Prepare Your Model for 3D Printing

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To avoid printing errors and broken parts when using a 3D printing service, use the guidelines in this document for the following:

- Thin Shells and Walls
- Structural Problems
- Moving Parts
- Miscellaneous

For more information on the 3D printing process, see AutoCAD® 2010 Help or, on the ***Autodesk 3D Printing website***, click Learn About 3D Printing.

Thin Shells and Walls

Models with a thin shell or walls may

- Break when printed or shipped
- Print with errors
- Be impossible to print
- Be vulnerable to breaking

Mimimum Thickness Requirements

Each service provider has their own requirements for mimimum shell and wall thickness.

For example, one service cannot guarantee that your model will print if its walls are less than 0.508 mm thick. Another service requires that models with shells with an aspect ratio of 1:5 or more have a minimum thickness of 1.25 mm.

Before you print your model, check the minimum shell and thickness requirements set by your service provider.

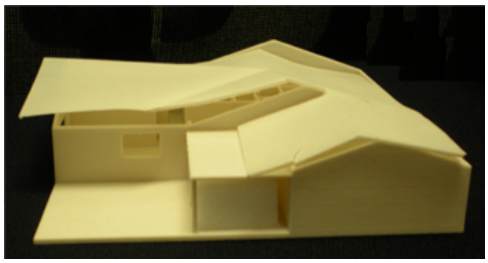
For a list of minimum requirements, see you service provider's website.

For a list of approved service providers, see the ***Autodesk 3D Printing website***.

Scaling Down Models

If you scale down a model, use caution. Make sure the shell or walls still meet your service provider's minimum thickness requirements. Also, pay particular attention to small objects that may break easily, such as the following:

- Handrails
- Pillars
- Pins
- Window sashes
- Wires



After this model of a house was scaled down, the roof was too thin and, as a result, cracked.

Structural Problems

Models with a large mass connected to a thin stem may

- Break when printed or shipped
- Print with errors

- Be impossible to print
- Be vulnerable to breaking

For example, a model with a sphere connected to a base by a thin stem is suspectible to damage after it is printed.

Before you print your model, check your service provider's website for the minimum requirements of printing similar models.

This model was printed and shipped without breaking. However, it illustrates the type of construction that could easily break: a large mass connected to a thin stem.

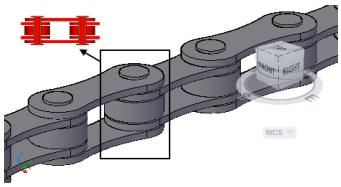
Moving Parts

Before you print your model, be sure that there is enough clearance between moving parts such as the following:

- Gears
- Cogs
- Links in a chain

If you do not, your prototype may be a solid, non-moving object.

To ensure that the parts of your model move, you may need to make clearance adjustments in AutoCAD® as illustrated below.



The side view of this chain link (shown in red) illustrates where extra space was added, before printing, so that the printed model moves.

Miscellaneous

You **can** print the following:

- 3D solids
- Watertight meshes
- Uniformly scaled blocks and xrefs that contain 3D solids or watertight meshes

NOTE When you select uniformly scaled blocks and xrefs, only the 3D solids and watertight meshes they contain are included in the selection set and can be printed. All other geometry is discarded.

You **cannot** print the following:

- Non-uniformly scaled blocks and xrefs, including those that contain 3D solids and watertight meshes
- Surfaces
- 2D geometry
- Text
- Colors
- Materials