



CD Symmetry Tools v1.0 For Cinema 4D 9.6+

CD Symmetry Tools is a workflow plugin, consisting of a set of tools and commands to help make working in symmetry a bit easier. The plugin is built around the CD Symmetry tag which was initially a part of the CD Morph plugin. CD Symmetry Tools not only helps make working in symmetry easier but it also allows you to continue working in symmetry after you've modeled an object and made it editable. This is especially handy for character riggers who find they need to adjust the points of the character mesh after rigging and skinning to improve the deformations.

The components of CD Symmetry Tools are:

Command Tools:

- CD Add Symmetry Tag
- CD Convert To Symmetry
- CD Symmetry to Tag
- CD Mirror Selection
- CD Activate Negative
- CD Activate Positive
- CD Make Symmetrical

Editor Tools:

- CD Symmetry Select
- CD Symmetry Assign

Tags:

- CD Symmetry Tag

Objects:

- CD Dynamic Symmetry

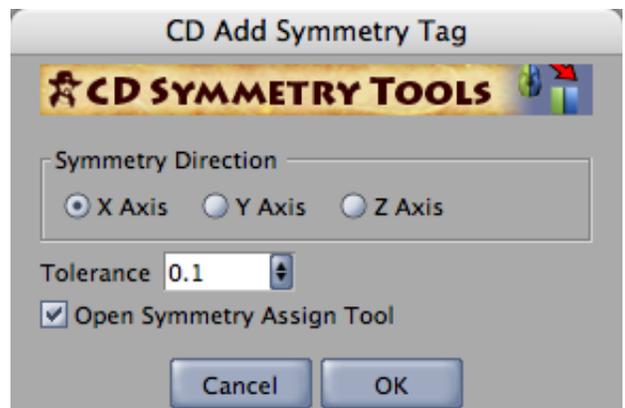
Command Tools

The command tools are simple tools to set up the tag and perform conversions to and from Symmetry objects. Some of the commands have options dialogs which can be accessed by holding the control key down when selecting the command from the menu or selecting the command's icon in your layout. The options you set in the options dialogs are stored in the plugin's preferences, so if you need to use the command again with the same options you need not open the options dialog and you can simply select the command to perform the command's function.



CD Add Symmetry Tag

This command adds a CD Symmetry Tag to the selected object or objects that are classified as a point object. This includes polygon objects, spline objects, etc. The command will automatically calculate the symmetry assignments and store them in the tag according to the options you set in the options dialog. In the options dialog, *Symmetry Direction* sets the axis across which the symmetry will be calculated. *Tolerance* sets the tolerance of the symmetry calculation. Enabling the *Open Symmetry Assign Tool* option will automatically open the CD Symmetry

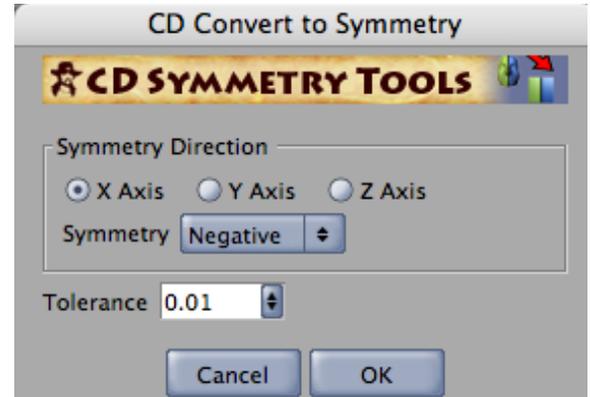


Assign tool if there were any points out of symmetry after the symmetry assignment calculation was performed. If there were no points out of symmetry after the symmetry assignment calculation was performed, then the tool will not open.



CD Convert To Symmetry

This command will cut the selected object or objects in half and put them into a Symmetry object. If the selected objects have children it will also cut them in half. If the selected objects are geometric primitives, it will also convert them to polygonal objects before making the cut. In the options dialog, *Symmetry Direction* sets the axis across which the cut will be made. With the *Symmetry* option you select which side of the object will be deleted. *Positive* will delete all points that are greater than zero along the symmetry axis and *Negative* will delete all points less than zero along the symmetry axis. *Tolerance* allows you to set a tolerance to determine how close to the center a point should be deleted. Some objects, such as spline objects, need a higher tolerance than others to ensure that none of the center points get deleted.



CD Symmetry to Tag

This command performs the same function as Cinema 4D's *Make Editable* function on a Symmetry object or CD Dynamic Symmetry object but with the added feature of automatically adding a CD Symmetry tag to the resulting single polygon mesh object. It will also automatically calculate the symmetry assignments and store those in the tag.



CD Activate Negative

This command only works on an object which has a CD Symmetry Tag on it with its *Restrict Symmetry* option enabled or an object which has a CD Dynamic Symmetry object as a parent. The command will set the active symmetry to *Negative*. This command was added so that you can assign a hot key to the command to make switching symmetry sides faster and thereby speeding up the work flow.



CD Activate Positive

This command only works on an object which has a CD Symmetry Tag on it with its *Restrict Symmetry* option enabled or an object which has a CD Dynamic Symmetry object as a parent. The command will set the active symmetry to *Positive*. This command was added so that you can assign a hot key to the command to make switching symmetry sides faster and thereby speeding up the work flow.



CD Mirror Selection

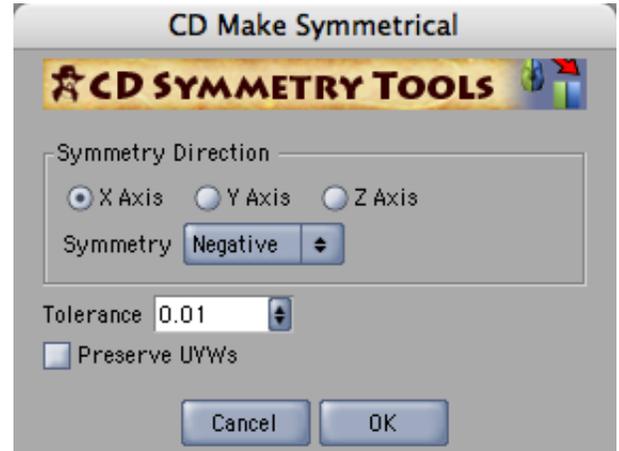
This command only works on an object which has a CD Symmetry Tag on it. The command will mirror the selected elements of an object so that both the original selection and the mirrored selection are selected. This command works in Point, Edge and Polygon modes.



CD Make Symmetrical

This command will make an object symmetrical by automatically cutting the object in half and mirroring the remaining geometry. It will work on any object that is classified as a point object or any primitive object that has points geometry. This includes both spline and geometric primitives. If the object is a primitive, the resulting object will be converted into an editable object. The command has a dialog box, which opens whenever you click on the command, that allows you to set the command's options. In the *Symmetry Direction* section, you can choose across which axis the symmetry will be. The *Symmetry* popup menu allows you to choose which side will be the symmetry side. The choices are *Negative* or *Positive*. *Tolerance* sets the point tolerance for the center cut that will be made. Enabling the *Preserve UVWs* option will preserve the uvw map of the deleted side by matching the new mirrored polygon's UVWs up to the delete polygon's UVWs.

Important NOTE: The *Preserve UVWs* option can be time consuming for meshes with high polygon counts.



Editor Tools



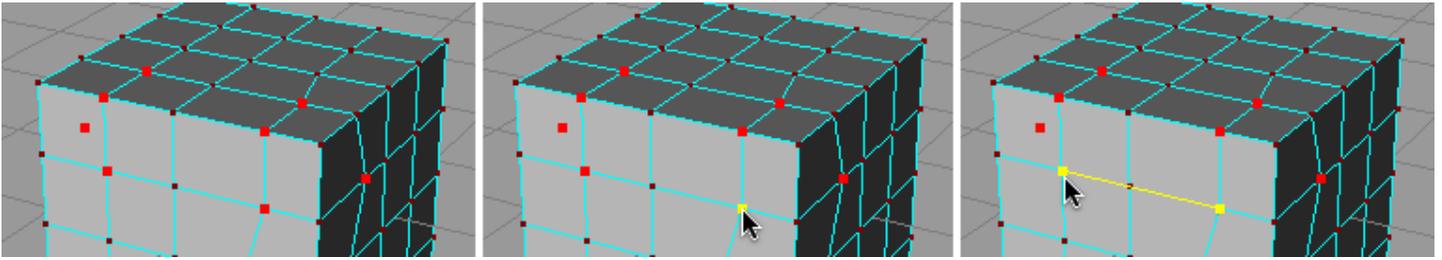
CD Symmetry Select

This tool is a "mode" tool that toggles symmetrical selections on and off. The tool works with the various built in selection tools, to allow them to mirror the selections on an object which has a CD Symmetry tag on it. The tool works in Point, Edge and Polygon editing modes.



CD Symmetry Assign

This tool only works in Points mode and only on an object which has a CD Symmetry Tag on it and has some points that are out of symmetry. The tool is designed to allow you to manually correct the symmetry assignments when the object has some points that are out of symmetry. When you first select the tool, it will automatically switch to Points mode and then display the out of sym-



metry points highlighted in red. To use the tool you first click on a point that is highlighted in red. Then move the mouse to another point that is also highlighted in red (the tool will draw a highlighted line from the first point to the mouse pointer) and click on a second highlighted point. The first point will then snap to the symmetrical position of the second point. If the second point is out of range of the view, you can use the viewport navigation controls to bring the second point into view and then click on the second point. If the point highlighted in red should be a center point, you can hold down the shift key and click once on the point without clicking on another point and the point will snap to the center of the symmetry axis plane. If you hold down the control key and click on an unhighlighted point, it will erase the symmetry assignment from that point and its assigned symmetrical point.

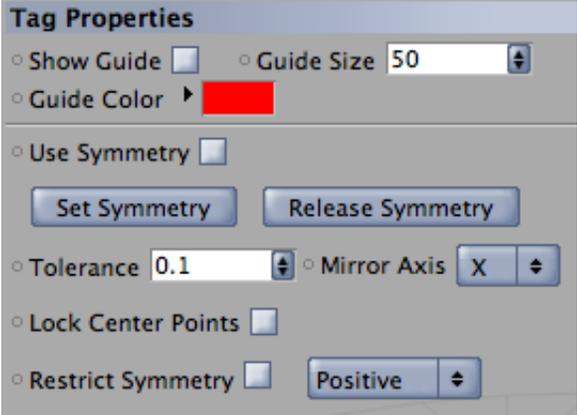
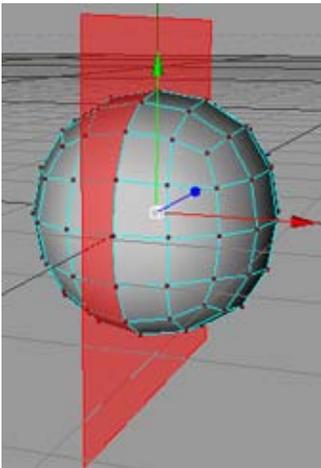
Tags

CD Symmetry Tag

This tag is designed to help keep a character mesh's points symmetrical. It stores a symmetry assignment for each point, so that you can select and move points on one side of the mesh, and their corresponding symmetrical points on the other side of the mesh move to their mirrored position. The tag also works in Edge mode and Polygon mode.

Tag Properties Tab

Show Guide draws a transparent plane in the viewport, showing you on which plane the symmetry axis is. The overall size of the plane is dependent on the size of the mesh's bounding box. *Guide Size* determines how far the plane's edges will extend past the mesh's bounding box. *Guide Color* allows you to change the color of the guide. The guide is only displayed in the viewport when in Point, Edge or Polygon editing modes.



Use Symmetry allows you to turn the symmetry on and off. This option is only available after the point symmetry assignments have been set. *Set Symmetry* sets the point symmetry assignments. *Release Symmetry* releases the point symmetry assignments. *Tolerance* sets the tolerance for the symmetry calcula-

tions when the point symmetry assignments are set. *Mirror Axis* determines on which axis the symmetry is calculated. *Tolerance* and *Mirror Axis* are only available if the point symmetry assignments have not been set. *Lock Center Points* will lock all points that are exactly in the center along the symmetry axis as determined by the *Mirror Axis* parameter. This option is only available after the point symmetry assignments have been set. *Restrict Symmetry* will restrict the manual movement of points to either the *Positive* side or the *Negative* side. This option is only available after the point symmetry assignments have been set. When using modeling tools such as the Brush tool or Magnet tool, which do not select the points you are moving, you can enable the *Restrict Symmetry* and set the *Positive* or *Negative* side on which you wish to work. You can also enable the *Lock Center Points* option to prevent the tools from moving the center points.

Objects

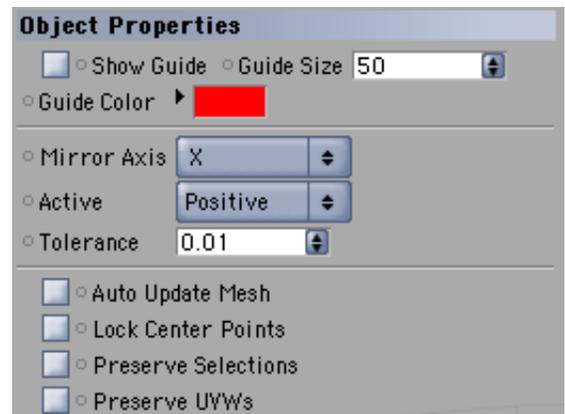


CD Dynamic Symmetry

This Object is similar to Cinema 4D's Symmetry Object with the difference being that it dynamically splits the original geometry in half and only shows the active symmetry side of the original object's geometry.

Object Properties Tab

Show Guide draws a transparent plane in the viewport, showing you on which plane the symmetry axis is. The overall size of the plane is dependent on the size of the original object's bounding box. *Guide Size* determines how far the plane's edges will extend past the original object's bounding box. *Guide Color* allows you to change the color of the guide. *Mirror Axis* determines on which axis the symmetry plane is. The choices are X, Y or Z axes. *Active* determines which side of the symmetry plane will be active. The original object's geometry will only be visible on the active side of the symmetry plane. The choices are the *Positive* side or the *Negative* side of the symmetry plane. *Tolerance* sets the center point



tolerance. All center points that fall within +/- the distance of the tolerance will be snapped to 0 on the symmetry plane axis. Enabling *Auto Update Mesh* will automatically update the original geometry's symmetry side. When *Auto Update Mesh* is enabled, then the *Lock Center Points*, *Preserve Selections* and *Preserve UVWs* options become available. Enabling *Lock Center Points* will constrain the center points to the symmetry plane. Enabling *Preserve Selections* will keep the selected components (points, edges or polygons) selected after the original mesh has been auto updated. Enabling *Preserve UVWs* will attempt to preserve the uvw maps. This option is only useful if you are not adding geometry.

Important Note: The *Preserve Selections* and *Preserve UVWs* options can be time consuming for meshes with high polygon counts.