



# CARVEWRIGHT™

## WOODWORKING SYSTEM

# TIPS & TRICKS

June 2008

## Scanning Probe Techniques

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The CarveWright  
3D Scanning Probe



In this month's Tips & Tricks I'll share a few techniques I've picked up while using the CarveWright Scanning Probe.

If you don't own and use a scanning probe already, I think you're missing half the fun as a CompuCarve/CarveWright user! The probe allows you to easily create your own dimensional relief patterns by scanning objects you might have around the house, or purchased from "dollar stores" or garage sales and the like. It's a very economical way to build-up a custom selection and assortment of carveable patterns for your personal use.

The scanning probe also includes the "Pattern Editor" software to convert your "raw" scans (called **mpw** files) into patterns (called **ptn** files) that you can import into your Designer Pattern Library. NOTE: In next month's Tips & Tricks, I'll be going over the features and functions of the Pattern Editor in depth, so you'll not want to miss that issue!

This month, I'll concentrate on the use of a scanning sled and how to scan objects successfully for pattern creation.

Some of this will be "old news" to current scanning probe owners, but for the benefit of new and future scanning probe owners, I'll present the basic guidelines and a few tips in this article. You can also get a lot of great information from the probe manual.

Download the Scanning Probe Owner's Manual at:

<http://www.carviewright.com/cms/downloads>  
(click on "CW Probe Manual")

### Building A Scanning Sled

A scanning sled is simply a flat platform base with two side rails. You can build one in less than an hour. I built my own sled from laminated white shelving purchased at a home center, but you can use almost any flat, straight material. I recommend that the material be 5/8" thick, so it is substantial, without being too heavy. The manual recommends the height of the side rails be no more than 2 1/4" tall from the surface of the sled, with a maximum width of 14.5". Length can vary, but 36" is a good overall length to start with.

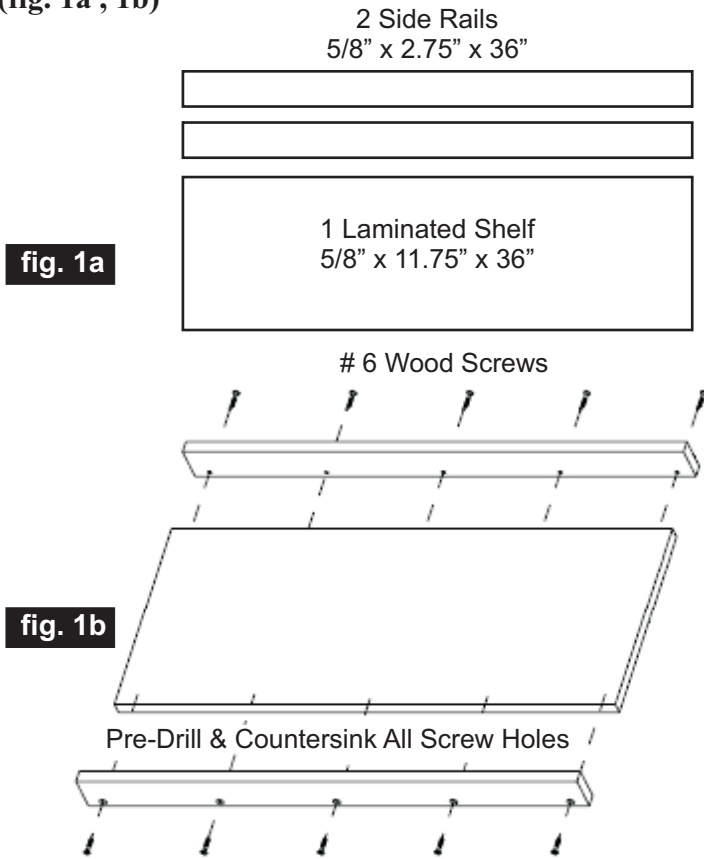
The scanning probe is designed to scan no more than 1" deep (but it can actually go about a 1/4" more). The machine can accept up to a maximum 5" total depth, so if you had a "tall" item, you could make the side rails taller to accommodate the extra height of the piece. Keep in mind that the object you want to scan must always be shorter than your side rails. Otherwise the object will hit the pressure rollers as the sled moves through the machine during scanning.

Take a look at the following page to see diagrams of my own scanning sled...

Please visit the manufacturer's website for more information about the CarveWright machines and see the new Pattern Depot at: [www.carviewright.com](http://www.carviewright.com)

For Additional Patterns you can add to your Designer software library, please visit: [www.carvebuddy.com](http://www.carvebuddy.com)

Here are the details of my own scanning sled.  
(fig. 1a , 1b)



I made a video of the scanning sled and probe "in action". It's about 8 minutes long and you'll learn a lot just by watching the video. You can view the video at the following link:

[http://www.carvebuddy.com/scanningvideo\\_how\\_it\\_works.html](http://www.carvebuddy.com/scanningvideo_how_it_works.html)

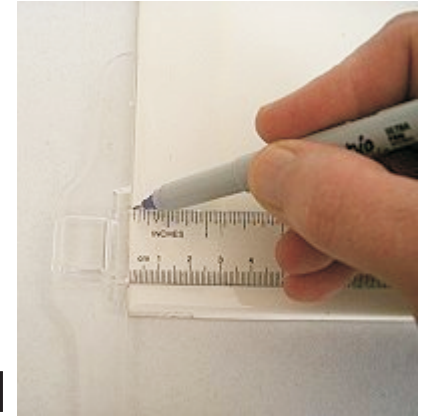
## Mounting Objects to the Sled

Ideally, the object you want to scan will have a "flattish" surface on the backside and be less than 1" tall. You can secure the object directly to the sled with a hot glue gun in that case, and you're pretty much all set (that's how I did it in the video).

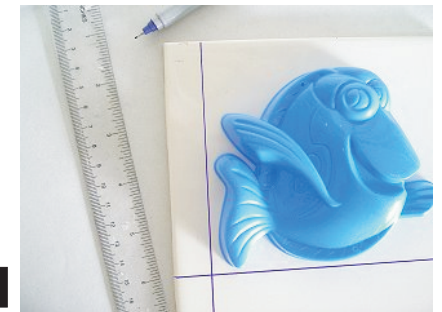
However, I have found that hot glue sometimes sticks a little too well which often made it a challenge to get the object off the sled when the scanning was done, and caused minor damage to my sled when I had to get out the chisel! I now use an alternate method of securing the object whenever possible...

I purchased an assortment of glazed ceramic tiles from a home improvement store and glue my objects to the tiles instead. I also draw a rectangle around the object to help with placement and to give me "targets" for a location to lower the probe to when setting the diagonal points during the scanning setup. (fig 2)

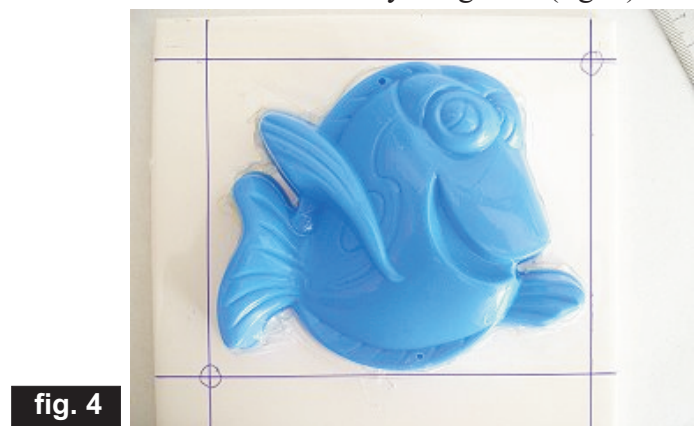
I use a clear plastic T-Square to draw my lines parallel to the tile edges. It's a little hard to see the "T" in the photo because it's clear!



First, I draw two lines and place the object about 1/8" away from the lines. Then I hot glue the object to the tile surface. (fig 3)



I then draw two more lines (forming a complete rectangle), and I circle the two diagonal corners where the lines intersect to serve as my "targets". (fig. 4)



Using guidelines and "targets" assures I don't "cut off" any of the object during the scanning process.



# Scanning Probe Techniques

## Mounting Objects to the Sled (cont.)

I then affix the tile to the sled with blue painter's masking tape. I press the tape down firmly using a scrap piece of wood to hold the tile securely to the sled surface and make sure the tile won't shift or tilt during the scan.

(fig. 5)



fig. 5

What if you have an object that is profoundly rounded on the backside, or is such an irregular shape that it won't stay in position firmly?

(fig. 6)

I found a solution in a scrap piece of white polystyrene foam sheet (the type of sheets used for packing material).



fig. 6

Cut a piece of foam sheet that is thick enough to embed the object into it at an appropriate depth. *The probe can scan down to about an inch in depth, so even if the object is taller than that, you can scan the top 1" of it. Keep in mind that the overall thickness (height) must be kept shorter than the height of your side rails. If it's not, then you'll need to install taller sled rails.*

Place your object on the foam and draw a rough outline around it.

(fig. 7)



fig. 7

Now cut into the foam along the outline with a hobby razor knife. (fig. 8)

Then start to "dig out" the foam, while periodically test fitting your object in the recess until it can be embedded sufficiently.



fig. 8

I use a Philips head screw driver to "dig" with. This is a messy job, so be sure to do it over a trash can! (fig 9)

Use hot glue to secure the object into the recess in the position you want it held. (fig. 10)



fig. 9

Surprisingly, the hot glue won't melt the foam, but the tip of the glue gun can, so be careful.

You can then place the foam sheet on the scanning sled and secure it with hot glue or the blue painter's tape I mentioned before.



fig. 10

## Selecting Objects for Scanning & Options

The probe has a metal tip that comes to a 1/16" point. Hard-surfaced objects such as glass, ceramic, porcelain and similarly durable materials are excellent scanning candidates.

You should use some care when considering scanning valuable or irreplaceable items. Objects with shiny metal or lacquered surfaces and some painted objects may experience some scuffing or light scratching due to contact with the probe during scanning. If in doubt, scan a tiny area of the object first. Stop the scan and inspect the object for any marks. If you notice any undesirable scuffing on the surface, you have a few options...

## Selecting Objects for Scanning & Options (cont.)

**1) Don't Scan the Object** - The obvious first option is you simply don't scan the object at all and choose something else to scan instead.

**2) Make a negative mold of the object, then make a positive model to scan**- I have only done this a few times myself, so I'm not an "expert" on the subject. In any case, here's what I did...

We have a circa 1860 piano with some carving detail I wanted to duplicate. (fig. 11)



fig. 11

I pressed some bisque-colored Crayola® Model Magic® (fig.12) over the carving to create a negative mold, then removed it carefully so as not to distort it too much. This material is inert and almost completely dry to the touch, so it won't damage finishes.



fig. 12

Then I let it air-dry for a couple days. (fig. 13)



fig. 13

When the mold was dry, I worked some Sculpey® clay into it, making sure all voids were filled. Then I laid a thin "backing" layer of Sculpey® clay over the pressed-in clay (the clay layer backing was about 1/16" thick, rolled out by a pasta machine). I then turned it out onto a glazed tile.



The Model Magic® mold is flexible, so I carefully flexed it and prodded the clay model out of the mold with a hobby razor knife, until the model was fully released onto the tile surface. I manually trimmed the excess clay from around the model using the hobby knife, then baked the clay (on the glazed tile) in an oven at 275 degrees for about 20 minutes. When the clay cooled, the result was a sufficiently rigid, very close replica of the original piano panel carving, ready to be scanned. (fig. 14).



fig. 14

While I was very pleased with the results, I am sure there are materials that are better suited to making molds and models with. The clay was a little tedious to work into and out of the mold. I think a liquid-pour product that would set-up quickly and release from the mold more easily would be worth pursuing, as I believe there is great potential in this method.

Someone recently mentioned to me that there are online stores that sell special effects/movie prop industry materials specifically designed for making relief molds and models. I haven't personally researched that end of it, but it might be worth looking into yourself, if you plan to do a lot of duplicating of carving elements from objects that are too large to place in the CarveWright machine.



## Selecting Objects for Scanning & Options (cont.)

### 3) Use a plastic Glue-Tip over the tip of the Probe -

There has been some discussion on the CarveWright User Forum about ways to make the metal tip of the probe “softer” on delicate surfaces. Although the probe doesn’t apply a lot of pressure, it does need to make contact with the surface of an object to transmit the depth data to your memory card.

The idea is to push a plastic glue applicator (fig. 15) over the metal tip of the probe to yield a “softer touch”. Many people report good results with this and I think the concept is a sound one. I have not needed to try this myself yet, but you may want to if you are concerned about “surface scuffing” of delicate objects. Visit the User Forum and do a search for “probe tips”. You will be able to read several threads on this topic and find out more details of each user’s success with this interesting method.

Here is the forum weblink:

<http://www.carviewright.com/forum/index.php>



fig. 15

## A Few Final Tips

1) When placing objects on your scanning sled, you need to allow about an inch or so of clearance away from the side rails to prevent the probe’s widest part, and the wire coming out of it, from hitting the rails. Measure the inside dimension of your platform between the rails, then subtract about 2.25” and that will be your useable scanning area width.

2) While setting my probe’s scanning depth, you saw in the video that I used a tapered wood scrap. Instead, I now keep a few business cards near my machines so I can stack any number of them to create just the right amount of “gap” to prevent the probe from contacting the sled (or tile) surface. I usually find that just two or three cards under the probe as it is lowered to the “surface” gives the perfect amount of clearance while still allowing the probe to scan the object completely.

3) Before a scanning session, it’s a good idea to remove the flex shaft from the top hat. Grasp the thicker part of the flex shaft near the top hat and pull firmly, straight up. There are a couple reasons to temporarily remove the flexshaft...it totally removes the possibility of the motor unexpectedly turning the chuck, and it is less “bulk” for the Z/Y truck to carry along during a scan. Watch out for the spring that is inside the flex shaft. It is loose and can fall onto the floor if you’re not careful. I place a sandwich bag over the end to keep off any stray debris in the shop from getting on the exposed part.

To replace, line up the square end of the shaft with the square hole (viewable down through the top of the top hat) and make sure that the far end is fully seated in the cut motor by turning the inner core by hand. If it’s properly seated, you’ll feel a slight resistance as the core is turning the motor. Once lined up and you have verified the core is seated in the cut motor, press straight down (firmly) until the flex shaft snaps back into place on the top hat.

4) Always perform your scans on the “BEST” quality setting.

5) Make sure any object you scan is firmly affixed to your platform. Any object movement will compound vibration, which will reduce the quality of your scan.

6) Have a great time scanning everything in sight!

**Special thanks to Michael Tyler of**  
**[www.CarveBuddy.com](http://www.CarveBuddy.com)**  
**for providing**  
**the content for this issue of**  
**CarveWright TIPS and TRiCKS.**

**NEXT ISSUE:** Learn about the features and functions of the scanning probe software...the **CarveWright Pattern Editor!**