

The growth of intaglio engraving

By Peter Kettle, 3D Product & Sales Manager, Roland DG (UK)

Recently Roland DG (UK) has witnessed an increase in the take up of intaglio engraving; this is sometimes referred to as sharp cornering or V-carving, so called because a cross-section would appear V-shaped. This is principally due to the affordability of software, such as Roland's EngraveStudio which is provided as part of the EGX-350 desktop engraver package.



EGX-350

Such software allows engravers and sign-makers to produce bevelled, 3D lettering by engraving at a range of depths to create stunning designs. For example, if you're engraving something with a Times Roman font, you can create a 3D effect by engraving at full depth on the wider areas moving to a progressively shallower depth for the serifs and letter edges. The effect is striking. Traditionally, intaglio engraving has been solely the preserve of the expert hand engraver or wood carver. While this is not to suggest that digital technology will ever replace hand skills, V-carving software does allow more users to produce a higher quality product, which has a much greater perceived value by the customer.

Identifying opportunities, such as intaglio engraving, that increase the value and appeal of engraving is of particular importance now because some traditional applications for engraving are being challenged,

and in some cases replaced by durable colour printing. At Roland DG, of course, we witness this first hand, because we are the leading developer of durable print technology. However, intaglio engraving cannot be replaced by print, and it opens up a whole new range of materials to the customer, including laminates, wood, slate, Corian, brass, acrylic, foam board and aluminium.

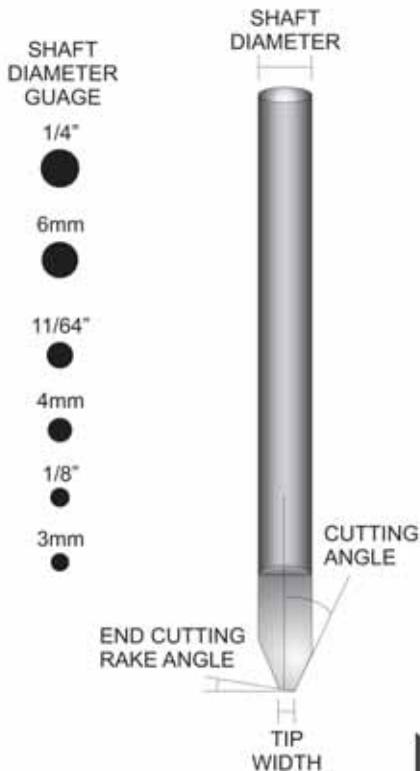
People may be surprised to hear that intaglio engraving is no more difficult than the traditional single-depth variety. All the operator needs to do is tell the software what cutter they are using and the software calculates the tool's path.

This is where a little bit of knowledge can make all the difference. The following pages are extracts from the Roland Academy 'introduction to engraving' course. The charts will help you identify your cutter, the tip size and the cutting angle. Although not a totally accurate method, it is enough to ensure the desired effect when engraving.



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Roland DG (UK) has seen a growing interest from both general engravers and sign-makers looking to produce higher value products and open up additional revenue streams. Increased accessibility of this kind of software will ensure that this trend will continue throughout the coming year.



When ordering new cutters, you will need to choose the correct shank length and diameter for your machine and your desired tip size, cutting angle and sometimes side clearance angle.

Shaft length - the total length of the cutter.

Shaft diameter - the width of the bar the cutter is ground from.

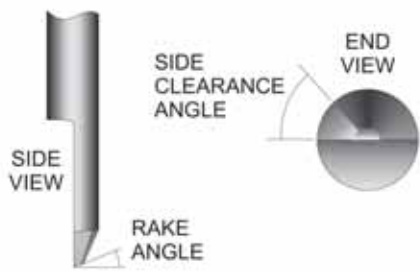
Cutter tip width - the size of point/flat which sets the width of engraving.

Cutting angle - the shape of the conical part of the cutter. Broad angles are stronger, but affect the width of engraving more depending on depth.

Side clearance angle - this sets the amount of metal behind the cutting edge. More metal means stronger cutter, but more heat/friction with the material can cause melting.

Rake angles - to ensure only the cutting edge is in contact with the material, the tip is ground to an angle.

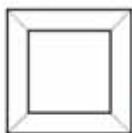
For single line letter styles, the cutter tip should be 10% of the letter height.
 For 2, 3, or 4 line letter styles, the cutter tip should be 5% of the letter height.
 For multi-line or fancy fonts, the cutter tip should be 3% of the letter height.



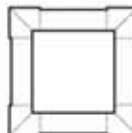
Setting the correct cutter angle is essential when creating 3D toolpaths. Applying the wrong angle in the software will produce poor results when engraved.



The programmed cutter angle is smaller than the actual cutter used. The engraved square has rounded corners.



The programmed cutter angle matches the actual cutter used. The engraved square has sharp corners and smooth side walls.



The programmed cutter angle is larger than the actual cutter used. The engraved square has sharp corners, but the area around each corner bulges. If you are engraving multiple depths, you may also see steps in the side walls.

In order to apply the correct angle in software you must first measure your cutter. Microscopes with graduated reticules exist to gain accurate measurements. However, the scales below will help you gain an adequate indication.

With the tip of the cutter facing right and the flat face uppermost, align the top edge of the cutter shaft with the horizontal line. Slide the cutter along the line so that the cutting edge can be checked against the angled lines. Find the closest match to identify the angle.

