

# Correct your 3D file manually

## Verify the structure of a 3D File

When you transfer your 3D file on our site some geometric inconsistencies may prevent our printers from understanding it. The most common problem we run in to is that your file does not consist of a single, solid, and uniform object. Our printer is then unable to determine the interior and exterior of the model and will render the file 'Not Orientable'.

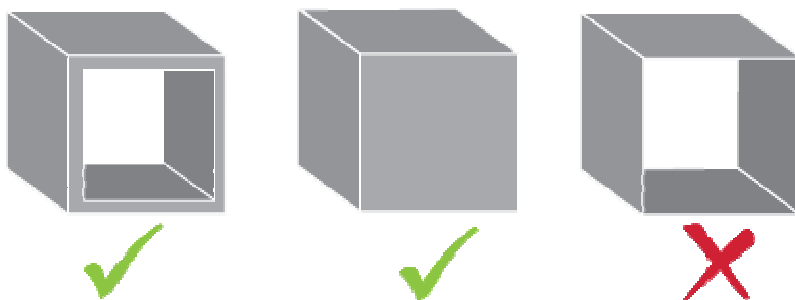
The majority 3D modeling programs available today are not created specifically for 3D printing; they often include animation and visual rendering tools. Animation and visual renderings do not require solid/closed objects in order to render (the priority is instead placed on the model's surface), however a file destined for a 3D print requires more than a simple surface - a 3D print requires *volume*. Our online repair tools (which will launch automatically if a corrupted file is uploaded) can fix most of the problems within a file, but in order to maintain complete control over your model's conception, it's important to understand how to repair your file manually. Below you'll find general information on repairing your file.

For information on correcting a file in a specific program, we invite you visit our tutorials which explain how to [prepare your file for a 3D print in various programs](#).

### Conceive a closed 3D model with voluminous surfaces

To ensure that your 3D model is closed or "watertight", you must verify that the model's geometry does not contain surfaces which do not bound a volume. To reiterate: a surface without a thickness or which does not contribute to a volume cannot be 3D printed. This problem can be corrected by either deleting the object or giving the surface(s) volume.

In other cases, there may be small holes which prevent volume from being "watertight". Most 3D modeling programs have a 'Fill' tool which can quickly remedy the problem.

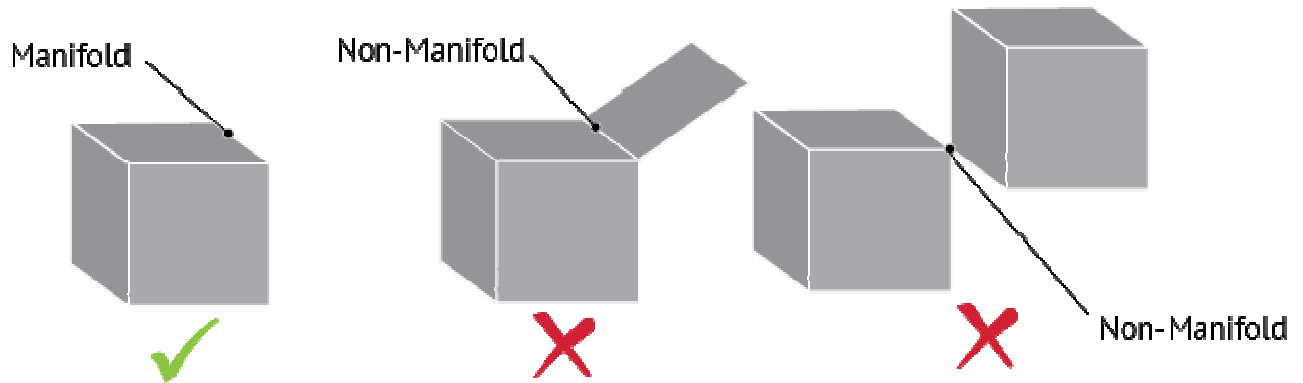


### Correct non-manifold edges and singular points

During the conception of your 3D file, certain operations may create unattached, ambiguous surfaces which do not connect. Other operations may separate surfaces, creating singular point of connection. These singularities prevent our online tools from determining the volume of the model.

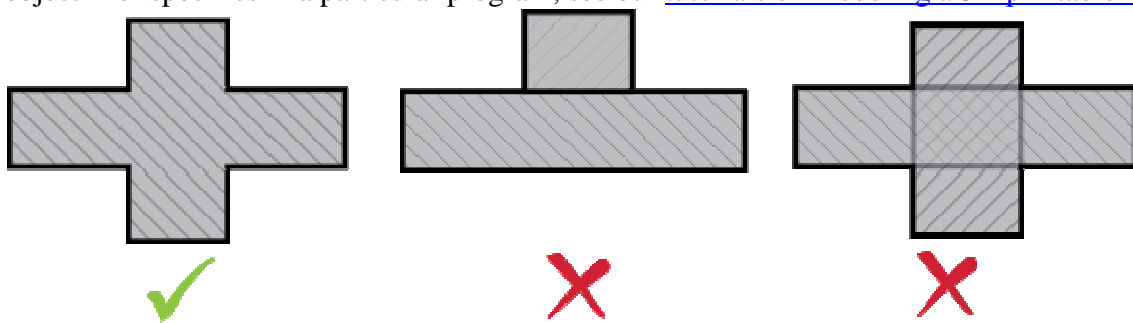
To define a clear volume, each side must be connecting two and only two adjacent faces. Similarly, singular points must arrive at the collection of multiple faces. If two faces share only one point (as shown in the image below), the model is considered "non-manifold" and will not be able to be printed.

These singularities can be eliminated by either disconnecting the non-manifold surface and giving it volume, or by deleting it completely.



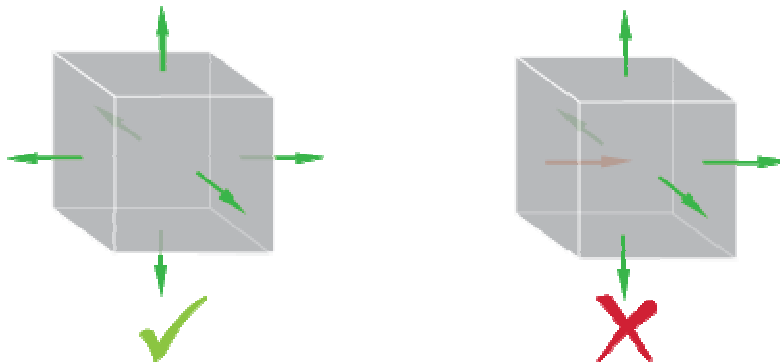
#### Delete auto-intersections

As you create your 3D model, there may be a point when two or more volumes cut into each other. These intersections create an ambiguous model with uninterpretable volumes. 3D Modeling softwares often have a function that can merge these elements, rendering a singular object - for specifics in a particular program, see our [tutorials on modeling a 3D printable file](#).



#### Correctly orient your model's surfaces

In most 3D modeling softwares, surfaces are oriented with an inside and an outside to help determine the model's volume. If one of the faces of an object is oriented in the wrong direction, it's volume may be indeterminate by our online software. It is important to reassure that each face is oriented in the correct direction in order to avoid that type of problem.



### **Check that your object is physically feasible**

When you design a file for 3D printing, you must also read and follow the [design guidelines](#) of the material you're planning to print with, our 3D printed polyamide is our most common option. Each [material](#) has its own restrictions when creating a file. For example, your plastic 3D prints must have a minimum thickness of 0.8 to 1 mm depending on the particularities of the design. It is also important to note that unlike your 3D file, your print will be a physical object, and will be constrained by the known physics of our universe. You must check and ensure that your 3D file is able to support the weight of its own cantilevers and that the object's walls are thick enough to support themselves.

### **Check the format and size of your 3D file**

In order to [upload your 3D file](#) to our online 3D printing service, you ought to double check that it is not too large and it is exported in one of the 25 file format our programs are able to interpret. For more information on accepted file types and exporting a file, visit our page on [exporting a file for 3D printing](#).