

Bullet Pen Anatomy

by Eric Rasmussen

Every business has its own special terminology. In some cases (such as medicine and engineering), that language derives from the need to be very specific and precise. At other times, it can seem like a tool simply to distinguish the in-crowd. I believe that language is whatever we actually say, and I don't intend to criticize anybody's usage, but the firearms industry does have some unique vocabulary. When you sell a "bullet pen" to a shooting enthusiast, it helps to speak the accepted lingo. To that end, here is a description of the parts of a metallic rifle cartridge, and their proper names.

To start right off, the term "bullet pen" itself is a misnomer. It's catchy though, and widely accepted – so let's just move on. Modern rifles and handguns share the same loading technology and terminology – commonly referred to as "metallic cartridges". Shotgun ammunition, called a "shotshell", is constructed differently. Shotgun and Muzzleloader components are rarely used in pens, and not addressed here.

So, a round of rifle and handgun ammunition is properly called a "cartridge". Sometimes, people speak of it as a "shell", but that word generally refers to either a shotgun shell, or an artillery shell. The cartridge is the complete, assembled piece, ready to load and fire. It consists of four parts: bullet, case, powder, and primer.



Figure 1 - Top: Complete Cartridge, Left to Right: Bullet, Shellcase, Powder, and Primer

The bullet is the actual projectile. It is the piece that flies out the barrel of the gun to (hopefully) hit whatever the shooter aimed at. Many people mistakenly refer to the entire cartridge (or even just the case) as the “bullet”, but that is incorrect.

The case, or “shellcase” is the metal housing that holds the other components together. It is very often mistakenly called a “casing”. In the penturning community, this misnomer is more common than the proper name. In fact, it is so pervasive, that I rarely even try to correct it. If you say “casing” to a serious shooter, however, you may get a strange look. “Casing” is what butchers stuff with ground meat to make sausage. “Case”, or “shellcase” are the correct names. Since cases are most often made of brass, the term “Brass” is often used as well.

Powder, a.k.a. smokeless powder or gunpowder, is the propellant. It burns rapidly and produces the expanding gas that drives the bullet down the barrel of the gun. The primer is the component that bursts into flame when struck, and ignites the powder. They are the most hazardous parts of a metallic cartridge, and generally don't come into play when making a pen. Unless you already know how to handle powder and primers safely, don't handle them at all.

While it is possible to disassemble live ammunition to use the components to make a pen, it's nearly always better to buy new (or fired) cases, and new bullets instead.

The bullets appropriate for penmaking are typically copper-jacketed. That is, they consist of a copper alloy form over a lead (or sometimes steel) core. Solid copper bullets are also available. Plain lead bullets are generally not usable for a pen. Jacketed bullets come in different shapes. “Full Metal Jacket” – FMJ (sometimes called “ball”) means that the tip of the bullet is completely encased (although the bullet base typically shows exposed lead). “Hollow Point” – HP means the tip of the bullet has a hole in it (and the bullet base is typically fully enclosed). “Soft Point” – SP indicates that the point is made of lead and the jacket begins partway down the bullet. There are also polymer tipped bullets (like a hollow-point with a plastic insert). The tip shape can be round (round nose – RN), flat (FN), or “Spire Point” (comes to a sharp point). The base of the bullet can be flat (FB) or angled which is called a “Boat-Tail” (BT). For pens, I normally use a Jacketed Hollow-Point Boat-Tail (JHPBT or BTHP) bullet although spire-point FMJ works well too. Sometimes, you’ll see a ridged groove formed around the bullet on the flat edge (the curved edge is called the “ogive”) of a bullet. That groove is called a “cannelure” and it provides a spot to crimp the case against.



Figure 2- Left to Right: Full Metal Jacket Boat Tail with Cannelure, Flat Nose Soft Point Flat Base with Cannelure, Jacketed Spire Point Polymer Tip Boat Tail, Solid Copper Hollow Point Boat Tail

The shellcase, as mentioned previously, can be made of steel, but is usually brass, or nickel-plated brass. They are sometimes straight-walled, or tapered, but most often (at least for rifles) are “bottleneck” shape. The hole that the bullet goes in is called the “Mouth”. The part that actually contacts and grips the bullet is the “Neck”. The angled section below the neck is known as the “Shoulder”. The remaining straight or tapered section of the case wall is the “Body”. The solid portion below the body is called the “Web”. At the very end there is groove called the “Extractor Groove”, and the “Rim”. This end of the shellcase is called the “Head” and the marking on the end is called the “Headstamp”. “Centerfire” cases have a “Primer Pocket” in the center of the case head. There are one or more “Flash Holes” in the primer pocket.



Figure 3 – Shellcase Annotated



Figure 4 - Case Head Annotated

An assembled cartridge of a particular caliber has specific minimum and maximum dimensions, one of which is the “Cartridge Overall Length” (COAL, or OAL). That is the distance from the bottom of the case head to the tip of the bullet. Bullet pens look most realistic when they maintain this dimension, as specified by the “Sporting Arms and Ammunition Manufacturers’ Institute (SAAMI).

Whew! That’s a lot of nomenclature to get through. I realize it seems daunting at first, but once you’re familiar with pieces and their correct names, you’ll be able to describe your products with confidence to the most serious shooting and hunting enthusiasts.