

Introduction to Pistol and Revolver Cartridges

By Chuck Hawks

The following series of articles will examine the popular, useful, and interesting handgun cartridges. A few, like the .22 LR, .22 WMR, .30 Carbine, .357 Magnum, and .44 Magnum are also popular as rifle cartridges, and can be found in both the rifle and pistol cartridge sections.

The number of pistol cartridges commercially available in the U.S. is smaller than the number of rifle cartridges, but it is still considerable. Remington, at the time of this writing, was producing 59 different loads for 17 different centerfire pistol cartridges in the Remington brand alone. This does not count their extensive rimfire cartridge line or their UMC brand offerings. I do not have the time to treat each one of these individually, but fortunately some of them are redundant and/or old cartridges that are of interest to relatively few shooters.

The purpose of a pistol cartridge, and the pistol it is chambered in, is to launch a bullet at a target (paper, man, beast, or whatever). A clever definition of a target pistol, for example, is "a chemically operated paper punch." It is the burning of the cartridge's gunpowder (the chemical part) that sends the bullet on its way to punch a hole in the paper target.

Pistol bullets are usually described by weight in grains (7000 grains = one pound), diameter in thousandths of an inch (as in .357") , and style (lead, JHP, etc.). For example, a 125 grain JHP bullet for the .357 Magnum.

Most pistol shooters don't pay much attention to ballistic coefficient (BC) or sectional density (SD), perhaps at least partly because at pistol velocities and ranges both (and particularly BC) are less important than at the far higher velocities and longer ranges over which rifle bullets are expected to perform.

In the articles that follow I have pretty much ignored both SD and BC. So I will briefly discuss them here. For those who are interested in more information, any of the popular reloading manuals published by the major bullet makers lists the SD and BC of all the bullets that company manufacturers, along with more detailed explanations of what each means.

Sectional density is basically a calculation that compares a bullet's weight to its diameter. SD is important because it has a significant effect on penetration. Other things being equal (like impact velocity, bullet design and material, etc.) the higher the SD number, the better the bullet's penetration. For comparison to the pistol bullets listed below, the SD of the common 130 grain bullet used in the .270 Winchester rifle cartridge is .241, which is way better than the SD of any common pistol bullet.

Ballistic coefficient is basically a measure of how streamlined a bullet is; that is, how well it cuts through the air. Again, the higher the BC number the better (less air drag). The BC of the common Speer 130 grain soft point spitzer bullet for the .270 Winchester rifle cartridge is .408, which again is way better than the BC of any common pistol bullet.

A short list of the most common and representative pistol bullets follows. The cartridges are displayed thusly: cartridge/actual bullet diameter/bullet weight and style: SD, BC. All figures are taken from the *Speer Reloading Manual No. 12*.

.22 WMR/.224"/40 grain JHP: SD = .114, BC = N/A
.30 Carbine/.308"/110 grain JSP: SD = .136, BC = .144
.32 H&R Mag./.312"/100 grain JHP: SD = .147, BC = .167
.380 ACP/.355"/90 grain JHP: SD = .102, BC = .101
9x19/.355"/115 grain JHP: SD = .130, BC = .125
.38 Spec./.357"/125 grain JHP: SD = .140, BC = .135
.357 Mag./.357"/158 grain JHP: SD = .177, BC = .158
.40 S&W/.400"/155 grain JHP: SD = .138, BC = .123
.41 Mag./.410"/200 grain JHP-SWC: SD = .170, BC = .113
.44 Mag./.429"/240 grain JHP: SD = .186, BC = .165
.45 ACP/.451"/230 grain JHP: SD = .162, BC = .143
.45 Colt/.451"/260 grain JHP: SD = .183, BC = .183

None of these figures are impressive compared to rifle bullets, which is probably why pistol shooters tend to ignore SD and BC. What can be learned from the numbers above is that all of these conventional pistol bullets are poor aerodynamically, and are therefore a poor choice for high velocity applications (over about 2000 fps) or long range shooting (much beyond 100 yards).

None of them have an impressive SD, either, and therefore can be expected to penetrate poorly compared to rifle bullets of similar design and impact velocity. Hunters, keep that in mind. The .357 Magnum, .41 Magnum, .44 Magnum, and .45 Colt--all big case revolver cartridges--clearly have the most ballistic potential, which should not surprise anyone. They are, in fact, the best of the conventional pistol cartridges for field use.

What is usually crucial to satisfactory performance in handgun cartridges is bullet expansion after impact (terminal ballistics). Rapid expansion and penetration adequate to reach the target's vitals is very desirable in hunting or self-defense situations. This allows quick kills when hunting, and terminates life-threatening behavior in self-defense applications. In most self-defense scenarios deep penetration is counter productive, it negates a quick energy dump and can lead to over penetration and collateral damage (for which the shooter will be held liable).

In almost all pistol cartridges, the modern hollow-point bullet is the best choice for hunting or self-defense. Choose a heavier JHP bullet for hunting (higher SD, more penetration), and a lighter one for self-defense (lower SD, less penetration). For example, in the .357 Magnum caliber the 110-125 grain JHP bullets are generally recommended for self-defense, and the 140-158 grain JHP bullets are generally recommended for hunting medium size game. To repeat what I wrote in the *Introduction to Rifle Cartridges*, the bullet is the part that does the work, and they are not all created equal.

Accuracy is also very important to the handgun hunter, for he (or she) must precisely place his bullet in a vital spot if he is to be successful, and often do so from 50 to 100 yards away. The cartridges that are best for handgun hunting are the rimfire .22 LR and .22 WMR cartridges for small game, and the centerfire .32, .357, .41, and .44 Magnum revolver cartridges for larger beasts. Fortunately, all are available in very accurate guns. The 10mm Auto cartridge also has definite hunting possibilities if an autoloader of sufficient accuracy can be found.

Any good hunting pistol should be capable of shooting 1.5" five-shot groups from a rest at 25 yards (6" at 100 yards). Long barrels, fine triggers, and excellent adjustable sights are required for a hunting pistol, in addition to an accurate, flat shooting cartridge. Things are difficult enough in the field without having to try to lob a bullet with a rainbow trajectory into an animal 100 yards away. Handgun hunting is a sport that has grown steadily in popularity over the years, and is now legal in most jurisdictions.

Another common use for pistols is formal or informal target shooting and plinking. Many times more ammunition is expended in such peaceful recreational pursuits than in all other handgun applications combined. In the U.S. the calibers to consider are .22 LR, .38 Special, and .45 ACP, depending on the specific purpose. All three are very accurate cartridges that, in a good target pistol, will take you as far as your skill will allow. A target pistol must be capable of keeping all of its shots inside of the 10 ring, and most of them in the "X" ring, at whatever range it is used in competition. The 10 ring in the center of an NRA 25 yard slow fire pistol target is only 1.5" in diameter, and the "X" ring in the center of the 10 ring, which is used to break tie scores, is only 21/32" (about 2/3 of an inch) in diameter. Most target pistols have excellent adjustable sights and triggers, and are ideal for general recreational shooting and plinking.

For the pistol shooter primarily interested in self-defense, accuracy is somewhat less important. Most self-defense situations involve shooting at very close range (less than 10 yards). Practically any revolver or semi-automatic pistol cartridge is accurate enough to put a bullet into the center of mass of a human being at that range. Even so, an accurate pistol is much more rewarding to shoot, and to gain and maintain a useful level of skill requires a fair amount of practice. Any decent self-defense pistol should be able to shoot 3" five-shot groups from a rest at 25 yards. The .380 ACP, 9x19, .38 Special, .357 Magnum, .40 S&W, 10mm Auto, and .45 ACP are probably the best choices among today's popular pistol cartridges.

The exception might be the person who lives in a rural or wilderness area; or who engages in a lot of outdoor activities (camping, fishing, hiking, cross country skiing, boating, etc.) and therefore might be called upon to defend him or her self at much longer range than the average city dweller. For such a person, a pistol chambered for one of the few 100 yard-plus conventional pistol cartridges would seem to be indicated. The outdoor self-defense pistol should basically resemble a hunting pistol with a shorter barrel, and requires the same level of intrinsic accuracy. A top quality .357 Magnum revolver with adjustable sights would be my first choice. Very few auto pistol cartridges, or the pistols that shoot them, will meet these stringent requirements. For the outdoors person who insists on an autoloading pistol, an exceptionally accurate autoloader in 9x19 (9mm Luger) would probably be a reasonable choice. That is one of the reasons the U.S. Army adopted a 9x19 pistol.

Of great interest to all pistol shooters concerned about self-defense is the proven effectiveness of the various self-defense cartridges. This information has been compiled by Evan Marshall and Edwin Sanow and published in their seminal book *Handgun Stopping Power*. Based on thousands of actual shootings recorded in police files, Marshall and Sanow compiled statistics on the effectiveness of specific factory loads in all of the popular self-defense calibers. The result is the actual percentage of one shot stops achieved by many of the common factory loads available in each caliber.

In the articles about individual pistol cartridges that follow I have provided abbreviated one shot stop percentages for most of the cartridges for which it is available. For anyone interested in more information on this subject, I urge you to order the stopping power books (there are three of them at this time) by Marshall and Sanow. You will find a link to their Stopping Power web site among the "Commercial Pages" on my Guns & Shooting Links page.

I have also compiled a *Handgun Cartridge Power* chart that includes many of the popular pistol cartridges and loads. This chart uses information from several sources to compare the energy, penetration, and stopping power of specific factory loads (including the famous Strasbourg goat shooting tests and Marshall and Sanow's published results). The link to this chart can be found in the "Handgun" section of the Guns & Shooting Online home page.

The articles that follow use a number of abbreviations that are familiar to most shooters. A few of the most commonly used abbreviations are: FMJ = full metal jacket (bullet, same as "ball"), fps = feet per

second (as in bullet velocity), ft. lbs. = foot pounds (as in the kinetic energy of a bullet), JHP = jacketed hollow point (bullet), JSP = jacketed soft point (bullet), ME = muzzle energy (of a bullet), MV = muzzle velocity (of a bullet), psi = pounds per square inch (of pressure), RNL = round nose lead (bullet), SWC = semi-wadcutter (bullet).