Scale Tool

Use the Scale Tool to resize and stretch portions of geometry relative to other entities in your model. Activate the Scale Tool from the Modification Toolbar (Microsoft Windows), the Tool Palette (Mac OS X) or the Tools menu.

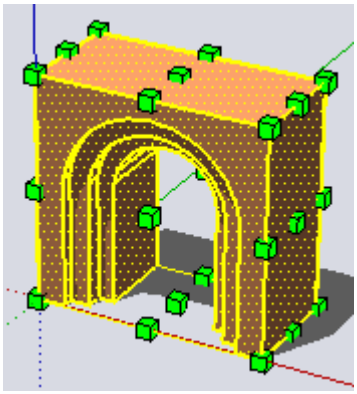
Keyboard Shortcut:S

Note - A Global Scale is an operation whereby the entire model is scaled simultaneously by applying a desired dimension to the distance between two points. The Scale Tool is only intended to perform scaling operations on portions of your model (not the entire model). Use the Tape Measure Tool's global re-scale functionality to perform global scaling operations.

Scale Grip Types

Upon activation, the Scale Tool displays all the grips you may use. Any grips hidden behind geometry will become visible whenever touched by the mouse cursor, and remain fully operable. Turn on X-ray Transparency mode to reveal any hidden grips.

The Scale Tool allows you to perform both uniform scaling and non-uniform scaling (stretching operations). The scaling grip that is used dictates the type of scaling you perform.



Corner Grips

Corner grips scale the selected geometry from the opposite corner. The default behavior is a uniform scale such that the proportions remain intact and a single scale factor or dimension is displayed in the Measurements Toolbar.

Edge Grips

Edge grips scale the selected geometry from the opposite edge by two dimensions simultaneously. The default behavior is a non-uniform scale, meaning that the proportions of the object will change. The Measurements Toolbar displays two values separated by a comma.

Face Grips

Face grips scale the selected geometry from the opposite face in only one dimension. The default behavior is a non-uniform scale, meaning that the proportions of the object will change. The Measurements Toolbar displays and accepts a single value.

Scaling 2D Surfaces or Image Entities

Two-dimensional surfaces and Image entities can be scaled just as easily as three-dimensional geometry. The Scale Tool's bounding box contains nine scaling grips when scaling a 2D face. These operate in a similar manner to the grips in a 3D bounding box, and also work with the Ctrl (Microsoft Windows) or Option (Mac OS X) and Shift modifiers.

The bounding box is a 2D rectangle when scaling a single 2D surface that lies in the red-green plane. The bounding box will be a 3D volume if the surface to be scaled is out of plane with the current red-green plane. You can ensure a 2D scale by aligning the Drawing Axes to a surface prior to scaling.

Scaling About the Geometry Center

The Scale Tool allows you to scale outward from geometry's center point. Press and hold the "Ctrl" (Microsoft Windows) or "Option" (Mac OS X) key at any time during a scale operation to display the geometry's center point, click on any of the other scaling grips, and drag outward or inward to scale accordingly.

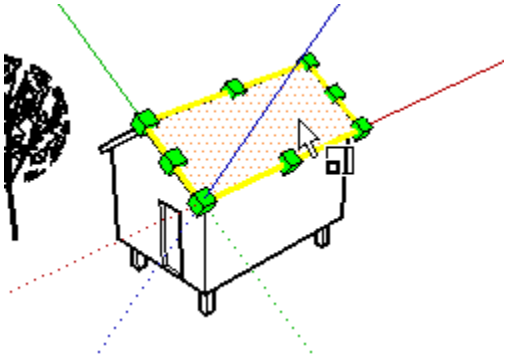
Scaling Components

Scaling a Component entity scales the individual instance. All other instances of the component will retain their individual scales. This feature allows you to have many differently scaled versions of the same component in your model.

Scale operations within a component's context (such as scaling a Line entity within a component) affect the component definition and, therefore, all instances of the component are scaled to match (all instances of the same Line entity in all component instances).

Controlling Scaling Direction With The Axis Tool

You can precisely control the direction of scaling by first repositioning the drawing axes with the Axes Tool. The Scale Tool will use the new red, green, and blue directions to orient itself, and control grip direction, after the axes are repositioned.



Scaling Precisely

The Measurements Toolbar at the bottom right corner of the SketchUp window displays the axis dimensions that are being scaled, and the value of the scale itself, in the default units (as specified under the Units panel of the Model Info dialog box) during a scaling operation. Type a scale value into the Measurements Toolbar to directly scale geometry during or immediately after a scaling operation.

Entering a Scale Multiplier Value

You can specify a new dimensional length value during or directly following a scaling operation. To enter a dimensional length value during a scaling operation:

1. Select the "Select Tool" (). The cursor will change to an arrow.
2. Select the geometry to scale.
3. Select the "Scale Tool" (). The cursor will change to a box within another box. Scaling grips will appear around the selected geometry.
4. Click on a scaling grip to select the grip. The selected grip and the opposite scaling grip will highlight in red. Each scaling grip provides a different scaling operation. See Scaling Options section for further information.
5. Move the mouse to scale the geometry. The Measurements Toolbar displays relative size of the item as you scale the item. You can enter the desired scale dimensions after the scale operation is complete.
6. Type the dimensional length value (such as 2' 6" for two feet and six inches or 2m for two meters) in the Measurements Toolbar and press the "Enter" (Microsoft Windows) or "Return" (Mac OS X) key.

Mirroring Geometry using the Scale Tool

The Scale Tool can also be used to mirror geometry by pulling a grip towards and then beyond the point about which you are scaling. This operation allows you to pull geometry inside out. Note that the grips snap to certain negative values (such as -1, -1.5, and -2) just as they do in the positive direction. You can force a mirror by typing in a negative value or dimension.

Entering Multiple Scale Values

The Measurements Toolbar always indicates the scaling factors associated with a particular operation. A 1D scaling operation requires one value. A 2D scaling operation requires two values, separated by a comma. A Uniform 3D scaling operation requires only one value whereas a Non Uniform 3D scaling operation requires three values, each separated by a comma.

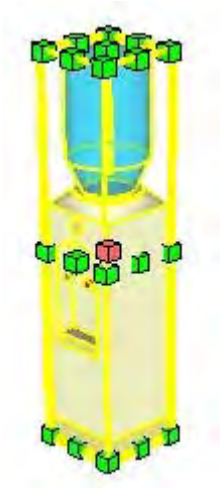
You'll notice that during the scale operation, a dashed line appears between the scaling point and the grip you've selected. Entering a single value or distance in the Measurements Toolbar tells SketchUp adjust the anchor to grip distance to be that scale value or distance, regardless of which mode (1D, 2D, 3D) is active.

When scaling in multiple directions, typing in multiple values separated by commas will resize the object(s) based on the entire bounding box dimension(s), not the objects individually. (To scale objects based on a particular edge or known distance, you can use the Tape Measure Tool.)

Scaling Geometry

To scale geometry:

1. Select the "Scale Tool" ( ). The cursor will change to a box within another box.
2. Click on the entity. Scaling grips will appear around the selected geometry.



3. Click on a scaling grip. The selected grip and the opposite scaling grip will highlight in red. Each scaling grip provides a different scaling operation. See Scaling Options section for further information.
4. Move the cursor to scale the entity. The Measurements Toolbar displays relative size of the item as you scale the item. You can enter the desired scale dimensions after the scale operation is complete.

   Note - Press the "Esc" key at any point during the operation to start over.

5. Click to finish scale operation.

Scaling Auto-Folding Geometry

SketchUp's Auto-fold feature works automatically with all Scale operations. SketchUp will create folding lines as necessary to maintain planar faces.

Scaling Uniformly

You might need to maintain the uniformity of geometry as it is being scaled, despite performing nonuniform scaling. The Shift key toggles to uniform scaling operation (from a nonuniform scaling operation) and to nonuniform scaling operation (from a uniform scaling operation).

Note - Use the "Ctrl" (Microsoft Windows) or "Option" (Mac OS X) and "Shift" keys to allow uniform and non-uniform scaling from the center of the selected geometry.