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# Ruger Model 77 Triggers

M77 MKII NO CUSTOMER ADJUSTMENTS

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**W**HEN RUGER'S MODEL 77 rifle was designed over 25 years ago, it was a very different world for gun designers and manufacturers. Product liability lawsuits that plague practically all U.S. companies today, whether they make step ladders, lawnmowers or bolt-action rifles, hadn't yet taken off.

So the focus was pretty clear where the design of the Model 77's trigger was concerned. If the rifle were to compete successfully with Remington's Model 700 and Winchester's Model 70, it needed a comparable trigger. That meant not only a trigger with good performance out of the box, but also one that could be adjusted to satisfy long-range and target shooters, as well as general all-around, finicky gun cranks.

Even the Weatherby Mark V and Savage 110, which were one notch up and down, respectively, on the competitive price scale, had adjustable triggers. So there wasn't much question as to what kind of trigger the Model 77 would have. It was fully adjustable.

There were screws to adjust poundage (weight of pull), engagement (pull, creep or pretravel) and overtravel (slap or backlash). The poundage screw could be reached from underneath without removing the stock, and, in perhaps the trigger's most unique feature, a series of small ratchet notches in the head of

the engagement screw permitted adjusting sear engagement in discrete .002-inch increments.

It was an excellent trigger, capable of good performance as delivered from the factory or if properly adjusted by a gunsmith or the owner. Of course, properly is the operative word here. ~~Like all adjustable triggers, it must be adjusted and used by reasonable people in reasonable ways.~~

~~Beginning in 1998, the Model 77 became the first, and so far the only, major U.S. made bolt-action centerfire rifle to switch from an adjustable to a non-adjustable trigger. In the current Mark II revision of the Model 77, poundage, engagement and overtravel are permanently built into the trigger, established at the factory by way of manufacturing tolerances and part selection.~~

Not only are there no means of adjustment, but also, as can be seen from the accompanying table of measurements made on out-of-the-box rifles, ~~both pull and overtravel increased significantly.~~

Naturally, the trigger does not feel quite the same. For the vast majority of Ruger customers it probably did not make much difference (if they even noticed it at all). Some purists, of course, weren't happy. Tinkerers quickly got to work devising altera-

tions to circumvent Ruger's intentions by restoring adjustability.

All this obviously creates a dilemma for any gun maker: How to offer a trigger capable of withstanding abuse and rough handling (even unreasonable abuse and rough handling) without jarring off, and at the same time capable of satisfying the exacting performance demands of the most persnickety shooters?

For a solution, Ruger went back to a feature in the military rifles of the last century, the much-maligned, but superbly effective, two-stage trigger. These early triggers, as seen on both the Mauser Model 98 and Springfield Model 1903, among many others, combined an extremely sure and certain initial engagement with a reasonably decent final release.

The same principle has been employed for many years in very sophisticated rimfire competition triggers, such as those made by Anschütz (*Rifle* No. 73, page 10). It involves two separate leverage points. To draw down initial engagement, leverage is such that a long, but very light, pull results. When the second leverage point takes over, a distinct transition occurs and the very small remaining movement is perceptively sharper.

Thus the shooter can easily take up the first pull without firing the rifle, then hold it there until deciding to go

through with the second stage. With a little familiarity, it soon becomes virtually second nature.

Ruger's design, while functionally the same, is entirely different mechanically. ~~It takes a unique approach that~~ Ruger is in the process of patenting.

It's a very simple idea, as most good inventions are. Perhaps the best way to describe how it works is to use a little imagination. Let's assume we go back to the original fully-adjustable Model 77 trigger, but with a couple differences — we make the trigger piece very thin, and we omit its lower portion (finger curve). So far, so good; except, of course, there's no way now to fire the rifle.

So we install another trigger piece on the same pivot, which we will call the first-stage or outer trigger. It has no adjustments, but has a finger curve on its lower half. Above, it forms a sort of catamaran, surrounding the abbreviated, but fully-adjustable, inner trigger piece, which we'll call the second-stage or inner trigger.

This ~~first-stage trigger~~ which is pretty much all that is visible from the outside. ~~It gives a few thousandths clearance at the top~~, so it doesn't actually contact or support the sear, at least not normally. Because it bears no load, it can operate very smoothly, opposed only by a light, fixed spring.

There are two basic operating scenarios. Each will be described using measurements made on my sample trigger, again in out-of-the-box condition.

Normally, the trigger pull is two-stage, feeling not entirely unlike a Mauser or Springfield, although *much* better. The first stage is a light and even pull (12 ounces) for .085 inch. Contact is then made against the second-stage (inner) trigger. At this point, the top of the first-stage (outer) trigger has already cleared the sear by .005 inch.

Picking up the second-stage (inner) trigger produces a clearly perceptible change in resistance. Pulling through the second stage requires increasing pressure to 36 ounces and an imperceptible .015 inch finger movement, the ingredients of a true target-quality final letoff.

The second scenario involves an accident, like dropping the rifle on a rock or slamming it hard against a fence post. If you had supernatural ears you

might hear a very faint click, as the inner trigger is jarred out of engagement and the sear drops. but is immediately picked up by the outer trigger (instead of the rifle accidentally firing, of course).

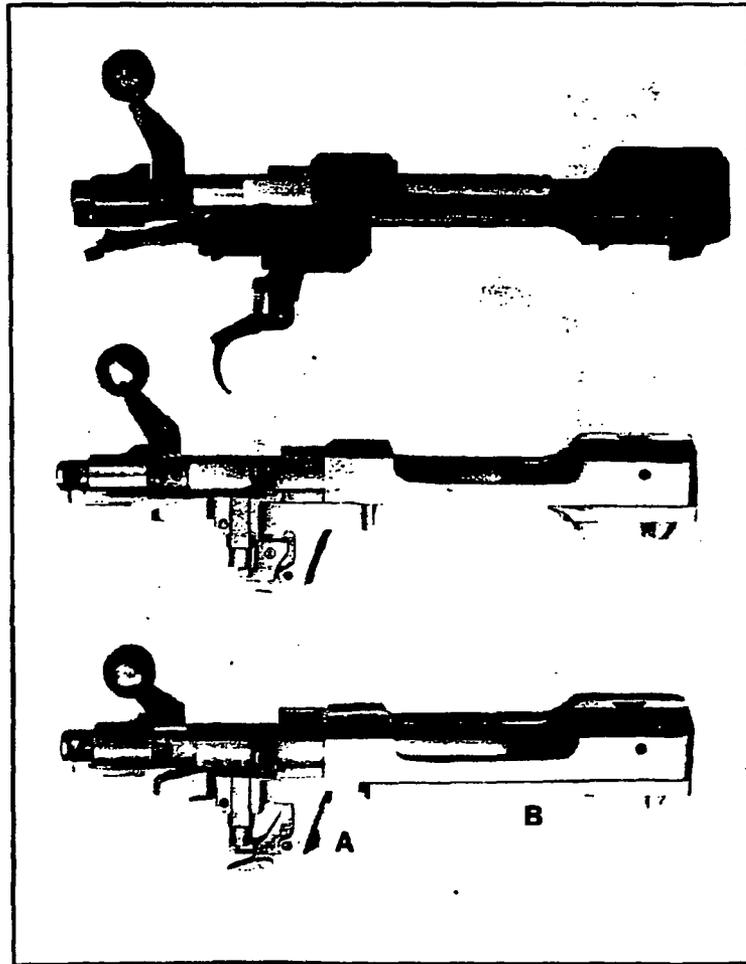
Now you have a single-stage trigger. If you tried to pull the trigger, you would notice there was no longer any free-play (no first stage). The best (and most logical) thing after dropping the rifle would be to at least lift the bolt and allow the entire mechanism to reset back to its original state.

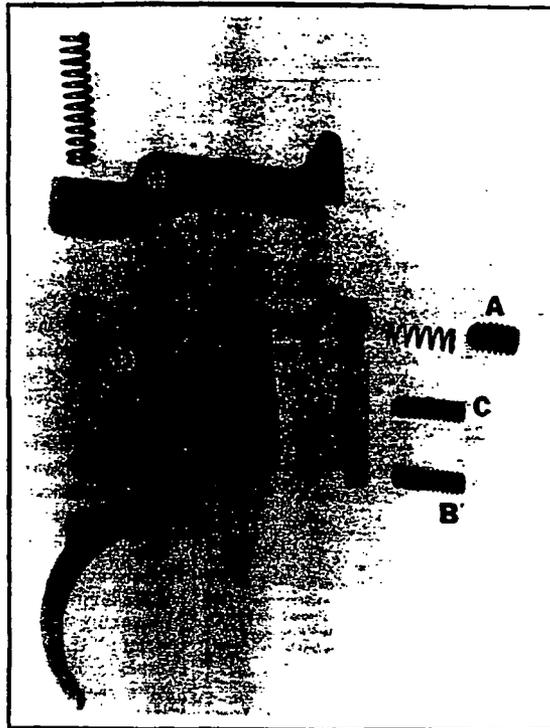
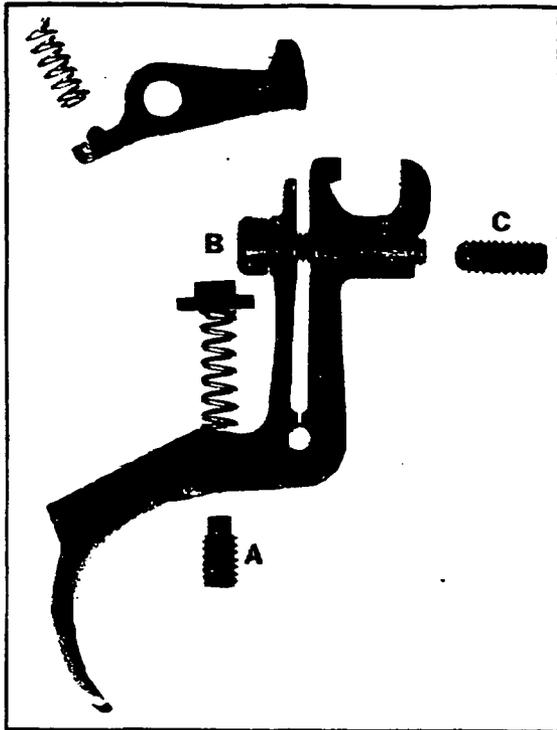
Even if you didn't, you would still have a trigger that will operate, albeit not as nice and smoothly as it normally does. The dual upper surfaces of the first-stage trigger (the "catamaran" surfaces) are now doing the job. They

will provide a heavier (4 pound, 8 ounce) and longer (.080 inch), but perfectly servicable, single-stage pull.

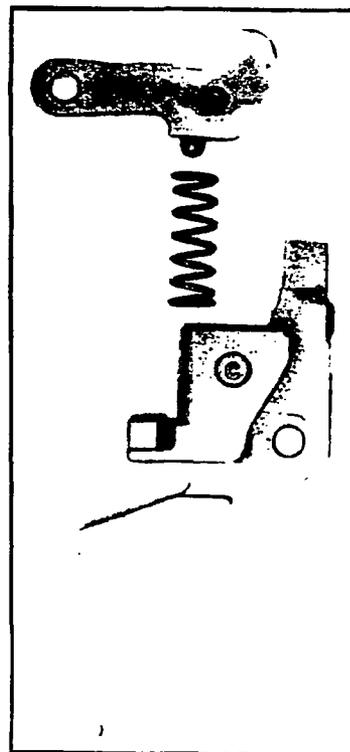
As noted earlier, most shooters will probably be perfectly happy with the standard, nonadjustable Mark II trigger. How popular this new trigger will ultimately prove is hard to predict.

For those seeking trigger perfection for long-range precision shooting combined with a ruggedness compatible with the most adverse field conditions, it looks like this new Ruger trigger would be hard to beat. At present it is available only in the Target Rifle, officially designated by Ruger as the KM77VT Mark II. Personally, I think it would be ideal in a lightweight mountain rifle, but we will have to wait and see. ●



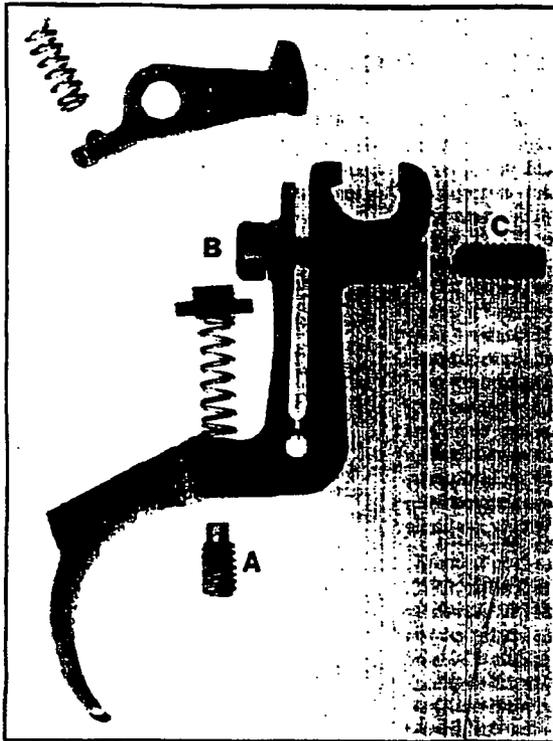


Opposite page, the original Model 77 trigger (top) pivots in bracket pinned to the underside of receiver. The Model 77 Mark II trigger (middle) works in a housing cast integral with the receiver. The KM77VT Mark II trigger (bottom) can be outwardly distinguished by the welded-on adjusting block (A). Also note stiffer receiver side rails (B) used for the target rifle. Above left, the original Model 77 trigger (1968-92) allows adjustment of poundage (A), engagement (B) and overtravel (C). Above right, the KM77VT Mark II trigger (1993) is like the original Model 77 trigger. Screws allow adjusting poundage (A), engagement (B) and overtravel (C). First-stage movement is opposed only by light fixed spring (D). Right, the Model 77 Mark II trigger was phased into the line over a three-year period from 1988 to 1991. Simplified construction incorporates no adjustments and a common spring serves both the sear and the trigger.

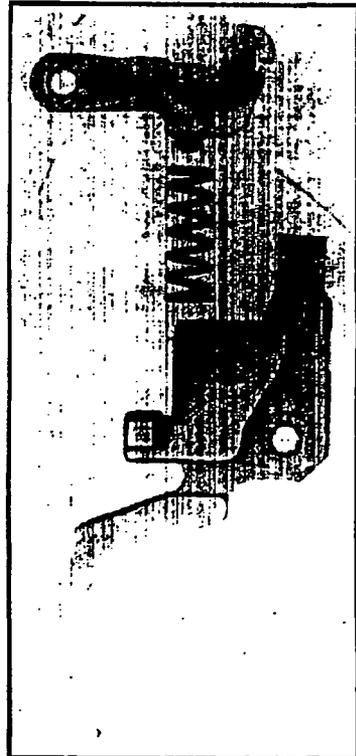


### Ruger Model 77 Trigger Measurements

trigger	pull (inch)	overtravel (inch)	poundage (pounds)
M77	.010	.020	4.5
M77 MKII	.030	.050	5.0
KM77VT MKII			
Two-Stage (normal)	.085/.015	-.012	.75/2.25
Single-Stage	.080	.032	4.5



Opposite page, the original Model 77 trigger (top) pivots on a pin, pinned to the underside of receiver. The Model 77 Mark II trigger (middle) works in a similar fashion, but is integral with the receiver. The KM77VT Mark II trigger (bottom) can be outwardly adjusted by the welded-on adjusting block (A). Also note stiffer receiver side rails (B) used on the trigger file. Above left, the original Model 77 trigger (1968-92) allows adjustment of poundage (A), engagement (B) and overtravel (C). Above right, the KM77VT Mark II trigger (1993) is like the original Model 77 trigger. Screws allow adjusting poundage (A), engagement (B) and overtravel (C). Two-stage movement is opposed only by light fixed spring (D). Right, the Model 77 Mark II trigger was phased into the line over a three-year period from 1988 to 1991. Simplified construction incorporates no adjustments and a common spring serves both the sear and the trigger.



**Ruger Model 77 Trigger Measurements**

Trigger	pull (lb)	overtravel (in)	poundage (ounces)
M77	.040	.020	4.5
M77 MKII	.030	.050	5.0
KM77VT MKII	.065	.012	75/2.25
Two-Stage (normal)	.085	.012	75/2.25
Single-Stage	.080	.032	4.5