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BenchTalk®, ¢ Classic - Barrell Fitting a 1911 Auto

There isn't a week that goes by that Brownells Gunsmith Technicians don't receive a couple of calls from customers wanting to fit a new barrel for their 1911 Auto. That's why we thought it would be great to bring you classic BenchTalk article from several years ago. These timeless techniques are described by Mike Watkins, one of Brownells Gunsmith Technicians and a member of the Pistolsmith's Guild.

Barrel Fitting the 1911 Auto

By: Mike Watkins

You have just received your 1911 Auto match barrel. Now, how does it fit and how do you go about installing it in your 1911 Auto? Hopefully, the following procedure that I use in my shop will help you achieve the results you're looking for.

The first step is to measure the slide with a **Digital Caliper #539-832-218** or **#606-500-136** to determine the hood length. That dimension is measured from the breech face to the back edge of the upper lug in the top of the slide. Generally that is around 1.314", but every slide is a little different. It should fit tightly against the breech face but not so tightly that it inhibits pistol functioning. Next, the sides of the hood are cut and held square with the slide using a **1911 Auto Barrel Alignment Block**.

You can measure the width of the breech face and transfer that measurement to the hood, then file or mill to the actual width needed. Another way is to hold the barrel squarely in the slide with the **Barrel Alignment Block**, paint the back of the hood with a black marker and gently tap the barrel against the breech face sides. You will have a mark to go by so you don't narrow the hood width too much when filing the hood by hand.

Now that the hood is fitted to the correct length and width, you can check to see if the barrel will lock up fully into battery. On match barrels, the rear lug will be oversized on the recess depth so you can fit it to the slide. The rear lug should be lowered until the barrel locks up fully to maximum lug depth. The theory is to center the barrel on the firing pin hole and have .040" to .045" lug engagement.

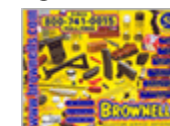
I prefer to have 0.45" or more lock up. The firing pin can hit a little off center and be just fine. However, that doesn't mean on the edge of the primer. You can measure the amount of lock-up in several ways. The simplest method is to place the barrel into the slide, make sure it does not touch the breech face and is not seated into the slide lugs. You want to use a loose bushing to support the muzzle end of a standard barrel so you do not

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have any binding.

If you're fitting a bull barrel, the O.D. of the barrel must be fit before you can measure lockup. You need to watch for, and prevent, barrel binding or springing as you push the barrel up into place, as they can adversely affect your measurement. Push up on the barrel, and, with a dial caliper, measure the distance from the top of the slide to the top of the barrel hood. Now slide the barrel back and up into the slide lugs and make the same measurement again. The difference between the two measurements will be the amount of engagement or lockup.

There are two approaches to fitting the bottom lugs on a 1911 Auto. You can use a milling machine to cut the bottom barrel lugs, or **Brownells Lug Cutter** that's operated by hand. Both work well and it just depends on the pistolsmith's preference and there of which procedure should be used. Everyone, through experience, develops their own technique that works for them. Maybe that is where the "magic" of pistolsmithing comes into play.

I prefer the hand-cut method. This is where the bottom lugs are cut with the barrel installed in the frame. That reasoning comes from having the frame, slide, and barrel all locked into the tolerances it has to operate with. This way the lugs are in direct relationship with the slide stop pin that they are going to lockup on. The lugs are then cut square with the slide stop pin even if the hole in the frame is a few thousandths of an inch off center.

Now we'll cut the barrel lower lugs with the **Lug Cutter**. Align the barrel square with the **Alignment Block** and insert a Brownells **1911 Auto Barrel Holder** into the slide. Or you can use the self-aligning, **Brownells Barrel Alignment Gauge** by itself to hold the barrel in place while cutting the lower lugs. Remove the alignment block and install the barrel slide assembly onto the frame and cut the lower lugs to lock on the slide stop pin. Be careful you don't cut too far and take metal off the back of the lugs. You should cut enough metal to allow the thumb safety to go into engagement.

Double check to make sure that after cutting, the disconnect is properly located into its slide recess as well. If the back of the slide and frame are not flush, you can remove metal later to blend them in. Continuing to cut the lugs to make the slide/frame flush at the rear will, most likely, over-cut the lug stopping point where it rests against the slide stop pin.

Remove the cutter and try the fit of the barrel against the slide stop pin. It should be tight and require a little hand fitting and polishing for it to lock and unlock easily. Don't take off too much. The lockup should still be firm, but not binding. The lugs should touch at the back and bottom against the slide stop pin. With that accomplished, measure the distance from the barrel link pin hole to the lugs where they rest on the pin. Choose a link the same distance as measured. Never open up either hole on the link!

Paint the sides of the lower lug feet with a marker and lay the link on the outside of the lugs using a link pin to hold it in place. With a scribe, rotate the link from its position of full lockup to the unlock position, at least a 45° arc. Then scribe that arc on the sides of the lower lug feet and not where metal needs to be removed from both sides of the barrel lug. This will allow the link to swing freely through its movement.

Pre-marking the lugs this way and then removing only that amount of material will prevent the lugs and slide stop pin from bumping at the front of the lugs during its travel, which will affect accuracy and functioning.

The flat on the lugs should be as long as possible to lock on the slide stop pin for the best accuracy. This also delays the unlocking of the barrel for accuracy. I also believe it contributes to less recoil or muzzle flip in a compensated pistol.

With those clearances correct, install the link and pin into the barrel and hand cycle to check functioning. We will assume that we have the correct bushing or cone lockup at this point. With the barrel unlocked and the slide back over the hood, you should have at

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least .005" clearance between the top of the barrel and the slide upper lugs. If not, the back of the barrel lugs could be hitting the frame as the barrel unlocks.

That contact point should be moved back around .005" at a time so that the barrel will have clearance to unlock. The sides of the barrel can also bind inside the slide right above the rail groove, so check that also. I remove that contact point from the slide rather than from the barrel if there is any binding.

Check to make sure the barrel is seated fully in the barrel bed on the frame and the bottom of the link is not bottoming out in the frame. When a ramp barrel cut is made, the link slot in the frame should be moved back about .040" to solve that problem. More on ramp cuts later. Now that we have a pistol that cycles without binding, yet locks up like a bank vault, we can proceed to chambering.

Using your digital caliper measure the end of the barrel hood to the case mouth ring in the chamber. Most match barrels are short-chambered and headspace will have to be set with a reamer. Even if the chamber length is correct, which doesn't happen very often, I still run a reamer into the barrel to make sure the chamber diameter is correct. This will also cut the lead-in taper into the lands. You can hand turn the reamer to check this without deepening the chamber. Just proceed carefully and remember the saying "cut a little, check a lot!"

I cut the chamber depth .002" to .005" over SAMMI minimum specifications, depending on caliber, to ensure that lead or fouling build up will not hinder chambering or ejection of a loaded round. Throating the barrel .10" will also help and lowers chamber pressure on the .38 Supers or other hot rounds. From my experience, throating will not adversely affect accuracy. Final dimensions will be up to you, of course.

Machining the frame wasn't addressed. Those dimensions will depend on the type of barrel ramp you have chosen. Consult the dimensions for your Wilson/Nowlin or Clark/Para ramped barrel.

Generally, with the frame level in the milling vise, you will touch the frame rails and then center the cutter in the frame slot. Lower a 3/8" (.375") center cut, end mill down .315" and machine slot through to the magazine well.

If you're fitting a barrel that has a Wilson/Nowlin ramp, you will now set the frame up vertically in the milling vise. Use a **Nowlin Frame Bridge Cutter** to move the frame lug slot back about .160". You can determine that amount by measuring from the slide stop pin to the face of the lug slot. Subtract the measurement from .495", and that will give you the depth. Remember to check your barrel specifications!

After the cut for barrel depth has been made, install the frame in the milling vise with the dust shroud pointing downward and the frame rails 45° from vertical. Cut a chamfer about .050" wide at the intersection of those two previous cuts. The edges of that chamfer should be beveled with a needle file, rounding them into a 1/16" radius.

On a Clark/Para ramp, the second cut is measured from the slide stop pin to the face of the lug slot. This cut is made with the frame level in the milling vise and is approximately .260" in length. The Clark ramp cut is rounded at the back of the lugs. Check your barrel again to see what the cut will look like. Remember; go by the specifications that came with your barrel.

Bushing-to-slide fit should be tight and a match bushing will have to be bored or reamed .001" over your barrel diameter. Chamfer the top rear inside and lower front inside of the bushing so the barrel can lock and unlock smoothly. Again, it should not bind or spring back when pushed up into the slide by hand during lockup.

Today's computer machined parts have resulted in tolerances that have increased the potential accuracy of the 1911 Auto design to new levels. Don't get in a hurry, check fit often, and you will have a pistol that is accurate and functions perfectly.



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