

12 Gauge Shotgun Home Defense

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Home Defense Shotgun Models

The 12-gauge has a nominal bore diameter of .729 inch and a standard 12-gauge load is 1 1/8 ounces of shot. The standard 16-gauge load is 1 ounce, and the standard 20-gauge load is 7/8 ounce. If you can only have one shotgun, and you want to shoot a little bit of everything with it, better make it a 12 gauge. This ballistic advantage comes from the shorter shot column of a 12 when compared to any of the smaller gauges firing the same amount of shot. For example, one ounce of shot makes a shorter stack in a fat 12-gauge shell than it does in a skinny 20 gauge shell. A short shot column means fewer shot deformed by friction on their trip through the forcing cone, down the barrel, and out through the constriction of the choke. 1 ounce of shot in a 12 gauge has a column .690 inch long. The same ounce of shot forms a column .968 inch long in a 20 gauge, and 1.21 inches long in a 28 gauge. This means that 12 gauge guns pattern better than the smaller gauges with the same amount of shot, or just as well with more shot. The ideal home defense shotgun would consist of a short barreled model, 18- to 22-inches, chambered for 12- or 20-gauge. Recommended action would be pump or autoloader. Models worth considering include the Remington 870 pump action series, including the Police model and the nickel plated Marine Magnum; the Mossberg 500 Special Purpose, 18.5-inch barrel pump action; the Beretta 1201 and the Benelli Super 90 autoloaders; and the Winchester pumps: Defender, Camp Defender, and Stainless Marine.

High quality pump action shotguns offer a distinct advantage over autoloaders in the sense that their operation tends to be mechanically reliable, even under the worst of adverse conditions. They often represent the best choice for a home defense application because they can be stored or carried in a relatively safe condition: magazine loaded, chamber empty, safety on, hammer down. From this state the pump can be brought to bear on an assailant very quickly. There is no sound in the world quite as identifiable or as intimidating as the rhythmic "click-click" of a pump action shotgun being racked. Again, in a home defense situation, the gun owner is cautioned to secure any loaded firearm, including a pump action shotgun, in a responsible manner. A reliable, well made pump action shotgun can usually be purchased at a cost less than a comparable quality handgun. Advantages of the shotgun are threefold. There exists less danger of harming third parties through walls in the event of an errant shot; the potential for inflicting wound trauma to a criminal assailant is maximized, thus halting a violent confrontation quickly; and it is easier to hit one's attacker with a shotgun when compared to a handgun. A superior quality autoloader represents an acceptable alternative to the pump. The action of the finer models tends to be flawless. As with any autoloader, one must be careful after the initial shot not to inadvertently discharge the firearm. Practice unloading a cocked autoloader with a shell in the chamber. Repeat the drill until it becomes second nature. Naturally, do this routine in a safe place to allow for the potential of accidental discharge.

Always remember the primary rules of safety, and never touch the trigger until you are actually ready to shoot. For versatility, it is desirable to select a shotgun with a receiver chambered for at least 3-inch Magnum shot shells. This receiver will accommodate both 2-3/4-inch Standard and 3-inch Magnum shells, a worthy feature in the event ammunition ever becomes scarce. The "Super Magnum" receivers now available will function with 2-3/4-inch, 3-inch, and 3-1/2-inch shells interchangeably. For home defense, however, use 2-3/4-inch shells. The Magnum and Super Magnum loadings offer little incremental benefit in this type of application. Their tremendous recoil makes shooting uncomfortable for many, a factor which inhibits follow up shot accuracy. For the 12-gauge, shoot Standard 2-3/4-inch, 00 buck. It is a good idea to actually put into practice the concepts embodied in the motto "be prepared". This means possessing adequate ammunition before the need arises.

Accessories

- ▶ Accessories to consider for a home defense shotgun include synthetic stock and fore ends (standard on some models), pistol grips, rifle sights such as those found on deer barrels, or a bead sight such as that found on field barrels, a sling (standard on some models), a means of securing spare ammunition, and a method of illuminating the point of aim during poor light conditions.
- ▶ Bandoliers are the best means of keeping extra ammunition handy, shell holding stocks are acceptable, and side saddle shell caddies may be the least preferred due to their propensity to get in the way. You may wish to attach an extended magazine to the firearm as a means of increasing ammunition holding capacity above factory standard. These extensions are installed essentially without tools because they are machined to mate with the existing tubular magazine once the end cap is unscrewed. An extension can add up to five additional rounds of capacity to the existing magazine on some makes and models.
- ▶ A means of illumination is desirable. In defending one's residence, especially at night, you need to be absolutely sure of the intent of any intruder

Shotgun Pellet Ammunition

For home defense, a shotgun is superior to a handgun in terms of being able to stop a violent intruder as quickly as possible. A reliable, well-made, pump-action shotgun can usually be purchased for less than the cost of a handgun of comparable quality. Also, inexpensive birdshot ammunition, typically used for training applications, is about three-fourths the cost, round for round, of comparable handgun ammunition. Most people typically choose a shotgun for home defense for one of three general reasons: 1) to minimize wall penetration to reduce the danger to innocent third parties in case of a missed shot, 2) to maximize wound trauma to stop a vicious assailant as quickly as possible, or 3) because a shotgun does not require as much skill as a handgun to put lead on target.

A shotgun pellet produces wound trauma by crushing the tissue it comes into direct contact with as it penetrates. In order to produce wound trauma that will be effective in quickly stopping an attacker, the pellets must penetrate his body deeply enough to be able to pass through a vital cardiovascular structure and cause rapid fatal hemorrhage to quickly deprive the brain of oxygenated blood needed to maintain consciousness. Shotgun pellets are classified into two general categories: 1) birdshot, of which individual pellets are typically less than .20 caliber in diameter, and 2) buckshot, which varies in diameter from .24 caliber to .36 caliber. Table 1 and Table 2 list nominal size and weight information about lead birdshot and buckshot, respectively.

Table 1. Lead Birdshot

Shot Number	Pellet Diameter (Inches)	Average Pellet Weight (Grains)	Approximate # of Pellets per Ounce
12	.05	.18	2385
11	.06	.25	1750
9	.08	.75	585
8 1/2	.085	.88	485
8	.09	1.07	410
7 1/2	.095	1.25	350
6	.11	1.95	225
5	.12	2.58	170
4	.13	3.24	135
2	.15	4.86	90
BB	.18	8.75	50

Table 2. Lead Buckshot

Shot Number	Pellet Diameter (Inches)	Average Pellet Weight (Grains)
4	.24	20.6
3	.25	23.4
2	.27	29.4
1	.30	40.0
0	.32	48.3
00	.33	53.8
000	.36	68.0

Birdshot, because of its small size, does not have the mass and sectional density to penetrate deeply enough to reliably reach and damage critical blood distribution organs. Although birdshot can destroy a great volume of tissue at close range, the permanent crush cavity is usually less than 6 inches deep, and this is not deep enough to reliably include the heart or great blood vessels of the abdomen. A gruesome, shallow wound in the torso does not guarantee a quick stop, especially if the bad guy is chemically intoxicated or psychotic. If the tissue crushed by the pellets does not include a vital cardiovascular structure there's no reason for it to be an effective wound.

Many people load their shotguns with birdshot, usually #6 shot or smaller, to minimize interior wall penetration. Number 6 lead birdshot, when propelled at 1300 fps, has a maximum penetration depth potential of about 5 inches in standard ordnance gelatin. Not all of the pellets penetrate this deeply however; most of the shot will penetrate about 4 inches.

Federal Cartridge Company offers reduced recoil Personal Defense Shotshells in 12 gauge. Loaded with #2 lead birdshot and propel their pellet payloads at a velocity of 1140 fps.

For personal defense and law enforcement applications, the International Wound Ballistics Association advocates number 1 buckshot as being superior to all other buckshot sizes. Number 1 buck is the smallest diameter shot that reliably and consistently penetrates more than 12 inches of standard ordnance gelatin when fired at typical shotgun engagement distances. A standard 2 3/4-inch 12 gauge shotshell contains 16 pellets of #1 buck. The total combined cross sectional area of the 16 pellets is 1.13 square inches. Compared to the total combined cross sectional area of the nine pellets in a standard #00 (double-aught) buck shotshell (0.77 square inches), the # 1 buck shotshell has the capacity to produce over 30 percent more potentially effective wound trauma. In all shotshell loads, number 1 buckshot produces more potentially effective wound trauma than either #00 or #000 buck. In addition, number 1 buck is less likely to over-penetrate and exit an attacker's body.

For home defense applications a standard velocity 2 3/4-inch #1 buck shotshell (16 pellet payload) from Federal, Remington or Winchester is your best choice. We feel the Federal Classic 2 3/4-inch #1 buck load (F127) is slightly better than the same loads offered by Remington and Winchester. The Federal shotshell uses both a plastic shot cup and granulated plastic shot buffer to minimize post-ignition pellet deformation, whereas the Remington and Winchester loads do not.

Second best choice is Winchester's 2 3/4-inch Magnum #1 buck shotshell, which is loaded with 20 pieces of copper-plated, buffered, hardened lead #1 buckshot. For those of you who are concerned about a tight shot pattern, this shotshell will probably give you the best patterning results in number 1 buck. This load may not be a good choice for those who are recoil sensitive.

Third choice is any standard or reduced recoil 2 3/4-inch #00 lead buckshot load from Winchester, Remington or Federal. If you choose a reduced recoil load or any load containing hardened Magnum #00 buckshot you increase the risk of over-penetration because these innovations assist in maintaining pellet shape integrity. Round pellets have better sectional density for deeper penetration than deformed pellets.

Fourth choice is any 2 3/4-inch Magnum shotshell that is loaded with hardened, plated and buffered #4 buckshot. The Magnum cartridge has the lowest velocity, and the lower velocity will help to minimize pellet deformation on impact. The hardened buckshot and buffering granules also help to minimize pellet deformation too. These three innovations help to maximize pellet penetration. Number 4 hardened buckshot is a marginal performer. Some of the hardened buckshot will penetrate at least 12 inches deep and some will not.

Flechettes and Exotic Ammunition for Home Defense

Some shotgun cartridges are loaded with flechettes. These are small, steel, pointed dart-like projectiles with aft stabilization fins, and are commonly referred to as "nails with tails." The low cross sectional area of a single flechette, combined with the small amount of flechettes that can be loaded into a shotshell, makes them an inferior choice for home defense when compared to buckshot. Also, according to Second Chance Body Armor Company, flechettes are not effective against soft body armor, if this is a particular mission requirement for your ammunition. Steel shot also is ineffective against soft body armor.

There are other various exotic shotshells that are best classified as gimmicks. These include rubber buckshot, bean bags, steel washers, rock salt, "Dragon's Breath," bird bombs, ceramic slugs, "bolo" projectiles and so on. The efficacy of these loads is questionable at best, and we advise you to avoid them altogether

- ▶ If you're worried that a missed shot might penetrate through a wall and harm others, load your shotgun so that the first one or two cartridges to be fired is number 6 or smaller birdshot, followed by standard lead #1 buckshot (12 gauge) or #3 buckshot (20 gauge). If your first shot misses, the birdshot is less likely to endanger innocent lives outside the room. If your first shot fails to stop the attacker, you can immediately follow-up with more potent ammunition.
- ▶ With birdshot you are wise to keep in mind that your gunfire has the potential to NOT PRODUCE an effective wound. Do not expect birdshot to have any decisive effect.
- ▶ Number 1 buckshot has the potential to produce more effective wound trauma than either #00 or #000 buck, without the accompanying risk of over-penetration. The IWBA believes, with very good reason, that number 1 buckshot is the shotshell load of choice for quickly stopping deadly criminal violence.
- ▶ The term "Magnum" when applied to shotshells means "more shot." Magnum shotshells usually propel their pellets at a lower velocity than a standard shotshell.

Shotgun Slug Ammunition

Unless you live on acreage and anticipate engaging bad guys at distances beyond 25 yards, shotgun slugs are not a good choice for home defense, because of their enormous capability to over-penetrate a human body and common building materials.

The first shotgun "slugs" were probably round, lead "pumpkin balls." These were common projectiles for muskets and shotguns--any sort of smooth bore long arm--for a long time. Unfortunately, the accuracy of a lead ball fired from a smooth bore barrel is pretty sad. Hitting the target is problematical and precise bullet placement is nearly impossible except at very close range. Also, a lead ball has a very poor sectional density (SD), and consequently poor penetration. There had to be a better way. The answer, of course, was the rifled barrel. Imparting spin to a projectile to stabilize its flight was a quantum improvement in accuracy. Rifled barrels also made possible the conical bullet, and later the familiar spitzer (pointed) bullets used by most hunters today. But demand remained for some sort of solid projectile that could be fired from a smoothbore gun and used on medium game like deer. Some one-gun families did not own, and could not afford to buy, a rifle. What was needed was an improvement on the lead ball, both in terms of accuracy and penetration.

Foster type rifled slugs

The eventual solution to this problem was the Foster "rifled" slug. This is a short, blunt lead bullet that is solid in front and hollow in the rear, analogous to a badminton bird. And, like a shuttlecock, it is its weight forward balance that allows the Foster slug to fly through the air to its target with reasonable accuracy. Compared to lead balls, this was a big improvement in both accuracy and SD.

Heavy external "rifling" was cast into these Foster type slugs, allegedly to allow the air they flew through to impart a slow spin that would help stabilize the slug. Like most something for nothing schemes, the rifling proved ineffective, but it did provide some space for some compression if the slug had to squeeze through a tight choke. The name "rifled slug" stuck and is still in widespread use today.

Rifled slugs are offered by most of the major ammunition makers in a variety of shotgun gauges, including 12, 16, 20, and .410 bore. They used to be made under bore diameter to allow safe passage through any degree of choke, from full to cylinder. Cylinder bore guns are usually recommended for shooting slugs, but in some cases a full or modified choke barrel will give better accuracy with the undersize slugs. This may not always hold true these days, however, as Remington advertises that their "Slugger" rifled slugs are made oversize for better sealing against the barrel wall and superior accuracy. Compared to rifle bullets, whose diameter is held to very strict tolerances, Foster type slugs are made to rather haphazard dimensions that vary from one manufacturer to another. The use of slugs is best confined to single barrel shotguns, either single shot or repeaters. Double guns tend to crossfire with slugs due to the regulation of the barrels. A smoothbore "slug gun" with rifle sights will usually shoot groups in the 3" (6 MOA) range at 50 yards/meters, making them satisfactory deer hunting weapons at short range. An occasional example will do better, and some do worse. Their effective deer hunting range is limited by their accuracy, but the slug itself is dangerous to other hunters at far greater distances, an important point to keep in mind.

Compared to practically any big game rifle bullet, rifled slugs are not very accurate. They are a short range (100 yard or less) proposition at best. The ballistic coefficient (BC) and sectional density of rifled slugs is pretty pitiful. The only place they score high numbers is in recoil, where low numbers are desired. Shooting groups from a bench rest with a slug gun is not fun, as the recoil is considerable. If possible, *always* use a rifle in preference to a slug gun for any kind of big game hunting. Some jurisdictions in the U.S. forbid the use of rifles and mandate the use of shotgun slugs for deer hunting, allegedly for "safety" in crowded hunting areas. I am sure that this is what keeps rifled slugs viable as a sporting proposition. (They are also used in police "riot" guns, of course.) This is actually kind of funny in an ironic way, as the one thing slugs do really well is penetrate brush. Rifled slugs are probably the most dangerous type of ammunition to use in a wooded area crowded with hunters and other humans, as they plow through visually impenetrable brush, leaves, and small tree limbs with aplomb. A high velocity rifle with a frangible bullet would be far safer in such an environment. I have, for instance, seen .22 varmint bullets fired at very high velocity turn into a puff of blue smoke on a blade of grass! Conventional Foster type rifled slugs generally weigh 1 ounce in 12 gauge, 4/5 ounce in 16 gauge, 5/8 ounce in 20 gauge, and 1/5 ounce (or 87 grains) in .410 gauge. The 12 gauge slug has an advertised muzzle velocity (MV) of 1560 fps from a 2 3/4" high-brass shell, 1680 fps from a 2 3/4" Magnum shell, or 1760 fps from a 3" Magnum shell. These are Remington figures from their 2004 catalog. The MV's of the other gauges are similar.

The catalog energy figures for the common high-brass ("maximum") 12 gauge slug load are an impressive 2361 ft. lbs. at the muzzle, but only 926 ft. lbs. at 100 yards. This is due to the very poor BC of the slug. Sighted to hit dead on at 50 yards, that slug is 4.8" low at 100 yards.

The more powerful 12 gauge slugs are only marginally better, and kick noticeably harder. No matter what, rifled slugs remain a short range proposition. Stick with 12 gauge Foster type slugs for deer hunting as the smaller gauges pack much less punch. The 20 gauge slug develops only 648 ft. lbs. of energy at 100 yards, which given its low SD is not encouraging. I have done some testing with .410 rifled slugs and they are definitely not adequate deer loads. The less said about these small bore rifled slugs the better.

Brenneke, Buckhammer, and Trophy Slug

These resemble Foster type slugs with one important difference: the wad remains attached to the base of the slug. This provides a better BC and stability in flight, a better shuttlecock, if you will. The assembly is heavier than a plain rifled slug due to the weight of the attached wad. The difference in retained energy at 100 yards is considerable. The original design of this type, as far as I know, is the German Brenneke slug, offered by Rottweil. Brenneke rifled slugs still use felt and fiber wads, and are suitable for use in smooth or rifled shotgun barrels. Rottweil offers several slug loads in 12, 20, and .410. Their 2 3/4" 12 gauge slug weighs 1 1/4 ounce, and their 3" Magnum 20 gauge slug weighs a full 1 ounce. A MV of 1476 fps and ME of 2538 are claimed for the 12 gauge 2 3/4" Magnum load. More important is the 100 yard retained energy figure of 1170 ft. lbs.

Fiocchi of Italy offers the Aeroslug Trophy Slug, which appears to be a modernized and simplified version of the Brenneke design. It, too, is recommended for both smooth and rifled barrels. The Fiocchi Trophy slug weighs 1 ounce in 2 3/4" 12 gauge shells, and 7/8 ounce in 2 3/4" 20 gauge shells. Ballistics are similar to the Brenneke loads with somewhat less energy due to the lighter slugs. Perhaps the most creative design of this general sort, with which I am familiar, is the Remington Buckhammer. It is also the most recent innovation. The Buckhammer lead slug itself is a short truncated cone, rather like a lead "Keith" style revolver bullet. Attached to the base of this is a long, plastic "stabilizer" wad. Remington says that the Buckhammer was designed for use in fully rifled barrels, or with rifled choke tubes. The diameter of the lead slug is supposed to be .73", so I do not see why it could not be used in cylinder bore (smooth) shotgun barrels, but I have not tried it. Experiment at your own risk! 12 gauge Buckhammer slugs weigh 1 1/4 ounces in 2 3/4" cases or 1 3/8 ounces in 3" cases. 20 gauge Buckhammer slugs come only in 2 3/4" cases and weigh 1 ounce. These Remington Buckhammer loads claim the most impressive ballistics of the bunch. The 12 gauge 2 3/4" load has a MV of 1550 fps and ME of 2935 ft. lbs. The 100 yard figures are 1145 fps and 1600 ft. lbs. Zeroed at 50 yards, the 1 1/4 ounce slug should hit 3.6" low at 100 yards, so it is still a short range load. Naturally, they kick like the very devil in a shotgun of average weight.

Sabot slugs

These days most of the major shotshell manufacturers also offer sabot slug loads for 12 and 20 gauge shotguns. These are for use *only* in fully rifled barrels. How a long arm with a fully rifled barrel can be termed a "shotgun," I fail to understand, but that is beside the point. These loads are essentially equivalent to the kind of loads used in modern, high performance muzzleloading rifles.

Remington offers 12 and 20 gauge Premier sabot loads with both JHP bonded lead core bullets and solid copper hollow point bullets. The former are called "Premier Core-Lokt Ultra," and latter are "Premier Copper Solid."

The 12 gauge Core-Lokt Ultra sabot bullet is a .50 caliber, 385 grain HP semi-spitzer. The catalog MV is 1900 fps and the 100 yard velocity is 1648 fps. The ME is given as 3086 ft. lbs. and the remaining energy at 100 yards is 2325 ft. lbs. The trajectory of that load looks like this: +1.8" at 50 yards, +2.4" at 100 yards, and +/- 0" at 150 yards.

As I wrote at the outset, this are similar to the ballistics obtainable with high performance, .50 caliber, inline muzzleloading rifles. Accuracy is apparently not quite as good as the best muzzleloaders, as Remington claims consistent 2 1/2" 5-shot groups at 100 yards. But that is impressive accuracy from any kind of shotgun--even if it is really a rifle! Clearly, the use of these sabot bullet loads completely negates the rationale behind the "shotgun only" deer hunts. Not only are these shotguns with rifled barrels technically rifles, they shoot like rifles. In fact, they equal traditional big game rifle cartridges such as the .45-70 and .38-55.

For example, a .45-70 rifle shooting a 400 grain bullet (BC .214) at a MV of 1900 fps has a trajectory that looks like this: +2.1" at 50 yards, +2.8" at 100 yards, +/- 0" at 150 yards, and -7.2" at 200 yards (Speer figures). That is a very similar trajectory to the Remington Core-Lokt Ultra loads described above.

The Hornady .45 caliber, 300 grain XTP-Mag sabot bullet used in their 12 gauge factory load has a BC of .200, which I suspect is not much different than the BC of the Remington sabot bullet. Holding a scope's horizontal crosswire level with a buck's back should put the bullet into the heart/lung area at 200 yards. Some shotgun!

Slug loads for home defense

Questions about slugs for home defense arise fairly frequently in my mail so, briefly, here is my take on the subject. Shotgun slugs are dangerously over penetrative for most home defense scenarios. (You have no right to endanger your neighbors.) I suggest that, inside of a domicile, #4 buckshot is usually a more appropriate defensive shotgun load. If you are forced to defend a farm, ranch house, or cabin from external attack, a rifle will probably be superior to a shotgun stuffed with slugs. So I do not see much reason to choose shotgun slug loads for personal defense, except in special circumstances. Police use of rifled slug loads in the riot guns carried in cruisers is one example of a special circumstance. Many police agencies are reluctant to provide both rifles and shotguns for their patrol cars, so they issue rifled slug loads for use in shotguns. This allows the squad car riot gun to serve as a makeshift rifle if required. Slug loads may also be appropriate in some marine applications. In addition to birdshot and buckshot loads, I always kept a pack of rifled slugs handy for my "boat gun," a Mossberg 500 Mariner.

Shot Size Graphic

Lead shot sizes:	12	9	8½	8	7½	6	5	4	2	BB
Pellet diameter (inches)	.05	.080	.085	.090	.095	.110	.120	.130	.150	.180
(mm)	1.27	2.30	2.16	2.29	2.41	2.79	3.05	3.30	3.81	4.57

Buckshot sizes:	No. 4	No. 3	No. 2	No. 1	No. 0	No. 00	No. 000
Pellet diameter (inches)	.24	.25	.27	.30	.32	.33	.36
(mm)	6.10	6.35	6.86	7.62	8.13	8.38	9.14

Steel shot sizes:	6	5	4	3	2	1	Rifle	BB	BBB	T	F
Pellet diameter (in.)	.11	.12	.13	.14	.15	.16	.177	.18	.19	.20	.22
(mm)	2.79	3.05	3.30	3.56	3.81	4.06	4.49	4.57	4.83	5.08	5.59

Note: the size of shot, whether lead or steel, is based on American Standard shot sizes. Thus: a steel No. 4 pellet and a lead No. 4 pellet are both .13 inches (3.3mm) in diameter.

SIZE #	9	8-1/2	8	7-1/2	6	5	4	3	2	1	BB	BBB	T	#4	00
DIA. IN	.08	.085	.09	.095	.11	.12	.13	.14	.15	.16	.18	.19	.20	.24	.33
DIA. MM	2.03	2.16	2.29	2.41	2.79	3.05	3.30	3.56	3.81	4.06	4.57	4.83	5.08	6.10	8.38

Lead Pellets in Various Loads

Lead Pellets	9	8-1/2	8	7-1/2	6	5	4
1 oz.	585	480	409	345	232	172	136
1 1/8 oz.	658	540	460	388	251	194	153
1 1/4 oz.	731	600	511	431	276	215	170
1 3/8 oz.	804	660	562	474	307	237	187
1 3/4 oz.	-	-	-	-	395	304	239

