

Pattern perfect

Longthorne Gunmakers examine what elements of gun and cartridge are needed to create good shot patterns

Unlike converging barrels found on most guns, Longthorne barrels are not only unique in that they are manufactured from a single piece of steel, improving both the rigidity and accuracy, they are also straight and parallel which means that the projectile exiting the barrels remains on a constant path (excluding the effects of wind and air resistance) – this in itself improves the resulting pattern.

The fixed choking on a Longthorne gun is unlike most other fixed chokes and definitely not like a multi-choke in its design. The cylindrical and concentricity (alignment between the choke and the barrel bore) are within 10 microns. The choke area of the barrel is also extended. For instance, on a full-choke gun the taper starts at approximately 150mm from the muzzle; this guides the shot smoothly from the barrel, and in tests we have performed the pattern has a tendency to last longer over a greater distance, depending on the choice of cartridge, shot size, and muzzle velocity (speed).

In theory, the perfect cartridge would contain the shot in a receptacle to provide a seal between the barrel bore and also the expanding gas. The perfect powder would be detonated and continue to

burn for at least three quarters of the barrel length providing a smooth and continuous acceleration of the shot load and then the wad would pause momentarily just before leaving the barrel allowing the shot to continue unhindered by the pursuing expanding gas. Unfortunately, this would be very difficult to achieve, so compromises have to be made.

It is a common misconception that if certain cartridges kick more, they get to the target faster and must be doing a better job. This is totally incorrect; initial velocity isn't the answer. The 'kick' can be due to a fast-burning powder over a slower burning powder and still result in the same muzzle velocity.

Too much velocity can be detrimental to the pattern as it becomes 'blown' as the pellets scatter and the pattern density becomes unacceptable.

At Longthorne we test many cartridges in our guns, and if you want to make a good pattern it is preferable to use a slower muzzle velocity with a plastic wad – no matter what – because it works.

The reason for this is that the plastic wad contains the shot in a cup until it exits the muzzle. It is unaffected by the gas pressure behind it whilst in the barrel. Once exiting the barrel, the plastic

wad splits a few metres in front of the muzzle allowing the shot to fly freely, unaffected by the pursuing gas eddies (an effect of the gas pressure from the shot charge).

Unfortunately, the downside to this is the environmental impact of a plastic wad. The modern-day solution to minimise environmental impact would be a truly biodegradable equivalent to a plastic wad – unfortunately, a rarity at the moment.

When using a fibre wad it is preferable to reduce the velocity as this will help with the pattern density.

When testing a fibre wad cartridge versus a plastic wad cartridge with the same shot load, size and muzzle velocity (e.g. 1450fps), the plastic wad cartridge will pattern tighter with a more uniform pattern. However, if the velocity of the fibre wad cartridge is reduced by approximately 10 per cent to 1300fps, the pattern size and density will be improved.

So, while the choice of cartridge is a vital factor in achieving good patterns, the quality of the gun's barrels are also a major factor. You should test your gun with different cartridges to see which ones give the desired result as every gun is different. ■

For a useful guide to patterning, go to www.browning.com/customer-service/qna/index.asp?offset=20



The quality of a gun's barrels are a major factor in achieving good patterns

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CONTACT DETAILS

To contact Longthorne Gunmakers:

- Web: www.longthorneguns.com
- Tel: 01772 811215
- Email: admin@longthorneguns.com
- You can also follow them on Facebook and Twitter: @longthorneguns