

Ergonomics vs aesthetics vs mechanics

Striking the balance between the looks and the performance of a shotgun requires careful consideration. Here, Longthorne discuss their approach

At Longthorne we believe that good gun design should be a combination of ergonomics, superb aesthetics and reliable mechanics and sometimes it's a very fine balance. It's no good designing guns which have stunning looks but are uncomfortable, tiring to use or fail in the field. For this reason we think very carefully about all the design aspects of Longthorne guns and we use some very sophisticated software to help us with this.

When manufacturing our stocks we take into account all aspects of the stock design, including length, height at front and rear of the comb, radius and thickness of the comb. Being able to adjust the comb is critical as it controls where the gun points in relation to the user's eye. Whereas cast at heel and toe, heel shape and angle contribute more to the comfort and ease of use of the gun.

We prefer to use a minimal amount of cast and the comb shape should be offset and adjusted to allow the eye to be in line with the rib; we quite often tweak this during a final fitting which can mean removing as little as 0.3mm to give the final perfect fit.

Not everyone's hand is the same size and they should not be faced with a grip that they can't get their hand around. We, therefore, adjust the grip shape (with palm swell or not) to the user's hand. If the gun is more controllable, as ours is, an oversized grip is not necessary to control the gun and we are therefore able to make it look more pleasing to the eye, although that said we are able to make any desired shape.

Recent investment in three-dimensional scanning equipment has meant that we are now able to

manufacture an 'ergo grip' of the user's hand from a gel mould. This is also useful when making multiple sets of guns as we are able to duplicate the 'fitted' stock exactly. This technology will come into its own for competition shooters or for those clients with multiple matched guns and will be fully operational when we move to our new factory later this year.

Fore-end wood design has more aesthetic influence than the mechanics or the ergonomics, but still has to be comfortable to use. We offer several different shapes and sizes for this reason, such as slim beaver tail, beaver tail, schnabel and



The trigger is located close to the rear of the trigger guard with the oval hole

Measuring the height of the action



Longthorne blend modern technology, materials and expertise with traditional methods to produce shotguns to suit today's demands.



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slim game, which is almost flat-sided, ensuring that there is something to suit all tastes.

A dilemma we often come up against is whether or not we insert a ‘hard’ fore-end spring so that in the event of the user accidentally placing his finger on the fore-end release button whilst shooting, as shooters occasionally do, the fore-end doesn’t come off... or should we make the spring softer so that the user can remove it easily? More senior clients often prefer a slightly softer spring.

Some clients like their fore-end wood-to-metal fit looser; others like it tighter. We tend to make them tighter as a matter of course as this helps to prevent the ingress of water, but over time this does sometimes remove some of the blacking on the barrels where it makes contact beneath the wood; it has to be a compromise.

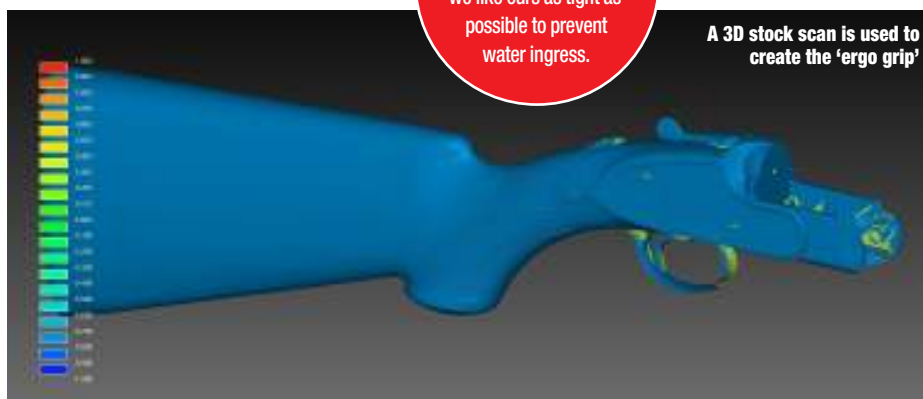
We sometimes get asked why we put the oval hole in some of our triggers. We feel that this not only adds to the appearance of the trigger, but also makes it lighter to use and positions your finger at the tip of the trigger, not allowing it to ride upwards, and therefore ensuring that the trigger pull weight is consistent. We believe that the trigger pull should be around 3lb for a shotgun. This is something rarely thought about by clients,

The integrated bridle strengthens the side plates



A tighter wood-to-metal fit prevents water from entering the fore-end

Fore-end wood-to-metal fit is a matter of personal preference, but we like ours as tight as possible to prevent water ingress.



A 3D stock scan is used to create the ‘ergo grip’

PICTURES: LONGTHORNE

but if you have a long ‘lever’, the trigger pull weight is reduced but the amount of travel is increased. If the trigger is pulled from closer to the action body, the weight is increased and the travel reduced.

The Longthorne over-and-under action is very low profile, possibly the lowest profile over-and-under action in the world, which makes it pleasing to look at but also practical, as it streamlines the gun and, combined with our low profile barrels, contributes to its minimal muzzle flip and felt recoil. The integrated bridle on our side plates ensures that they are stronger and lighter and don’t shake loose, ensuring consistent quality and a better result, despite being more difficult to manufacture. Fewer moving parts result in a stronger product.

This brings us to our barrel design. When we first started designing our guns we went down the ‘conventional’ route, but felt we could improve upon it. As engineers we were able to adopt the same philosophies and engineering methodology used in the manufacture of precision components and injection mould tools, and make them from one solid piece of high specification steel. We are able to make our barrels lighter in weight, despite the thicker walls the barrels have compared to conventionally produced barrels, which also

makes them strong. Eliminating the wide central rib and replacing it with a small I-beam allows the distance between the barrels at the breach face, and also the muzzle end, to be reduced and accommodate the low profile action. The parallelism of the barrels also ensures that the shot leaving the barrel maintains a constant path to the point of aim.

In summary, at Longthorne we are strong advocates for using modern technology, materials and expertise available to us, whilst maintaining traditional skills and methods to produce shotguns to suit today’s demands.

If you are interested in a career at Longthorne, we will soon be setting up a new factory in Northampton. Please contact us for an application form. ■

CONTACT DETAILS

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