# Best practice - Composer Advanced Supporting of Keysplint Soft Splints

This is a personal recommendation based on what I found to be very useful when using Composer on a regular basis for basic and advanced tasks.
*This Document is considered a DRAFT and is subject to change without notice.*

## Concept:

Supports have two functions:
1. To prevent critical failure like detachment from platform or break away of portions of the object
2. To prevent distortion of the object.

Separation forces are different depending on the exact Geometry in each layer and the previous layers. This makes Support Generation rather complex to get right each time with only one set of parameters.
Often a user would generate default settings and then modify them via the add and remove button.

In this example we will see how to combine two automatic support settings to support the same object. This involves *a work-around* (*necessary Composer 1.2.12 and lower, as currently each object can only have exactly one support file attached - future versions of Composer will have a specific feature for advanced support strategies like this*) by cloning the same part in the same position and generating different supports for each copy of the part. As both parts are at the exact same position, they act as one but now have a combination of 2 support settings.
The support settings will follow of two basic principles:

1. Thicker Anchor Supports that connect only to Islands (segments of the part that are not yet connected to each other) to prevent break away of portions. Usually larger, especially round islands have strong separation forces. We use the Anchor to fix the island to the platform and add stability.
2. Thin Structure Supports. These can be very thin (down to 0.150 for some materials, but usually around 0.25 or 0.3) and should be very dense. Their function is to prevent torsion and to reduce the area of unsupported overhangs. Simultaneously this also leads to less deformation in the object and as such to a higher accuracy of freeform geometries - it preserves the actual Structure.

A combination of thick and thin supports has shown more successful than a compromise of medium sized medium spaced supports.

*What follows are Examples for **Splints** in Keysplint Soft as this material is very sticky and a bit harder to print, but has very good mechanical performance in its final application.*

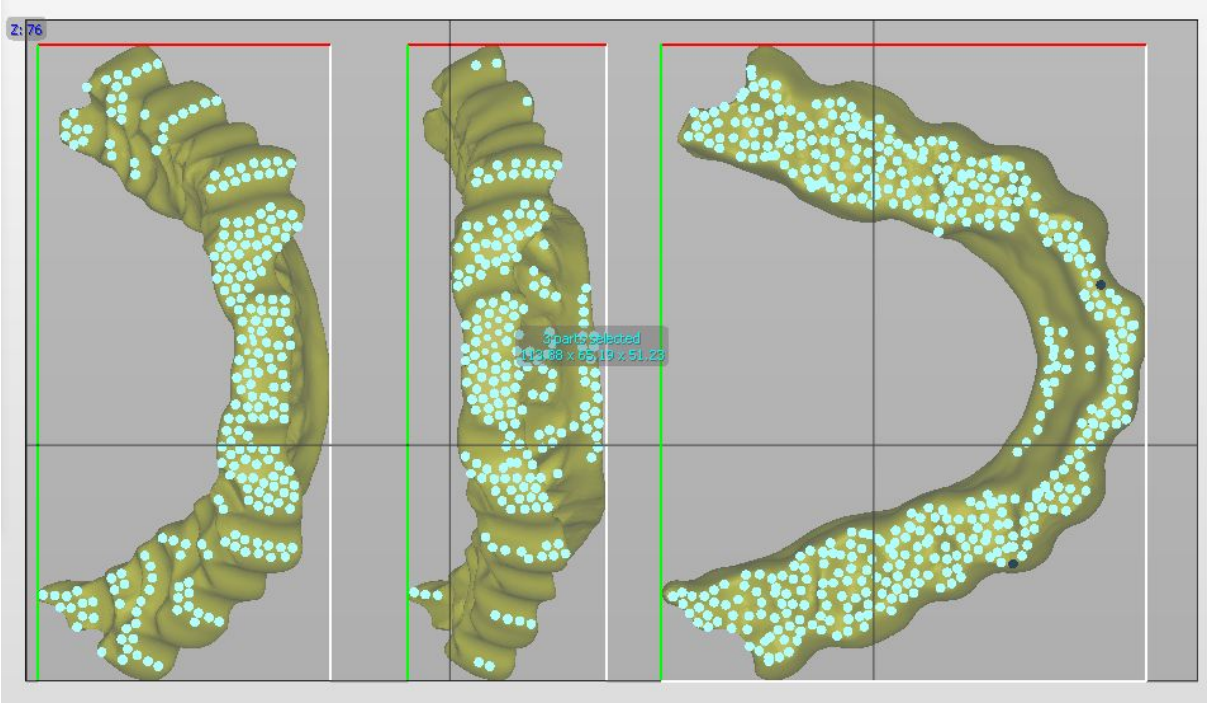
ASIGA PTY LTD
UNIT 2, 19-21 BOURKE ROAD, ALEXANDRIA, NSW 2015, AUSTRALIA
ABN 19 153 329 616

Author: Dr. Stephan Weiß | stephan@asiga.com

# Example Splint, using Keysplint Soft:

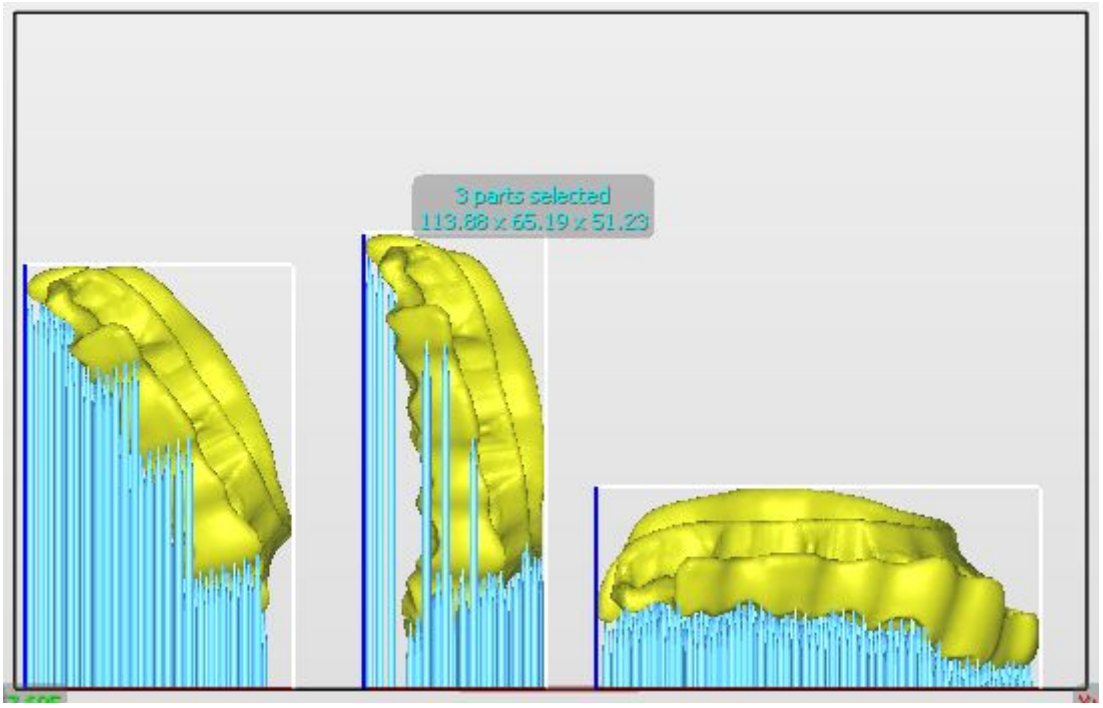
In this example we show how Geometry will affect the amount of islands and torsion.

**Best practice is to nest the objects first, then continue with the following steps**
**-generate first type of supports (Anchor Supports or Structure Supports)**
**-clone in place.**
**-generate second type of Structure Supports (Structure or Anchor Supports)**

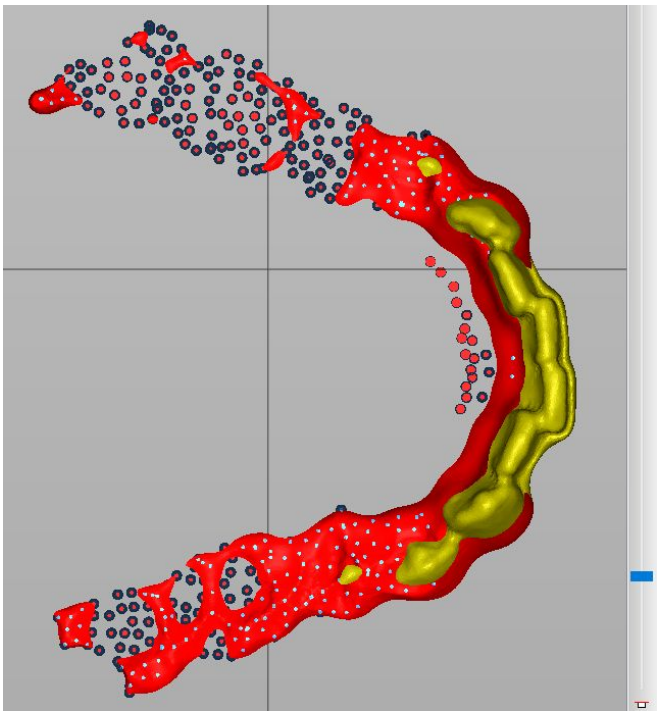



ASIGA PTY LTD
UNIT 2, 19-21 BOURKE ROAD, ALEXANDRIA, NSW 2015, AUSTRALIA
ABN 19 153 329 616

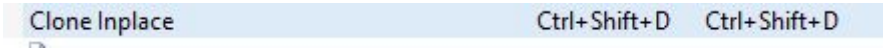
Author: Dr. Stephan Weiß | stephan@asiga.com

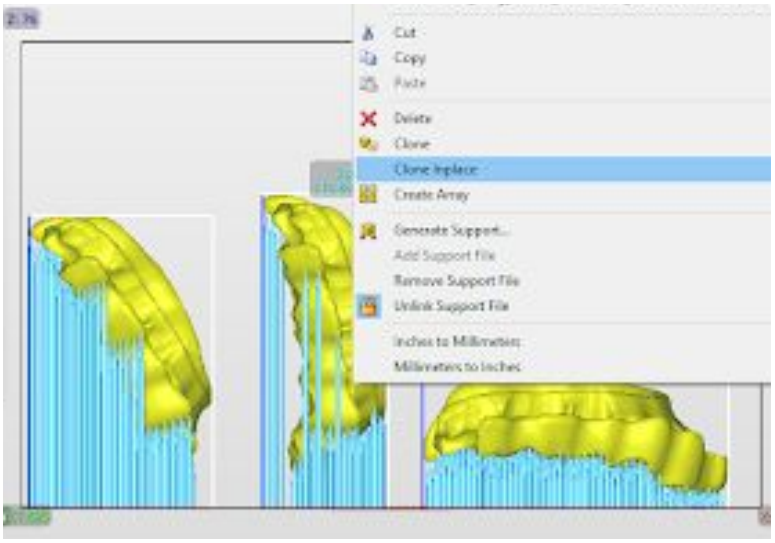



Clipping slider shows how the cross section is stabilized by the small pins of the structure Support to prevent Torsion:



**Create a Clone** in the same spot (two identical objects on same position, looks like one, but both can have different support files attached to them).
->select all splints, right click and select Clone Inplace:

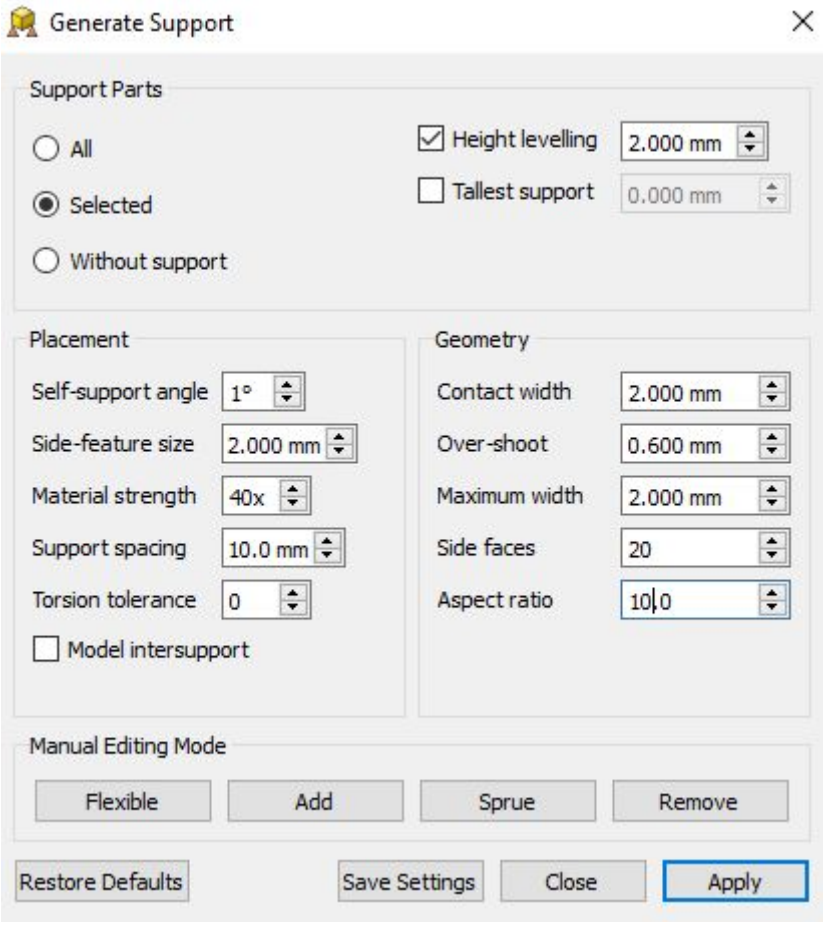


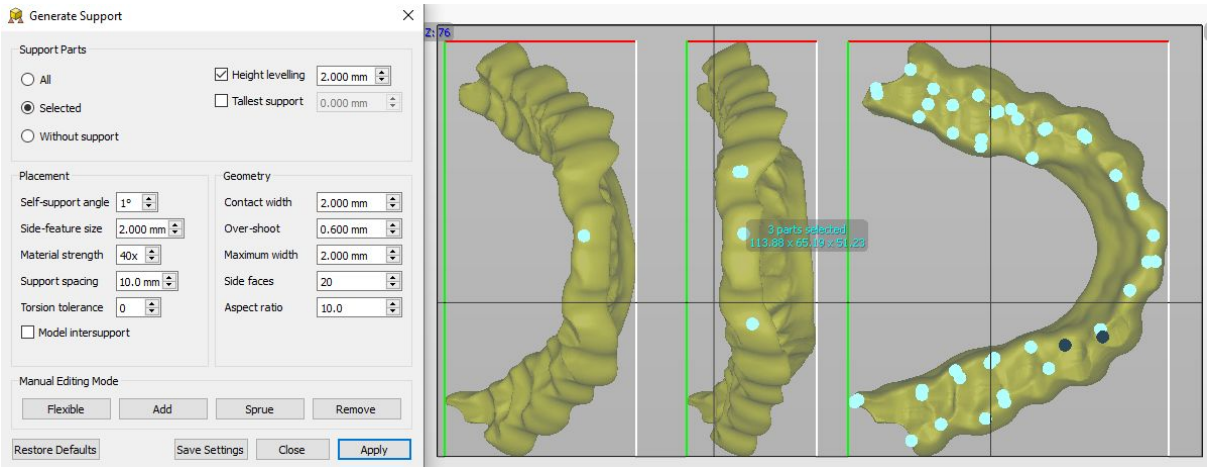




**IMPORTANT**:
As the cloned version is still treated as individual copy, you can use the “Rectangular Select” (configure Shortcut to e.g. SPACE key for quick acces) to select both parts instead of simple mouse click

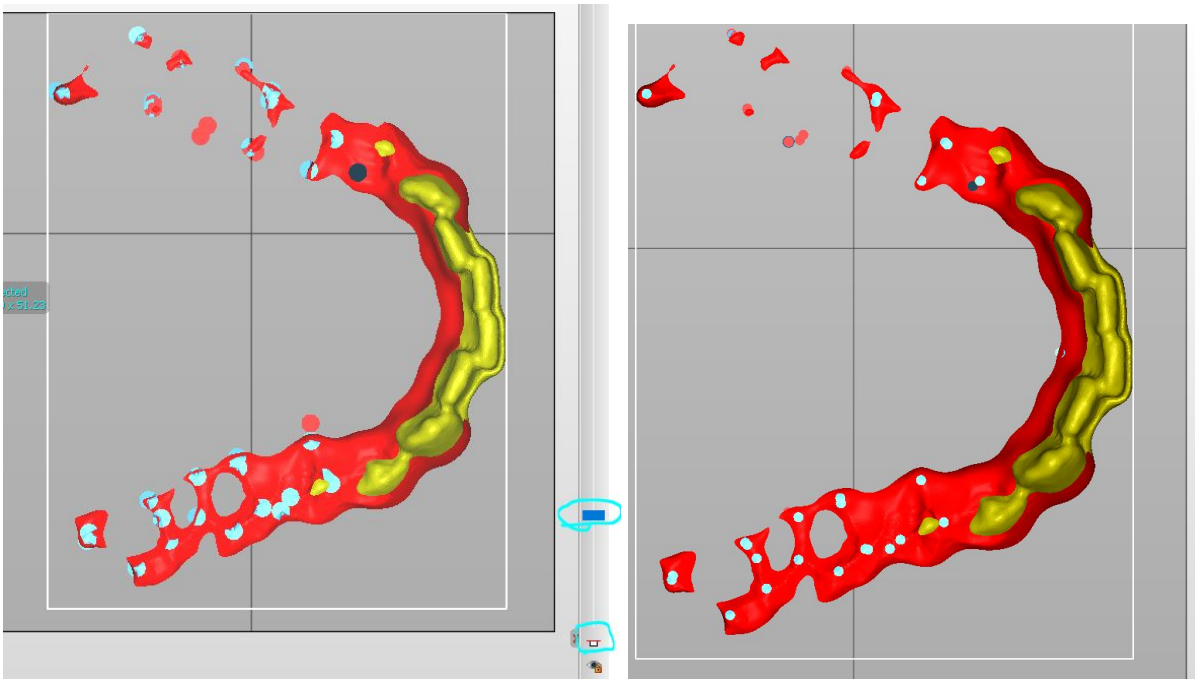
This helps you to prevent moving just one of the parts and misaligning it with its clone. Make sure to move both copies always at same time.

Adding **Anchor Supports** using these settings as a start (you can **increase or decrease Contact width** depending on the Parts you produce - usually when the print still fails at the position where an Anchor is placed.
You can also increase **Self-support angle to 5°** if you see print failure at a position where no Anchor is)

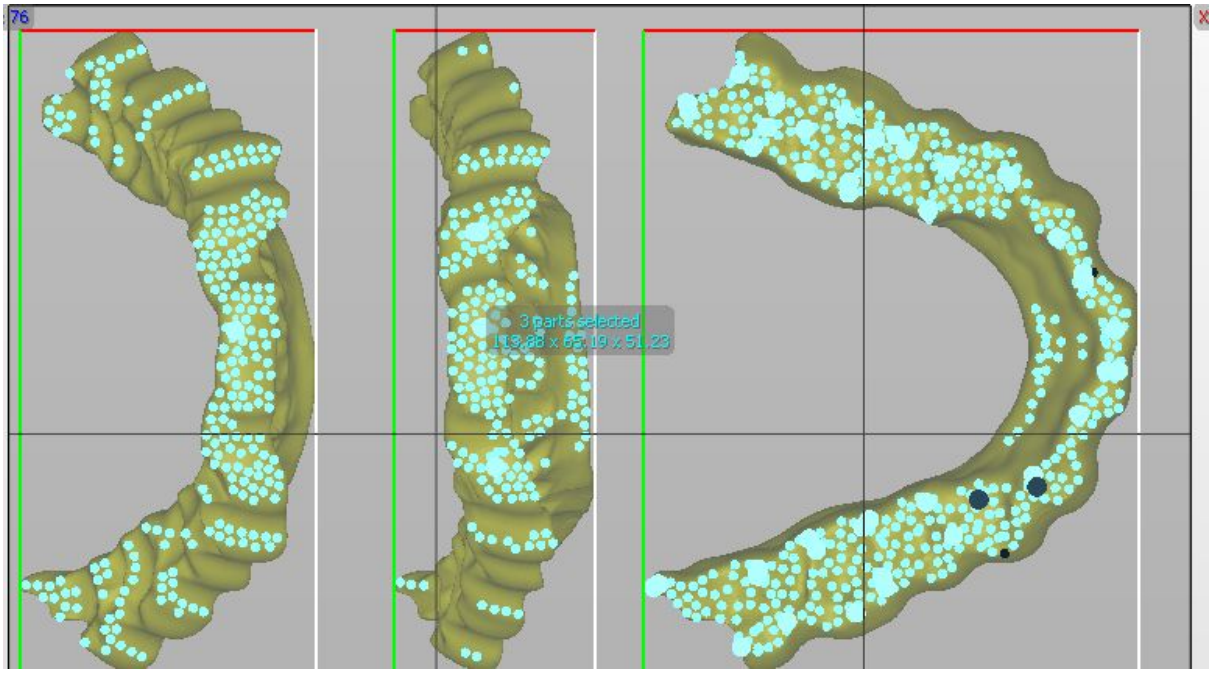


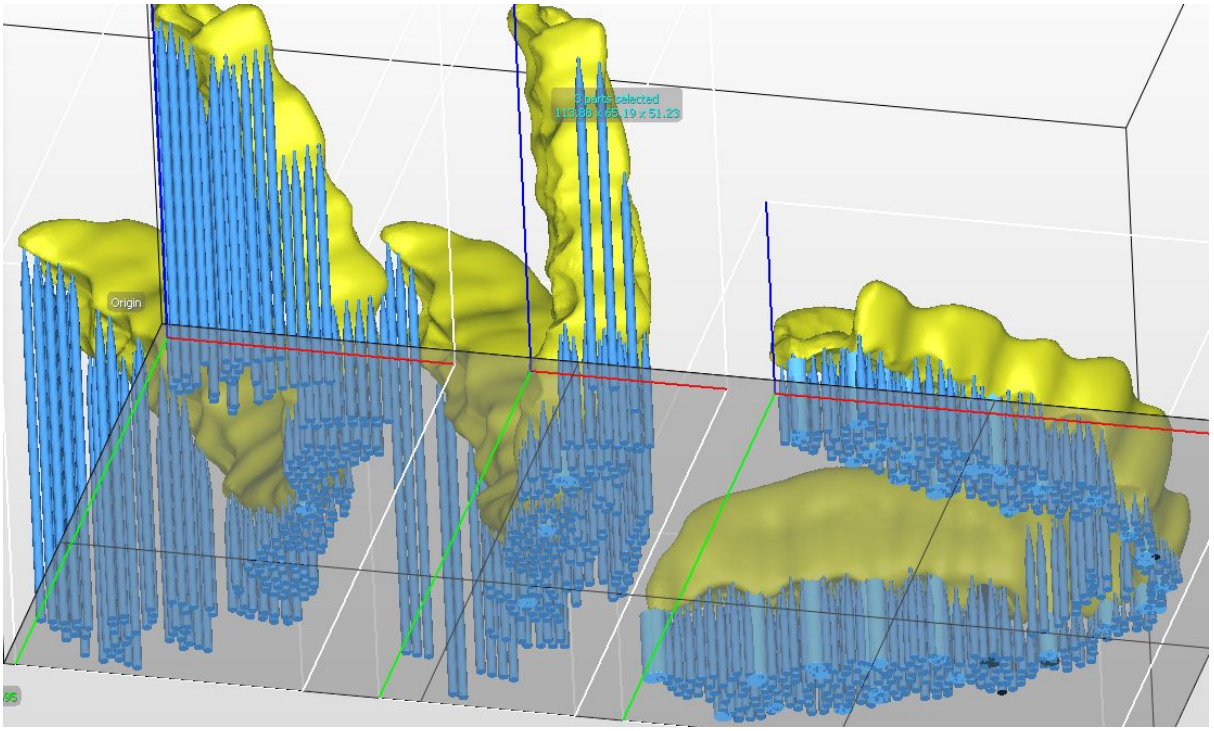



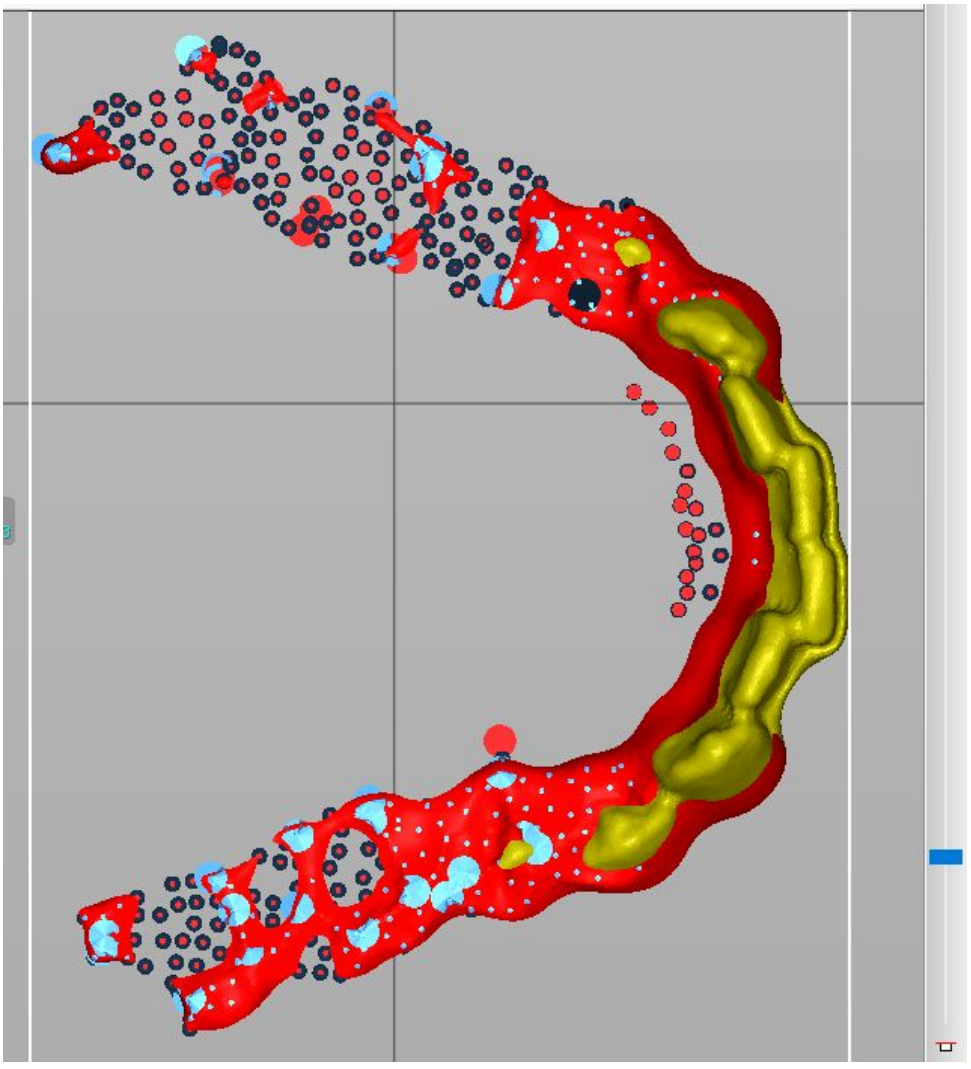
Clipping slider shows how the Anchors support the islands, left “Contact width” = 2 mm, right “Contact width” =1mm:



In Combination we have a very powerful support structure, which is still rather easy to remove and finish, especially in an upright vertical position (as it won't affect the bite).
***For flat horizontal splints you might want to reduce the Anchor diameter to 1 mm as it generally has less torsion to support per anchor (as you have more of them due to the many islands this orientation generates). For thicker, heavier Splints in vertical position we recommend self-support angle of 5° and contact width 2 - 3 mm.***



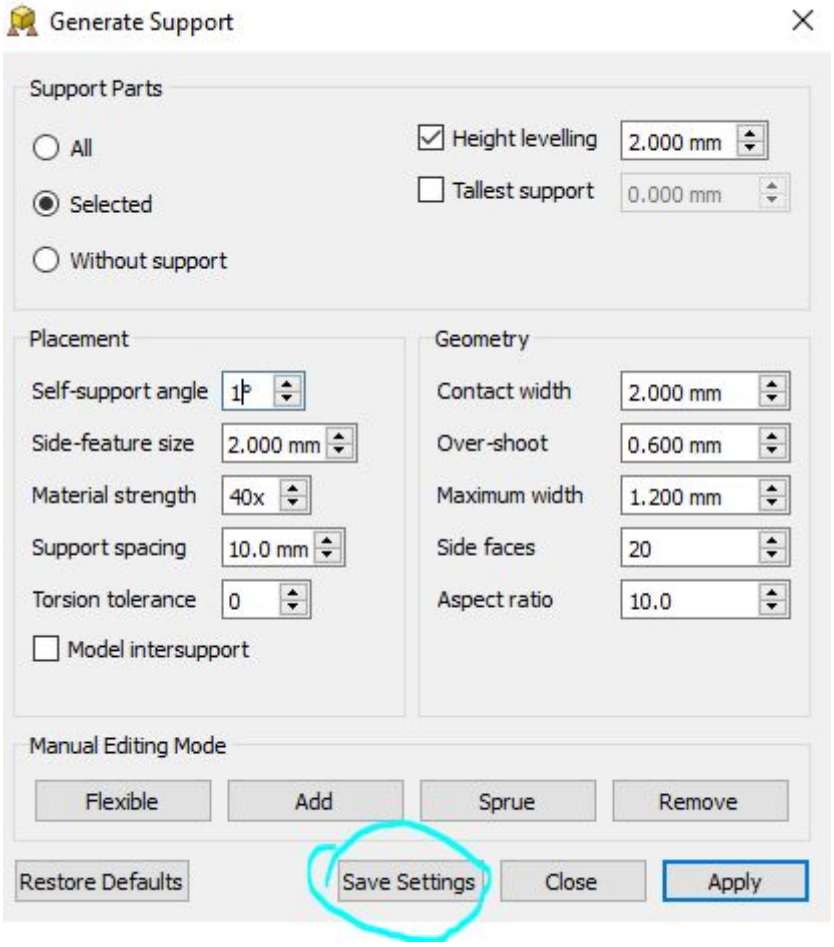


ASIGA PTY LTD
UNIT 2, 19-21 BOURKE ROAD, ALEXANDRIA, NSW 2015, AUSTRALIA
ABN 19 153 329 616

Author: Dr. Stephan Weiß | stephan@asiga.com

To **speed up the workflow for future**, click on “Save Settings” after having set the parameters for Anchor supports:




Now whenever you open the Support Interface again, the Settings will be set to the ones we defined for Anchor Supports (until you click Save Settings to overwrite).
You would now generate those for the Splint first, then clone inplace and then click on “**Restore Defaults**” which will reset settings to the Default settings provided by the INI File, which are the ones we use as Structure Supports.