


.338 Lapua Magnum

.338 Lapua Magnum			
 <p style="text-align: center;">.338 Lapua Magnum cartridge</p>			
Type	Rifle		
Place of origin	Finland		
Service history			
Used by	Multiple official and civil users		
Wars	Afghanistan War Iraq War		
Production history			
Designer	Nammo Lapua Oy		
Designed	1989		
Produced	1989–present		
Specifications			
Parent case	.416 Rigby, .338/416		
Case type	Rimless, bottleneck		
Bullet diameter	8.58 mm (0.338 in)		
Neck diameter	9.46 mm (0.372 in)		
Shoulder diameter	13.82 mm (0.544 in)		
Base diameter	14.91 mm (0.587 in)		
Rim diameter	14.93 mm (0.588 in)		
Rim thickness	1.52 mm (0.060 in)		
Case length	69.20 mm (2.724 in)		
Overall length	93.50 mm (3.681 in)		
Case capacity	7.40 cm ³ (114.2 gr H ₂ O)		
Rifling twist	254 mm (1-10")		
Primer type	Large rifle magnum		
Maximum pressure	420.00 MPa (60,916 psi)		
Ballistic performance			
Bullet weight/type	Velocity	Energy	
12.96 g (200 gr) SP	1,019 m/s (3,340 ft/s)	6,734 J (4,967 ft·lbf)	

16.20 g (250 gr) Partition	897 m/s (2,940 ft/s)	6,516 J (4,806 ft·lbf)
16.20 g (250 gr) Lapua Scenar GB488 VLD	910 m/s (3,000 ft/s)	6,634 J (4,893 ft·lbf)
19.44 g (300 gr) Sierra HPBT MatchKing	826 m/s (2,710 ft/s)	6,632 J (4,892 ft·lbf)
19.44 g (300 gr) Lapua Scenar GB528 VLD	837 m/s (2,750 ft/s)	6,810 J (5,020 ft·lbf)
<i>Test barrel length: 660 mm (26.0 inches)</i>		
<i>Source(s): Accurate Powder^[1] Lapua (690 mm; 27.2 inches) barrel^{[2][3][4]}</i>		

The **.338 Lapua Magnum** (8.6×70mm or 8.58×70mm) is a specialized rimless bottlenecked centerfire cartridge developed for military long-range sniper rifles. The Afghanistan War and Iraq War made it a combat-proven round with ready and substantial ammunition availability. The .338 Lapua is a dual-purpose anti-personnel and anti-materiel round, but its anti-materiel potential is limited, due to the bullet's lower kinetic energy compared with that of the .50 BMG's 35.64-to-55.08-gram (550.0 to 850.0 gr) projectiles. The loaded cartridge is 14.93 mm (0.588 in) in diameter (rim) and 93.5 mm (3.68 in) long. It can penetrate better-than-standard military body armour at ranges up to 1,000 metres (1,094 yd) and has a maximum effective range of about 1,750 metres (1,910 yd). Muzzle velocity is dependent on load and powder temperature and varies from 880 to 915 m/s (2,900 to 3,000 ft/s) for commercial loads with 16.2-gram (250 gr) bullets, which results in about 6,525 J (4,813 ft·lbf) of muzzle energy. Non-C.I.P. conforming British military issue overpressure .338 Lapua Magnum cartridges with a 91.4 mm (3.60 in) overall length, loaded with 16.2-gram (250 gr) LockBase B408 very-low-drag bullets were used in November 2009 by British sniper Corporal of Horse (CoH) Craig Harrison to establish a new record for the longest confirmed sniper kill in combat, at a range of 2,475 m (2,707 yd).^{[5][6]}

In addition to its military role, it is increasingly used by hunters and civilian long-range shooting enthusiasts. The .338 Lapua Magnum is capable of taking down any game animal, though its suitability for some dangerous game (Cape buffalo, hippopotamus, white rhinoceros and elephant) is arguable, unless accompanied by a larger "backup" caliber: "There is a huge difference between calibers that will kill an elephant and those that can be relied upon to stop one."^[7]

History

Initial development

In 1983, Research Armament Industries (RAI) in the United States began development of a new, long-range sniper cartridge capable of firing a 16.2-gram (250 gr), 0.338-inch (8.6 mm) diameter bullet at 914 metre per second (3,000 ft/s) that could penetrate five layers of military body armour at 1,000 m (1,094 yd) and still make the kill. After preliminary experiments, a .416 Rigby case necked down to take a 0.338-inch (8.6 mm) bullet was selected, since this diameter presents an optimum of sectional density and penetrating capability for practical spin stabilized rifle bullets (bullets up to about 5 to 5.5 calibers in length).^[8] The .416 Rigby is an English big game cartridge that was designed to accommodate 325 MPa (47,137 psi) pressures. One of the disadvantages of these old cartridge cases, which were intended for firing cordite charges instead of modern smokeless powder, is the thickness of the sidewall just forward of the web. During ignition, the cartridge's base, forward to the bolt face, is not supported. The case is driven back against the bolt face which results in the stretching of the case, particularly the sidewall immediately forward of the web. When the sidewall resists the outward expansion against the chamber, the pressure stretches the case thereby increasing its length resulting in the sidewall becoming thinner at that stretch point.

During the process RAI employed Brass Extrusion Labs Ltd. (BELL) of Bensenville, Illinois, to make the **.338/416** or **8.58×71mm** cartridge cases, Hornady produced bullets, and RAI built a sniper rifle under contract for the U.S. Navy. RAI found that the BELL cases did not fulfill the requirements. Pressed by military deadlines RAI looked for another case producer and contacted Lapua of Finland in 1984.^[9] RAI was forced to drop out of the program due to financial difficulties. Subsequently, Lapua of Finland put this cartridge into limited production.^[10] The .338/416 rifle

program was later cancelled when the contractors were unable to make the cartridge meet the project's velocity target 16.2 gram at 914 m/s (250 gr at 3000 ft/s), due to weak brass cases.

Final development

The current .338 Lapua Magnum cartridge was developed as a joint venture between the Finnish rifle manufacturer SAKO and the British rifle manufacturer Accuracy International along with the Finnish ammunition manufacturer Lapua, or more officially Nammo Lapua Oy, which since 1998 is part of the Nordic Ammunition Group (Nammo).^{[11][12]}













Lapua opted to redesign the .338/416 cartridge. In the new case design, particular attention was directed toward thickening and metallurgically strengthening the case's web and sidewall immediately forward of the web. In modern solid head cases, the hardness of the brass is the major factor that determines a case's pressure limit before undergoing plastic deformation. Lapua tackled this problem by creating a hardness distribution ranging from the head and web (hard) to the mouth (soft) as well as a strengthened (thicker) case web and sidewall immediately forward of the web. This resulted in a very pressure resistant case, allowing it to operate at high pressure and come within 15 m/s (50 ft/s) of the original velocity goal. Lapua also designed a 16.2-gram (250 gr) .338 calibre Lock Base B408 full metal jacket bullet, modeled after its .30 calibre Lock Base bullet configuration. The result was the .338 Lapua Magnum cartridge which was registered with C.I.P. (Commission Internationale Permanente pour l'Epreuve des Armes à Feu Portatives) in 1989. With the procurement by the Dutch Army, the cartridge became NATO codified.
















The .338 Lapua Magnum fills the gap between weapons chambered for standard military rounds such as the 7.62×51mm NATO and large, weighty rifles firing the .50 BMG cartridge.^[13] It also offers a tolerable amount of barrel wear, which is important to military snipers who tend to fire thousands of rounds in practice every year to acquire and maintain expert long-range marksmanship.^[14] Like every other comparable big magnum rifle cartridge the .338 Lapua Magnum presents a stout recoil.^[15] An appropriate fitting stock and an effective muzzle brake will help to reduce recoil induced problems, enabling the operator to fire more rounds before getting too uncomfortable to shoot accurately. Good factory loads, multiple projectile weights and factory special application ammunition are all available.^{[16][17]}

Due to its growing civilian popularity, several high quality tactical and match (semi) custom bolt actions designed for the .338 Lapua Magnum are becoming available. These (semi) custom bolt actions are used with other high grade rifle and sighting components to build custom sporting and target rifles.

Law enforcement and military users

The .338 Lapua Magnum cartridge is in law enforcement or military^{[18][19]} use with:

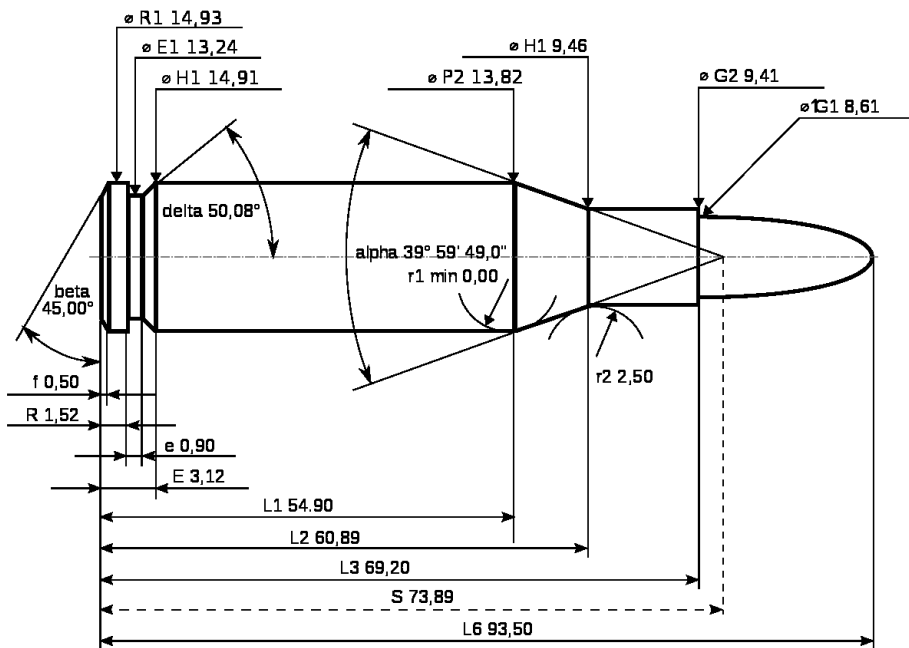
-  Albania: RENE—Sako TRG-42^[20]
-  Australia: Blaser Tactical 2^{[21][22][23]}
-  Brazil: Blaser Tactical 2—Used by special unit of Polícia Federal (Federal Police) named "COT" (Comando de Operações Táticas/Tactical Operations Commando)
-  Canada: Canadian Forces—C14 Timberwolf Medium Range Sniper Weapon System (MRSWS)^[24]
-  Colombia: TAP.^[25]
-  Denmark: Military of Denmark—Sako TRG-42^{[26][27]}
-  Estonia: Military of Estonia reconnaissance units and special forces—Sako TRG-42.^[28]
-  Finland: Finnish Defence Forces—Sako TRG-42
-  France: French Army, GIGN - PGM 338^[citation needed]
-  Germany: Erma SR-100,^[29] AMP Technical Services DSR-1, GOL Sniper Magnum
-  Greece: Anti-Terrorist Unit EKAM—Sako TRG-41^[]
-  Indonesia: Kopassus—Accuracy International AWSM^[]

-  Ireland: Irish Army—Accuracy International AWM^[citation needed]
-  Israel: H-S Precision Pro-Series 2000 HTR militarized semi-custom bolt-action rifle^{[30][31][32]}
-  Italy: Sako TRG-42^[33]
-  Malaysia: *Pasukan Gerakan Khas*—Accuracy International AWM^[citation needed]
-  Netherlands: Dutch military—Accuracy International AWSM, Sako TRG-41^{[][]}
-  Poland: GROM—Accuracy International AWM,^[34] 1 Pułk Specjalny Komandosów^[35]
-  Portugal: Military of Portugal - Accuracy International AWSM^[citation needed]
-  Russia: Alpha Group and SOBR—Accuracy International AWSM^{[36][37]} and Sako TRG-42^[38]
-  Singapore: PGM 338^[39]
-  Slovenia: Military of Slovenia—PGM 338^[40]
-  Spain: GOE—Sako TRG-41^[41]
-  Switzerland: Sako TRG-42^{[42][43]}
-  Turkey: Sako TRG-42,^[44] PGM 338^[citation needed]
-  United Kingdom: British military—Accuracy International AWSM^[45]
-  United States: US Navy Special Warfare—McMillan Tac-338^{[46][47][48][49][50]}

The .338 Lapua Magnum has been designated a "cartridge of interest" by the National Defense Industrial Association (NDIA). It is being groomed to replace the .300 Winchester Magnum and the .50 BMG for anti-personnel long-range service in the U.S. military. On June 17, 2008, the U.S. government issued a market survey to support a requirement for a Precision Sniper Rifle (PRS) to possibly replace the currently fielded Bolt Action SOF Sniper Systems MK 13 (.300 Winchester Magnum) and the M40 and M24 (7.62×51mm NATO) chambered to safely fire factory produced "non-wildcat" .338 caliber ammunition.^{[51][52]}

Cartridge dimensions

Extremely thick-walled brass results in a 7.40 ml (114 grains H₂O) cartridge case capacity for the .338 Lapua Magnum. The exterior shape of the case was designed to promote reliable feeding and extraction in bolt action, semi-automatic, and automatic firearms alike, under extreme conditions.



.338 Lapua Magnum maximum C.I.P. cartridge dimensions. All sizes in millimeters (mm).

Americans would define the shoulder angle at $\alpha/2 \approx 20$ degrees. The common rifling twist rate for this cartridge is 254 mm (1 in 10 in), 6 grooves, \varnothing lands = 8.38 mm, \varnothing grooves = 8.58 mm, land width = 2.79 mm and the primer type is large rifle magnum.

According to the official C.I.P. decisions and tables edition 2007 the .338 Lapua Magnum case can handle up to 420 MPa (60,916 psi) piezo pressure. This now prevails over the C.I.P. decisions and tables edition 2003, that rated the .338 Lapua Magnum at 470 MPa (68,167 psi) maximum piezo pressure. The 470 MPa (68,167 psi) maximum piezo pressure C.I.P. ruling for the .300 Lapua Magnum cartridge, which is based on the same case, was not accordingly changed. In C.I.P. regulated countries every rifle cartridge combo has to be proofed at 125% of the prevailing maximum C.I.P. pressure to certify for sale to consumers.

Lapua is ambivalent on the maximum piezo pressure of this cartridge. In the article 'From an American dream to a Finnish success story'^[53] by Janne Pohjoispää Lapua propagates the C.I.P. 2007 ruling of 420 MPa (60,915 psi) maximum piezo pressure. To further complicate matters the mentioned 56,000 CUP C.I.P. copper crusher pressure in this article would translate in ≈ 447.5 MPa (64,903 psi) C.I.P. piezo pressure according to a study on the conversion from CUP to PSI for rifle cartridges by Denton Bramwell.^[54] The C.I.P. 2003 ruling of 470 MPa (68,167 psi) piezo pressure is corroborated by Lapua Australia in the 'History and development of the .338 Lapua Magnum' article by Alan C. Paulson.^[55] A reverse engineering simulation with QuickLOAD internal ballistic software predicted that Lapua load their factory .338 Lapua Magnum ammunition at ≈ 420 MPa (60,915 psi) piezo pressure as Alan C. Paulson asserts in his article.

The large boltface combined with the high maximum pressure means that the .338 Lapua Magnum should only be chambered in rifles that are capable of handling such large and fierce cartridges and thus high bolt thrust safely. Chambering such powerful super magnum cartridges in rifles intended for normal magnum rifle cartridges and using high pressure loads can cause serious or fatal injury to the shooter and bystanders.

The American .338-378 Weatherby Magnum cartridge introduced in 1998 and the American .338 Remington Ultra Magnum (.338 RUM) cartridge introduced in 2000 are probably the closest currently (2007) commercially available ballistic twins of the .338 Lapua Magnum. The .338-378 Weatherby Magnum is however a belted cartridge and the .338 Remington Ultra Magnum is a rebated rim cartridge.

Supersonic range performance of the .338 Lapua Magnum

Performance with C.I.P. conform cartridges

For a typical .338 Lapua Magnum high end factory military sniper rifle like the Sako TRG-42 with a 690 mm (27.2 in) long 305 mm (1 in 12 inch) rifling twist rate barrel at sea level, 1,500 m (1,640 yd) is considered to be the maximum shooting distance for man sized targets. When using standard Lapua military 16.2 g (250 gr) loads it has a supersonic range of 1,500 m (1,640 yd) under warm summer conditions at a muzzle velocity of 915 m/s (3,000 ft/s). However, to be able to maintain 80 to 90% hit probability on non-moving 45 cm \times 90 cm (17.7 in \times 35.4 in) reactive army targets, this maximum shooting distance has to be reduced to 1,300 metres (1,422 yd) at freezing point conditions or 1,100 m (1,203 yd) in Arctic winter conditions, when the muzzle velocity may drop to 880 m/s (2,887 ft/s)—i.e. only during optimal warm summer conditions the 1,500 m (1,640 yd) maximum shooting distance is realistically achievable.

Loaded with more aerodynamic very-low-drag bullets such as the traditionally lead cored 19.44 g (300.0 gr) Lapua Scenar GB528 VLD bullet (G1 BC = 0.736) or the Lost River Ballistics J40 .338 17.5 gram (270 gr) CNC manufactured mono-metal bullet (G1 BC = 0.871) the long-range performance and supersonic range of .338 Lapua Magnum rifles can be improved. These longer very-low-drag bullets require a 254 mm (1 in 10 inch) twist rate to stabilize them. Due to the lower practically possible muzzle velocities for a relative heavy bullet like the 19.44 g (300 gr) Lapua Scenar GB528 VLD bullet it gains about 104 m (114 yd) extra supersonic range under International Standard Atmosphere sea level conditions (air density $\rho = 1.225$ kg/m³) at a muzzle velocity of 837 m/s (2750 ft/s) when compared to the standard 16.2 g (250 gr) Lapua Scenar GB488 VLD at a muzzle velocity of 915 m/s (3002 ft/s). For significant supersonic range improvement the aerodynamic efficiency of the employed bullets has to be significantly improved without sacrificing a lot of practically achievable muzzle velocity - meaning that besides

the coefficient of drag of the projectile weight is also an important parameter for its actual downrange flight behavior. The .338 17.5 gram (270 gr) Lost River Ballistic Technologies J40 match bullet made out of a copper-nickel alloy is one of the most aerodynamic .338 calibre bullets available. It has a 1800 m (1969 yd) supersonic range under optimal warm summer conditions at a muzzle velocity of 869 m/s (2850 ft/s). This makes engaging static targets up to 1800 m (1969 yd) feasible.

Performance improvement experiments with non C.I.P. conform cartridges

Improvement beyond this standard while still using standard .338 Lapua Magnum brass is possible, but the bullets have to be very long (over 5.5 calibers in length) and the normal cartridge overall length of 93.5 mm has to be exceeded making such cartridges wildcats. The common 254 mm (1:10 inch) rifling twist rate also has to be tightened to stabilize very long projectiles. Such commercially non-existent cartridges are termed "wildcats". The use of a wildcat .338 Lapua Magnum based cartridge demands the use of a custom or customized rifle with an appropriately cut chamber and fast-twist bore. The firearm action and if a repeating arm is required the magazine(s) must also be able to cope with dimensional increases.

An example of such a special .338 calibre extreme range bullet is the German CNC manufactured mono-metal 18.92 gram (292 gr) LM-105 (G1 BC ≈ 0.93 – this Ballistic coefficient (BC) is calculated by its designer, Lutz Möller, and not proven by Doppler radar measurements). If Möller's assumptions are correct, the LM-105 would have a supersonic range of ≈ 2000 m (2200 yd) at a muzzle velocity of 915 m/s (3,002 ft/s) under International Standard Atmosphere sea level conditions (air density $\rho = 1.225 \text{ kg/m}^3$). The 2010 version of the LM-105 bullet has an overall length of 54.3 mm (2.14 in) or 6.33 calibers and derives its exceptional low drag from a radical LD Haack or Sears-Haack profile in the bullet's nose area. Rifles chambered for this wildcat cartridge, with a cartridge overall length of 105 mm (4.13 in), and equipped with custom made 178 mm (1:7 inch) progressive twist rate^[56] 900 mm (35.43 in) long barrels with a 2° cone-angle (the standard C.I.P. cone-angle for the .338 Lapua Magnum is 6°) cone area finished first and second at several long range competitions. Its most recent win (2007) was in an international Special Forces and police sniper competition in Switzerland against rifles chambered for 7.62x51mm NATO up to .50 BMG at ranges from 100 m – 1,500 m (109 yd – 1,640 yd). The LM-105 bullet exhibited its very low wind drift susceptibility notably at ranges beyond 800 m (875 yd).^[57] A real world average G1 BC of ≈ 0.90 to 0.93 is commonly adopted by the users of this bullet, for making long range trajectory predictions using ballistics calculators.^[58]

The .343 Lapua Magnum LM-107 was a wildcat cartridge under development based on the standard .338 Lapua Magnum cartridge case.^[59] The LM-107 was hoped to boost the ballistic performance of the LM-105 by achieving an increase in supersonic range. The 19.3 g (298 gr) LM-107 projectile design is 59 mm long and has a Haack profiled nose and an Adams profiled tail. The rifling twist rate for the .343 Lapua Magnum LM-107 wildcat cartridge was chosen at 180 mm (1:7 inch), \emptyset lands = 8.72 mm, \emptyset grooves = 8.45 mm and loaded with the LM-107 projectile has a cartridge overall length of 107 mm. The length of the neck is increased from 8,31 to 8,50 mm to support the bigger LM-107 bullet. Several other dimensions of the .338 Lapua Magnum parental cartridge are also changed. The shoulder angle gets steepened from 40° to 60° and the body taper is set at 1° . The throat area is set at a 2° cone-angle. All this modifications make the .343 Lapua Magnum a fairly comprehensively revised wildcat cartridge. Out of a 900 mm (35.43 in) long progressive twist barrel Mr. Möller expected to achieve 909 m/s (2982 ft/s) muzzle velocity. If Möller's design assumptions are correct the LM-107 projectile with a calculated G1 BC of 1.02 will offer a supersonic range of ≈ 2170 m (2373 yd) at a muzzle velocity of 909 m/s (2982 ft/s) under International Standard Atmosphere sea level conditions (air density $\rho = 1.225 \text{ kg/m}^3$).

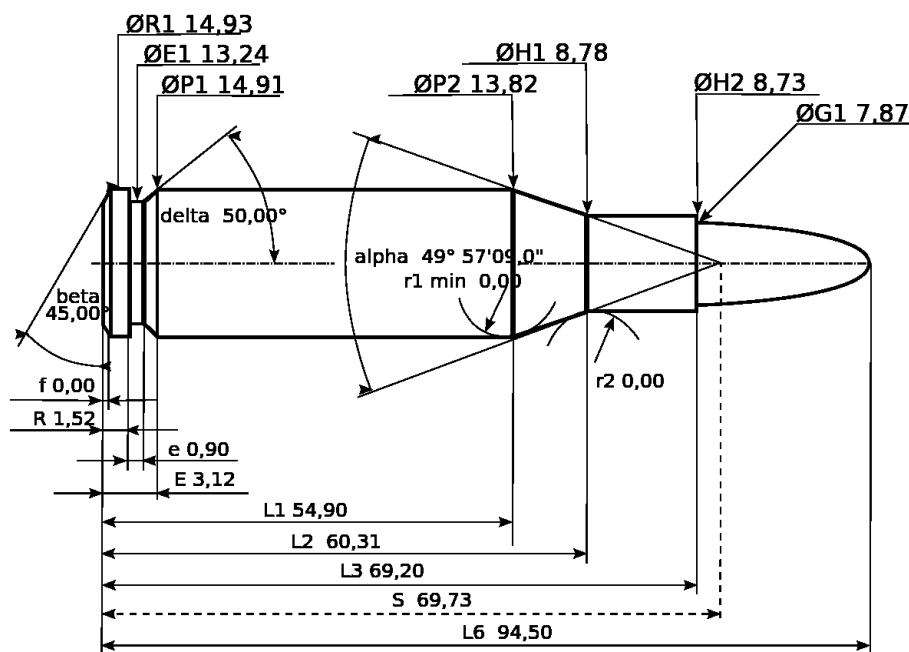
.338 Lapua Magnum as a parent case

The .300 Lapua Magnum

The commercially successful .338 Lapua Magnum cartridge has functioned as the parent case for the .300 Lapua Magnum, which is essentially a necked-down version of the .338 Lapua Magnum. The .338 cartridge case was used for this since it has the capability to operate with high chamber pressures which, combined with smaller and hence lighter bullets result in very high muzzle velocities.

The Finnish ammunition manufacturer Lapua got the .300 Lapua Magnum C.I.P. certified, so it became an officially registered and sanctioned member of the Finnish "family" of super magnum rifle cartridges. The .300 Lapua Magnum is not commercially available and currently exists only as a C.I.P. datasheet. It is however still used by a few shooters who produce the cases from .338 Lapua Magnum brass by reshaping the shoulder and neck, and handloading it with .30 calibre bullets.

The .300 Lapua Magnum has a 7.33 ml (113 grains H₂O) cartridge case capacity.



.300 Lapua Magnum maximum C.I.P. cartridge dimensions. All sizes in millimeters (mm).

Americans would define the shoulder angle at $\alpha/2 \approx 25$ degrees. The common rifling twist rate for this cartridge is 240 mm (1 in 9.45 in), 4 grooves, \varnothing lands = 7.62 mm, \varnothing grooves = 7.82 mm, land width = 4.47 mm and the primer type is large rifle magnum.

According to the official C.I.P. guidelines the .300 Lapua Magnum case can handle up to 470 MPa (68,167 psi) piezo pressure. In C.I.P. regulated countries every rifle cartridge combo has to be proofed at 125% of this maximum C.I.P. pressure to certify for sale to consumers.

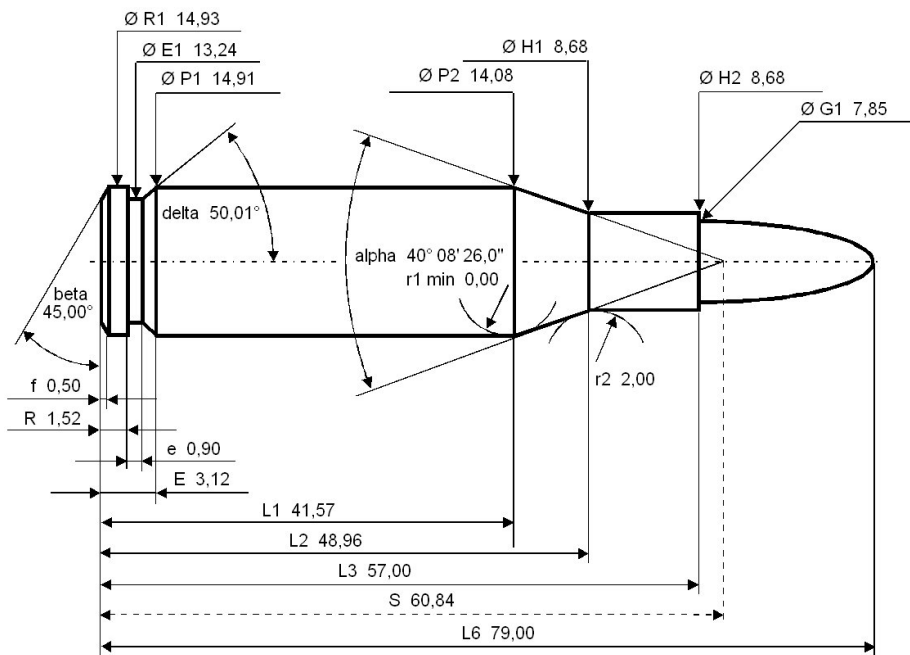
This for rifles very high maximum allowed chamber pressure level indicates that the cases of the .300 and .338 Lapua Magnum are built extremely sturdy to cope with this for rifles very high operating pressure. The large boltface combined with the high 470 MPa (68,000 PSI) maximum pressure makes that the .300 Lapua Magnum should only be chambered in rifles that are capable of handling such large and fierce cartridges and thus high bolt thrust safely. Chambering such powerful super magnum cartridges in rifles intended for normal magnum rifle cartridges and using 470 MPa (68,000 PSI) loads can cause serious or fatal injury to the shooter and bystanders.

The 7.62 UKM

The .338 Lapua Magnum cartridge is also used as the parent case for the German designed 7.62 UKM, which is essentially a necked-down shortened version of the .338 Lapua Magnum.^[60] The use of the .338 cartridge case with its capability to operate at high chamber pressures resulted in magnum case capable of producing high muzzle velocities.

The 7.62 UKM was developed by Michael Uekötter and was C.I.P.-certified in 2002, making it an officially registered and sanctioned member of the Finnish "family" of super magnum rifle cartridges. The 7.62 UKM is not commercially available and currently exists only as a C.I.P. datasheet. It is however still used by a few shooters who produce the cases from .338 Lapua Magnum brass by reshaping the shoulder and neck, and handloading it with .30 calibre bullets.

The 7.62 UKM has a 5.84 ml (90 grains H₂O) cartridge case capacity.



7.62 UKM maximum C.I.P. cartridge dimensions. All sizes in millimeters (mm).

Americans would define the shoulder angle at $\alpha/2 \approx 20$ degrees. The common rifling twist rate for this cartridge is 254 mm (1 in 10 in), 6 grooves, \varnothing lands = 7.62 mm, \varnothing grooves = 7.82 mm, land width = 2.79 mm and the primer type is large rifle magnum.

According to the official C.I.P. guidelines, the 7.62 UKM case can handle up to 470 MPa (68,000 psi) piezo pressure. In C.I.P.-regulated countries every rifle cartridge combo has to be proofed at 125% of this maximum C.I.P. pressure to certify for sale to consumers.

Wildcats

The .338 Lapua Magnum case is also used as the parent case for a host of modified variants that are not officially registered with or sanctioned by C.I.P. or its American equivalent, SAAMI. Such cartridges which use commercial factory cases are generally known as wildcats. By changing the shape of standard factory cases (decreasing case taper and/or changing the shoulder geometry) the wildcatter generally increases the case capacity of the factory parent cartridge case, allowing more propellant to be used to generate higher velocities. Besides changing the shape and internal volume of the parent cartridge case, wildcatters also can change the original calibre. A reason to change the original calibre can be to comply with a minimal permitted calibre or bullet weight for the legal hunting of certain species of game. Because the .338 Lapua offers a large and exceptionally sturdy, pressure resistant cartridge case that can be relatively easily reloaded and hence be reused several times it has become quite popular amongst wildcatters. With the .338 Lapua Magnum as the parent case wildcatters have created 7 mm (7 mm Katzmeier, 7 mm Fatso^[61]), .30 (.30-338 Lapua (Triebel), .30 Wolf), 8 mm (8 mm-338 Lapua (Triebel), LM-101), .338 (.338 Yogi, LM-105), .343 (.343 Lapua Magnum LM-107^[59]), 9.3 mm (9,3-338 Lapua Magnum (Triebel)), .375 (9.5×70 ELR) and .50 calibre (.510 Whisper) variants. The current (2008) benchrest 1,000-yard (914.4 m) 5-shot group world record holder Tom Sarver used a .300 Hulk wildcat cartridge, which is basically a necked-down, blown out, shortened .338 Lapua Magnum variant, to achieve a 1.403-inch (35.64 mm) diameter 5-shot group on 7 July 2007.^[62]



From left to right: cross sectioned and normal .338 Yogi cartridge cases compared to a factory .338 Lapua Magnum case.

Notes

- [1] .338 Lapua at Accurate Online ([http://www.accuratepowder.com/data/PerCaliber2Guide/Rifle/Standarddata\(Rifle\)/338cal\(8.59mm\)/338LapuaMagnumnewdata.pdf](http://www.accuratepowder.com/data/PerCaliber2Guide/Rifle/Standarddata(Rifle)/338cal(8.59mm)/338LapuaMagnumnewdata.pdf)).
- [2] Lapua product brochure .338 Lapua Magnum ammunition (<http://www.lapua.com/upload/downloads/brochures/2011/lapuaspecialpurpose2011eng.pdf>).
- [3] VihtaVuori international reloading guide 2009 (<http://www.lapua.com/upload/downloads/brochures/2011/vihtavuorireloadinguideed9eng.pdf>).
- [4] .338 Lapua Mag. (8.6x70) (<http://www.lapua.com/en/products/special-purpose/centerfire-rifle/23>)
- [5] Sheridan, Michael (May 3, 2010). British sniper Craig Harrison (The Silent Assassin) breaks record, kills target from 1.5 miles away" (http://www.nydailynews.com/news/world/2010/05/03/2010-05-03_british_sniper_craig_harrison_the_silent_assassin_breaks_record_kills_target_fro.html). *Daily News* (New York). Accessed May 13, 2010.
- [6] Alpert, Lukas I. (May 2, 2010). "Sniper kills Qaeda-from 1½ mi. away" (http://www.nypost.com/p/news/international/sniper_kills_qaeda_from_mi_away_sTm0xFUmJNal3HgWlmEgRL). *New York Post*. Accessed May 13, 2010.
- [7] Robertson, K: *The Perfect Shot*, Safari Press, Inc, Long Beach, 1999:p. 50.
- [8] What is the Maximum Length of a spin stabilized Projectile? by Mr. Beat Kneubühl (<http://lutz-moeller-jagd.de/PDF/Kneubuehl.pdf>).
- [9] Nammo Lapua Oy company website (<http://www.lapua.com/index.php?id=1116>).
- [10] Barnes, Frank C., *Cartridges of the World* 8th Edition, Edited by M.L. McPherson, DBI Books, 1997, ISBN 0-87349-178-5.
- [12] History of Lapua (<http://www.lapua.com/en/lapua/history-of-lapua.html>)
- [13] Cartridges for Long-Range Sniping Rifles by Anthony G Williams (<http://www.quarry.nildram.co.uk/LongRangeSniping.htm>)
- [14] The Finnish Army found out during a test/trails program and 7 years of service that the barrels of their Sako TRG-42 sniper rifles lasted 7,000 to 8,000 rounds with Lapua Lock Base B408 factory ammunition before showing impermissible accuracy decay. The Finnish Army consistent accuracy requirement for these rifles is ≤ 1 MOA at 1,000 m. If this requirement is not met the TRG-42 gets a new barrel. This is normal practice for active high performance precision rifle operators who regard barrels as expendable items. The continuous use of very

- powerful handloads (which results in higher muzzle velocities) resulted in much quicker throat erosion reducing the TRG-42 barrel's accuracy life to 1500 to 2000 rounds.
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