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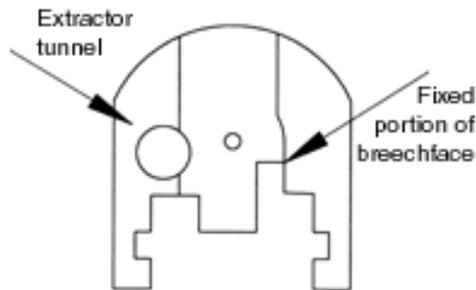
## 1911 Auto Extractor Adjustment

by: Jack Weigand



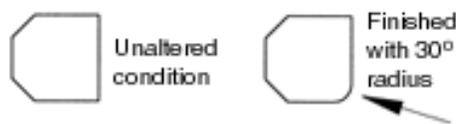
The extractor on a 1911 Auto Pistol is one of the most misunderstood parts of the entire gun. It probably causes more malfunctions and more jams than any other part, including the magazine. I am going to explain what it does, how it works and how I make simple extractor adjustments in my shop.

I am going to make a bold statement and then of course explain myself. The extractor has one function and one function only. That is to hold on to the spent case long enough for the slide to move rearward until the case hits the ejector. The case then pivots around the extractor head and is released out of the ejection port of the slide.



1911 Auto Breechface Detail

Some gunsmiths share the opinion that the extractor guides the case into the chamber, but in my experience, this is not necessarily true and here's how to prove that. Remove the extractor from a 1911 Auto, insert a magazine filled with dummy rounds. Rack the slide and feed a dummy round from the magazine into the chamber. You will find the pistol will feed reliably without an extractor.



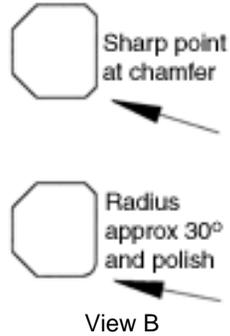
Extractor Head as viewed from the end of the breechface

Early in my career as a pistolsmith I used to remove the extractor in diagnosing extractor type problems. If the pistol fed OK with the extractor removed then I would go to work on the extractor because I was pretty sure that it was the problem. You will find, generally speaking, that if you follow the directions I've outlined here in fitting and adjusting the extractor, you

will avoid almost all of those diagnostic problems and save the time spent doing them.

## HOW IT'S MADE

For the most part, high quality 1911 Auto extractors are machined from bar stock and heat-treated. From manufacturer to manufacturer you will find different materials used but generally speaking they all hold up very well. Extractors are machined from both carbon steel and stainless steel. I would avoid extractors that are cast. If you encounter an extractor that will not maintain correct tension, my suggestion is to replace it with a new one with the correct temper.



## HOW IT WORKS

As the pistol cycles after firing, a fresh round is stripped from the magazine by the slide as it comes forward. The bullet nose travels up the feed ramp and is cammed into the chamber. As the cartridge is camming, at about the 45-degree mark, the rim encounters the extractor. The rim of the cartridge is fed into the extractor hook and then it is cammed outward as the bullet is chambered.

Now, take a look at the Breechface Detail shown above. This is a simple CAD drawing but you will get the idea. At the point in the loading cycle we described above, the cartridge head is held against the fixed portion of the breech face. You can see the extractor tunnel in the diagram, where the extractor is positioned.



Extractor tension gauge

The extractor is exerting side pressure toward the fixed portion of the breech face. This is where the term extractor tension comes from. Extractor tension is simply the amount of pressure being exerted by the extractor on the case head. 25 to 28 ounces of tension is a good working range for most semi-auto pistols.

As the pistol is fired, the case is held firmly against the breech face until it moves far enough in the cycle to come in contact with the extractor. The case is then pivoted around the extractor by the ejector until it releases and is ejected from the pistol. If the case is not held firmly by the extractor you will experience erratic ejection performance or non-ejection.



RCBS Trigger Pull Gauge

## FAILURE TO FEED

In most instances, an extractor that is adjusted too tightly (too much extractor tension) will cause a failure to feed. In this condition, the case head is not allowed to travel up, into the breech face because the rim of the cartridge never becomes fully-seated under the extractor hook.

Excessive extractor tension can also cause the extractor to dig into the cartridge rim, which is made of brass. This will cause inconsistent feeding or an intermittent feeding problem.

Refer to View "A". This illustration shows the end of the extractor as if you were looking at the breech face from the muzzle end but it shows the extractor hook only. You will see on the left what the majority of extractor hooks are machined like. We want to radius the lower portion of the hook as shown in the illustration on the right. This area, when left with a sharp transition, can dig into brass and impede feeding.

The second problem area, View "B" is a view of the extractor from the same vantage point with the hook removed. You will see a small bevel where the case slides up the extractor face that usually has a sharp intersection. I take a small needle file and radius this intersection to smooth up the transition point.

When examining your brass you will find small dings on the rim of your brass, this is the area of the extractor that causes it. Similarly with the hook not being radiused you will find small dings in the web of your brass.

## **FAILURE TO EXTRACT**

Failures to extract are usually related to an extractor with too little tension. With too little tension, the brass is not held securely long enough in the cycle to be properly ejected. The brass is allowed to loosely float around as the pistol cycles. The brass hits the ejector in a non-uniform manner and ejection is very random. One case may be tossed several feet, another case may just barely clear the edge of the ejection port.

## **CHECKING AND SETTING EXTRACTOR TENSION**

Many highly trained pistolsmiths can adjust extractors by hand with a great deal of success. In my shop we try to employ a method that is a little more scientific by identifying our unknowns. I try to use procedures that produce consistent results. I like results that can be measured (quantified) and later incorporated into other pistols I intend to build in the future. This saves time for us and frustration for the customer. Return shipping is quite expensive these days and customer returns are something I try to avoid at all costs.



Extractor Tensioning Tool

I determine extractor tension using our Extractor Tension Gauge Set (#957-101-000). The Set includes two, double-ended, brass gauges that will work for 9mm/.38 Super, and .40 S&W/.45 ACP. To use this tool you will also need a trigger pull gauge that reads in ounces. I recommend the RCBS Trigger Pull Gauge (#747-094-500). That's the trigger pull gauge that I use in our shop and it works just fine. If you really want to go upscale, Brownells offers four models of Recording Trigger Pull Gauges that will not only show exact extractor tension but record the tension with a telltale. The 6 lb. Model (#174-006-060) will work best for measuring extractors.

First, install the extractor into the slide and retain the extractor with the firing pin stop. Clamp the slide vertically in a padded bench vise with the muzzle end pointing upward and the ejection port facing you as you stand in front of the vise.

Insert the Extractor Tension Gauge for the appropriate caliber between the extractor and the breech face directly where the case head would set. Line up the hole in the gauge with the firing pin hole. Attach a trigger pull gauge to the opposite end of the Extractor Tension Gauge. Pull the trigger pull gauge toward you so the Extractor Tension Gauge will be moved from between the extractor and the breech face. Read the tension on the scale at the moment the Extractor Tension Gauge begins to move toward you. The amount of pull required to move the Extractor Tension Gauge, expressed in ounces, is your extractor tension. Ideally, the tension should be between 25 to 28 ounces.

To adjust the amount of tension exerted by the extractor, you can bend the body of the extractor to position the hook closer or farther away from the side of the breechface. It can be bent using many methods. You can use the extractor tunnel hole in the slide to capture half of the extractor while you bend it with your hands. You can also bend it with two

pairs of pliers or secure one end of the extractor in a vise.

Over the years I had problems controlling the amount of bend when adjusting extractors by any of these methods. I would go through the bend and unbend method several times until I got it just right. I was quite time consuming.

I developed a new tool. It's called the Extractor Tensioning Tool (#957-000-037). It's simply a hand arbor press used to precisely bend the extractor while controlling the degree of bend.

The picture above shows the Extractor Tensioning Tool with a 1911 Auto extractor setting in the tool. If your extractor has an insufficient amount of tension follow these directions. Adjust the Stop Screw and Lock Nut until there's an 1/8" of gap between the extractor and the tip of the Stop Screw. Tighten the Thumb Knob on the bottom of the tool until the extractor rests against the end of the Stop Screw. Tightening the Thumb Screw bends the extractor body.

Reinstall the extractor into the slide and recheck the extractor tension. If more tension is needed, remove the extractor from the slide and repeat the adjustment sequence. To increase extractor tension, adjust the Stop Screw outward an 1/8 of a turn and bend the extractor again.

Continue the bend and check sequence until the proper extractor tension is reached. Turning the Stop Screw an eighth of a turn will usually produce from between 3 to 5 ounces of additional extractor tension. All extractors will vary but this is a good starting point. If your extractor is too tight (excessive extractor tension), I recommend you bend out the extractor and repeat the process again.

The real advantage to using these tools is you get a measurable starting point and a constant value to work with. Having the constant value of known, extractor tension and a reliable, repeatable method to change it, will help you solve extractor and feeding problems quickly and accurately.