

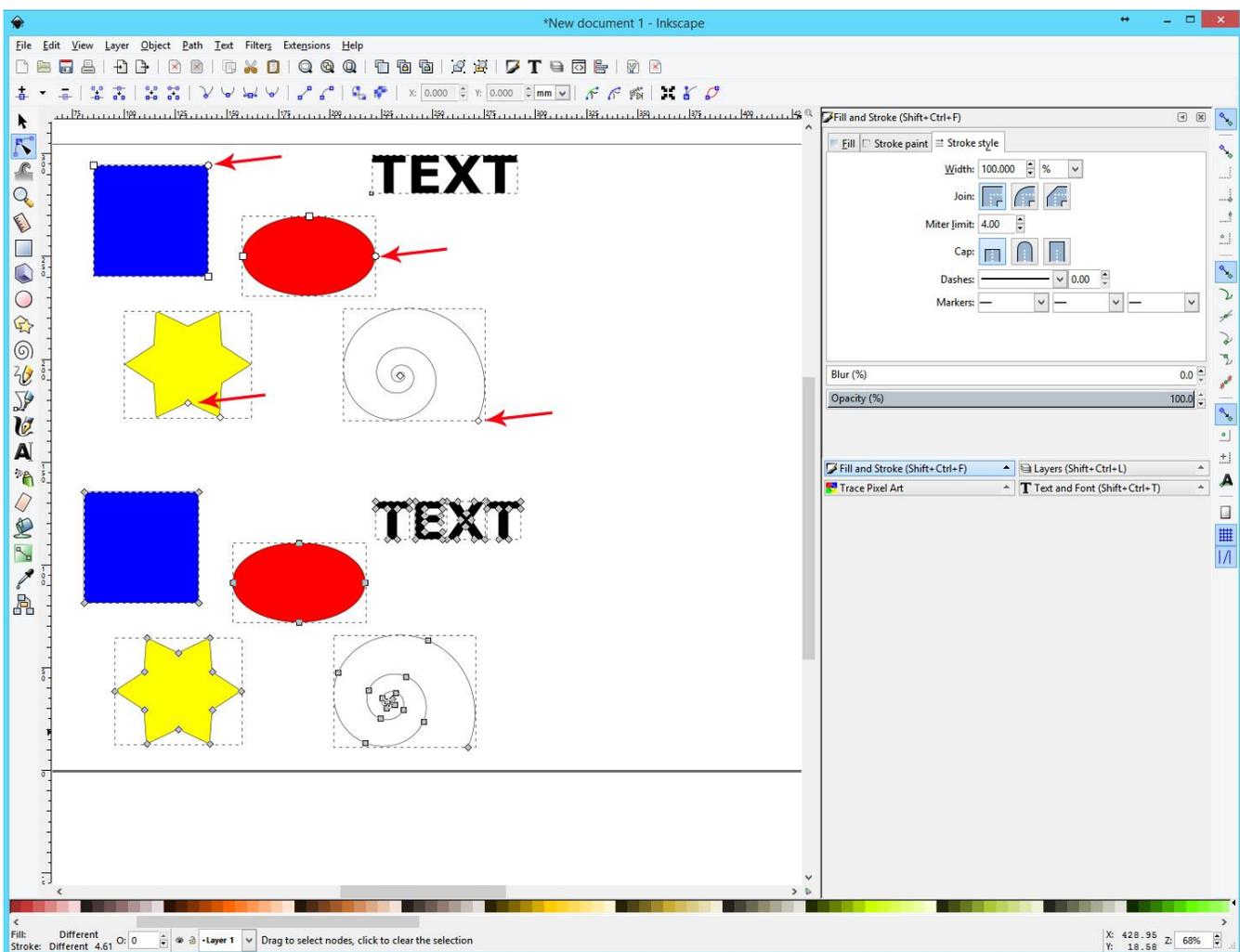
Object to Path, Stroke to Path, and Expanding Appearance in Inkscape

Inkscape treats its pre-defined shapes a little bit differently than some other drawing programs. The shapes like rectangles, ellipses, polygons and spirals each maintain a defined relationship between the segments that make up the shapes. *(This defined relationship also applies to fonts and type.)*

That's not altogether unusual for drawing programs. But for these objects in Inkscape, one or more **control handles** are built into the shapes themselves. Dragging on these handles impacts the whole shape, and some very interesting effects can be achieved with them in the edit process.

In order to edit specific points and alter the overall shape though, it's necessary in Inkscape to **convert these objects to a path** first.

Select the items, click on **Path > Object to Path**. Clicking on **Object to Path** locks the shape into place by applying the nodes and segments needed to create that shape. Those nodes can then be edited, giving you control over the shape.



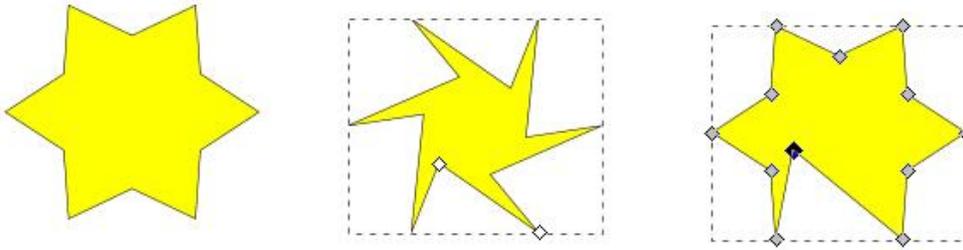
The top shapes above show the white **Control Handles**. The shapes and text underneath have been converted into paths. Notice that square gray editable nodes now appear on the bottom versions.

Designing with the Control Handles versus Nodes

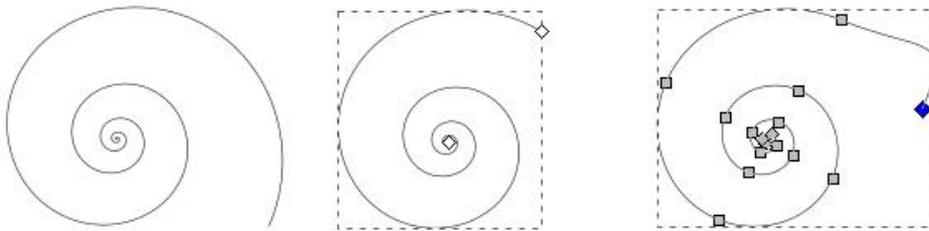
Dragging on the control handles as opposed to dragging on the converted nodes gives a very different result.

A few examples:

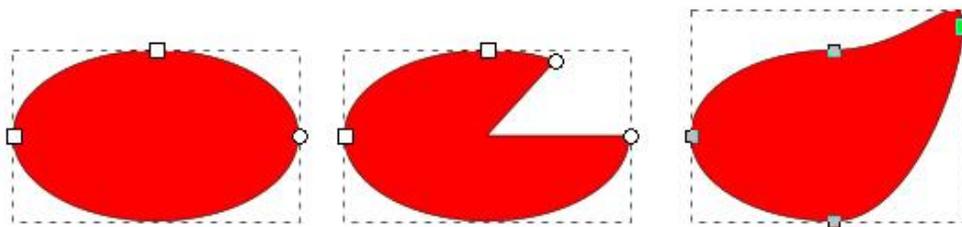
Drag a control handle up and to the left, versus dragging a node up and to the left.



Drag a control handle up and around to the left, versus dragging a node up and to the left. You can't select anything but the control handles on the unconverted spiral.



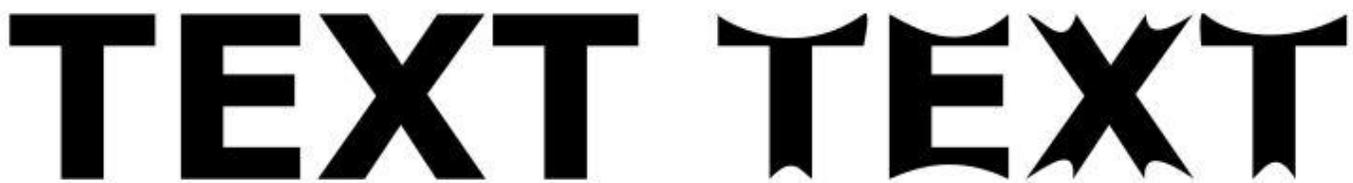
Drag a control handle up and around to the left, versus dragging a node up and to the left. The round control on the ellipse shape starts subtracting a wedge from the oval.



Converting Text to a Path

It's good practice to convert your shapes to a path after you have finished manipulating them. Text should generally be converted to a Path before sending it to be processed by the laser. One reason for that is, if you send it as text, the font you used might not be available on the destination server. The **one** way to make absolutely sure that what you designed turns out exactly the way you want it to, is to convert it to a path before you save it as an SVG. Another reason is that if you want the laser to cut the text instead of treating it as an item to be engraved, you have to assign a path to it. The laser interface might not recognize it as a cuttable item unless you do.

In addition, in order to modify the text in any way, you have to convert it first. Text is not editable for shape until it's converted. Convert it by selecting it and choosing **Path > Object to Path**.



TEXT TEXT

Converting Strokes to Paths

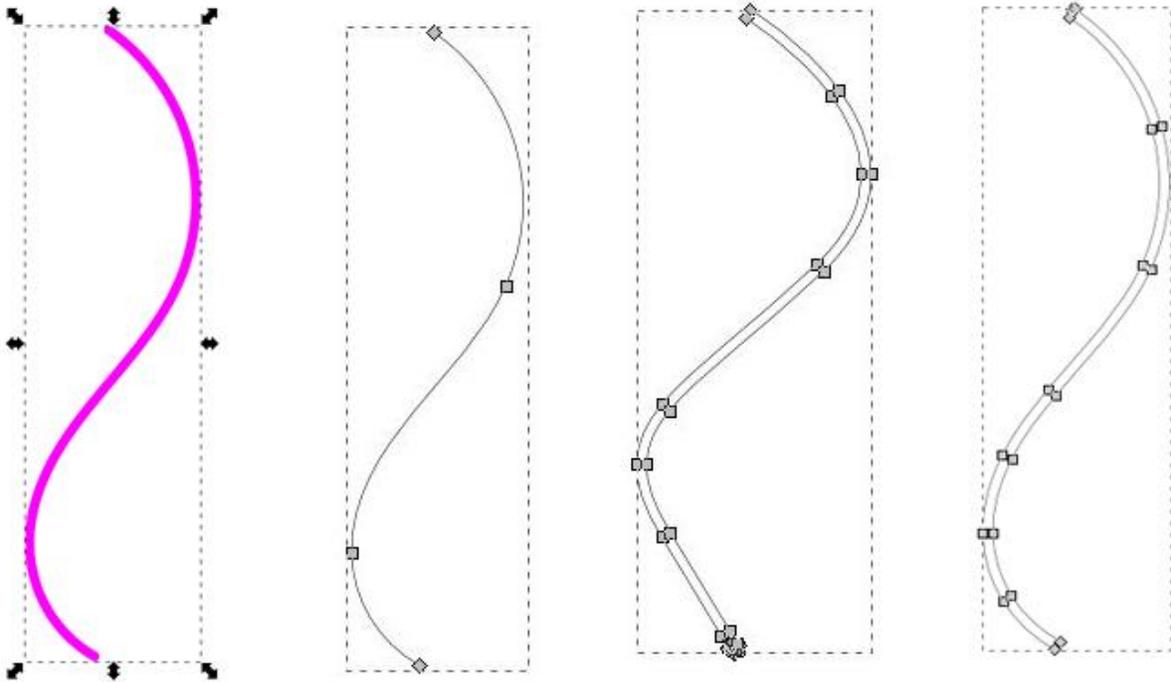
Convert a stroke to a path if you wish to use the width of the stroke as part of a design element. Doing so changes a single vector path that runs down the center of whatever stroke width you are using to an enclosed shape. The laser will follow around the outside of the stroke, instead of going down the middle of it.

But there is a bit of a catch.

One thing I've noticed with Bezier curves in Inkscape is that what is displayed on the screen is **not** always the actual shape of the underlying vector path. (*You can tell by hovering the mouse over the path while in Edit mode. The actual vector path will flash red.*) The reason for it is the smoothing function built into Inkscape.

If you try to go directly from a single stroke curved path directly to **Path > Stroke to Path**, you might get some unexpected results, because there might be smoothing applied to the curve.

In order to get an accurate external trace of what you see as a curved stroke, you need to select it, click on **Path > Object to Path**, and **then** click on **Path> Stroke to Path**. The first sets the shape, the second outlines around the outside of the stroke.



As an example:

You might think that the thick stroke single line object at the left has a vector path associated with it like the second image, and it does. If you want to cut directly down the center of the stroke, that is the path that should be followed by the laser.

But if you want the laser to cut out **around the outside of the stroke**, and you immediately go to **Convert Stroke to Path**, the paths generated will look like the third image. You can tell that the shape is a lot sharper at the curves than the original.

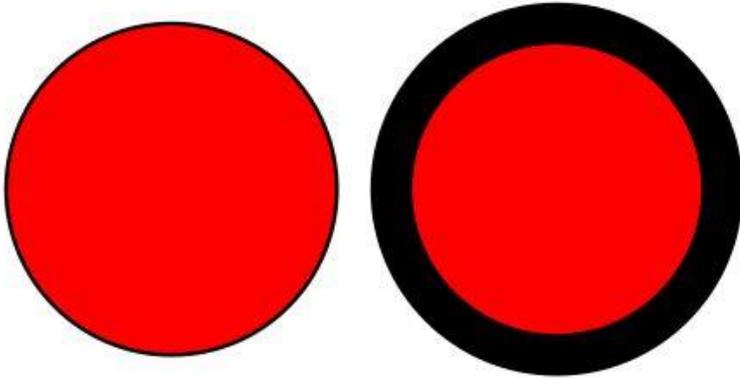
In order to recreate the original shape, you will need to first click on **Path > Object to Path**, and then click on **Path > Stroke to Path**. *(last image)*

Straight lines convert just fine by going directly to **Stroke to Path**. *(Some slight editing might be necessary at one end – the conversion seems a little touch and go at the end point of the path.)*

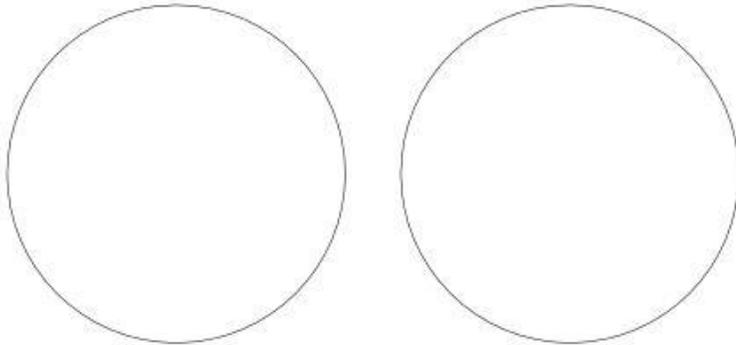
It's just something to be aware of and compensate for in your design.

Converting Filled Shapes using Stroke to Path

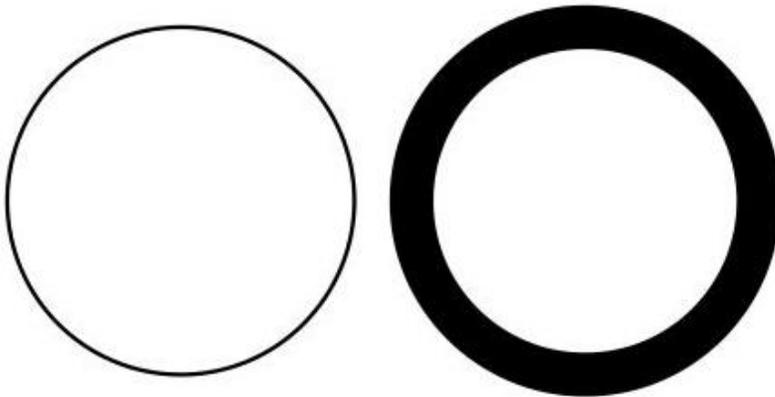
You can convert a Filled shape with a Stroke using **Stroke to Path**. The Fill will be removed, and a path will be placed on either side of the Stroke. An example below:



These filled circles are the same size. The vector path runs down the center of the thick stroke on the right, and down the center of the thin stroke on the left.

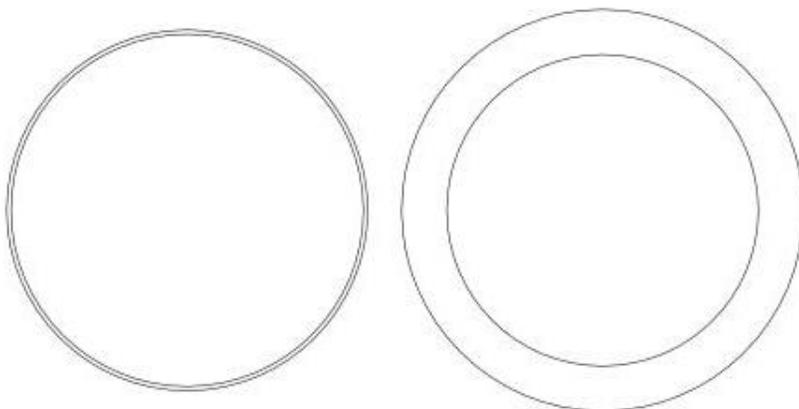


These are the same two circles in **Outline Mode**.



These are the results of applying the **Stroke to Path** option. The fill is removed and a vector path is applied to either side of the stroke. The stroke color becomes Fill for the ring that remains.

You won't see that unless you switch to **Outline View Mode**.



Notice that even for that thin stroke line, there are two vector paths applied, right next to each other. One on the inside of the original stroke, and one on the outside. Always check for double lines by switching to **Outline** mode to review your results.

(The computer can see stroke widths much smaller than we can.)

Expanding Appearance

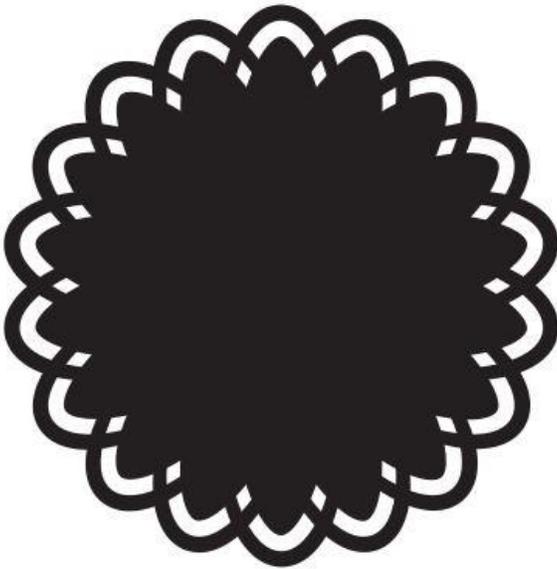
I'm not sure if that is what it is called in **Inkscape**, (*I come from an Illustrator background*), but the objective is the same. You always want to make sure that you check your design results before you export to SVG, to make sure that the paths that you have created match what you are wanting to do.

(Things like double lines are annoying in paper, and damned infuriating in a large piece of leather.)

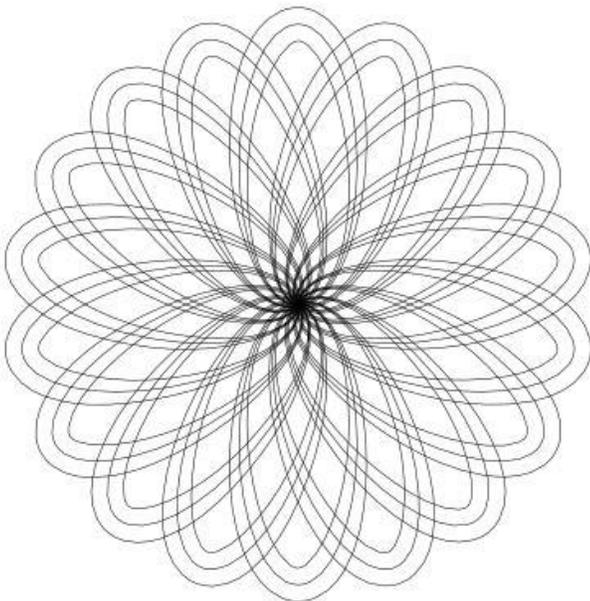
You can check your work by changing the view mode to Outline.

View > Display Mode > Outline

Do that **every single time** before you save a file. It's going to save you a lot of expensive mistakes.



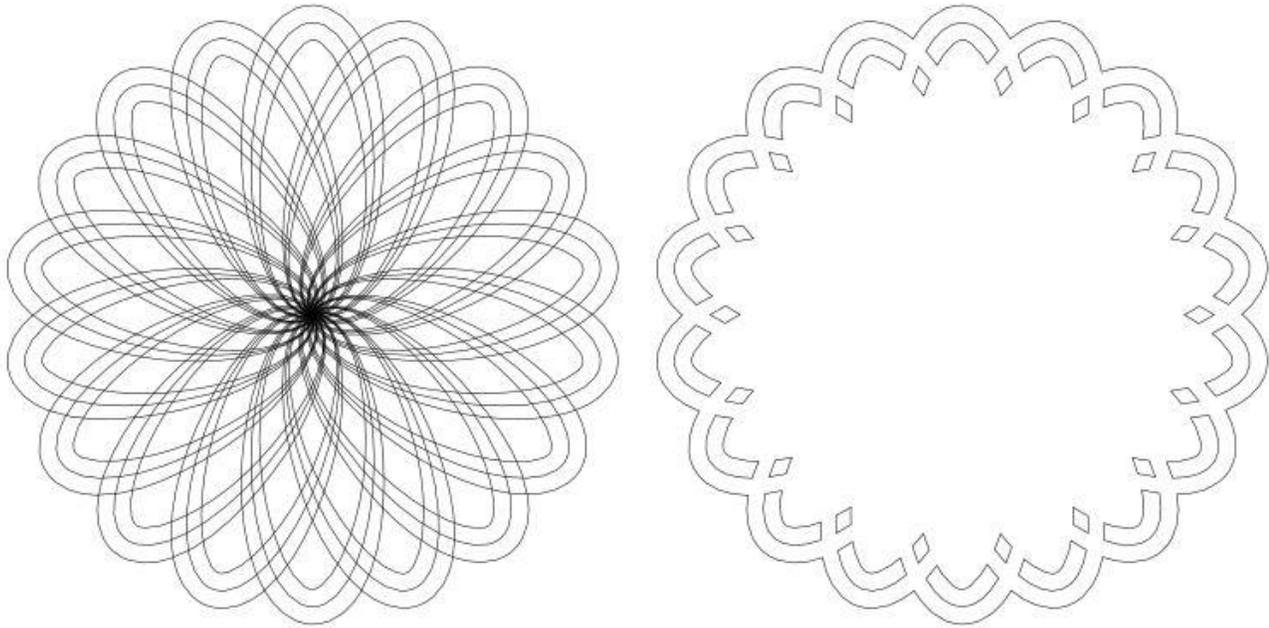
This rather cool looking flower doily shape isn't what it seems.



This is what it looks like from a vector path standpoint in Outline mode. It needs to be turned into something that will cut the way that it appears on the screen; otherwise you've got a lot of cool confetti on your hands.

Those shapes can be converted in one step to match the lace edged doily shape by selecting everything, and clicking

Path > Union.



Now the results will match what you expect to get. It's very easy when you are designing to forget to perform a **Union**, or a **Difference** operation on your design, especially when they get a little more complex. Checking it by turning on the **Outline Display Mode** before you send it to the laser is a very good idea.

(Note: It's possible that the display of the vector paths in the Glowforge interface will prevent you from making this mistake, but just to be on the safe side, get into the habit of checking the Outline Mode anyway.)