


.357 SIG

.357 SIG			
			
.357 SIG cartridge			
Type	Pistol		
Place of origin	Switzerland, United States		
Production history			
Designer	SIGARMS / Federal Cartridge Co.		
Designed	1994		
Produced	1994–present		
Specifications			
Parent case	.40 S&W		
Case type	Rimless, bottleneck		
Bullet diameter	9.02 mm (0.355 in)		
Neck diameter	9.68 mm (0.381 in)		
Shoulder diameter	10.77 mm (0.424 in)		
Base diameter	10.77 mm (0.424 in)		
Rim diameter	10.77 mm (0.424 in)		
Rim thickness	1.40 mm (0.055 in)		
Case length	21.97 mm (0.865 in)		
Overall length	28.96 mm (1.140 in)		
Case capacity	1.27 cm ³ (19.6 gr H ₂ O)		
Rifling twist	406 mm (1 in 16 in)		
Primer type	Small pistol		
Maximum pressure	275.8 MPa (40,000 psi)		
Ballistic performance			
Bullet weight/type	Velocity	Energy	
115 gr (7 g) Doubletap Bonded defense JHP	1,550 ft/s (470 m/s)	614 ft·lbf (832 J)	
125 gr (8 g) Doubletap FMJ-FP Match and Bonded defense JHP	1,450 ft/s (440 m/s)	584 ft·lbf (792 J)	

147 gr (10 g) DoubletapBonded defense JHP	1,250 ft/s (380 m/s)	510 ft·lbf (690 J)
147 gr (10 g) DoubletapFMJ-FP	1,255 ft/s (383 m/s)	514 ft·lbf (697 J)
<i>Test barrel length: 4 in (102 mm) rifled barrel.</i>		
<i>Source(s): DoubleTap Ammunition ^[1], C.I.P. ^[1]</i>		

The **.357 SIG** pistol cartridge is the product of Swiss-German firearms manufacturer SIG-Sauer, in cooperation with the American ammunition manufacturer Federal Cartridge. While it is based on a .40 S&W case necked down to accept 0.355-inch (9.0 mm) bullets, the .357 SIG brass is slightly longer (0.009-inch (0.23 mm) to 0.020-inch (0.51 mm)). The cartridge is used by a number of law enforcement agencies and has a good reputation for both accuracy and stopping power.^[2]

History

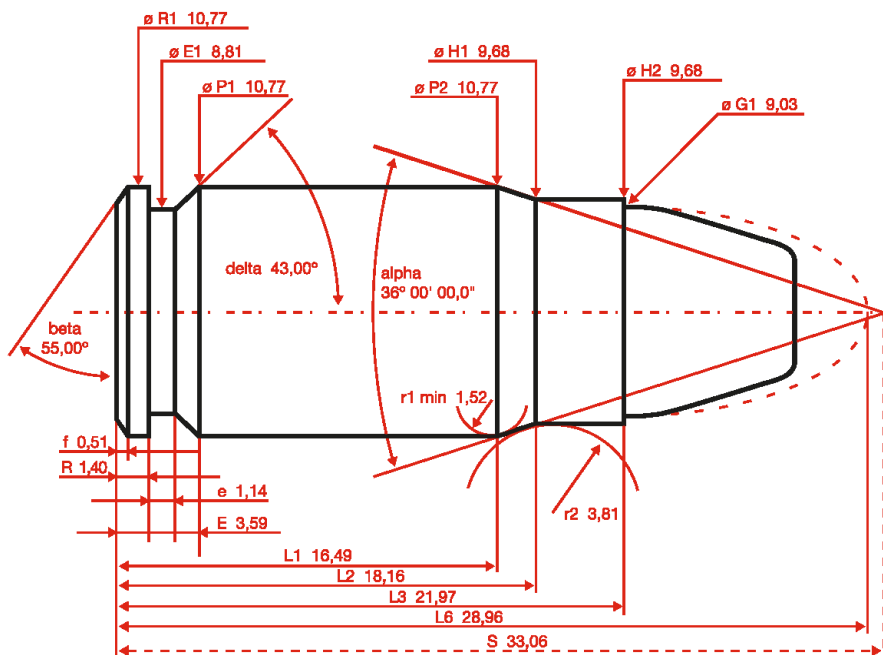
Developed in 1994, the new cartridge was named "357" to highlight its purpose: to duplicate the performance of 125-grain (8.1 g) .357 Magnum loads fired from 4-inch (100 mm) barreled revolvers, in a cartridge designed to be used in a semi-automatic pistol. Performance is similar to the 9x23mm Winchester.

The .357 SIG provided a self-defense cartridge close in performance to a 125 gr .357 Magnum, but from a semi-automatic pistol with greater ammunition capacity.

Other than specialized competition cartridges like the 9x25mm Dillon (1988), necking a 10mm Auto case down to a 9mm bullet, the .357 SIG was the first modern bottleneck commercial handgun cartridge since the early 1960s, when Remington introduced the unsuccessful .22 Remington Jet (1961), which necked a .357 Magnum case down to a .22 caliber bullet, and the .221 Remington Fireball (1963). Soon after the .357 SIG, other bottleneck commercial handgun cartridges appeared: the .40 Corbon (1996), necking the .45 ACP down to .40 caliber; the .440 Corbon (1998), necking down the .50 AE to .44 caliber; the .32 NAA (2002), necking the .380 ACP down to .32 caliber; and the .25 NAA (2004), necking the .32 ACP down to .25 caliber.

Cartridge dimensions

The .357 SIG has 1.27 ml (19.5 grains) H₂O cartridge case capacity.



.357 SIG maximum C.I.P. cartridge dimensions.^[1] All sizes in millimeters (mm).

Americans would define the shoulder angle at $\alpha/2=18$ degrees. The common rifling twist rate for this cartridge is 406 mm (1 in 16 in), 6 grooves, \varnothing lands=8.71 mm, \varnothing grooves=9.02 mm, land width=2.69 mm and the primer type is small pistol.

Several sources have published contradicting information regarding .357 SIG headspacing.^[3] This is due to originally designed as .357 (9.02mm)round but has been rapidly adapted to .355 (9mm) bullet. According to the official C.I.P. (Commission Internationale Permanente Pour L'Epreuve Des Armes A Feu Portatives) 2007 guidelines the .357 SIG headspaces on the shoulder (P2-H1). Some US sources concur this C.I.P. ruling.^[4] US reloading supplier Lyman once published the .357 SIG headspaces on the case mouth (H2).

According to the C.I.P. guidelines the .357 SIG case can handle up to 305 MPa (44,236 psi) piezo pressure. In C.I.P. regulated countries every pistol cartridge combo has to be proofed at 130% of this maximum C.I.P. pressure to certify for sale to consumers.

The SAAMI pressure limit for the .357 SIG is set at 275.80 MPa (40,000 psi), piezo pressure.^[5]

Conversions

Most .40 S&W pistols can be converted to .357 SIG by replacing the barrel, but sometimes the recoil spring must be changed as well. Pistols with especially strong recoil springs can accept either cartridge with a barrel change. Magazines will freely interchange between the two cartridges in most pistols. .357 SIG barrel kits have allowed this cartridge to gain in popularity among handgun owners. However, the .357 SIG is loaded to higher pressures than the .40 S&W (the C.I.P. and the SAAMI pressure limits for .40 S&W are 225 MPa and 35,000 psi), and may not be suitable for use in all .40 S&W-chambered pistols due to the increase in bolt thrust.



Left to right: .357 SIG, 10 mm Auto, .40 S&W

Performance

The table below shows common performance parameters for several .357 SIG loads. Bullet weights ranging from 115 to 150 grains have been offered. Loads are available with energies from 488 (ft•lbf) to over 568 (ft•lbf), and penetration depths from 9 inches to over 16.5 inches are available for various applications and risk assessments.

Manufacturer	Load	Mass (grains)	Velocity (ft/s)	Energy (ft•lbf)	Expansion (inches) ^[6]	Penetration (inches) ^[6]	PC ^[6] (cu in)	TSC ^[6] (cu in)
Triton	Quik-Shok	115	1425	518	frag	9.0	4.1	43.2 (est)
Winchester	Ranger T	125	1385	532	0.75	11.5	5.1	45.0 (est)
Federal	Premium JHP	125	1430	568	0.62	12.7	3.8	49.5 (est)
Speer	Gold Dot JHP	125	1385	532	0.68	16.5	6.0	45.0 (est)
Remington	JHP	125	1350	506	0.57	14.3	3.6	41.7 (est)
Federal	Premium JHP	150	1210	488	0.60	15.0	4.2	39.4 (est)

Key:

Expansion – expanded bullet diameter (ballistic gelatin).

Penetration – penetration depth (ballistic gelatin).

PC – permanent cavity volume (ballistic gelatin, FBI method).

TSC – temporary stretch cavity volume (ballistic gelatin).

Because of its relatively high velocity^[7] for a handgun round, the .357 SIG has an unusually flat trajectory, extending the effective range. However, it does not quite reach the performance of the .357 Magnum with bullets heavier than 125 grains (8.1 g). Offsetting this general slight disadvantage in performance is that semi-automatic pistols tend to carry considerably more ammunition than revolvers.

The Virginia State Police has reported that attacking dogs have been stopped dead in their tracks by a single shot, whereas the former 147 grain 9 mm duty rounds would require multiple shots to incapacitate the animals.^[8] Proponents of the hydrostatic shock theory contend that the energy available in the .357 SIG is sufficient for imparting hydrostatic shock with well-designed bullets.^{[9][10]} Users have commented, "We're really impressed with the stopping power of the .357 SIG round."^[2]

The bottleneck shape of the .357 SIG cartridge makes feeding problems almost non-existent.^[11] This is because the bullet is channeled through the larger chamber before being seated entirely as the slide goes into full battery. Flat point bullets are seldom used with other autoloader platforms because of feeding problems; however, such bullets are commonly seen in the .357 SIG chambering and are quite reliable, as are hollow-point bullets.

The "Accurate Powder" reloading manual claims that it is "without a doubt the most ballistically consistent handgun cartridge we have ever worked with."^[5]

Characteristics

The goal of the .357 SIG project was to offer a level of performance equal to the highly effective 125 grains (8.1 g) .357 Magnum load.^{[12][13]} The .357 SIG accomplishes this with a 125 grains (8.1 g) bullet at a muzzle velocity of 1,450 feet per second (440 m/s) out of a 4 in (102 mm) barrel, which is generally identical to the velocity achieved by standard factory 125 grains (8.1 g) .357 Magnum loads out of a 4 in (102 mm) revolver barrel.^[citation needed] (A check of advertised ballistics both in articles from the late 1990s & current ballistics tables from ammunition manufacturers show commonly a nominal velocity of 1,350fps for the .357 SIG with a 125gr bullet in a 4" bbl.) The .357 SIG gains extra muzzle velocity when fired from a longer barrel, like an after-market drop-in 6 in (152 mm) barrel. (This might achieve a velocity of 1450fps.)

With a simplistic approach to physics, recoil being directly proportional to "muzzle velocity x bullet mass" (due to conservation of momentum), the recoil of the .357 SIG is equal to or slightly less than that of the .40 S&W, and less than that of the full-power 10 mm Auto loads or the original .357 Magnum,^[14] Handgun Recoil table^[15] as well as Federal^[16] and.^[17] This simple approach to recoil is only part of the story as it is not only the properties of the bullet that produce recoil, a more important effect is the rocket like blast of propellant gases coming out of the barrel, after the bullet leaves the muzzle, that plays a greater role in the felt recoil.^[18] A more accurate view on recoil is that it is proportional to the mass of all ejecta x velocity of ejecta.^[19] Even so, recoil calculated in this manner is only the starting point in a comparison with the .357 Magnum cartridge, since the latter is used in a revolver, in which all the recoil energy is due to the Bullet and propellant, while the .357 SIG cartridge is frequently used in a semi-automatic pistol of recoil operation, in which a significant portion of the recoil energy is diverted to cycle the action, effectively prolonging the recoil phase.

In comparing the energy levels of premium self-defense ammunition the muzzle energy of 584 ft.lbs (792 J) of the 125 grains (8.1 g) 1,450 feet per second (440 m/s) .357 SIG load is higher than either the 475 ft-lbf (644 J) generated by a 155 grains (10.0 g) 1,175 feet per second (358 m/s) Speer GoldDot .40 S&W load or the 400 ft-lbf (540 J) generated by a 180 grains (12 g) 985 feet per second (300 m/s) Speer GoldDot .40 S&W load.^[20]

Like the 10 mm Auto, the .357 SIG can be down-loaded to reduce recoil, to the point where recoil is similar to that of a 9x19mm Parabellum. However, since the .357 SIG uses bullets that are generally the same as those used in the 9 mm Para,^[21] downloading it to this point would defeat the purpose of having the SIG cartridge in the first place, as

the .357 SIG casing was designed to handle up to 160gr. bullets whereas 9mm max out at ~140gr. and to download for recoil and ballistics to be identical to the less-powerful 9 mm cartridge would be a waste of time.

Because the .357 SIG fires at relatively high pressures, muzzle flash and noise are significant with standard loads, even with longer barrels. Utilizing loads with specialized powders and experimenting with different bullet weights can reduce flash.

Implementation

In 1995, the Texas Highway Patrol became the first government agency to deploy a firearm utilizing .357 SIG cartridge.

The SIG Sauer P229 in .357 SIG has been adopted for use by agents and officers of the following national and state organizations:

- United States Secret Service^[2]
- Bureau of Industry and Security
- Federal Air Marshals^[2]
- Delaware State Police^[2]
- Rhode Island State Police
- Virginia State Police^[2]
- Montana Highway Patrol
- North Carolina Highway Patrol



The Tennessee Highway Patrol currently issues the Glock 31 pistol chambered in .357 SIG. The Mississippi Highway Patrol issues a (Glock 31 Generation 4) with their logo engraved on the weapon.^{[22][23]} The Bedford Heights Police Department in Ohio currently issues the Glock 31/32/33. The Elloree Police Department in South Carolina Elloree Police^[24] also issues the Glock 31, .357 SIG and the Madison Police Department in Madison, WV issues the Glock 32 in .357 SIG. The Lexington Police Department in North Carolina issues the Sig P229 DAK in .357 Sig. The Oklahoma Highway Patrol issues the SIG Sauer P226 in .357 SIG. The Paramus Police Department in New Jersey also issues the SIG P226 in .357 SIG. The West Grove Borough Police Department, West Grove PA, also carry the SIG Sauer P226 in the .357 SIG caliber. Both the New Mexico State Police^[25] and the North Carolina State Highway Patrol use Smith & Wesson M&Ps chambered in .357 SIG. The Herculaneum (Missouri) Police Department uses the P226 and P229 in .357 SIG. The Orlando Police Department uses the SIG Sauer P226 in .357 SIG.^[26]

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- [24] <http://www.elloreesc.com/police.htm>
- [25] Smith & Wesson advertisement in Sept. 2010 issue of Tactical Weapons magazine.
- [26] Police Weapons in the USA: Florida (http://sites.google.com/site/worldinventory/pw_florida)

External links

- Ballistics By The Inch .357Sig results (<http://www.ballisticsbytheinch.com/357sig.html>)

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