figure 14 Reassembled Breech Bolt Assembly*

9. Reinstall the bolt into the rifle for testing of the headspace. See Figure 15.



*Figure 15 Shims in the Firearm*

## Testing of the Breech Bolt Assembly in the Firearm

The Breech Bolt Assembly may be tested by feel. The bolt should close smoothly and firmly, but without looseness. Closing the bolt may require a very slight increase in effort compared to before shim installation. It should not bind nor require excessive force to close. If you must put excess force or undue stress on your bolt to close it, you should reduce the thickness of the shims. Adjustments to the shim thickness to increase or decrease the headspace require disassembly and reassembly.

If access to the chamber gauges is available, test the bolt with the GO gauge (Figure 16) by placing the gauge in the chamber and closing the bolt. The bolt should close normally on this gauge as shown in Figure 17.

Extract the GO gauge from the chamber and replace it with the NO GO gauge (Figure 18). The bolt should not close on this gauge as shown in Figure 19.



*Figure 16 GO Gauge*



*Figure 17 Bolt Closed with the GO Gauge*





*Figure 18 NO GO Gauge*



*Figure 19 Bolt NOT Able to Close with NO GO Gauge*

The bolt shim installation is complete.

Happy Shooting!