



How to Resize a Pattern

By Tom Buzz Bernard at LaserBuzz

Wouldn't it be nice to take a complex pattern and make it work for any thickness of substrate? Here I show you how to make any item larger, smaller, or use different materials such as wood, acrylic, etc. using any thickness material and still make the pattern work. It is really simple to learn. You are only limited by the size your machine can cut. This conversion will even work for a laser, CNC router, plasma cutter or water jet.

I am not just talking about any type of pattern. Primarily, I am referring to something which has to be assembled, such as our skeleton pattern or something similar. How can you quickly make changes that don't require you to re-engineer the design using CorelDraw?

We live in a big world and substrates vary on thickness. Even batches of material bought at the same time (same location) can have variations in thickness. Wood or cast acrylics are especially known for their dimensional issues. I have even witnessed where the environment has an affect on material. I remember when I tried to assemble a Humvee at a Fort Worth, Texas trade show. It was very humid and the parts had to be hammered together because the joints were so tight, but when using the exact same piece of wood and design for a show in California, I needed to glue the pieces together because the parts were so loose since the wood had dried out!

So how can I simply adjust quickly and make sure the end result works perfectly? Well, first let's look at an example based on material. In the picture you will see three of the same product – the skeletons. The small one is cut out of $\frac{1}{8}$ " material and is almost 17" tall. I had to make an adjustment because the wood I used was .133" thickness rather than .124" which is the normal size of the plywood we get. This was a new batch of wood with heavy moisture content and so I know the thickness will change over time. If that is the case then you will need to know how to adjust for it.

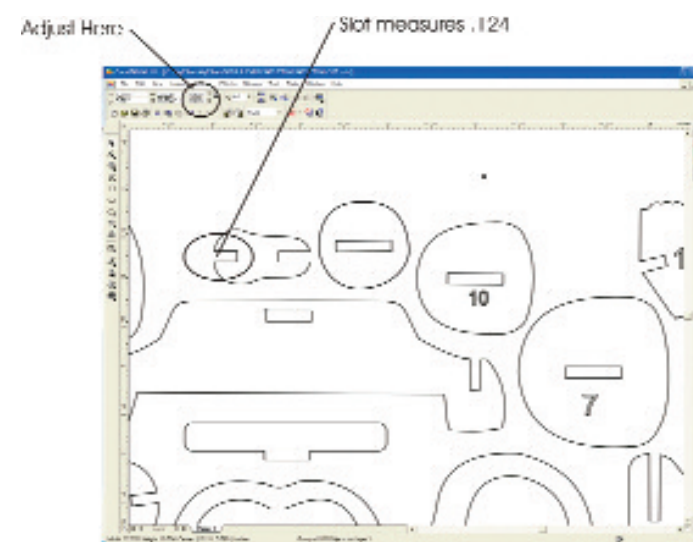


Here's how simple it is. Take a micrometre (see picture) and measure the thickness of your material. Now go to your design and check the size of your slots. (Note: I am working on the assumption the design you have has been engineered to work perfectly at the dimensions it was made for).



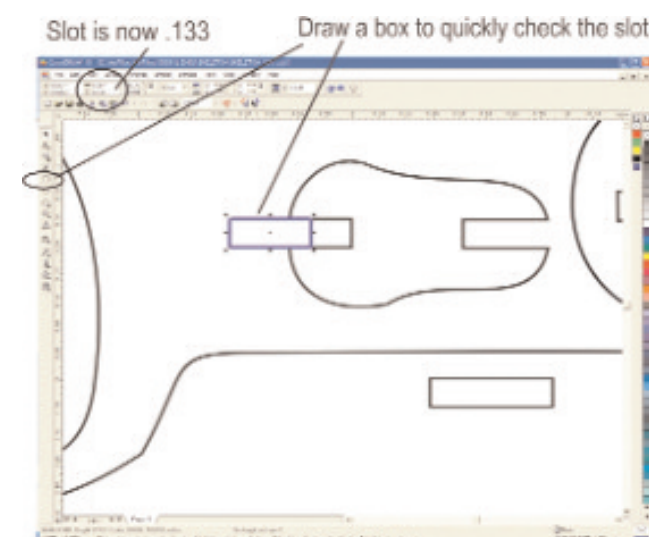
The original design was made to fit .124" thickness materials. If we select everything in the design and proportionally change the size it will go together perfectly. Let me show you what I mean. The new plywood I just bought measures out at .133" thick, so I

'Select All', and change the percentage (for size) from 100% to 110% for both height and width. You may need to experiment to find the exact increase or decrease, but that is easy with CTRL+ Z since you can quickly go back and try a different setting (percentage).



Once you resize the design, I like to use the rectangle tool (F6) to draw a small box to check the slot size.

Note: I prefer to resize the design using the percentages because if there are multiple pages to the project you will need to make those exact adjustments to each page to ensure the pattern extrapolates out and works perfect. *Never in my life did I ever think I would get the chance to use the word extrapolate in a sentence. A new first for Buzz!*



In theory, if your materials purchased were the actual thicknesses as advertised, such as $\frac{1}{8}$ ", you could select all and increase the percentage to 200% then your pattern would cut perfectly out of $\frac{1}{4}$ " material and 400% would make it perfect for $\frac{1}{2}$ " material. Unfortunately, I have never seen material at exact sizes, so you need to pick up a micrometre and make the necessary adjustments. It really is that simple and it works.

In the original picture of the three skeletons, the smallest is $\frac{1}{8}$ " material, the 4-foot one is $\frac{3}{8}$ " and the 5' 6" one is $\frac{1}{2}$ " plywood which was cut on a CNC router. The largest one has a laser-cut cigar in his mouth and one of my hats. I am taking him to all the trade shows this year to help attract attention to my stand. The WOW factor (humour) should be part of everyone's sales technique. Rudy (the name I gave him) is my new salesman. I pay him a bare bones salary and everyone wants their picture taken with him. I say he is doing his job well, although I am starting to get a little jealous of all the attention he is getting!

I hope this simple technique helps you to make a whole bunch of new products at different sizes.



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