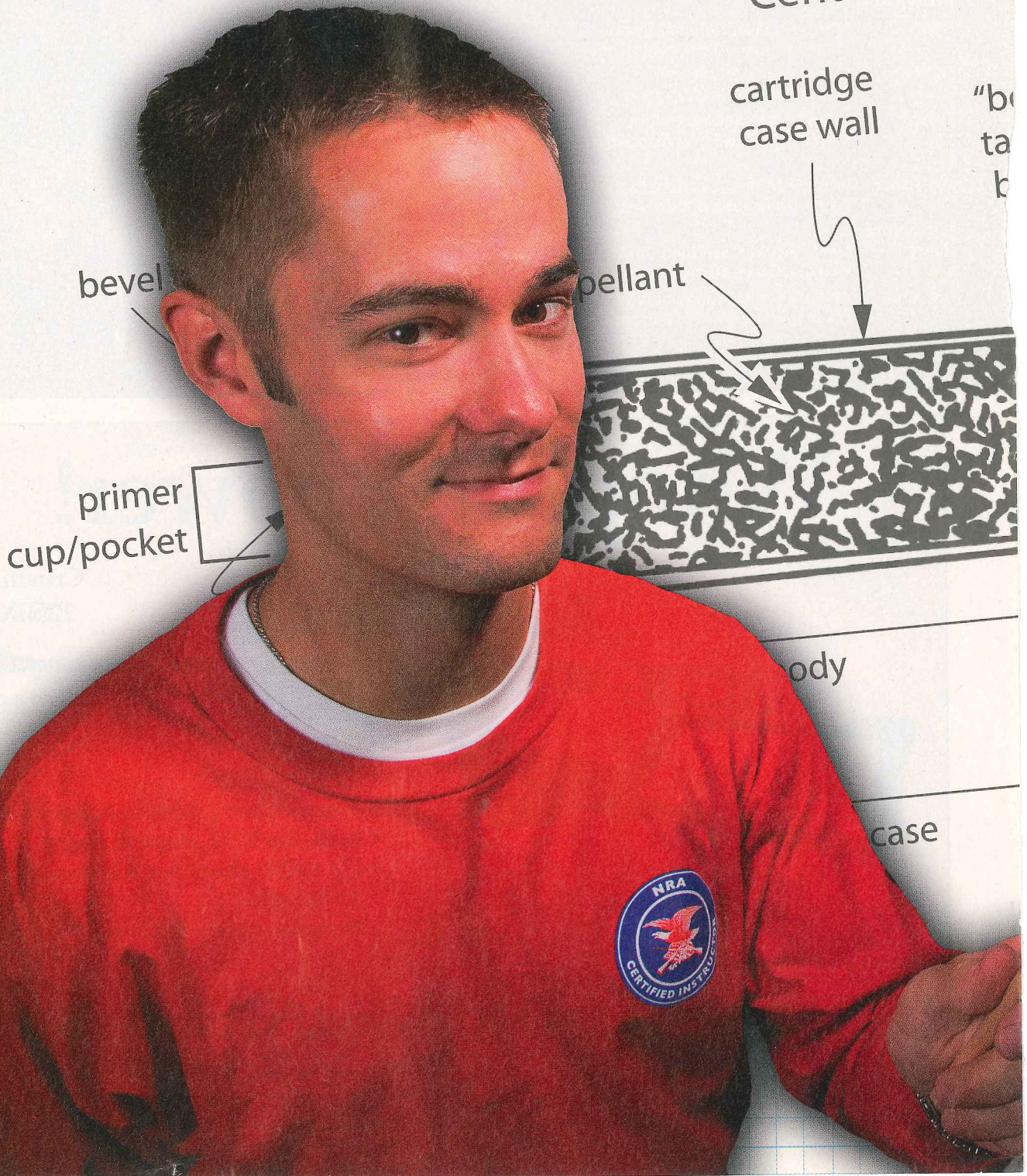
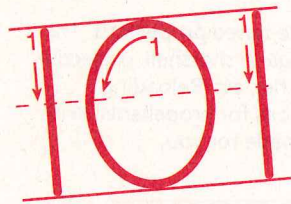


Center-Fire N



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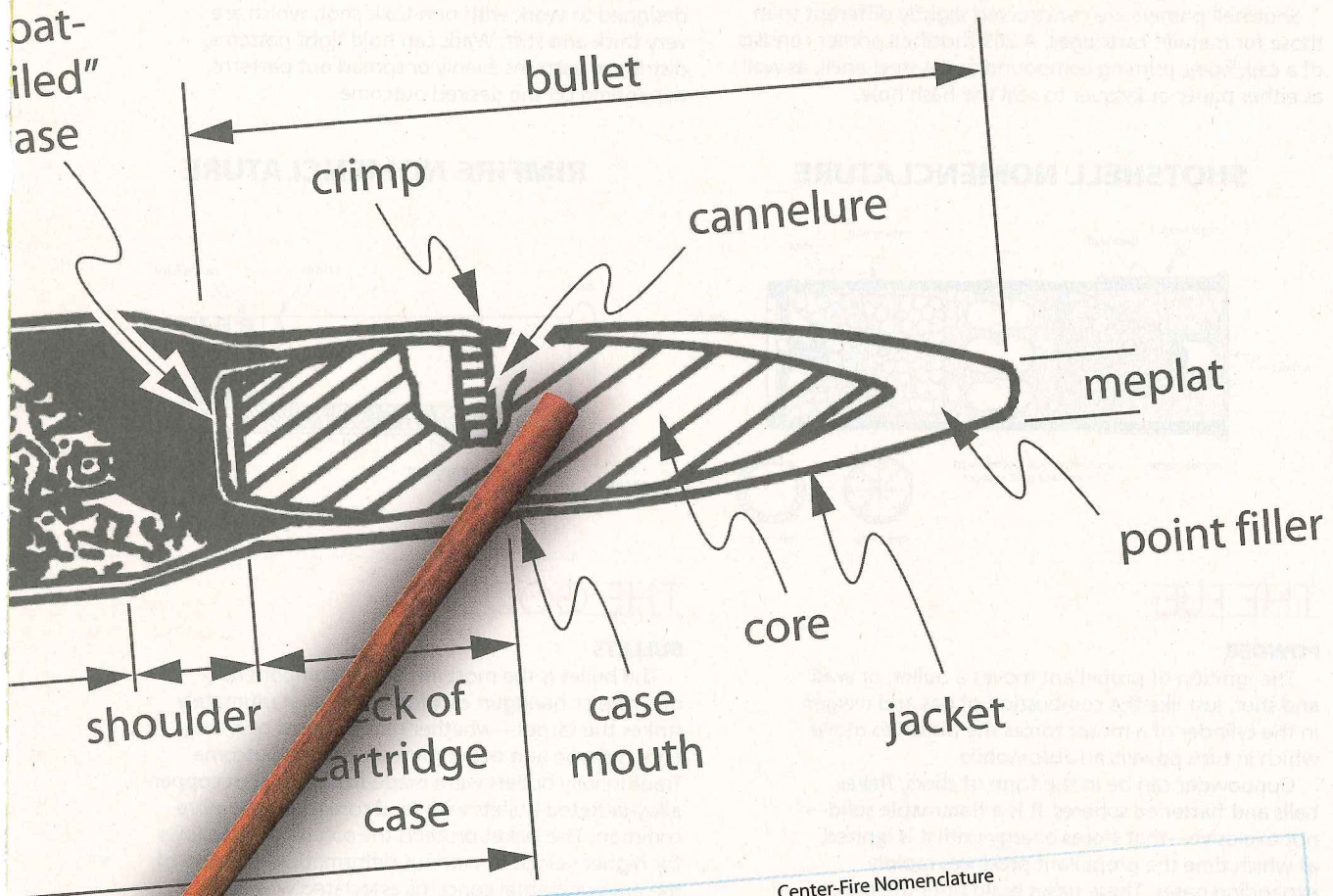


WHAT'S INSIDE AMMUNITION?

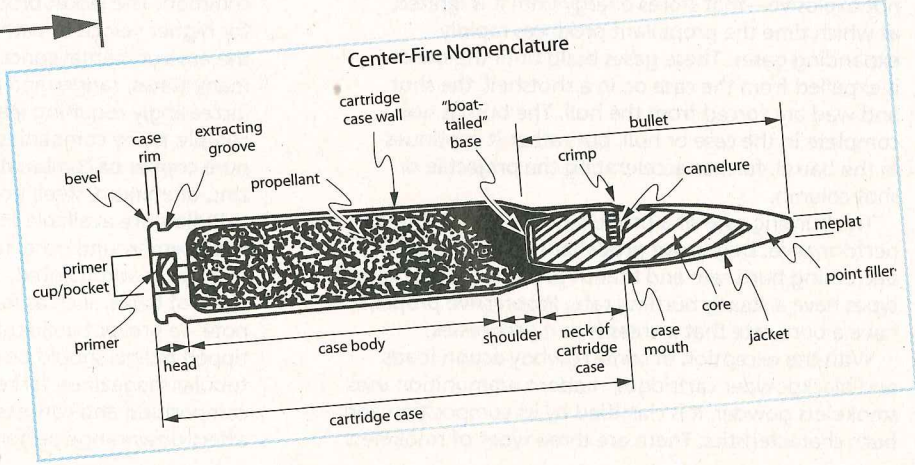
BY AARON CARTER, ASSOCIATE EDITOR, SHOOTING ILLUSTRATED

As a hunter or shooting sports enthusiast, you're probably used to loading a shell into your shotgun or a cartridge into your rifle, pulling the trigger and hitting the target. But, have you ever given more thought to what's inside the stuff you're putting in your gun? Ammunition is actually a complicated topic and has a lot of components. It's important that you understand the basics, so let's walk through them.

Nomenclature



NRA Instructor Erik Olsen points out the bullet components in a center-fire cartridge.



GETTING IT STARTED

PRIMERS

The primer in a cartridge or shotshell acts like a spark plug in an automobile engine. The spark plug provides the ignition source needed for combustion—without it a vehicle will not move. The same holds true for ammunition. Without a primer to provide ignition, nothing will happen.

The primer—housed in a pocket at the rear of center-fire cartridges and shotshells—contains a volatile mixture held inside a cap. When struck by the firing pin the compound is crushed between the cap and the anvil, causing it to explode. The hot gas then flows through the flash hole and ignites the powder charge. The primer in a rimfire cartridge, on the other hand, is contained in the hollow rim and has an added frictioning agent to aid in ignition.

Shotshell primers are constructed slightly different than those for metallic cartridges. A 209 shotshell primer consists of a cap, body, priming compound and a steel anvil, as well as either paper or lacquer to seal the flash hole.

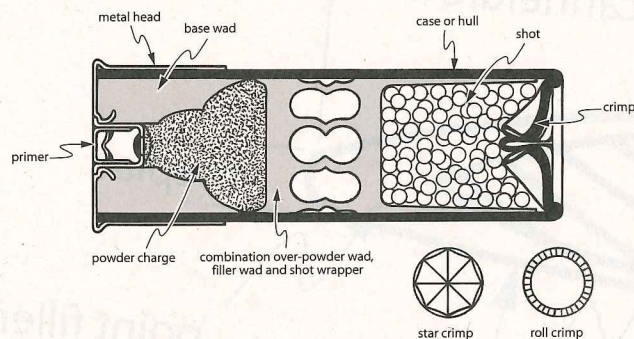
powder—single-, double- and triple-based propellants. The best choice depends on the cartridge or shotshell, projectile or shot charge, barrel length, weather, etc. Reloading manuals give many recommendations for propellants. With factory ammunition the choice is made for you.

DELIVERING THE GOODS

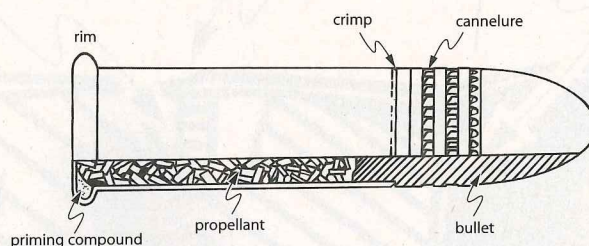
SHOTSHELL WADS

The shotshell wad has many duties. It seals propellant gases from the shot charge, cushions the shot during setback, protects the shot—and bore—from abrasion and influences shot patterns. Wads were originally made from felt, paper or cork, but most modern wads are manufactured from flexible plastic, with the exception of those designed to work with non-toxic shot, which are very thick and stiff. Wads can hold tight patterns, distribute patterns evenly or spread out patterns, depending on the desired outcome.

SHOTSHELL NOMENCLATURE



RIMFIRE NOMENCLATURE



THE FUEL

POWDER

The ignition of propellant moves a bullet, or wad and shot, just like the combustion of gas and oxygen in the cylinder of a motor forces the piston to move, which in turn powers an automobile.

Gunpowder can be in the form of sticks, flakes, balls and flattened spheres. It is a flammable solid—not explosive—that stores energy until it is ignited, at which time the propellant produces rapidly expanding gases. These gases build until the bullet is expelled from the case or, in a shotshell, the shot and wad are forced from the hull. The burn is not complete in the case or hull, but rather it continues in the barrel, further accelerating the projectile or shot column.

The burning rate of a propellant is important to its performance. Degressive propellants have a steadily decreasing burn rate and breech pressure, while neutral types have a steady burning rate. Progressive propellants have a burn rate that increases as it progresses.

With the exception of some cowboy action loads and blackpowder cartridges, modern ammunition uses smokeless powder. It is classified by its composition and burn characteristics. There are three types of smokeless

THE GOODS

BULLETS

The bullet is the most important component of a rifle or handgun cartridge. It is what ultimately strikes the target—whether game animal or X-ring—and its shape and design determines the outcome. Traditionally bullets were made from lead, but copper-alloy-jacketed bullets with lead cores are now more common. The jacket protects the soft lead and allows for higher velocities without deformation. Because of the environmental concerns associated with lead, many states, ranges and private hunting leases are increasingly requiring lead-free ammunition. To comply, many companies are making bullets from pure copper or combinations of copper and tungsten, zinc, aluminum, steel, iron and bismuth.

Bullets are available in several shapes—round nose, semi-round nose, flat nose, wadcutter, semi wadcutter and pointed, or spitzer, along with several types of bases, such as flat and boattail. On a side note, to prevent accidental discharges, only flat-tipped bullets should be used in firearms with tubular magazines. Jacket types also vary in composition and consistency, and will ultimately affect downrange performance.

The best bullet for the job depends on the task at hand. Full-metal-jacket bullets are good only for practice, pelt and dangerous game hunting. Traditional hunting bullets are available in hollow-point, soft-point, hollow-soft-point, frangible, tipped and solid configurations, and the best choice depends on the animal and the terrain hunted. In short, rapid-expansion bullets are good choices only for varmints and small deer, while controlled-upset versions work well for all but the most dangerous game, given an appropriate caliber is used and the bullet is properly placed. Construction of the bullet is also important, and will help determine bullet suitability. Ammunition companies and reloading manuals can provide recommendations for bullet use.

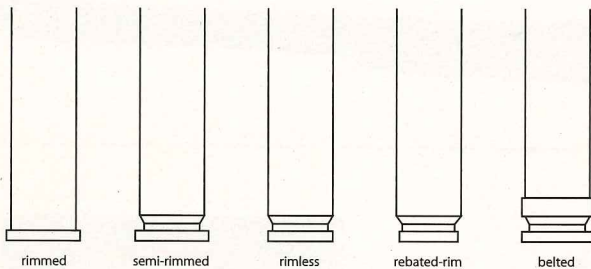
SHOT

Shot is generally manufactured from lead, which is usually alloyed with antimony to increase the hardness. The exception to this is non-toxic shot, which is assembled using different mixtures of bismuth, tungsten, iron, zinc, bronze, steel and polymer. The harder the pellet, the less

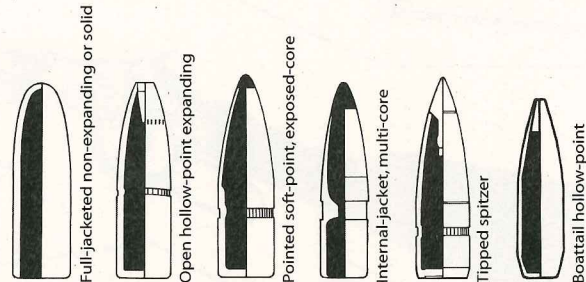
basewads. There are others that have a paper or full-metal hull or a paper basewad. Plastic is used most often because it is less expensive and more water resistant than other materials. Basewads come in separate and integral configurations and serve to control internal volume and reinforce the base area. To seal the front, shotshells usually have either six- or eight-point star-shaped crimps for hunting and target shot loads, and roll crimps for rifled slugs. Consistency and cleanliness of crimps affects pressure and performance of the shotshells. Most shotshell colors indicate gauge, or in the case of the .410, bore.

Yes, ammunition is a complex topic, but just as it's important to understand the anatomy that makes up your body, so you can take care of it, it's also important to know what you are putting inside your firearm to ensure its maximum performance. Next time you load your favorite firearm for target practice or varmint hunting, take a moment to appreciate the one product that hunters and shooters cannot do without, ammunition. 🦅

CASE TYPES



RIFLE BULLET TYPES



likely it will be deformed and stray outside the pattern. Pellets are classified by diameter. Those smaller than .200-inch diameter are referred to as shot and the larger-sized pellets are called buckshot. Buckshot is usually reserved for big-game and predator hunting, and home-defense, while smaller shot is used for everything from shooting clay targets to turkey and rabbits.

HOUSING THE GOODS

METALLIC RIFLE AND HANDGUN CASES

Commonly referred to as "brass," named for its composition, cartridge cases are what keep the entire works together—primer, powder and bullet. Brass is not the only material used for cases, as steel, aluminum and polymer, or a hybrid of these are also used. Cartridges generally have one of several head and rim configurations—rimmed, semi-rimmed, rimless, rebated-rim and belted versions—along with straight, tapered and necked body configurations. The primer is contained within the primer pocket at one end, the powder inside and the bullet seated in the front end.

SHOTSHELL HULLS

Most shotshell hulls have plastic bodies, metal heads—brass or brass-plated steel or aluminum—and plastic

PRIMER TYPES

There are two types of center-fire primers—Berdan and Boxer. Boxer is the one most often used in the United States. Cartridges have specific operating pressure limits, certain powder capacities and compatible powder types differing in composition and ignition requirements, so primers vary in the intensity of the heat they generate. Primers are further distinguished by diameter and consistency, or quality. For example, Large Rifle, Large Rifle Match, Large Pistol, Small Rifle and Small Pistol.

