UNDERSTANDING THE COMPLEX WORLD OF CHOKES

By Heidi Lyn Rao

Understanding chokes can be very perplexing unless you get rid of the mindset that “all improved cylinder chokes pattern like all improved cylinder chokes”, “all modified chokes pattern like all modified chokes,” and “all full chokes pattern like all full chokes.” Just because a choke is stamped or marked for a certain constriction, does not mean you are necessarily getting the constriction it says. The true pattern of your shotgun is determined by the relationship between your shotgun barrel and the choke.

Identifying a Shotgun’s Choke Pattern

Chokes constrict the shot pattern as it exits the barrel of the shotgun, holding the shot pattern together for a specified distance. These constrictions are shown as “Thousandths of an Inch.” The measurement, thousandth of an inch, is equal to 1/1,000

of an inch. Most shotgunners believe that if their shotgun's choke is marked as a cylinder, skeet, improved cylinder, modified, improved modified, or full choke, that will be the pattern, or "spread" that will come out of their muzzle.

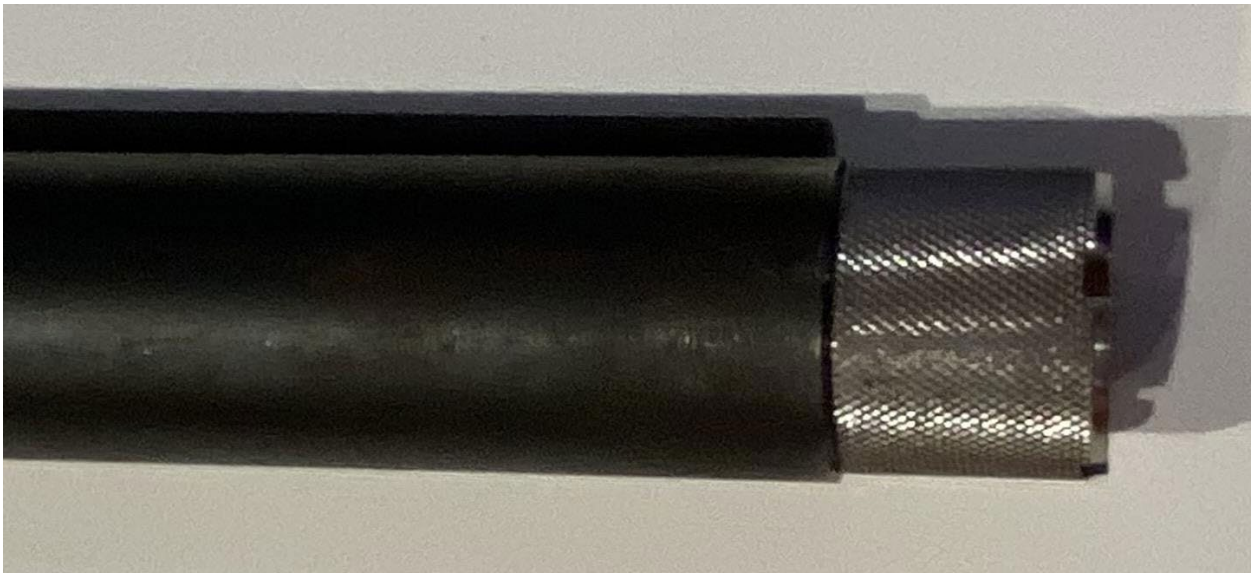
Choke constrictions for the common 12-gauge and 20-gauge shotguns are as follows:

12 Gauge – cylinder (.000), skeet (.005), improved cylinder (.009), modified (.019), and full (.035).

20 Gauge – cylinder (.000), skeet (.004), improved cylinder (.006), modified (.014), and full (.025).

Shotguns either have choked barrels, also known as "fixed barrels", or they have screw in chokes. Choked barrels should be marked on the barrel(s) "Imp" if the entire barrel is choked as an improved cylinder, "Mod" if the entire barrel is choked as a modified, or "Full."

Screw in chokes come in many constrictions with the most common being skeet, improved cylinder, modified, or full chokes. The constriction for screw in chokes will be spelled out and marked on the choke, or depending on the manufacturer will be identified by notches or asterisks around the rim of the choke. Each manufacturer has their own unique marks on their chokes indicating the constriction of that particular choke.



There are also gauges on the market that you can stick into the choke when it is screwed into the barrel and get a measurement in thousandths of an inch. By relying on the identifying marks on your choke or by using a gauge, the best you can hope for is a close estimate.

Determining Your Shotgun's Choke Patterns

When determining your shotgun's choke patterns, it is important to remember that the actual diameter of a bore varies from gun to gun. This means that the actual constriction is going to vary between guns with choked barrels or screw in chokes. The only way to determine the exact choke or constriction of the barrel is to physically measure it. The formula for determining the choke of your firearm is: Bore Diameter minus Choke Diameter equals Constriction (BD-CD=C).

To get the measurement, you first need to determine the exact constriction. To find this, you need a bore gauge.

A bore gauge is used by inserting this instrument through the muzzle and taking a measurement in the barrel, behind the choke before the constriction starts. The second measurement is taken in the choke at the point of most constriction. The difference between these two measurements will give you the exact constriction of your choke.

Since the bore diameter of different barrels vary slightly from each other and chokes vary from each other, you could get measurements that vary from .001 inches to .003 inches. That means that you may think you are shooting a modified because of the choke you have in your barrel, but in reality, it may be closer to an improved modified constriction.

The Proper Way to Pattern a Shotgun

The constriction, or choke, of your barrel can also be determined by patterning your shotgun. To get the exact constriction, this technique must be properly done. If you do not properly pattern your shotgun, the results will be close, but not exact.

Interpreting choke patterns can be just as perplexing as understanding chokes. Once again, you must get rid of the mindset that all improved cylinder chokes pattern like an improved cylinder choke, a modified choke patterns like a modified choke, and a full choke patterns like a full choke. First, you must decide if you are only interested in a close percentage of hits on your target or a more precise number.

To pattern a shotgun, we use a “pattern board.” Most people think that all you have to do is set up a large piece of plywood or affix a large piece of butcher paper on a target stand 40-yards away, mark a dot in the center of the paper to aim the shotgun, then slap the trigger. He or she then draws a 30-inch circle around the densest group of pellet holes. Many shotgunners think that all you do at this point is count the number of pellets that hit the paper inside the 30-inch circle, or pellets that touch the line, and divide that number by all the holes in the target, including the ones inside the 30-inch circle. This number will give you your percentage of hits.

Pattern Board – photo by Orston Shooting Ground

This is a good way to get a quick idea of your shotguns pattern, but it is only a close representation of the percentage of hits. For some shooters, close is good enough. But, if you are one of those shooters who want to be precise and want to know the true percentage of hits, you need to follow a few extra steps.

First set up your pattern board as described above. Shoot at an aiming point and draw a 30-inch circle around the densest amount of hits or holes in the paper. Then count the number of

holes in the circle, including the ones touching the line. Write this number down. You then need to perform these tasks two more times so that you have three sets of numbers recorded.

Second, cut open three shotshells of the same type you shot to pattern. Pour the pellets in a bowl and count them all. Take the total number of pellets and divide the number of pellets by three. This will give you the average number of pellets in each shotshell.

The third step is to take each of the hits or holes that you recorded in step one and divide that number by the average number of pellets in each shotshell that you recorded in step two. This should give you three percentages of hits.

The fourth step is to take the three percentages of hits that you recorded in step three and add them together. Take this number then divide by three. This will give you the average percentage of hits for your shotgun.

The late Jack O'Connor, the "Guru of Guns", set the standard for acceptable percentages of shotgun patterns in his book, "The Complete Book of Shotguns and Rifles." In his book, Jack O'Connor states that the acceptable range of Cylinder Choke is 35-40%, Skeet Choke 35-40%, Improved Cylinder Choke 45-50%, Modified Choke 55-65%, Improved Modified Choke 65-70%, Full Choke70-80%, and Extra Full Choke is more than 80%.

Understanding the complexities of chokes will almost always make you a better shooter. If you have ever wondered why you missed that easy shot, or if you are having trouble improving your shotgun skills, the issue might be the relationship between your choke and your barrel. By determining the exact constriction of your shotgun, you can better determine the lead ahead of the target before slapping the trigger. When hunting, it can also help you in determining the distances that you are able to make that quick, clean, and ethical kill.

One of the things that is often taught regarding gun safety is knowing your firearm. By knowing your firearm, you become aware of the gun's limitations as well as your own. Remember, by taking the time to determine the exact constriction of your shotgun's choke reflects on how serious you are as a shooter in knowing his or her firearm.