



Technical Newsletter From
Your Ballistic Technicians
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Accuracy Loading Tip: Squaring Your Dies (cont.) by Rich Machholz

Due to the many calls and letters regarding the accuracy tip "Squaring Your Dies" in the last issue of ["The X-RING"](#), a bit of explanation is required. As pointed out by our callers, often times a properly adjusted die will not touch the shell holder, even when full-length resizing. In these cases, a machined spacer some .040" to .050" thick (like a flat washer) placed between the die and shell holder will allow you to apply pressure to the bottom of the die.

Setting dies for your rifle: Minimal resizing.

Begin by removing the decapping assembly and turning your full length die into the press until it contacts the shellholder at the ram's highest point of travel. Back the die out one and a half to two full revolutions. Find a case that will not chamber easily in your rifle. Resize it, and try it in your rifle. It probably won't chamber easily, so adjust the die down by another eighth turn. Resize it again, and try to chamber it in your rifle again. Continue this until the bolt will close with some pressure. Continue to adjust the die downward by a sixteenth of a turn at a time, until the bolt will close with a slight "feel."

The ideal fit is achieved when we can close the bolt without feeling any resistance at all, but will feel some resistance if the die is backed off even a sixteenth of a turn. Each time you resize, and before you fire the rifle, the chamber should be cleaned of lube from cases.

Reinstall the expander assembly, square your die, and you're ready to load custom fitted cases in this rifle. They may not work in another rifle of the same caliber, but they are a true custom fit in your rifle. This procedure will yield maximum case life and provide accuracy potential superior to other methods. Should excessive resistance be encountered after resizing and expanding the necks when chambering, the probable cause is the expander ball is pulling the neck and a section of the shoulder forward. A light polishing of the leading edge of the expander ball and lubing the inside of the neck will ease passage.

Sierra Introduces Two Beginning Reloading Videos!!

After the phenomenally successful David Tubb video on advanced highpower rifle reloading, a need was felt for a more basic primer on both handgun and rifle reloading. These tapes will take the handloader through basic to advanced operations of the reloading process, with each phase being clearly demonstrated by two of the most respected competitive shooters in the country; David Tubb for rifle and Doug Koenig for handgun.

Using hands on examples and high-tech computer graphics, these tapes provide an in-depth look at the "how to" of reloading, providing useful information for both the novice and experienced reloader.

Both instructional tapes are available through Sierra dealers and directly from Sierra Bullets. These tapes retail for \$29.95 each, however, as a recipient of our X-Ring, you can save \$3.00 per tape by sending in the coupon to the right with your order. Tapes available after January 1, 1995. You may send your order to P.O. Box 818, Sedalia, MO 65302.



Ask The Bulletsmiths

Question: I've just started reloading hunting ammunition for my bolt action rifle, but I'm confused by the different over all lengths (OAL) I've seen listed. What OAL should I seat my bullets to?

Answer: In bolt action repeating rifles, the length of the magazine is often the determining factor in over all length. Regardless of the type of firearm being used, some constants must be observed. The OAL must allow the gun to function properly. The bullets must be seated deeply enough to allow the ammunition to withstand cycling through the action. The bullets must be seated deeply enough to prevent it from jamming into the rifling upon being chambered. Since these factors vary from gun to gun, there is no "absolute" length that will be correct for all firearms, bullet weights, or styles. OAL is truly an individual figure for each gun.

Cartridge length is often dictated by the gun systems requirements and limitations. Tubular magazines, for example, generally use bullets which must be crimped into a cannellure that prevents the bullet from being pulled under recoil or pushed back into the case. In this situation, cannellure location will dictate the OAL.

Varmint and target shooters in pursuit of finest accuracy will often seat bullets out to the rifling, just contacting the lands. This is fine if loads are developed accordingly, but be aware, this can cause an increase in pressures. In this situation, the length of the throat will be the limiting factor in determining the OAL. Since much of this type of shooting will be single shot, magazine length may not be a consideration.

A good many reloaders are slaves to the length specified in a given manual. Rather than an iron clad rule, this should be regarded as a recommended starting point which may or may not be best for your particular rifle. The OAL listed in any given manual is simply the length used when the data was developed, and may be different in another gun. In fact, the listed OAL may not even work in your rifle because of the variations mentioned here. Just keep in mind that changing seating lengths will change pressures, and must be approached with caution. Know your firearms limitations, and abide by them.

Dave Brown

Question: I recently had some pressure problems during a 'chuck hunt with some ammunition I worked up last winter. I didn't change any of the components, so what's the problem?

Answer: Temperature is a variable that figures into any firearm/ammunition combination. All other factors being equal, temperature change can raise or lower both velocities and pressures of a given lot of ammunition. Generally, an increase in temperature will increase the burn rate of powder, thus increasing pressures. Based on arsenal studies, single-base extruded powders such as the IMR series will gain approximately 1.7 fps per degree of temperature increase. Other types of powders will show similar velocity/pressure increases.

As one might expect, the change in pressure has the potential to turn what was a safe load in cool weather into an overload in a hotter environment. Aside from the safety issue, drastic changes in temperature should alert the shooter to the potential need to re-zero his rifle due to the change in velocity. The temperature likely to prevail at the time the ammunition will be used must be taken into consideration when developing a load. If at all possible, the ammunition should be tested at a temperature as close as possible to that which will be expected during your hunt.

Tommy Todd

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