Last Thoughts

There can be good from it, if it's necessary. I have inside reamers that I can use on cases that thickened up. One well used reamer got its most use on cases for one rifle that has a little more clearance than I would like in the chamber neck area. Yes, there is an effect from excessive expansion and resultant contraction from sizing. These cases need a ream at about six firings. Any more, though, I just scrap them. As a gage it's become a nice tool.

Outside Case Neck Turning
[the art of living vicariously]

The job of turning case necks is not amusing or diverting. However, it can make a difference (not a recommendation, just a fact). Where and how, and how much, difference it makes is hard to guess: "measured on the case necks themselves" is the only safe answer.

[You'll notice that I added a "0" to the measurements in this section; did it since it suits the impetus here: if anyone can't measure down that tiny then he probably doesn't need to worry about turning case necks.]

Definition

When a case neck is outside turned, brass is shaved or pared from around its circumference. Tools options and needs are beat unconscious soon enough, but none of that matters yet.

The benefit from neck turning is that the operation serves to make case neck wall thicknesses more uniform. *If nothing else.* The grade of uniformity can range from good to perfect (based on measured standards, and standards of measure). Well beyond the questions of how and why to do it, it's the standard of uniformity that needs to be figured and settled on before the tooling is even considered for purchase (bucks, and blisters, and a lot of each, are at stake).

More uniform wall thickness can make a case neck more concentric, which means the bullet seated in the neck will likewise be more concentric and enter the bore with less "runout." So neck turning should make a gun shoot better. *Should.* Detracting factors include action alignment, chamber precision, case body concentricity, case head squareness, and die quality. If any of those hack, the case is cooked no matter what is done to its neck.

It is not necessarily turning the neck that improves concentricity; it's the resultant increase in the quality of the sizing and seating operations that results from more uniform neck walls. Whenever sizing or seating, the first thing that contacts the die or bullet is the case mouth. If the mouth is uneven or not uniform in thickness (which has the effect of placing it off center), the case or bullet, or both, can tweak. That's what it does, so next is how it's done.

Rituals

There are two ways, according to me, to approach case neck turning. One is entirely safe and workable in any application, and can yield extremely low-tolerance case necks. The other is unsafe to the unaware and problematic to all and yields no-tolerance case necks. I do both and will cover both. The first step either way is, as mentioned, establishing a standard.

Sorting cases by neck wall thickness uniformity may yield radically varying results. Enough of this tedium with representative pieces from different brass manufacturers shows that some brands are better than others. More of this tedium will also show that some lots of one brand are better than others, and some might also show some difference in the measured thicknesses themselves. Enough of that mess will eventually also show that overall variances are lower with a scant few brands of empty cartridge cases.

The reason this is important needs some attention, and here's the deal: case neck turning cannot make a bad case good. It can make neck

walls more uniform or consistent, up to and including as consistent as technically possible. But, variances in neck walls relate to variances elsewhere in the cases, so some of the effort done in neck turning gets undone, or lowered in ultimate value, after a few firings. Plus, cases that tend to exhibit shoddiness in uniformity issues involving wall thicknesses likewise tend to be shoddy in other issues regarding case quality (weight, primer pockets, flash holes, and so on). Case neck turning, then, starts with brand first. It's flawed thinking to say that case quality doesn't matter if we're going to neck turn anyhow. The demands and expectations of case neck turning don't conjoin with "doesn't matter" approaches. Point is that if someone is looking for a performance increase from turning, and let's hope that's the reason he's taking this step, then he also needs to see that as one (very important) component of other segregation or preparation steps that will contribute to the performance increase. It's a package, so to speak.

Connotation

Next step in the decision is to set a parameter or goal for what neck turning might do for (and to) the cases. A bit ago I said there were two methods to approach this: one for people who take themselves too seriously, and one for people who take everything too seriously. The lesser of the two is to blueprint rather than redesign by cleaning off a minimum of extraneous brass from low tolerance cases.

Check the walls on at least 100 cases from the same batch and see what's there. Since we're talking about new cases, for the sake of example, tolerances upcoming can be interchangeably thought of as runout or measured thickness variations since they'll be approximately the same.

Within a batch of 100 cases, if the majority show no more than 0.002 variance I'd say that's a good batch of brass, and I'd say that because it should mean there were a fair amount under that. If there's trouble finding less than half with that sort of variance, shop for better cases (whether any will be turned or not). Honestly, if there is 0.0010 or under in a quarter of the cases, I won't say turning necks is a waste of time, but it probably is if more than 25 found are solidly under 0.0010. Those are really good cases. I hope this isn't getting confusing (for me mostly) because it's a tall order for me to set a standard for anyone but myself. I personally wouldn't turn a case that showed 0.0020* variance because it would then be violating another "rule" of sorts that I try to adhere to here: don't see more than half the total area around circumference of a case neck showing evidence of the cut. Adhering to that and still having a turned case neck exhibit virtually no variance cannot happen with a case that shows over 0.0010 to start, let alone more. Uniform thickness for anything more than 50 percent of the case neck circumference and the bullet will be held squarely behind the bore.

[*I wrote this based on not having my Gracey power turner. With that machine, and with some of the case forming I've been doing, a lot of cases get turned now that used to didn't. The references, however, are fully in effect for those who are proceeding manually and looking for some "perfect" prone cases.]

Denotation

I just skipped way too far ahead, but I'll back up and get back on track: this last several paragraphs ultimately leads to answering what I think is the defining question on the realistic viability of turning case necks — how much brass has to come off to get a good case neck. Brass that shows wall variations isn't all too thick: variations are thick and thin. Turning can only make walls thinner, so, too much variation combined with too much expectation leads to potentially unusable brass. To add some figgers: cases are showing 0.0030 variation and the goal is to see 0.0001 variation (tool limit), so the case neck has to be turned down to meld with its thinnest area. This could result in a case neck that's flat too thin for use in a