

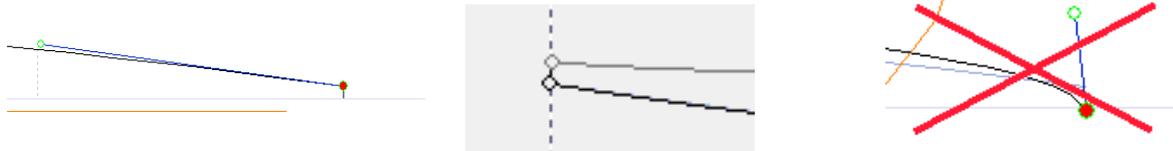
SHAPE3D DESIGN TRICK TIP

We'll try here to address all the design features that one should check to make sure that the board will be handled properly by any cutting machine.

Width and Thickness:

A Shape3d model must always have a strictly positive width and thickness, in particular at the tail and the nose!

- It means that the tail and nose of the thickness curve must finish vertically.



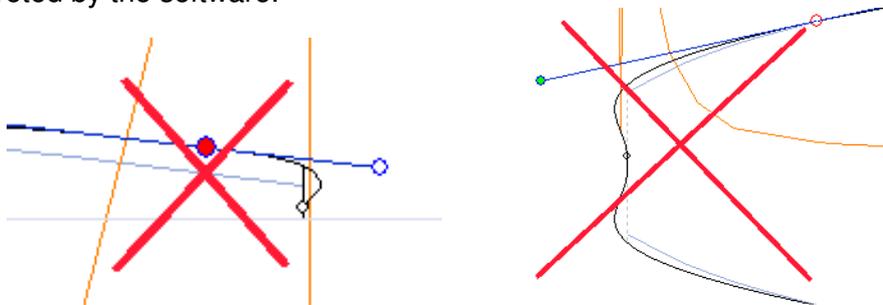
- And that the tail and nose of the outline curve must be "squared".



This is to avoid any trick with the cutting lines that could cross or have too much curvature.

Exceeding the board length:

All the design curves must lie between $x = 0$ and $x = \text{length}$. Any loop would be misinterpreted by the software.



Smoothness and continuity:

Check the smoothness of the curves.

- A general rule would be: the less control points the smoother. Prefer continuous tangents



to angular ones



(except for the rail).

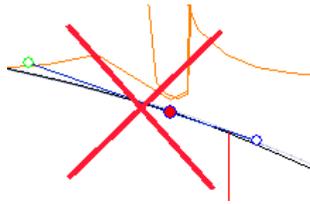
Avoid zero length tangents:



The minimum being a point at each end, and one horizontal tangents point at the widest point of the outline, the thickest point of the thickness, and the lowest point of the rocker. Possibly add a point close to the tail and the nose to get more control on the curves.

- Picks on the curvature red line can be due to the superposition of two control points:





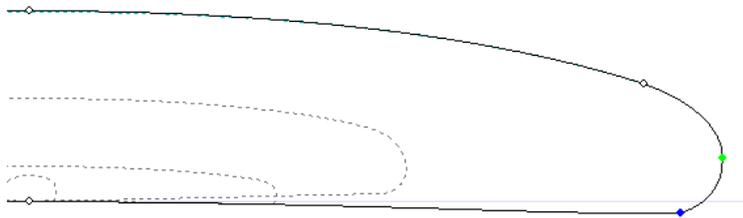
If so, delete one of them and reshape the curve.

Slices:

- Here again, the less slices the smoother. The right number obviously depends on the shape...

If you design a new model, a good way to get a smooth shape is to begin with the design of the center slice, and then make all the other slices from this one. For that you can use the copy-past facility: select a slice on the outline view, click on the copy button  in the toolbar, select another slice and press the past button . Modify these slices to make the shape smoothly evolve from the tail to the nose.

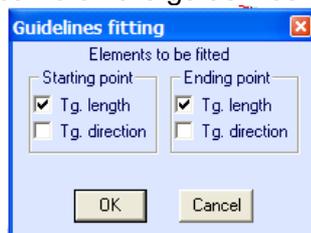
- The design of a slice usually needs 4 to 5 control points.



It is safe to define the apex point (green ), with vertical tangents , the rail point (blue , with angular tangents , and possibly another point on the deck to have a better control of the rail shape. The deck center point generally has a horizontal tangent . Same for the bottom center point, except in case of V or inverted-V.

Automatic fitting:

- All the design curves can be automatically adjusted on the guidelines: press the guidelines button  to make the guidelines appear. Then select a curve, right click, choose “automatic fitting”, and “fit the curve on the guidelines” to make the fitting window appear.



The starting point is the left control point, and the end point is the one on the right hand side. Tick the “Tg. length” box if you want the length of the tangent to be adjusted, the “Tg. direction” box if you want the direction of the tangent to be adjusted, or both. Then press OK.

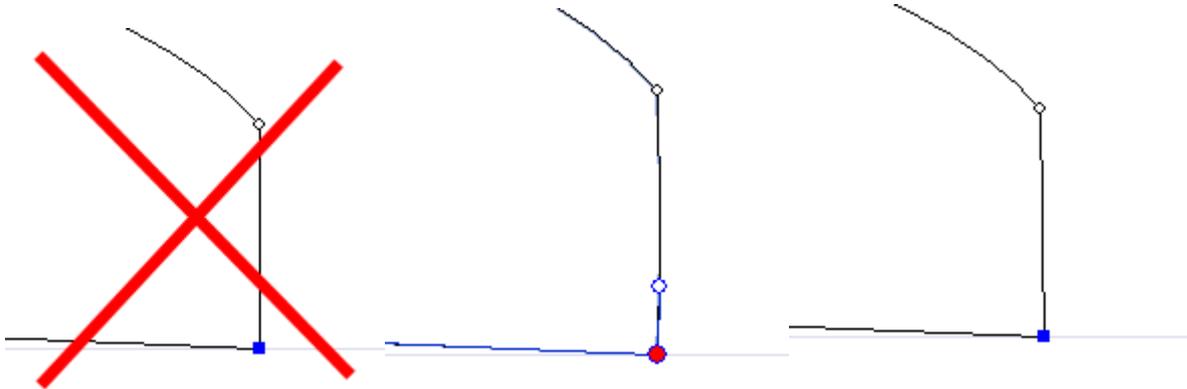
- If you did not define any guidelines, you can make guidelines appear right on the curves doing: right click, “Guidelines”, “default guidelines” (you can also use measurement wizard). This trick can be very helpful if you if you want to do some slight modifications of a curve (delete a point for example) and be able to go back to it.

Apex definition:

Concerning the apex points definition, one has two choices: either you fix a point at the apex that you set as the Apex point, or you don't define an apex point.

In the later case you have to be careful that the water line is smooth. In particular, if the

edges of some slices are vertical, the apex can either be the top or the bottom of the vertical section, and jump from one to the other. So, instead of a vertical section it's better to make it a little convex, or bend it a little.



For Bezier surfaces exportation:

Note that each control point and each slice will lead to a border between two Bezier surfaces, *i.e.* points or slice at close x position will lead to very small surfaces. In order to get clean Bezier surface result, try to move the control points and the slices that are in close x-vicinity to exactly the same x position.

IF YOU WANT TO ADD ANY TRICK TIP HERE, FEEL FREE TO CONTACT US AT THE E-MAIL ADDRESS WHICH IS ON THE WEBSITE!