The task: Given the shown curved surface, pull out a piece from its top and connect (stitch) it to the remaining portion of the surface, through faces that extend between the two pieces. For example, we may wish to pull out a piece shaped as shown above right.

1. Execute a Split With Line operation by selecting the curved object and then the line.
2. Move the piece inside the split line upwards.
3. Using snapping to point and the Vector Line Draw tool, draw two closed lines that coincide with the split lines.
4. With the Create Mesh tool, using options At Point and No Rounding for both length and depth, generate a mesh.
5. Stitch all the pieces together.

A

B All steps as above, except that, in step 2, a parallel object of the piece inside the split line is derived.

C All steps as in A, except that after step 3, two more copies of the split lines are made, scaled, and positioned appropriately. They are then used as control lines and a mesh is generated for the side faces.

D All steps as in C, except that in step 2, the split piece is not moved, but scaled down in its position, leaving a gap from the other piece of the surface. A number of copies of the split lines are made, scaled, and positioned, then used to generate a mesh that extends between the two pieces of the surface.

E Embossing a circular shape onto another surface.

**Embossing surfaces**

Given the task of pulling a portion of a curved surface upwards or inwards, and then connecting it to the remaining portion of the surface (what a printer would call embossing), the first step is to split (cut) the piece from the main body of the surface. Tools to do this are already available in form-Z. In this example, an open surface is embossed using a Split With Line operation. Were the curved surface a solid, then using an extruded solid as the splitting object would give better control of the position of the split.

In example A, the split piece is simply moved up. Subsequent examples show different ways in which the split piece is shaped, such as by deriving a parallel surface from it (B), or by scaling it.

There are also a variety of ways in which the side faces between the two split lines can be generated, such as with or without applying rounding. In all cases, they have to start with lines that are exactly coincident with the split boundaries, to allow proper stitching of all the parts at the end. With the current version of form-Z, these lines can be derived by tracing (redrawing) the two split lines using point snaps. This is a key (and also relatively tedious) operation. In example A, we only need to trace one of the split lines, and then copy it and move it the same distance the split piece was moved. In example B, where the split piece was also transformed, the split lines are no longer the same, and each needs to be traced separately. In example C, the traced lines are copied, transformed, and then used for the generation of a mesh. This is also done in examples D and E.

**Conclusion:** Would it be desirable to offer a tool that embosses surfaces as shown here? Our examples should have shown that there are so many different ways in which users would want to execute such an operation, that formalizing it into a tool which executes it automatically would be undesirable. What we need to offer (and will) is a variation of the Derive Surface Object tool that will derive an object (shape) from the boundary lines (sequence of segments) of surfaces (as it is now done for outlines, faces, etc.). This and the ability to stitch multiple objects with a single operation (see previous section) will certainly eliminate the two most tedious steps of the embossing operation.