FITTING A BROWNELLS FITTED BARREL TO AN ACTION

Fitting a Brownells pre-threaded and short-chambered Fitted Barrel to an action can be done with a minimum of equipment and difficulty. However, barreling a rifle does require CARE and ATTENTION TO DETAIL. Because of the high pressure involved (.308 Winchester cartridge generates as much as 50,000 pounds of pressure per square inch), you cannot be too careful!

PLEASE NOTE: Be sure you have the appropriate barrel for your action. Barrels designed to fit the Model 1898 Large Ring Military Mauser with a 1.1" x 12 tpi shank will also fit the commercial equivalent, such as the Interarms Mark X. These barrels will NOT fit the Small Ring Mausers, such as the Models 93, 95, or the Swedish Models 96 or 38.

Barrels threaded with a shank size of .980" x 12 tpi are for use on the Small Ring Mausers such as the Models 93, 95, or the Swedish 96 or 38 and some Small Ring Model 98's and Large Ring/Small Thread Model 98's.

Barrels for the Remington 700 series will fit most Remington actions using a 1.062" x 16 tpi shank. These include the long and short M-700, the M-690, M-660, Model Seven, and 40X Centerfire. A Shilen Ovparex recoil lug is included with the Remington barrels and MUST be used with these to provide proper fit to the receiver.

Barrels for the Savage 110 series will fit most Savage actions using a 1.062" x 20 tpi shank, made after 1966, with a bolt head having the recoil lugs extending the full length of the head.

BE SURE OF THE IDENTITY OF YOUR BARREL AND ACTION BEFORE STARTING THE JOB! Although Brownells Fitted Barrels are held to close tolerances on the length and diameter of the threaded shank, they may not necessarily fit your individual action due to variations in the tolerances allowed in the barrel threading, action bolt and manufacturing processes. IT IS YOUR RESPONSIBILITY to determine that the action and barrel can be used together. Double check the barrel thread size, the pre-cut chamber dimensions and the bore size before proceeding with the work! The instructions which follow assume you are starting with an action that has had the barrel previously removed, and any work necessary to true or repair the action has been done.

In considering an action for rebarreling, be very leery of military actions produced during the latter part of World War II, 1944 or 1945, either in Germany or any of the Nazi-occupied countries. Production controls and procedures were often quite lax under the pressures of wartime, and some unsafe guns were produced. Most importantly, the receiver may not be properly heat treated. In addition, some actions made for Spain or the Latin American countries may also have questionable heat treatment. If the receiver or bolt shows signs of extreme wear, pitting, abuse, or any indication of having been in a fire, DO NOT USE IT! Use only those actions that are in good condition. If you are in doubt about a particular action, DON'T USE IT!

TOOLS AND SUPPLIES: To properly fit a barrel to your action, you will need the following tools and supplies in addition to your new Brownells Fitted Barrel: Barrel vise with blocks or bushings matched to your new barrel’s contour; action wrench to fit your receiver; “Finish” chambering reamer with an extension handle; “GO” and “NO-GO” headspace gauges to match your chambering reamer; cutting oil (such as Brownells Do-Drill); Brownells Barrel Assembly Paste, or other good quality, anti-seize lubricant.
examine the bolt face for signs of primer leakage (pitting or gas cutting in a circular pattern around the firing pin hole) or an oversized firing pin hole. Check the firing pin tip diameter, shape, and amount of protrusion. A bolt head should not be permitted with more than .5 (.005) smaller primer seating, and the firing pin must be replaced.

IMPORTANT NOTES ON MAGNUM BARREL INSTALLATION ON MAUSER 98 RIFLES: These barrels are intended for use on commercial magnum Model 98-type actions such as the Interarms Mark X and FN-Browning magnum models in good condition. If you choose to fit one to any action, it was not originally built or chambered for, the following safety inspections, alterations and re-heating treatment must be done.

Bolt Assembly - Inspect locking lugs for cracks or uneven wear. Check the firing pin tip for diameter and protrusion. Inspect the firing pin hole for galling when it is threaded into the receiver. Check for bolt setback when it is threaded into the receiver. When using an “in-the-receiver” style action wrench, make certain the rec coil lug will be at the “six-o’clock” position to the scope mounting holes when the barrel is fully tightened. Check that the rec coil lug is snug and securely tightened. Continue the receiver onto the barrel until it is snug and secure. There is no need for excessive force when installing the barrel. As with the Mauser barrels, a snug, tight fit (usually 1/8th to 1/4th of a turn past hand tight) will suffice. Remove the action wrench.

For Remington Rifles: Remove the bolt from the action. Fit an appropriate action wrench to the receiver. Make certain the rec coil lug will be at the “six-o’clock” position to the scope mounting holes when the barrel is fully tightened. Check the rec coil lug is snug and securely tightened. There is no need for excessive force when installing the barrel. As with the Mauser barrels, a snug, tight fit (usually 1/8th to 1/4th of a turn past hand tight) will suffice. Remove the action wrench.

For Savage Rifles: The barrels fit a commercial magnum barrel and short action receiver with a Shilen rec lug and barrel with a shoulder. Remove the bolt from the receiver. Fit an appropriate action wrench to the receiver. Make certain the rec coil lug will be at the “six-o’clock” position to the scope mounting holes when the barrel is fully tightened. Clamp the barrel securely in a bench vise. Continue tightening the barrel onto the receiver until it is snug and secure. There is no need for excessive force when installing the barrel. A snug, tight fit (usually 1/8th to 1/4th of a turn past hand tight) will suffice. Remove the action wrench.

CHECKING HEADSPACE: Before headspace can be checked, the bolt must first be stripped. For Mauser Rifles: Strip the bolt of the striker assembly and the extractor. For Remington Rifles: Strip the bolt of the striker assembly and the ejector assembly. Since the extractor is riveted in place on most Remingtons it can remain in the bolt, if desired, provided extra care is taken when checking the headspace. For Savage Rifles, Type 1: Post-1966 Savage 110/112 series use an extractor that slides in a slot in the bolt head and is held in place by a detent ball and spring. Removing the extractor will cause the bolt to be sprung back through the access hole in the extractor and slide the extractor out of the bolt head. Note: the detent ball and spring may fly from their hole in the bolt head, and are easily lost. The extractor is a spring-loaded plunger similar to the Remington 700 and must be replaced.

CAUTION: Because of its complicated design, it is not practical to remove the firing pin assembly from the Savage bolt. Use care not to pull the trigger and allow the firing pin to strike the headspace gauge. The headspace gauge is hardened and tough, and if the firing pin or headspace gauge may result.

Clean your “GO” and “NO-GO” headspace gauges of all traces of oil and dirt. Check the headspace by carefully placing the “GO” headspace gauge in the appropriate cavity in the chamber and check lock of the bolt using “one-finger, fingertip pressure”. The bolt normally will not close on the “GO” gauge. If it does, check the chamber next with the “NO-GO” gauge. Insert the “NO-GO” gauge into the chamber and attempt to close and lock the bolt using the same amount of pressure as initially used with the “GO” gauge. The bolt should not close on the “NO-GO” gauge. If it does close on the “NO-GO” gauge, you have an excessive headspace condition. Correction of this condition may require either setting back the
shoulder of the barrel or facing off the forward end of the receiver. Both of these operations will require the skilled use of a lathe. Occasionally, fitting a new bolt will tighten up an excessive headspace condition to where the bolt will not close fully on the “NO-GO” gauge.

Normally, the bolt will fail to close on the “GO” gauge indicating that the chamber is too “short” and must be lengthened. When this occurs, remove the headspace gauge and bolt. Attach an extension and a “T” handle to a finishing reamer of the appropriate caliber. Coat the chamber and reamer with a liberal amount of a good grade cutting oil such as Brownells Do-Drill®. **CAUTION:** The use of cutting oil is absolutely essential to produce a smooth chamber and to prevent damage to the reamer. You cannot use too much cutting oil. Carefully insert the reamer into the chamber.

Cutting should be done with a smooth, even pressure exerted along the axis of the bore. Turn the reamer only in a *clockwise* direction. NEVER turn it counterclockwise or you will “roll” the edges of the reamer and ruin it. A good quality reamer will virtually pull itself into the barrel as it cuts. Be extremely careful that you do not remove too much material from the chamber. We suggest that you remove the reamer after only 3 or 4 complete revolutions in the chamber. Clean away all traces of cutting oil and metal chips from the chamber, barrel and locking lug recesses.

After removing all traces of oil from your headspace gauges, check the headspace of the rifle. The bolt should evidence of moving further forward and coming closer to locking with the “GO” gauge. If the bolt does lock, check the chamber with the “NO-GO” gauge. Remember that you do NOT want the bolt to close fully on the “NO-GO” gauge. If it does, you have excessive headspace.

Assuming that the bolt did not close on the “GO” gauge, remove the gauge and bolt. Using liberal amounts of cutting oil on the finish reamer, insert the reamer into the chamber and remove a bit more material from the chamber. Again, three or four turns of the reamer is all that you should make before checking with the “GO” gauge. DO NOT HURRY this process. Take your time; check frequently to make sure you do not remove too much metal from the chamber. The chambering with the finish reamer will be complete when the bolt will close on the “GO” gauge. **It should NOT close to the fully locked position on the “NO-GO” gauge.**

When the thinning of the chamber is completed, the chamber, receiver, and barrel should be thoroughly cleaned of all traces of cutting oil and metal chips. **CAUTION:** Make sure the bore is completely clean and unobstructed. We repeat: Make sure the bore is clean and unobstructed.

If you have fitted a new barrel and recoil lug to a Remington or Savage rifle, you MUST inlet the stock for the oversized recoil lug. It may also be necessary to open the barrel channel of your stock to accept the new barrel, especially if one of the heavy contour barrels has been fitted.

**For Savage Rifles, Type 2:** These barrels use the Savage recoil lug and barrel nut. Brownsell's Fitted Barrels for Savage rifles using the original recoil lug and barrel nut have a full diameter, full length chamber. A chamber reamer is not needed to install this barrel.

To fit this barrel, clean the chamber, barrel threads, barrel nut threads, bolt locking lugs and receiver locking lug recesses. To extract and ejector must be removed from the bolt head. Clean the bore face. Place a small amount of Brownells Barrel Paste on the barrel threads and screw the barrel nut onto the barrel. Place the Savage recoil lug onto the barrel with the small projection facing the breech end of the barrel. Place the bolt in the action and close it. Place the appropriate “GO” headspace gauge into the chamber and screw the barrel into the receiver until you feel the headspace gauge contact the bolt. Engage the projection of the Savage recoil lug into its slot in the receiver and hand tighten the barrel nut against the recoil lug. Use the Brownells Action Wrench when fitting a Savage 110 Barrel Nut heads to tighten the barrel nut by about 1⁄8th of a turn past hand tight. Note: Excessive tightness is not necessary or desirable. Remove the “GO” headspace gauge from the chamber, and check the headspace with the “NO-GO” gauge, making certain the bolt will not close fully on the “NO-GO” gauge. DO NOT attempt to force the bolt closed . . . only fingertip pressure on the bolt handle is needed. Forcing a bolt closed on a headspace gauge may damage the bolt, the chamber, the action locking lug recesses, the headspace gauge or any or all of the above.

Reassemble the extractor and ejector into the bolt. **CAUTION:** Make sure the bore is completely clean and unobstructed. We repeat: Make sure the bore is clean and unobstructed.

When fitting a Type 2 Savage barrel, we recommend that the headspaces be set using the “GO” gauge as described above, and then **double check** with the “NO-GO” gauge after test-firing is completed. Check the barrel nut’s tightness. It should not unscrew using hard hand pressure. Re-tighten if needed.

Reassemble the bolt, striker assembly and extractor, and install the complete bolt assembly in the receiver. Reassemble the firearm according to the manufacturer’s instructions. Check for proper functioning using a **ACTION PROVING DUMMIES.** Make sure **ALL SAFETY MECHANISM** are fully functional as designed and approved by the manufacturer. These tests prove satisfactory, test-fire the firearm with live ammunition in a **SAFE** and **APPROPRIATE** manner.

If all of your tests are satisfactory, the rifle can now be fitted with sights, reblued, etc. Don’t forget to stamp the barrel caliber in an exposed area of the barrel.

For additional information on chambering, use of headspace gauges, barrel installations, etc., we recommend the National Rifle Association publication, *The NRA Gunsmithing Guide * Updated. This outstanding gunsmithing book is available from both the NRA and Brownells. You may also wish to consult *Gunsmithing Tips & Projects* by Wolfe Publishing a publication, *The Mauser M91-M98 Bolt Actions, A Shop Manual* by Jerry Kuhns.

If you have any problems or need additional information, do not hesitate to contact our Technical Support Group.