

Long Range Shooting Secrets

Caliber Tips

Some factors that should be considered when choosing a caliber are: inherent accuracy; availability of ammunition, brass, and bullets; accessories; maximum effective range; and availability of the desired rifle. All calibers undergo extensive testing for function, accuracy, and barrel life. Military cartridges have been tested even more and are better documented. Most rifles selected for long range shooting will be fired a lot and are expected to maintain accuracy for thousands of rounds. Many cartridges are not suited for this type of shooting due to inaccuracy, barrel life, cost, recoil and availability. There are exceptions for those long range hunters that need more energy, shoot fewer rounds, and don't mind recoil. This data is intended more for tactical shooters but the concepts are the same for big game hunters. A rifle must be very accurate to score hits at 300 yards and beyond. Many shooters go out to a thousand yards. A rifle and the cartridge must be capable of 1 Minute of Angle (MOA) or better to qualify as accurate

Barrel life: One of the main criteria for acceptable military cartridges is barrel life. .223 Rem, .7x57 Mauser, 308 Win, and 30-'06 were all military cartridges developed with full auto in mind. Full auto causes accelerated throat erosion and bore wear. The throat of the chamber erodes from flame cutting and will cause inaccuracy. By designing the case with the optimum shoulder angle and case dimensions, throat life is extended. The cartridge that comes to mind for bad throat life is the 264 Win Mag. This very accurate, flat shooting, powerful, long range cartridge has a typical throat life of 500 rounds. Some of us shoot that much on one prairie dog hunt. After the throat is eroded, the cases split, accuracy goes away and the rifle becomes unsafe to shoot. *Bore wear* is not related to case design. It is more dependent on velocity and bullet weight. It's easy to inspect for bore wear because the bullet is at maximum velocity at the muzzle. Look for shallow rifling near the muzzle. The belted magnums are notorious for short bore life of 2000-5000 rounds. Data for non-military barrel life is hard to come by and is based on gunsmith experience. Most military (not full auto operation) barrels are expected to last at least 10,000 rounds for throat and bore life.

Actions and platforms: Bolt action and single shot rifles typically have a tighter chamber, tighter lockup, and are built on a stable platform (frame and stock). Semi-autos, pumps and lever action rifles typically have looser chambers and lockups to prevent malfunctions. Their platforms are often unstable. Most shooters prefer a bolt or single shot for long range performance, accuracy, and excellent caliber selection.

.224 bore (5.56 mm): The *223 Remington* (5.56 NATO) is an excellent choice. Its a little light for extreme distances but ammo is cheap and very available, accuracy is excellent, and recoil is very tame. Almost every manufacturer offers rifles chambered in this great military cartridge. The *22-250 Remington* has grown in popularity as one of the most accurate cartridges available. Higher velocity greatly improves maximum usable range for this light recoil performer. Ammunition and rifles for this former "wild cat" are available from a variety of manufacturers. Bullet weight range for 223 and 22-250 is 45 to 60 grains. Heavier bullets may be used but require a faster twist rate.

.243 bore (6mm): *The 243 Winchester* was developed by necking down a 308 case to 6mm. This very accurate cartridge uses bullets in the range of 70 to 100 grains. Very modest recoil in this 50-year-old cartridge have made it a very popular rifle and an excellent choice for long range shooting. Ammo and rifles are available from most manufacturers.

.270 bore: *The 270 Winchester* is a necked down 30-'06 case that is one of the best cartridges on the market. Besides being an excellent big game cartridge, it has the accuracy potential for good long range performance. With bullet weights in the 100 to 150 grain range, this heavy hitter can be a little stiff on recoil. Most manufacturers make rifles and ammunition for this popular cartridge, however bullet variety isn't too good..

7mm bore: Bullets in 7mm (.284) diameter have higher ballistic coefficients than most any others. This makes them ideally suited for long range performance. Based on a necked down 308 case, the *7mm-08 Remington* is the most accurate cartridge in the 7mm family. It may be loaded with 100 to 175 grain bullets. Bullet weights in the 139 to 145 grain range take advantage of modest recoil and sub-MOA accuracy. Downrange performance rivals 308 and 30-'06. Ammo and rifle selection is not as good as some, but are certainly available from most American manufacturers. *The 280 Remington, AKA 7mm Express* is based on the 30-'06 case necked to 7mm. After the 7mm Rem Mag was introduced, the 280 lost popularity and was reintroduced as the 7mm Express. Its velocity performance is just under the 7 Mag but its accuracy potential and barrel life is better. Shooters are fond of this outstanding long range performer though ammunition availability isn't very good. Recoil is stout but down range ballistics are excellent for hunting or target shooting. The Express uses bullets in the 115 to 175 grain range with 150 to 162 being the best performers. 7mm Express rifles can be a bit scarce.

308 bore: .308 (7.62mm) diameter bullets are the most popular on the market probably because they support the two most popular 30 caliber cartridges, the *308 Winchester* (7.62 NATO) and the *30-'06 Springfield*. Both military cartridges are well suited for long range shooting and have very similar ballistics. The 308 Win is inherently accurate and an efficient cartridge that is shorter and a little slower than the '06. Rifle and ammunition availability for both cartridges is probably the best of any caliber. Recoil is stout but manageable. .308 bullets are available in 100 to 220 grain and optimize with 150 –168 grain in both cartridges.

Conclusions: You may have noticed all the above cartridges are military based except the 22-250 and even its case is nearly the same as a 308. All others except the 223 Rem are based on either the 308 Win or the 30-'06 cases. Many good cartridges are based on the 7mm Mauser, such as the 257 Roberts. However, their popularity and availability kept them off the list. Any of the above tried and true cartridges will make a good long range solution that will offer excellent accuracy potential, long barrel life, and availability. If you don't see your favorite cartridge listed, it's because of barrel life, availability, or other subjective criteria. That doesn't mean it's a poor performer.

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