

The Gunwerks 7mm Long Range Magnum (7LRM)
by Aaron Davidson

The New 7LRM Specs

The 7LRM (Long Range Magnum) is a not belted case that has the same overall length as the 7mm Rem Mag with a standard magnum case head. However, the body diameter is larger with no belt. The case neck is longer and the shoulder angle is 30 degrees. The case will fit and feed from a standard magazine box. Velocity with a 180 grain bullet is 3075 to 3100 fps from a 26 inch barrel length. See Figure one for a comparison of different 7mm cases.



Figure 1. Case comparison. 7WSM, Loaded 7LRM, Fired 7LRM, 7mm Rem Mag, 7mm STW

The brass dimensions and tolerances are outlined in Figure 2. We have a very nice no-turn-neck, piloted reamer available to do custom barreling on your action, or start from scratch and have us build a full custom rifle. This is not a standard SAMMI cartridge, it is important to use a reamer with correct dimensions and clearances to ensure best accuracy, and longest brass life.

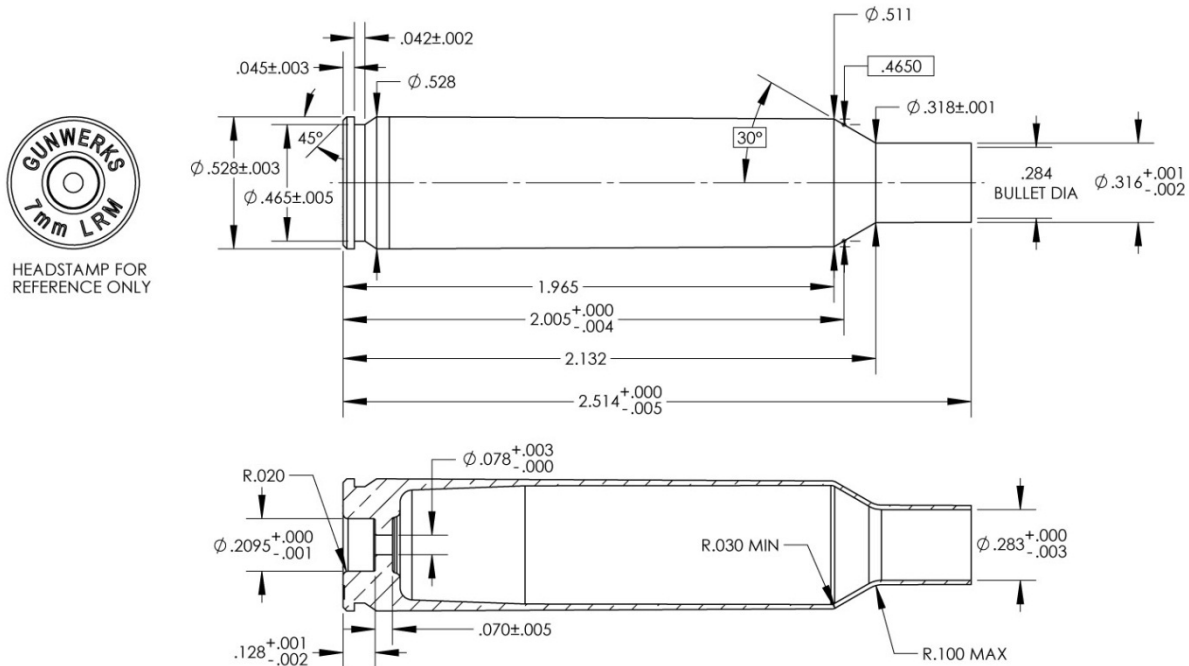


Figure 2. 7mm LRM case dimensions and tolerances.

Developing a New Cartridge

The first question you have to ask when designing a new cartridge is Why? When we are talking about long range shooting, usually the quest is for more case capacity to drive the bullets faster. This “faster is better” mentality is a hold-over from old school long range shooting philosophy. With modern rangefinder and scope technology, bullet drop is not nearly as significant as it was 10 years ago. Now the informed long range hunter sets his sights on less wind deflection and increased terminal velocity. The ability to range the distance to target precisely eliminates the importance of laser flat super magnums because we can get the wind and terminal velocity required by using better bullets with higher BC's.

Another fact that is often over looked is that no matter how masculine or macho a shooter is, recoil DOES affect your ability to shoot. To combat recoil most super magnum shooters use massive and loud muzzle breaks, another cause of poor shooting performance. Or they build rifles that are not intended to get very far from their truck.



Figure 3. The LR-1000 long range package is the best handling long range rifle configuration we offer.

The development goal behind the design of the 7LRM was to achieve balance, not extreme performance. Really, shooting at animals beyond 1000 yards is a tricky proposition—not for the novice. The Gunwerks crew lives for long range gear and shots, but the number of animals killed at or beyond 1000 can be counted on one hand. Maybe this is because we film our hunts, and can't afford a miss or bad shot placement.

We need to balance the requirement of a minimum velocity threshold of 2000 fps at 1000 yards with a hunting weight bullet, and wind deflection numbers that will allow 30-50% uncertainty in our wind estimation against recoil, cost, and case life for reloading. We wanted a cartridge of modern design that fit in a standard magazine box that will take any game we want to chase in all conditions—basically the ultimate hunting cartridge.

First off, we settle on the 7mm diameter bullet because of the high ballistic coefficients of hunting weight bullets from 160 to 180+ grains. Then we look for a case to base the cartridge from to save thousands in tooling costs. The 375 Ruger from Hornady is perfect. The 375 is very similar to the genius 30 Newton cartridge from 100 years ago. This cartridge case fits a standard magnum bolt face without modification, and there is no rebated rim as on the massive Ultra Magnum case. We fit the neck length to the longer 180 grain bullet, with the overall case length of 2.5 inches. With a 30 degree shoulder and minimum body taper, we achieve nearly 3100 fps velocity with a 180 grain bullet. If one compared the LRM case against two of our other favorite cartridges the 6XC and 6.5-284 Norma, you will notice some striking similarity.



Figure 4. Comparing cartridge case designs on three of our all time favorite cartridges.

For the shooter sending thousands of rounds downrange, the fact that there is no belt on the case indicates long brass life with no special sizing dies required to resize the base portion of the brass just in front of the belt. Loaded ammunition, brass and custom Hornady dies are both available from Gunwerks.



Figure 5. Dies, Brass, and Loaded Ammo are available from Gunwerks for the new 7LRM cartridge.