



Planar Cut

Introduction

A common way to simplify a 3-dimensional geometry is to cut, or partition, the geometry in a specific plane and remove the objects on either side of the plane. A typical example is when the geometry is symmetric with respect to one or several planes, and you would like to remove symmetric parts from your geometry. This can be done manually but requires adding multiple steps to the geometry sequence. This add-in simplifies the task by automatically adding such steps to the sequence of a 3-dimensional geometry. You just have to specify the plane (xy -, xz -, or yz -plane), the side to remove, and the coordinate for the cut; see [Figure 1](#)

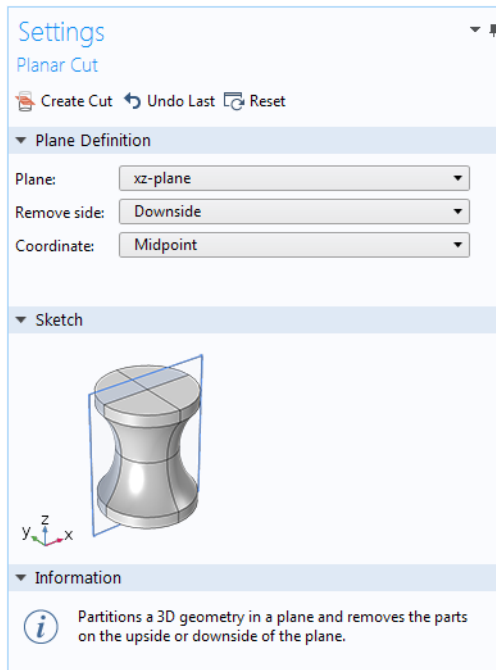


Figure 1: The Settings window for the Planar Cut add-in.

Figure 2 shows the 3-dimensional geometry of a check valve, where a planar cut has been performed in the xz -plane at the midpoint coordinate to remove the symmetry half on the downside of the plane.

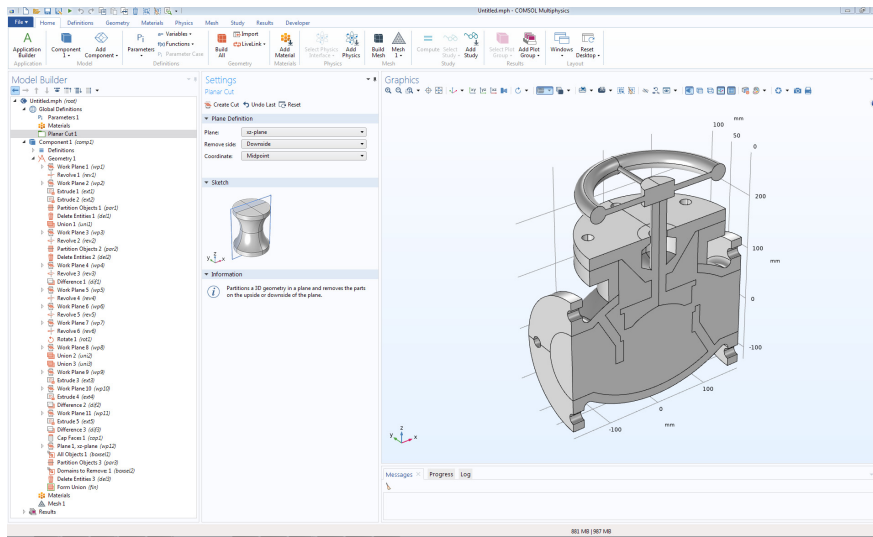


Figure 2: A check valve cut in half at the xz symmetry plane.

Once the add-in has been imported from the COMSOL Multiphysics Add-in Library, it can be added to the model from the **Add-ins** menu on the **Developer** tab.

Add-in Library path: COMSOL_Multiphysics/planar_cut

Planar Cut

Use the toolbar at the top of the **Settings** window to perform, undo, or reset planar cuts. Click **Create Cut** to add steps to the geometry sequence for creating a planar cut based on the settings specified in the **Plane Definition** section. Click **Undo Last** to remove the steps added by the last performed cut from the geometry sequence. Click **Reset** to remove added steps for all cuts created with the add-in from the geometry sequence.

PLANE DEFINITION

In the **Plane** list, choose between the options **xy-plane**, **xz-plane**, and **yz-plane**. Specify which side to remove in the **Remove side** list — either **Downside** or **Upside** from the plane. In the **Coordinate** list you can choose between **Midpoint** and **User defined**. The midpoint coordinate is defined as the midpoint between the maximum and minimum coordinates on the axis perpendicular to the specified plane.

For example, when selecting an *xy*-plane, the upside is defined as the side where all points have a *z*-coordinate greater than the specified cut coordinate, and the midpoint coordinate is the midpoint between the maximum and minimum *z*-coordinates of all parts of the geometry.

SKETCH

The image in the sketch section illustrates the orientation of the selected plane: the *xy*-, *xz*-, or *yz*-plane.

INFORMATION

This section displays information and warning messages. A warning is shown if the model does not contain any 3D component or if the selected component is not 3-dimensional. In the latter case, selecting a 3D component in the **Model Builder** window or on the **Home** tab and then selecting the **Planar Cut** node again will allow you to perform the cut.