

# FabPro 1000 Best Practices


## FabPro 1000

# FabPro 1000™ Best Practices

Rev. D, P/N 45-D33

Original Instructions



**NOTE:** Use this page to print the Best Practices as a whole. Scroll down to the bottom of the page and click the  **Printer-friendly version** button. On the page in the new tab, press ctrl+P (cmd+P on Mac) to print the document.




**NOTE:** Please refer back to [support.3dsystems.com/fabpro/](https://support.3dsystems.com/fabpro/) for the most up-to-date Best Practices.


# FabPro/NextDent Print Material Quick Reference

You can use the following chart as a one-stop shop for all FabPro/NextDent print material information. To print this page, scroll to the bottom and click the **Printer-friendly Version Link**. On the page in the new tab, press ctrl+P (cmd+P on Mac) to print the document. **For best results, set up the print in landscape orientation and 50% scale.**


Print Material	Part Quality and Accuracy Tips	3D Sprint Orientation / Supports Guides	Resin Mixing Instructions	Part-Cleaning Info.	Part-Curing Time
NextDent® Surgical Guide	<ol style="list-style-type: none"> <li>For best results orient the parts flat in the build area so the surface fitting the teeth is away from the print platform.</li> <li>Orient drill guide holes perpendicular to the XY-Plane. If there are multiple drill guides at different angles try to orient the part to keep them all as perpendicular to the XY-Plane as possible.</li> <li>Verify proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.</li> </ol>	<p><a href="#">Video - FabPro 1000 3D Sprint Training Click here for full material best practices</a></p>	<p><b>Pre-mix resin on LC-3DMixer before pouring</b>  <u>New bottle</u> - 5 min.  <u>After 1st use</u> - 5 min.  <a href="#">(see Note 1)</a></p> <hr/> <p><b>Mix resin in resin tray before printing</b>  <u>In tray &lt; 3 hr</u> - n/a  <u>In tray &gt; 3 hr</u> - n/a</p>	<p><a href="#">Post-Processing Guide</a></p>	<p>10 min. (see <a href="#">Note 2</a>)</p>

<b>Print Material</b>	<b>Part Quality and Accuracy Tips</b>	<b>3D Sprint Orientation / Supports Guides</b>	<b>Resin Mixing Instructions</b>	<b>Part-Cleaning Info.</b>	<b>Part-Curing Time</b>
	<p>4. Follow and apply accuracy wizard procedure for each printer to get highest accuracy parts.</p>				

Print Material	Part Quality and Accuracy Tips	3D Sprint Orientation / Supports Guides	Resin Mixing Instructions	Part-Cleaning Info.	Part-Curing Time
<p>NextDent® Model 2.0 WHT</p>	<p>1. For best results use the Resin Mixer to gently stir between prints and after the resin has been sitting overnight.</p> <p> <b>CAUTION: Do NOT press down on the film when stirring.</b></p> <p>2. Allow parts to dry completely before post cure.</p> <p>3. Verify proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.</p> <p>4. Follow and apply accuracy wizard procedure for each printer to get highest accuracy parts.</p>	<p><a href="#">Video - FabPro 1000 3D Sprint Training Click here for full material best practices</a></p>	<p><b>Pre-mix resin on LC-3DMixer before pouring</b></p> <p><u>New bottle</u> - 2.5 hr.  <u>After 1st use</u> - 1 hr.                      (see Note 1)</p> <hr/> <p><b>Mix resin in resin tray before printing</b></p> <p><u>In tray &lt; 3 hr</u> - 30 sec.  <u>In tray &gt; 3 hr</u> - 60 sec.</p>	<p><a href="#">Post-Processing Guide</a></p>	<p>10 min. (see Note 2)</p>


Print Material	Part Quality and Accuracy Tips	3D Sprint Orientation / Supports Guides	Resin Mixing Instructions	Part-Cleaning Info.	Part-Curing Time
<p>NextDent® Model 2.0 PCH</p>	<p>1. For best results use the Resin Mixer to gently stir between prints and after the resin has been sitting overnight.</p> <p> <b>CAUTION: Do NOT press down on the film when stirring.</b></p> <p>2. Allow parts to dry completely before post cure.</p> <p>3. Verify proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.</p> <p>4. Follow and apply accuracy wizard procedure for each printer to get highest accuracy parts.</p>	<p><a href="#">Video - FabPro 1000 3D Sprint Training Click here for full material best practices</a></p>	<p><b>Pre-mix resin on LC-3DMixer before pouring</b></p> <p><u>New bottle</u> - 2.5 hr.  <u>After 1st use</u> - 1 hr.                      (see Note 1)</p> <hr/> <p><b>Mix resin in resin tray before printing</b></p> <p><u>In tray &lt; 3 hr</u> - 30 sec.  <u>In tray &gt; 3 hr</u> - 60 sec.</p>	<p><a href="#">Post-Processing Guide</a></p>	<p>10 min. (see Note 2)</p>

Print Material	Part Quality and Accuracy Tips	3D Sprint Orientation / Supports Guides	Resin Mixing Instructions	Part-Cleaning Info.	Part-Curing Time
<p>NextDent® Ortho Rigid</p>	<ol style="list-style-type: none"> <li>1. For best results orient the parts flat in the build area so the surface fitting the teeth is away from the print platform.</li> <li>2. Verify proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.</li> <li>3. Follow and apply accuracy wizard procedure for each printer to get highest accuracy parts.</li> </ol>	<p><a href="#">Video - FabPro 1000 3D Sprint Training Click here for full material best practices</a></p>	<p><b>Pre-mix resin on LC-3DMixer before pouring</b>  <u>New bottle</u> - 5 min.  <u>After 1st use</u> - 5 min.                      (see Note 1)</p> <hr/> <p><b>Mix resin in resin tray before printing</b>  <u>In tray &lt; 3 hr</u> - 10 sec.  <u>In tray &gt; 3 hr</u> - 30 sec.</p>	<p><a href="#">Post-Processing Guide</a></p>	<p>10 min. (see Note 2)</p>

Print Material	Part Quality and Accuracy Tips	3D Sprint Orientation / Supports Guides	Resin Mixing Instructions	Part-Cleaning Info.	Part-Curing Time
NextDent® Model	<p>1. For best results use the Resin Mixer to gently stir between prints and after the resin has been sitting overnight.</p> <p> <b>CAUTION: Do NOT press down on the film when stirring.</b></p> <p>2. Allow parts to dry completely before post cure.</p> <p>3. Verify proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.</p> <p>4. Follow and apply accuracy wizard procedure for each printer to get highest accuracy parts.</p>	<p><a href="#">Video - FabPro 1000 3D Sprint Training Click here for full material best practices</a></p>	<p><b>Pre-mix resin on LC-3DMixer before pouring</b>  <u>New bottle</u> - 2.5 hrs.  <u>After 1st use</u> - 1 hr.  (see Note 1)</p> <hr/> <p><b>Mix resin in resin tray before printing</b>  <u>In tray &lt; 3 hr</u> - 30 sec.  <u>In tray &gt; 3 hr</u> - 60 sec.</p>	<p><a href="#">Post-Processing Guide</a></p>	<p>10 min. (see Note 2)</p>
FabPro™ Proto GRY	<p>1. Use orientation to minimize large cross sections areas.</p>	<p><a href="#">Video - FabPro 1000 3D Sprint Training</a></p>	<p><b>Pre-mix resin on LC-3DMixer before pouring</b>  <u>New bottle</u> - 1 hr.</p>	<p><a href="#">Post-Processing Guide</a></p>	<p>60 min. (see Note 2)</p>

Print Material	Part Quality and Accuracy Tips	<a href="#">Click here for Orientation/Support Guides</a> <a href="#">for material best practices</a>	<u>After 1st use - 10 min. (See Note 1)</u> <b>Resin Mixing Instructions</b>	Part-Cleaning Info.	Part-Curing Time
	<p>2. Before each build, make sure there is no debris stuck to the film, nor floating around in the tray. If debris is suspected to be present, filter the debris out using a thin wire mesh material by pouring the material from the tray into the original material bottle or glass jar. Clean tray as needed and inspect the film for damage before pouring material back in.</p> <p>3. Follow and apply accuracy wizard procedure for each printer to get highest accuracy parts.</p> <p>4. For best results use the Resin Mixer to gently stir between prints and after the resin has</p>		<p><b>Mix resin in resin tray before printing</b></p> <p><u>In tray &lt; 3 hr</u> - 30 sec.</p> <p><u>In tray &gt; 3 hr</u> - 30 sec.</p>		





Print Material	Part Quality and Accuracy Tips	3D Sprint Orientation / Supports Guides	Resin Mixing Instructions	Part-Cleaning Info.	Part-Curing Time
	<p>been sitting overnight.</p> <p> <b>CAUTION: Do NOT press down on the film when stirring.</b></p> <p>5. Verify proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.</p>				
<p>FabPro™ JewelCast GRN</p>	<ol style="list-style-type: none"> <li>1. Follow and apply accuracy wizard procedure for each printer to get highest accuracy parts.</li> <li>2. Manually check support location before printing.</li> <li>3. In thicker cross sections for large rings or non-ring geometries, go up in cure depth to avoid delamination between layers. Go up in 10µm increments to</li> </ol>	<p><a href="#">Video - FabPro 1000 3D Sprint Training</a> <a href="#">Video - JewelCast GRN</a> <a href="#">Click here for full material best practices</a></p>	<p><b>Pre-mix resin on LC-3DMixer before pouring</b> <u>New bottle</u> - 1 hr. <u>After 1st use</u> - 10 min. (see Note 1)</p> <hr/> <p><b>Mix resin in resin tray before printing</b> <u>In tray &lt; 3 hr</u> - 30 sec. <u>In tray &gt; 3 hr</u> - 30 sec.</p>	<p><a href="#">Post-Processing Guide</a></p>	<p>30 min. (see Note 2)</p>

<b>Print Material</b>	<b>Part Quality and Accuracy Tips</b>	<b>3D Sprint Orientation / Supports Guides</b>	<b>Resin Mixing Instructions</b>	<b>Part-Cleaning Info.</b>	<b>Part-Curing Time</b>
	<p>prevent over curing features.</p> <p>4. For parts thicker than 3.5mm use Heavy Mode to print the ring. If any cracking is seen after printing in Heavy Mode, raise the cure depth by 10µm.</p> <p>5. If positive features have poor resolution, the Border Thickness parameter in the build style could be increased up to 20%. It is not suggested to go higher or negative features might get closed or too small.</p> <p>6. If detail is blurry, check for proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.</p>				

<b>Print Material</b>	<b>Part Quality and Accuracy Tips</b>	<b>3D Sprint Orientation / Supports Guides</b>	<b>Resin Mixing Instructions</b>	<b>Part-Cleaning Info.</b>	<b>Part-Curing Time</b>
	<p>7. If detailing is still blurred, lower cure depth in 10µm increments.</p> <p>8. If detail remains an issue or accuracy is hard to achieve run the accuracy wizard for this build style.</p> <p>9. Verify proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.</p> <p>10. Make sure all IPA has been evaporated off, and allow for parts to dry completely. If surface finish is still shiny and not matte after cleaning, not all resin has been removed and it will show up in the casting. Repeat cleaning and drying until</p>				

Print Material	Part Quality and Accuracy Tips	3D Sprint Orientation / Supports Guides	Resin Mixing Instructions	Part-Cleaning Info.	Part-Curing Time
	<p>parts do not have any excess material.</p>				
<p>FabPro™ Tough BLK</p>	<ol style="list-style-type: none"> <li>1. Use orientation to minimize large cross sections areas.</li> <li>2. Before each build, make sure there is no debris stuck to the film, nor floating around in the tray. If debris is suspected to be present, filter the debris out using a thin wire mesh material by pouring the material from the tray into the original material bottle or glass jar. Clean tray as needed and inspect the film for damage before pouring material back in.</li> <li>3. Follow and apply accuracy wizard procedure for each printer to</li> </ol>	<p><a href="#">Video - FabPro 1000 3D Sprint Training</a>  <a href="#">Click here for full material best practices</a></p>	<p><b>Pre-mix resin on LC-3DMixer before pouring</b>  <u>New bottle</u> - n/a  <u>After 1st use</u> - n/a                      (see Note 1)</p> <hr/> <p><b>Mix resin in resin tray before printing</b>  <u>In tray &lt; 3 hr</u> - 30 sec.  <u>In tray &gt; 3 hr</u> - 30 sec.</p>	<p><a href="#">Post-Processing Guide</a></p>	<p>150 min. (see Note 2)</p>

Print Material	Part Quality and Accuracy Tips	3D Sprint Orientation / Supports Guides	Resin Mixing Instructions	Part-Cleaning Info.	Part-Curing Time
	<p>get highest accuracy parts.</p> <p>4. For best results use the Resin Mixer to gently stir between prints and after the resin has been sitting overnight.</p> <p> <b>CAUTION: Do NOT press down on the film when stirring.</b></p>				
<p>FabPro™ Elastic BLK</p>	<ol style="list-style-type: none"> <li>In 3D Sprint, use the <b>Orient</b> tool to minimize large cross-sectional areas.</li> <li>Before each build, make sure there is no debris stuck to the film, nor floating around in the tray. If debris is suspected to be present, filter the debris out using a thin wire mesh material by pouring the material from the tray into the original material</li> </ol>	<p><a href="#">Video - FabPro 1000 3D Sprint Training</a>  <a href="#">Click here for full material best practices</a></p>	<p><b>Pre-mix resin on LC-3DMixer before pouring</b>  <u>New bottle</u> - 1 hr.  <u>After 1st use</u> - 10 min.                      (see Note 1)</p> <hr/> <p><b>Mix resin in resin tray before printing</b>  <u>In tray &lt; 3 hr</u> - 30 sec.  <u>In tray &gt; 3 hr</u> - 30 sec.</p>	<p><a href="#">Post-Processing Guide</a></p>	<p>45 min. (see Note 2)</p>

Print Material	Part Quality and Accuracy Tips	3D Sprint Orientation / Supports Guides	Resin Mixing Instructions	Part-Cleaning Info.	Part-Curing Time
	<p>bottle or glass jar. Clean tray as needed and inspect the film for damage before pouring material back in.</p> <p>3. For best results use the Resin Mixer to gently stir between prints and after the resin has been sitting overnight.</p> <p> <b>CAUTION: Do NOT press down on the film when stirring.</b></p> <p>4. Remove parts from print platform soon after printing. Remove large parts within six hours of the end of a print, and all smaller parts within 24 hours from the end of a print. Due to the elastic nature of the material, and gravity, failure to do this risks the part detaching</p>				

<b>Print Material</b>	<b>Part Quality and Accuracy Tips</b>	<b>3D Sprint Orientation / Supports Guides</b>	<b>Resin Mixing Instructions</b>	<b>Part-Cleaning Info.</b>	<b>Part-Curing Time</b>
	<p>from the print platform and falling into the print tray. This will cause a resin spill and partially cured resin to be left in the tray. It can also damage your build.</p> <p>5. Verify proper cleaning method. Ensure cleaning solvents are not saturated and parts are allowed to dry before post-curing.</p> <p>6. To get best surfaces, cut supports off of part before post-curing.</p> <p>7. Advanced users who would like to try to print flat-bottom parts, such as gaskets, directly on the print platform without supports may do so by taking the following steps in 3D Sprint:</p>				

Print Material	Part Quality and Accuracy Tips	3D Sprint Orientation / Supports Guides	Resin Mixing Instructions	Part-Cleaning Info.	Part-Curing Time
	<p>a. Go to <b>Build Style &gt; Advanced</b>.</p> <p>b. Scroll down and set the <b>Min. Support Height</b> field to <b>0</b>. Then click <b>Apply</b>.</p> <p>c. In 3D Sprint, use the <b>Transform</b> tool to move parts to sit flush on the bottom of the grid (print platform).</p> <p>8. Verify print tray is full of material before printing.</p>				



Print Material	Part Quality and Accuracy Tips	3D Sprint Orientation / Supports Guides	Resin Mixing Instructions	Part-Cleaning Info.	Part-Curing Time
FabPro™ Flexible BLK	<ol style="list-style-type: none"> <li>1. Use orientation to minimize large cross-sectional areas.</li> <li>2. Orient part to print non-flat surfaces. Flat surfaces may show more support scarring than other FabPro materials.</li> <li>3. Verify proper cleaning method. Ensure cleaning solvents are not saturated and parts are allowed to dry before post curing.</li> </ol>	<p><a href="#">Video - FabPro 1000 3D Sprint Training</a>  <a href="#">Click here for full material best practices</a></p>	<p><b>Pre-mix resin on LC-3DMixer before pouring</b>  <u>New bottle</u> - 1 hr.  <u>After 1st use</u> - 10 min.  <a href="#">(see Note 1)</a></p> <hr/> <p><b>Mix resin in resin tray before printing</b>  <u>In tray &lt; 3 hr</u> - 30 sec.  <u>In tray &gt; 3 hr</u> - 30 sec.</p>	<p><a href="#">Post-Processing Guide</a></p>	<p>60 min. (<a href="#">see Note 2</a>)</p>



**NOTE 1:** Considerations for resin that has been sitting, unused, for over 1 month - If you have a resin bottle like this, simply treat it like a new bottle and mix it for the time specified in the "Brand-new bottle" column in the above chart. Instead of using the bottle mixer, you may opt to mix the material bottle by hand, shaking it vigorously in an up-and-down motion. Shake it for five minutes for a new material or for one you are treating as new (see above note). Shake the bottle for two minutes for a recently used bottle. Please see the section [Begin Your Print Job](#) for more information.



**NOTE 2:** Ensure that you place the build in your UV curing oven in the same orientation it was printed in, as if the bottom of the oven is the print platform.

## 3D Sprint

### General Tips

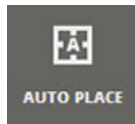
The following section will help you in basic orientation of 3D models in 3D Sprint software.

## General Tips

The most-common tools you will use are:



The **Transform Tool** allows you to move, rotate, and scale your 3D model in the print area.



The **Auto Place Tool** automatically places your 3D model in the optimal part of the print area.



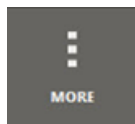
The **Combine/Separate Tool** allows you to select and combine subparts to create a new part, as well as separate a combined part into its subparts.



The **Smart Support Tool** allows you to create supporting architecture for your print job. Supporting architecture both holds the printed part on the print platform, and supports the architecture of the part so that it keeps its shape during printing.



The **Orient Tool** allows you to automatically orient parts on the print platform, or select the face of the 3D model to align with the platform.



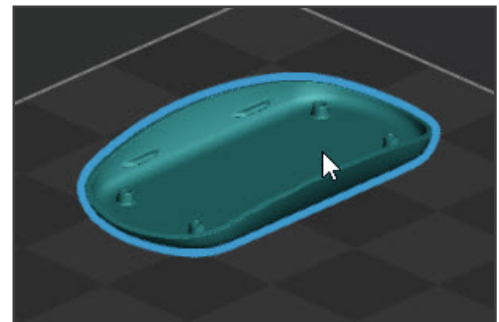
If you are using a smaller computer screen, some tools might be hidden under the "MORE" dropdown menu.


## Part Tilting

### Tilt Single Model

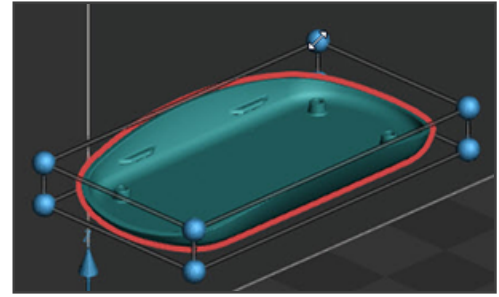
Tilting objects optimizes cross-sectional area for printing, and enables finer part-surface quality and uniformity on surfaces. A tilted orientation is especially recommended for parts with large flat sections. This section describes how to best tilt objects for inverted-SLA printers.

1. Click on your part model to select it.



2. Click the **Transform Tool** and then the  button.

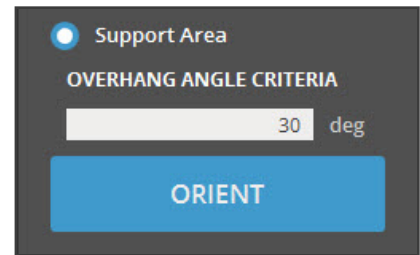
3. This will create anchors on the 3D model, which you can click and drag to resize your model. Resize the model until it is small enough to fit on the print platform, and until it is at your desired dimensions.



4. Click the **Auto Place Tool** and click the  button.

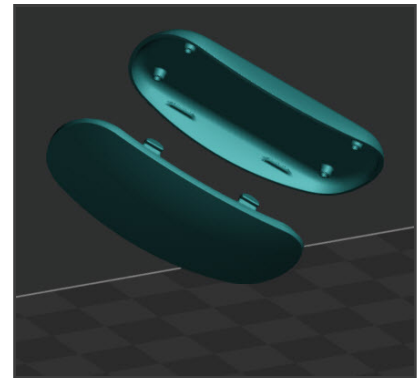
5. Click the **Orient Tool** and select the **Support Area** radio button.

6. Keep the default setting of **30 deg** and click the **Orient** button. The other recommended setting you may use is **15 deg**.




## Combined Parts

1. Combined parts will be oriented together and will be placed in undesirable positions.

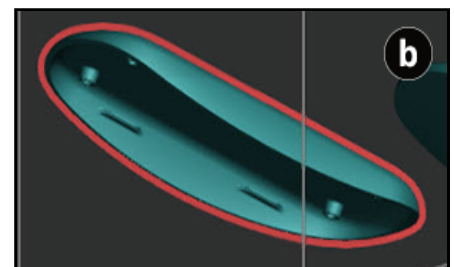
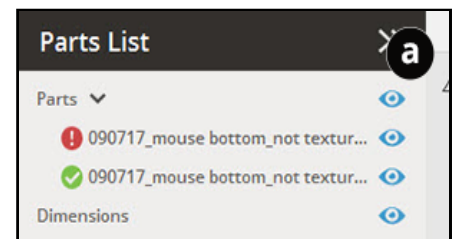


2. Click the **Combine/Separate Tool** and click the  button.

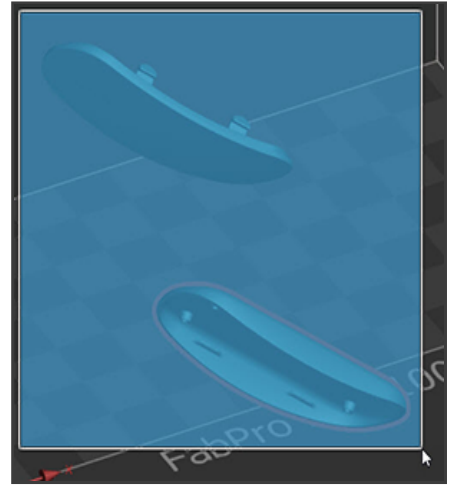
3. Click the combined part to select it and click the  button.

4. Both parts may not fit in the print area as they are. They might need to be scaled and/or moved to fit. There are two ways to tell if a part does not fit in the print area:

- The item is marked with a red exclamation point in a circle in the **Parts List** menu.
- The model is outlined in red in the printable area.



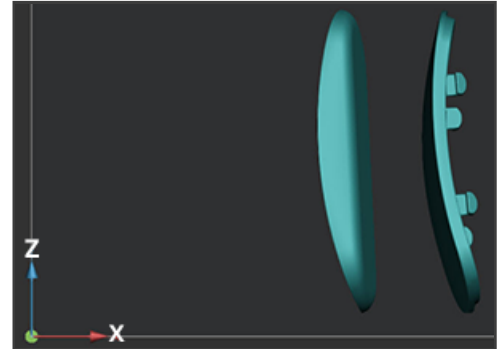
5. To scale the parts down, click and drag a box around the parts to select them as a group. Use the **Transform Tool**, as in **Step 2** of the above section **Tilt Single Model**.
6. With the parts still selected, click the **Auto Place Tool**, and then click the **Set** button.



## Advanced Placing Techniques

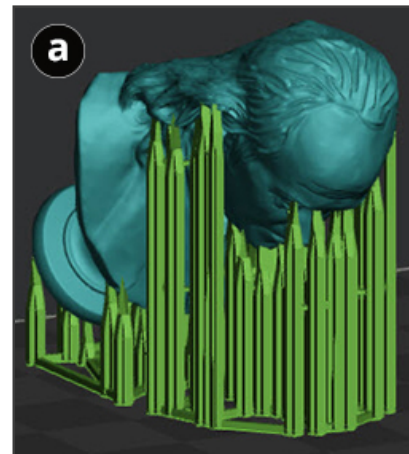
You may wish to alter the models beyond simply auto-placing them.

1. Use the **Move** and **Rotate** functions within the **Transform** dialog window to reorient your part(s) so that any flat parts are in a vertical orientation.



2. To print a part with as few supports as possible, ensure that the sections of your part(s) that have a continuously connected surface are facing the print platform as much as possible. In the example at the right, the arrows point to sections with a continuous surface. Consider the following examples:

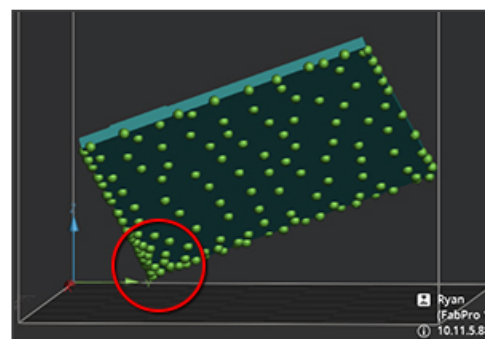
- a. In this example, the side of the part with fine details faces the print platform. The supports must connect at many places to support the structure, causing a lot of supports to be created.



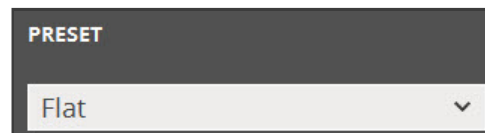
- b. In this example, the same part is oriented such that the parts with the least amount of details are facing the print platform. Less supports are needed, making for a more-ideal print job.



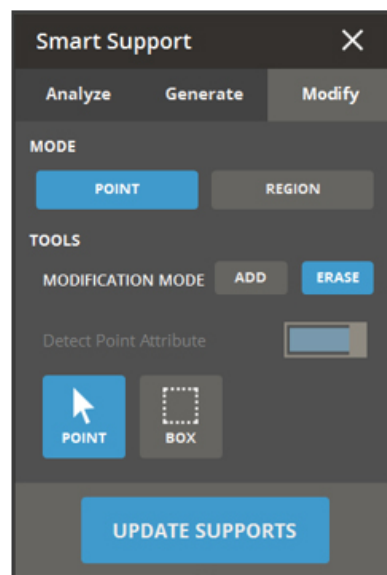
3. Ensure that there are enough supports along the sections of your part that have the most changes in geometry. Pay particular attention to the areas closest to the print platform, as these will be the first parts that attach to the supports- the highest density of supports should be concentrated on these areas. The image at the right shows an example of a high density of nodes near the platform. You may need to reinforce areas such as these with more supports, depending on the size and geometry of the part.



- a. Toggle between **Flat** and **Tilted** settings in the **PRESET** dropdown menu, and then click **UPDATE SUPPORTS**, to see if either preset distributes the nodes more evenly and at a better density.

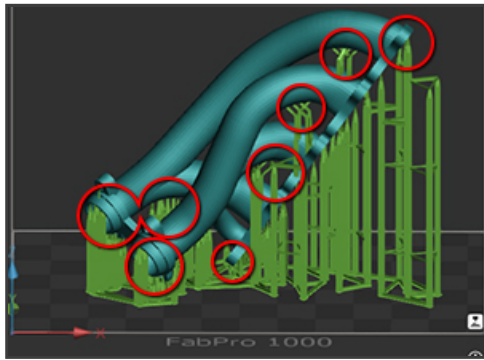


- b. If there are still gaps in the parts, use the **Add/Erase** buttons under the **Modify** tab to manually add/edit your supports. Ensure you are using **POINT** mode. Click the **ADD** or **ERASE** buttons to go into that mode. Click on the **green diodes** you wish to erase, or click on areas where you wish to add a diode. Click the **UPDATE SUPPORTS** button.

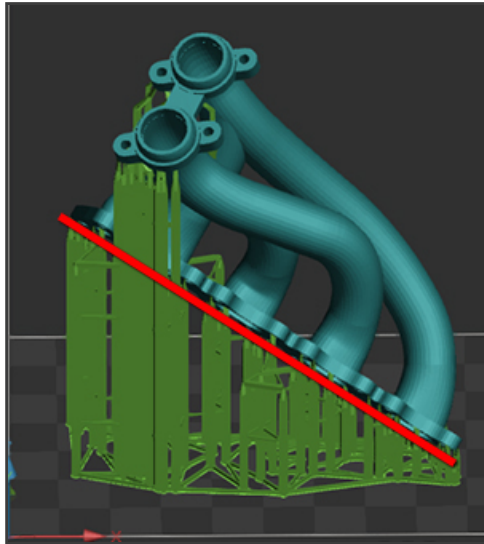


4. Parts that don't have large flat areas, and less than 2mm wall thickness, may be printed in either **Flat** or **Tilted** preset modes, provided that you still inspect the supports for proper placement, continuity, and density near the platform.

Consider the following examples:





The way this part is oriented, there are many changes in elevation facing the print platform, and there are many floating parts that must be supported. This causes many supports to be necessary, and at staggering heights.



If the same part is oriented with the longest, flattest portion facing down and slanted, most of the supports are so evenly spaced and consistent that a line can be drawn through them. There are just a couple of extra support sets sticking up to support floating geometry. This is ideal.

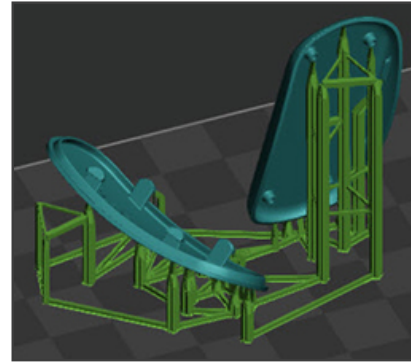
## Support Anchor Placement

When creating supports automatically, the supports that are generated might not always be the most-optimal. This section will show you how to modify supports by adding or erasing support anchor points.

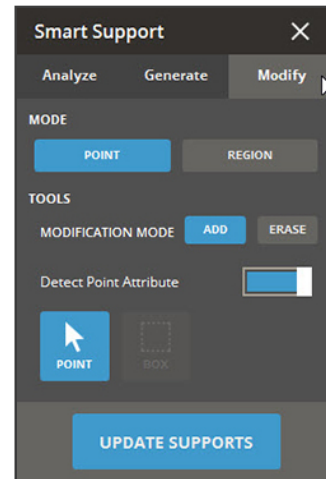
1. Ensure that the part(s) are properly oriented before generating supports. If you have multiple parts, it is best to group them together by using the **Combine/Separate Tool**. Click this tool in the top menu.
2. Ensure that  is selected. Click and drag a square around the parts to select them.
3. Click 



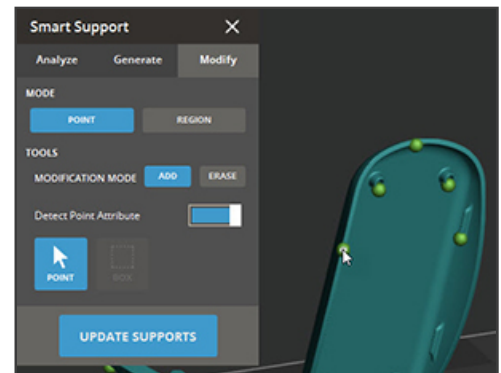
4. Now, when you generate supports, they will connect the two parts together. Generate supports using the **Smart Supports** dialog window.



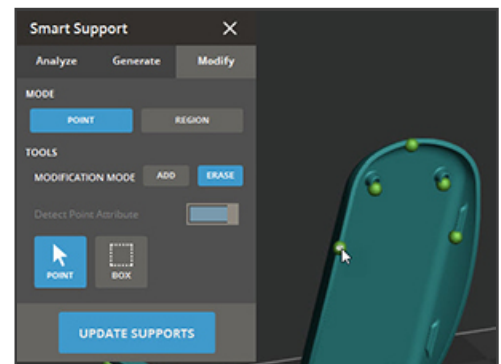
5. Support anchors can be changed by clicking in the **Modify** tab of the **Smart Supports** dialog window.



6. Add supports by clicking the **ADD** button and clicking an area on the surface of a part where another support is needed.

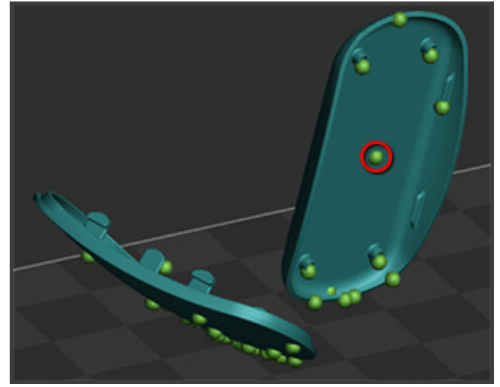


7. Erase supports by clicking the **ERASE** button and clicking the green anchor sphere(s) where you no longer want supports.

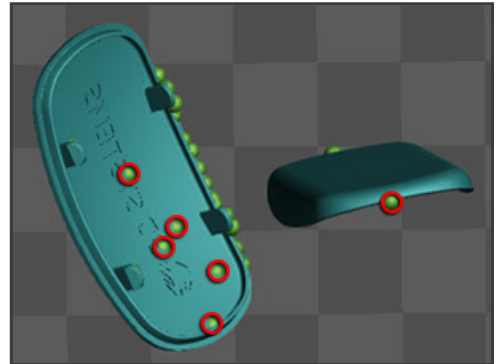


## General Tips on Adding/Erasing Supports

1. Supports in the middle of sidewalls are generally not necessary. Delete supports like the one circled at the right.



2. Anchors that appear under the part, in relation to the print platform, should be deleted.



## Materials

### FabPro Proto GRY

A fast, general purpose plastic material ideally suited for industrial applications. The FabPro's precision printing in this opaque gray material highlights fine features and is ready for finishing and painting, perfect for high quality prototypes and models.

### Part Quality and Accuracy Tips

In order to achieve good accuracy with PROTO GRY it is important to follow the part setup instructions below for orientation and supports. Some other key tips are as follows:

1. Use orientation to minimize large cross sections areas.
2. Before each build, make sure there is no debris stuck to the film, nor floating around in the tray. If debris is suspected to be present, filter the debris out using a thin wire mesh material by pouring the material from the tray into the original material bottle or a glass jar. Clean tray as needed and inspect the film for damage before pouring material back in the tray.
3. Follow and apply accuracy wizard procedure for each printer to get highest accuracy parts.
4. For best results use the Resin Mixer to gently stir between prints and after the resin has been sitting overnight.



**CAUTION: Do NOT press down on the film when stirring.**

5. Verify proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.




## Orientation

Part orientation is the first critical setup function before slicing a part in 3DSprint™. The part orientation must consider several features before adding supports to the part. The optimal orientation may not be intuitive at first, but the orientation is based on the premise of printing on a 3D printer one layer at a time. The goal of this document is to allow the customer to build that orientation skill and intuition.

### Tip 1 - Identify No Support Surfaces-

The first thing to consider for a part is to determine what surfaces or features should NOT have a support.

 **NOTE:** In 3DSprint™ for FabPro™, this will be surfaces facing AWAY from the print platform or 'floor' (checker board plane in the illustration below) of 3DSprint™. Thus, surfaces such as datums, textured surfaces, and outer cover surfaces should be oriented for no supports.

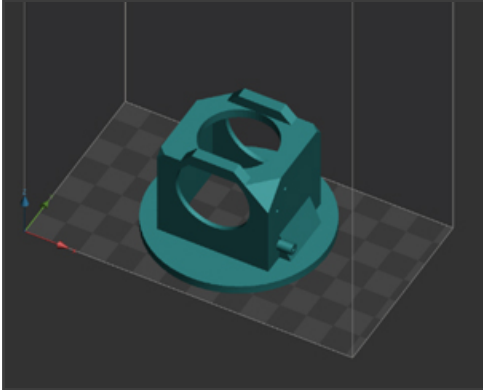



Figure 1. Initial part orientation in 3DSprint™

### Tip 2 - Large Cross Sectional Area

To get the best surface quality and accurate part, minimizing the cross sectional area is very important. Use the Transform function in 3DSprint™ to rotate the part such that it satisfies Tip 1 and Tip 2.

 **NOTE:** It is also useful to use the View window to click on the Top Left triangle of Z in the Clipping section. This will create a plan that can be moved up and down in Z to view the slice image of the layer being printed. In other words, what is seen in Red is what is being printed in that layer.

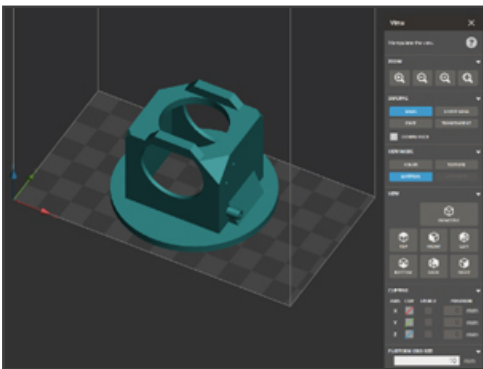


Figure 2. Initial part orientation and View window in 3DSprint™

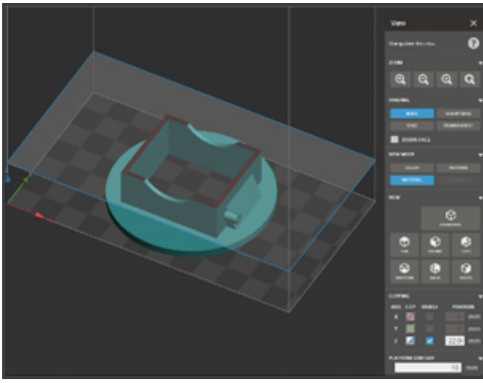


Figure 3. Cross section area view in XY plane using Z-axis clipping in View. Red denotes the layer information.

To see the large cross sectional area for this part, move the blue plane down. This is a large cross section that would be better printed in an angular rotated orientation. Note a Large Cross Section can be considered to be a cross section that is greater than a 20x10mm or 8x30mm area. This should be defined as being in a local area and not the full area of the layer. The figure shows an area that has four large cross sectional local areas.

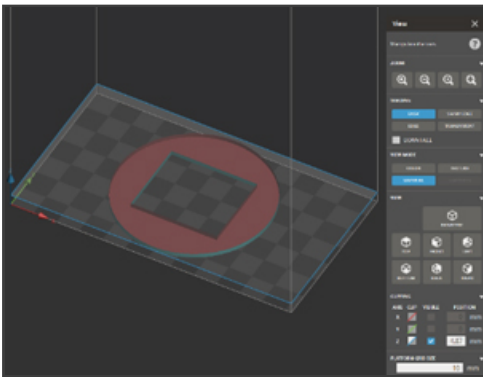


Figure 4. Large cross sectional area. Shows four sides with approximate 10x30mm cross sectional areas.

Continue to move the blue plane up and down along the Z-axis to identify the large cross section areas in the part. The area below shows a part that is approximately 8x35mm in two local areas.

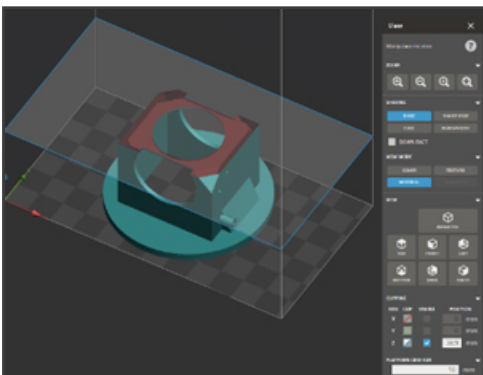



Figure 5. Large cross sectional area. Shows two areas with approximate 8x35mm cross sectional areas.

### Tip 3 – Critical Feature Orientation

A critical feature is a feature for which you would prefer minimal or no supports, such as a screw boss, snap, or other critical geometry. On the part in this example, there is a screw boss on one side of the part. For these features, it is optimal to rotate the part so they are facing away from the print platform.

 **NOTE:** These surfaces may have minimal supports (minimal meaning  $<5$ ), but not in such a way the support interferes with the critical function of the feature. Note manual editing may also be required on these features.

**Enable Tip 1, Tip 2, and Tip 3** – Once considering the items described in Tips 1-3, the part can be oriented. The Transform window in 3DSprint™ can be used to orient the part back 45-degrees toward the Y-axis. Note the change in cross section being printed on this layer compared to the orientation in Figure 5. The following images show the considerations from Tip 1-3.

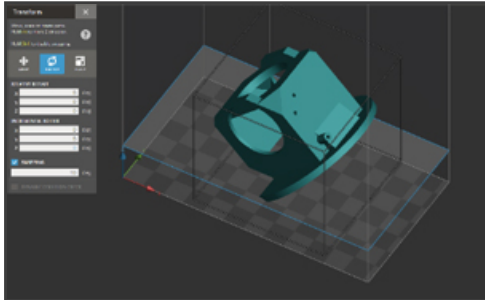


Figure 6. Re-oriented part after following Tip 1 for no support surface.

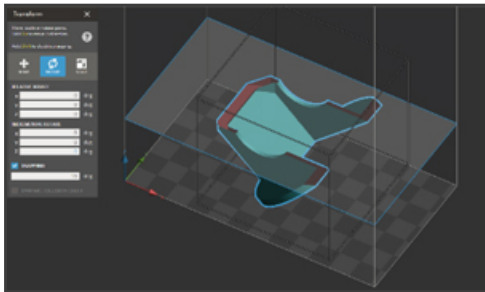


Figure 7. Re-oriented part after following Tip 2 for small cross sectional area.

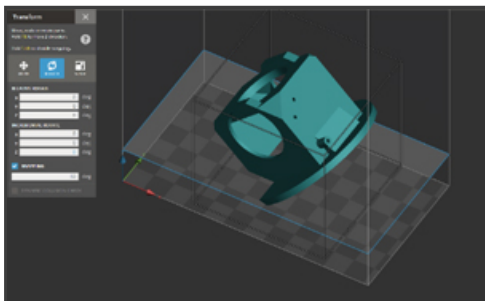


Figure 8. Re-oriented part after following Tip 3 for feature location.

#### Tip 4 – Minimizing Supports Using Self Supporting Orientation

Before adding supports, it is important to orient the parts to be self-supporting. This includes orienting the part such that larger sections of the part are at approximately 45° relative to the print platform. Consider the example in Figures 9 and 10 below, where large, straight edges have been oriented 45° from the print platform.

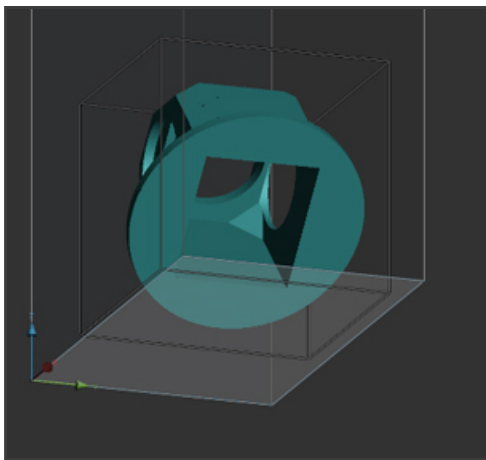


Figure 9. Top of center hole is parallel to the print platform.

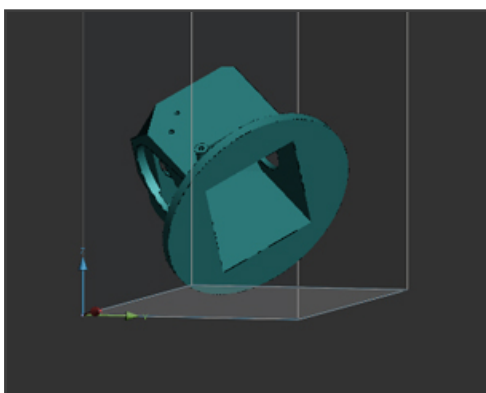


Figure 10. Top of center hole is now at a self supporting angle to the print platform.

The part in the image below is now ready to add supports. It has used the following information to optimally orient the part:

**Tip 1 - Identify No Support Surfaces** – Cover area has been considered and no supports are on top surfaces of the part. There is minimal supports on the side of the outer surface wall.

**Tip 2 - Large Cross Sectional Area** – The large cross sectional areas were identified and have been optimized.

**Tip 3 – Critical Feature Orientation** – The critical features of the large holes and screw boss have been oriented for minimal supports.

**Tip 4 – Minimizing Supports Using Self Supporting Orientation** – The final orientation moves the part such that it minimized edges parallel to the print platform.

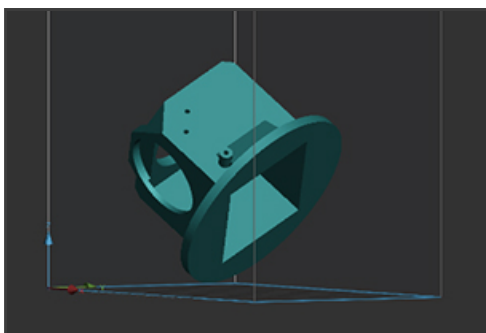


Figure 11. Final orientation after following Tips 1-4.

## Add Supports

Supporting the part is another critical function for getting successful accurate parts. Once the part has been optimized for orientation, then the supports can be added. TOUGH BLK print material has two default support styles which have been optimized for that particular material. These support styles are fZlat and Tilted. The Flat and Tilted refer to the part orientation. Sometimes a part will need to be printed in a flat orientation and, thus, the supports are optimized for that; it is likewise for a tilted part.

### Tip - 1 Flat Supports

The Flat supports are designed to be conservative in that they will cover a large span of geometries. This will also lead to the need to manually remove some supports before printing. The following is an example of a flat part and the manual editing of the supports. It is printed flat in order to optimize the round sections of the part.

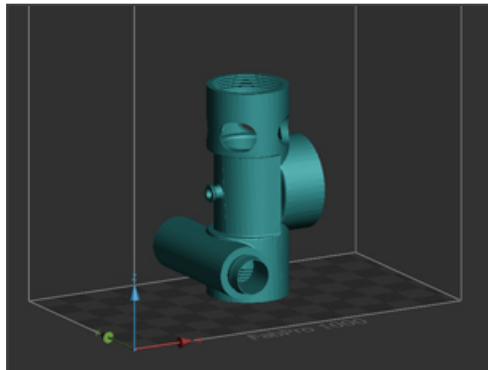


Figure 12. Part in flat orientation.

Go to Smart Supports and select the Flat support style to generate the default supports.

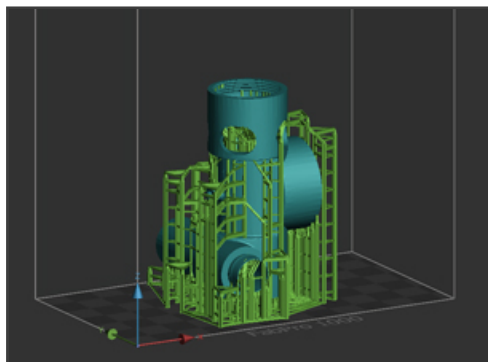


Figure 13. Part in flat orientation with default supports.

Rotate the part to see the bottom view and the threads of the part. In most cases, screw threads do not need any supports.

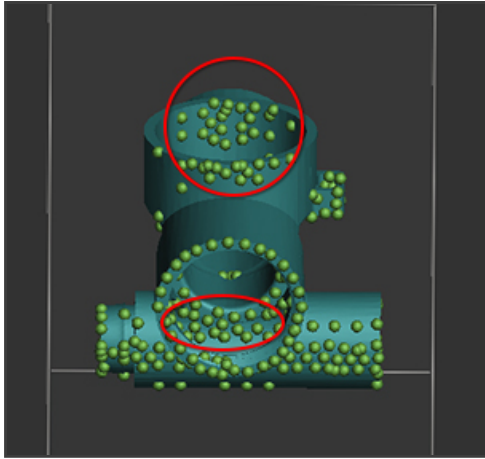


Figure 14. Due to the geometry and the conservative approach for the Flat supports, there will be areas that require manually removing some anchor points to prevent excess support scarring.

Go to the Modify tab to manually remove anchor points. It is important to maintain anchor points in areas as shown below to get the most accurate part. This includes properly supporting large radii on the bottom and inside of the top of a hole.

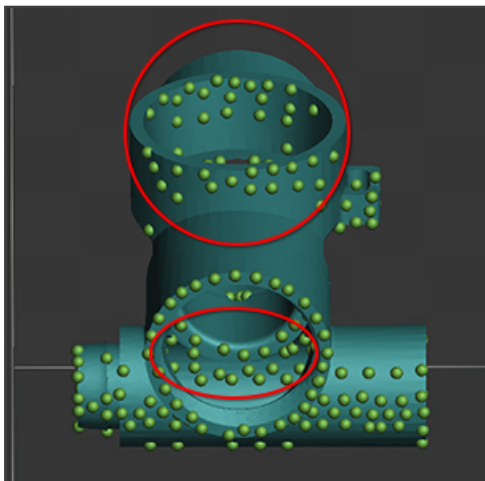


Figure 15. Modified anchor points using support tools.

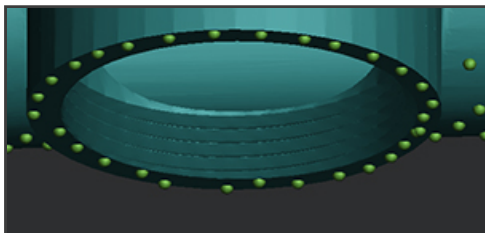


Figure 16. Anchor points are removed from threads on part.

## Tip-2 Tilted Supports

The Tilted supports are designed to be conservative in that they will cover a large span of geometries. This will also lead to the need to manually remove some supports before printing. The following is an example of a tilted part and the manual editing of the supports. It is printed in a tilted orientation in order to optimize the flat surfaces of the part.

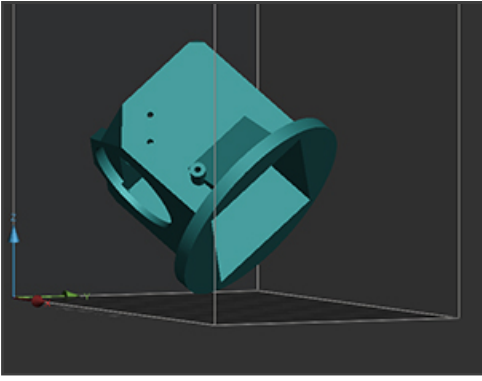


Figure 17. Part in tilted orientation.

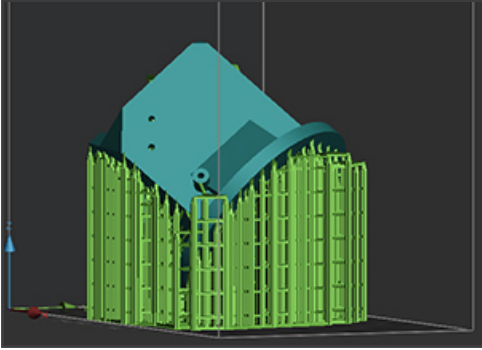


Figure 18. Part in tilted orientation with default supports.

Go to the Modify tab and rotate the part to check for excess anchor points. One signal for too many anchor points is a line of supports on a flat functional wall. It is optimal to have fewer supports on a functional surface to reduce the post processing of the part.

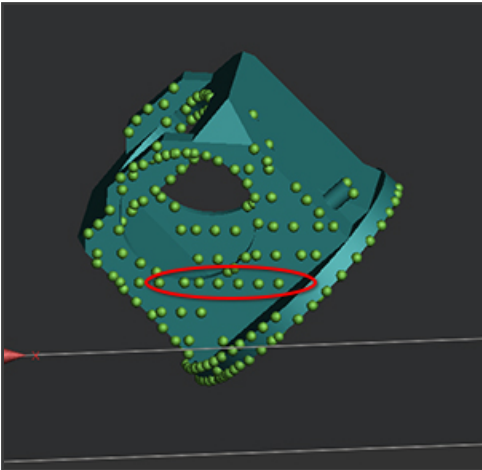


Figure 19. Note lines of anchor points on functional wall surface.

However, it is necessary to know the bottom side of the part as it may need the excess supports to maintain the flatness of the part.

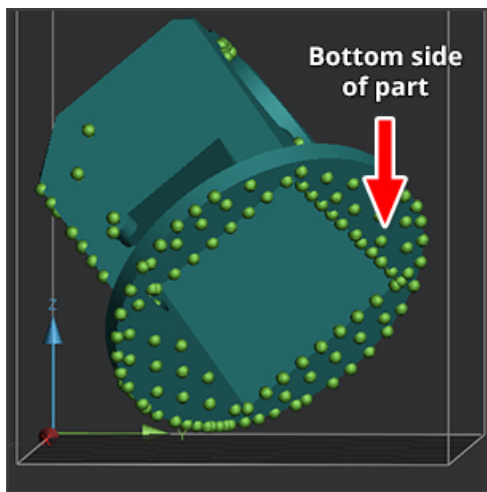


Figure 20. The bottom side of the part has full sharp edge anchor points as well as some infill anchor points to maintain a flat part bottom.

Go to the Modify tab to manually remove excess anchor points. It is important to maintain anchor points in areas as shown below to get the most accurate part. This includes properly supporting large radii on the bottom and inside of the top of a hole.

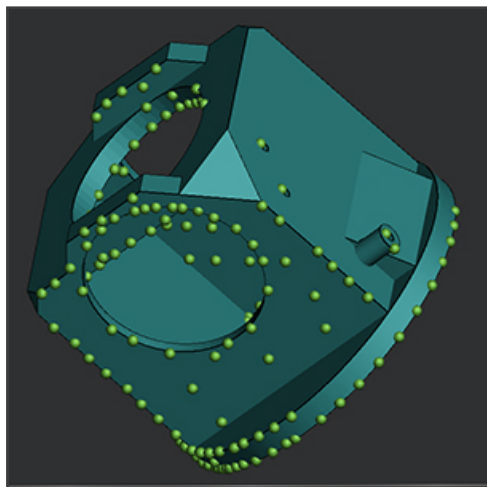


Figure 20. Anchor points are optimized on the functional wall without sacrificing part accuracy.

## FabPro Tough BLK

A durable plastic material for producing black parts for functional prototyping and production parts. Combined with the versatility, reliability and small footprint of the FabPro, this tough material provides a solution to create mechanical assemblies, fit testing prototypes and functional parts.

### Part Quality and Accuracy Tips

In order to achieve good accuracy with TOUGH BLK it is important to follow the part setup instructions below for orientation and supports. Some other key tips are as follows:

1. Use orientation to minimize large cross sections areas.
2. Before each build, make sure there is no debris stuck to the film, nor floating around in the tray. If debris is suspected to be present, filter the debris out using a thin wire mesh material by pouring the material from the tray into the original



material bottle or glass jar. Clean tray as needed and inspect the film for damage before pouring material back in.

3. Follow and apply accuracy wizard procedure for each printer to get highest accuracy parts.
4. For best results use the Resin Mixer to gently stir between prints and after the resin has been sitting overnight.



**CAUTION: Do NOT press down on the film when stirring.**

5. Verify proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.

## Orientation

Please see [Orientation section for FabPro Proto GRY](#).

## Add Supports

Please see [Add Supports section for FabPro Proto GRY](#).

# FabPro JewelCast GRN

A green material ideal for small, fine featured jewelry master patterns for gypsum investment casting applications. This material leaves minimal ash after burnout to produce superior casting quality. Create and produce custom jewelry or other investment castings that capture fine detail with a smooth surface finish.

## Part Quality and Accuracy Tips

In order to achieve good accuracy with JewelCast-GRN, it is important to follow the part setup instructions below for orientation and supports. Some other key tips are as follows:

1. Follow and apply accuracy wizard procedure for each printer to get highest accuracy parts.
2. Manually check support location before printing.
3. In thicker cross sections for large rings or non-ring geometries, go up in cure depth to avoid delamination between layers. Go up in 10µm increments to prevent over curing features.
4. For parts thicker than 3.5mm use Heavy Mode to print the ring. If any cracking is seen after printing in Heavy Mode, raise the cure depth by 10µm.
5. If positive features have poor resolution, the Border Thickness parameter in the build style could be increased up to 20%. It is not suggested to go higher or negative features might get closed or too small.
6. If detail is blurry, check for proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.
7. If detailing is still blurred, lower cure depth in 10µm increments.
8. If detail remains an issue or accuracy is hard to achieve run the accuracy wizard for this build style.
9. Verify proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.
10. Make sure all IPA has been evaporated off, and allow for parts to dry completely. If surface finish is still shiny and not matte after cleaning, not all resin has been removed and it will show up in the casting. Repeat cleaning and drying until parts do not have any excess material.

## Orientation

The orientation for thick parts is best when oriented vertically to minimize supports.

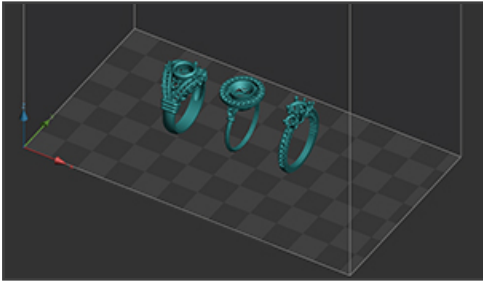


Figure 1. Ring print orientation in 3DSprint

## Add Supports – Full Arches

Add supports to the part using the Create Supports function under the Smart Supports icon. Look at the supports and determine how they may need to be modified.

Jewelry parts will need to be checked manually to verify supports are on the correct part of the rings to prevent damage to the part during support removal. In 3DSprint start by viewing the rings from the bottom-up.

### Thin and Multiple band Ring Geometry

Rings with thin bands and multiple-band geometry need to be properly supported to maintain roundness of all bands.

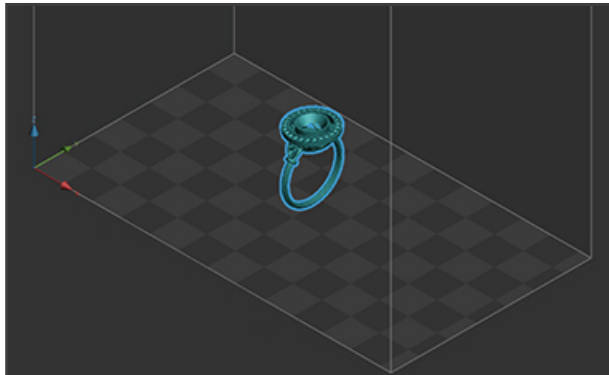


Figure 2. Ring view from bottom-up.

Go to the Analyze tab in the Smart Supports and Update Placement to view the default supports. Many of these supports will need to be removed.

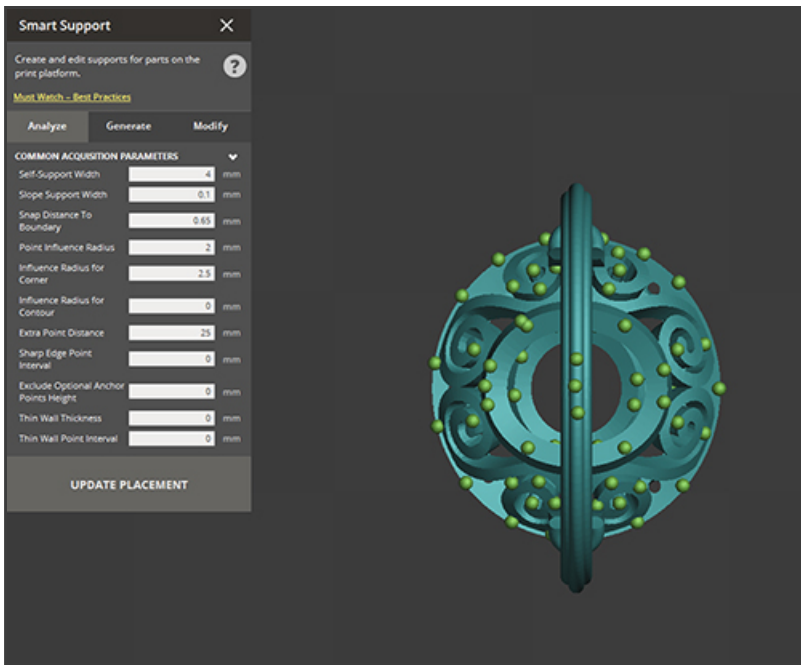


Figure 3. Default support placement.

After loading the default supports go to the Manual Tab to remove supports. Remove the supports that are on the crown. Note also that this part of the ring is mostly self-supporting. The reason the software adds these supports is that the default supports must cover all general parts. Thus, the support coverage will be conservative for reliability.

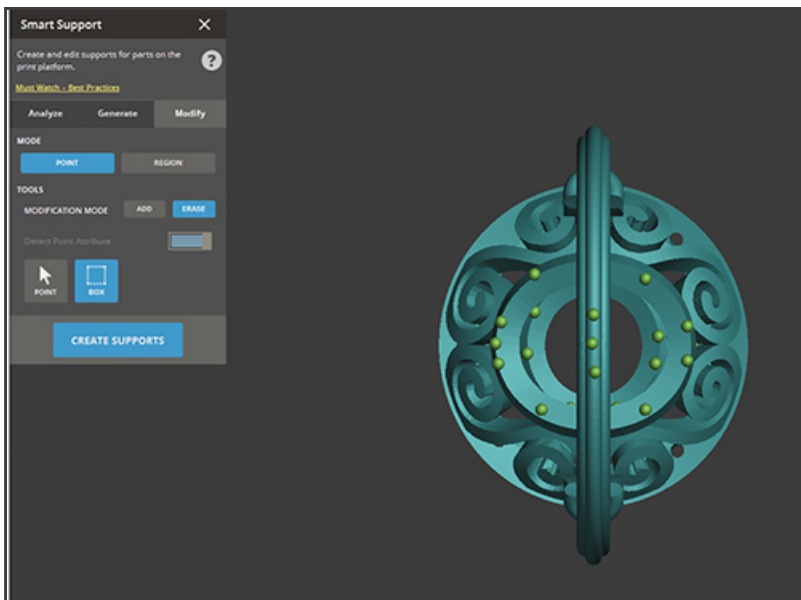


Figure 4. Manually edited support removal result.

Use the Clipping function in the View window to scroll thru the part to see if any anchor points are on the inside that need to be removed.

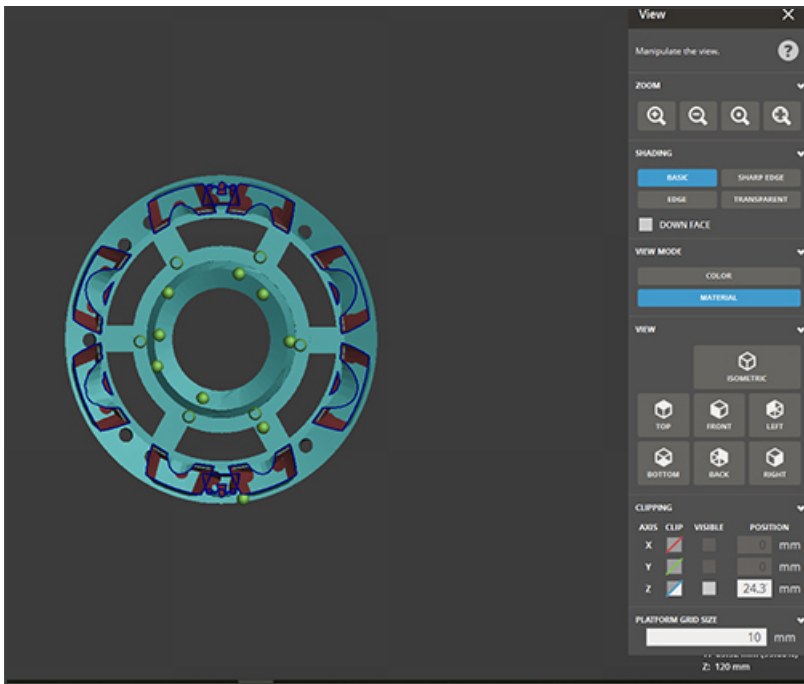


Figure 5. This ring has many anchor points that need to be removed from the inside of the part.

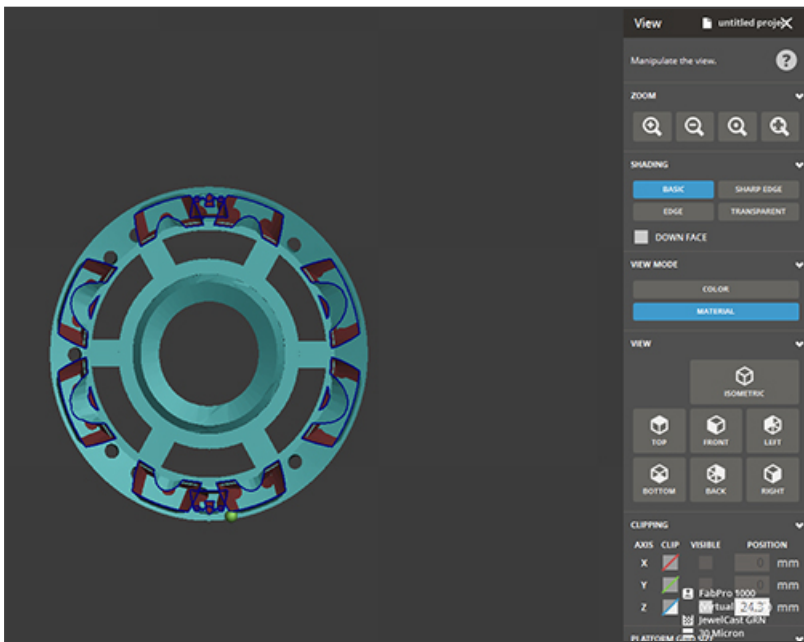


Figure 6. This ring has the anchor points removed from the inside of the part.

Next, be sure to remove anchor points from features that can be self-supporting.

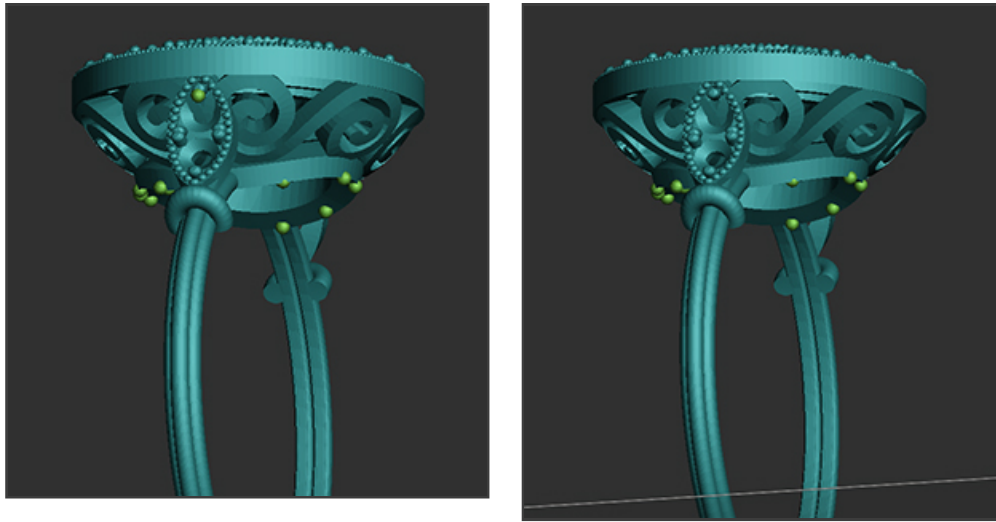


Figure 7. The ring on the right has the feature anchor point removed.

The band and underside of the crown are the ideal places to support. This is because support removal is easy and less likely to scar the part in these areas. Support the extra bands with more anchor points at the starting area of the ring.



Figure 8. Anchor points added to starting point 2nd and 3rd bands of the ring.

To maintain roundness of the part during printing, add anchor points at intervals going up the ring sides. Ensure all bands of the ring are supported.

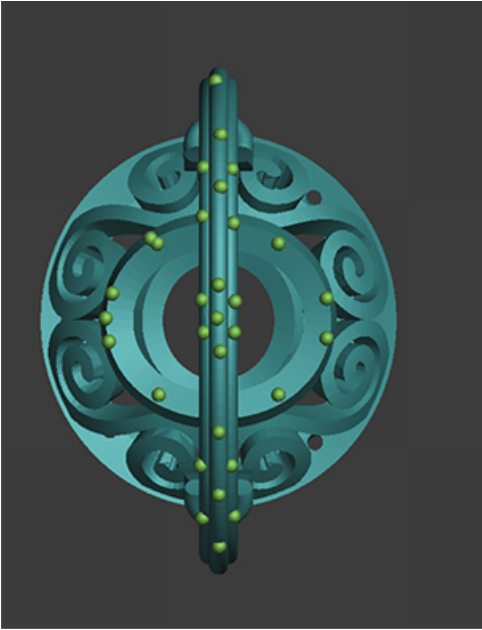


Figure 9. Anchor points added to starting point 2nd and 3rd bands of the ring.

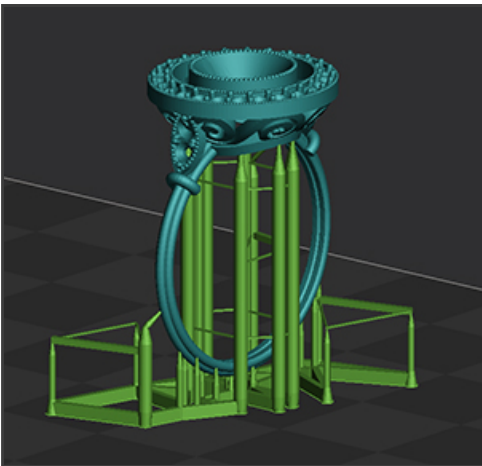


Figure 10. Ring with final support solution.

The tips can be made smaller if desired by using The Pillar Top Ratio parameter in the Tip section.

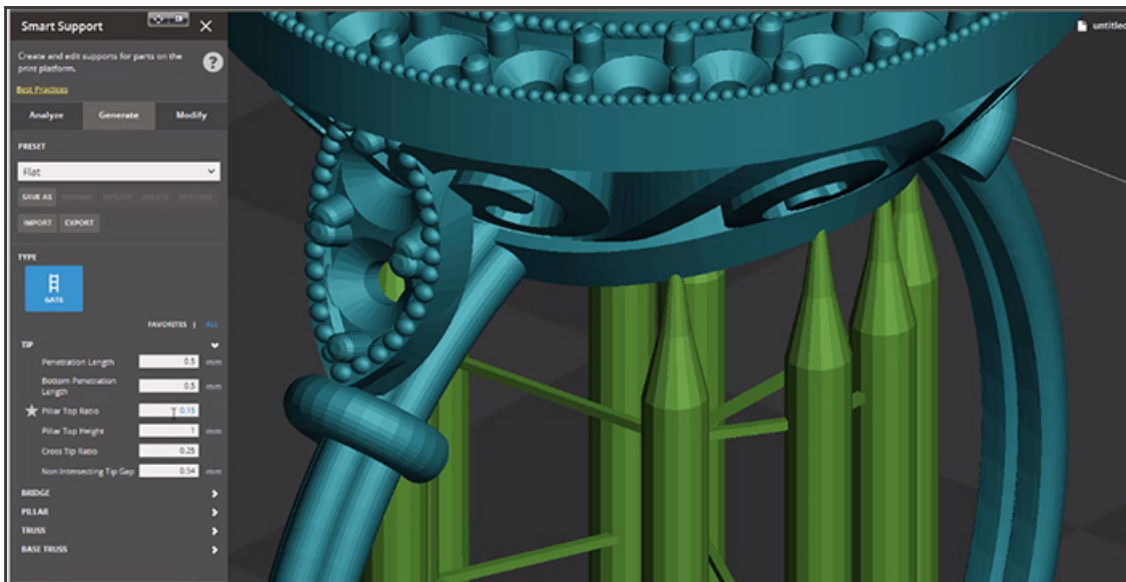


Figure 11. The Pillar Top Ratio parameter is highlighted with a star.

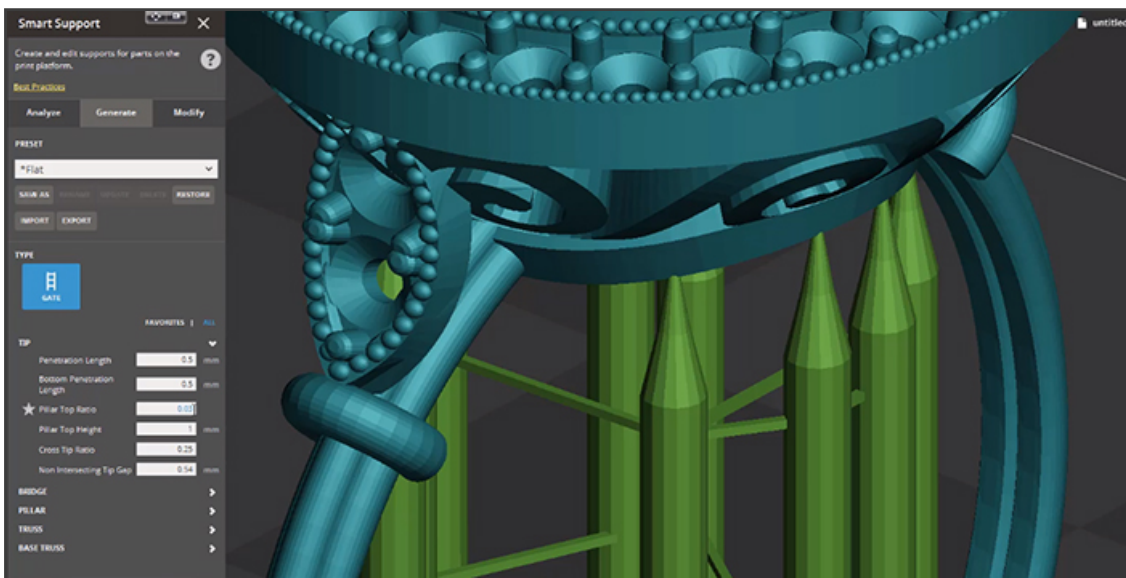


Figure 12. Note the support tip change by making the Pillar Top Ratio 0.3 rather than 0.15.


## Wide Band Ring Geometry

Rings with wide bands require more anchor points on the bottom half of the ring band. This will help maintain the roundness of the ring and control the shape of the bottom of the ring to minimize post processing.



Figure 13. Wide band ring.

The default anchor points on the ring band will not be enough to maintain the shape.

 **NOTE:** Because the manual support editing is necessary, the 3DSprint software defaults to less supports so removing supports and adding supports is easier for the user.

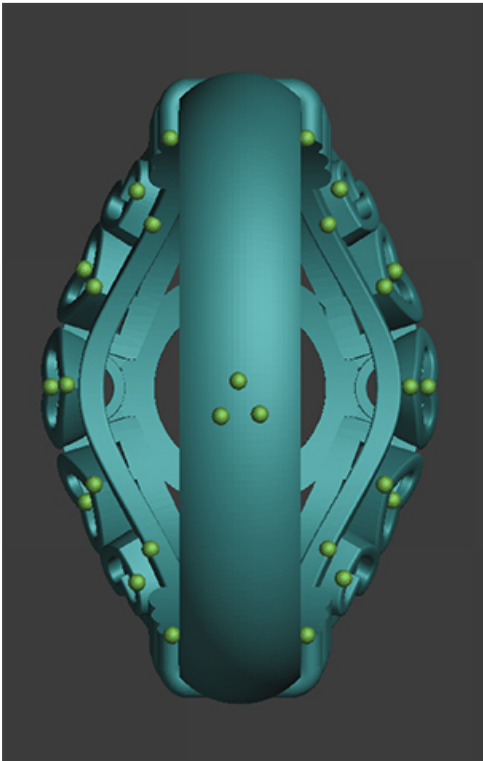


Figure 14. Default anchor points on thick ring band.



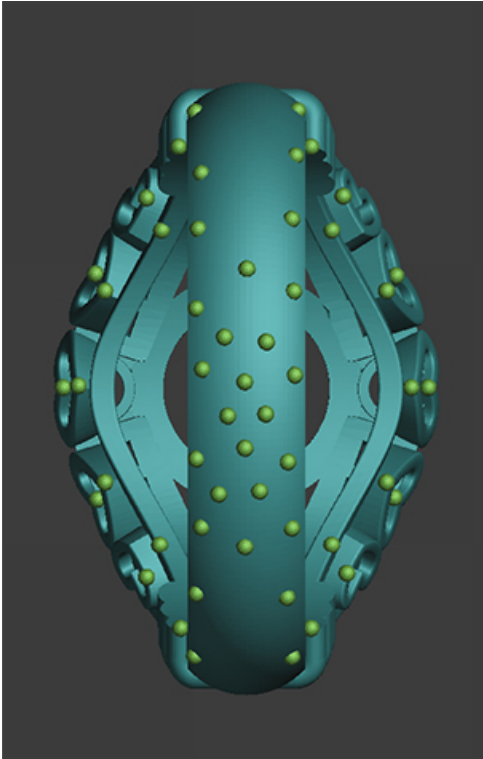



Figure 15. Modified anchor points on thick ring band.

## FabPro Elastic BLK

A design elastomer.

### Part Quality and Accuracy Tips

1. Before each build, make sure there is no debris stuck to the film, nor floating around in the tray. If debris is suspected to be present, filter the debris out using a thin wire mesh material by pouring the material from the tray into the original material bottle or glass jar. Clean tray as needed and inspect the film for damage before pouring material back in.
2. For best results use the Resin Mixer to gently stir between prints and after the resin has been sitting overnight.  
 **CAUTION: Do NOT press down on the film when stirring.**
3. Remove parts from print platform soon after printing. Remove large parts within six hours of the end of a print, and all smaller parts within 24 hours from the end of a print. Due to the elastic nature of the material, and gravity, failure to do this risks the part detaching from the print platform and falling into the print tray. This will cause a resin spill and partially cured resin to be left in the tray. It can also damage your build.
4. Verify proper cleaning method. Ensure cleaning solvents are not saturated and parts are allowed to dry before post-curing.
5. To get best surfaces, cut supports off of part before post-curing.
6. Verify print tray is full of material before printing.

### Orientation

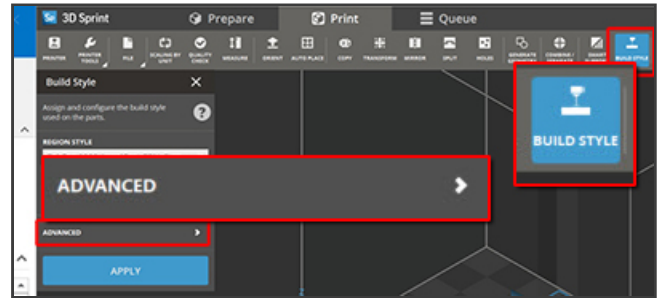
Please see [Orientation section for FabPro Proto GRY](#).

### Add Supports

Please see [Add Supports section for FabPro Proto GRY](#).

Advanced users who would like to try to print flat-bottom parts, such as gaskets, directly on the print platform without supports may do so by taking the following steps in 3D Sprint:

1. Go to **Build Style > Advanced**.



2. Scroll down and set the **Min. Support Height** field to **0**. Then click **Apply**.



3. Use the **Transform** tool to move parts to sit flush on the bottom of the grid (print platform).



## FabPro Flexible BLK

FabPro™ Flexible BLK is a material suited for prototyping, and offers high strength and stability for production applications. Producing parts in a fraction of the time required to produce molded parts, this material accelerates the design and iteration of new concepts with flexible, durable, functional prototypes for industrial and consumer goods applications.

### Accuracy Tips

In order to achieve good accuracy with Flexible BLK, it is important to follow the part setup instructions below for orientation and supports. Some other key tips are as follows:

1. Use orientation to minimize large cross-sectional areas.
2. Orient part to print non-flat surfaces. Flat surfaces may show more support scarring than other Figure 4 materials.
3. Verify proper cleaning method. Ensure cleaning solvents are not saturated and parts are allowed to dry before post curing.

## NextDent Surgical Guide

NextDent SG is a biocompatible Class I material, developed for the printing of Surgical Guides for implant surgery use. Because of the high precision of this material it is easy to insert drill sleeves, directly after printing. Enabling even greater precision during surgery. The properties of NextDent SG will not change by using disinfectants. In addition, the material can also be sterilized using standard autoclave protocols. The use of an autoclave does not affect the dimensional stability, therefore NextDent SG can be used in every operating theater.

## Part Quality and Accuracy Tips

In order to achieve good accuracy with SG materials it is important to follow the part setup instructions below for orientation and supports. Some other key tips are as follows:

1. For best results orient the parts flat in the build area so the surface fitting the teeth is away from the print platform.
2. Orient drill guide holes perpendicular to the XY-Plane. If there are multiple drill guides at different angles try to orient the part to keep them all as perpendicular to the XY-Plane as possible.
3. Verify proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.
4. Follow and apply accuracy wizard procedure for each printer to get highest accuracy parts.

## Orientation - Partial

Orient part with the top of the teeth facing down into the grid on 3DSprint™. Use Transform functions to orient part such that the drill guides are as vertical as possible.

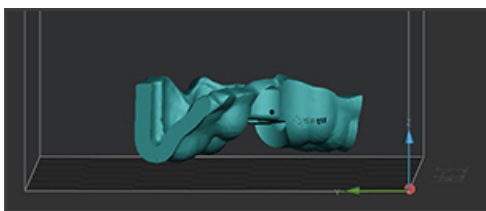


Figure 1. Front view of surgical guide part.

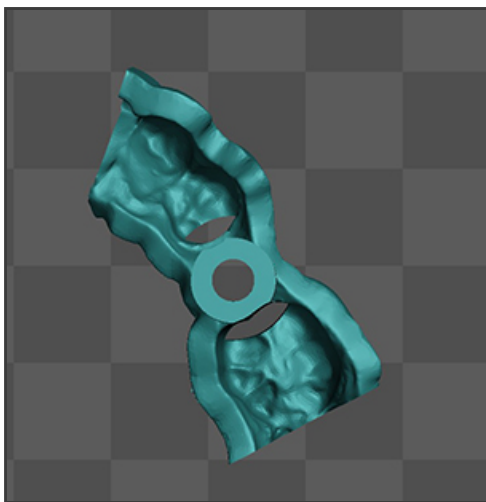
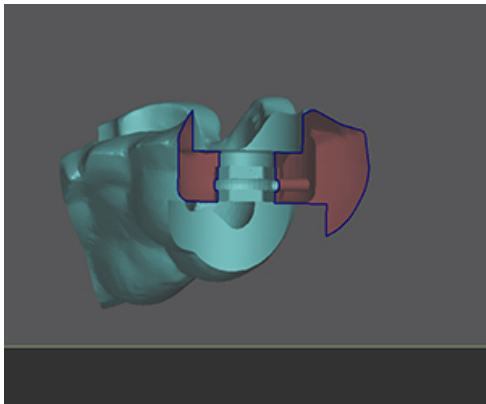


Figure 2. Top view of surgical guide part.

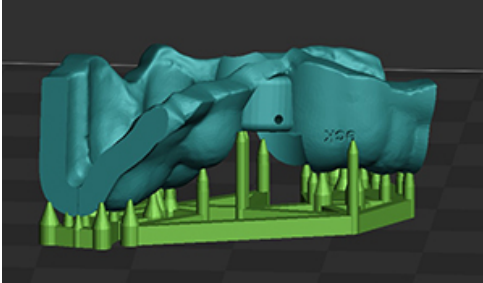
Use the Clipping features under view to verify the verticality of the drill guide.



*Figure 3. Clipped view of drill guide hole in surgical guide part.*

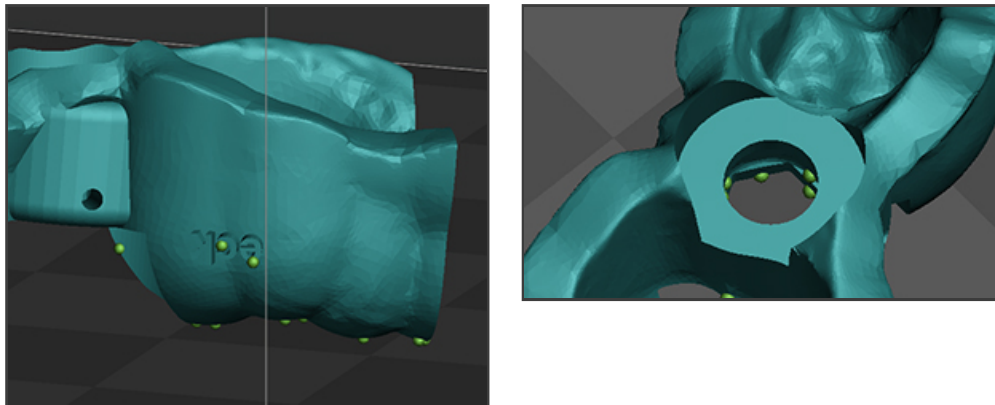
## Add Supports - Partial

Add supports to the part using the Create Supports function under the Smart Supports icon. Look at the supports and determine how they may need to be modified.



*Figure 4. Front view of supported surgical guide part.*

Note supports should be removed from all numbers or lettering and from any area that will cause an obstruction when inserting the drill guide.



*Figure 5. View of lettering and drill guide hole showing support nodes in surgical guide part.*

Remove the nodes using the tools under the Modify Tab.

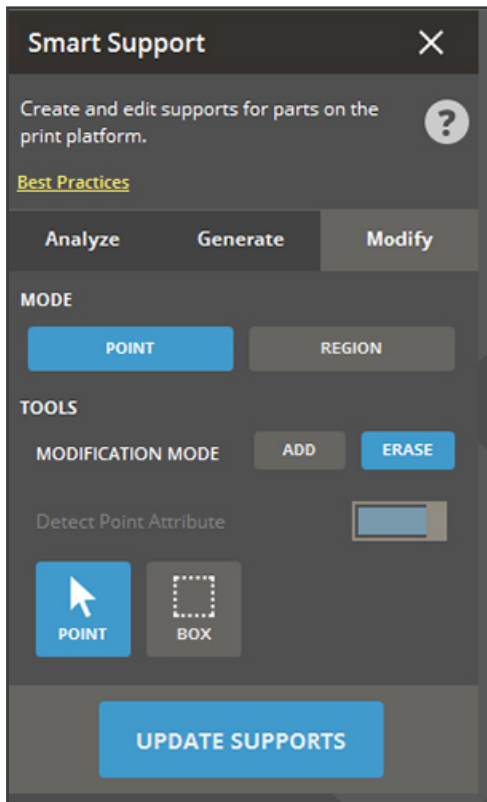


Figure 6. Smart Support Window with function tabs including Modify tab

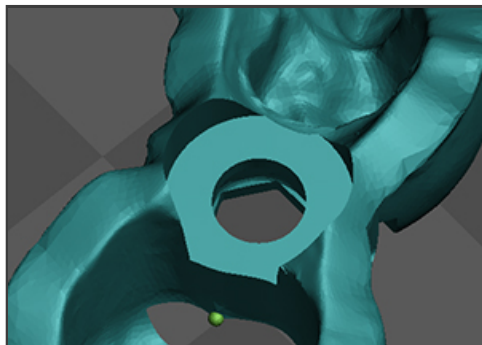
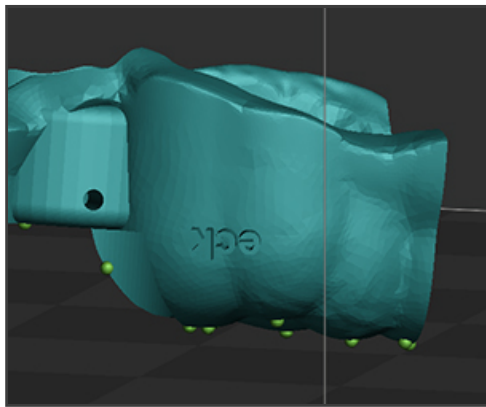


Figure 7. View of lettering and drill guide hole showing support nodes removed in surgical guide part.

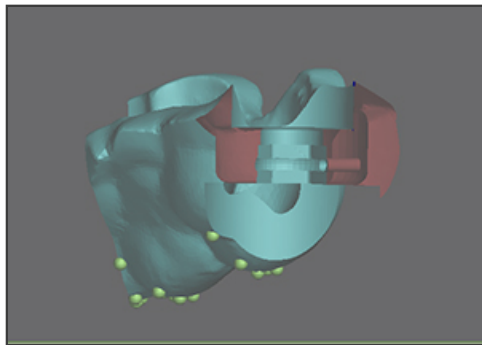
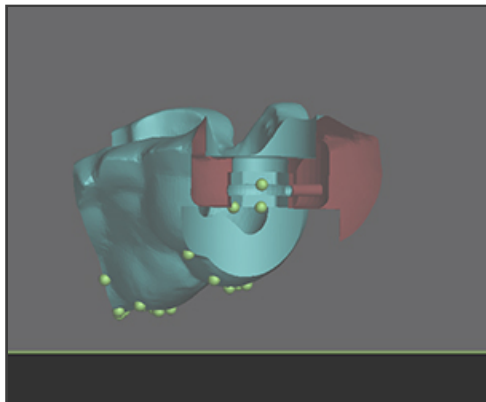


Figure 8. Clipped view of drill guide hole before and after nodes are removed from surgical guide part.

Once supports have been modified, the part is ready to print.

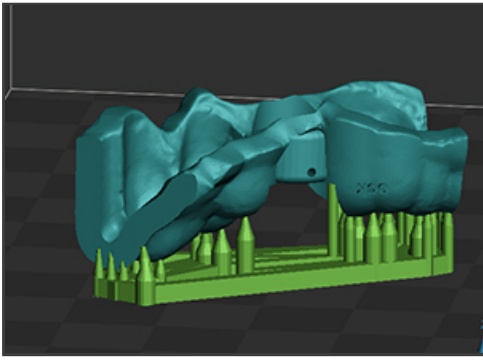


Figure 9. Properly oriented and supported surgical guide part.

## Orientation – Full Arches

Orient part with the top of the teeth facing down into the grid on 3DSprint™. The choice here is going to be speed vs drill guide verticality. For print speed, orient the part such that the part is as flat as possible. For drill verticality, use Transform functions to orient part such that the drill guides are as vertical as possible.



Figure 10. Surgical guide full arch.

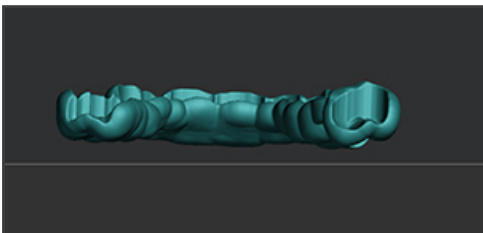


Figure 11. View of surgical guide full arch oriented to optimize print speed.

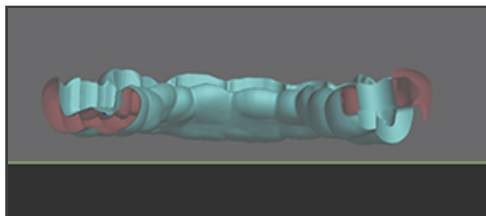


Figure 12. View of surgical guide full arch re-oriented to optimize drill guide verticality.

## Add Supports – Full Arches

Add supports to the part using the Create Supports function under the Smart Supports icon. Look at the supports and determine how they may need to be modified.

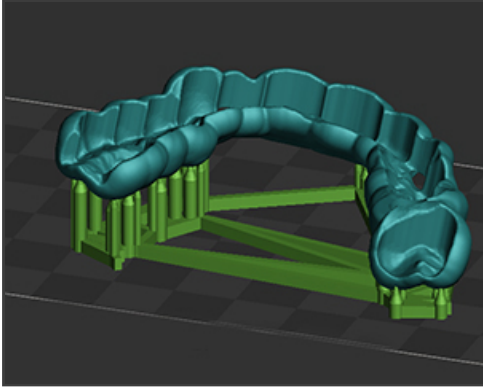


Figure 13. Isotropic view of supported surgical guide full arch oriented for drill guide verticality.

It may be necessary to ADD supports for print reliability and optimal accuracy. For surgical guide parts, this normally occurs when the automatically generated supports do not provide enough supports on the near flat surfaces of the teeth.

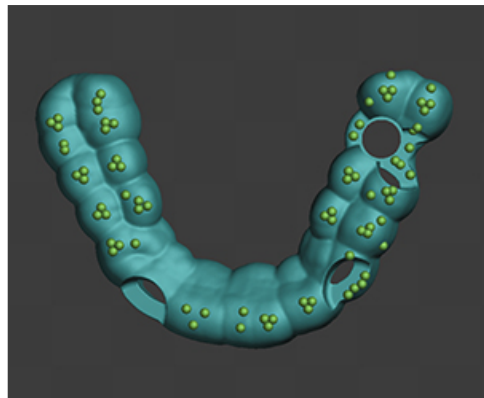
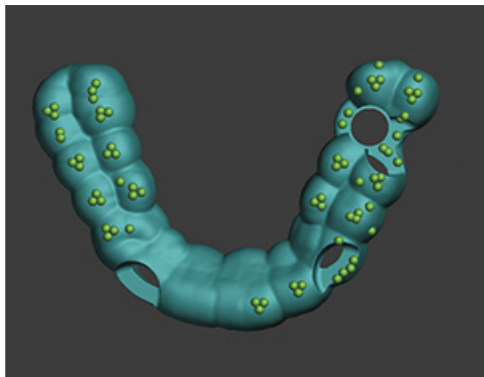


Figure 14. Bottom view of supported surgical guide full arch oriented for drill guide verticality with extra nodes added for a more reliably supported print to the image on the right.

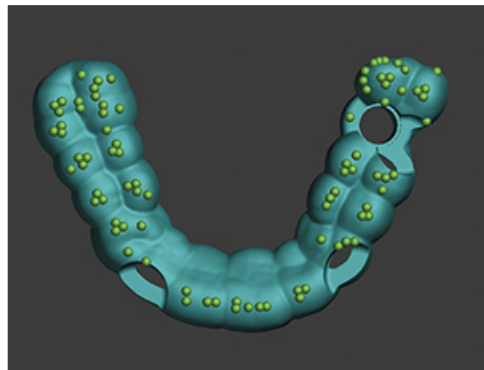
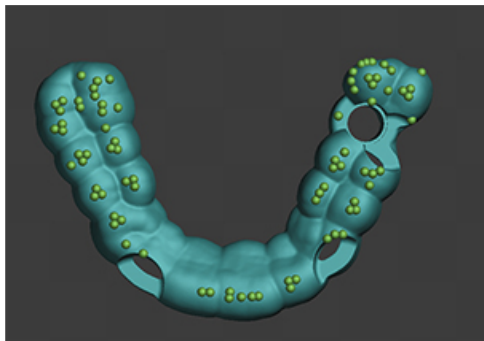


Figure 15. Bottom view of supported surgical guide full arch oriented for print speed with extra nodes added for a more reliably supported print to the image on the right.

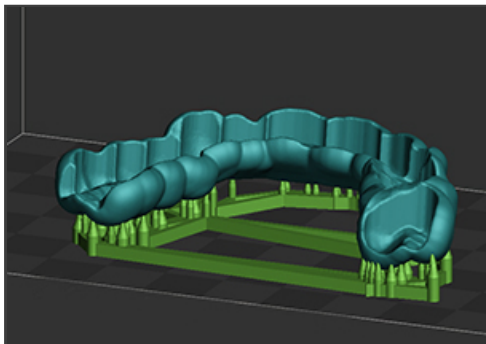


Figure 16. Isotropic view of supported surgical guide full arch oriented for drill guide verticality.

## NextDent Model

NextDent Model is characterized by its high-precision dental model prints.

### Part Quality and Accuracy Tips

In order to achieve good accuracy on Model Oker materials it is important to follow the part setup instructions below for orientation and supports. Some other key tips are as follows:

1. For best results use the Resin Mixer to gently stir between prints and after the resin has been sitting overnight.



**CAUTION: Do NOT press down on the film when stirring.**

2. Allow parts to dry completely before post cure.
3. Verify proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.
4. Follow and apply accuracy wizard procedure for each printer to get highest accuracy parts.

### Orientation - Arches

Most Model Oker parts are intended to print flat or the bottom surface being parallel to the XY-plane grid on 3DSprint™. The exception is when the model has large cross sectional areas on a full plate part.

For arches, use Orient functions to orient part such that the bottom surface is parallel to the XY-plane grid.



Figure 1. Isotropic view of model part not parallel XY-plane grid.

The Manual selection in the Orient function allows the user to select the base of the part. Once chosen, selecting SET BASE will auto orient the part to be flat.



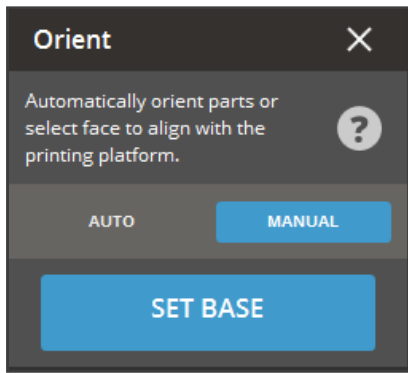


Figure 2. The Orient function window with Manual/Set Base selected.

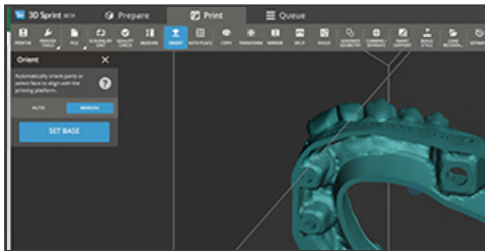


Figure 3. The small blue circle denotes the bottom of the part to be aligned parallel to the XY-plane.



Figure 4. The model arch is now flat or parallel to the XY-plane.

## Orientation- Full Palate Models

For models with a full palate and/or very large cross sectional areas. Angle the model as to reduce the number of surfaces parallel to the XY plane.

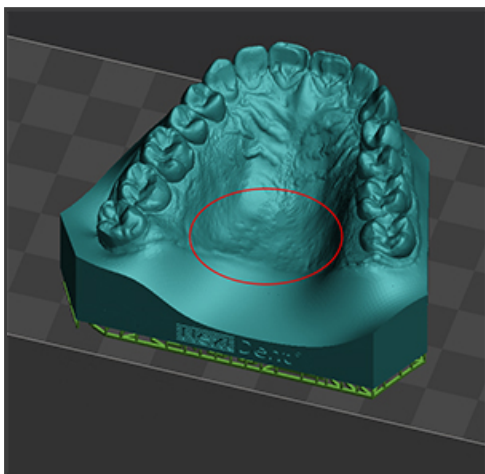


Figure 5. Full Palate model with large cross sectional area.

Rotate the part and then use the Z-Clipping Tool in the View window to see the cross sectional areas of the part. Find the largest cross section and then rotate the part 15-30 degrees to reduce the cross sectional area.

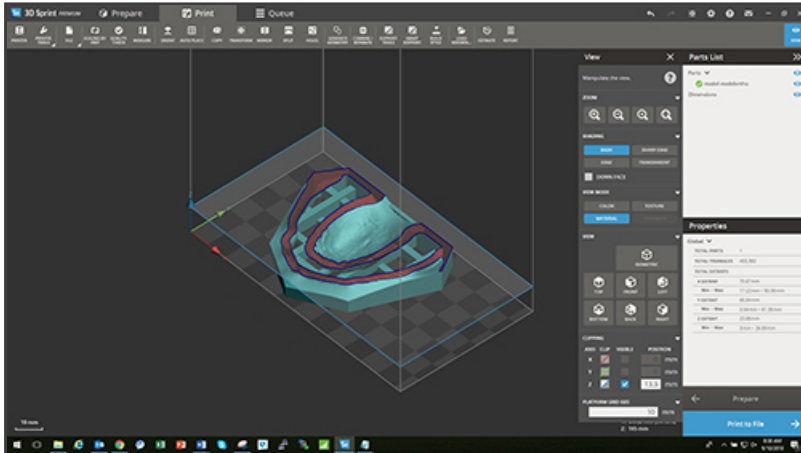


Figure 6. Cross sectional view of full palate model using Z-Clipping tool.

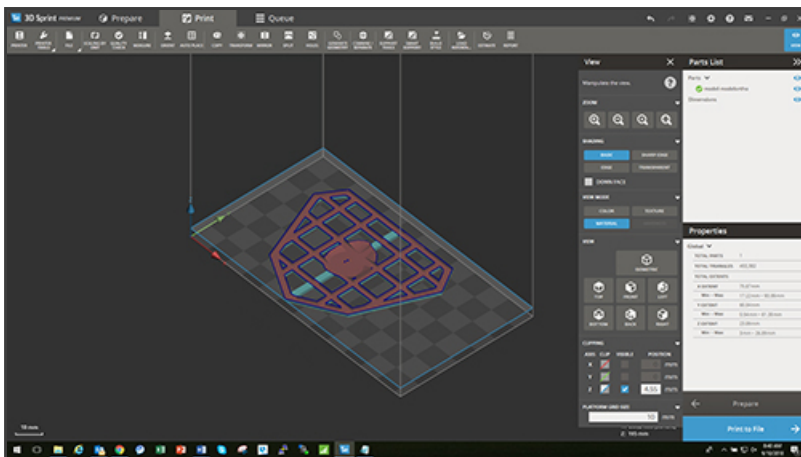


Figure 7. Cross sectional view of full palate model using Z-Clipping tool at largest cross section.

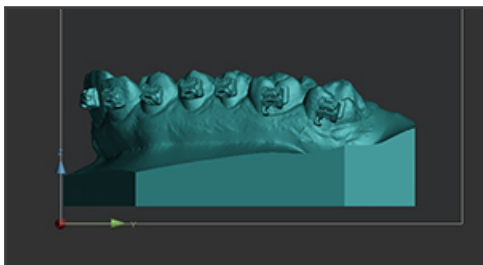


Figure 8. Right side view of full palate model oriented parallel to XY-plane.

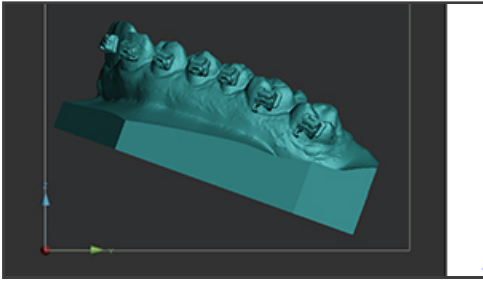


Figure 9. Right side view of full palate model oriented at angle to reduce cross section.

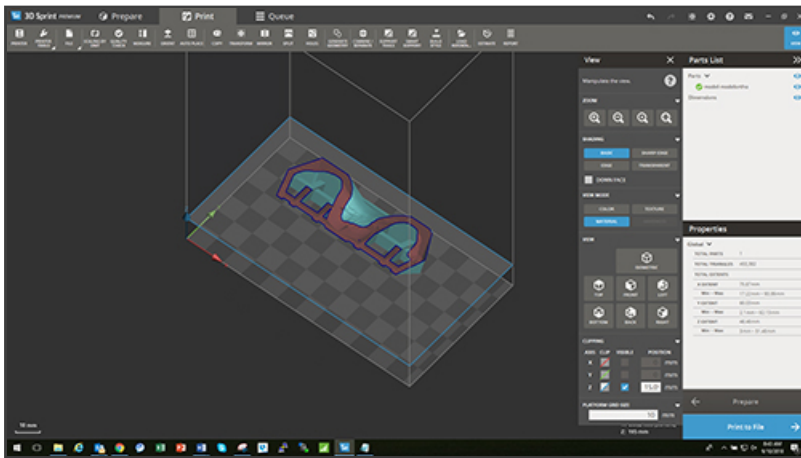


Figure 10. Cross sectional view of full palate model using Z-Clipping tool at largest cross section after rotation.

## Add Supports – Full Arches

Add supports to the part using the Create Supports function under the Smart Supports icon. Look at the supports and determine how they may need to be modified. The supports should only be on the bottom surface of the part.

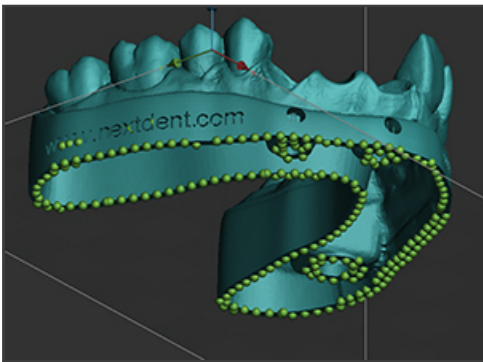


Figure 11. Bottom view of supported arch with model arch parallel to XY-plane.



**NOTE:** supports should be removed from all numbers or lettering using the Modify tab tools under Smart Support.



Figure 12. Nodes in lettering of part.



Figure 13. Node removed from lettering of part.

## Add Supports – Tooth Inserts

Add supports to the part using the Create Supports function under the Smart Supports icon. Look at the supports and determine how they may need to be modified. The supports should only be on the bottom surface of the part. Tooth inserts should not have any supports on the fitting surface.

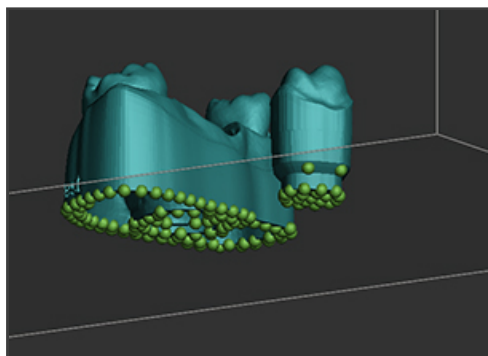


Figure 14. The tooth shows nodes on the fitted surface of the tooth insert.

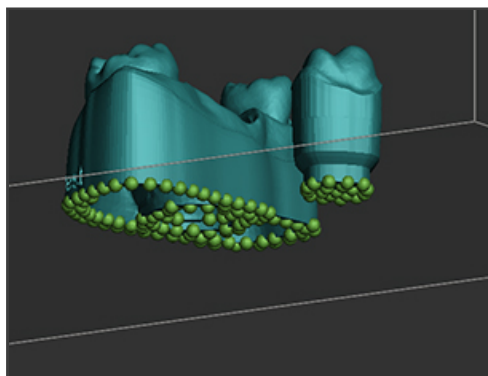


Figure 15. The tooth shows nodes removed from the fitted surface of the tooth insert.

## NextDent Model 2.0 WHT/PCH

NextDent Model 2.0 is characterized by its high degree of accuracy, making this material suitable for detailed master prosthodontic and orthodontic models where high precision is needed. The models show highly visual details due to color and opacity and has an ideal surface for scan impressions.

The accurate printed models are the perfect base for creating your dental work piece. Available in colors Peach and White.

### Part Quality and Accuracy Tips

In order to achieve good accuracy on Model 2.0 materials it is important to follow the part setup instructions below for orientation and supports. Some other key tips are as follows:

1. For best results use the Resin Mixer to gently stir between prints and after the resin has been sitting overnight.



**CAUTION: Do NOT press down on the film when stirring.**

2. Allow parts to dry completely before post cure.
3. Verify proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.
4. Follow and apply accuracy wizard procedure for each printer to get highest accuracy parts.

### Orientation - Arches

Most Model 2.0 parts are intended to print flat or the bottom surface being parallel to the XY-plane grid on 3DSprint™. The exception is when the model has large cross sectional areas on a full plate part.

For arches, use Orient functions to orient part such that the bottom surface is parallel to the XY-plane grid.



Figure 1. Isotropic view of model part not parallel XY-plane grid.

The Manual selection in the Orient function allows the user to select the base of the part. Once chosen, selecting SET BASE will auto orient the part to be flat.

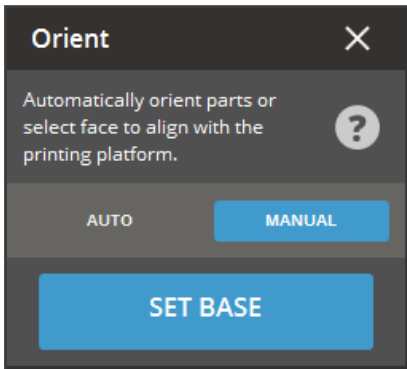


Figure 2. The Orient function window with Manual/Set Base selected.

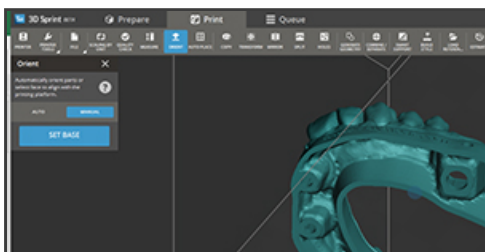


Figure 3. The small blue circle denotes the bottom of the part to be aligned parallel to the XY-plane.



Figure 4. The model arch is now flat or parallel to the XY-plane.

## Orientation- Full Palate Models

For models with a full palate and/or very large cross sectional areas. Angle the model as to reduce the number of surfaces parallel to the XY plane.

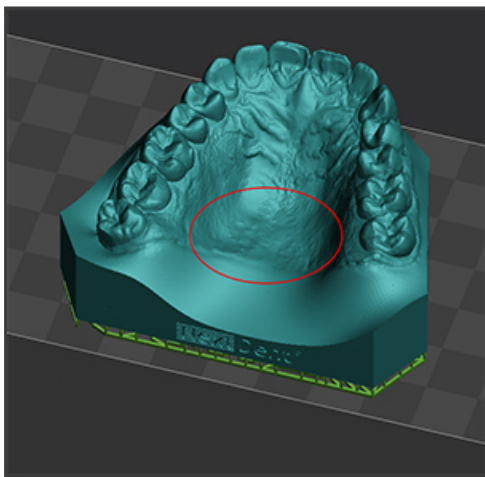


Figure 5. Full Palate model with large cross sectional area.

Rotate the part and then use the Z-Clipping Tool in the View window to see the cross sectional areas of the part. Find the largest cross section and then rotate the part 15-30 degrees to reduce the cross sectional area.

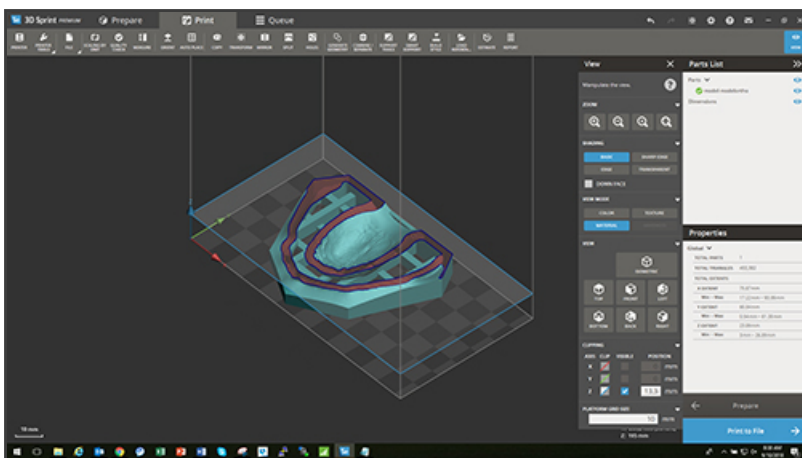


Figure 6. Cross sectional view of full palate model using Z-Clipping tool.

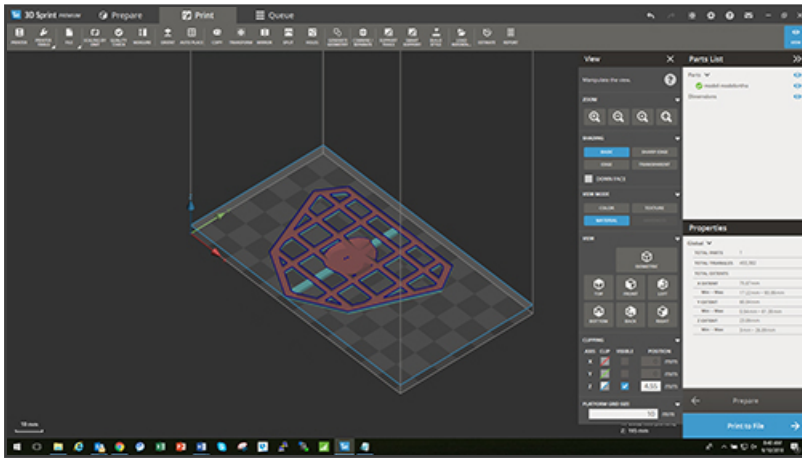


Figure 7. Cross sectional view of full palate model using Z-Clipping tool at largest cross section.



Figure 8. Right side view of full palate model oriented parallel to XY-plane.

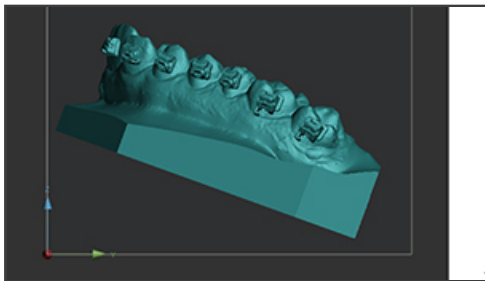


Figure 9. Right side view of full palate model oriented at angle to reduce cross section.

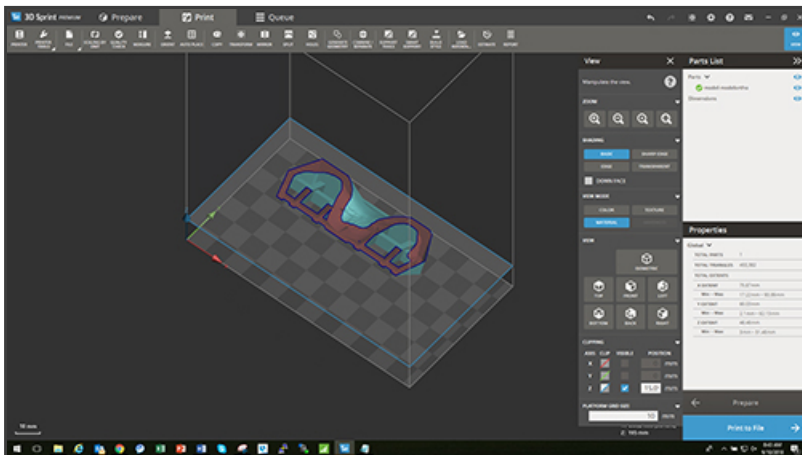


Figure 10. Cross sectional view of full palate model using Z-Clipping tool at largest cross section after rotation.

## Add Supports – Full Arches

Add supports to the part using the Create Supports function under the Smart Supports icon. Look at the supports and determine how they may need to be modified. The supports should only be on the bottom surface of the part.

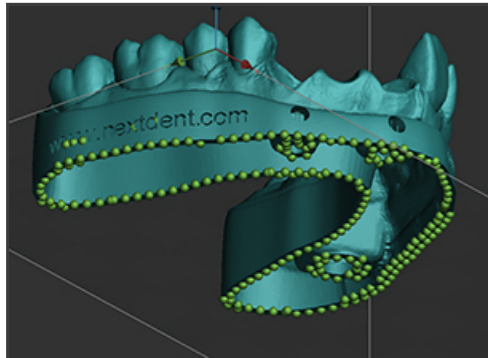


Figure 11. Bottom view of supported arch with model arch parallel to XY-plane.


 **NOTE:** supports should be removed from all numbers or lettering using the Modify tab tools under Smart Support.



Figure 12. Nodes in lettering of part.



Figure 13. Node removed from lettering of part.

## Add Supports – Tooth Inserts

Add supports to the part using the Create Supports function under the Smart Supports icon. Look at the supports and determine how they may need to be modified. The supports should only be on the bottom surface of the part. Tooth inserts should not have any supports on the fitting surface.



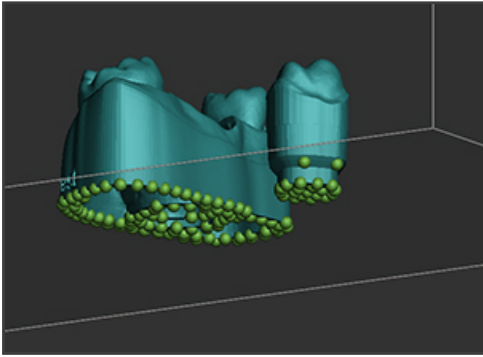


Figure 14. The tooth shows nodes on the fitted surface of the tooth insert.

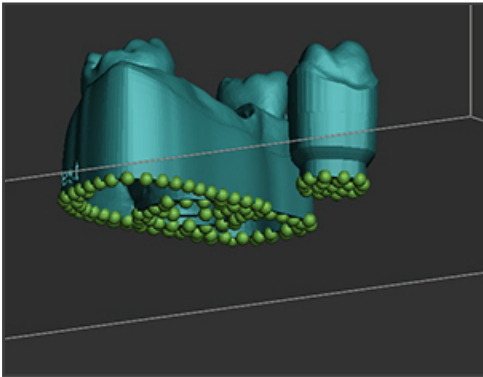


Figure 15. The tooth shows nodes removed from the fitted surface of the tooth insert.

## NextDent Ortho Rigid

NextDent Ortho Rigid is a biocompatible Class IIa material developed for digital manufacturing of splints. In combination with suitable software, it is possible to easily design and print splints.

### Part Quality and Accuracy Tips

In order to achieve good accuracy with Ortho Rigid it is important to follow the part setup instructions below for orientation and supports. Some other key tips are as follows:

1. For best results orient the parts flat in the build area so the surface fitting the teeth is away from the print platform.
2. Verify proper cleaning method. Insure cleaning solvents are not saturated and parts are allowed to dry before post cure.
3. Follow and apply accuracy wizard procedure for each printer to get highest accuracy parts.

### Orientation- Full Arches

All Ortho Rigid parts are intended to print flat or the bottom surface being parallel to the XY-plane grid on 3DSprint™. Use Orient functions to orient part such that the bottom surface is parallel to the XY-plane grid.

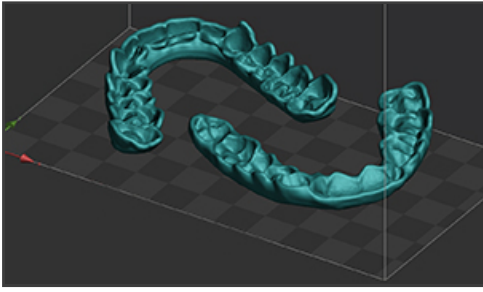


Figure 1. Isotropic view of arches parts parallel XY-plane grid.

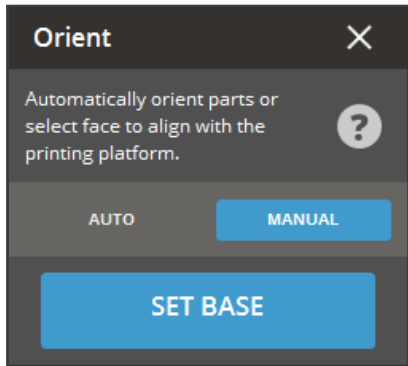


Figure 2. The Orient function window with Manual/Set Base selected.

The Manual selection in the Orient function allows the user to select the base of the part. Once chosen, selecting SET BASE will auto orient the part to be flat.

## Add Supports- Full Arches

Add supports to the part using the Create Supports function under the Smart Supports icon. Look at the supports to verify the placement and ensure they are only on the bottom surface of the part.

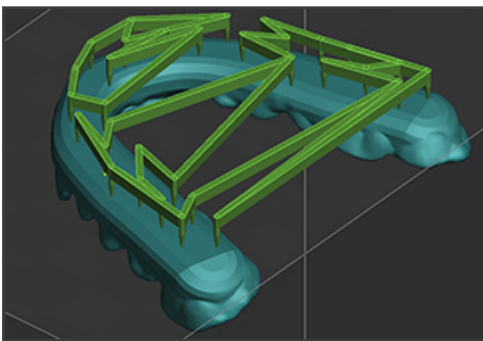


Figure 3. The arch is supported correctly.



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29730

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**Rev. D, P/N 45-D33**