



AMMUNITION

(BULLET DELIVERY SYSTEMS)

BASIC NOMENCLATURE

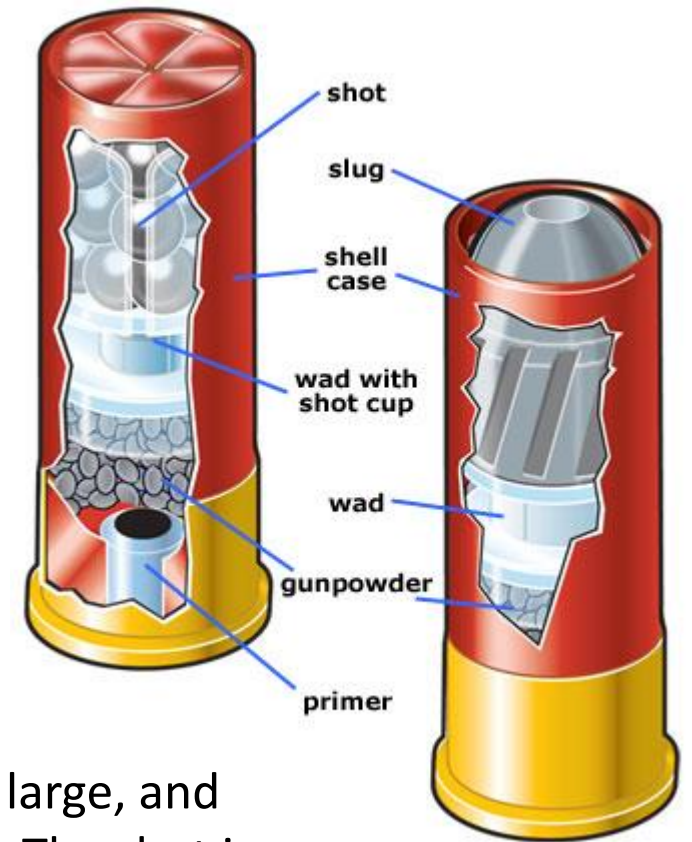
- Ammunition is a ballistic bullet delivery system. A “round” is assembled from several components: a shell, a primer, gunpowder, and the bullet being the part released at great speed to hit a target.
- Rifle and handgun shells are specified by the caliber and weight of the bullet, and often bear the name of the developer of the load.
- The primer comes in several sizes, small and large, for shotgun, handgun, and rifle. It has a small amount of explosive cased in a tiny steel “cap” which can ignite when compressed, struck by a firing pin. Its energy ignites the gunpowder, which creates enough pressure to send the bullet or pellets out of the shell and on their way down the barrel at supersonic speed.
- Caliber is designated by either decimal inches or millimeters. Fractional sizes are not used for handguns & rifles. The widest diameter of the bullet is what is measured, not the length.
- Gage of a shotgun is the number referring to the weight, in fractions of a pound, of the largest perfectly spherical ball of lead that could fit into the barrel of the shotgun. (1/10, 1/12, 1/16, 1/20, 1/28) It is not a diameter or size, *except* for the .410 designation. Why? I don’t know! (... must be some wacky old British idea....)





SHOTGUN AMMUNITION

Shells come in different gages or calibers. They are limited to those shown on the left, which are from L to R: 12 ga, 16, 20, 28, and .410 (four-ten), and one larger one not shown is 10 ga., because it is rarely used today.



Shotgun shells are specified by the size of the shot pellets contained, small to large, and those used for typical purpose: duck and goose, upland bird, target, and deer. The shot is typically made from steel, tungsten, bismuth or lead. The deer loads are a large one piece “slug” of lead. Shotgun shells contain a collapsible plastic “wad” that holds the many pellets in place. The pellets are the “shot” (or slug), that hits the target. The outside of the shell is made of paper or plastic with a brass rim. Corresponding to the size, the amount of recoil felt by the shooter increases with the lower the gage number. 10 ga. is punishing, 12 ga. is tolerable, and 20 ga. (shown in blue) is just right.

CALIBER is designated by either decimal inches or millimeters. Fractional sizes are not used. The widest diameter of the bullet is what is measured, not the length. Where there is overlap between inches and metric size, the bullets and shells usually differ enough in design to maintain either one or the other designation. For example:

The 38 long Colt, .38 special, and .357 Magnum bullets are used in revolvers. The .380 ACP bullet is used in pistols, the 9 mm (which is .354 inches dia.) is also used in pistols, but it comes in long or short (kurtz). However the 9mm short is actually the .380 ACP round. It would stand to reason that a barrel chambered in .354 inches (9mm) would be too small to take the larger .380 inch bullet. But, by some gunsmith magic and the difference in length of the two rounds, they won't feed the same, so you can't interchange them. This is an extreme example of caliber confusion.

The 9mm FAMILY of ammunition has the same basic bullet diameter but different bullet shapes and weights. Basically, the Luger, 9x19mm, Largo, IMI, Parabellum, NATO, Makarov, Dillon, and Winchester are all just variations that are interchangeable. (However, the .380 ACP and the 9mm are not.)



HANDGUN SHELL TYPES

- In addition, shells (or cartridge, or casings) used in revolvers are differently than those used in pistols. The only handgun we offer that can use ACP loads in a revolver is the Ruger SP-101 by using a moon ring holding device.
- Look carefully at this illustration. The 38 Special and the 357 Mag both have bases different from the other four rounds. These are only used in revolvers. Notice how the base diameter is larger than the shell dia. This lip or rim holds the round in place to keep it from falling through the chambers in the rotating cylinder. The other rounds use a base dia. identical to the shell dia., but with an undercut for the extraction mechanism. This allows the rounds to be stacked up in the magazine and fed through smoothly.
- Also notice in the illustration that one shell is steel. They are not reusable.
- Reloading used brass shells is an economical way to shoot as a sport. If you are only buying a gun for protection and don't intend to burn up a few thousand rounds for the fun of it on a Sunday afternoon, please purchase new ammo and throw out the used shells. Reloaded shells have a finite life, and begin to show age by splitting open when they get too thin. The shell can then jam in the chamber and could ruin the gun. This could ruin your day, too, but your attacker would be thrilled.



PRIMERS

are the means of igniting the gunpowder, or smokeless powder. They come in multiple sizes for the size of the ammo, but generally this relates to shells that take the little replaceable caps that contain explosive. These shells are called centerfire, and are used for rifles, handguns, and shotguns. There is a primer that is not replaceable, and it is an explosive that sits inside the shell casing itself- not a separate cap. These shells are called rimfire. Rimfire cartridges fire when the striker hits the rim or lip of the shell. The explosive reacts to the compression, and ignites the gunpowder. Rimfire ammo comes in various calibers, although .22 Long Rifle is by far the most popular type. They tend to be all the smaller sizes, and the shells are not re-loadable because there's no way to replace the explosive. 5mm Remington, .17 HMR, .22 Mag, .17 HM2, .22 Stinger, .17 Aguila, and .17 PMC are all rimfire. They can only be shot in carbines and revolvers because of that rim design.

Replaceable primers go back to the days of muskets and black powder firearms. The percussion caps would be placed on a nipple, one at a time by hand, which when struck would flame into the breech packed with powder and a bullet.





GUNPOWDER

Long ago in the land of black powder muskets and Chinese fireworks, gunpowder was nasty to deal with. It didn't burn, it exploded. Not only was it **extremely** explosive, like ammonium nitrate, TNT, or dynamite, but when it was set off the smoke it made was really dense. During the Civil War the smoke would get so bad the soldiers couldn't see who to shoot!

Gunpowder consists of a mixture of sulfur, charcoal, and potassium nitrate. The sulfur and charcoal act as fuels while the saltpeter is an oxidizer. Because of its incendiary properties and the amount of heat and gas volume that it generates, gunpowder has been widely used as a propellant and a blasting agent for mining.

Today there is a variety of "smokeless powder" available, each with its own special characteristics of slow burn or fast burn. Even granule shape and size will influence the ballistics: powder, stick, ball, or flake, make a major impact on how a powder will deliver energy to the bullet. Obviously, each type of powder is carefully measured, and varies for each caliber, weight, and ballistics required.

Although modern gunpowder burns, not explodes, you still should store your ammo in a cool dry place to keep it fresh. If properly stored, it can last many years. Some ammo comes with a thin coat of wax on it to seal the bullet to shell connection and keep it fresh.



BULLETS

For the sake of our needs with handguns, only two types of bullet (projectile) will be shown out of the MANY ballistic designs available: full metal jacket (FMJ) and hollow point (HP). The FMJ bullet is always made with a lead core. Most have a complete copper foil covering, and are a parabolic shape. When the FMJ bullet hits something it begins to mushroom, i.e. flatten out. The target sustains damage, but often minimal penetration, or a clean, small exit area.



The HP bullet has serrations on the sides, so that when it impacts, it spreads out in segments. Some bullets like this are designed to have each petal of the flower disconnect and go 6 different ways. This maximizes the damage the target sustains, and upon exit, makes a very large hole.

The cost of the HP bullet is a bit higher than the FMJ. You should use the FMJ for practice, and the HP kept for protection.

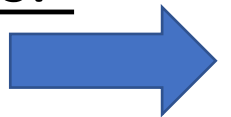




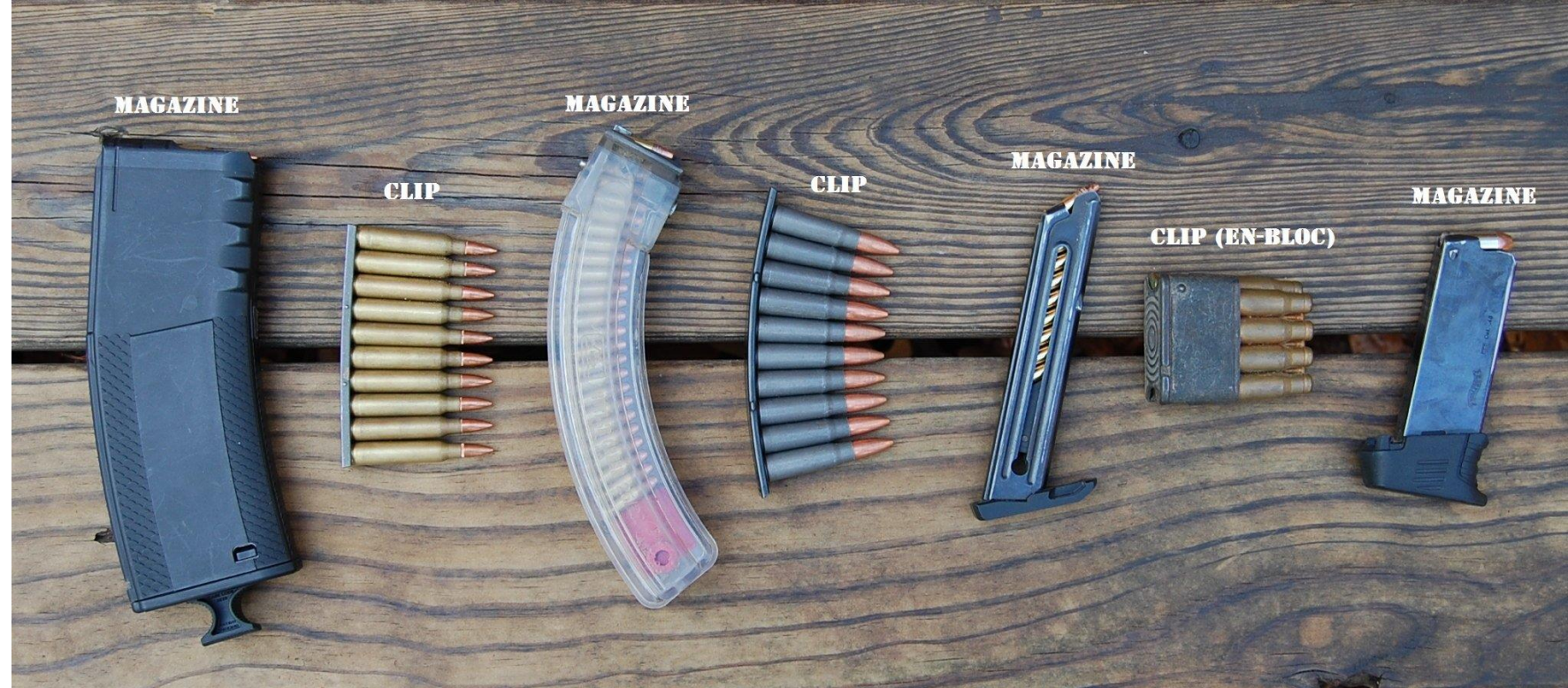
Shown are rifle ammo in a “CLIP”. Even Rambo wears his fashion-forward bandolier of 50 cal. rounds in a long clip or belt. They are typically used to feed automatic or “5-shot burst” assault rifles and machine guns.



These are not “magazines.”



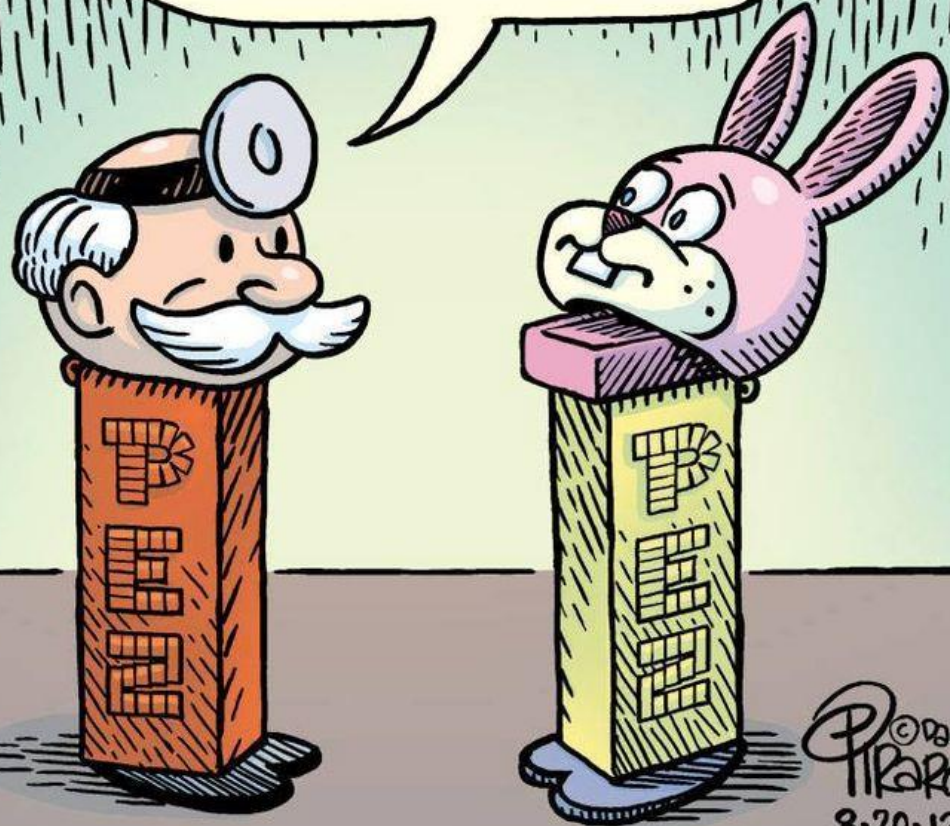
Here we show magazines along with clips. The terminology is **not** to be confused: In military use, clip devices are not re-used. However, magazines are. They can be reloaded many times. (Although you might hear someone refer to the curved magazines as "banana clips.")



Often magazines are a part of the gun itself, as a metal box inside the stock ahead of the trigger, or in a tube just below the barrel. Pistols use a removeable spring loaded device that looks like a PEZ candy dispenser, (right) - - - >



Tracheal obstructions of this kind are fairly common. They're easily removed and are actually quite tasty.



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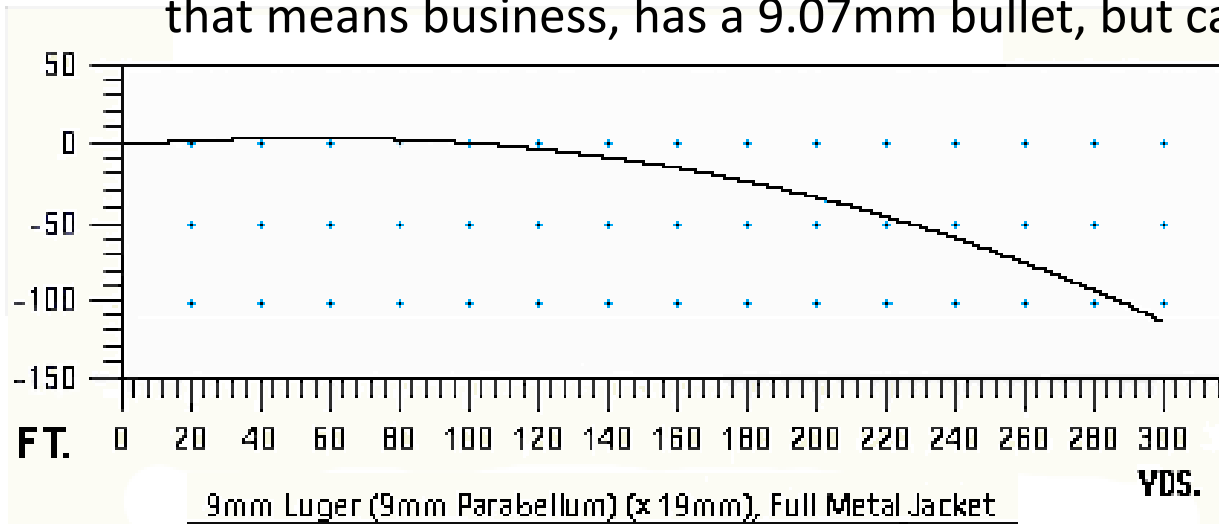
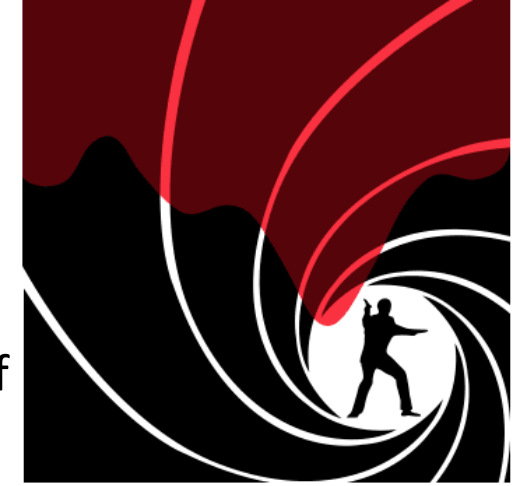
As they are available, we will ship with every pistol a magazine reloading gizmo to help with shoving the rounds down the spring-loaded magazine. Typically the first few rounds are easy to load by hand, then it gets more difficult to do by hand until it is loaded full.

More terminology: a pistol and a revolver are both handguns. A pistol is a **semi**-automatic handgun. A revolver is also known as a “wheel-gun” because of the turning cylinder. A pistol is not a revolver.

There are no **automatic** revolvers, and we don't sell **automatic** pistols. They are taboo, and require a special Class 3 license to own. The same is true for automatic shotguns and rifles. Illegal without a special permit! These are in the category of machine guns. Contrary to popular belief, an AR-15 rifle is not a machine gun or an assault rifle.

SPEED AND TRAJECTORY

- Bullets fire at speeds mostly at or exceeding the speed of sound. Chamber pressure for a large handgun can exceed 65,000 psi. That's a lot of energy to dissipate over distance, and much depends on the bullet weight and shape. Of course the gun itself must be built to take that pressure, which requires a high alloy steel.
- Trajectory is the shape of the curve the bullet travels over distance. Handgun bullets run flat for a much shorter distance before they slow down and drop than rifle bullets do, all dependent on the length of the barrel, rifling twist rate of spin, bullet weight & powder charge (both measured in grains), and amount of powder.
- For example, a **9mm Luger** 115 grain FMJ bullet trajectory is "flat" to 80 yds, fires at 34,084 psi chamber pressure, and achieves 1078 ft/sec velocity. *Comparing:* the **.357 Magnum**, a heavy load that means business, has a 9.07mm bullet, but can fire at 1700 ft/sec velocity, has a 43,500 psi chamber pressure, and has a flat trajectory to only 30 yards. Clearly, it is a powerful but close-contact weapon, where the 9mm can go the longer distance. It's no wonder that military and police worldwide (and 007) have switched to 9mm, a manageable but effective load.



AMMUNITION: THE #1 CAUSE OF DIRTY GUNS

- A gun gets dirty from the deposits left behind of burnt gunpowder, primer, wax, lead, oil, and copper. The pressures involved in firing the gun assures that the stuff gets blown everywhere in and around the gun. It does not all go down the barrel. If you don't clean it often, the action will get stuck on the gunk and will jam, misload, fail to eject, and cause bad accuracy. Semi-auto shotguns are particularly prone to this, since they use powder in flake form. It builds up, or more accurately, stacks up inside the workings.
- Too much oil used during cleaning attracts more dirt. Use oil only *sparingly*. It is essential that from time to time, besides cleaning the barrel and wiping down the exterior action parts, you take the gun to a gunsmith for a thorough take-down part-by-part cleaning. You will be amazed at what a difference it will make!
- Another problem is the buildup of copper inside the barrel from the bullet jackets. If trapped inside the barrel rifling, it traps moisture and causes corrosion by galvanic action. If caught soon enough, there are special ways the gunsmith can remove the copper before it harms the barrel.
- The gun should always be kept dry and out of temperature extremes to prevent rust!



Ammunition storage



- Some states and localities require that ammunition be stored totally separate from guns, and that guns be unloaded in storage. *(So much for using it in an emergency.)*
- How your ammo is stored determines its longevity: The 3 Rules of Ammo Storage are:

- Keep Ammo Dry
- Keep Ammo Cool
- Keep Ammo Fresh



- High heat can ruin your ammunition, with the breakdown point happening at about 150°F. Never leave it in the trunk of your car on a hot day for any period of time or the gunpowder will have deteriorated.
- Moisture is the biggest killer of gunpowder. Keep the ammo dry in a sealed can or shrink wrap.



MISCELLANEOUS TRIVIA..

- Smaller loads, (like .22LR, .25, or .32) are not recommended for protection. They will wound, but rarely kill unless well-placed. Larger loads, like .357mag, .38 +P, .40, or 44 mag, or 45 ACP all have a big recoil that affects the shooter's ability to hold on target.
- J. M. Browning designed the 45 ACP for Colt in 1910, and was used in WWI by foreign military. The 1911 version was used by American military in WWI and WWII, and is still in use today. ACP stands for Automatic Colt Pistol, which is misleading, because these guns are semi-auto, *not automatic*, and the only Colt in **our selection** is a revolver that can't use ACP ammo. [Russian Czar Romanov and his family were all shot with an American Colt 45 "1911."]
- The size of the shell has no relationship to the size of the bullet. There simply must be enough powder in the shell to push the weight of the bullet. There are a lot of stubby fat rifle shells out there with skinny bullets in them, just as there are long shells with nearly the same dia. and length of bullet in them. It's all in what it's used for....
- The biggest, baddest handgun out there is a .50 caliber. A half-inch sized bullet takes considerable strength to handle firing it. This is military anti-aircraft cannon sized ammo.
- Helical rifling grooves in the barrel of a gun impart spin to the projectile around its long axis which gyroscopically stabilizes the projectile, improving its aerodynamic stability and accuracy. These grooves are spaced as twist rate, a ratio of one revolution of the bullet to inches traveled: 1:10, 1:16, etc.