CD Morph v1.5 For Cinema 4D 9.6+

CD Morph is a point selection morph system that works with a Point or Polygon object. It does not need additional copies of the object for each morph target shape. The morph shapes are stored in tags, and only the selected points that are morphed are stored in the tags. This makes CD Morph a very fast morphing solution and also keeps the file size small. There are morph editing features that allow you to add and subtract points from the point selection, and also edit the shape of the morph. CD morph has some built in controllers, too. Each morph tag has it's own morph slider and an option to allow the morph to be driven by a bone's rotation simply by assigning the tag to the bone. There is also a Jason Osipa style box slider expression included for those who prefer them for facial animation. An optional Mixer tag is provided, too for those who prefer a PoseMixer style interface. CD Morph also has a few command tools to help make setups easier.

The components of CD Morph are:

Command Tools:
- CD Set Morph Selection
- CD Set Home Position
- CD Mirror Morph Tag
- CD Morph Mix Subtract
- CD Object To Morph Tag
- CD Morph Tag To Object
- CD Morph Mix To Object
- CD Morph Mix to Tag
- CD Morph Convert
- CD Morph Split

Tags:
- CD Morph Mixer
- CD Morph Reference
- CD Morph Slider
- CD Morph Tag
- CD Symmetry Tag

Selecting Objects in Order

CD Morph keeps track of the order in which objects are selected when selecting more than one object. This works best when shift selecting the objects one at a time in the viewport. If you drag a selection around a group of objects so that several objects are selected at once, then the order will be determined by the order in which the objects appear in the Object Manager. Remember that in R10 and above, when selecting multiple objects in the Object Manager, you must control select the objects.

Command Tools

The command tools are simple tools to make setting up the tags easier. Some of the command tools also perform conversions between objects and morph tags.

CD Set Morph Selection
This command tool sets a CD Morph tag for the first selected object and sets the point

selection to the current selected points of that object. If only one object is selected, then the CD Morph tag will be placed on that object. If 2 objects are selected by shift selecting them one at a time as described above in the section **Selecting Objects in Order,** then the CD morph Tag will be placed on the second object selected and the first object will become the active object. To use the command you select an object (the object must be a point object), then in Point mode select the points you want to be included in the morph and click on the command. Once the tag has been assigned to the object the tag will have the selected points set and will be ready for you to edit the point positions to create the morph shape.

CD Set Home Position
This command is used to return a CD Morph Slider to it's home position. It checks the active object to see if a CD Morph Slider tag is assigned to it and if so, it will activate the tag's Home Position button to return the slider object to it's home position. This tool can be added to your layout for convenience.

CD Mirror Morph Tag
This command will mirror the selected CD Morph tag. It will create a new CD Morph tag and add it to the selected object. If no object is selected it will add the new mirrored tag to the object for which the tag is morphing.

CD Morph Mix Subtract
This command will subtract the current shape of a morphed object from the selected CD Morph tag and create a new CD Morph tag based on the result of the subtraction. This new CD Morph tag can then be mixed with the selected CD Morph tag to re-form the current shape.

CD Object to Morph Tag
This command creates a CD Morph tag from a morph shape object or objects that have the same point count and point order as the target object. To use the command you select the target object, then shift select the morph shape objects, as described above in the section **Selecting Objects in Order,** and then click on the command. A CD Morph tag will then be added to the target object for each additional selected object.

CD Morph Tag to Object
This command will create an object from one or more selected CD Morph tags. The new objects will have the shape of the selected morph tags.

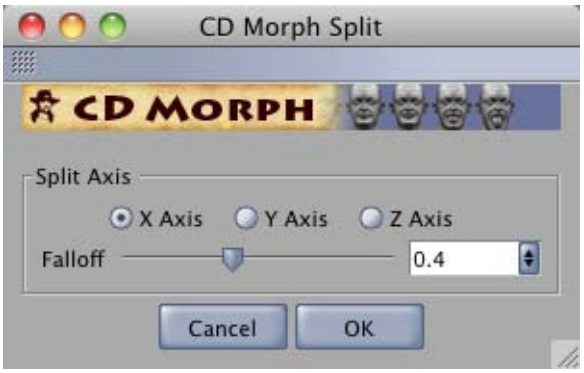
CD Morph Mix to Object
This command will create an object from a mix of several CD Morph tags. To use this command, you must first set the CD Morph tags' *Morph Mixer* sliders to the desired shape, and then select the object that is being morphed and click on the command.

CD Morph Mix to Tag
This command will create a CD Morph tag from a mix of several CD Morph tags. To use this command, you must first set the CD Morph tags' *Morph Mixer* sliders to the desired shape, and then select the object that is being morphed and click on the command. If you shift select a second object, as described above in the section **Selecting Objects in Order,** the new tag will be added to the second object, otherwise the new tag will be added to the first object.

CD Morph Convert
This command will convert a Mocca 3 Morph tag to CD Morph tags. It can also split up

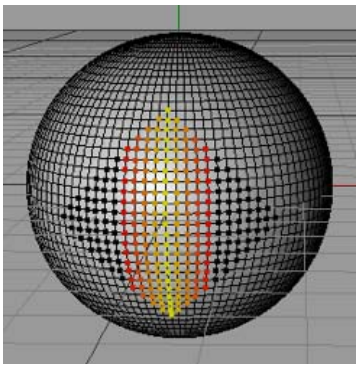
the created tags and assign them to selected objects. If a selected object also has a CD Morph Slider tag on it, then the command will only place the number of tags required for the number of tag links in the CD Morph slider tag. If a selected object does not have a CD Morph slider on it then the command will place a default number of 4 tags per selected object. The last selected object will receive all of the remaning tags. The tags are placed in order according to the order of the morph shapes in the Mocca 3 Morph tag's list and the order of the selected objects, as described above in the section **Selecting Objects in Order.**

CD Morph Split



This command will split a morph shape into two halves and create two new tags. The two new tags will have a blended falloff between them so that when both tags have their mix slider set at 100%, the morphed object will be in the shape of the original tag's morph shape. To use the command you select a CD Morph tag and them select the command. The command will always open a dialog box where you set the command's options. If you also have an object selected, the newly created tags will be placed on that selected object, otherwise the new tag will be added to the selected CD Morph tag's *Destination* object.

Options Dialog



In the options dialog, you can set the axis across which the morph shape will be split. The choices are *X Axis*, *Y Axis* or *Z Axis*. The center of the split is determined by the point selection that is stored in the selected CD Morph tag. If the point selection is off center from the mesh's center, then the split will also be off center. The Falloff slider allows you to adjust the falloff blend between the two halves. When the dialog opens, point handle guides are drawn on the object so you can visualize the falloff blend between the two halves. When the Falloff slider is at 0%, only the center points will be blended and when the Falloff slider is at 100%, the falloff blend will cover the entire point selection set stored in the selected CD Morph tag.

Tags

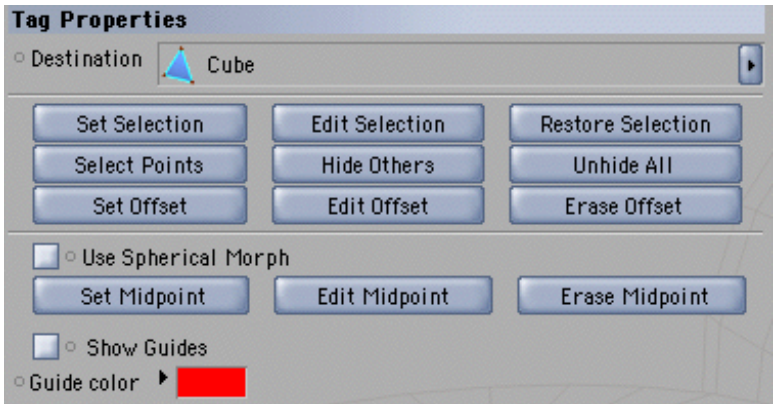
CD Morph Reference

This tag is automatically added to the object when a CD Morph tag is set for the object. It stores the original shape of the object to be morphed. Once this tag has been placed on an object the object is locked to the original "Reference" shape and can only be edited by clicking on the *Edit Reference* button. After edits have been made to the mesh you then click on the *Reset Reference* button to store the new reference shape.

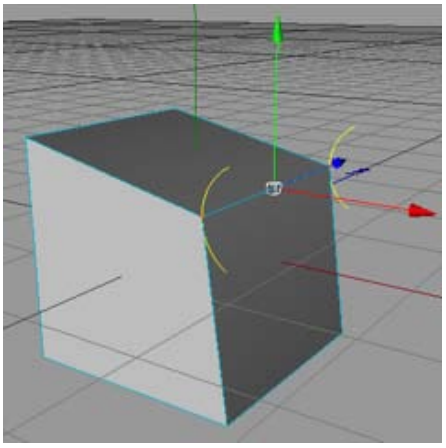
CD Morph Tag

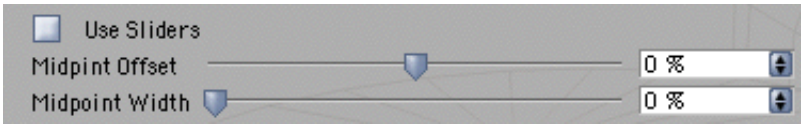
This tag stores the point selection set and the point offsets that create the morph shape. It can be assigned to any object in the hierarchy.

Tag Properties Tab



The *Destination* link holds the Point or Polygon object to be morphed. The selection buttons work similar to a point selection tag. *Set Selection* sets the selection set to the currently selected points. *Edit Selection* allows you to add or subtract points to the selection set. Once the points have been added to or subtracted from the selection set you then use *Set Selection* again to set the new selection set. *Restore Selection* will select all of the points in the selection set and deselect any points that are not in the selection set. *Select Points* will select all of the points in the selection set without deselecting any selected points that are not in the selection set. *Hide Others* will hide all of the points that are not in the selection set. Unhide All will unhide all hidden points of the object. *Set Offset* will set the point positions that define the morph shape. *Edit Offset* will allow you to edit the offset point positions. When you are in offset editing mode, all of the points that do not belong to the selection set are hidden so that you only see the points in the selection set. After editing the point positions, use Set Offset again to set the new morph shape. Erase Offset will erase the morph shape and set the points in the selection set back to their original position. This is useful if you want to use the same set of points for another morph shape. You can then just copy the CD Morph tag and erase the shape to start a new one. *Use Spherical Morph* enables the spherical morphing. This allows you to define an arc path for each point included in the selection set by setting an offset of the point at the half way position in the linear morphing path. *Set Midpoint* sets the offset of the half way position. *Edit Midpoint* will allow you to edit the offset of the half way position. When you are in midpoint offset editing mode, all of the points that do not belong to the selection set are hidden so that you only see the points in the selection set. A yellow guide is also drawn in the view for each point in the selection set, so you can see the arced path along which the spherical morph will move. The shape of the guide path will change as you move the points. Also while in midpoint editing mode the *Use Sliders* option will appear just below the midpoint buttons.

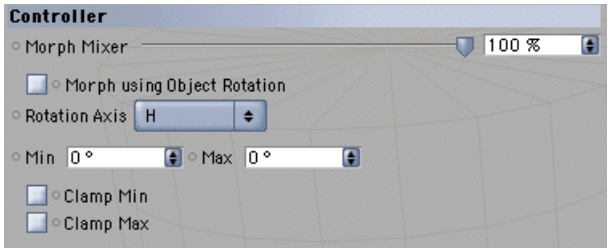




The sliders help position all of the points in the selection set as a group to the midpoint offset position. This is only useful as long as the selection set point bounds have depth in all 3 dimensions. If one of the dimensions has a depth of 0, then the results may be unpre-

dictable. *Midpoint Offset* helps you establish a common center pivot point for the all of the points in the selection set. Midpoint Width changes the direction of all arc paths. At 0%, all of the arc paths are parallel to a common normal, and at 100% all of the arc paths radiate from the common center point. The slider options are useful for getting the general shape of all of the points and you may need to adjust individual points afterwards to get the exact desired shape. *Erase Midpoint* will erase the stored midpoint offset. *Show Guides* allows you to display the arc guides in the viewport while not in midpoint editing mode. Guide Color allows you to change the color of the guides.

Controller Tab

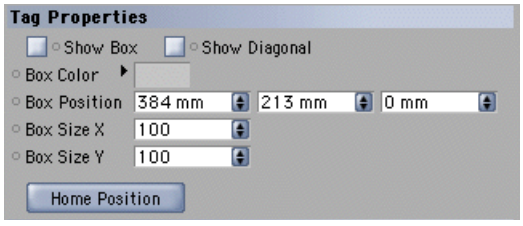


In the Controller Tab there are two types of controllers built into the tag. The choices are the slider or the object driven controls. The object driven controls only become available when the CD Morph Tag is assigned to another object other than the targeted mesh object. The *Morph Mixer* slider mixes between the original shape (0%) and the morph shape (100%). In the edit field to the right of the slider, you can also input values of more than 100% or less than 0% for some interesting results. The *Morph using Object Rotation* check box activates the object driven controls. *Rotation Axis* sets which rotation of the object (HPB) will drive the morph controller. The *Min/Max* edit fields are a built in range mapper where you set the range of the object's rotation that will affect the morphing. The *Min/Max* range also works when the values are flipped. In other words the *Min* value can be a positive value and the *Max* value can be a negative value and it will still work correctly. The *Min* value will always be the original shape (0%) and the *Max* value will always be the morph shape (100%). If you need the morphing to stop at either the *Min* value or *Max* value, you can activate the *Clamp Min* check box or *Clamp Max* check box. If the tag is placed on object which also has a **Zero Transformation Tag** on it from the ***CD Transfer Tools*** plugin, then the *Min* and *Max* rotation values will be taken from the **Zero Transformation Tag's** *Zero Transformation* coordinates. If the tag is placed on a **CD Joint** object from the ***CD Joints & Skin*** plugin, then the *Min* and *Max* rotation values will be taken from the **CD Joint's** *Zero Transformation* coordinates.

CD Morph Slider

This expression tag is used on an object to turn it into a Jason Osipa style box slider. The size of the box that will be drawn around the object is determined by the object's size. The object's movement will be restricted to stay within the drawn box. CD Morph Slider can be configured to be a 4 way, 3 way, 2 way or 1 way slider.

Tag Properties Tab



Show Box turns the box display on and off. *Show Diagonal* will draw diagonal lines in the box according to how you have the box slider configured. This option will be grayed out if *Show Box* is disabled. *Box Color* will allow you change the color of the drawn box. *Box Position* sets the coordinates of the box slider's Local position. If the object with a CD Morph Slider

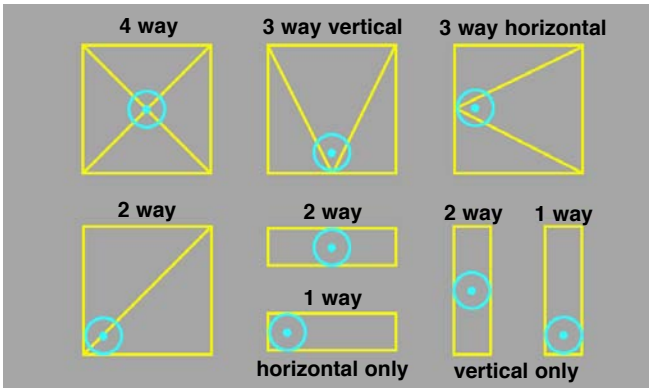
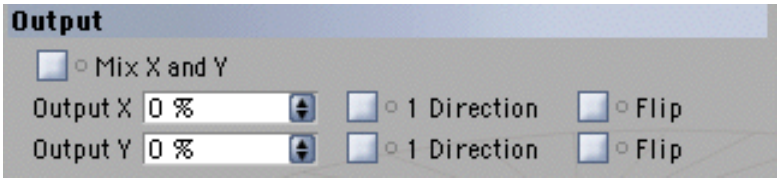


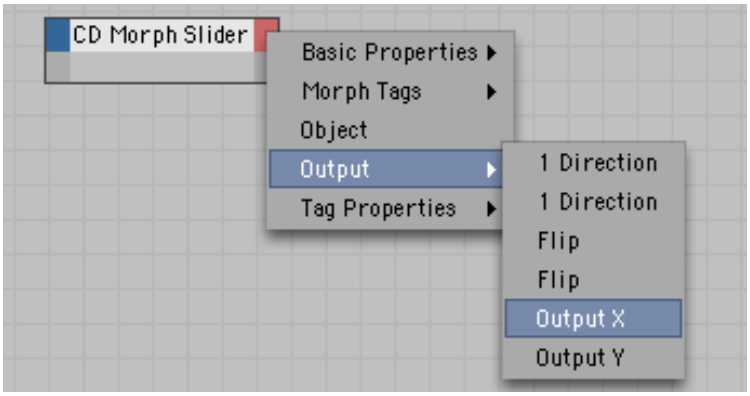
Figure 1 - Home Positions

tag does not have a parent object, then *Box Position* will set the coordinates of the box slider's Global position. *Box Size X* and *Box Size Y* sets the horizontal and vertical size of the box slider. If the *Box Size X* parameter is set to 0, then the slider becomes a vertical only slider, and if the Box Size Y parameter is set to 0, then the slider becomes a horizontal only slider. The *Home Position* button sets the slider to a 0,0 "home" position according to how you have the slider configured. *See Figure 1.*

Output Tab



The **Output** tab parameters are provided so that the position of the slider can be accessed through Xpresso via the node's output port. This will allow you to use the tag's X and Y outputs to drive any custom controller setup you create in Xpresso. You will be able to use the CD Morph Slider as a controller to drive other parts of your rig, besides the morphing setups that you create with CD Morph. You simply drag the CD Morph tag to the Xpresso editor window and add XY output ports. The output ports can then be wired to the input ports of a Range Mapper node or any other node that is set to read Percent values on its input port. Each output has a *1 Direction* check box and a *Flip* check box. Activating the *1 Direction* check box will set the output values to be from 0% to +100% for the corresponding output. When this check box is deactivated, the output values will be from -100% to +100% for the corresponding output. The *Flip* check box will only be available if the *1 Direction* check box is active for the corresponding output. Activating the *Flip* check box will change the direction of the slider, so the X output will be from right (0%) to left (100%) or the Y will be from top (0%) to bottom (100%). The *Mix X and Y* option allows you to use the Y value to drive 2 morphs at once, while the X value subtracts the left or right morph. So, with a Y value



of 100% and an X value of 0%, both left and right morphs will be 100%, and with a Y value of 100% and an X value of 100%, then the left morph will be 0% and the right morph will be 100%.

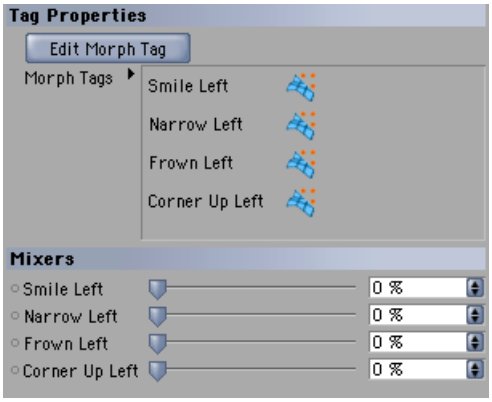
Morph Tags Tab

This tab has a link for each output direction where you place the CD Morph Tags you want the box slider to control. The links only appear according to how you have the box slider configured. For example, if you have the box slider configured to be a 2 way horizontal slider, then the only links that will be available in this tab are the *+X Control* and the *-X Control*. Once you drop a CD Morph Tag into a link the box slider will automatically take over control of the CD Morph Tag.

CD Morph Mixer

This tag was added as an option for those who prefer a PoseMixer style interface with all of the morph sliders listed in one single interface. The CD Morph Mixer tag can be assigned to any object in the Object Manager so it can be placed where it is most conveniently accessed.

Tag Properties Tab



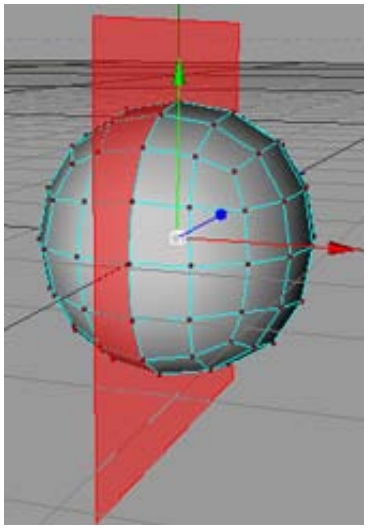
The *Morph Tags* list is where you drag the CD Morph Tags you want to be included in the Mixer. A corresponding mix slider will appear in the **Mixers** tab for the CD Morph Tag. The sliders will appear in the same order as the CD Morph Tags in the list. You can change the order of the tags in the list and the order of the sliders will automatically change to match. If the CD Morph Tag has its *Morph using Object Rotation* option enabled then the CD Morph Tag will automatically be removed from the list. The *Edit Morph Tag* button allows you to select a CD Morph Tag in the list and go directly to its editing Attributes Manager by clicking on the *Edit Morph Tag* button.

CD Symmetry Tag

This tag was added as an option 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 mesh move to their mirrored position. The tag also works in Edge mode and Polygon mode. This tag will not appear in the CD Morph Menu if you also have the CD Symmetry Tools plugin installed, but will instead appear in the CD Symmetry Tools menu.

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 points symmetry assignment has been set. *Set Symmetry* sets the points symmetry assignment. *Release Symmetry* releases the points symmetry assignment. *Tolerance* sets the tolerance for the symmetry calculations when the points symmetry assignment is set. *Mirror Axis* determines on which axis the symmetry is calculated. *Tolerance* and *Mirror Axis* are only available if the points symmetry assignment is not 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 points symmetry assignment has 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 points symmetry assignment has 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.