TOON BOOM HARMONY 12.1

- Premium Edition -

Paperless Animation Guide (Server)

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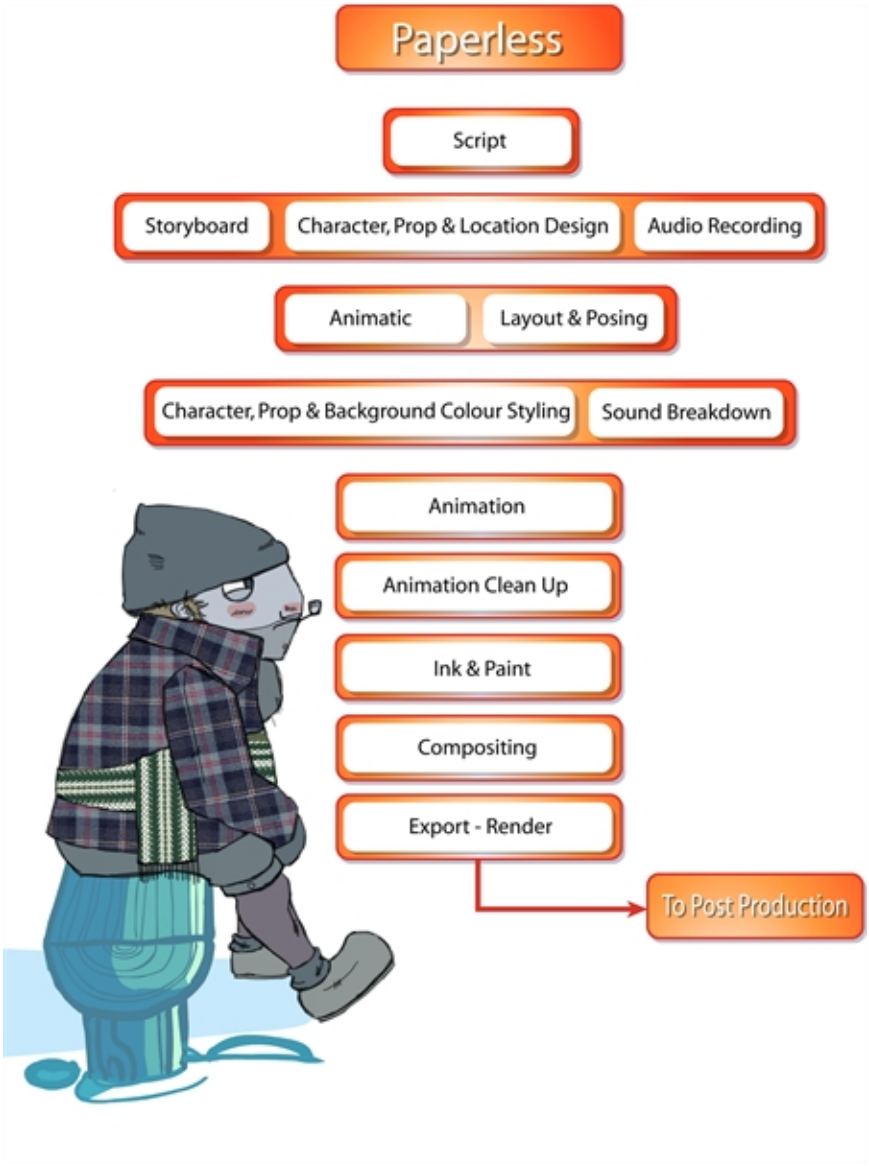
Chapter 1: Paperless Animation - An Introduction

Harmony is a high-performance animation software which not only offers a wide range of features, but also handles more than one animation type and workflow. In this guide, you will learn how to perform tasks related to the cut-out animation workflow from start to finish using Harmony.

Before reading this guide, be sure to take some time to familiarize yourself with the basic concepts in the Fundamentals Guide. Each chapter is self-contained. so you can concentrate only on the chapter pertaining to your task. You do not need to read the entire guide, but you should read the whole chapter before starting to work.



Topics in this section:

- Design and Drawing Tools
- *Colour Styling and Colour Models* on page 191
- *Timing* on page 245

- *Paperless Animation* on page 333
- *Ink and Paint* on page 387
- *Morphing* on page 437

Chapter 2: Design and Drawing Tools

Another important step in the project creation is the character, prop and location design. This determines the style and models to follow for the entire project.

This is also the step where you will need to use most of Harmony's drawing tools.

The design can be created on paper and scanned in or it can be created digitally. You can draw and even create the colours entirely on paper, while others like to design on paper and scan the drawings to create the colour model in a software program. The most popular method is to design directly in Harmony.

To save paper and time and avoid having to recreate colour palettes, Harmony gives you the ability to design all elements directly in the application. This keeps all your work within the same software, avoids using a lot of paper and losing time scanning in elements and importing them.

The character and prop design process is divided in three steps:

- *Preparation* on page 13
- *Sketching the Model* on page 15
- *Cleaning and Inking the Model* on page 30

Harmony has an extensive set of drawing tools that can be used to design your characters. You can learn more about this in the following topic:

- *Drawing Tasks* on page 35

Each drawing tool has a series of options to customize its behaviour and drawing style. You can learn more about them in the following section:

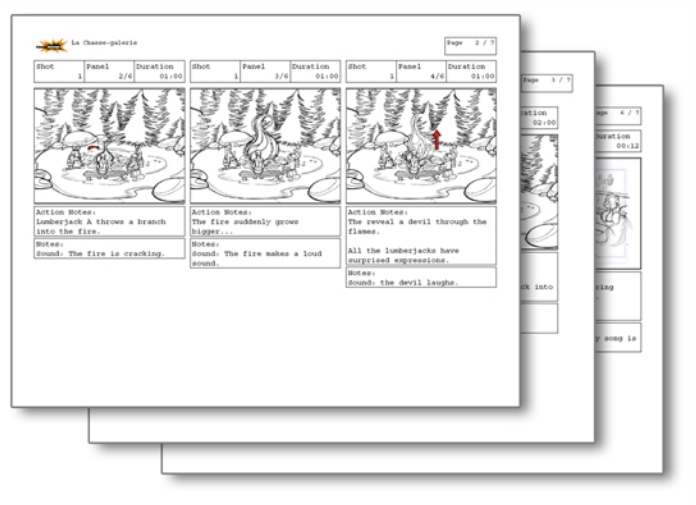
- *Drawing Tool References* on page 115

Preparation

To prepare for the design task, you will need to go through a few steps:

- *Getting References* on page 14
- *Using the Workspace* on page 14

Getting References



Creating models requires two main reference sources, the script and the storyboard. Once you have the script in hand, you can learn about the characters and their personalities, the props, the ambiances, and so on. This will be your main reference, so it is very important to read it carefully.

The storyboard is the second reference source and it can be quite useful as well. Although it will not yet be the final version of the storyboard, it will show you what the character is doing and what props need to be designed.

Using the Workspace

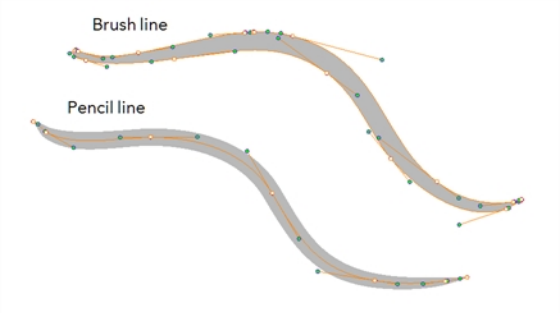
Once your scene is created, you can open it and set your workspace.

To sketch the characters, props or locations directly in Harmony, you will mostly use the Camera or Drawing views along with the Colour, Timeline and Tool Properties views.

Sketching the Model

Now that your references and scene are created, you can start designing. To draw your characters, props and key locations, you will need to learn the following:

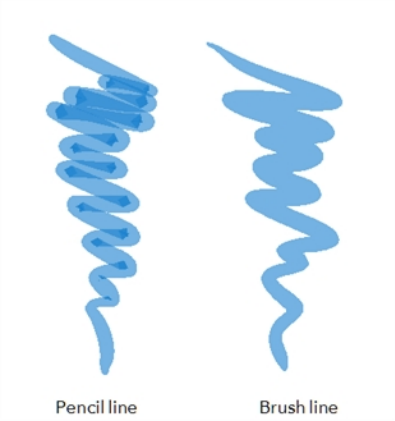
Drawing with the Brush or Pencil Tool



The Brush and Pencil tools are used for drawing and sketching. Both tools support pressure sensitivity, allowing you to create lines with variable thickness. The Brush tool produces contour vector lines. The Pencil and shape tools produce central vector lines. This means that a pencil line's control points (used to deform its shape) are located along the length of the central spine, while the Brush line's control points are located along the contour.

- If you draw with the Brush tool and want to modify the thickness variation, use the Contour Editor tool.
- If you draw with the Pencil tool and want to modify the thickness variation, use the Pencil Editor tool.
- You can also convert a brush zone into a pencil line with the Brush Stroke to Pencil Line option.

If you sketch a drawing using a semitransparent colour to get a paper-like feel, you should use the Brush tool as it produces a more realistic and natural feel. The pencil line is very useful for tracing clean or final drawings.

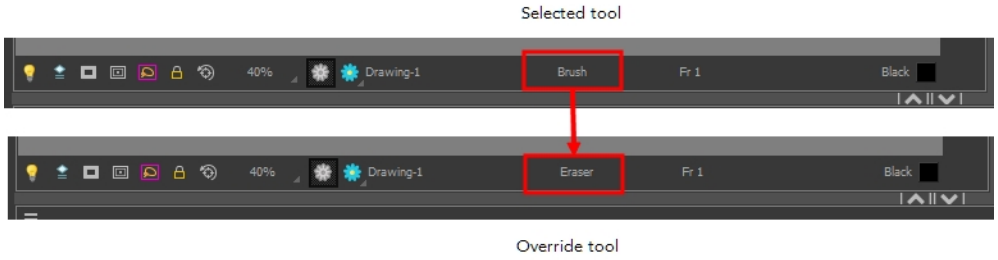


Also, it is recommended to use brush lines when designing cut-out puppet articulations which use patches.

Override Tool

The Override tool lets you increase productivity by rapidly switching between tools used for short tasks and your previous tool. Most drawing tool shortcuts are accessed using the Alt key followed by another key, such as the Eraser tool which is accessed by pressing Alt + E.

If you are drawing with the Brush tool and need to briefly switch to the Eraser before continuing, hold down the E key while you are erasing. Once you are done, release the E key to return to the previous tool; in this case, the Brush tool. You can do the same for most drawing tools that have a shortcut composed of Alt followed by another key.



Relative Size

The size relation between the props, characters and backgrounds is very important in maintaining consistency and structure throughout the project.

A production can contain many characters and props. It is not unusual for these to be created by different people. If there is no size control implemented, the characters and elements created by different artists can vary greatly. When this occurs, the characters that are placed together in a scene will be out of proportion. The animator or person doing the scene setup will then have to scale them to the correct size.

When a character or prop is scaled down, the outline will become increasingly thinner. By the time the element is scaled to its proper size, the outline may be so thin that a difference between one character's outline and the one beside it will not look very good.

Here are a few tips you can use to create a suitable size relation.

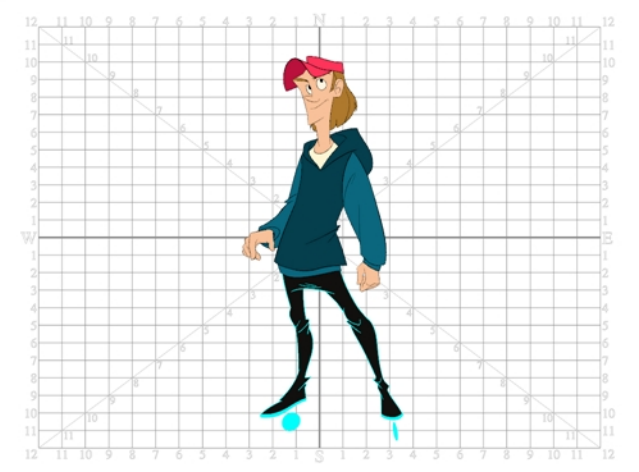
Line Up

A line up consists of copying and pasting all your character designs into the same drawing and then scaling them to the correct proportion in relation to the other characters. This line up is very important and should be handed to any animator, layout and posing artist or scene setup person working on the project.

For the prop design, it is recommended that you paste one of the main character's hands or even the full body beside the prop. This enables the animator to know what size to draw the prop.

In your character design scene, it is a good idea to create a column for the character line up.The line up is usually done during the character design step. When the character builder imports the model to the breakdown scene, the size relation should be correct.

Field Chart



Harmony includes a field chart in its Drawing and Camera views. This tool is very useful in setting the characters' and props' heights.

It is recommended that you keep the character design and breakdown inside the 12 field size. This ensures that it fits the default camera size and the template thumbnails. If some parts were drawn too big or too far apart,

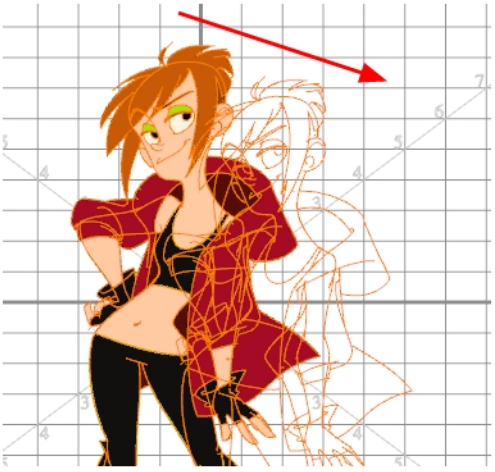
you can use the Reposition All Drawings tool and reposition, scale or rotate multiple drawings from different layers all at once.

Use the Show Grid option to display a grid in the Drawing or Camera views.

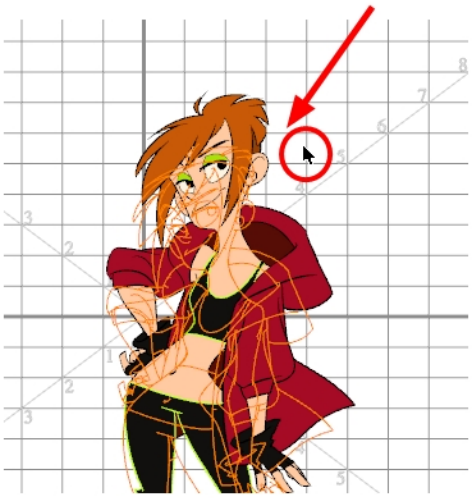
Name	Button	Description	Keyboard Shortcut
Show Grid		Displays the grid.	**View > Grid > Show Grid** Press Ctrl + ' (Windows/Linux) or ⌘ + ' (Mac OS X).
Grid Outline Only		Displays the outline of the grid only.	**View > Grid > Grid Outline Only**
Square		Displays a standard square grid.	**View > Grid > Square**
12 Field Grid		Displays a 12-field size grid.	**View > Grid > 12 Field Grid**
16 Field Grid		Displays a 16-field size grid.	**View > Grid > 16 Field Grid**
Underlay		Displays the grid under the drawing elements.	**View > Grid > Underlay**
Overlay		Displays the grid over the drawing elements.	**View > Grid > Overlay**

How to reposition all drawings

1. In the Tools toolbar from the Select drop-down menu, select the Reposition All Drawings tool. This also automatically selects every stroke in your drawing in the Drawing and Camera views.
2. To deform or reposition a selection:
   - To reposition, click and drag your selection to a new area.



   - To scale, pull or push on the top, side, bottom or corner control points. Hold down Shift to lock the selection's ratio.



3. When you release your cursor, every drawing contained in the drawing layer you repositioned, scaled, rotated or skewed will follow the same transformation.

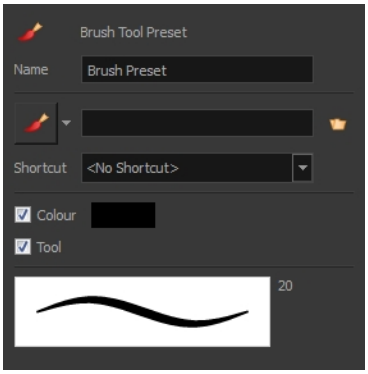
Brush Size

Harmony provides a variety of pens and brushes and also allows you to create and save your own through creating a tool preset.

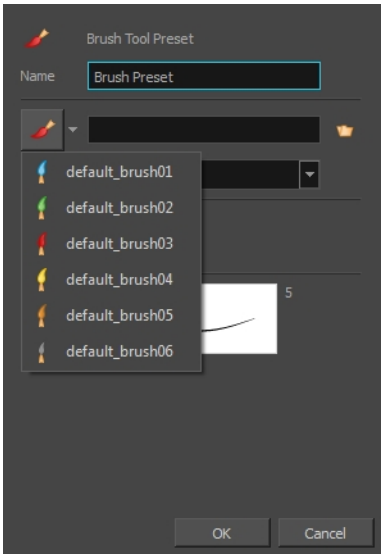
It is a good idea to create and save pens with precise sizes and parameters to trace and design your models and breakdowns.

How to create a tool preset

1. In the Tools toolbar, select a tool, for example the Brush tool.
1. Use the Tool Properties view to customize the tool.
2. To set a specific colour for your preset, in the Colour view, select the colour swatch to link to the tool. Note that when using this preset in another scene not using that colour palette, upon selecting this new preset, a colour recovery dialog box will appear asking to add this colour to your scene.
3. In the Tool Presets toolbar, click the New Tool Preset button.
4. In the New Preset dialog box, in the Name field, type a name for your new preset.



2. From the icon list, select an icon to quickly identify your preset or upload your own by clicking the File button.



5. (Optional) From the Shortcut menu, set a keyboard shortcut to quickly access your preset. By default, the shortcuts are unassigned. To assign a keyboard shortcut, go to the top menu and select **Edit > Preferences > Shortcuts > Tool Presets** (Windows/Linux) or **Stage > Preferences >Shortcuts > Tool Presets** (Mac OS X).

6. When you select any of the following options, they will take effect when you use the tool preset. If an option is deselected, then using a tool preset will not override your current settings.

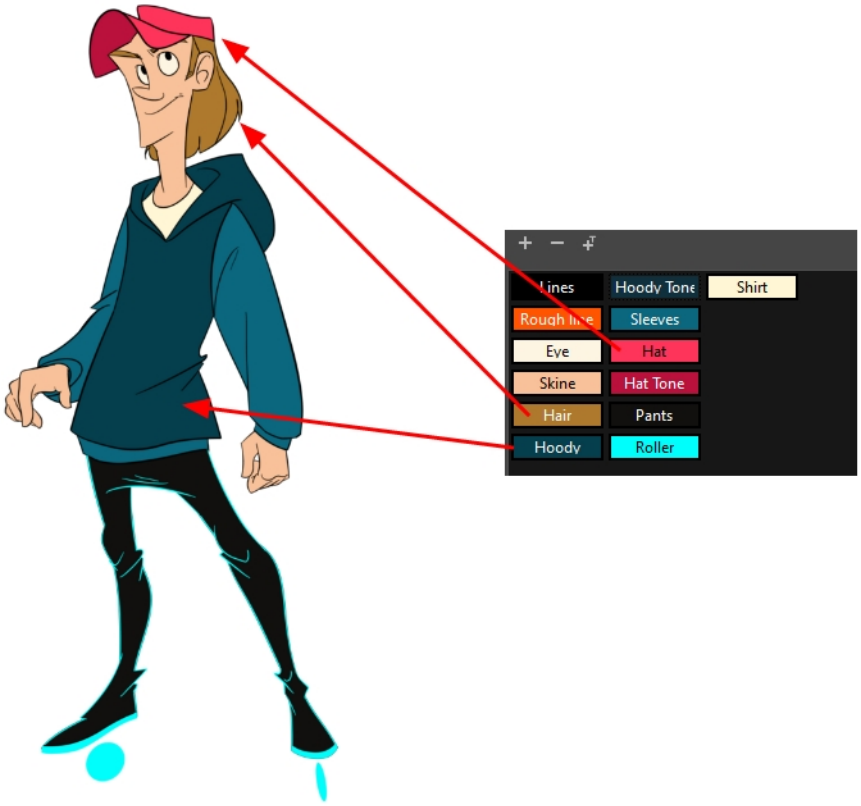
   - **Colour**: Saves the current colour into the tool preset.

7. Click **OK**.

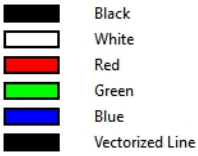
For more information on Tool Presets—see Working with Tool Presets

Palettes and Colours

Harmony has an integrated palette system. Each character, prop or background can have its own set of colours and each colour in the palette can be associated to colour fill zones on a drawing. You can create as many palettes and colours as you need.



Each scene created in Harmony includes a default colour palette which contains a standard set of colours for sketching and painting.



You can sketch and design using the default palette without any problem. However, it is not recommended that you use the default palette for the colour models. A different colour palette should be created for each colour model.

To sketch and design with a different colour swatch or create a palette for each character, prop or key location, you will need to learn how to manage the Harmony palettes.

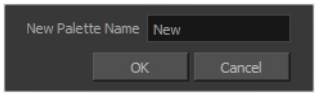
How to create a new palette (Basic Palette Lists mode)

1. From the Colour View menu, select **Palettes** > **New** or click the New Palette button.

   - Make sure you have the necessary rights to modify the palette list. If not, select **Edit > Edit Palette List Mode.**

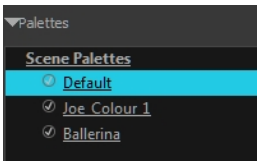
   The Create Palette window opens.

2. Enter the palette name according to the model.



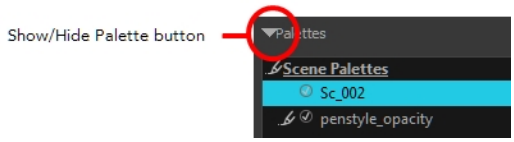
3. Click **OK**.

   The palette appears in the drawing element's palette list.



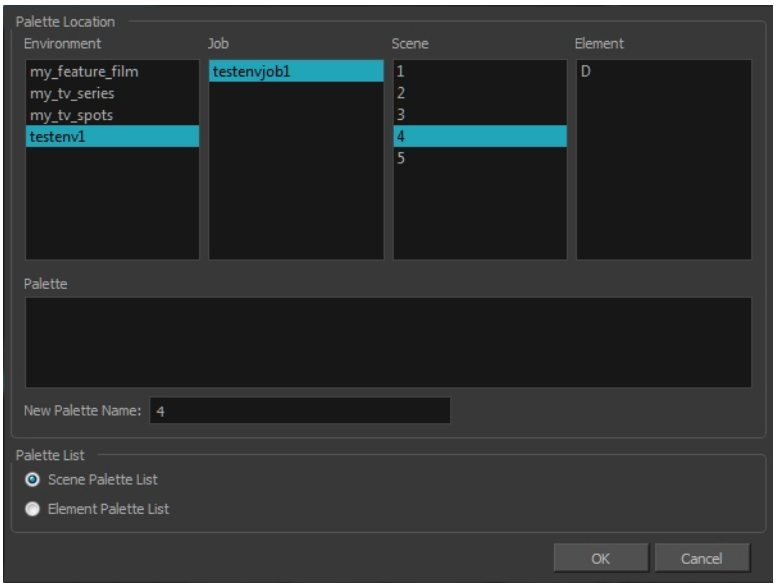
How to create a palette from the Advanced Palette Lists mode

1. In the Timeline or Xsheet view, select the drawing that requires a palette.
2. Make sure that you have the necessary rights to modify the palette list. If you do not, select **Edit > Edit Palette List Mode.**
3. In the Colour view, click the **Show Palette List View** button to display the palette list.



4. Do one of the following:
   - From the Colour view menu, select **Palettes > New.**
   - Click the Create Palette button.

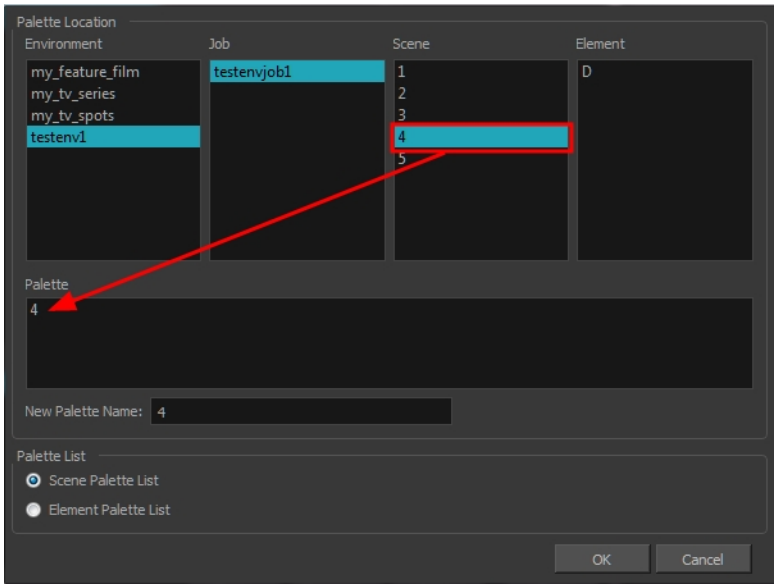
   The Palette Browser: Create Palette dialog box opens.



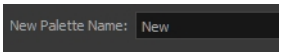
5. Select the level to store the palette file.

   - **Environment**: The palette-library folder is stored in the scene's parent environment folder.
   - **Job**: The palette-library folder is stored in the scene's parent job folder.
   - **Scene**: The palette-library folder is stored directly in the scene folder.
   - **Element**: The palette-library folder is stored directly in the drawing element folder.

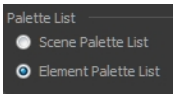
   When you select a level that has a palette stored in it, the palette names are displayed in the Palette field.



6. Name the palette. There is no need to add the suffix "palette" to the name as it is always recognized as a palette file.



7. Select a Palette List option.



   - The Scene Palette List is mainly used with cut-out animation. A cut-out character will often be divided in twenty to thirty different drawing elements that use the character's master palette.

     The palette list is stored at the scene level instead of the Element directory. This way, all palettes linked to this list will appear in every drawing element created in the scene. There is no need to manually load the palette in each element.
   - The Element Palette List is mainly used with traditional and paperless animation. Unlike cut-out animation, all columns (drawing elements) contain different characters, props, backgrounds and effects. The Element Palette List is used because you do not necessarily want all of the palettes for all of your elements linked in every column.

The palette list is stored in the drawing element's directory instead of directly in the Scene level. This ensures that the links to the palettes appear only in the appropriate element. If you prefer to access a global palette list, link your palettes to the Scene Palette List.

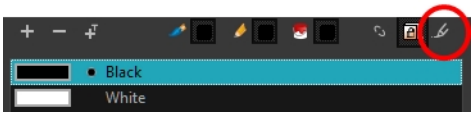
8. Click **OK**.

   The new palette appears in the palette list.

How to lock or unlock the palette list

- In the Colour view, click the Edit Palette Mode button.

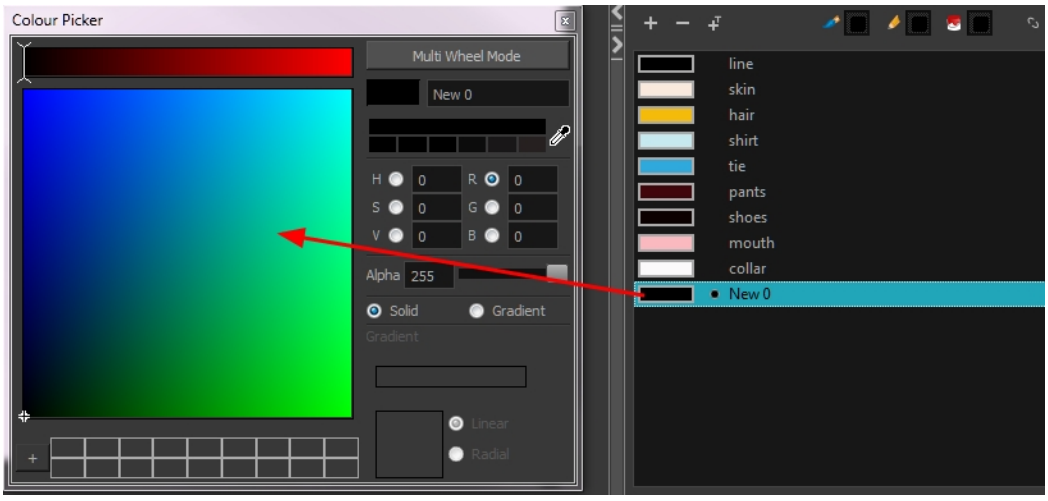
A grey pencil icon appears in the top-right corner of the Palette list.



How to add or modify a solid colour swatch

1. In the Colour view, click the Add Colour button.
2. From the Colour View menu, select **Colours** > **Edit** or double-click on the colour swatch.

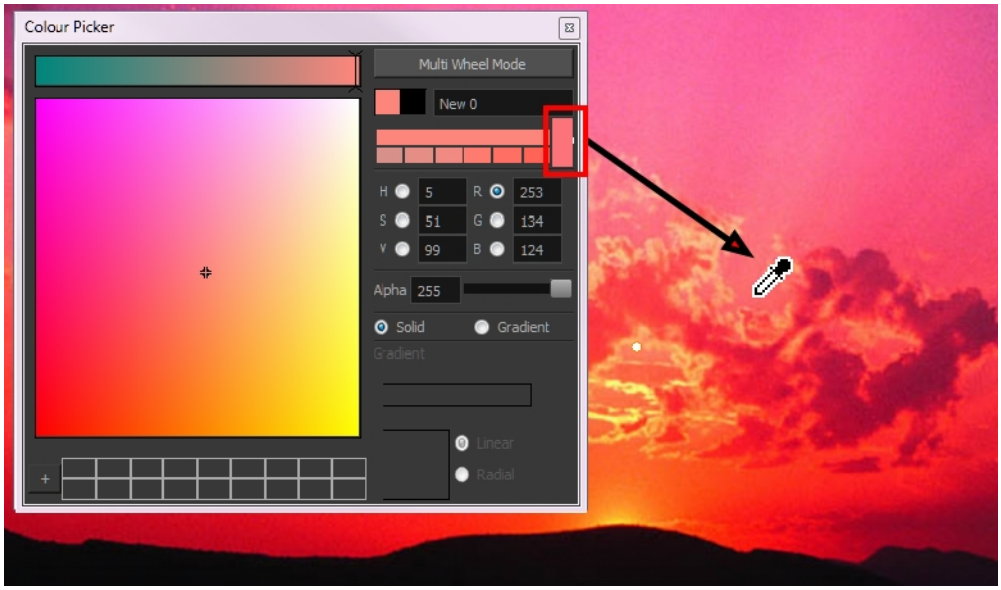
   The Colour Picker window opens.



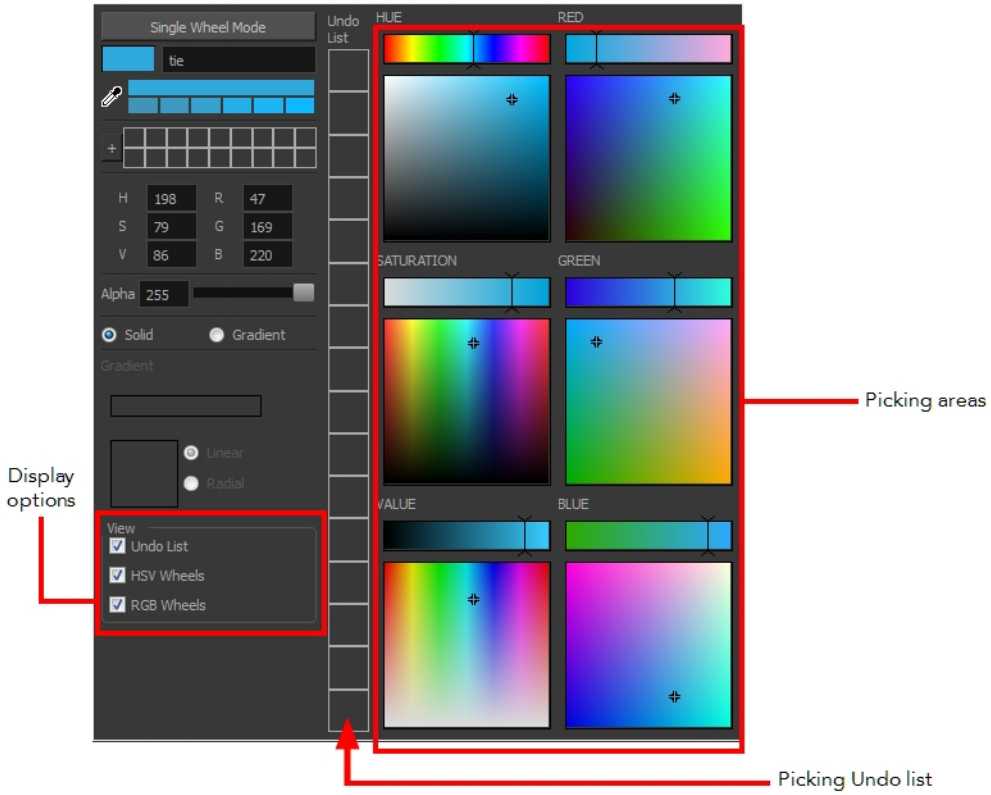
3. To set your colour, do one of the following:
   - In the colour wheel, select a colour.
   - Enter the HSV or RGB values in the corresponding fields. Select the **R,G,B,H,S** or **V** options to change the look of the colour picking area.

- Hold down the Dropper button as you move along the desktop to preview colours, then release to select the colour. It can be from the Toon Boom Harmony interface, your operating system or any other open application.

NOTE: If the Sticky Eye Dropper option in the Preferences dialog box (Drawing tab > Options section) is selected, the dropper will not have this behaviour.



You can also click **Multi Wheel Mode** to open the Multiwheel Colour dialog box. This displays all the picking area styles together and also contains a picking undo list. To return to the regular Colour Picker window, click **Single Wheel Mode**.



4. Click on the Shade Scale swatches to modify the shade of the selected colour.

5. Adjust the desired level of transparency with the Alpha slider, or type the value directly in the Alpha field.

6. Click the **Add** button to add the current selected colour to the Colour Storage Library, so you can quickly access it later.

7. You can rename the colour swatch in the Colour Picker window or directly in the colour list by double-clicking on its name.

Sketching the Character

You are now ready to sketch your models. There are two tasks to perform in order to draw your characters:

- Add a drawing layer
- Sketch the model

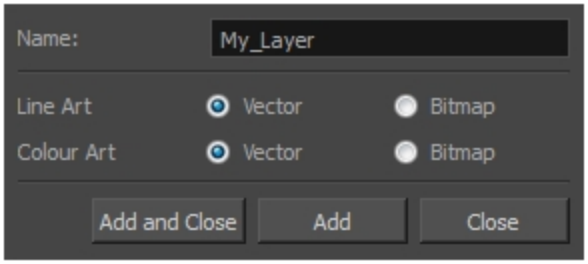
You have the choice to sketch your model as a bitmap or vector drawing. If you like the feel of drawing with bitmap lines, you can set your layer as bitmap. If you like drawing with vectors, you can set your layer as vector. If you use vector, you will be able to enlarge your drawing and zoom into it without losing quality or resolution. You can also use the Contour Editor and Select tools to resize and modify lines. If you draw with bitmap, you will not be able to scale the drawing beyond 100% of its resolution without encountering pixelization issues.

If you would like to separate your lines and colours on separated art layers, see *Art Layers* on page 396

How to add a drawing layer

1. In the Timeline view, click the Add Drawing Layer button or press Ctrl + R (Windows/Linux) or ⌘ + R (Mac OS X).

   The Add Drawing Layer window opens.

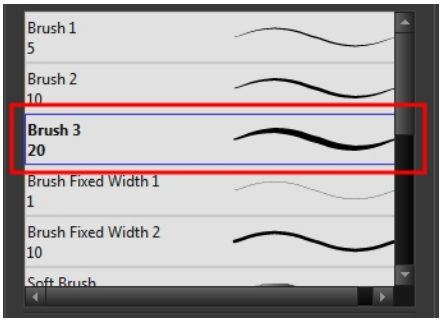


2. In the Name field, name your new layer.
3. Set the Line Art and Colour Art options to **Vector** to get a vector layer or to **Bitmap** to have a bitmap layer.
4. Do one of the following:
   - Click **Add** to add a first layer and keep the window open to add more layers.
   - Click **Add and Close** to add a new layer and close the window.

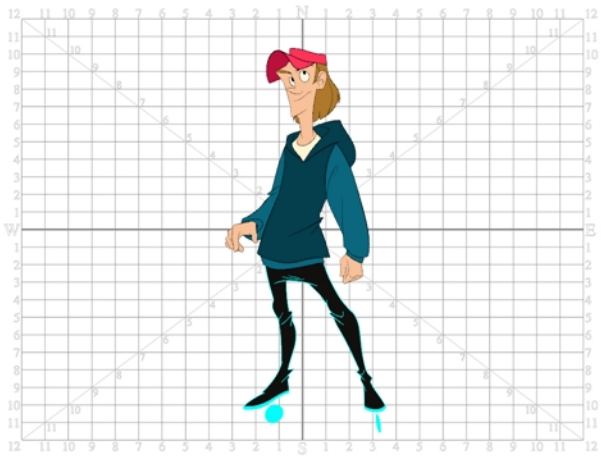
   A new drawing layer is added to the Timeline view.

How to sketch a model

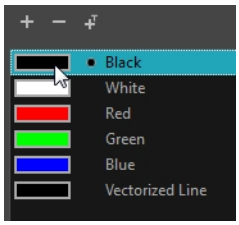
1. In the Tools toolbar, select the Brush tool or press Alt + B.
2. In the Tool Properties view, select a brush preset and adjust its parameters.



3. In the Timeline or Xsheet view, click in the first cell of the drawing layer.
4. In the Drawing or Camera view, enable the Grid (Field Chart). You can press Ctrl + ' (Windows/Linux) or ⌘ + ' (Mac OS X).
   - Make sure the Drawing or Camera view is the active view while using the keyboard shortcut.
5. In the Drawing or Camera view, start drawing.



6. To select a different colour, in the Colour view, select a different colour swatch. Double-click on the colour swatch to open the Colour Picker window and modify the colour. Remember that anything already painted with that colour swatch will update to the new colour.



7. In the Camera or Drawing view, use the Rotary Table to rotate your workspace.You can press Ctrl+Alt (Windows/Linux) or Ctrl+⌘ (Mac OS X).

   - The default keyboard shortcut to reset the workspace rotation is Shift + X.

8. If you decide to draw in the next cell and need to see your previous drawing, enable the Onion Skin by pressing Alt + O.

Cleaning and Inking the Model

When your rough models are ready, it is time to clean and ink them. You can still use the default palette and colours to do so, especially if you are not the one doing the colour styling. If you have already created a palette for your model, you can add new colours for tracing.

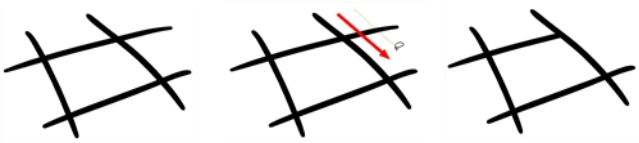
If you want to keep your roughs and sketches, add a new drawing layer and trace in it using the Light Table. This is the equivalent of adding a sheet of paper and tracing over the rough using the animation disk light table. You only need to disable the rough layer to prevent it from appearing in the final scene render.

If you would like to separate your lines and colours on separated art layers, see *Art Layers* on page 396

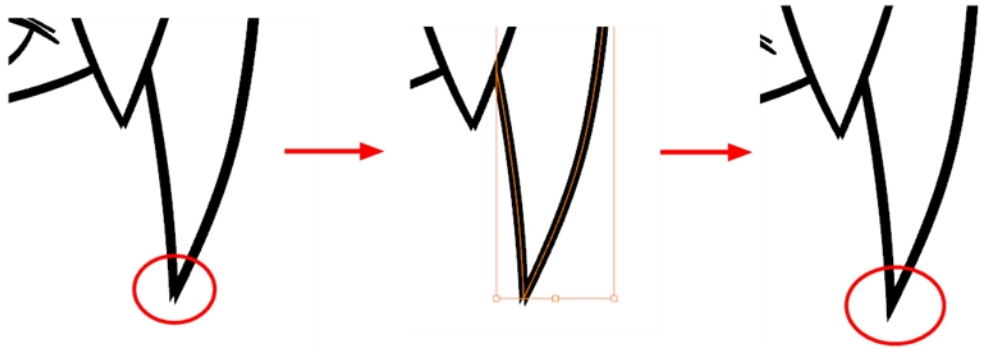
How to trace your character in a new layer

1. In the Timeline view, add a new drawing layer and name it: **`clean`**.
2. If you work in the Drawing view, enable the Light Table or press Shift + L.
3. Do one of the following:
   - In the Tools toolbar, select a drawing tool.
   - From the top menu, select **Drawing > Drawing Tools > *desired tool***.
4. In the Timeline or Xsheet view, select the cell in which you want to draw.
5. Trace the model.

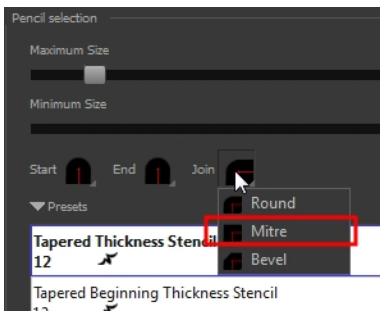
6. To make perfect points and corners, you can intersect the two strokes to create a point. Using the Cutter tool, you can automatically trim the excess portion. In the Tool Properties view, enable the Lasso selection type. Make sure the Use Mouse Gesture button is enabled. In this mode, you can automatically delete any extra sections of line in your artwork by simply clicking, holding and dragging your mouse over it.



7. If you are using the Pencil tool to clean your drawing, you will need to merge your pencil lines together after cropping the points.
   - In the Tools toolbar, select the Select tool.
   - In the Camera or Drawing view, select the two strokes to be merged.
   - In the Tool Properties view, click the Merge Pencil Lines button.

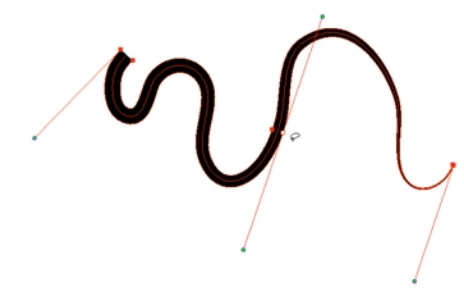


   - You can also set the Join option to **Mitre**.

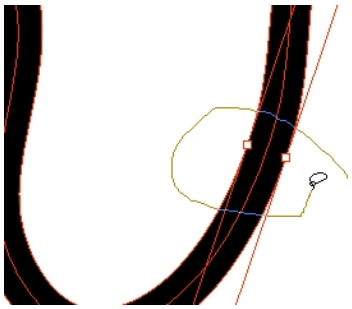


How to add thick and thin Lines

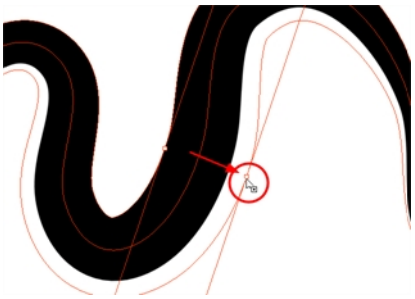
1. In the Tools toolbar, select the Pencil Editor tool located in the Contour Editor menu.
2. In the Camera or Drawing view, select a pencil line and click the line to reshape it.



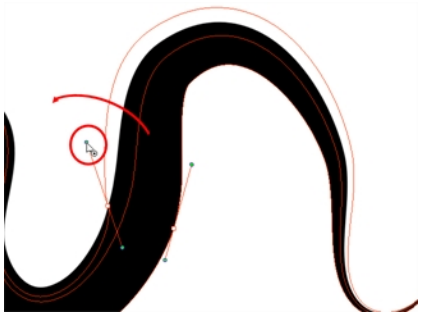
3. Select one or several points by clicking on them or circling around.



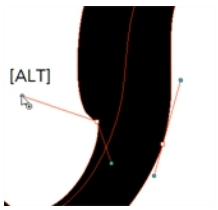
4. Press Delete to delete a selected point.
5. Press Ctrl (Windows/Linux) or ⌘ (Mac OS X) and click the central spine to add a set of points to adjust the contour.
6. To modify the shape, you can:
   - Move the selected points to a new area.



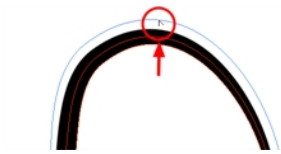
   - Pull the Bézier handle to move both points' handles as one.



- Hold Alt down and pull one of the Bézier handles to move it independently from the other one.

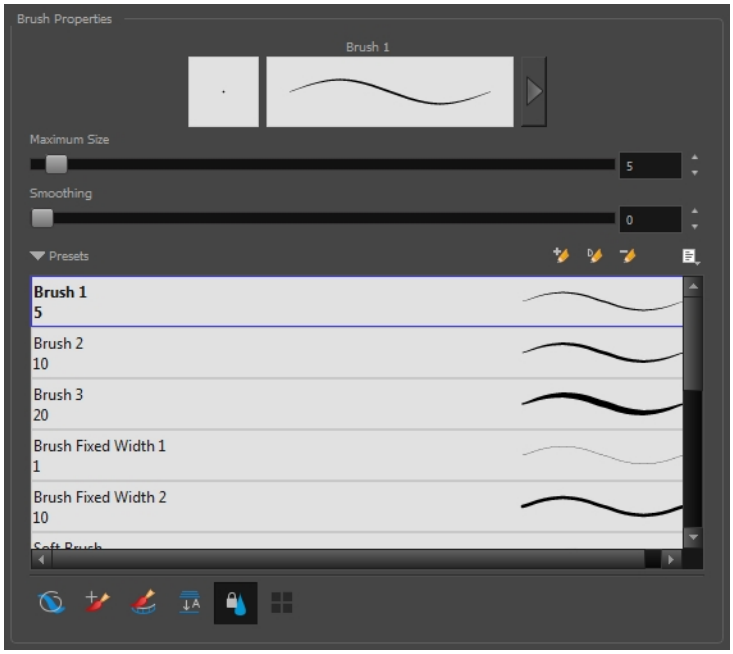


- Pull directly on the line in-between two points. No selection is necessary. Holding down the Shift key limits the contour modification to the curve between the two first points.

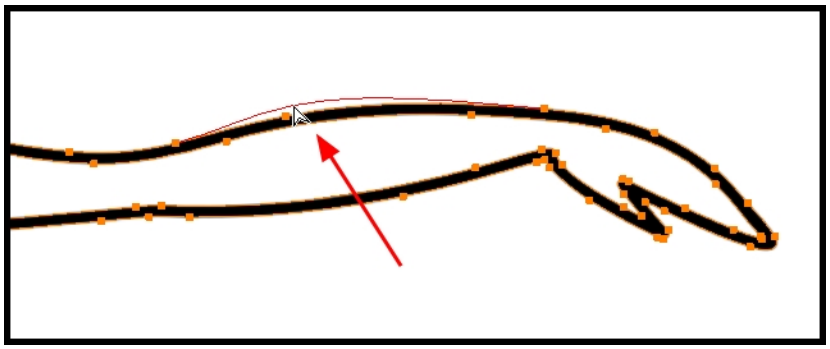


- If an anchor point has no visible bezier, hold down the Alt key to display them.

7. You can also use the Brush tool to draw some of the lines and change the tip to an oblique shape or use a pen tablet which provides pressure sensitivity and lets you draw lines of variable thickness.



Drawing with the Brush tool does not allow you to reshape your lines as easily as with the Polyline or Pencil tool. The Brush tool creates contour vector lines (also known as *fills*) where the vector points are situated on the line's contour. Pencil lines are central vector lines in which the points follow the centre of the line.



Drawing Tasks

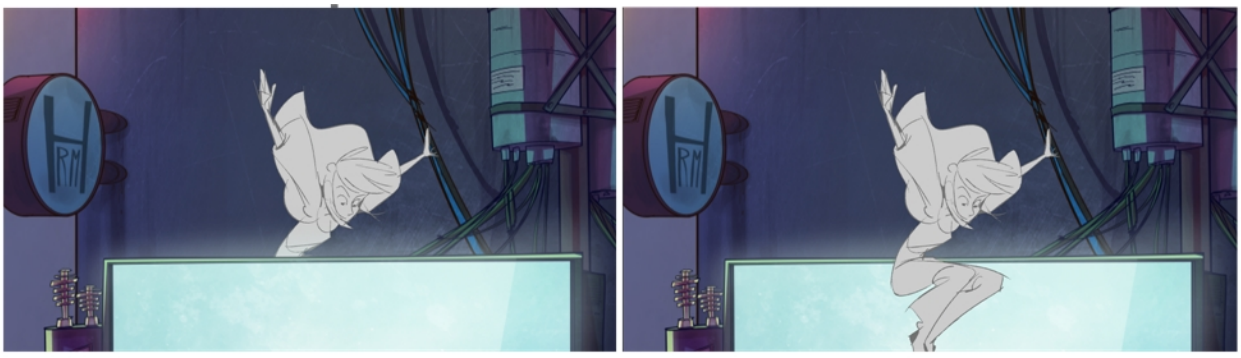
Harmony has a wide variety of drawing tools for all kinds of drawing tasks. This section covers how to use these tools. For the complete details on their options in the Tool Properties view, see *Drawing Tool References* on page 115.

In this topic, you will learn about:

- *Current Drawing on Top* on page 36
- *Drawing with the Pencil Tool* on page 36
- *Drawing with the Brush Tool* on page 49
- *Drawing with Textured Brushes on Vector Drawing Layer* on page 56
- *Viewing the Final Lines as You Draw* on page 79
- *Selecting the Current Colour of a Tool* on page 80Selecting the Current Colour of a Tool
- *Selecting Drawing Objects* on page 83
- *Erasing Parts of a Drawing* on page 87
- *Reshaping a Drawing Using the Contour Editor Tool* on page 90
- *Reshaping Pencil Lines with the Pencil Editor Tool* on page 92
- *Drawing with Shapes* on page 95
- *Drawing with the Polyline Tool* on page 96
- *Drawing with Invisible Lines* on page 97
- *Deforming a Drawing with the Perspective Tool* on page 99
- *Warping a Drawing with the Envelope Tool* on page 100
- *Cutting Drawing Parts* on page 102
- *Smoothing Lines* on page 103
- *Working With Text* on page 104
- *Working with Tool Presets* on page 105
- *More Drawing Tools* on page 108

Current Drawing on Top

In Harmony, when you draw on a layer, the artwork is displayed in the correct order. For example, if the layer on which you are drawing is located behind an object on another layer, the lines you are drawing will be hidden behind that object.



This lets you display the selected drawing on top of everything while you draw. By enabling this option, each time you select a drawing tool, the selected drawing is displayed in front of everything in the Camera view. The Timeline and Node view ordering remain unchanged.

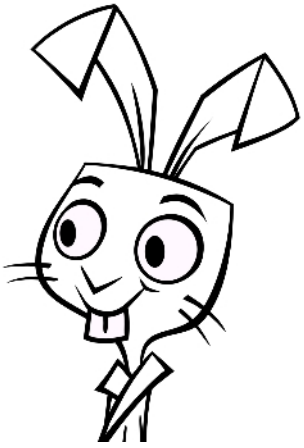
The Current Drawing on Top status (enabled or disabled) is remembered when you exit Harmony. When you restart the application, the last status will be used.

You only need to enable this option once, it is not necessary to do it each time you select a drawing tool.

How to display the drawing on top

1. Do one of the following:
   - From the top menu, select **View > Show > Current Drawing on Top**.
   - In the Camera bottom toolbar, click the Current Drawing on Top button.
2. In the Tools toolbar, select a drawing tool.
3. In the Camera view, start drawing.

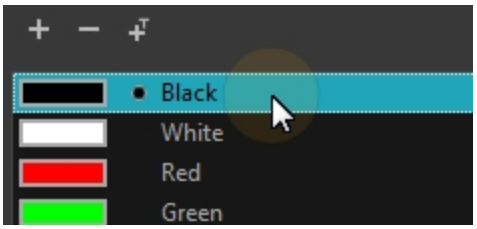
Drawing with the Pencil Tool



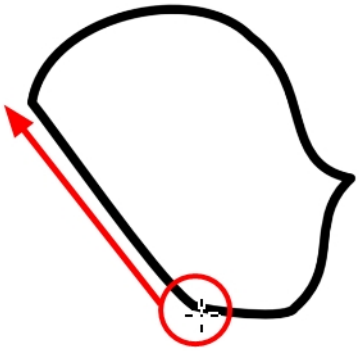
The Pencil tool is for drawing the final images, such as character nodes, cut-out puppet and clean animation. The pencil creates a central vector shape. Pencil lines support pressure sensitivity and texture.

How to draw with the Pencil tool

1. In the Timeline or Xsheet view, select the cell on which you want to draw.
2. In the Tools toolbar, select the Pencil tool or press Alt + /.
3. In the Colour view, click a colour swatch to select a colour.

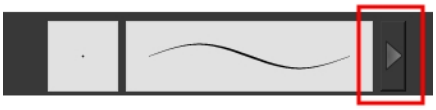


4. In the Drawing or Camera view, start drawing.
   - When you get close to an existing pencil line, hold Alt to draw and connect your stroke to the existing one. Pencil lines are central vector lines and you might think your line is connected, but in fact, only the contour is touching the other one. Also, make sure the central vector crosses the other one.
     To connect the start or end of your stroke, hold Alt when you start or finish drawing a line.
   - To draw a straight line, press Shift + Alt as you draw.

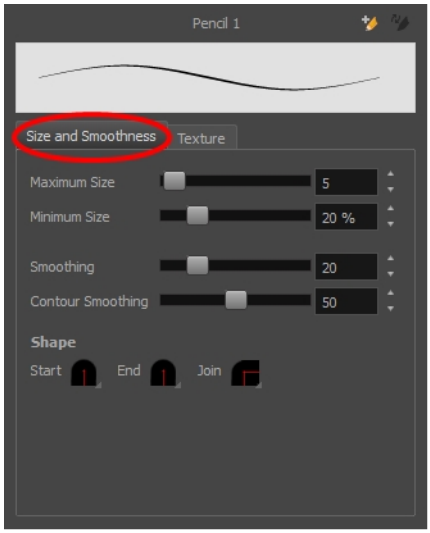


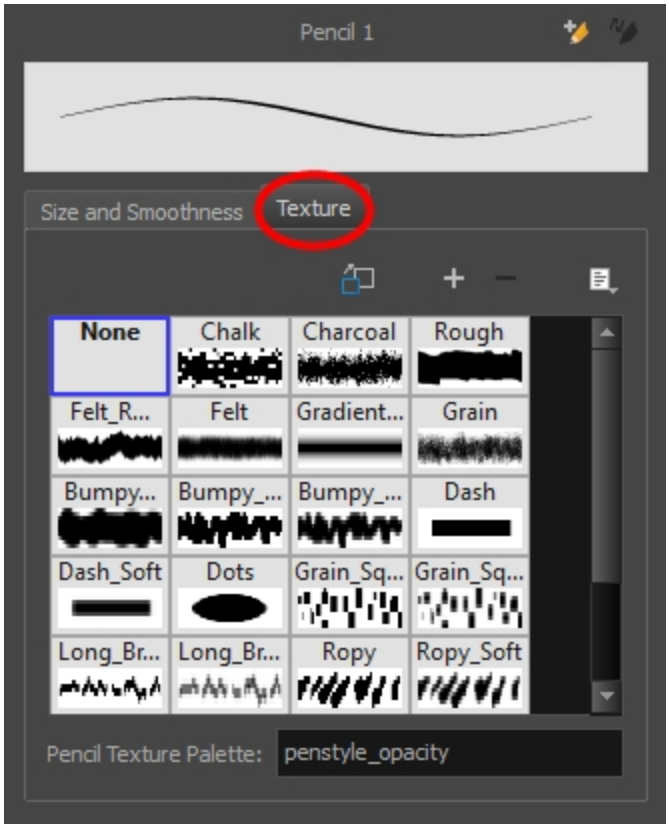
How to modify the pencil settings

1. In the Tools toolbar, select the Pencil tool or press Alt + /.
2. In the Tool Properties view, the preview area displays the stroke that will be produced after you customize the different parameters in the Tool Properties view. Click the arrow button.



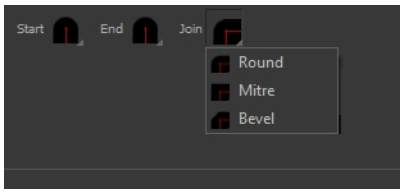
The Pencil Properties window opens.





This is where you set the minimum and maximum sizes of your drawing tool which will produce the thick and thin effect on your stroke. This works with the pressure sensitivity of a pen tablet.

Parameter	Description
Size and Smoothness tab	
Maximum Size	Sets the maximum width of the line.

Minimum Size	Sets the minimum width of the line in relation to the maximum size.
Smoothness	Lets you modify the central line smoothness of the line. This parameter smooths the initial movement of your line. Increasing the value will result in a smoother line with fewer control points.
Contour Smoothness	Optimizes the contour line smoothness of the line. This parameter will smooth the contour of the line once it has been traced; the higher the value, the fewer control points will compose your line.
Shape	 You can adjust the start, end, and joint style of a selected pencil line. • **Start**: Lets you select the style of the start tip, which is the first tip you drew. You can choose between Round or Flat style. • **End**: Lets you select the style of the end tip, which is the last tip you drew. You can choose between Round or Flat style. • **Join:** Lets you select the joint style. The joints are where the line curves abruptly. You could also define the Join style as the corner style. You can choose between Round, Mitre and Bevel style.
Texture tab	
Texture	See *Pencil Line Texture* on page 45.

Working with Pencil Presets

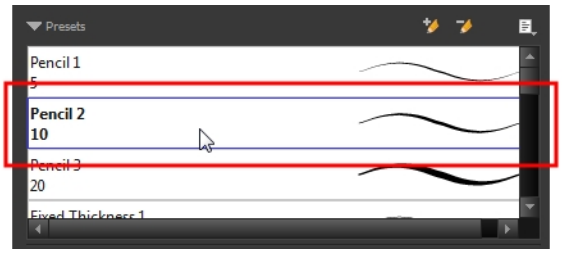
A pencil preset is a pencil with specific properties. You can work with regular pencil presets and thickness stencils.

Regular pencil presets allow you to set the size and smoothing of the line or shape. As you draw, the thickness of the line varies according the amount of pressure you apply with a pen and tablet.

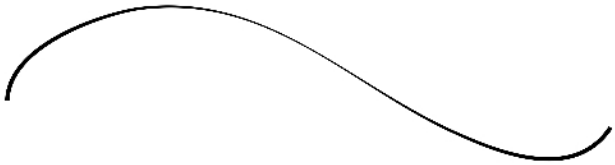
Thickness stencils that are indicated with this icon are also set with specific properties, but disregards the pressure you use with your pen and tablet. The line thickness varies. You can access thickness stencils from the list of presets on the Tool Properties view or create your own.

How to select a pencil preset

1. In the Tools toolbar, select the Pencil, Line, Ellipse, or Rectangle tool.
2. In the Tool Properties view, use the Presets menu to select a pencil preset.

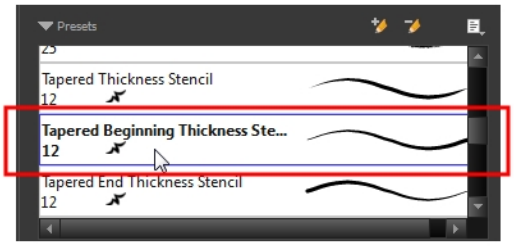


3. In the Drawing or Camera view, draw your pencil line or shape.

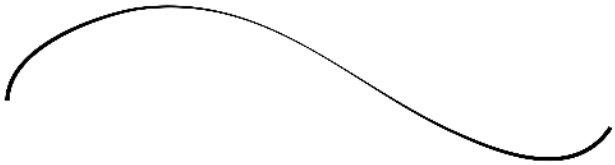


How to select a pencil thickness stencil

1. In the Tools toolbar, select the Pencil, Line, Ellipse, or Rectangle tool.
2. In the Tool Properties view, use the Presets menu to select a thickness stencil. They are marked with this icon.



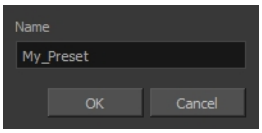
3. In the Drawing or Camera view, draw your pencil line or shape.



How to create a pencil preset

1. In the Tools toolbar, select the Pencil , Line , Ellipse , or Rectangle tool.
2. In the Tool Properties view, adjust your pencil settings—see *How to modify the pencil settings* on page 37.
3. In the Tool Properties view, click the New Brush button.

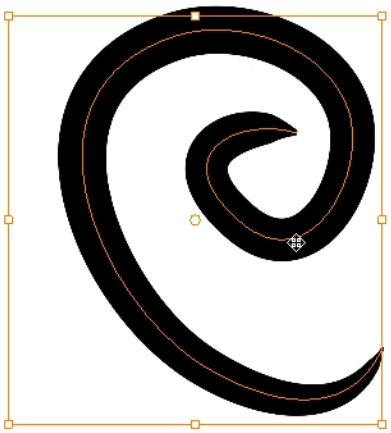
   The New Preset dialog box opens.

4. Type in a name for your new pencil thickness stencil and click **OK**.
5. Start drawing in the Drawing or Camera view.

How to create a pencil thickness stencil

1. In the Tools toolbar, select the Select tool.
2. In the Camera view, select the pencil line or shape from which you want to take the style.

3. In the Tool Properties view, click the New Thickness Stencil button.

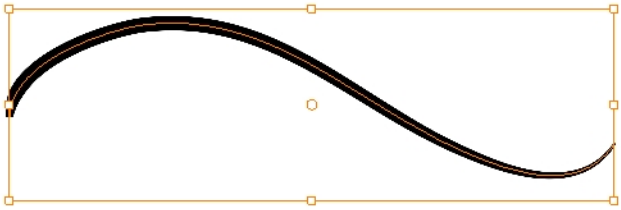
   A new thickness stencil is added to the end of the list in the Presets menu.

4. In the Presets menu, select a new thickness stencil and click on a line or shape in the Drawing or Camera view to apply the thickness stencil you created.

How to apply a thickness stencil to a pencil line or shape

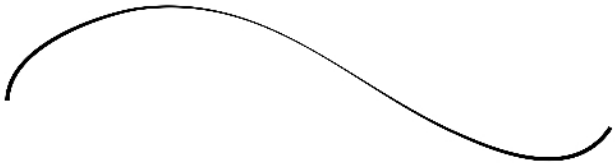
1. In the Tools toolbar, select the Select tool.

2. In the Drawing or Camera view, select the pencil line or shape on which you want to apply a style.



3. In the Tool Properties view, select the style you want to apply from the Presets list.

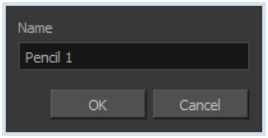
The style you selected is applied to your selection.



How to rename a thickness stencil or pencil preset

1. In the Tools toolbar, select the Pencil , Line , Ellipse , or Rectangle tool.
2. In the Presets menu, select the thickness stencil or preset you want to rename.
3. From the Brush menu , select **Rename Brush**.

   The Rename Preset dialog box opens.



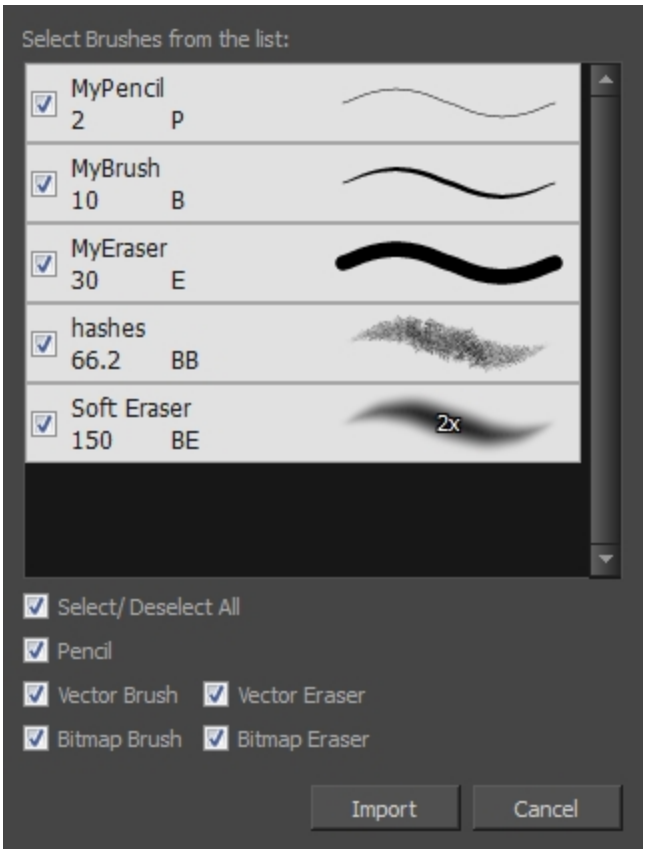
4. In the Name field, type in the new name.
5. Click **OK**.

How to delete a thickness stencil or pencil preset

1. In the Tools toolbar, select the Pencil tool.
2. In the Presets menu, select the thickness stencil or preset to delete.
3. Click the Delete Preset button.

How to import pencils, brushes and erasers

1. From the Brush menu , select **Import Brushes**.
2. In the browser window that appears, navigate to and select the `.xml` file.
3. Click **Open.**
4. In the Import Brushes dialog box, select the brushes brushes and erasers you want to import. You can also import pencils at the same time.

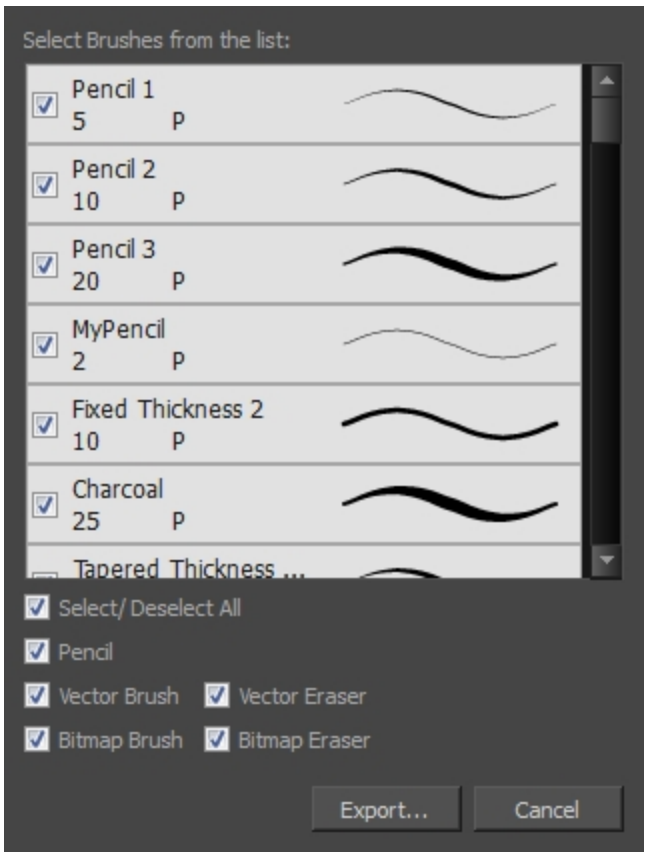


5. Click **Import**.

   The imported brush, eraser and pencil styles will appear in the presets library. You can reuse any of the imported tips to create other brush, eraser and pencil style presets.

How to export pencils, brushes and erasers

1. From the Brush menu, select **Export**.
2. In the Export Brushes dialog box, select the bitmap and vector brushes and erasers to export, as well as any pencils.



3. Click **Export**.
4. In the Export Brushes window that appears, browse to the location where you want to save the .xml file and give it a name.
5. Click **Save**.

How to change the Presets Library thumbnail display

1. From the Brush menu, select one of the following:

Parameter	Description
Small Thumbnail	Reduces the size of the thumbnails in order to view more at the same time. Displays an image of the tool's tip and its maximum size.
Large Thumbnail	Increases the size of the thumbnails in order to see the images more clearly. Displays an image of the tool's tip, its maximum size and its name.
Stroke View	Displays the tool's name, maximum size and stroke preview.

Pencil Line Texture

You can apply a texture to a pencil line. Pencil lines support texture. Before drawing, you can select or import a texture and apply it to your lines. You can also change it afterwards using the Select tool. Textures are independent from pencil templates.

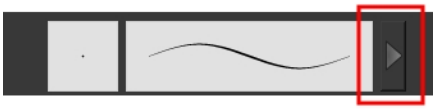
When you import a texture in your pencil styles, it is saved in your scene. If you want to add that texture to a bank that you will reuse in different scenes, you can add that texture to your preferences.

There is a pencil texture palette created in each scene. In order for this palette to be created, you need to draw a pencil stroke using texture. To see it, you need to enable the Advance Palette Lists option. Once enabled, you will see a palette named **`pencilstyle_opacity`** in your palette list.

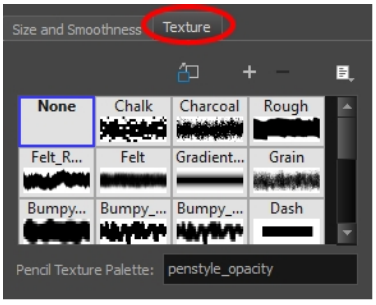
For advanced usage, you can assign a custom palette as your pencil texture palette. All textures used to draw in your scene will be added to this custom palette. This gives you the ability to save your custom palette at the Environment or Job level if you want to reuse that palette in more than one scene.

How to apply a preset texture to a pencil line

1. In the Tools toolbar, select the Pencil tool.
2. In the Tool Properties view, the preview area displays the stroke that will be produced after you customize the different parameters in the Tool Properties view. Click the arrow button.



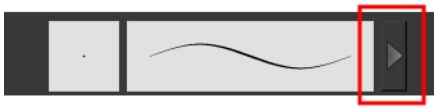
3. In the Pencil Properties editor, select the Texture tab.



4. In the Texture library, select a texture for the pencil.
5. In the Camera or Drawing view, draw a pencil line.

How to create a pencil texture template with the Pencil tool

1. In the Tools toolbar, select the Pencil tool.
2. In the Tool Properties view, click the arrow button beside the stroke preview area.

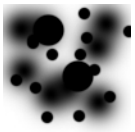


3. In the Pencil Properties editor, click the New Texture button or select **New Texture** from the Texture menu.
   - To delete a preset style, click the Delete Texture button or select **Delete Texture** from the Texture menu.
4. Browse for your bitmap texture file.

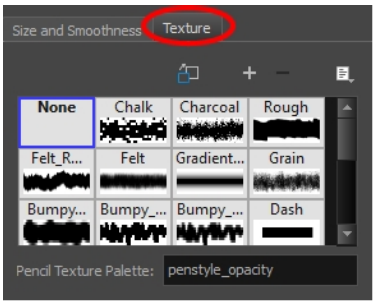
NOTE:
The following file formats are supported: .jpg, .png, .psd, .sgi, .tif. Your texture **MUST HAVE** an alpha channel.

5. Click **Open**.

   The imported texture is saved in your texture list.

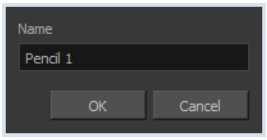


6. In the Pencil Properties editor, select your new texture.



7. Click the Texture menu and select **Rename Texture**.

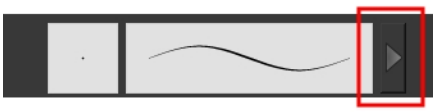
   The Rename Opacity Texture dialog box opens.



8. In the Name field, type the template name and click **OK**.
9. In the Camera or Drawing view, draw your pencil line with your new texture.

How to add a texture to your preferences

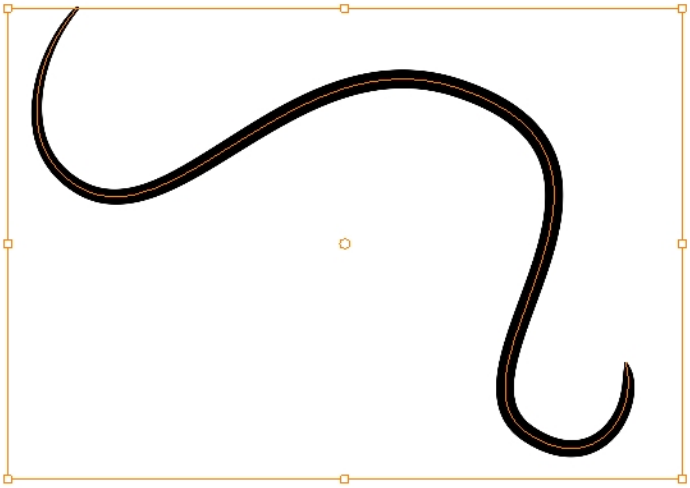
1. In the Tools toolbar, select the Pencil tool.
2. In the Tool Properties view, click the arrow button beside the stroke preview area.



3. In the Pencil Properties editor, select a texture from the Textures area to add to your preferences.
4. Click the Copy to Preference button.

How to apply a preset texture to a pencil line

1. In the Tools toolbar, select the Select tool.
2. In the Drawing or Camera view, select a pencil line.



3. In the Tool Properties view, select a texture from the Textures area to apply to the selected stroke.

How to assign a custom palette as the Pencil Texture Palette

1. In the Colour view, create your custom palette and save it at the level of your choice.
2. Select the palette you want to assign as your pencil texture palette.
3. From the Colour view menu, select **Palette > Pencil Texture Palette**.

How to enable the Advanced Palette Lists preference

1. From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences** (Mac OS X).
2. In the Preferences dialog box, select the **Advanced** tab.
3. In the Advanced Options section, select the **Advanced Palette Lists** option.
4. Click **OK**.

Drawing with the Brush Tool

The Brush tool is pressure sensitive and lets you create a contour shape with a thick and thin line effect, as if it was created with a paint brush.

With the Brush tool, you can draw as vector or bitmap, depending on your preference. When you add a drawing layer, you can simply select the vector or bitmap option. If you draw with vector, you can enlarge your drawing and zoom into it without losing quality or resolution. You can also use the Contour Editor and Select tools to resize and modify lines. If you draw with bitmap, you will not be able to scale your drawing beyond 100% of its resolution without encountering pixelization issues.

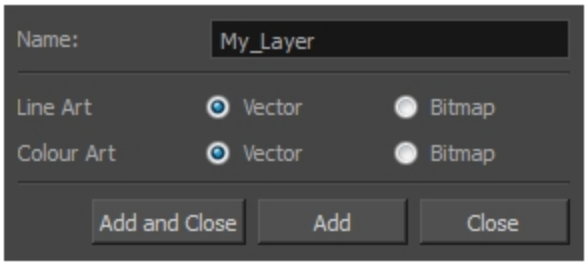
You can create your own brush styles. A variety of brush styles are provided allowing you to create and save your own.This way you can create brushes with precise sizes and parameters and save them so you can draw and design with them. Renaming a brush can make it easier to identify and access the brushes you use most frequently.

A dynamic brush can be created for drawing using patterns created from your artwork. Create a new dynamic brush to copy a pattern you have drawn to reproduce it quickly. You can create dynamic brushes using a single or multiple patterns that automatically switch through the patterns as you draw.

How to draw with the Brush tool

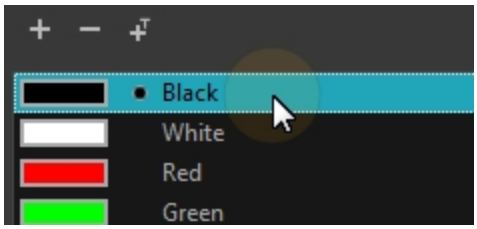
1. In the Timeline view, click the Add Drawing Layer button or press Ctrl + R (Windows/Linux) or ⌘ + R (Mac OS X).

   The Add Drawing Layer window opens.

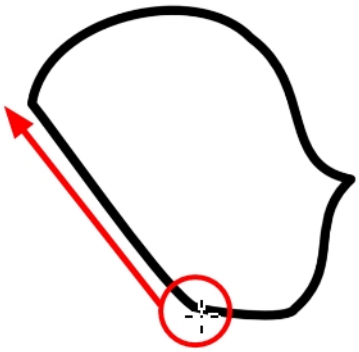


2. In the Name field, name your new layer.
3. Set the Line Art and Colour Art options to **Vector** to get a vector layer or to **Bitmap** to have a bitmap layer.
4. Do one of the following:
   - Click **Add** to add a first layer and keep the window open to add more layers.
   - Click **Add and Close** to add a new layer and close the window.

   A new drawing layer is added to the Timeline view.
5. In the Timeline or Xsheet view, select the cell on which you want to draw.
6. In the Tools toolbar, select the Brush tool or press Alt + B.
7. In the Colour view, click a colour swatch to select a colour.



8. In the Drawing or Camera view, start drawing.
   - Hold Ctrl (Windows/Linux) or ⌘ (Mac OS X) to force a line to join the start and end of the shape while drawing.

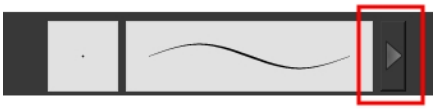


How to select a brush style

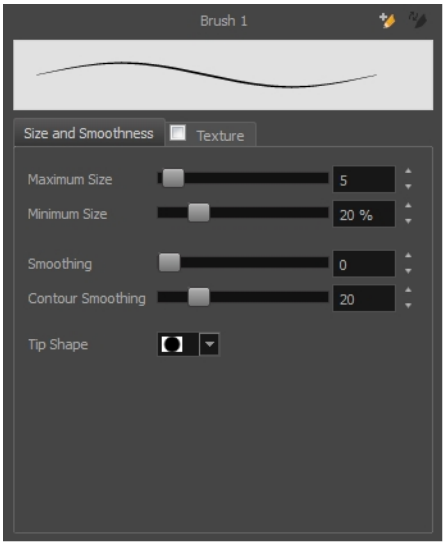
1. In the Tools toolbar, select the Brush tool or press Alt + B.
2. In the Tool Properties view, select a brush style from the Presets section.

How to modify the brush settings

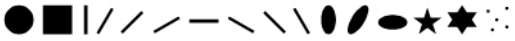
1. In the Tools toolbar, select the Brush tool or press Alt + B.
2. In the Tool Properties view, the preview area displays the stroke that will be produced after you customize the different parameters. Click the arrow button.



The Brush Properties window opens.



This is where you set the minimum and maximum sizes of your drawing tool which will produce the thick and thin effect on your stroke. This works with the pressure sensitivity of a pen tablet.

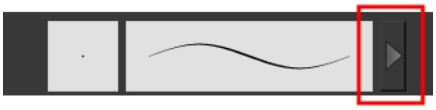
Parameter	Description
Size and Smoothness Tab	
Maximum Size	Sets the maximum width of the line.
Minimum Size	Sets the minimum width of the line in relation to the maximum size.
Smoothness	Lets you modify the central line smoothness of the line. This parameter smooths the initial movement of your line. Increasing the value will result in a smoother line with fewer control points.
Contour Smoothness	Optimizes the contour line smoothness of the line. This parameter smooths the contour of the line once it has been traced. The higher the value, the fewer control points will compose your line.
Tip Shape	Lets you select a tip shape—from round and square ones to star shaped. This option is disabled when using a textured brush. 

Texture Tab	
Texture	See *Drawing with Textured Brushes on Vector Drawing Layer* on page 56

NOTE: If you are trying to create artwork on a bitmap drawing layer, and therefore with a bitmap brush, see *Drawing with Bitmap Brushes on Bitmap Drawing Layers* on page 67

How to create a brush preset

1. Make sure your current brush has the settings you want in the preset you will create.
2. In the Tool Properties view, do one of the following:
   - Click the arrow button to display the Brush Properties window and click the New Brush button in the upper-right corner.

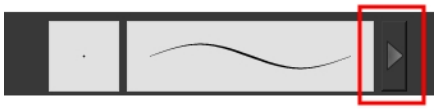
     

   - Click the New Brush button.
   - From the Brush menu, select **New Brush Preset**.
3. In the New Preset window, type a name for your new brush preset.

   The new brush is added to the end of the list of brush presets.

How to update a brush preset

1. Select the brush preset to update and click the arrow button to display the Brush Properties window.



2. Change the brush settings and click the Update Brush Preset button in the upper-right corner.

How to rename a brush

1. In the Tool Properties view, select a brush to rename.
2. From the Brush menu, select **Rename Brush**.
3. Type in a new name for the brush and click **OK**.

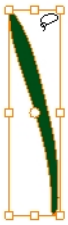
How to delete a brush preset

1. In the Tool Properties view, select the brush preset you want to delete.
2. Do one of the following:
   - Click the Delete Brush button.
   - From the Brush menu , select **Delete Brush**.

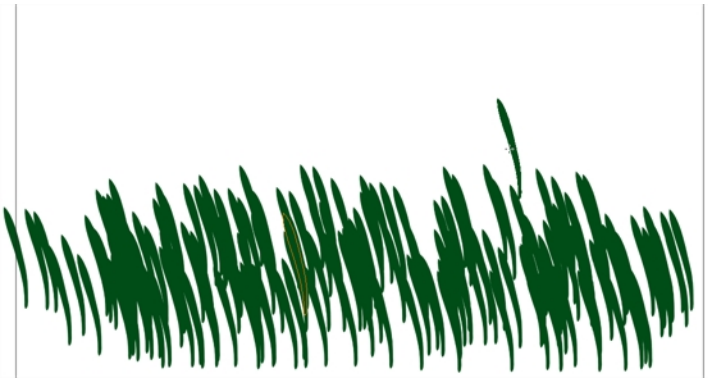
How to create a new dynamic brush

1. In the Tools toolbar, select a drawing tool.
2. In the Camera or Drawing view, draw the pattern you want to use as your dynamic brush stamp.

3. In the Tools toolbar, click the Select tool and select the parts of the drawing you want to repeat.



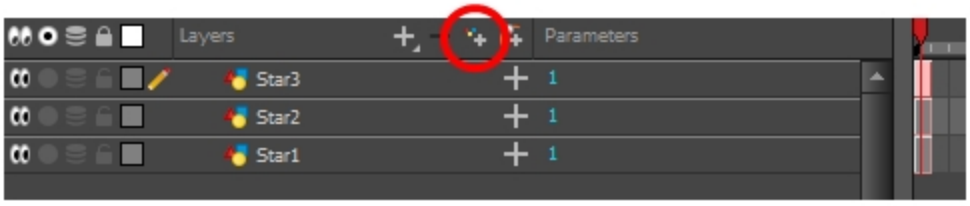
4. In the Tools toolbar, select the Brush tool or press Alt + B.
5. In the Tool Properties view, click the Add Dynamic Brush button to add your selection as a new dynamic brush preset.
6. From the Brush menu, select **Rename Brush**.
7. Type in a name for the new dynamic brush and click **OK**.
8. In the Camera or Drawing view, start drawing with your dynamic brush to quickly repeat a pattern.



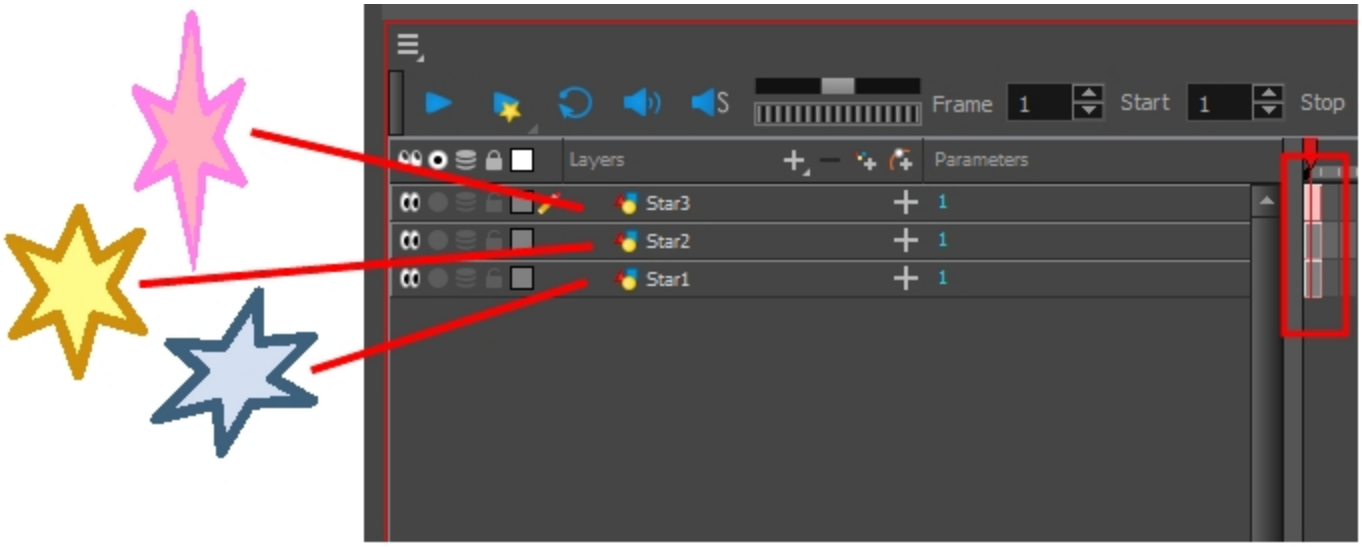
9. To adjust the scale of your pattern to make it bigger or smaller as you stamp it, adjust the Maximum Size value in the Tool Properties view.

How to create a dynamic brush with multiple drawings

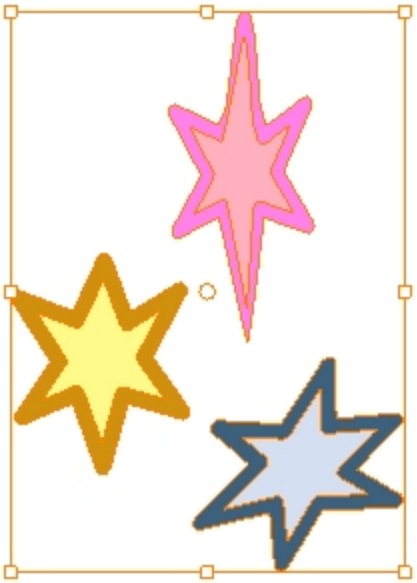
1. In the Timeline view, click the Add Drawing Layers button to create the layers you want to use as patterns in your dynamic brush. Make sure to rename your layers.



2. In the Camera view, draw the individual drawings of your pattern on separate layers.



3. In the Tools toolbar, select the Select tool.
4. In the Tool Properties view, disable the Works on Single Drawing option to allow the Select tool to grab artwork on multiple layers.
5. In the Camera view, select all the drawings you want to add to your new dynamic brush.



6. In the Tools toolbar, select the Brush tool or press Alt + B.
7. Click the Add Dynamic Brush button to add your selection as a new Dynamic Brush preset.
8. From the Brush menu, select **Rename Brush**.

   The Rename Preset dialog box opens.

9. Type in a name for the new dynamic brush and click **OK**.
10. In the Camera or Drawing view, start drawing with your dynamic brush to quickly repeat a pattern. When you use this brush, you will cycle through the drawings.

Drawing with Textured Brushes on Vector Drawing Layer

In Harmony, you can use the Brush tool to draw bitmap textured lines.

In the Brush Tool Properties view, you will find a series of default textured "brushes", but you can also create and import your own custom collection. In Harmony, when using a textured brush on a vector layer, the texture of a brush is referred to as the *Paper Texture*. In other words, we are attributing the texture not to the tool, but to the texture of the surface that is revealed when a stroke passes over it. You will understand why when you work with bitmap brushes on bitmap layers, where it is possible to have both a textured brush tip and a paper texture.

To create your own textured brush, you must prepare your texture file ahead of time, either in Harmony or in a third-party software, such as Adobe Photoshop. Colour is not supported and transparency is not supported in the traditional sense. Black appears as 100% opaque, white appears as 100% transparent, and all the shades of grey in between appear as varying degrees of semitransparenty. A range of file formats are supported—.jpeg, .png, .tif, .psd, .tga to name a few. Alpha channels are disregarded on import. It is recommended that you maintain the texture resolution between 100 x 100 pixels and 400 x 400 pixels.

You can import your custom paper textures in the extended Brush Properties window. Browsing for a texture file with a brush selected that is already using a paper texture will replace the file currently in use. It will not, however, replace the texture in lines already drawn. The replaced texture swatch will no longer be the selected texture, but it will remain in the texture library and not be deleted.

Harmony also allows you to import textures as an .xml file that was exported from another project. In this way, you do not have to import individual image files one-by-one to have the same texture library and brush presets as others who you are collaborating with. You can also export brush presets and textures, in order to share your default or customized textures and presets with other project collaborators.

When you use the Eraser tool to erase a portion of a textured line, the vector frame is cut straight and you lose the feather created while drawing with the Brush tool. In Harmony, a special option in the Eraser Tool Properties lets you create a soft edge on your textured lines. You can also cut or keep the vector frame as is.

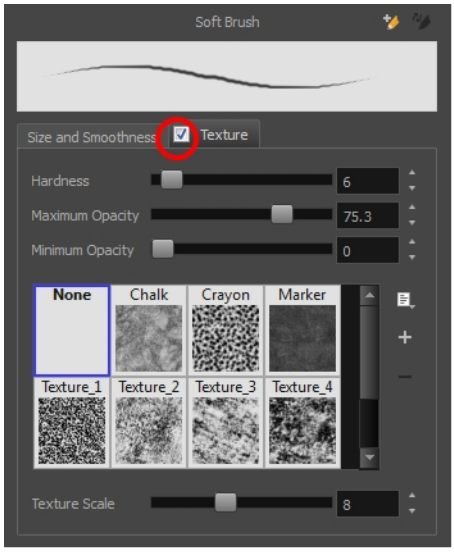
At some point, you may want to modify the look of a textured drawing if you suddenly find that your lines look too hard or too light. You can adjust those parameters by using the Adjust Line Texture Opacity command.

To draw with textured lines, use the Brush tool and the correct brush in the list. You can also draw with pencil line texture—see *Pencil Line Texture* on page 45

How to draw with textured lines

1. In the Tools toolbar, select the Brush tool or press Alt + B.
2. In the Tool Properties view, select a brush and click the Arrow button to open the Brush Properties view.

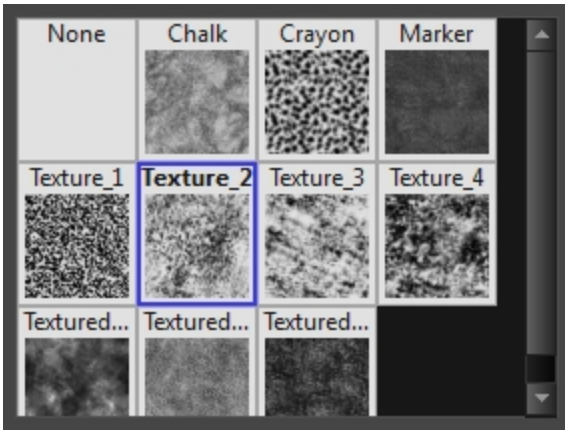
3. Click the Texture tab, select the **Texture** option.



4. Set the following parameters:

Parameter	Description
Hardness	The hardness value corresponds to the softness of the line edge. The lower the value, the softer the line edge will be. The higher the value, the sharper the line edge will be.
Maximum Opacity	This value corresponds to the transparency of the stroke when the pressure is heavy.
Minimum Opacity	This value corresponds to the transparency of the stroke when the pressure is light and is a percentage of the Maximum Opacity value.

5. Select a texture for your brush from the premade textures available.

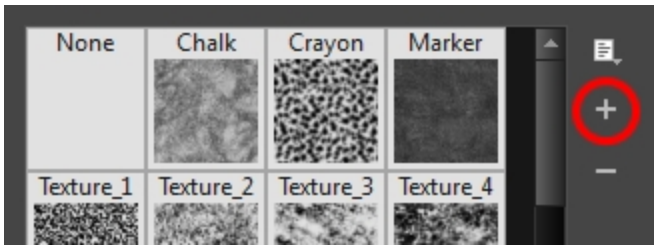


6. Adjust the Texture Scale to change the size of the texture in the lines you draw. If you are using a plaid texture, the squares will be larger if you increase the value and smaller if you decrease it.

7. In the Camera or Drawing view, start drawing.

How to add a paper texture

1. Do one of the following:
   - From the Paper Texture menu , select **Add**.
   - Click the Add Paper Texture button.

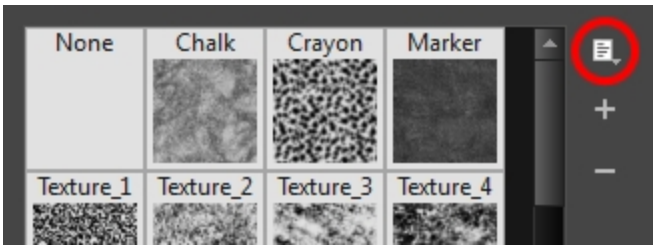


2. In the browser window that appears, navigate to where you saved your texture file.
3. Click **Open** to import the file into the Paper Texture library.

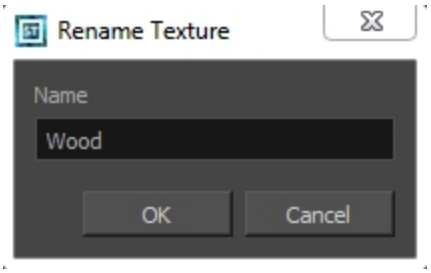
   By default, an imported texture is given the name of the image file.

How to rename a paper texture

1. In the Paper Texture library, select a texture.
2. From the Paper Texture menu, select **Rename**.



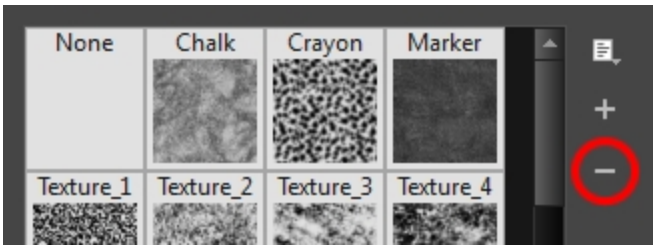
3. In the Rename Texture dialog box that appears, type in the new name for the texture.



4. Click **OK**.

How to delete a paper texture

1. In the Paper Texture library, select a texture.
2. Do one of the following:
   - In the Paper Texture menu, select **Delete**.
   - Click the Delete button.



NOTE: You can delete any texture in the texture library as long as there is no brush preset using it.

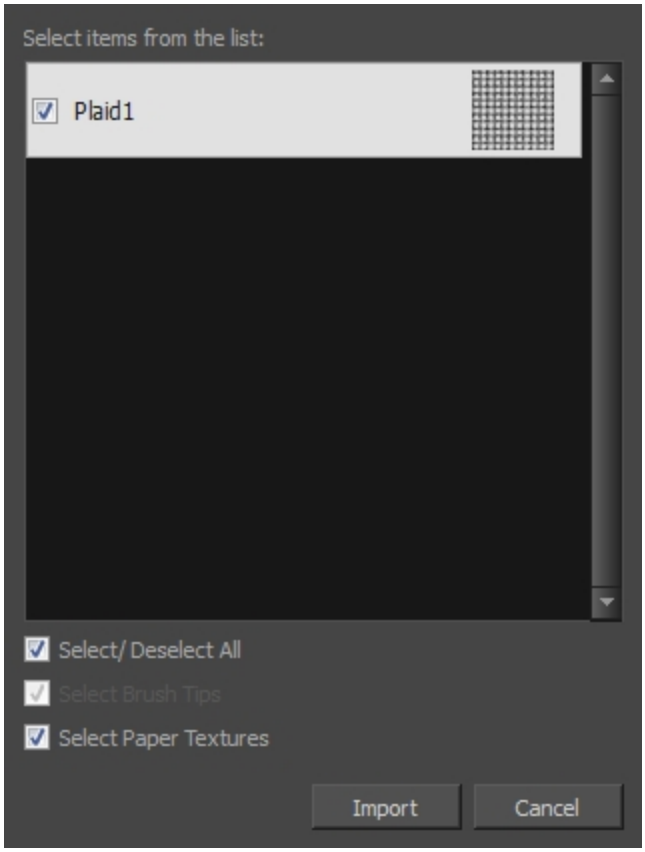
How to change the Paper Texture thumbnail display

1. From the Paper Texture menu, select one of the following:

Parameter	Description
Small Thumbnail	Reduces the size of the thumbnails in order to view more at the same time.
Large Thumbnail	Increases the size of the thumbnails in order to see the images more clearly.
List View	Allows you to see the name, as well as the thumbnail.

How to import paper textures

1. In the Paper Texture menu, select **Import**.
2. In the browser window that appears, navigate to and select the `.xml` file.
3. Click **Open.**
4. In the Import Textures dialog box, select the paper textures that you wish to import. You can import any available brush tips at the same time too.

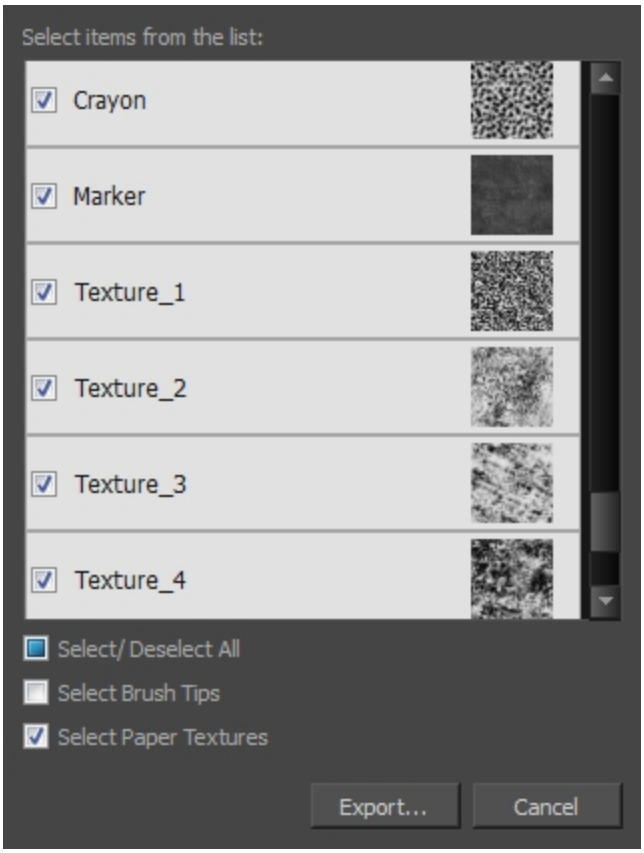


5. Click **Import**.

   The imported paper textures will appear in the Paper Texture Library. You can reuse any of the imported paper textures to create other brush style presets.

How to export paper textures

1. In the Paper Texture menu, select **Export**.
2. In the Export Tips and Textures window, scroll down the textures list to the paper textures and select or deselect any textures to create the list that you wish to export. You can export brush tips at the same time too.

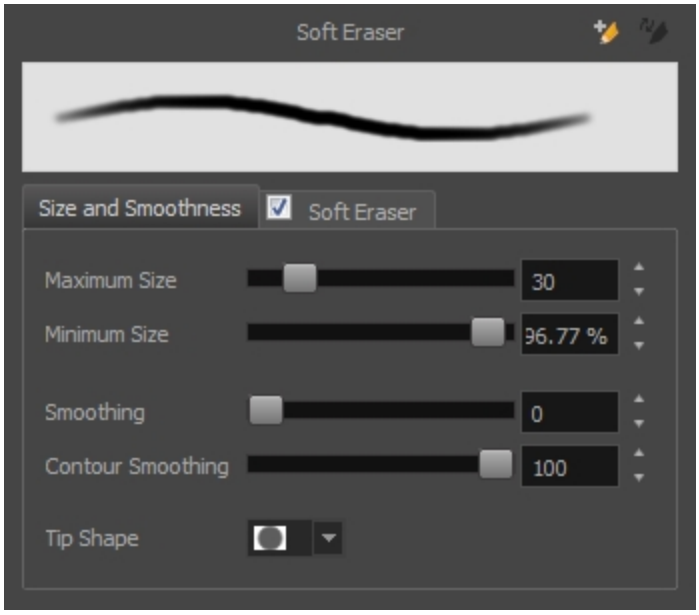


3. Click on the **Export** button.
4. In the Export Textures window that appears, browse to a location where you would like to save the .xml file and give it a name.
5. Click **Save**.

How to erase textured lines

1. In the Tools toolbar, select the Eraser tool, press Alt + E.
2. In the Tool Properties view, click the arrow button.

The Eraser Properties window opens.



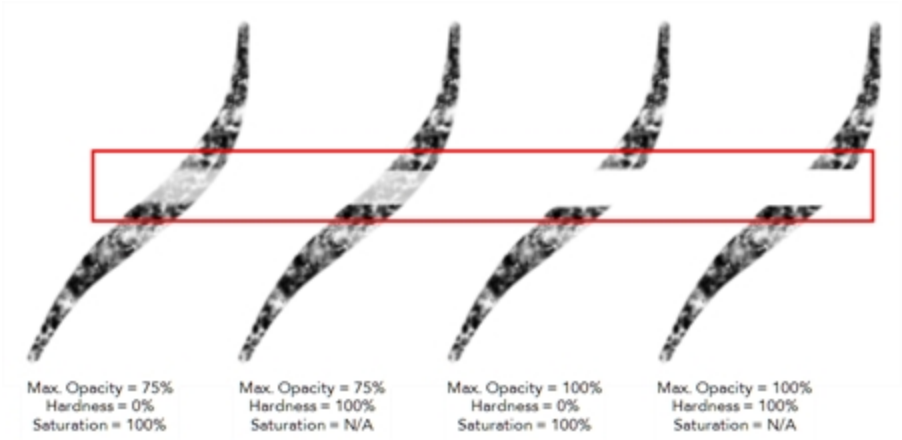
3. Adjust the following:

Parameter	Description
Size and Smoothness Tab	
Maximum Size	Sets the maximum width of the line.
Minimum Size	Sets the minimum width of the line in relation to the maximum size.
Smoothness	Lets you modify the central line smoothness of the line. This parameter smooths the initial movement of your line. Increasing the value will result in a smoother line with fewer control points.
Contour Smoothness	Optimizes the contour line smoothness of the line. This parameter smooths the contour of the line once it has been traced. The higher the value, the fewer control points will compose your line.
Tip Shape	Lets you select a tip shape—from round and square ones to star shaped. This option is disabled when using a textured brush.

Soft Eraser Tab	
Hardness	Defines the softness of the stroke edge. The lower the value, the softer the stroke edge will be. The higher the value, the sharper the stroke edge will be.
Saturation	Lets you adjust the softness of edge feathering. Works in conjunction with the Hardness, e.g. 100% Hardness will yield no results in saturation change. 0% Hardness will allow a fine tuning of the feathering of the soft stroke edge.
Maximum Opacity	The transparency of the brush when the pressure is heavy. A smaller value will leave semi-transparent colour and texture. A larger value will ensure that

	everything is properly erased. This option in unavailable if the Keep Vectors option is disabled.
Minimum Opacity	Sets the minimum transparency of the brush, in relation to the Maximum Opacity, when the pressure is very light. A smaller value will leave semi-transparent colour and texture. A larger value will ensure that everything is properly erased. This option in unavailable if the Keep Vectors option is disabled.
Keep Vectors	Keeps the vector frames around your strokes intact, only the texture fill disappears. Disabling this option will cut the stroke's vector frame into different pieces when the Eraser tool passes over it. If you disable this option, the maximum and minimum opacity sliders are disabled as well.

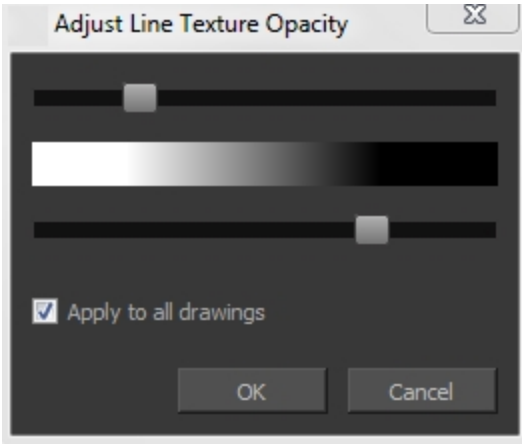
4. In the Camera or Drawing view, erase your textures lines.



How to adjust the line texture opacity

1. If you are in Camera view, select the **Current Drawing on Top** option—see *Current Drawing on Top* on page 36.
2. In the Timeline or Xsheet view, select the drawing that contains the opacity you want to adjust.
3. In the Camera or Drawing view menu, select **Drawing > Adjust Line Texture Opacity**.

   The Adjust Line Texture Opacity dialog box opens.



4. Drag the sliders toward the middle to increase the contrast and opacity of the textured lines.

5. If you want to apply the changes to all drawings exposed on the layer, select the **Apply to All Drawings** option and click **OK**.

Drawing with Bitmap Brushes on Bitmap Drawing Layers

With Harmony, you have the choice to draw with vector or bitmap brushes. This is decided by what modes you select for your layer. When adding a new drawing layer in Harmony, you can set your art layers (Line Art, Colour Art) to vector or bitmap. This way, you can draw in bitmap and paint in vector, draw everything in bitmap, or any other combination that suits your needs. If you are using the Overlay and Underlay layers, you can also set them to either bitmap or vector.

Not all drawing tools are available when working on a bitmap layer. You can use the following tools:

- Brush
- Cutter
- Dropper
- Edit Gradient/Texture
- Ellipse
- Eraser
- Line
- Paint
- Paint Unpainted
- Pivot
- Rectangle
- Repaint
- Reposition All Drawings
- Select
- Text
- Unpaint

Any tool that is unavailable for use will be greyed out.

On a bitmap layer, a temporary vector layer is created when painting with a gradient. Until a modification is made on your layer with a bitmap drawing tool, you can edit your last painted zone—by either editing the gradient

swatch, which is dynamically linked to the painted zone or with the Edit Gradient texture tool. The moment a bitmap drawing tool or action is used, a vector-to-bitmap conversion occurs. If there are vector elements on the layer (such as if you switched your art mode from vector to bitmap after having created vector artwork), they too will be converted to bitmap.

Here is a list of tools and actions that will trigger a vector-to-bitmap conversion:

- Brush
- Ellipse
- Eraser
- Line
- Paint
- Paint Unpainted
- Rectangle
- Repaint
- Unpaint
- Performing a paste with the Select tool selected
- Performing a paste with the Cutter tool selected

This means that certain tools, such as the Text tool or the Cutter tool, will not trigger a conversion.

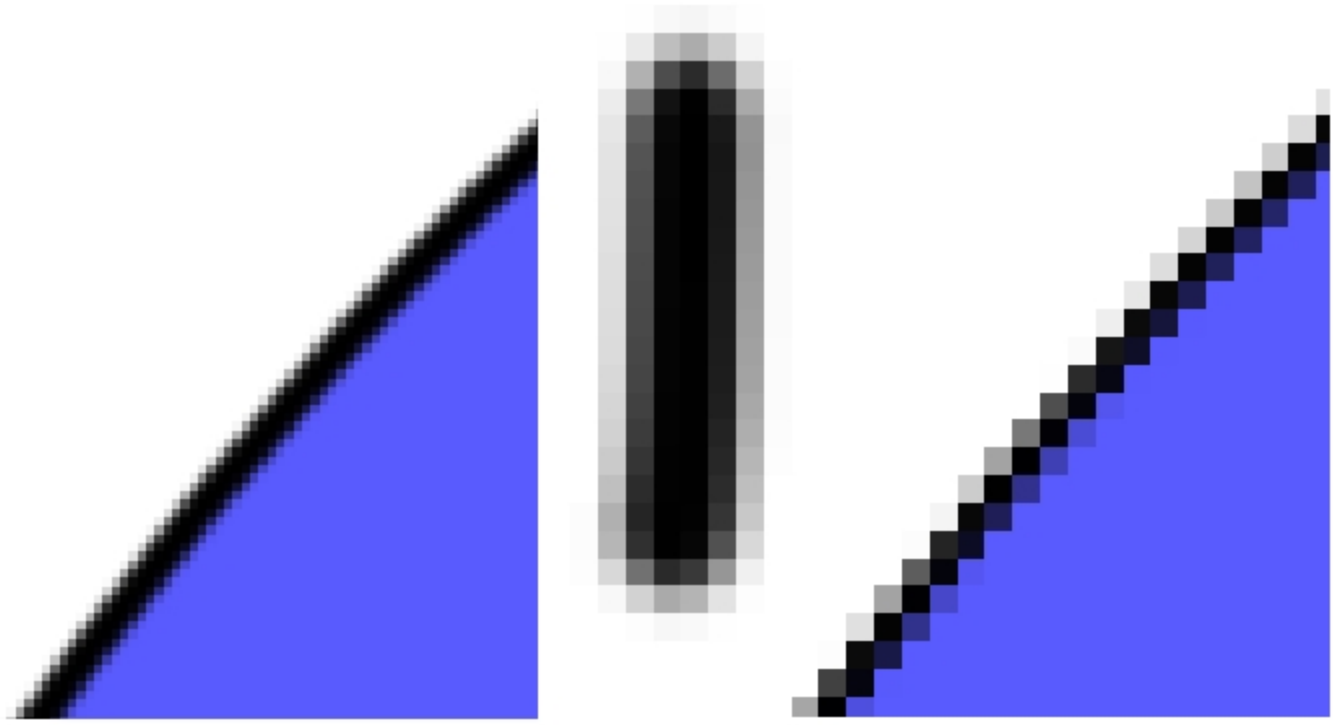
If you selected the incorrect art modes for your layer, you can open the Layer Properties view and change them. If you switch the art mode for a layer that already has strokes on it, the artwork will NOT be converted for bitmap artwork, but will be for vector artwork, though not immediately. A drawing with bitmap strokes on a newly converted vector layer will remain bitmap. This means that the bitmap artwork will not be editable by some tools, such as the Eraser tool, but will be editable by other tools, such as the Cutter tool. However, a drawing with vector lines on a newly converted bitmap layer will remain vector temporarily, until a bitmap drawing tool or action is used. Then the vector-to-bitmap conversion will occur.

To always reuse the same art mode settings, you can adjust them in the Preferences dialog box.

If you want to be able to edit the artwork in the new mode, you need to convert the drawings.

Vector-to-bitmap conversion includes flattening individual drawings into a single image. Flattening means that it will not be possible to select non-overlapping or overlapping elements as individual objects with the Select tool. Instead, the selection of one drawing will initiate the selection of all elements, with a single vector frame surrounding them.

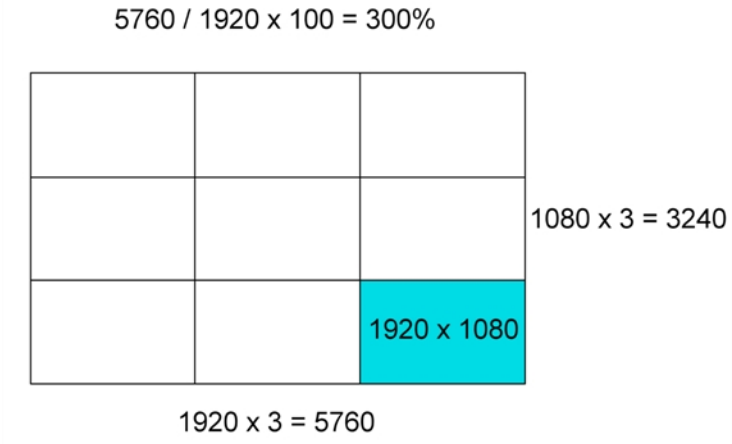
Resampling is also triggered on bitmap layers with the use of a bitmap drawing tool. For example, if you draw the outline of a circle, scale it down and then zoom into it, you will see tiny square pixels along the edge of the line. If you then draw a line right next to it, you will notice two things: first that the square pixels of the new line are gigantic by comparison and that the pixels in the line of your circle suddenly become the same size. This is because the circle was resampled. It was not resampled when you scaled it down. It was resampled when you used a bitmap drawing tool. It is resampled so that all the drawn objects are scaled to the same bitmap grid, in other words that their basic unit, the pixel, is the same size. The grid is defined by the bitmap layer's resolution.



Before resampling

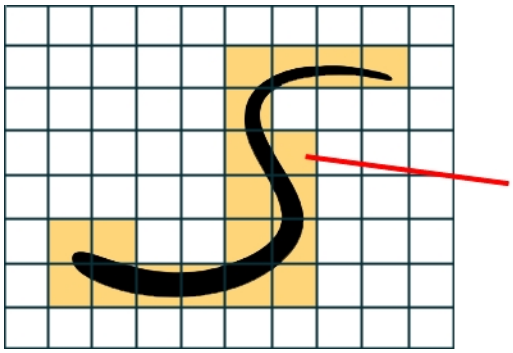
After resampling

Before you start drawing in bitmap, it is important to understand that your artwork will now be resolution dependent. If you zoom in your scene, you artwork will be enlarged. It is important to plan ahead and decide how high of a resolution you need your artwork to be. If you plan to zoom in your scene, the smallest section of the image that the camera will frame must be 100% the size of your scene resolution. For example, if your scene resolution is set to 1920 x 1080 and you zoom- in 300% with your camera, then the resolution of the bitmap layer also has to be set to 300%, otherwise its elements will look pixelated in the final render. It is important to change the bitmap layer resolution before you start drawing.



The bitmap resolution can be set at the scene level or drawing level. The setting at the scene level affects newly created bitmap art layers.

Note that even if your drawing resolution is set to be very large, it doesn't mean that your file will be very heavy. It depends on the amount of artwork you draw in it.



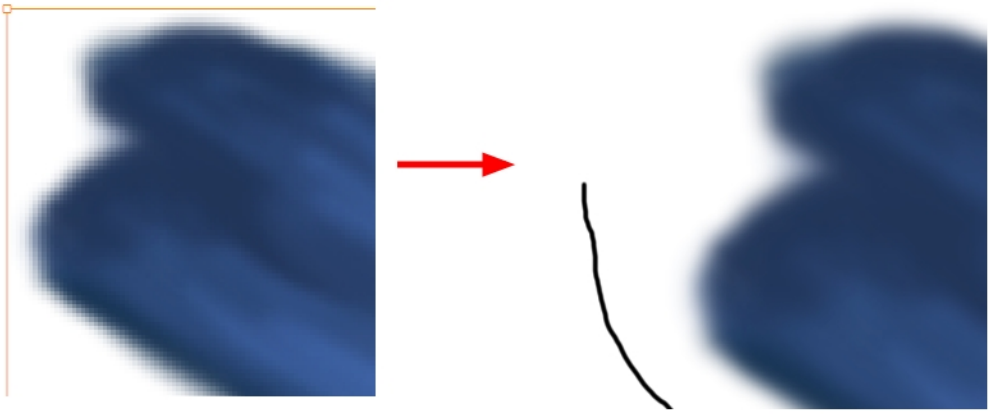
The yellow tiles are the spaces containing artwork. The white tiles are empty spaces, making the bitmap image much lighter.

The bitmap resolution (width and height) is the resolution of the tiles in relation to the project resolution.

There is a function to change the resolution of bitmap art for individual drawings. You can reduce the resolution of your bitmap file as well as increase it. Be careful because enlarging the bitmap resolution on an existing drawing will result in a loss of quality.Harmony will perform a pixel smoothing pass (resampling) and create additional pixels to avoid losing too much quality, but only to a certain extent. For example, what if you used the default scene's resolution for some bitmap art, but then discover you are zooming-in quite close? If you do not want to see the pixels appear too much when you are zoomed in, you can set the bitmap resolution to 200% and the bitmap art will have a higher resolution with smaller pixels, but will NOT retain 100% of its quality. You can use this function on multiple drawings using the Apply to All Drawings option. Changing this option will affect existing and selected bitmap art layers.

If you draw an outline on a bitmap layer, you can still vectorize it. Using a vector drawing layer, simply select your bitmap drawing and the vector cell of where you want your vectorized line to be, and use the Vectorize Line Art in Selected Drawing function.

You should avoid scaling up your bitmap strokes using the Select tool. If you do, keep in mind that when you continue drawing, your image will be resampled and your new strokes will be scaled to the scene resolution.



Scaled-up bitmap drawing before reesampling

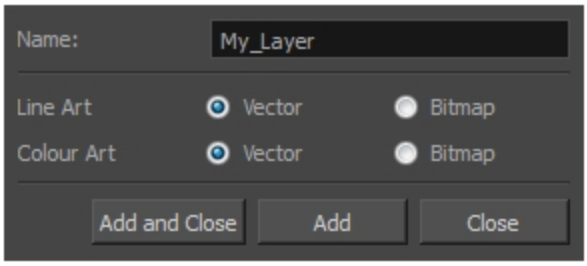
Scaled-up bitmap drawing resampled. The new brush stroke triggers the resampling.

NOTE: Your drawing should be scaled up using the Transform tool when animating, instead of the Select tool, in order to avoid creating very large bitmap layers. Harmony calculates the scaling of your drawings when you use the Transform tool; your image is mathematically transformed. When you use the Select tool to scale, you are physically scaling the drawing.

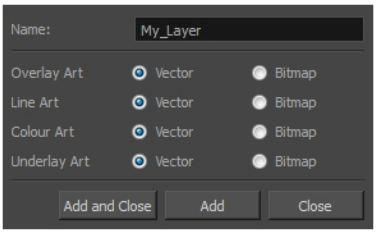
How to add a bitmap layer

1. In the Timeline view, click the Add Drawing Layer button,

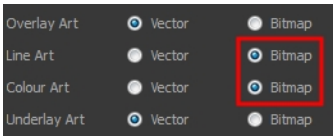
   The Add Drawing Layer window opens.



   If you are using the Overlay and Underlay layers, those art layers are also displayed.



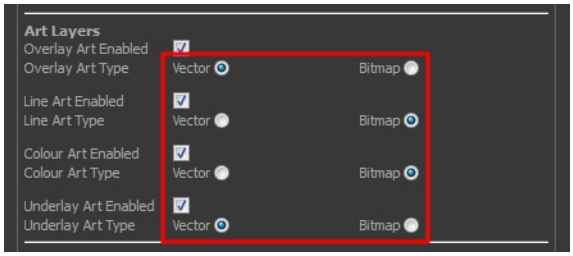
2. For each art layer, select the **Vector** or **Bitmap** option.



3. Click **OK**.

How to change the art mode

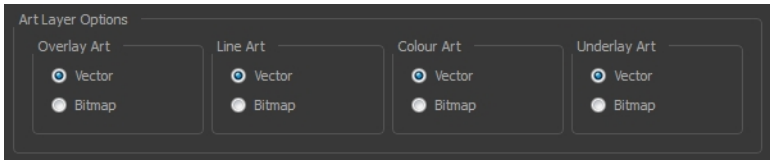
1. Open the Layer Properties view.
2. In the Timeline view, select the layer you want to edit.
3. In the Layer Properties view, select the **Drawing** tab.



4. In the Art Layers section, select the art mode for each art layer.

How to adjust the art mode settings in the Preferences dialog box

1. From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences** (Mac OS X).
2. Select the **Node View** tab.



3. In the Layer Drawing Options section, set the art layers to the desired art mode. Once this option is enabled, all new layers will follow these settings. It will not affect any existing layers.
4. Click **OK**.

How to convert drawings to match the art mode

1. In the Timeline view, select the layer that contains the drawings you want to convert.
2. From the Timeline view menu, select **Layers > Convert Drawings to Match Art Layer Type**.

   You can also right-click on the selected layer and select **Convert Drawings to Match Art Layer Type**.

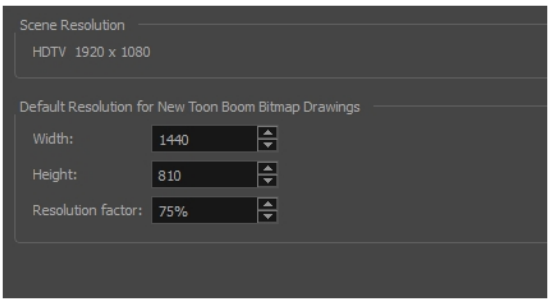
   All drawings in the layer are converted to the selected art mode. Note that bitmap strokes are not vectorized when converted to a vector art layer. They are simply inserted in a square vector frame containing a bitmap texture.

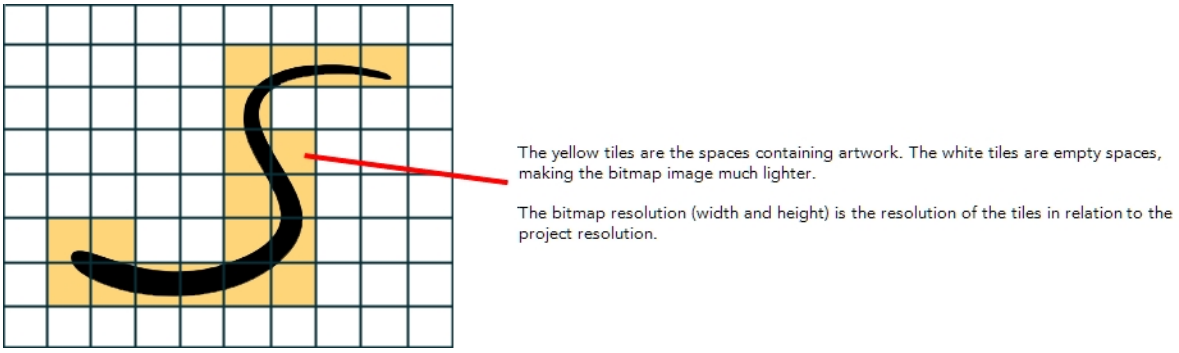
How to change the bitmap layer resolution at the scene level

1. From the top menu, select **Scene > Scene Settings**.

   The Scene Settings dialog box opens.
2. Select the **Bitmap Resolution** tab.
3. Change the bitmap resolution settings and click **OK**.

The bitmap resolution settings at the scene level affects newly created bitmap art layers.





Parameter	Description
Scene Resolution	This is the scene resolution preset name and size in pixels.
Width	This is the width of the resolution for the bitmap that will be created. This is not the actual size of the bitmap. TVG drawings (Toon Boom drawing native format) have an infinite size. Bitmap TVGs are composed of small tiles. Therefore it does not mean that because you have artwork at the four corners of your camera frame or even quite far outside of your drawing that your bitmap image will be very large and heavy. By default, it is set to the same width as the scene resolution.
Height	This is the height of the resolution for the bitmap that will be created. By default, it is set to the same height as the scene resolution.
Resolution Factor	This is the size of the bitmap resolution in relation to the scene resolution. If you increase the percentage, the width and height fields will increase accordingly. If you plan to animate the camera and zoom into your background, you will need to set a higher resolution so that the smaller area in which you will zoom will be 100% of the scene resolution.

How to change the bitmap resolution at the drawing level

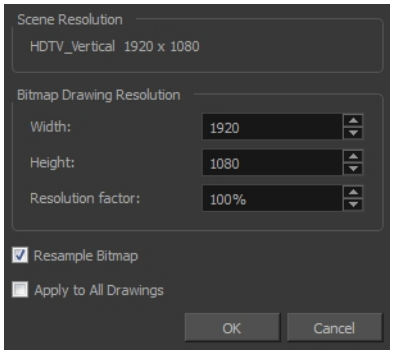
1. In the Timeline view, select the drawing whose resolution you want to change.

NOTE: Note that the drawing can be enlarged slightly and retain its original look, but you may lose quality if you enlarge it too much. Pixels are created and a smoothing pass is applied. You should set your resolution before

drawing. If you need to change the resolution of a drawing to be larger than the one set in the Scene Settings dialog box, create an empty drawing first and then follow this procedure.

2. From the top menu, select **Drawing > Change Bitmap Drawing Resolution**.

   The Change Bitmap Drawing Resolution window opens.

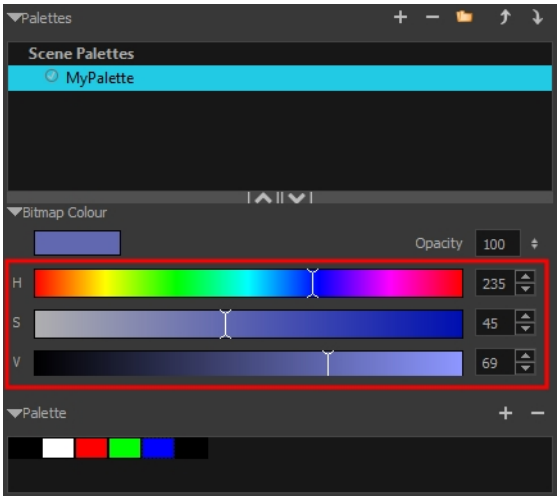


Parameter	Description
Scene Resolution	This is the scene resolution preset name and size in pixels.
Width	This is the width of the resolution for the bitmap that will be created. This is not the actual size of the bitmap. TVG drawings (Toon Boom drawing native format) have an infinite size. Bitmap TVGs are composed of small tiles. Therefore it does not mean that because you have artwork at the four corners of your camera frame or even quite far outside of your drawing that your bitmap image will be very large and heavy. By default, it is set to the same width as the scene resolution.
Height	This is the height of the resolution for the bitmap that will be created. By default, it is set to the same height as the scene resolution.
Resolution Factor	This is the size of the bitmap resolution in relation to the scene resolution. If you increase the percentage, the width and height fields will increase accordingly. If you plan to animate the camera and zoom into your background, you will need to set a higher resolution so that the smaller area in which you will zoom will be 100% of the scene resolution.
Resample Bitmap	When this option is selected, the existing bitmap image is modified to match the new resolution. If the width and height are increased, more pixels will be created to enlarge the image. Visually, the existing artwork will look the same, maybe a little bit smoothed out, but the size will look the same. When this option is deselected, the artwork is not modified. Only the reference grid is resized. If the scene resolution is 1920 x 1080 and you reduce the bitmap resolution to 960 x 540, the image will be scaled up to twice the size of the scene.
Apply to All Drawings	The modified settings are applied to all drawings in the drawing layer for a given art layer. If the Apply to Line Art and Colour Art option is enabled, it will then be applied to all bitmap art layers.

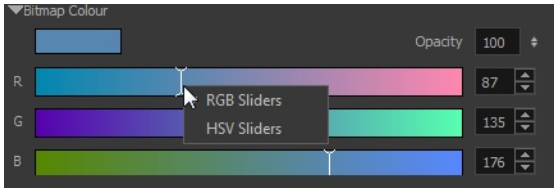
3. Change the bitmap resolution.
4. Click **OK**.

How to draw with bitmap brushes

1. In the Timeline view, add a bitmap drawing layer—see *How to add a bitmap layer* on page 71.
2. In the Tools toolbar, select the Brush tool or press Alt + B.
3. In the Colour view, select a colour.



- To switch the bitmap colour picker from HSV to RGB, in the Colour view menu, select **Colour > Bitmap Colour Sliders > HSV Sliders** or **RGB Sliders**. You can also right-click on the colour sliders and select **RGB Sliders** or **HSV Sliders**.

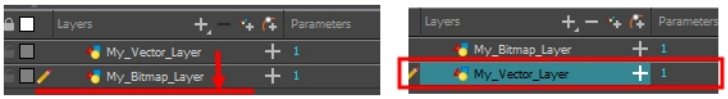


When using bitmap colours, there is no longer a link between the painted zones and selected colour. You can edit the colour as much as you want, but your drawing will not be affected. You can still select colours from your vector colour palette to use the same tint, but you will not create links between your drawing and the swatches.

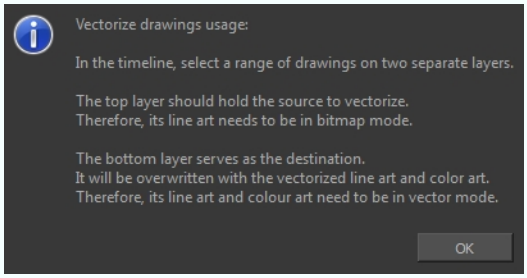
4. In the Camera or Drawing view, start drawing.

How to vectorize a bitmap drawing

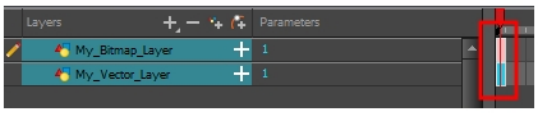
1. In the Timeline view, add a vector drawing layer BELOW the bitmap drawing layer containing the drawing to vectorize. In your bitmap drawing, the artwork to vectorize must be placed on the Line Art layer (default drawing layer).



NOTE:
If you place the vector drawing on top of the bitmap layer, you will not be able to perform the operation. A warning dialog box will display.

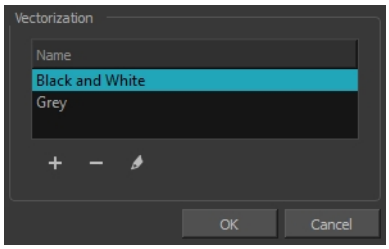


2. On the right side of the Timeline view, select the bitmap drawing and corresponding cell in the vector drawing layer.



3. Right-click and select **Drawings > Vectorize Line Art in Selected Drawing**.

   The Convert to Vector Drawing dialog box opens.



4. In the Vectorization section, select a vectorization preset. You can customize your own preset using the Add or Edit buttons.

5. Click **OK**.

   Your vectorized drawing is created in the vector drawing layer. Your bitmap drawing remains intact.

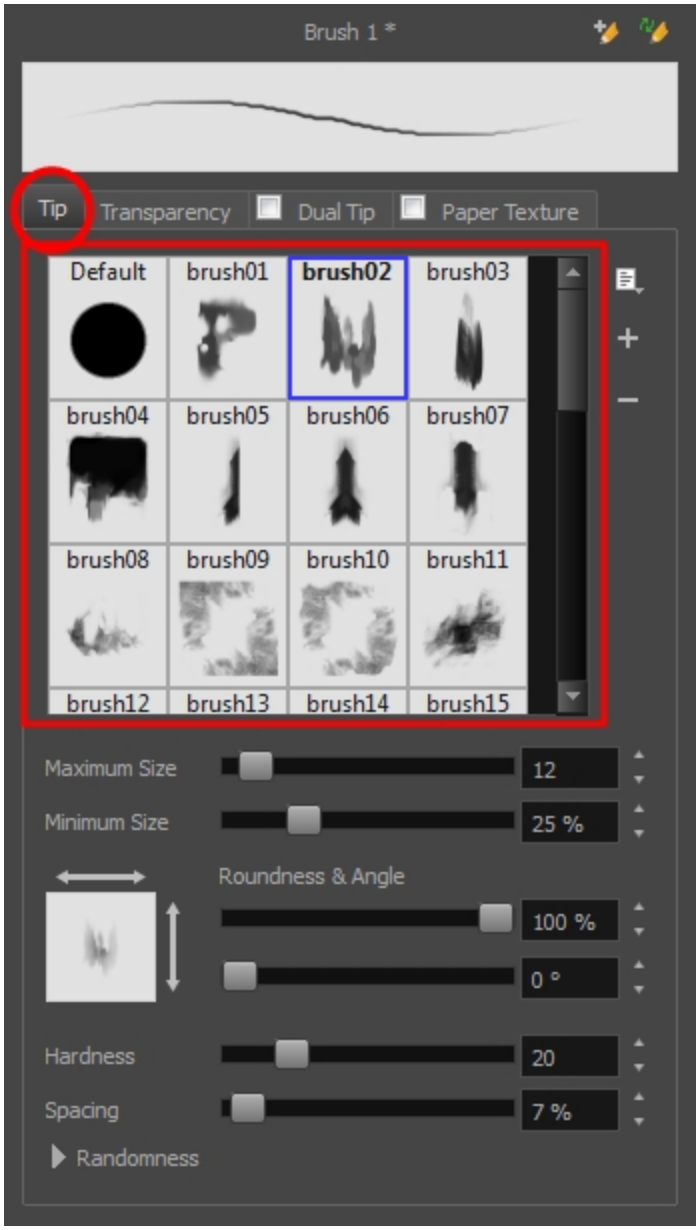
Creating Bitmap Brushes

With bitmap brushes in Harmony, you can create an infinite range of fuzzy, textured and watercolour lines. You can combine two different brush tips, with separate sets of parameters, with the Dual Tip feature. You can also select a paper texture that will mimic the texture of the surface that is being painted on. Uses these features separately or in combination to create distinct, natural-looking strokes.

How to create a Bitmap Brush

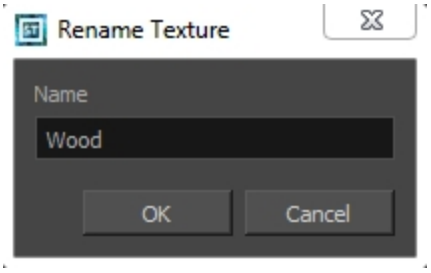
1. In the Timeline view, create a new Bitmap drawing layer.
2. In the Tools toolbar, select the Brush tool or press Alt + B.
3. In the Tool Properties view, select a brush and click the Arrow button to open the Bitmap Brush Properties view.

4. In the Tip tab, select a brush tip.



5. Click on the different tabs to access the options available for adjustment. You can use the brush stroke preview at the top to view all your adjustments in real time.
   - **Tip tab**: Make adjustments to size, brush tip angle, hardness and spacing—see *Bitmap Brush Tool Options* on page 125.
   - **Transparency tab**: Make adjustments to flow and opacity—see *Transparency Tab* on page 136.
   - **Dual Tip tab**: Select this option to enable the Dual Tip feature. Select a dual brush tip and make adjustments to its size, brush tip angle, hardness and spacing—see *Dual Tip Tab* on page 139.
   - **Paper Texture tab**: Select this option to enable the Paper Texture feature. Select a paper texture and make adjustments to its scale, alignment and additivity—see *Paper Texture tab* on page 143.
6. When you are satisfied with the look of your bitmap brush, click the Add New Brush Preset button at the top-right corner of the Bitmap Brush Properties window.

7. In the New Preset dialog box that appears, enter the name for your brush preset.



8. Click **OK**.

   If you continue to make adjustments to your new brush preset and want to save these changes, click the Update Preset button. Otherwise, your modifications will only be saved until another brush preset or drawing tool is selected.

Viewing the Final Lines as You Draw

Everything you draw in Harmony is vector-based, unless you purposely elected to draw as bitmap. Although, when you draw in the Drawing or Camera view, notice that your lines may appear jagged. This is caused by the fast real-time display called OpenGL. If you prefer to see smooth lines as you draw, you can enable the antialiasing preference.

Full Scene Antialiasing

Full scene antialiasing is generated by your computer's graphics card. This antialiasing will not only antialias your drawings, but all your different views in the interface. Full scene antialiasing is an option you can turn on and off; by default, it is disabled.

There is no need to modify your graphic card settings.

NOTE: Full Scene Antialiasing parameters are only valid while you work in your scene. The scene will be rendered to 100% of its resolution regardless of your preference settings or graphic card panel.

How to customize the full scene antialiasing parameters

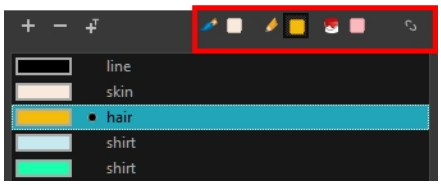
NOTE: You must restart Harmony after you change the parameters.

1. Do one of the following:
   - From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences** (Mac OS X).
   - Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).

   The Preferences dialog box opens.
2. In the OpenGL tab, go to the Full Scene Antialiasing section.

   - **Enable:** Select this option to enable/disable the Full Scene Antialiasing.
3. **Number or samples**: Enter the number of samples you want to be used for the antialiasing process. The number of samples is basically equivalent to the amount of times a pixel will be enlarged to calculate the antialiasing. This technique is called *supersampling*. The higher the number of samples, the better the antialiasing quality will be, but the longer it will take to calculate.
4. Restart Harmony.

Selecting the Current Colour of a Tool



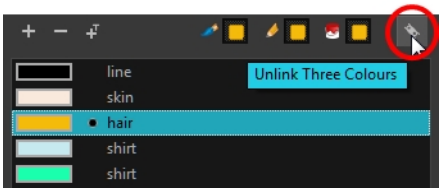
While drawing and painting, you can let Harmony retain the last colour you selected for each one of the following tools:

- Brush
- Paint
- Pencil, Ellipse, Line, Rectangle, Polyline

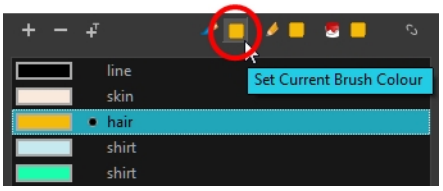
The Colour view has three swatches where you can set a colour for the Brush , Paint, and Pencil tools.

How to unlink the storage swatches

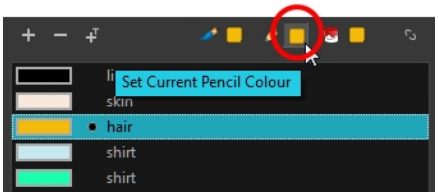
1. In the Colour view, if the storage swatches are linked, click the Link button to unlink them.



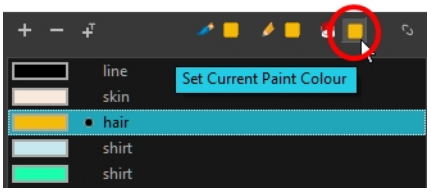
2. Click on the Brush storage swatch.



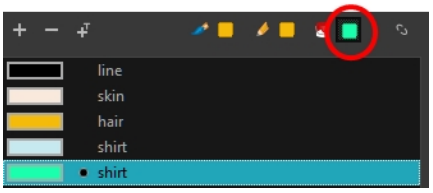
3. In the Colour list, select the desired colour.
4. Click the Pencil storage swatch.



5. In the Colour list, select a colour.
6. Click the Paint storage swatch.



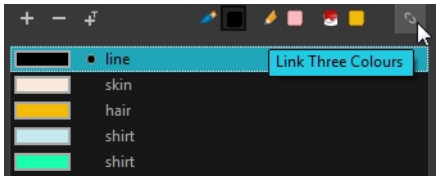
7. In the Colour list, select a colour.



NOTE: If you prefer to have Harmony use the same colour swatches regardless of the selected tool, you can link the three swatches together.

How to link the storage swatches

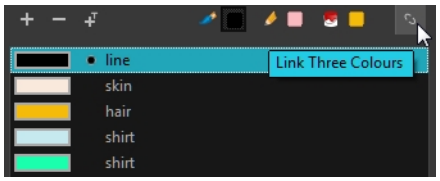
1. In the Tools toolbar, select one of the following tools:
   - Brush
   - Paint
   - Pencil
   - Polyline
   - Line
   - Ellipse
   - Rectangle
2. In the Colour view, if the storage swatches are unlinked, click the Link button to link them.



Each time you select a new colour for your current tool, all the storage swatches are updated.

How to link the storage swatches

1. In the Tools toolbar, select one of the following tools:
   - Brush
   - Paint
   - Pencil
   - Polyline
   - Line
   - Ellipse
   - Rectangle
2. In the Colour view, if the storage swatches are unlinked, click the Link button to link them.



Each time you select a new colour for your current tool, all the storage swatches are updated.

Using Independent Colours when Working with Bitmap Layers

When working in the Colour view, by default the current colour is active for both vector and bitmap layers. You can however, use different reference colours for each layer.

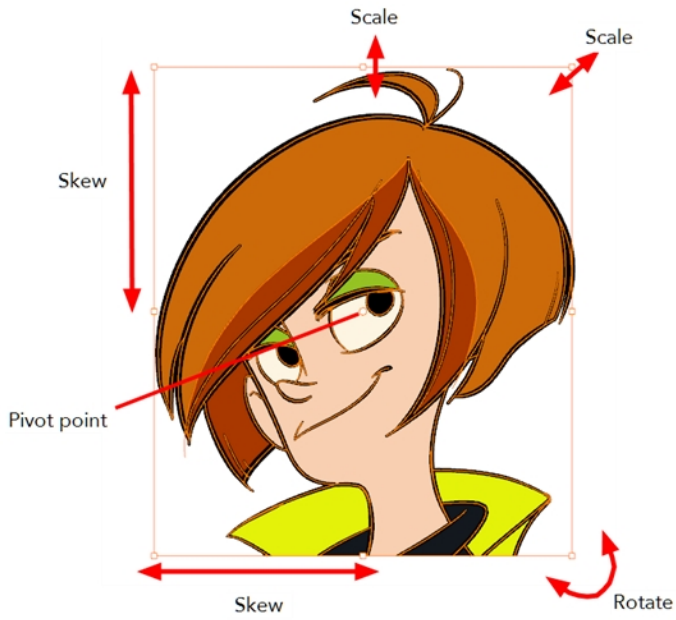
When using bitmap colours, there is no longer a link between the painted zones and selected colour. You can edit the colour as much as you want, but your drawing will not be affected. You can still select colours from your vector colour palette to use the same tint, but you will not create links between your drawing and the swatches.

How to use independent colours

- From the Colour view menu, select **Colours > Independent Bitmap Colour**.

Whichever colour you choose as the reference color is retained for that layer type.

Selecting Drawing Objects



The Select tool is used to select strokes in both the Drawing and Camera views, and apply basic transformations, such as repositioning, rotating, scaling or skewing using the different handles of the bounding box.

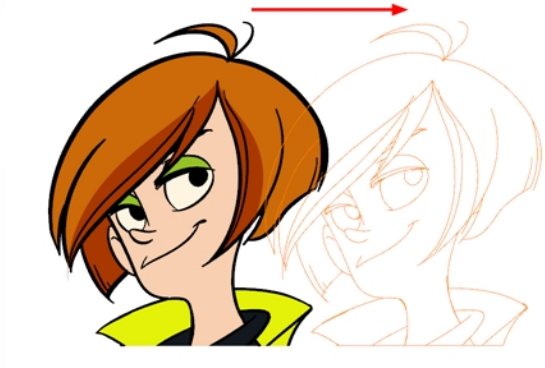
Sometimes, when you want to select multiple objects while leaving one unselected, it can be handy to select only the stroke or line that you do not want included in your selection. Then, you can invert the selection so that everything else becomes selected. This can be quite a time saver.

By default, when you draw a selection box, the Select tool will select only the drawing strokes of the current drawing. If you prefer the Select tool to select all the strokes on all layers, you can disable the Works on Single Drawing option in the Tool Properties view or the Select Tool Works on Single Drawing option in the Preferences dialog box.

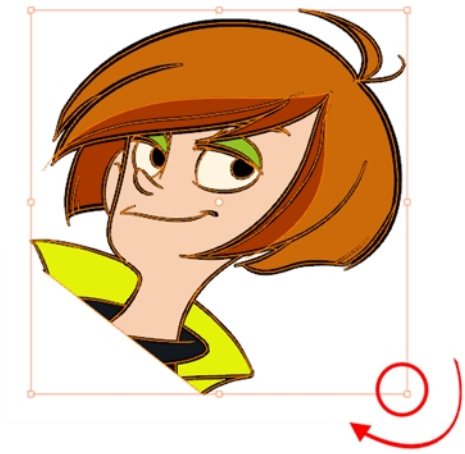
Some of the transformations, such as rotation, scale, skew, and flip are done relative to the position of the pivot point. You can temporarily reposition this pivot point for a transformation using the Select tool.

How to select with the Select tool

1. In the Timeline view, select the cell on which you want to select drawing objects.
2. In the Tools toolbar, select the Select tool or press Alt + S.
3. In the Camera or Drawing view, select the drawing objects.
   - You can select all the drawing objects in a drawing by using **Edit > Select All** or by pressing Ctrl + A (Windows/Linux) or ⌘ + A (Mac OS X).
4. To deform or reposition a selection:
   - To reposition, click the selected drawing object and drag the selection to a new area.

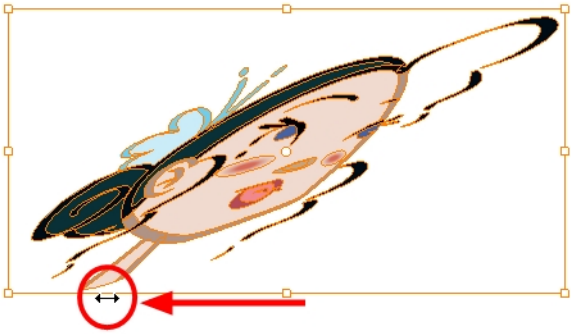


   - To rotate, grab the selection box handle and rotate it.



   - To scale, pull or push on the top, side, bottom or corner control point. Hold down Shift to lock the selection's ratio.

- To skew, drag sideways or up and down the sides or top and bottom segments, between the control points.



How to invert a selection

1. From the top menu, select **Edit > Invert Selection** or press Ctrl + Shift + I.
   - You can also find the Invert Selection option in the Camera or Drawing View menu by selecting **Edit > Invert Selection**.

How to enable and disable the Select Tool Works on Single Drawing preference

1. In the Tools toolbar, select the Select tool or press Alt + S.
2. Do one of the followings:
   - From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences** (Mac OS X). In the Camera tab, go to the Tools section and select or deselect the **Select Tool Works on Single Drawing** option and click **OK**.
   - In the Tool Properties view, disable the Works on Single Drawing option.
3. In the Camera view, make your selection. It is possible that you will have to restart Harmony depending on your system.

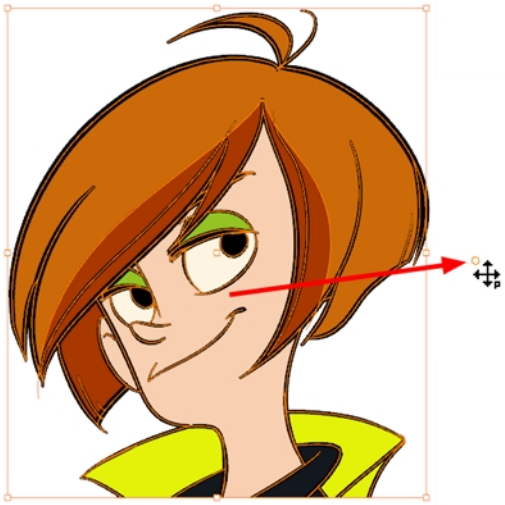
How to temporarily reposition the pivot point

1. In the Camera or Drawing view, select the drawing object you want to transform.

   The pivot point appears in the middle of your selection.

2. Click the pivot point and drag it to a new position.

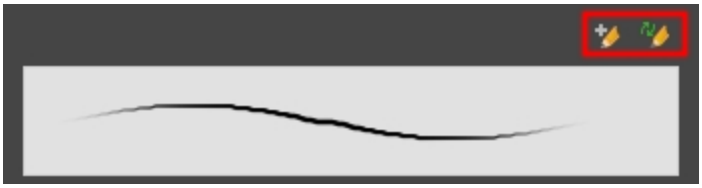
   This becomes the new position of the pivot point for the current transformation and will remain there until you make a new selection.



Erasing Parts of a Drawing

The Eraser tool is pressure sensitive, like the Brush tool, giving you more precision when erasing parts of a drawing. You can also use the Select tool to select drawing objects and delete them instead of erasing.

It is a good idea to create and save erasers with precise sizes and parameters in order to save time when drawing and designing. There are two icons located at the top, right corner of the Eraser Properties window. One is to create a new preset, while the other is to update the currently selected preset. Use them after you have set all the parameters for the new eraser preset.



- **New Brush Preset**: Click on this button to create a new eraser brush style. The new eraser style will appear at the bottom of the list in the Presets section of the Tool Properties window. All the values and selected options in the Eraser Properties window will be attributed to this new style.
- **Update Preset:** Click on this button to update the selected eraser preset with any changes made in the Eraser Properties window. If you make changes and do not click on the Update Preset button, then all the changes made will only be applied to the selected eraser preset temporarily. The moment you switch to another eraser preset or to another drawing tool, these modifications to the eraser preset will disappear.

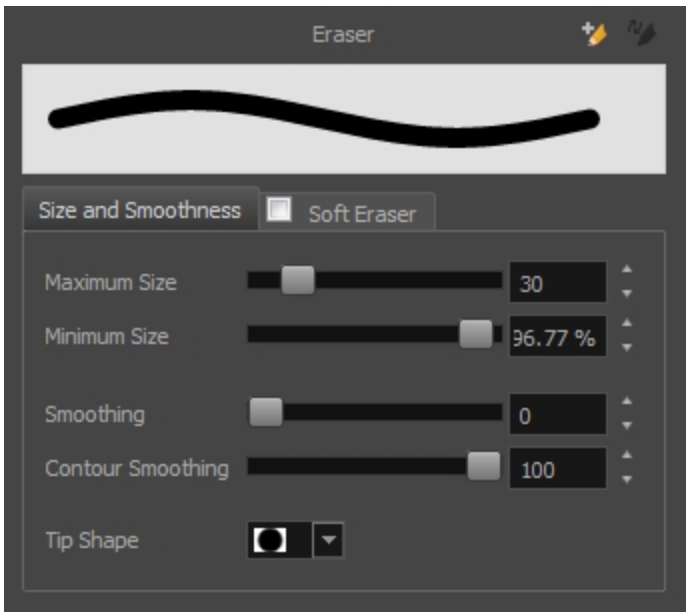
How to erase with the Eraser tool

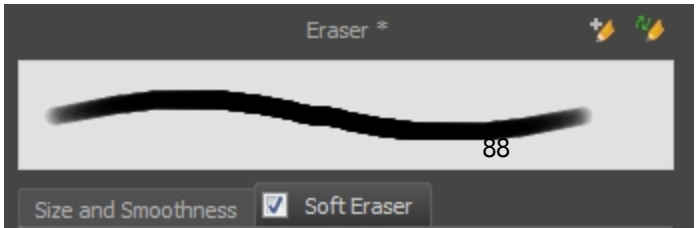
1. In the Timeline or Xsheet view, select the cell that contains objects you want to erase.
2. In the Tools toolbar, select the Eraser tool or press Alt + E.
3. In the Camera or Drawing view, start erasing.

How to modify the eraser settings

1. In the Tools toolbar, select the Eraser tool .
2. In the Tool Properties view, the preview area displays the stroke that will be produced after you customize the different parameters in the Eraser Properties view. Click the arrow button.

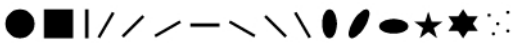
The Eraser Properties window opens.





The Size and Smoothness tab is where you set the minimum and maximum sizes of your drawing tool which will produce the thick and thin effect on your stroke.

The Soft Eraser tab needs to be enable for its parameters to become active. This feature only works on soft or textured brush strokes. Both tabs works with the pressure sensitivity of a pen tablet.

Parameter	**Description**
Size and Smoothness Tab	
Maximum Size	Sets the maximum width of the line.
Minimum Size	Sets the minimum width of the line in relation to the maximum size.
Smoothness	Lets you modify the central line smoothness of the line. This parameter smooths the initial movement of your line. Increasing the value will result in a smoother line with fewer control points.
Contour Smoothness	Optimizes the contour line smoothness of the line. This parameter smooths the contour of the line once it has been traced. The higher the value, the fewer control points will compose your line.
Tip Shape	Lets you select a tip shape—from round and square ones to star shaped. This option is disabled when using a textured brush. 

Soft Eraser Tab	
Hardness	Defines the softness of the stroke edge. The lower the value, the softer the stroke edge will be. The higher the value, the sharper the stroke edge will be.
Saturation	Lets you adjust the softness of edge feathering. Works in conjunction with the Hardness, e.g. 100% Hardness will yield no results in saturation change. 0% Hardness will allow a fine tuning of the feathering of the soft stroke edge.
Maximum Opacity	The transparency of the brush when the pressure is heavy. A smaller value will leave semi-transparent colour and texture. A larger value will ensure that everything is properly erased. This option in unavailable if the Keep Vectors option is disabled.
Minimum Opacity	Sets the minimum transparency of the brush, in relation to the Maximum Opacity, when the pressure is very light. A smaller value will leave semi-transparent colour and texture. A larger value will ensure that everything is properly erased. This option in unavailable if the Keep Vectors option is disabled.
Keep Vectors	Keeps the vector frames around your strokes intact, only the texture fill disappears. Disabling this option will cut the stroke's vector frame into different pieces when the Eraser tool passes over it. If you disable this option, the maximum and minimum opacity sliders are disabled as well.

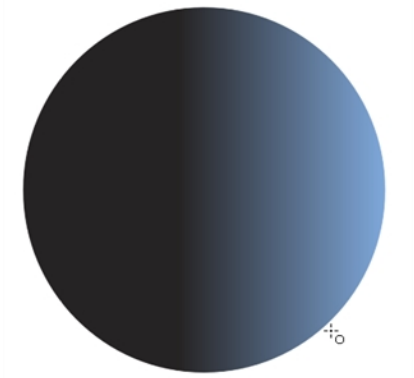
Reshaping a Drawing Using the Contour Editor Tool

The Contour Editor tool is a powerful tool that allows you to add, remove or modify points on a vector line and control them with Bezier handles. It is used to correct line shapes and modify a single part of a colour zone. If a line is too thin or has a gap in it, you can modify and correct it with the Contour Editor tool. You can also use this tool to create elaborate shapes.

The Contour Editor displays vector points around a shape and the central vector points in a pencil line. Pulling or pushing on these points adjusts the brush's line thickness. Points can be selected and deleted. Each point has two Bezier handles for correcting the curves between two points. Shapes can be modified by pulling and pushing directly on the segment between the points. You can use it to perfect a central shape pencil line, a contour shape brush line, or even create an elaborate shape from a basic ellipse or square.

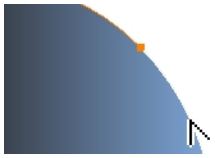
How to reshape with the Contour Editor tool

1. In the Timeline or Xsheet view, select the cell in which you want to draw.
1. In the Tools toolbar, select a shape tool: .
2. In the Tool Properties view, click the Ellipse button, click the Auto Fill button and set the pencil size to **0**.
3. In the Drawing or Camera view, draw a circle.

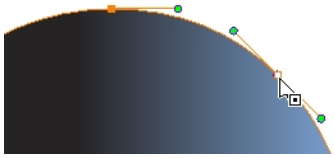


4. In the Tools toolbar, select the Contour Editor tool.

5. In the Drawing or Camera view, click the line to reshape it.



6. Select one or several points by clicking on them or circling around.

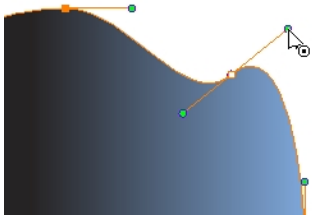


7. Press Delete to delete a selected point.

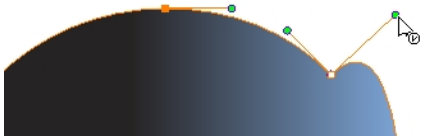
   Press Ctrl (Windows/Linux) or ⌘ (Mac OS X)and click on the contour to add a new point to adjust the contour.

8. To modify the shape, you can:

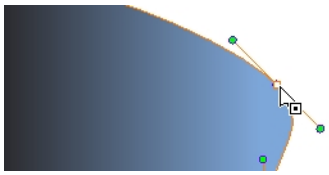
   - Pull on the Bezier handle. Both point's handles will move as one.



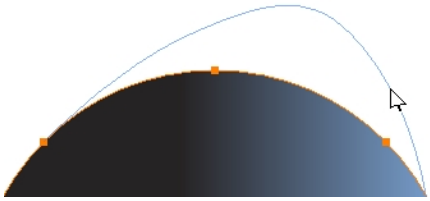
   - Hold down Alt and pull on one of the Bezier handles. The point's handle will move independently from the other one.



   - Move the selected points to a new area.

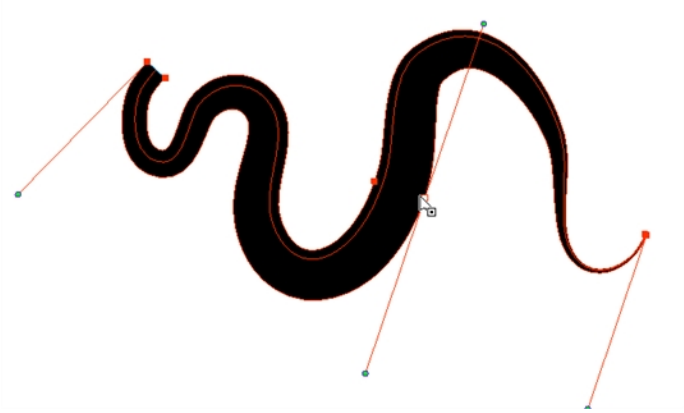


   - Pull directly on the line between two points. No selection is necessary. Holding down Shift will limit the contour modification to the curve between the two first points.

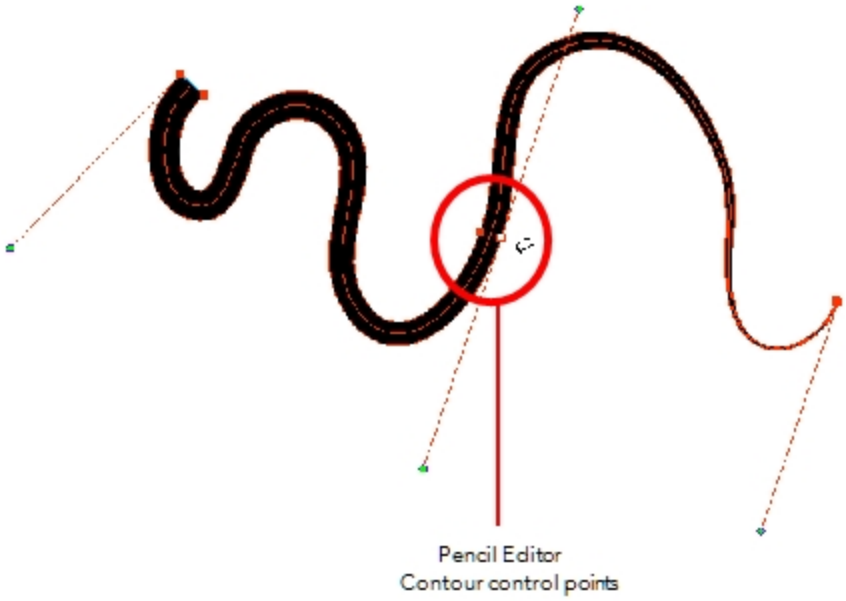


- If an anchor point has no visible Bezier handles, hold down the Alt key to display them.
- To add control points, press Ctrl (Windows/Linux) or ⌘ (Mac OS X) and click the line.
- To remove control points, select the control point and press Delete.

Reshaping Pencil Lines with the Pencil Editor Tool

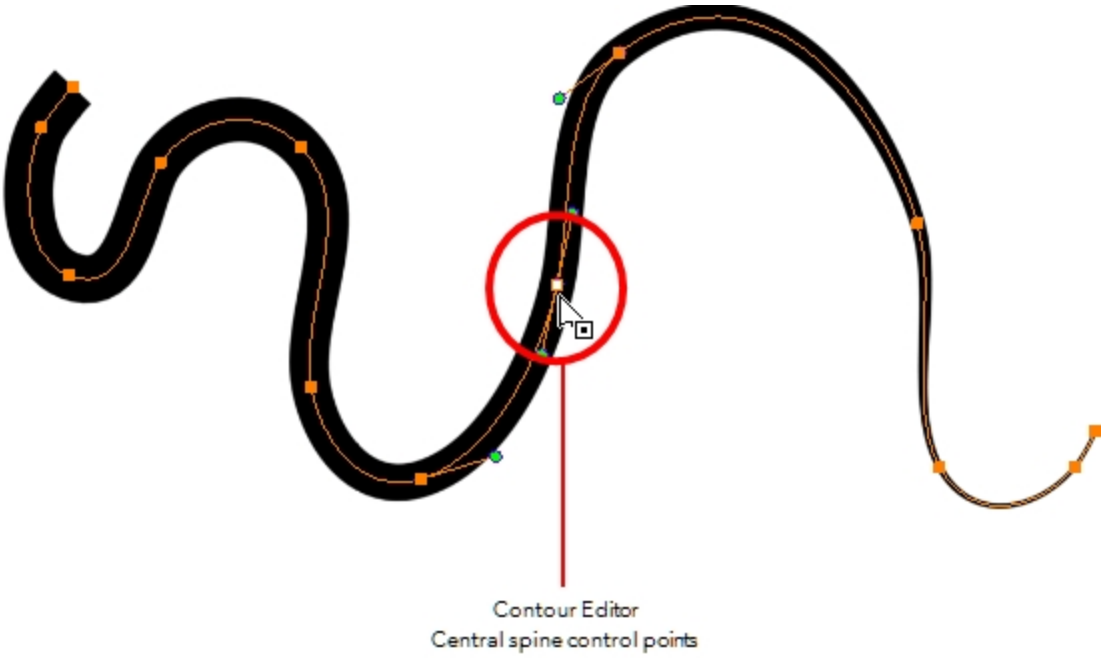


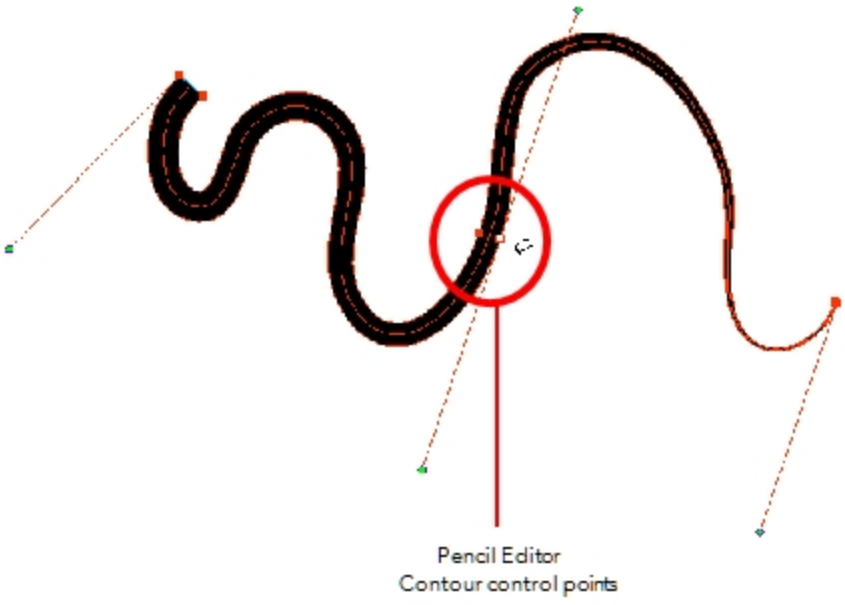
The Pencil Editor tool is used to modify the thick and thin contour o f a pencil line. A pencil line is a central vector shape. The shape control points are located all along the central spine allowing you to adjust the stroke curve and position. When using the Contour Editor tool, you can repos ition the spine of the stroke. When using the Pencil Editor tool, you can ad just the thick and thin areas of lines.



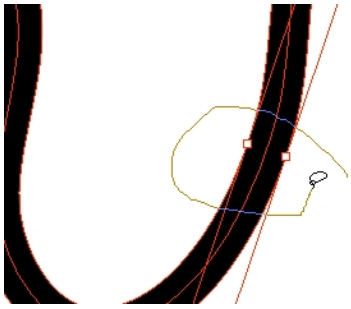
How to use the Pencil Editor tool

1. In the Tools toolbar, select the Pencil Editor tool or press Alt + W.
2. In the Camera or Drawing view, select a pencil line and click the line to reshape it.

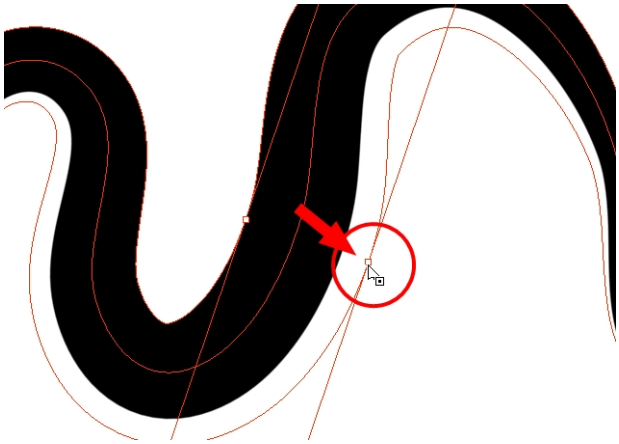




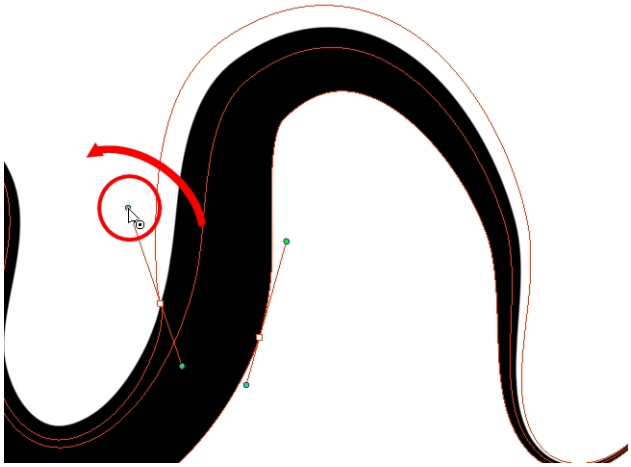
3. Select one or several points by clicking them or circling around.



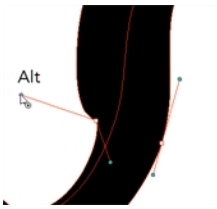
4. Press Delete to delete a selected point.
5. Press Ctrl (Windows/Linux) or ⌘ (Mac OS X) and click the central spine to add a set of points to adjust the contour.
6. To modify the shape, you can:
   - Move the selected points to a new area. If you select matching points on each side of the line, holding the Shift key will move them both. This way you can thicken or thin a line from both sides at the same time.



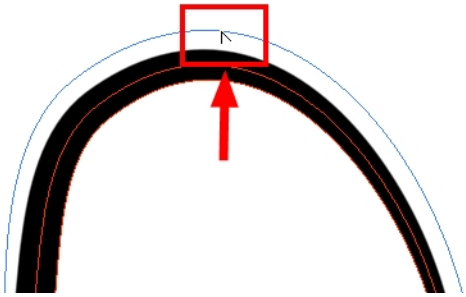
   - Pull on the Bezier handle to move both points' handles s one.



   - Hold down Alt and pull on one of the Bezier handles. It moves the handle independently from the other one.



- Pull directly on the line between two points. No selection is necessary. Holding down the Shift key will limit the contour modification to the curve between the two first points.



- If an anchor point has no visible Bezier handle, hold down Alt to display them.

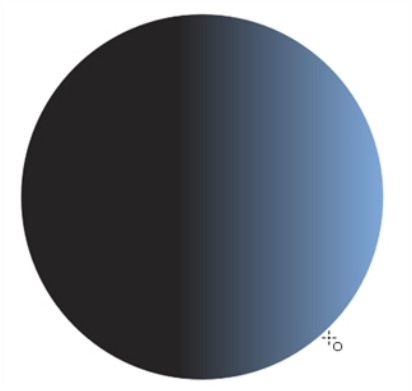
Drawing with Shapes

In Harmony, you can use the shape tools to draw circles, lines and squares. You can also easily reshape a square or circle into a much more complex drawing such as these butterfly wings—see *Reshaping a Drawing Using the Contour Editor Tool* on page 90 and *Reshaping Pencil Lines with the Pencil Editor Tool* on page 92.

How to draw with a Shape tool

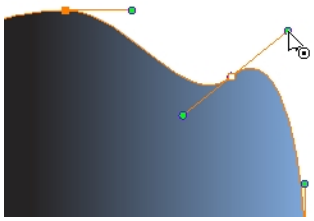
1. In the Timeline or Xsheet view, select the cell on which you want to draw.
2. In the Tools toolbar, select a shape tool: .

3. To automatically fill the shape, in the Tool Properties view, select the Auto Fill option.
4. In the Camera view, click and drag to draw the shape.

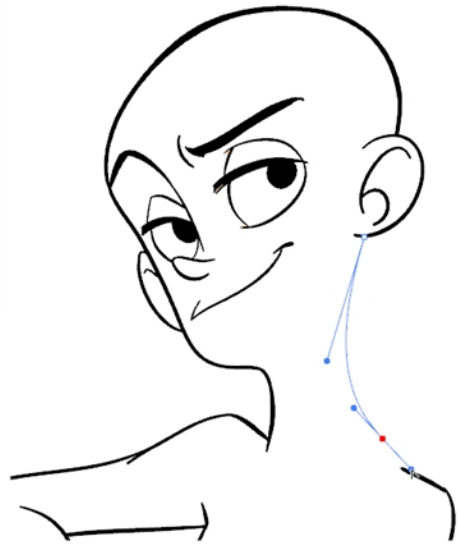


- Hold down Shift to lock the rectangle or the ellipse ratio to 1:1.
- Hold down Alt to draw the rectangle or ellipse from its centre.
- Hold down Shift to snap the line every 15 degrees.
- Hold down Alt to snap the start or end of the line to a nearby stroke.

5. Use the Contour Editor tool to deform the shape and create your drawing.



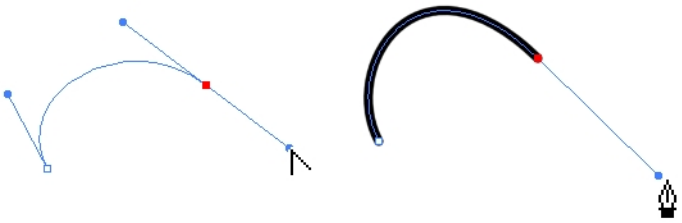
Drawing with the Polyline Tool



The Polyline tool is used to draw shapes with a central vector type of line. To form a shape, you click to add a point and then, without releasing the mouse, pull the handle in the desired direction before adding the next point and repeat the operation. To edit the shape, you can use the Contour Editor tool.

How to draw with the Polyline tool

1. In the Timeline view, select the cell on which you want to draw.
2. In the Tools toolbar, select the Polyline tool or press Alt + _.
3. In the Camera or Drawing view, click and drag to create a point and a Bezier handle to shape your line.
   - Press Alt to pull only one handle, instead of two.
   - Press Shift to snap the handles to 45, 90, or 180 degrees.
4. Click a new area and drag to create a second point and Bezier handle.



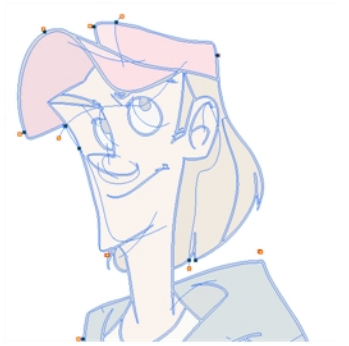
5. Repeat the previous step until your shape is completed.
6. Press Ctrl (Windows/Linux) or ⌘ (Mac OS X) and click to release the Polyline tool from the current path or shape that it is creating. Continue to use the tool to make multiple, independent paths or shapes.
7. If necessary, reshape the lines using the Contour Editor tool—see *Reshaping a Drawing Using the Contour Editor Tool* on page 90.

Drawing with Invisible Lines

There are two different ways to draw invisible lines.

Using the Pencil tool, you can draw as strokes only, meaning that the line will be invisible. This can be useful for drawing tones and highlights directly on the character.

The Stroke tool draws invisible lines only. You cannot add thickness to the line. Unlike the Close Gap tool that creates a short, straight line between two points, the stroke line will stay exactly where you draw it. This tool can be useful for closing a zone in a particular way or creating some hard shadows or highlight areas.

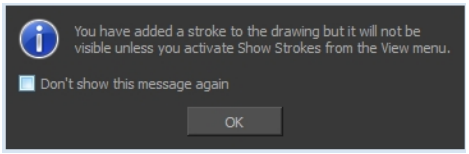


Sometimes, it may be difficult to see your strokes, especially if your colours are similar to the blue stroke colour. In Harmony, you can display the strokes in washed-out colours so that the invisible lines stand out.

How to draw invisible lines with the Pencil tool

1. In the Timeline or Xsheet view, select the cell on which you want to draw.
2. In the Tools toolbar, select the Pencil tool or press Alt + /.
3. From the top menu, select **View > Drawing > Show Strokes** or press K.
4. In the Tool Properties view, set the Pen Style size to **0**. You can also adjust the smoothness.
5. In the Camera or Drawing view, start drawing.

   If you forgot to enable the Show Strokes option before drawing, as soon as you draw a first stroke, a Message dialog box opens.

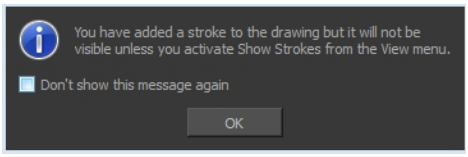
   Select the **Don't Show This Message Again** option if you do not want the dialog box to notify you about the Show Strokes option.
6. Click **OK**.
7. You can modify the stroke shape with the Contour Editor tool.

How to draw invisible lines with the Stroke tool

1. In the Timeline or Xsheet view, select the cell on which you want to draw.

2. In the Tools toolbar from the Paint drop-down menu, select the Stroke tool or press Alt + V.
3. From the top menu, select **View > Show Drawing > Show Strokes** or press K.
4. In the Tool Properties view, you can adjust the smoothness.
5. In the Camera or Drawing view, start drawing.

   If you forgot to enable the Show Strokes option before drawing, as soon as you draw a first stroke, a Message dialog box opens.

   Select the **Don't Show This Message Again** option if you do not want the dialog box to notify you about the Show Strokes option.
6. Click **OK**.
7. You can modify the stroke shape with the Contour Editor tool.

How to show the strokes with washed-out colours

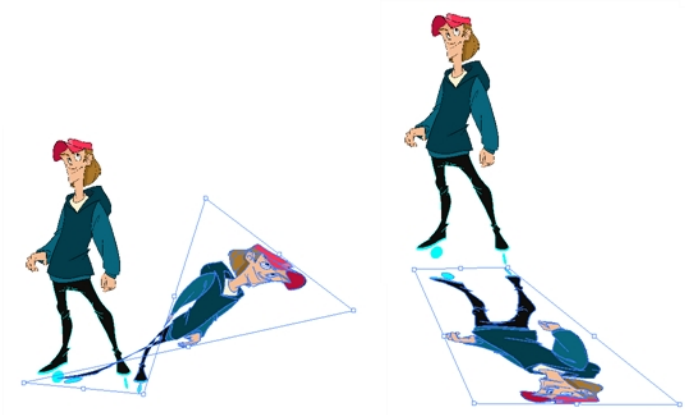
- From the top menu, select **View > Show > Show Stroke With Colour Wash**.

Deforming a Drawing with the Perspective Tool

The Perspective tool lets you deform a drawing selection and alter its perspective.

How to deform a drawing with the Perspective tool

1. In the Tools toolbar, select the Perspective tool from the Contour Editor drop-down menu or press Alt + 0.
2. In the Camera or Drawing view, select a drawing to deform.
3. Click and drag the different anchor points to deform the shape.



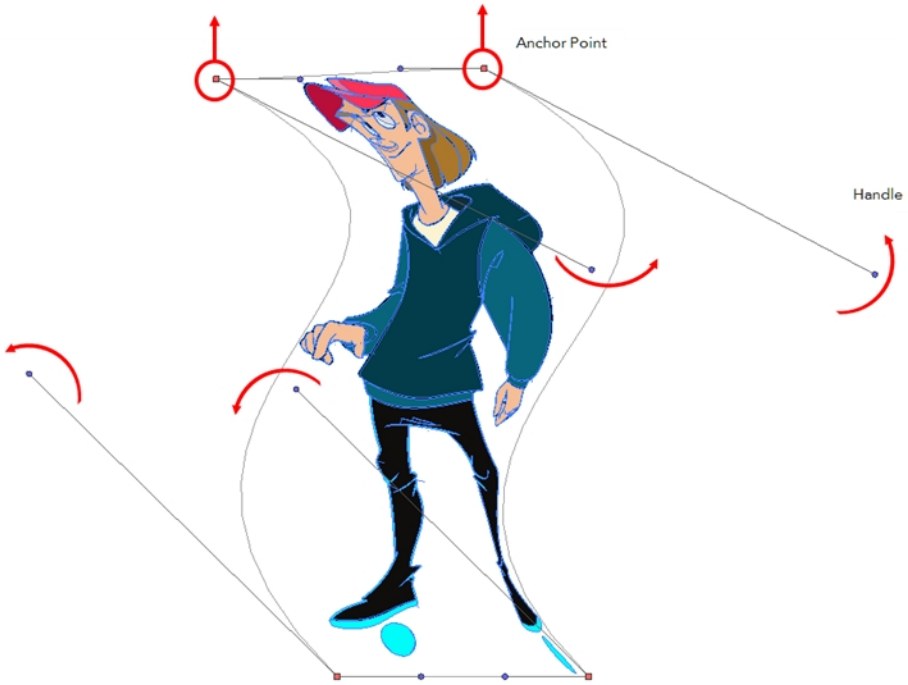
Warping a Drawing with the Envelope Tool

The Envelope tool lets you deform and warp part of a drawing using a grid envelope and Bezier handles.

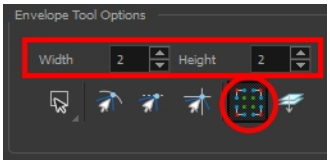
How to warp a drawing with the Envelope tool

1. In the Tools toolbar, select the Envelope tool from the Contour Editor drop-down menu.
2. In the Timeline view, select a drawing to deform.
3. In the Camera or Drawing view, select the region you want to deform

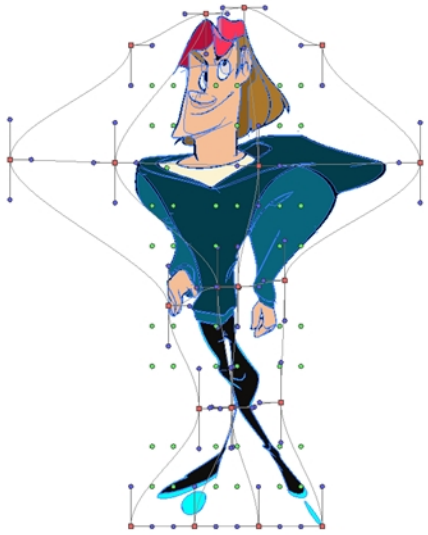
4. Click and drag the different anchor points and handles to deform the image.



5. To display more controls, in the Tool Properties view, click the Show Advanced Controls button.



6. Increase the height and width of the grid to get more control points to deform your image.



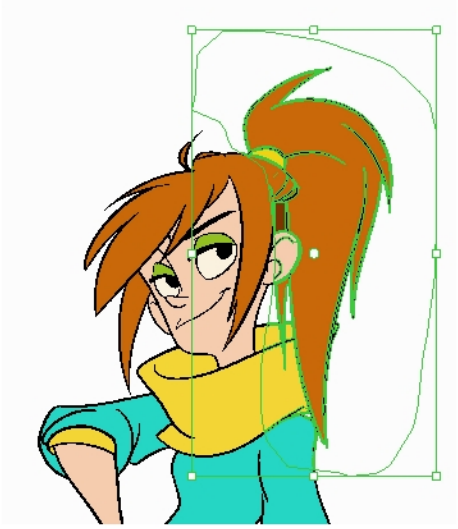
Cutting Drawing Parts

The Cutter tool lets you cut a drawing area to move, copy, cut or delete it.

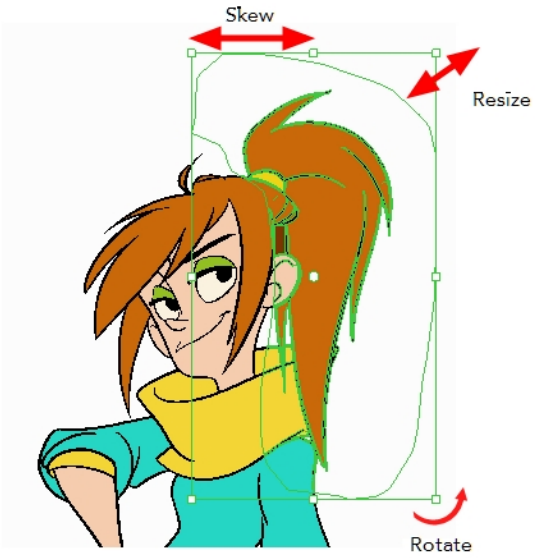
How to cut with the Cutter tool

1. In the Tools toolbar, select the Cutter tool or press Alt + T.

2. In the Camera or Drawing view, make a selection around an area to cut away.



- To delete the selected zone, press Delete.
- To move the selection, click the selection and drag it to a new area.
- Use the bounding box controls to scale, skew, or rotate the cut piece.



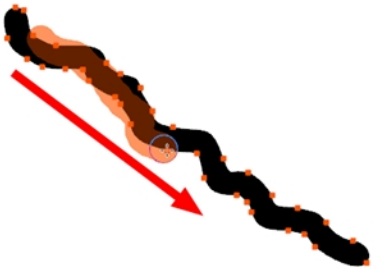
Smoothing Lines

When drawing in a digital application, it is not like drawing on a sheet of paper. Sometimes the lines you draw may look as if they were drawn with an unsteady hand. When this occurs, you may need to correct the look of your lines.

Harmony has a very powerful tool you can use to optimize contours and reduce the number of points on the lines, the Smooth Editor tool.

How to optimize lines with the Smooth Editor tool

1. In the Tools toolbar, select the Smooth Editor tool or select **Drawing > Tools > Smooth Editor**.
2. In the Camera or Drawing view, place your pointer over the lines to smooth. You may need to pass over the same line several times to remove more points and make the line smoother. Note that by default, the Smooth Editor tool colour is yellow, it was changed to orange for screen grab clarity—see *Smooth Editor Tool Options* on page 182 to learn about the various settings available.

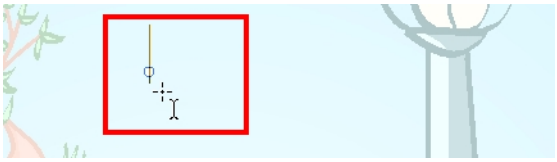


Working With Text

With the Text tool, you can type text in your project using various fonts and texts attributes. Text objects are part of a drawing, so you can manipulate them in the same way. OTF fonts are also supported.

How to add text to drawings

1. Do one of the following:
   - In the Tools toolbar, select the Text tool.
   - From the top menu, select **Drawing > Tools > Text**.
   - Press Alt + 9.
2. In the Timeline view, select the cell containing the drawing on which you want to add text.
3. In the Drawing or Camera view, click on the location you want the text to begin.



4. You can use the Tool Properties view to select the font, font size and format of the text you will type—see *Text Tool Options* on page 184.

5. Type in the desired text.

6. Click outside the text box to exit the typing mode.

   If you want to create another text object, click outside the currently active text box. You can always return to edit the text by selecting the Text tool and clicking in the text.

Working with Tool Presets

Tool presets let you save a variety of settings and are very handy and efficient for accessing the tools you use most often. That way, the tool is already set with the desired properties, such as colour, line thickness, whether to enable Draw Behind or Auto Flatten mode, and so on. You can create presets for these tools and many more: Brush, Pencil, Eraser, Rectangle, Ellipse, and Line. First, select a tool, adjust the properties, and then create a tool preset for it. Once you have created a tool preset, you can always make adjustments to fine-tune it, as well as create a keyboard shortcut for it.

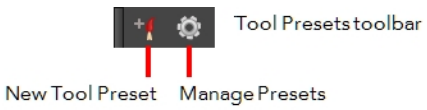
What's the difference between a tool preset and a brush preset? When you save a tool preset, you have the option of saving the colour, which you cannot do with brush presets.

The Tool Presets Toolbar

The Tool Presets toolbar lets you create new tool presets and manage them.

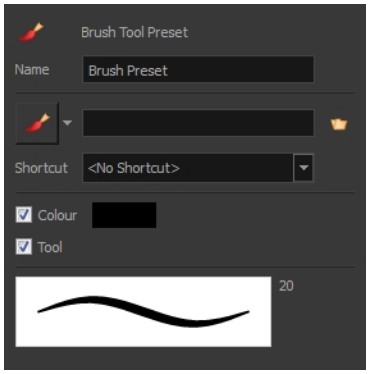
How to display the Tool Presets toolbar

1. Do one of the following:
   - From the top menu, select **Windows > Toolbars > Tool Presets**.
   - Right-click an empty area below the top menu and select **Tool Presets**.

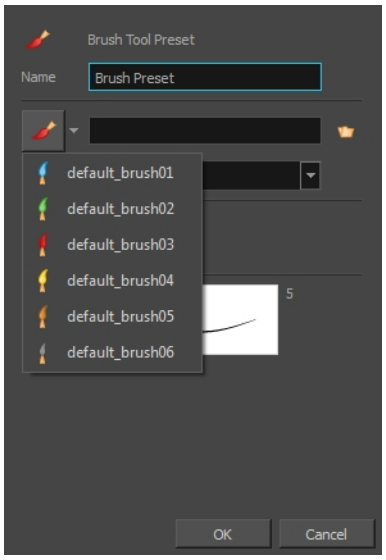


How to create a tool preset

1. In the Tools toolbar, select a tool, for example the Brush tool.
1. Use the Tool Properties view to customize the tool.
2. To set a specific colour for your preset, in the Colour view, select the colour swatch to link to the tool. Note that when using this preset in another scene not using that colour palette, upon selecting this new preset, a colour recovery dialog box will appear asking to add this colour to your scene.
3. In the Tool Presets toolbar, click the New Tool Preset button.
4. In the New Preset dialog box, in the Name field, type a name for your new preset.



2. From the icon list, select an icon to quickly identify your preset or upload your own by clicking the File button.



5. (Optional) From the Shortcut menu, set a keyboard shortcut to quickly access your preset. By default, the shortcuts are unassigned. To assign a keyboard shortcut, go to the top menu and select **Edit > Preferences > Shortcuts > Tool Presets** (Windows/Linux) or **Stage > Preferences >Shortcuts > Tool Presets** (Mac OS X).

6. When you select any of the following options, they will take effect when you use the tool preset. If an option is deselected, then using a tool preset will not override your current settings.

   - **Colour**: Saves the current colour into the tool preset.

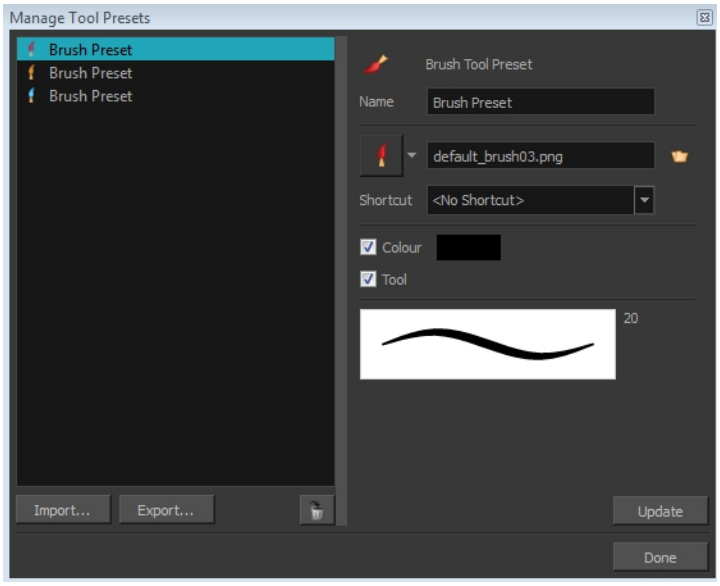
7. Click **OK**.

How to select a tool preset

- In the Tool Presets toolbar, click the tool preset icon you assigned when creating the preset. Note that when using this preset in a new scene not using the assigned colour swatch, a colour recovery dialog box appears prompting you to add the colour to the scene.

How to delete a tool preset

1. In the Tool Presets toolbar, click the Manage Tool Presets button.



2. From the list of tool presets on the left, select a preset to delete and click the Trash icon.

How to import a tool preset

1. In the Tool Presets toolbar, click the Manage Tool Presets button.

   The Manage Tool Presets dialog box opens.

3. Click **Import**.
4. In the Select Folder window that opens, locate and select the preset(s) to import and click **Select Folder**.

How to export a tool preset

1. In the Tool Presets toolbar, click the Manage Tool Presets button.

The Manage Tool Presets dialog box opens.

5. Click **Export**.

2. In the Export Brush Presets window that opens, click **Export**.

6. Select a folder and click **Select Folder**.

How to update a tool preset

1. To update the colour of your preset, you must first select it in the Colour view.
2. In the Tool Presets toolbar, click the Manage Tool Presets button.
3. In the Manage Tool Presets dialog box that opens, select the tool preset from the left side of the dialog box.
4. Make any changes you would like to the preset.
5. Click **Update**.

More Drawing Tools

Harmony offers a wide variety of useful tools to optimize your drawings and work more efficiently; tools such as Group, Arrange, and the animation disk to rotate your workspace.

- *Arrange* on page 108
- *Convert Brush Strokes to Pencil Lines* on page 109
- *Pencil Lines to Brush Strokes* on page 110
- *Strokes to Pencil Lines* on page 110
- *Optimize* on page 110
- *Remove Extra Strokes* on page 111
- *Reduce Drawing Texture Resolution* on page 111
- *Crop Brush Textures* on page 112
- *Create Contour Stroke* on page 113
- *Remove Contour Stroke* on page 113
- *Grid* on page 114
- *Group/Ungroup* on page 114
- *Hand* on page 114
- *Rotate View* on page 115

Arrange

The different Arrange options let you reorder drawing objects inside a single layer in the Drawing or Camera view.

Name	Button	Description	Access Method
Bring to Front		Moves the selected art to the front (on top).	From the top menu, select **Drawing > Arrange > Bring to Front.** Press Ctrl + Shift + PgUp (Windows/Linux) or ⌘ + Shift + PgUp (Mac OS X).
Bring Forward		Moves the selected art one level forward (closer to the front).	From the top menu, select **Drawing > Arrange > Bring Forward**. Press Ctrl + PgUp (Windows/Linux) or ⌘ + PgUp (Mac OS X).
Send Backward		Moves the selected art one level lower (behind).	From the top menu, select **Drawing > Arrange > Send Backward**. Press Ctrl + PgDown (Windows/Linux) or ⌘ + PgDown (Mac OS X).
Send to Back		Moves the selected art behind everything (bottom / back).	From the top menu, select **Drawing > Arrange > Send to Back**. Press Ctrl + Shift + PgDown (Windows/Linux) or ⌘ + Shift + PgDown (Mac OS X).

Convert Brush Strokes to Pencil Lines

The Brushes Strokes to Pencil Lines operation converts selected contour strokes into centreline pencil strokes. The brush stroke thickness will be lost.

How to convert brush strokes to pencil lines

- From the top menu, select **Drawing > Convert > Brush Strokes to Pencil Lines** or press ^.
- Right-click on the selection, select **Convert > Brush Strokes to Pencil Lines** or press ^

Pencil Lines to Brush Strokes

The Pencil Lines to Brush Strokes operation converts the selected centreline pencil strokes into contour strokes brush lines.

How to convert pencil lines to brush strokes

- From the top menu, select **Drawing > Convert > Pencil Lines to Brush Strokes** or press &.
- Right-click on the selection, select **Convert > Pencil Lines to Brush Strokes** or press &

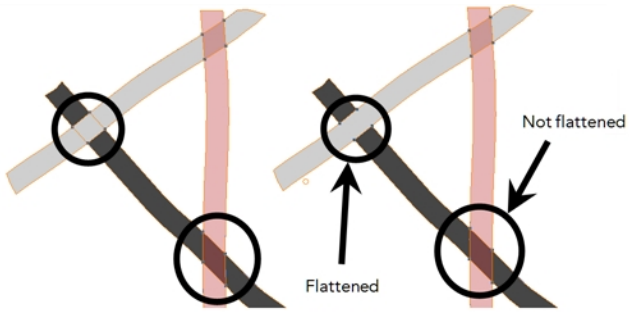
Strokes to Pencil Lines

The Strokes to Pencil Lines operation converts the selected invisible line to a pencil line.

How to convert strokes to pencil lines

- From the top menu, select **Drawing > Convert > Strokes to Pencil Lines** or press Shift + F12 (Windows/Linux only).
- Right-click on the selection, select **Convert > Strokes to Pencil Lines** or press Shift + F12 (Windows/Linux only)

Optimize



The Optimize command reduces the number of layers, such as overlapping brush strokes, in the selected drawing objects. Drawing objects will only be flattened and optimized if the selected objects do not change the appearance of the final image when they are merged.

For example, if you have selected a number of partially transparent objects, which you layered to create an additive colour effect, the selected transparent drawing objects will not be merged. This is because merging the transparent drawing objects will cause them to lose the effect of the layered transparent colours.

How to optimize

- Use the Select tool to select the drawing objects you want to optimize.
- From the top menu, select **Drawing > Optimize > Optimize**.
- From the Camera or Drawing view menu, select **Drawing > Optimize > Optimize**.

Remove Extra Strokes

The Remove Extra Strokes option let you remove the invisible lines in your selection.

How to remove extra strokes

1. In the Tools toolbar, select the Select tool.
2. In the Camera or Drawing view, use the Select tool to select the drawing objects you want to remove invisible lines from.
3. From the top menu, select **Drawing > Optimize > Remove Extra Strokes**.
   - From the Camera or Drawing view menu, select **Drawing > Optimize > Remove Extra Strokes**.

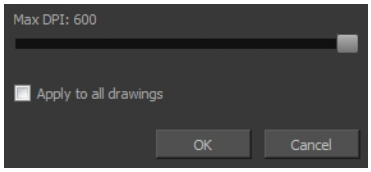
Reduce Drawing Texture Resolution

When you import and vectorize as texture (colour) a high resolution image, the size of your drawing can be heavy. You can reduce the size and resolution of the textures in a drawing.

When you import and vectorize drawings using the grey or colour preset styles, you don't have control on the size of the bitmap texture. You can reduce that bitmap texture.

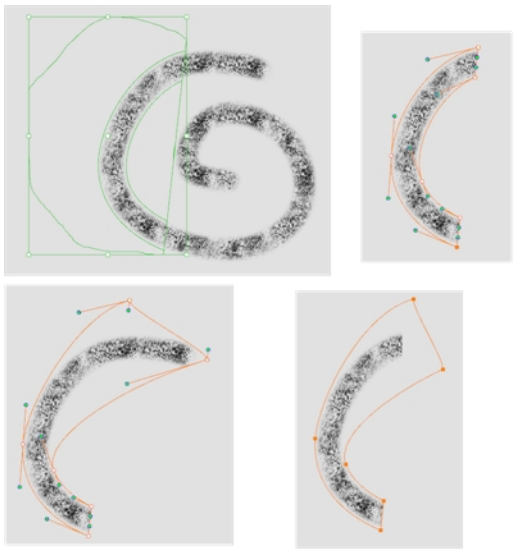
How to reduce the drawing texture resolution

1. In the Tools toolbar, select the Select tool.
2. In the Camera or Drawing view, use the Select tool to select the drawing objects you want to reduce the texture resolution for.
3. From the top menu, select **Drawing > Optimize > Reduce Drawing Texture Resolution.**
   - From the Camera or Drawing view menu, select **Drawing > Optimize > Reduce Drawing Texture Resolution**.



4. In the dialog box, drag the slider toward the left to reduce the texture resolution.
5. Enable the **Apply to All Drawings** option if you want the modification to be applied to all the drawings in your layer.
6. Click **OK**.

Crop Brush Textures



The Crop Brush Textures option is used to crop an unnecessarily large texture bitmap that lies unseen beneath the vector contour of a textured line. This often occurs when you cut and paste textured lines from one drawing into another. If you cut a portion from a textured line and paste it into a different drawing, Harmony pastes the entire unseen texture bitmap from the source drawing into the new one, even if you only took a small portion of the source drawing. Using the Crop Brush Texture command will crop away extraneous texture that does not touch the vector area. If there are many textured lines in your scene, this will greatly reduce the file size.

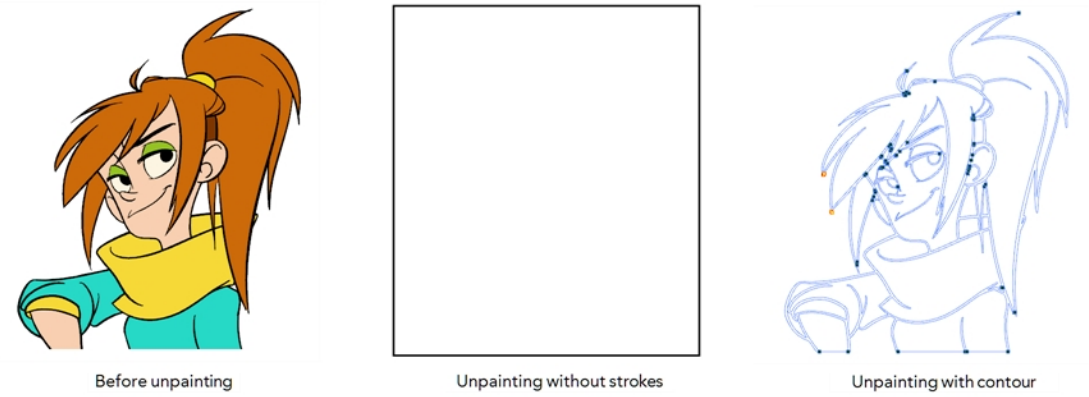
In the example shown above, a textured line is cut from a drawing and pasted into a new drawing. At first, it appears as if only a cropped section of the underlying texture bitmap was cut and pasted as well. However, using the Contour Editor tool to expand the vector envelope of the textured line, it is revealed that more texture bitmap exists beyond the cropped boundary. If you use the Crop Brush Texture command, the bitmap texture is cropped to the boundaries of the textured line's vector contour (as seen in the fourth image where the vector envelope has been pulled out to reveal empty space).

How to crop the brush texture

1. In the Timeline or Xsheet view, select the drawing whose texture you want to crop.

2. From the top menu, select **Drawing > Optimize > Crop Brush Textures**.
3. From the Camera or Drawing menu, select **Drawing > Optimize > Crop Brush Textures**.

Create Contour Stroke



The Create Contour Stroke option is used to add a permanent invisible line around a shape that was drawn directly in Harmony. This allows you to unpaint your lines with the Paint tool but maintain the shape of the lines, should you need to repaint later.

This command is useful when inking and painting and using the Apply to All Drawings in Layer option.

How to create contour strokes

1. In the Tools toolbar, select the Select tool.
2. In the Camera or Drawing view, use the Select tool to select the drawing objects you want to create contour strokes for.
3. From the top menu, select **Drawing > Optimize > Create Contour Strokes.**

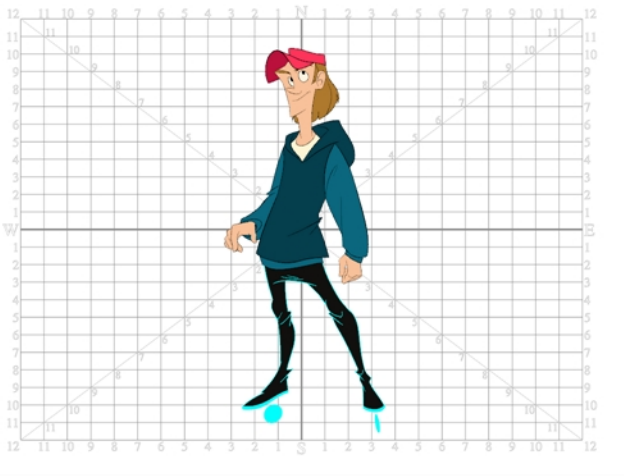
Remove Contour Stroke

The Remove Contour Stroke option is used to remove any permanently invisible lines that were created while scanning and vectorizing drawings or manually adding contour strokes. This is useful if you want to remove the intersection triangles created during vectorization.

How to remove contour strokes

1. In the Tools toolbar, select the Select tool.
2. In the Camera or Drawing view, use the Select tool to select the drawing objects you want to remove contour strokes for.
3. From the top menu, select **Drawing > Optimize > Remove Contour Strokes.**

Grid



Use the Show Grid option to display a grid in the Drawing or Camera views.

Name	Button	Description	Keyboard Shortcut
Show Grid		Displays the grid.	**View > Grid > Show Grid** Press Ctrl + ' (Windows/Linux) or ⌘ + ' (Mac OS X).
Grid Outline Only		Displays the outline of the grid only.	**View > Grid > Grid Outline Only**
Square		Displays a standard square grid.	**View > Grid > Square**
12 Field Grid		Displays a 12-field size grid.	**View > Grid > 12 Field Grid**
16 Field Grid		Displays a 16-field size grid.	**View > Grid > 16 Field Grid**
Underlay		Displays the grid under the drawing elements.	**View > Grid > Underlay**
Overlay		Displays the grid over the drawing elements.	**View > Grid > Overlay**

Group/Ungroup

Use the Group option to group selected drawing objects. This can help in the selection, repositioning, re-scaling and other transformations to be applied to multiple objects of a drawing.

- From the top menu, select **Edit > Group > Group** or **Edit > Group > Ungroup**.
- From the Camera or Drawing view menu, select **Edit > Group > Group** or **Edit > Group > Ungroup**.
- Press Ctrl + G and Ctrl + Shift + G (Windows/Linux) or ⌘ + G and ⌘ + Shift + G (Mac OS X).

Hand

Use the Hand tool to pan through the Drawing or Camera view.

- In the Tools toolbar, select the Hand tool, click in the Drawing or Camera view and drag.
- You can also Hold down the Spacebar, click in the Drawing or Camera view and move your mouse in the direction you want to pan the view.

Rotate View

The Rotate View tool lets you rotate the Drawing or Camera view, the same way as you would do with a real animation disc. This tool can also be used in the Perspective view.

How to use the Rotate View tool

1. Do one of the following:
   - From the top menu, select **Drawing > Tools > Rotate View**.
   - Press Ctrl + Alt (Windows/Linux) or ⌘ + Alt (Mac OS X).
   - In the Tools toolbar, select the Rotate View tool.
   - In the Drawing or Camera view, right-click and select **Drawing Tools > Rotate View**.
2. In the Drawing or Camera view, click and drag to rotate the space.

Drawing Tool References

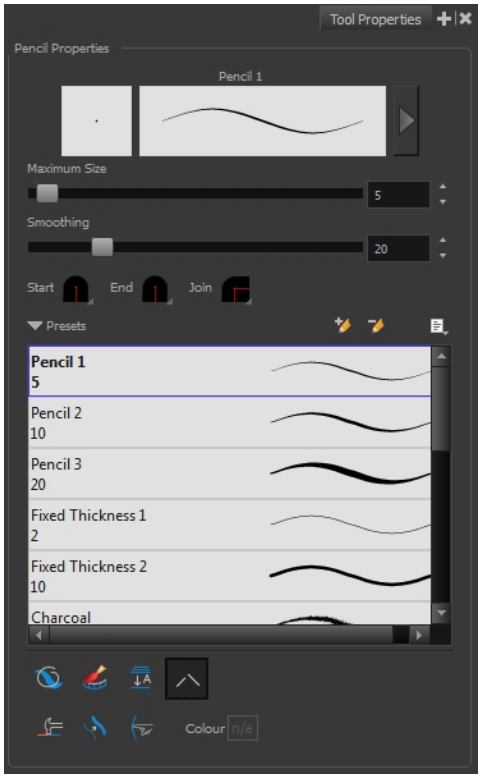
Harmony has a wide variety of drawing tools and each one of them has a series of options and modes available. This section covers these options. For details on how to use these tools, see *Drawing Tasks* on page 35.

- *Pencil Tool Options* on page 116
- *Vector Brush Tool Options* on page 121
- Bitmap Brush Tool Options
- *Select Tool Options* on page 149
- *Eraser Tool Options* on page 158
- Bitmap Eraser Options

- *Contour Editor Options* on page 162
- *Pencil Editor Options* on page 165
- *Shape Tool Options* on page 169
- *Polyline Tool Options* on page 173
- *Stroke Tool Options* on page 175
- *Perspective Tool Options* on page 176
- *Envelope Tool Options* on page 177
- *Cutter Tool Options* on page 180
- *Smooth Editor Tool Options* on page 182
- *Text Tool Options* on page 184
- *Drawing Pivot Tool* on page 188

Pencil Tool Options

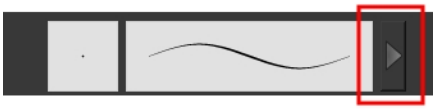
When you select the Pencil tool, its properties and options appears in the Tool Properties view.



Previewing the Stroke

The Preview area lets you see a preview of the stroke that will be produced after you customize the different parameters in the Tool Properties view.

1. Select a brush style from the Presets section. It's a good idea to choose a brush preset that is closest to the style you want to create.
2. Click on the Show Extended Properties arrow to display advanced customization parameters.

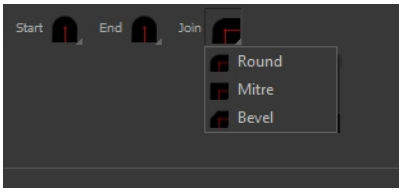


Maximum Size and Smoothing

This is where you set the maximum size of your drawing tool.

- **MaximumSize:** Defines the width of the stroke.
- **Smoothing:** Defines the number of control points added to the centre line. The fewer the control points the smoother (but less faithful) the line.

Adjusting the Pencil Line Style



You can adjust the start, end, and joint style of a selected pencil line.

- **Start**: Lets you select the style of the start tip, which is the first tip you drew. You can choose between Round or Flat style.
- **End**: Lets you select the style of the end tip, which is the last tip you drew. You can choose between Round or Flat style.
- **Join:** Lets you select the joint style. The joints are where the line curves abruptly. You could also define the Join style as the corner style. You can choose between Round, Mitre and Bevel style.

Pencil Presets and Thickness Stencils

Harmony provides a variety of pencil presets and thickness stencils and also lets you create and save your own. It is a good idea to create and save pencils with precise sizes and parameters when you draw and design for efficiency and consistency.

A thickness stencil saves the thickness information across the length of the line. When drawing with a thickness stencil, the pressure sensitivity of the tablet is discarded. A thickness stencil can be used while drawing, or applied afterwards.

You also have the possibility to apply different textures to your lines by either using the default presets or importing your own—*See Pencil Line Texture on page 45.*

You can export the pencil presets that you have created and import those that others have created. This is a good way for you and project collaborators to keep a consistent look for the project—see *Working with Pencil Presets* on page 39

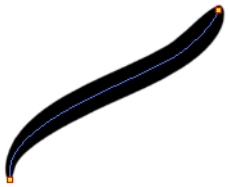
Pencil Line Texture

You can apply a bitmap texture on your pencil line and adjust it as needed—see *Pencil Line Texture* on page 45

Draw Behind

When drawing on vector layers, the Draw Behind mode lets you paint behind existing art. By default, strokes appear over your work until you release the tool.

Create Colour Art Automatically



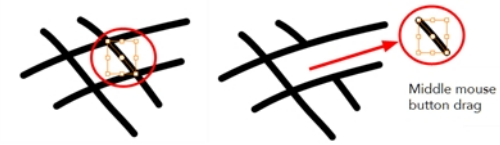
As you draw in the Line Art layer, the Create Colour Art Automatically option automatically creates the corresponding strokes in the Colour Art layer.

Auto-Flatten Mode

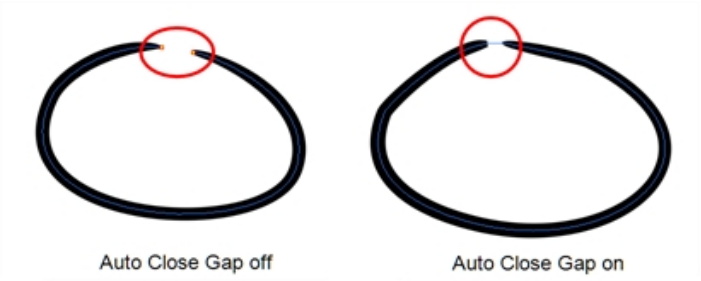
When drawing on vector layers, lines do not usually become one object. The Auto-Flatten mode automatically merges lines created with the existing ones into one single object as you draw.

When drawing on a bitmap layer, you are laying down the bare pixels, so they are always flattened. You can no longer access the individual stroke after you draw it.

NOTE:
Using the Select tool, you can use select and remove a segment of flattened pencil lines. Overlapping pencil lines drawn with the Auto-Flatten mode enabled are essentially cut into segments by the overlap and can therefore be treated as individual lines.



Auto-Close Gap



When using the pencil tool, you can automatically close strokes with an invisible stroke.

It is recommended to keep this option enabled when drawing with the Pencil tool.

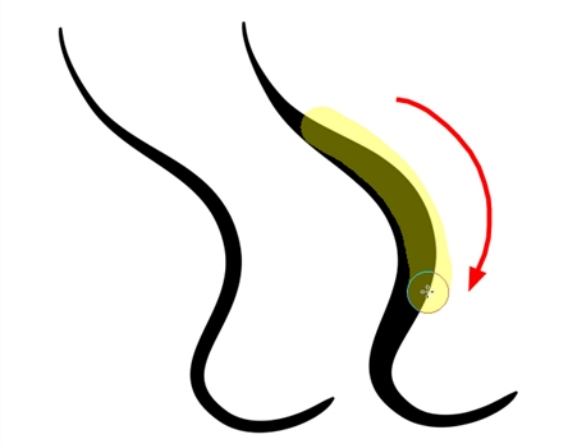
Line Building Mode

The Line Building mode is very useful when drawing long lines and curves in small increments with pencil lines or the line tool. As the pencil lines are central vector lines, it may be difficult to align the line tips perfectly to create a uniform stroke and close all gaps.

In this mode, you can draw lines in small increments and the tips are merge into one single stroke.

NOTE: This mode only works with pencil lines or the line tool.

Auto Adjust Thickness

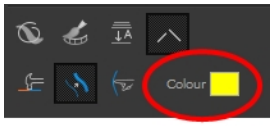


The Auto Adjust Thickness tool is useful when you want to render a portion of a line thicker. When tracing a drawing on paper, you will often go back to a section of a curve to make it thicker to add dynamism to the line. Using the Auto Adjust Thickness tool, you can draw highlight strokes over the section to make thicker. Once you release the pen or mouse, the line becomes thicker following the shape and curve of the original stroke. This way is much faster and smoother than using the Pencil Editor tool. You do not have to add extra points and adjust the position and Bezier handles.

The default overlay colour is light yellow. If this colour is difficult to see because of the background or drawing colour, you can adjust the colour.

How to change the Auto Adjust Thickness Colour

1. In the Tools toolbar, select the Pencil tool.
2. In the Tool Properties view, click the Auto Adjust Thickness button.
3. Click the colour swatch.



The Colour Picker window opens.

4. In the Colour Picker window, select a new colour.

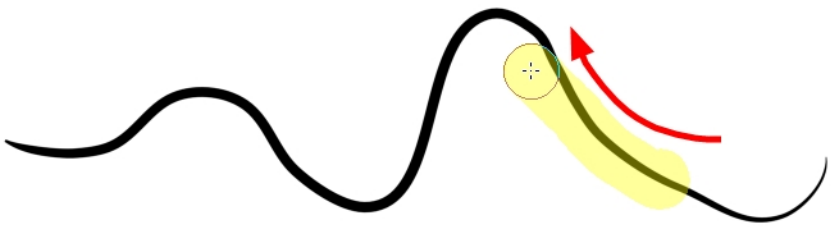
Line Pushing Mode

The Line Pushing Mode option lets you draw highlight strokes over existing pencil lines. You can reshape the curves. Depending how you draw the pushing stroke over your line, the highlighted section will be reshaped in one direction or the other.

The default overlay colour is light yellow. If this colour is difficult to see because of the background or drawing colour, you can adjust the colour.

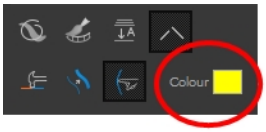
To change the Line Pushing Mode colour

1. In the Tools toolbar, select the Pencil tool.



2. In the Tool Properties view, select the Line Pushing Mode button.

3. Click the colour swatch.

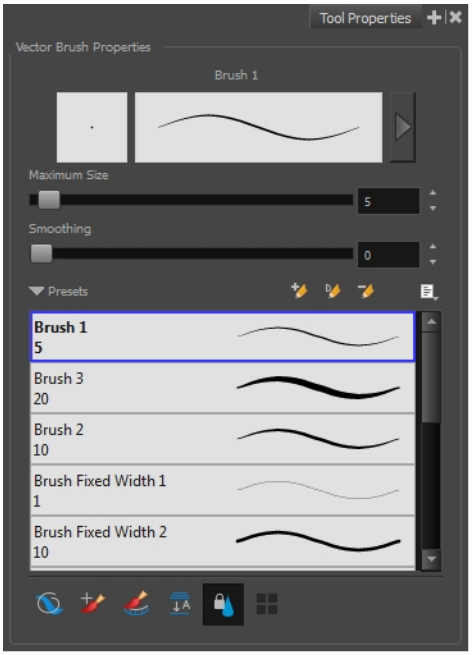


The Colour Picker window opens.

4. In the Colour Picker window, select a new colour.

Vector Brush Tool Options

When you're drawing on a vector layer and select the Brush tool, its properties and options appear in the Tool Properties view.

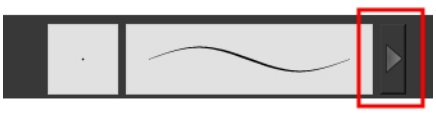


Previewing the Stroke

The Preview area lets you see a preview of the stroke that will be produced after you customize the different parameters in the Tool Properties view.

1. Select a brush style from the Presets section. It's a good idea to choose a brush preset that is closest to the style you want to create.

2. Click on the Show Extended Properties arrow to display advanced customization parameters.



Maximum Size and Smoothing

This is where you set the maximum size of your drawing tool.

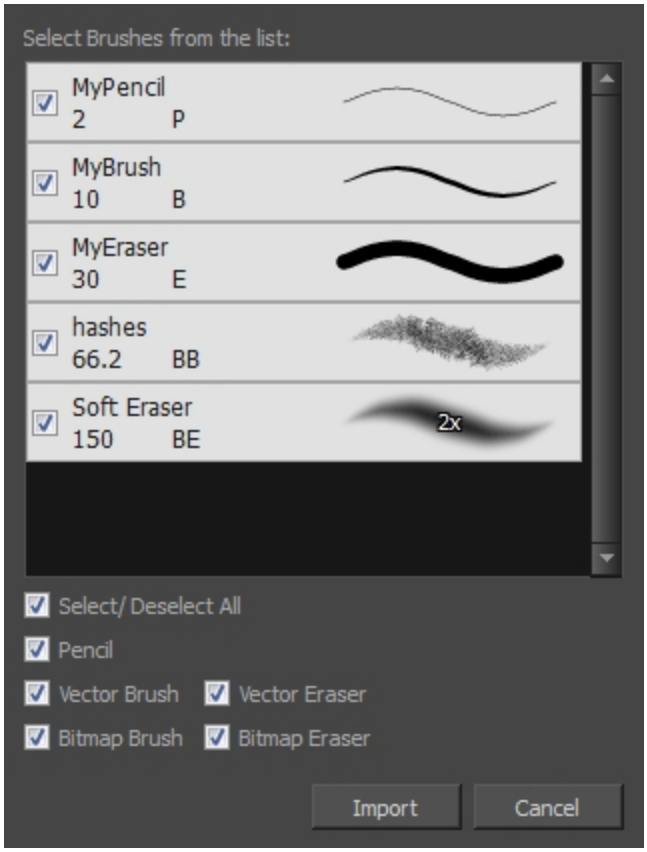
- **MaximumSize:** Defines the width of the stroke.
- **Smoothing:** Defines the number of control points added to the centre line. The fewer the control points the smoother (but less faithful) the line.

Brush Presets

Brush presets are created by saving the properties of the current brush to a new preset, which you can reuse for repeated tasks. You can create as many brush presets as you need—see *Drawing with the Brush Tool* on page 49.

How to import pencils, brushes and erasers

1. From the Brush menu , select **Import Brushes**.
2. In the browser window that appears, navigate to and select the `.xml` file.
3. Click **Open.**
4. In the Import Brushes dialog box, select the brushes brushes and erasers you want to import. You can also import pencils at the same time.

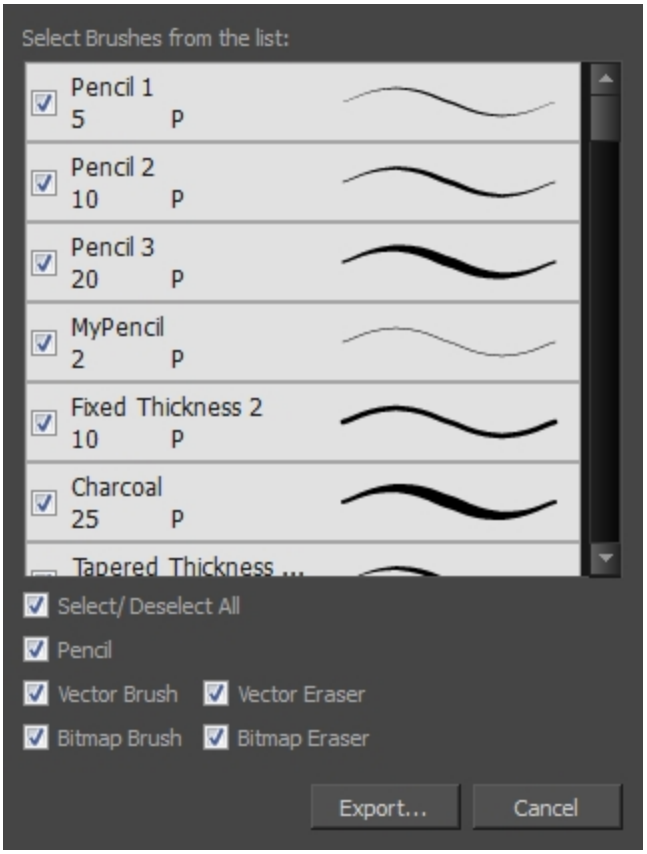


5. Click **Import**.

   The imported brush, eraser and pencil styles will appear in the presets library. You can reuse any of the imported tips to create other brush, eraser and pencil style presets.

How to export pencils, brushes and erasers

1. From the Brush menu, select **Export**.
2. In the Export Brushes dialog box, select the bitmap and vector brushes and erasers to export, as well as any pencils.



3. Click **Export**.
4. In the Export Brushes window that appears, browse to the location where you want to save the .xml file and give it a name.
5. Click **Save**.

How to change the Presets Library thumbnail display

1. From the Brush menu, select one of the following:

Parameter	Description
Small Thumbnail	Reduces the size of the thumbnails in order to view more at the same time. Dis-

	plays an image of the tool's tip and its maximum size.
Large Thumbnail	Increases the size of the thumbnails in order to see the images more clearly. Displays an image of the tool's tip, its maximum size and its name.
Stroke View	Displays the tool's name, maximum size and stroke preview.

Draw Behind

When the Draw Behind mode is enabled, the lines you draw will appear behind the art that already exists.

Repaint Brush Mode

The Repaint Brush is used to repaint zones that have already been painted, it will not affect empty zones or pencil lines. It also automatically flattens each of its brush lines so it does not add new brush lines on top of existing ones. You can use this mode to paint tones or highlights onto your character.

Create Colour Art Automatically

As you draw in the Line Art layer, the Create Colour Art Automatically option automatically creates the corresponding strokes in the Colour Art layer.

Auto-Flatten Mode

When enabled, the Auto-Flatten

mode automatically flattens the new lines created with the existing artwork as you draw in the Drawing or Camera view. Brush strokes will flatten with brush strokes and pencil lines will flatten with pencil lines.

Respect Protected Colour

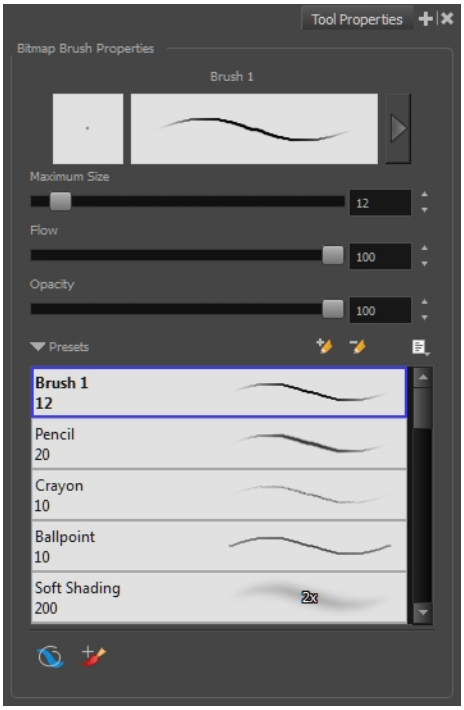
The Respect Protected Colour option prevent the colours you marked as protected, in the Colour view, to be repainted using the Repaint Brush mode or any of the painting tools.

Use Stored Colour Gradient

The Use Stored Colour Gradient option makes your tool use the previously stored gradient position. This way, every new brush line or colour fill will use the stored gradient position.

Bitmap Brush Tool Options

When you're drawing on a bitmap layer and select the Brush tool, its properties and options appear in the Tool Properties view.

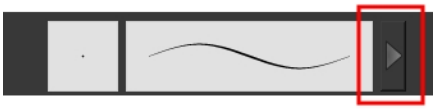


Previewing the Stroke

The Preview area lets you see a preview of the stroke that will be produced after you customize the different parameters in the Tool Properties view.

1. Select a brush style from the Presets section. It's a good idea to choose a brush preset that is closest to the style you want to create.

2. Click on the Show Extended Properties arrow to display advanced customization parameters.



Maximum Size

This is where you set the maximum size of your drawing tool. This parameter defines the width of the stroke.

Flow

The Flow parameter lets you set the range for the rate at which paint flows from your brush. The analogy works better with a pen. The greater the flow, the more ink comes out, hence the more consistent the colour and texture of the line. If the flow is light, then the colour and texture of the line may look spotty. This feature works with the pressure sensitivity of a pen tablet.

Opacity

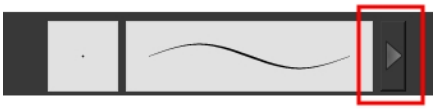
The Opacity parameter are where you set the opacity for a brush mark. This works with the pressure sensitivity of a pen tablet.

Brush Presets

Brush presets are created by saving the properties of the current brush to a new preset, which you can reuse for repeated tasks. You can create as many brush presets as you need.

How to create a brush preset

1. Make sure your current brush has the settings you want in the preset you will create.
2. In the Tool Properties view, do one of the following:
   - Click the arrow button to display the Brush Properties window and click the New Brush button in the upper-right corner.

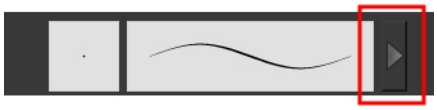
     

   - Click the New Brush button.
   - From the Brush menu, select **New Brush Preset**.
3. In the New Preset window, type a name for your new brush preset.

   The new brush is added to the end of the list of brush presets.

How to update a brush preset

1. Select the brush preset to update and click the arrow button to display the Brush Properties window.



2. Change the brush settings and click the Update Brush Preset button in the upper-right corner.

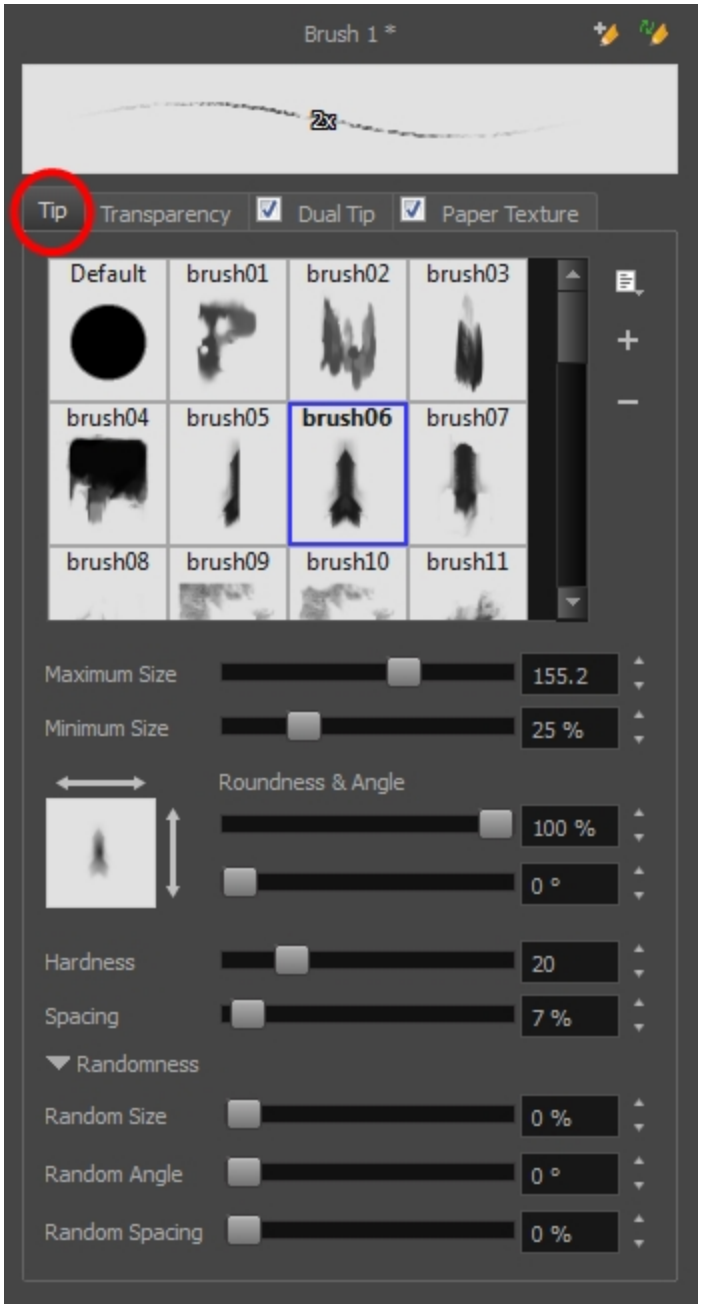
Draw Behind

When the Draw Behind mode is enabled, the lines you draw will appear behind the art that already exists.

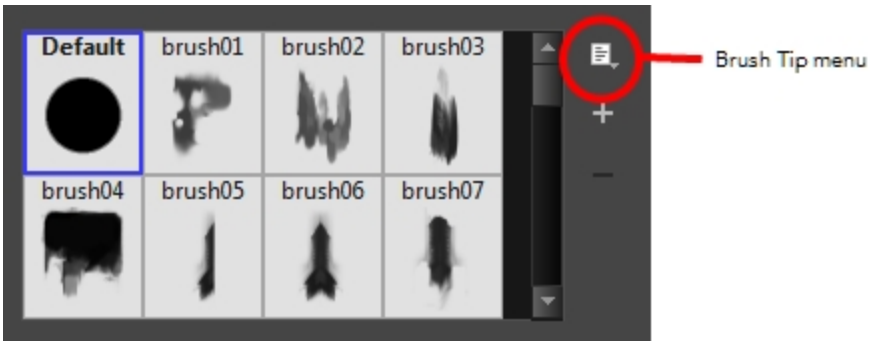
Repaint Brush Mode

The Repaint Brush is used to repaint zones that have already been painted, it will not affect empty zones or pencil lines. You can use this mode to paint tones or highlights onto your character.

Tip Tab


Brush 1 *
2x
Tip
Transparency
Dual Tip
Paper Texture
Default
brush01
brush02
brush03
brush04
brush05
brush06
brush07
brush08
brush09
brush10
brush11
Maximum Size
155.2
Minimum Size
25 %
Roundness & Angle
100 %
0 °
Hardness
20
Spacing
7 %
Randomness
Random Size
0 %
Random Angle
0 °
Random Spacing
0 %

Brush Tips Library



This is where you select the shape of the brush tip. By default it is round. Note that some tips are designed to have semitransparent areas, even when the maximum brush opacity is set to 100%.

To create a custom brush tip, you must prepare the file ahead of time, either in Harmony or in a third-party software, such as Adobe Photoshop. Colour is not supported and transparency is not supported in the traditional sense. Black appears as 100% opaque, white appears as 100% transparent and all the shades of grey in between appear as varying degrees of semitransparency. A range of file formats are supported—.jpeg, .png, .tif, .psd, .tga to name a few. Alpha channels are disregarded on import. It is recommended that your file be between 100 x 100 pixels and 400 x 400 pixels.

You can also import brush tips that you exported from Harmony, so you can share them with colleagues.

How to add a brush tip

1. Do one of the following:
   - From the Brush Tip menu, select **Add**.
   - Click the Add button.
2. In the browser window that appears, navigate to where you saved your file.
3. Click **Open** to import the file into the Brush Tip Library.

   By default, an imported brush tip is given the name of the image file.

How to rename a brush tip

1. In the Brush Tip Library, select a brush tip.
2. From the Brush Tip menu, select **Rename**.
3. In the Rename dialog box that appears, type in the new name of the brush tip.
4. Click **OK**.

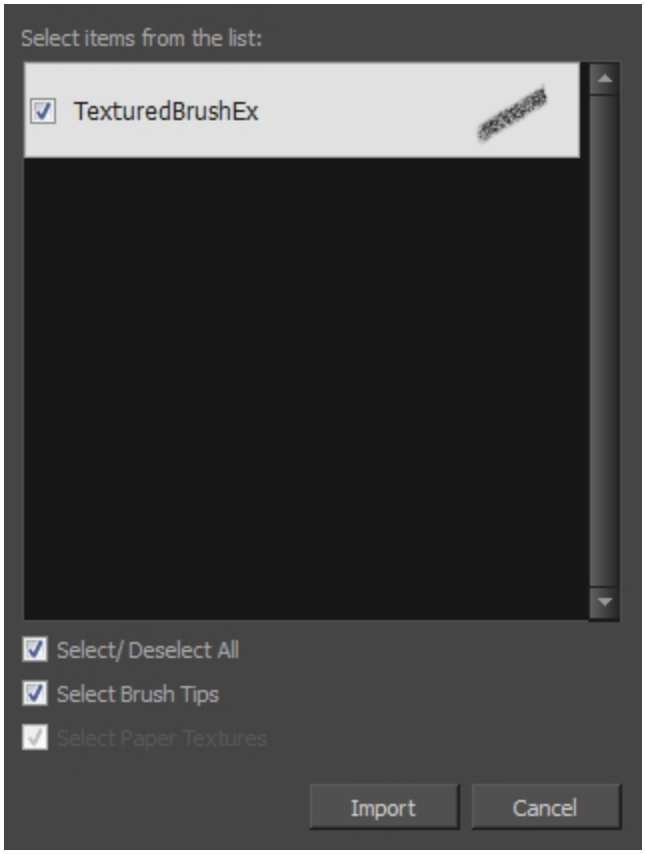
How to delete a brush tip

1. In the Brush Tip Library, select a brush tip.
2. Do one of the following:
   - In the Brush Tip menu, select **Delete**.
   - Click the Delete button.

   The linked brush tip file does not get deleted and can therefore be reimported.

How to import brush tips

1. In the Brush Tip menu, select **Import**.
2. In the browser window that appears, navigate to and select the `.xml` file.
3. Click **Open.**
4. In the Import Textures dialog box, select the brush tips to import. You can also import paper textures at the same time.

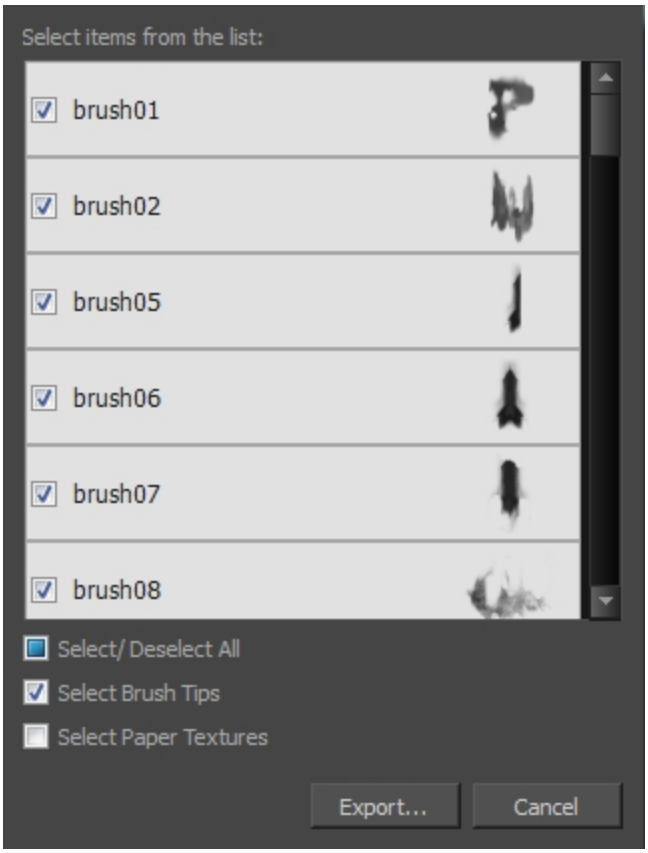


5. Click **Import**.

The imported brush tips appear in the Brush Tips Library. You can reuse any of the imported tips to create other brush style presets.

How to export brush tips

1. In the Brush Tip menu, select **Export**.
2. In the Export Tips and Textures window, select or deselect any of the brush tips to create the list to export. You can also export paper textures at the same time.



3. Click **Export**.
4. In the Export Textures window that appears, browse to a location where you want save the **`.xml`** file and give it a name.
5. Click **Save**.

How to change the Brush Tips thumbnail display

1. From Brush Tip menu, select one of the following options:

Parameter	Description

Small Thumbnail	Reduces the size of the thumbnails in order to view more at the same time.
Large Thumbnail	Increases the size of the thumbnails in order to see the images more clearly.
List View	Allows you to see the name, as well as the thumbnail.

Minimum and Maximum Size

The minimum and maximum sizes of your drawing tool produce the thick and thin effect on your stroke. This works with the pressure sensitivity of a pen tablet.

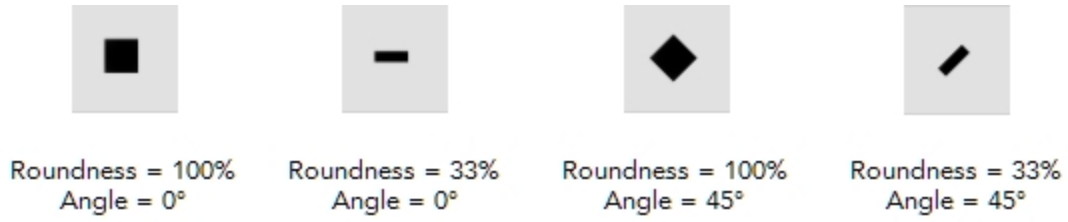
- **Maximum Size:** Defines the maximum width of the stroke.
- **Minimum Size:** Defines the minimum width of the stroke in relation to and as a percentage of the maximum size.

NOTE: Setting the Minimum Size value to 100% eliminates the possibility of creating width variation on your stroke. In other words, you would be forcing a uniform line width using the Maximum Size value.

Roundness and Angle

The Roundness and Angle parameters allow you to change the shape and orientation of the brush tip.

- **Roundness:** Squashes the height of the brush tip from its centre point. 100% roundness = the native height of the brush tip. A smaller percentage will make the brush tip look flatter and more narrow. The squashing is NOT relative to the angle value—if the brush tip is rotated, the squashing function still uses the brush tip's original orientation.
- **Angle:** Rotates the brush tip counter-clockwise. 0° = the brush tip's native orientation.



Hardness and Spacing

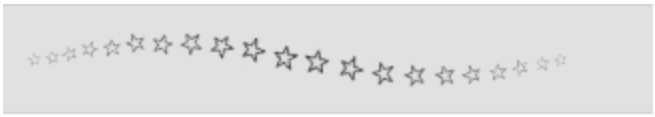
The Hardness and Spacing parameters allow you to change the softness and spacing of the marks made by the brush tip. You can preview the hardness and spacing at the top of the Bitmap Brush Properties window, stroke preview area.

- **Hardness:** The hardness value corresponds to the softness of the brush tip's edges. The lower the value, the softer the tip edge. The higher the value, the sharper the tip edge. Be aware that some brush tips are not 100% opaque, so they will always appear somewhat soft, even at 100% hardness.

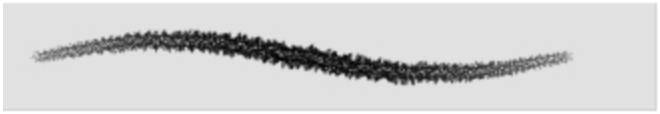
100% Hardness 10% Hardness

- **Spacing:** Defines the amount of space between each stamp of the brush. A value of 100% sets the stamp marks edge to edge, if there is no white space around the shape. The larger the value, the greater the space between marks. A really large value can make the brush stroke appear as a string of individual marks. Conversely, a small spacing value will give the appearance of a fluid brush stroke.

  Spacing is only evident when making a continuous stroke.



Spacing = 100%



Spacing = 10%

Randomness

The Randomness parameters let you create a varied bitmap brush stroke. Refining these options can give your stroke a lovely, non-mechanical look.

- **Random Size:** You can create variation between the thick and thin of your brush stroke just by setting the Maximum and Minimum Size values. If you add randomness to the mix, pressure sensitivity from your drawing tablet will still be applied. Light pressure will create random values around the minimum, while heavy pressure will create random values closer to the maximum. The larger the percentage, the larger the range of random variation.

NOTE: Setting the Minimum Size to 100% eliminates the possibility of creating width variation on your stroke, whether you are applying randomness or not. Therefore, you would be forcing a uniform line width using the Maximum Size value.

Random Size = 0%
Spacing = 10%

Random Size = 50%
Spacing = 10%

- **Random Angle:** Sets the range for random rotation around the set Angle value. For example, if the Angle is set to 45° and the Random Angle set to 10°, the software will choose values between 40°–50° (plus or minus 5 degrees, equaling a total of 10 degrees).

Random Angle = 0%

Random Angle = 60%

- **Random Spacing**: Sets the range for random spacing around the set Spacing value. For example, if the Spacing is set to 50% and the Random Spacing is set to 10%, then Harmony will choose values between 45%–55% (plus or minus 5 percent, equaling a total of 10 percent).

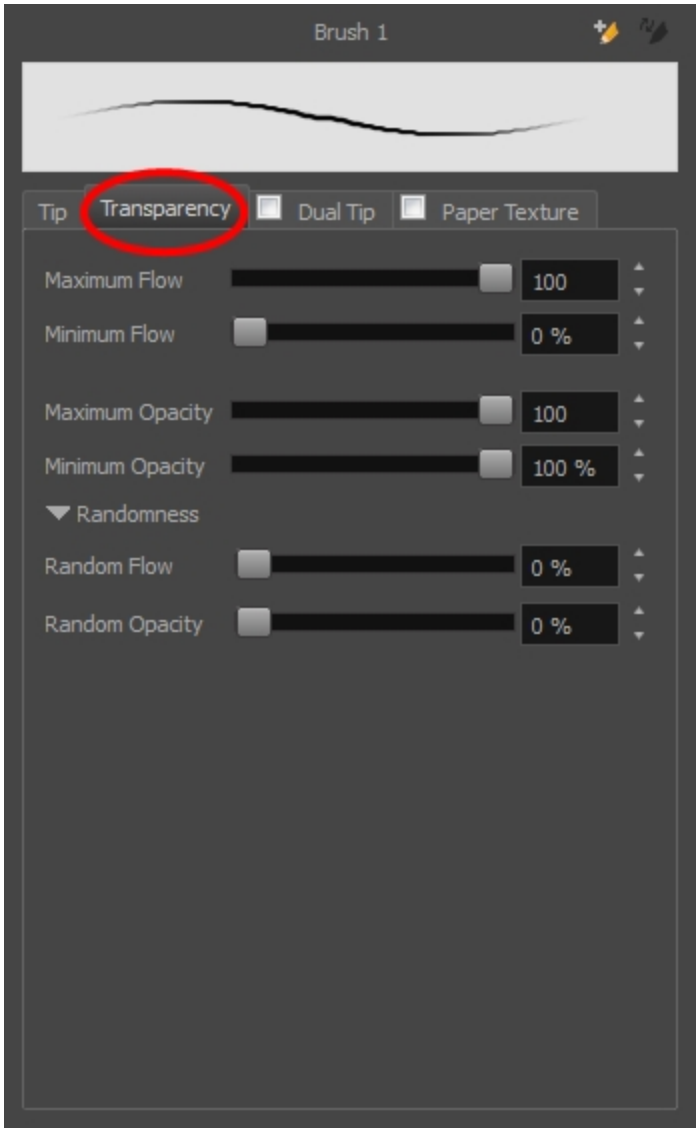
Spacing = 10%
Random Spacing = 0%

Spacing = 10%
Random Spacing = 80%

Spacing = 100%
Random Spacing = 0%

Spacing = 100%
Random Spacing = 80%

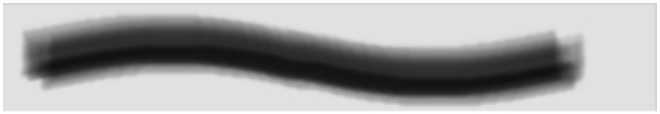
Transparency Tab



Maximum and Minimum Flow

The Maximum and Minimum Flow parameters let you set the range for the rate at which paint flows from your brush. The analogy works better with a pen. The greater the flow, the more ink comes out, hence the more consistent the colour and texture of the line. If the flow is light, then the colour and texture of the line may look spotty. This feature works with the pressure sensitivity of a pen tablet.

- **Maximum Flow:** Sets the maximum rate at which colour and texture are applied as you create a fluid stroke.
- **Minimum Flow:** Sets the minimum rate at which colour and texture are applied as you create a fluid stroke. It is defined as a percentage of the Maximum Flow value. If the Minimum Flow value is set to 100%, then tablet pressure sensitivity will no longer be applicable. The flow will be set to the constant rate of the Maximum Flow value.



Maximum Flow = 8
Opacity = 100%

Maximum Flow = 100
Opacity = 100%

Maximum Opacity and Minimum Opacity

The Maximum and Minimum Opacity parameters are where you set the opacity range for a brush mark. This works with the pressure sensitivity of a pen tablet.

- **Maximum Opacity:** Sets the transparency limit of the brush mark when the pressure is heavy.
- **Minimum Opacity:** Sets the transparency limit of the brush mark when the pressure is very light. It is defined as a percentage of the Maximum Opacity value. If the Minimum Opacity value is set to 100%, then tablet pressure sensitivity will no longer be applicable. The opacity will be set to the constant rate of the Maximum Opacity value.

Maximum Flow = 8
Opacity = 25%

Maximum Flow = 100
Opacity = 25%

Randomness

Th Randomness parameter lets you set the range for the randomness of the flow and opacity. This works with the pressure sensitivity of a pen tablet.

- **Random Flow:** You can create variation in the flow of your brush stroke just by setting the Maximum and Minimum Flow values. If you add randomness to the mix, pressure sensitivity from your drawing tablet will still be applied. Light pressure will create random values around the minimum, while heavy pressure will create random values closer to the maximum. The larger the percentage, the larger the range of random variation.

NOTE: Setting the Minimum Flow value to 100% eliminates the possibility of creating flow variation on your stroke, whether you are applying randomness or not. That is, you would be forcing a uniform flow using the Maximum Flow value.

Maximum Flow = 100
Random Flow = 0%

Maximum Flow = 100
Random Flow = 100%

Maximum Flow = 50
Random Flow = 100%

- **Random Opacity:** You can create variation in the opacity of your brush stroke just by setting the Maximum and Minimum Opacity values. If you add randomness to the mix, pressure sensitivity from your drawing tablet will still be applied. Light pressure will create random values around the minimum, while heavy pressure will create random values closer to the maximum. The larger the percentage, the larger the range of random variation.

NOTE: Setting the Minimum Opacity value to 100% eliminates the possibility of creating opacity variation on your stroke, whether you are applying randomness or not. That is, you would be forcing a uniform opacity using the Maximum Opacity value.

Maximum Opacity = 100
Minimum Opacity = 10%
Random Opacity = 0%

Maximum Opacity = 100
Minimum Opacity = 10%
Random Opacity = 10%

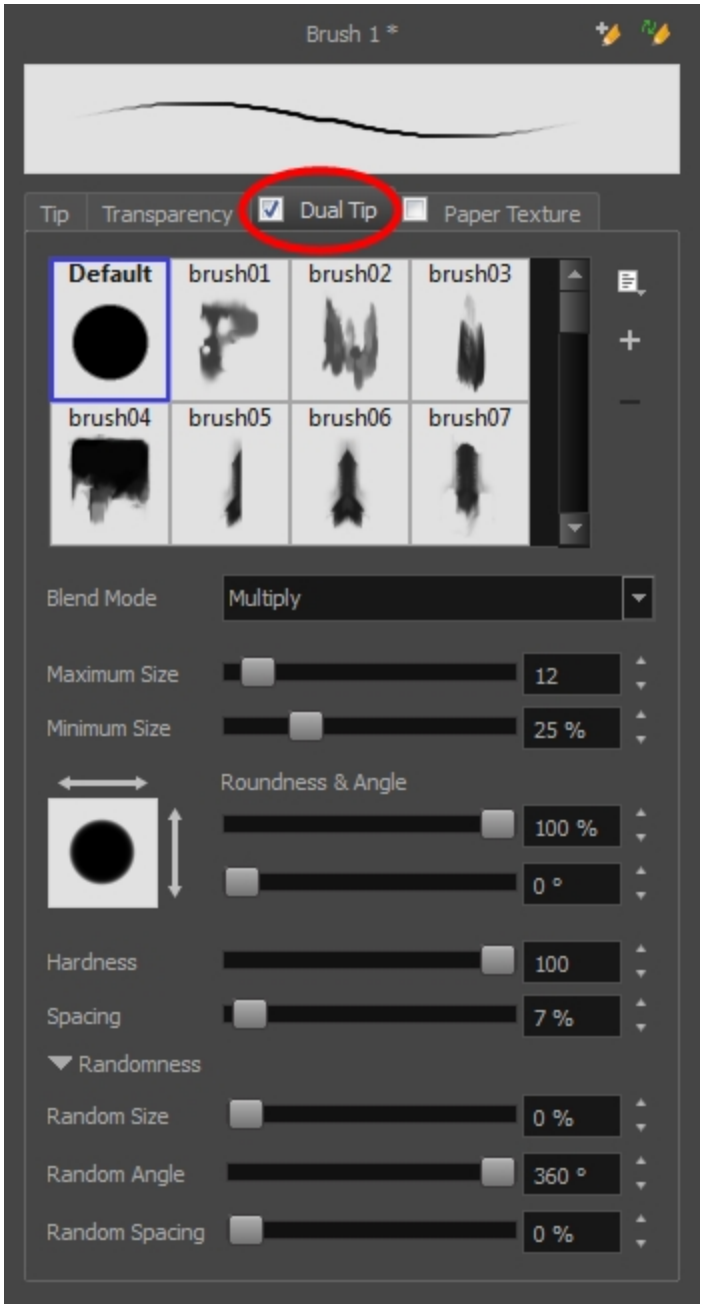
Maximum Opacity = 100
Minimum Opacity = 10%
Random Opacity = 50%

Dual Tip Tab

The Dual Tip tab lets you set the parameters for creating a dual tip brush. The primary bitmap brush tip and the dual tip always work together. You can set the parameters for the primary tip in the Tip tab and those for the dual tip in the Dual Tip tab. The Blend mode you select determines how the tips are combined.

You must select the Dual Tip option to access the tab's parameters.

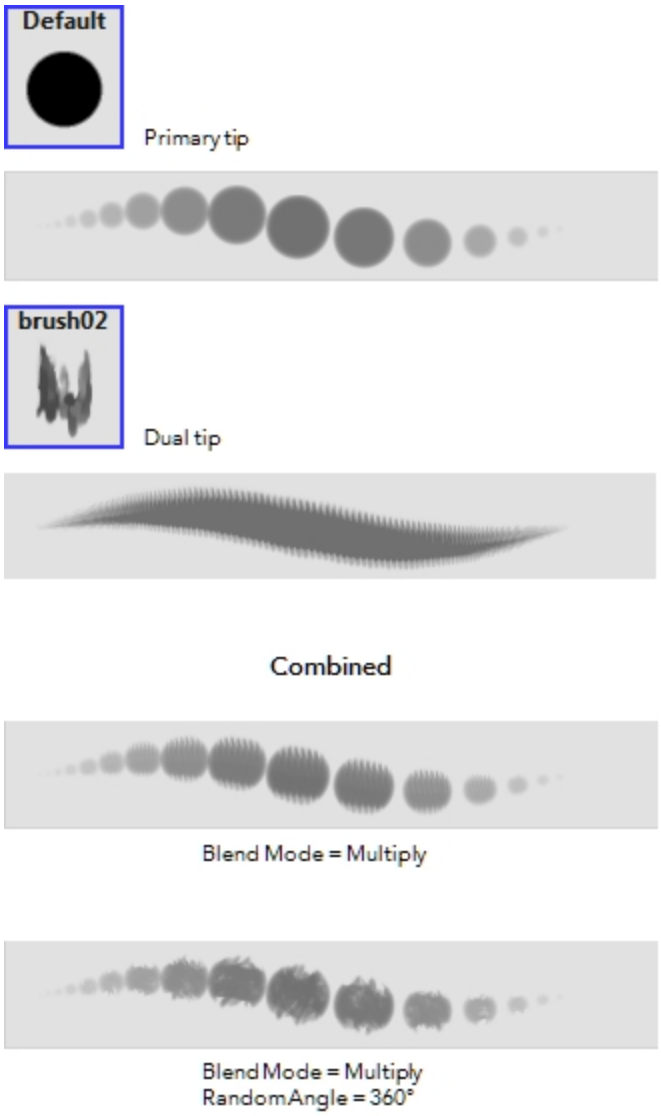
By default, the Blend Mode is set to Multiply and the Random Angle to 360°.



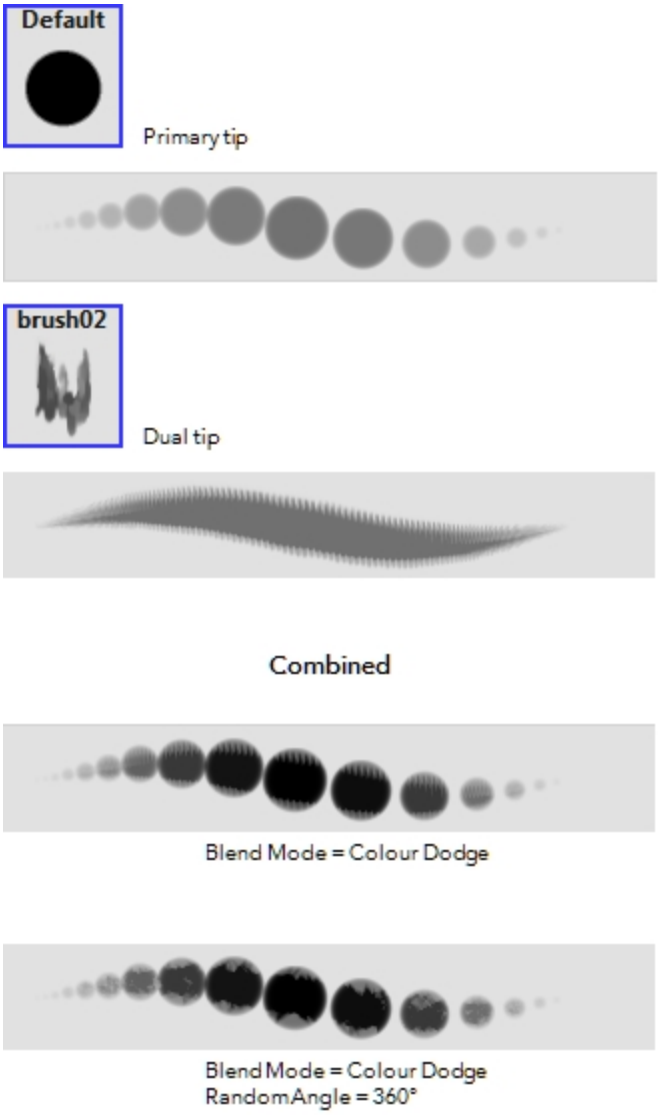
Blend Mode

The Blend modes let you decide how the primary tip and the dual tip are combined.

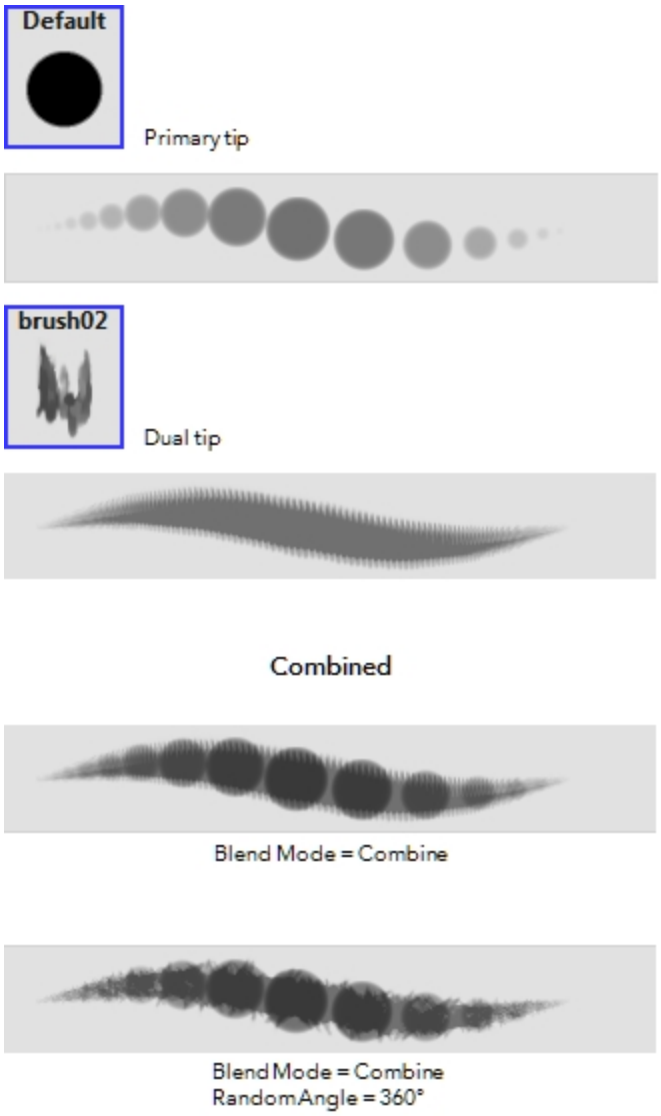
- **Multiply:** This is the default blend mode. When the two brush tips are combined in this mode, they essentially cut each other out in overlapping areas, where one or both tips have an area of 100% transparency. The less opaque the brush tips are, the lighter their combination.



- **Colour Dodge:** In this mode, the primary tip cuts out the shape of the dual tip. Where the tip shapes overlap, within the boundaries of the primary shape, the colour and opacity appear darker.



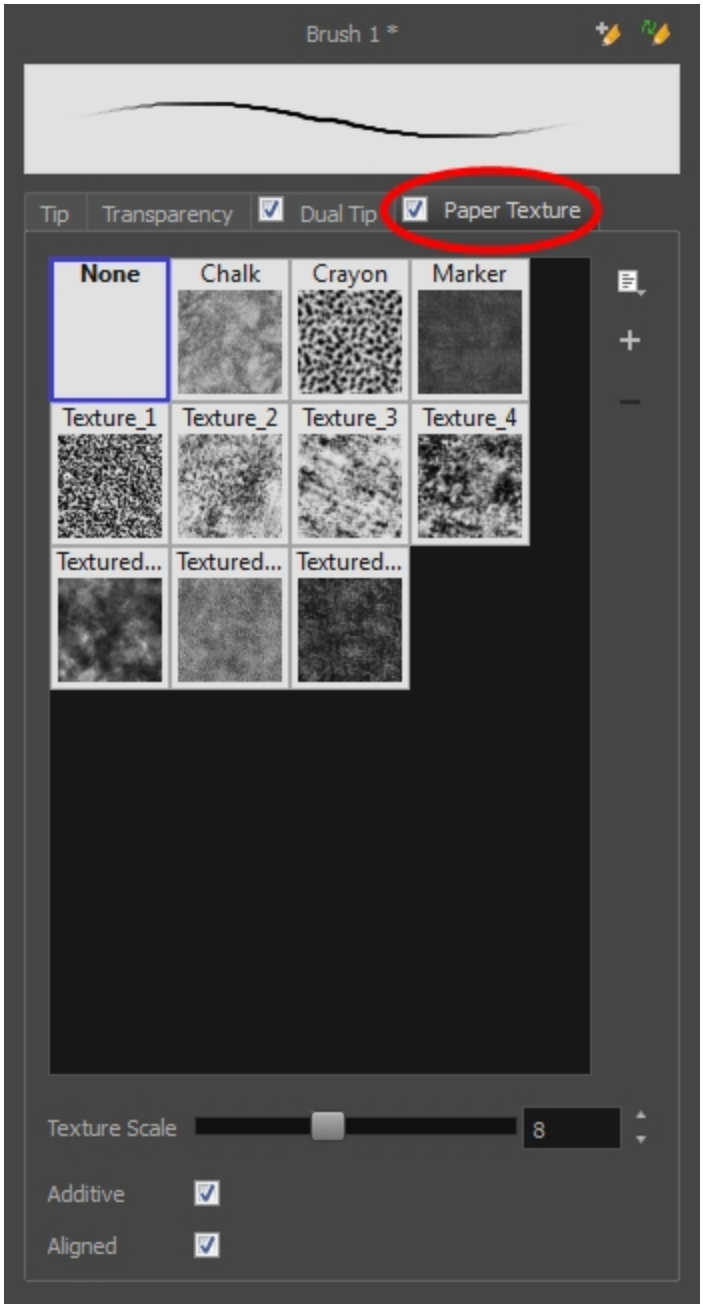
- **Combine**: This mode treats the two tips as two different and separate brushes that have the same colour and follow the same path.



Paper Texture tab

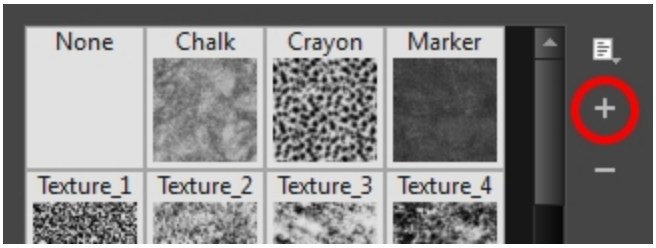
The Paper Texture tab lets you view and select a paperlike texture for your brush. You can also import paper textures that were previously exported.

You must select this option to access the tab's parameters.



How to add a paper texture

1. Do one of the following:
   - From the Paper Texture menu , select **Add**.
   - Click the Add Paper Texture button.

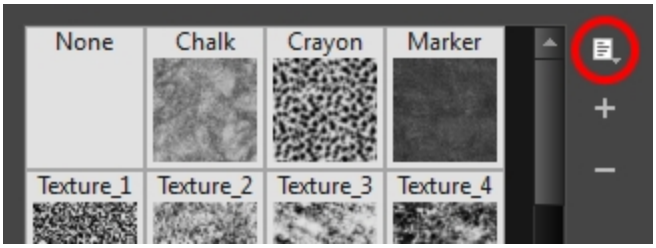


2. In the browser window that appears, navigate to where you saved your texture file.
3. Click **Open** to import the file into the Paper Texture library.

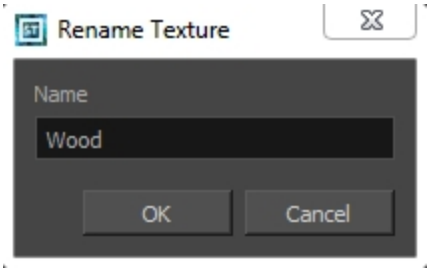
   By default, an imported texture is given the name of the image file.

How to rename a paper texture

1. In the Paper Texture library, select a texture.
2. From the Paper Texture menu, select **Rename**.



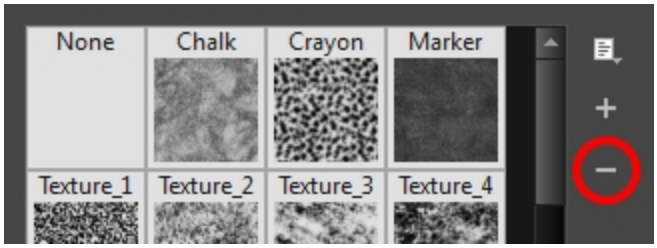
3. In the Rename Texture dialog box that appears, type in the new name for the texture.



4. Click **OK**.

How to delete a paper texture

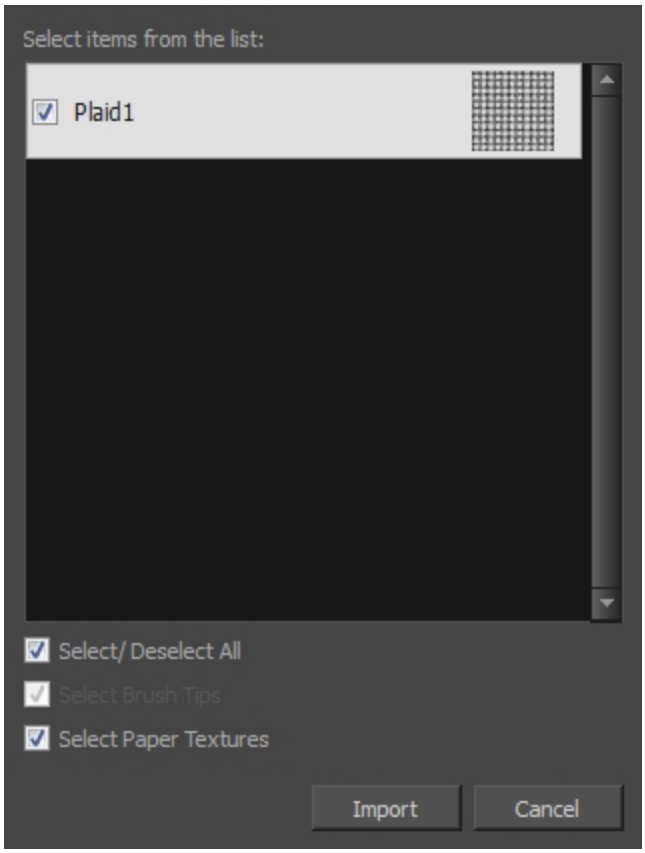
1. In the Paper Texture library, select a texture.
2. Do one of the following:
   - In the Paper Texture menu, select **Delete**.
   - Click the Delete button.



NOTE: You can delete any texture in the texture library as long as there is no brush preset using it.

How to import paper textures

1. In the Paper Texture menu, select **Import**.
2. In the browser window that appears, navigate to and select the `.xml` file.
3. Click **Open.**
4. In the Import Textures dialog box, select the paper textures that you wish to import. You can import any available brush tips at the same time too.

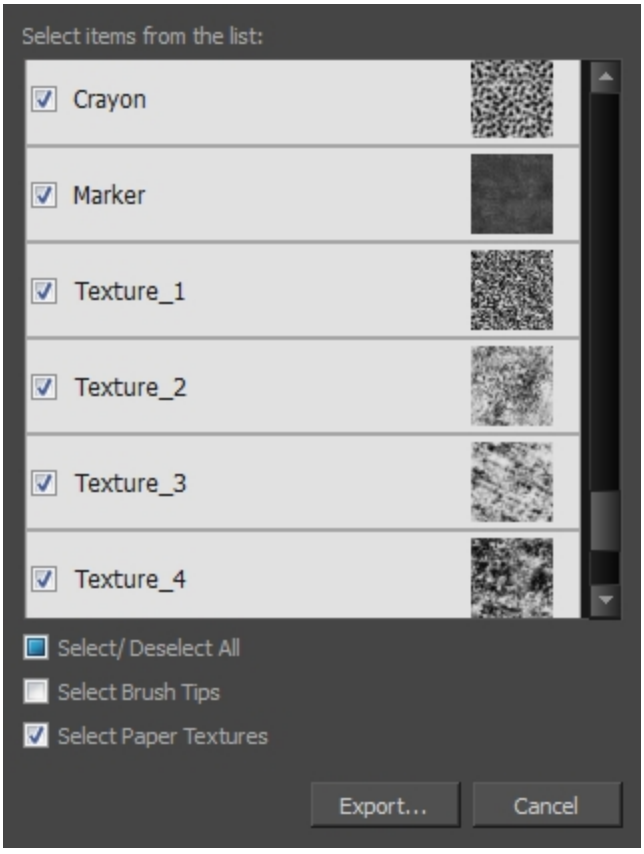


5. Click **Import**.

   The imported paper textures will appear in the Paper Texture Library. You can reuse any of the imported paper textures to create other brush style presets.

How to export paper textures

1. In the Paper Texture menu, select **Export**.
2. In the Export Tips and Textures window, scroll down the textures list to the paper textures and select or deselect any textures to create the list that you wish to export. You can export brush tips at the same time too.



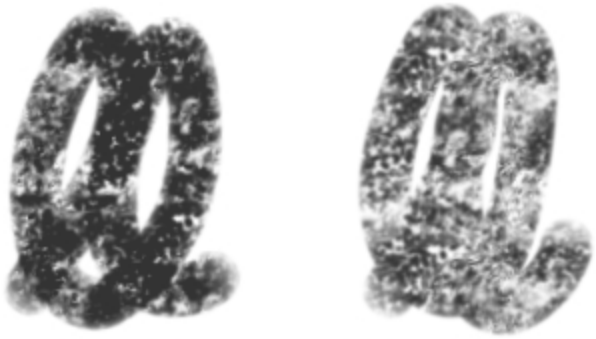
3. Click on the **Export** button.
4. In the Export Textures window that appears, browse to a location where you would like to save the .xml file and give it a name.
5. Click **Save**.

How to change the Paper Texture thumbnail display

1. From the Paper Texture menu, select one of the following:

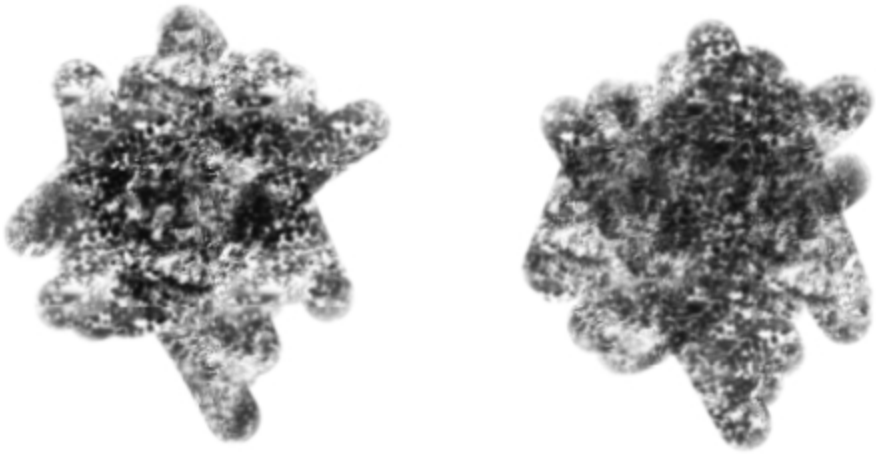
Parameter	Description
Small Thumbnail	Reduces the size of the thumbnails in order to view more at the same time.
Large Thumbnail	Increases the size of the thumbnails in order to see the images more clearly.
List View	Allows you to see the name, as well as the thumbnail.

- **Texture Scale**: Increase or decreases the size of the paper texture.
- **Additive**: This option layers the texture on top of itself as you scribble overlapping lines in one continuous stroke. If this option is turned off, areas of overlapping lines from a single, continuous stroke will appear the same, in terms of darkness and texture, as non-overlapping areas.



Additive enabled Additive disabled

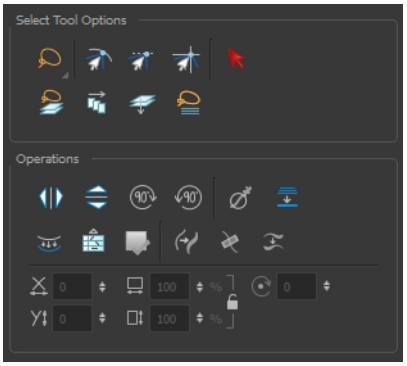
- **Aligned**: This option defines the way separate, overlapping strokes behave. If this option is enabled, the paper texture's position does not change with each sweep of the brush. If this option is disabled, each sweep of the brush produces a different texture position. The texture orientation always stays the same.



Aligned enabled Aligned disabled

Select Tool Options

When you use the Select tool, its properties and options appear in the Tool Properties view.



Lasso and Marquee

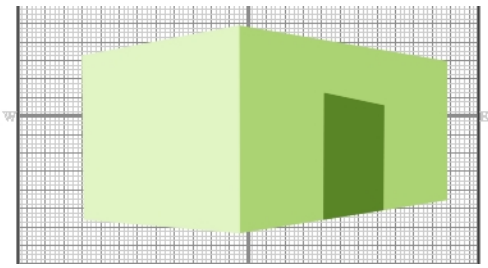
Choose between the Lasso and Marquee options to change the selection style of the tool.

- Click and hold Alt to temporarily switch from the current mode to the other.

Snap Options

You can enable different snapping modes to help you when repositioning drawings using the Select tool.

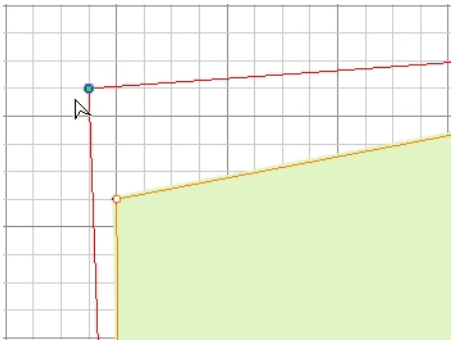
- **Snap to Contour:** Snaps your selection or point to any line you position it on. As soon as you move it close enough to another line, your point or selection will snap to it.
- **Snap and Align:** Snaps the selected anchor point to any existing line while displaying temporary rulers as a guide that you can also snap your anchor point to.
- **Snap to Grid:** Snaps your selection following the currently enabled grid.



How to snap to the grid

1. Do one of the following:
   - Select **View > Grid > Show Grid** to display the grid in the Camera or Drawing view or press Ctrl + ' (Windows/Linux) or ⌘ + ' (Mac OS X).
   - Select **View > Grid > Square Grid**, **12 Field Grid** or **16 Field Grid** for your current needs.

2. In the Tools toolbar, select the Contour Editor tool or press Alt + Q.
3. In the Tool Properties view, click the Snap to Grid button.
4. In the Camera or Drawing view, click on the anchor point you want to snap to the grid, drag it to the desired position and release.



Selecting by Colour

The Select by Colour mode lets you select all the zones and lines in your drawing painted with the same colour swatch.

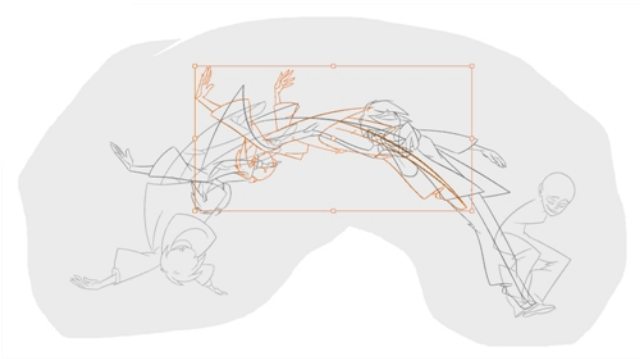
NOTE: Only the zones painted with the **SAME** colour swatch will be selected. If another zone is coloured with the exact same RGB value (same colour), but not painted with the same colour swatch, it will not be selected.

How to select areas by colour

1. In the Tools toolbar, select the **Select** tool or press Alt + S.
2. In the Tool Properties view, click the Select by Colour button.
3. In the Camera or Drawing view, click on any zone or line in your drawing.

   All zones and lines of the same colour are selected.
4. Click the Select tool again to return to the regular Select mode.

Permanent Selection



The Permanent Selection option lets you maintain a selection over multiple drawings. Once this option is enabled, the selection zone made using the Select tool will remain as you navigate through drawings of the same layer and drawings from other drawing layers. This option can be used to simultaneously delete artwork inside or outside of the selection on several drawings when combined with the Apply to Multiple Drawings option.

Apply to All Drawings in Layer

The Apply to All Drawings in Layer option is used to perform an action on all the drawings contained in a layer. For example, you could enable the option to paint a section on all the drawings simultaneously. The Apply Tool to All Drawings option must be activated before performing the action and will stay enabled only for the next action.

Apply to Line and Colour Art

The Apply to Line and Colour Art option uses the concept of Line Art and Colour Art layers. Use this option to apply an action such as selecting, resizing or erasing a drawing on both Line Art and Colour Art layers, as well as the Overlay and Underlay layers.

Single Mode

By default, when you draw a selection box in the Camera view, the Select tool will select only the drawing strokes of the current drawing. If you prefer the Select tool to select all the strokes on all layers, you can disable the Works on Single Drawing option in the Tool Properties view or disable the Select tool Works on Single Drawing preference. To do this, go to the top menu, select **Edit > Preferences > Camera** (Windows/Linux) or **Stage > Preferences > Camera** (Mac OS X) and uncheck the Select tool Works on Single Drawing option.

Flip Horizontal and Vertical

The Flip Horizontal and Flip Vertical operations flip the current selection horizontally or vertically.

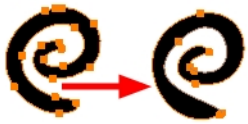
- From the top menu, select **Drawing > Flip Horizontal** and **Flip Vertical**.

Rotate 90 Degrees CW and CCW

The Rotate 90 Degrees CW and Rotate 90 Degrees CCW operations rotate the current selection 90 degrees clockwise or counter-clockwise.

- From the top menu, select **Drawing > Transform > Rotate 90 Degrees CW** and **Rotate 90 Degrees CCW**.
- Press Ctrl + 7 and Ctrl + 9 (Windows/Linux) or ⌘ + 7 and ⌘ + 9 (Mac OS X).

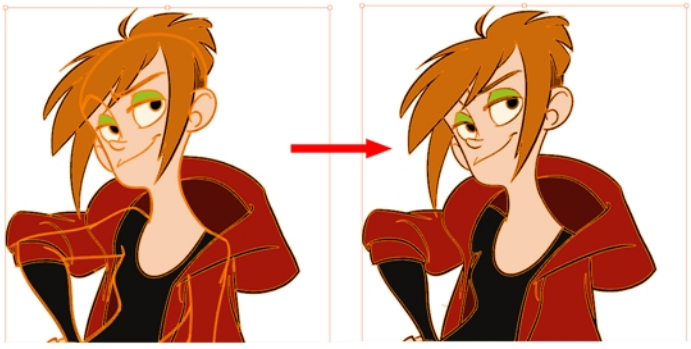
Smooth



The Smooth operation lets you smooth out selected drawing strokes and remove extra points.

- From the top menu, select **Drawing> Optimize > Smooth** or press Alt + Shift + S.

Flatten



The Flatten operation is used to merge drawing objects and brush strokes into a single layer. If you draw new lines to fix a drawing or line with many brush strokes, it can be useful to flatten them all into a single shape. By

default, lines are drawn one on top of each other. If you intend to repaint the lines or modify their shape, it will be easier if they are flattened.

- From the top menu, select **Drawing > Optimize > Flatten** or pres Alt + Shift + F.

Create Colour Art from Line Art

Lets you use the outline you traced on one of the four embedded layers (line art, colour art, overlay, underlay) and create invisible strokes to paint your drawings on separate layers. This provides more inking and painting flexibility.

You can also configure this option to create the invisible strokes on any of the four embedded layers.

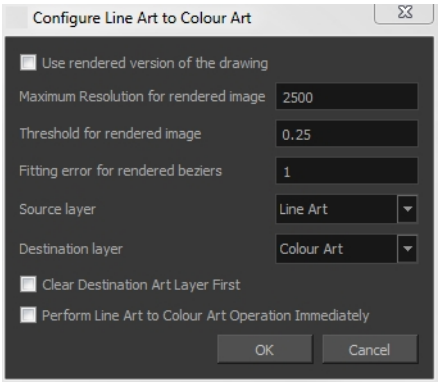
How to create Colour Art zones out of the Line Art content

1. In the Tools toolbar, select the Select tool or press Alt + S.
2. In the Camera or Drawing view, select the artwork to transfer to the Colour Art.
3. In the Tool Properties view or the Drawing View toolbar, click the Create Colour Art from Line Art button or press *.

How to configure the Create Colour Art from Line Art option

1. In the Tools toolbar, select the Select tool or press Alt + S.
2. In the Tool Properties view or the Drawing View toolbar, Shift + click the Create Colour Art from Line Art button.

   The Configure Line Art to Colour Art dialog box opens.



Parameter	Description
Use rendered version of the drawing	Renders the drawing and vectorize it to calculate the position of the centreline that will produce the colour art stroke.
Maximum Resolution for rendered image	The size of the rendered image.

Threshold for rendered image	The value of grey processed to create the rendered vectorized arts.
Fitting error for rendered Beziers	This value represents how precise the fitting of the colour art zone in relation to the line art will be.
Source layer	Lets you select the layer (Line Art, Colour Art, Underlay or **Overlay**) you want the colour art to be created from.
Destination layer	Lets you select the layer (Line Art, Colour Art, Underlay or **Overlay**) you want the colour art to be created on.
Clear Destination Art Layer First	Deletes the content before the colour art is added. This is useful when you already have artwork on the destination layer.
Perform Line Art to Colour Art Operation Immediately	Performs the **Create Colour Art from Line Art** command when you click OK.

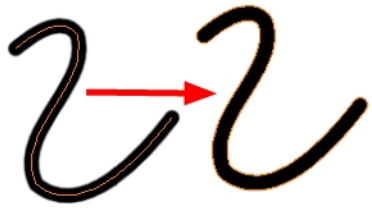
Distribute to Layers

The Distribute to Layers option is used to separate the selected art strokes and send them to new drawing layers. In the Camera view, once you have drawn your artwork, you can select the strokes you want to distribute using the Select tool and click on the Distribute to Layers button; you can also select **Drawing > Distribute to Layers**. It will automatically take every stroke from the drawing selection made in the Camera view and separate them into a different layer for each. If an artwork is composed of several strokes, you must group them using **Edit > Group > Group** before using the Distribute to Layers option. This option cannot be done from the Drawing view.

Store Colour Gradient

Use the Store Colour Gradient operation to record the selected gradient's position. This reuses the stored position of the gradient when drawing new brush lines or painting colour zones. Enable the Use Stored Colour Gradient option in the Paint or Brush Tool Properties view to do this.

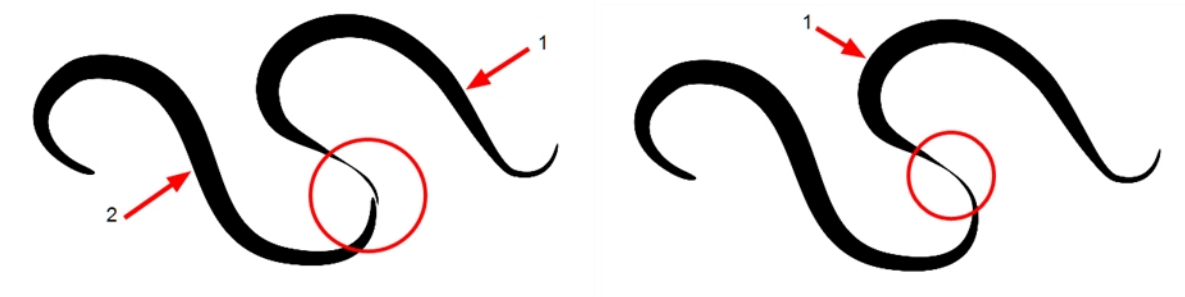
Pencil to Brush



The Pencil to Brush operation converts the selected centre line pencil strokes into contour strokes brush lines.

From the top menu, select **Drawing > Convert > Pencil Lines to Brush** or press &.

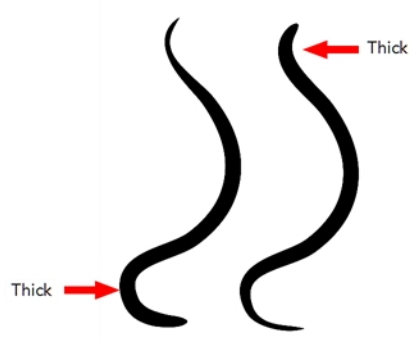
Merge Pencil Lines



Pencil lines are central vector lines and it might be difficult to match pencil line's tips properly to align them and make it look like it is one single line. With the Select tool, you can select several pencil lines and merge them as one single object using the Merge Pencil Lines option. The ends of your lines are adjusted to form one single line.

NOTE: Points must be close enough to be merged. If there is a large gap between the lines, they will not be merged.

Reverse Pencil Thickness



The Reverse Pencil Thickness option inverts the thick and thin section on a selected pencil line. This option will take the thickest size on the line and apply it to the thinnest, and it will apply the thinnest to the thickest.

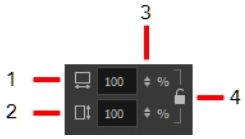
Offset X and Y

Use the Offset X and Offset Y operation fields to enter specific values and precisely reposition the selected shape.

1. **X**: Type a value in this field to reposition your selection along the X-axis.
2. **Y**: Type a value in this field to reposition your selection along the Y-axis.
3. **Up/Down arrows:** Use the up and down arrows to modify the value in the X or Y value field.

Width and Height

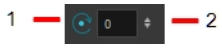
Use the Width and Height operation fields to enter specific values to resize the selected shape with precision.



1. **Width**: Type a value in this field to resize the width of your selection.
2. **Height**: Type a value in this field to resize the height of your selection.
3. **Up/Down arrows:** Use the up and down arrows to modify the value in the Width or Height fields.
4. **Lock icon**: Click the lock icon to lock or unlock the ratio between the Width and Height values.

Angle

The Angle operation lets you to enter specific values and accurately rotate the selected shape.

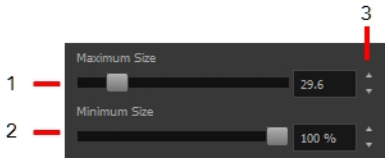


1. **Angle**: Type a degree value in this field to rotate your selection.
2. **Up/Down arrows:** Use the up and down arrows to modify the value in the Angle value field.

When you select a pencil line with the Select tool, additional options appear in the Tool Properties view.

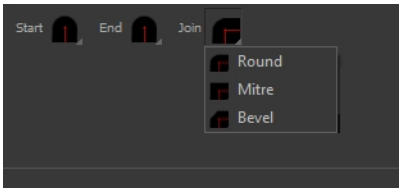
Adjusting the Pencil Line Thickness

Use the Adjusting the Pencil Line Thickness operation field to resize the selected centreline strokes. This operation is not permitted on contour line shapes, such as brush strokes or shape fills.



1. **Minimum Size**: Type a value in this field to set the minimum thickness of the selected centreline stroke.
2. **Maximum Size**: Type a value in this field to set the maximum thickness of the selected centreline stroke.
3. **Up/Down arrows:** Use the up and down arrows to modify the value contained in the Thickness value field.

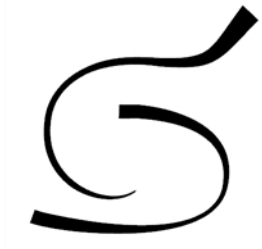
Adjusting the Pencil Line Style



You can adjust the start, end, and joint style of a selected pencil line.

- **Start**: Lets you select the style of the start tip, which is the first tip you drew. You can choose between Round or Flat style.
- **End**: Lets you select the style of the end tip, which is the last tip you drew. You can choose between Round or Flat style.
- **Join:** Lets you select the joint style. The joints are where the line curves abruptly. You could also define the Join style as the corner style. You can choose between Round, Mitre and Bevel style.

Pencil Stencils



Toon Boom Harmony gives you the flexibility to change the style and thickness of your pencil lines even after they are drawn. You can apply preset pencil stencils or create your own—see *Working with Pencil Presets* on page 39.

Adding Texture to a Pencil Line

Pencil lines support texture. Once a pencil line is drawn, you can apply a preset texture or load your own. Textures are independent from pencil stencils—see *Pencil Line Texture* on page 45.

Adjusting the Text Selection

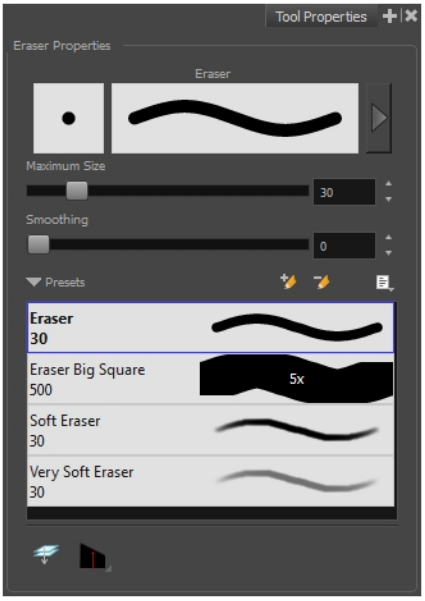
When you select text with the Select tool, the tool properties will display the Text tool options on the bottom of the view. You can also press Alt + 9 to display only the Text properties in the Tool Properties view—see *Text Tool Options* on page 184.

Eraser Tool Options

When you're drawing on vector layer and you select the Eraser tool, its properties and options appear in the Tool Properties view.

For information on erasing textured lines—see *See How to erase textured lines on page 63.*

For information on Bitmap Eraser tool options—see *See Bitmap Eraser Options on page 162.*



Previewing the Stroke

The Preview area lets you see a preview of the stroke that will be produced after you customize the different parameters in the Tool Properties view. Click on the Show Extended Properties arrow to display advanced customization parameters,

Maximum Size and Smoothing

This is where you set the maximum size of your drawing tool.

- **MaximumSize:** Defines the width of the stroke.
- **Smoothing:** Defines the number of control points added to the centre line. The fewer the control points the smoother (but less faithful) the line.

Eraser Presets

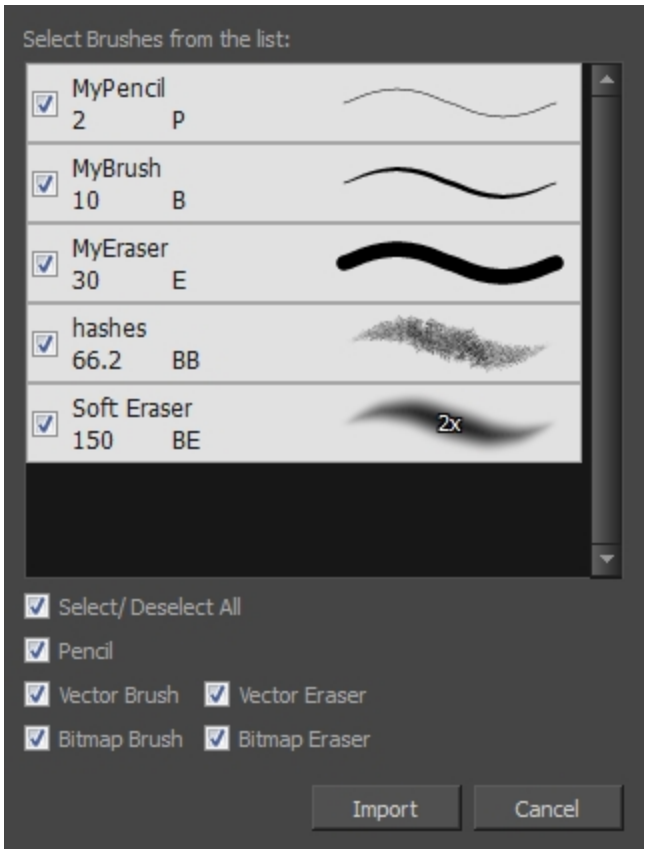
It is a good idea to create and save erasers with precise sizes and parameters in order to save time when drawing and designing. Toon Boom Harmony provides you with a variety of default eraser styles and allows you to create and save your own.

Eraser presets are created by saving the properties of the current eraser as a preset, in order to reuse it again and again. You can create a new preset from the Eraser Tool Properties view, but it is better to do it from the Eraser Properties—see *Erasing Parts of a Drawing* on page 87.

The Eraser tool uses its own preset list, separated from the Brush tool.

How to import pencils, brushes and erasers

1. From the Brush menu , select **Import Brushes**.
2. In the browser window that appears, navigate to and select the `.xml` file.
3. Click **Open.**
4. In the Import Brushes dialog box, select the brushes brushes and erasers you want to import. You can also import pencils at the same time.

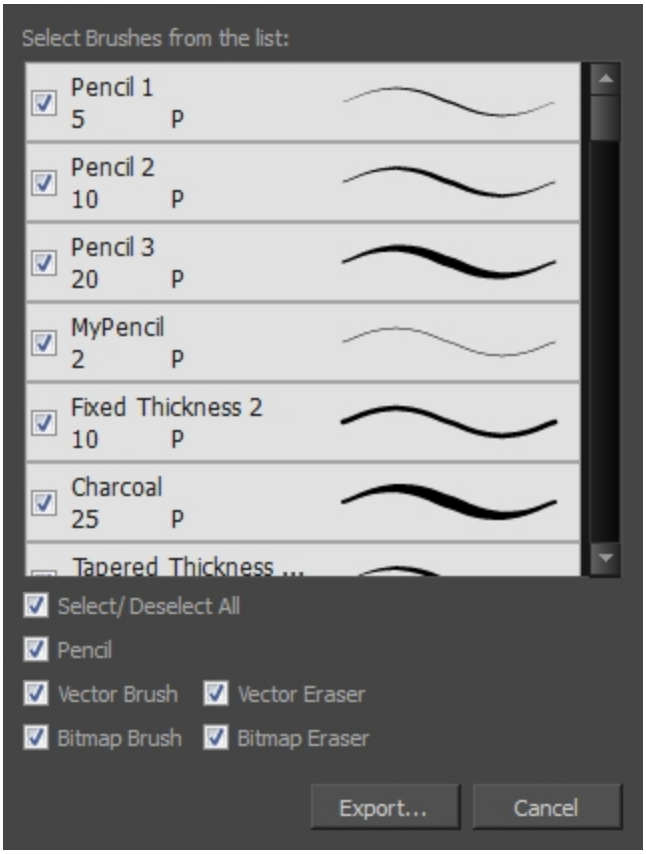


5. Click **Import**.

   The imported brush, eraser and pencil styles will appear in the presets library. You can reuse any of the imported tips to create other brush, eraser and pencil style presets.

How to export pencils, brushes and erasers

1. From the Brush menu, select **Export**.
2. In the Export Brushes dialog box, select the bitmap and vector brushes and erasers to export, as well as any pencils.



3. Click **Export**.
4. In the Export Brushes window that appears, browse to the location where you want to save the .xml file and give it a name.
5. Click **Save**.

How to change the Presets Library thumbnail display

1. From the Brush menu, select one of the following:

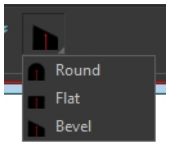
Parameter	Description
Small Thumbnail	Reduces the size of the thumbnails in order to view more at the same time. Displays an image of the tool's tip and its maximum size.
Large Thumbnail	Increases the size of the thumbnails in order to see the images more clearly. Displays an image of the tool's tip, its maximum size and its name.
Stroke View	Displays the tool's name, maximum size and stroke preview.

Apply to Line and Colour Art

The Apply to Line and Colour Art option uses the concept of Line Art and Colour Art layers. Use this option

to apply an action such as selecting, resizing or erasing a drawing on both Line Art and Colour Art layers, as well as the Overlay and Underlay layers.

Tip Style



If you erase the end of a pencil line or erase a pencil line through the centre, new line tips or line ends are created. Use the Tip Style option to customize the shape of the new line tips that are created.

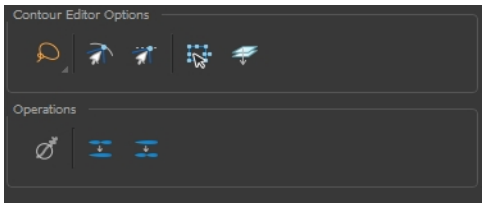
Bitmap Eraser Options

The bitmap eraser options are identical to those of the bitmap brush with one obvious exception. Instead of customizing the parameters of a mark or stroke, you will be customizing the parameters for the absence of a mark or stroke.

It is a good idea to create an eraser preset with the identical properties of a brush preset and to use them as a pair. That way, when part of a stroke is erased, its soft textured look is not interrupted with a hard edged eraser mark.

Contour Editor Options

When you select the Contour Editor tool, its properties and options appear in the Tool Properties view.



Lasso and Marquee

Choose between the Lasso and Marquee options to change the selection style of the tool.

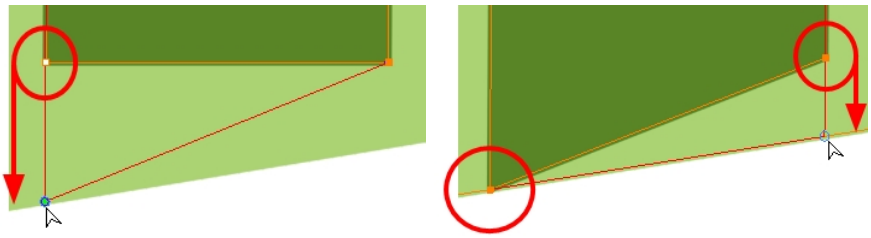
- Click and hold Alt to temporarily switch from the current mode to the other.

Snap to Contour

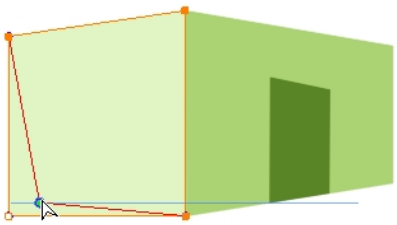
The Snap to Contour option will snap the selected anchor point to any line you position it on.

How to snap two shapes together

1. In the Tools toolbar, select the Contour Editor tool or press Alt + Q.
2. In the Tool Properties view, click the Snap to Contour button.
3. In the Camera or Drawing view, click on an anchor point you want to snap to the other shape, drag it on top of the contour line area and release it.



Snap and Align

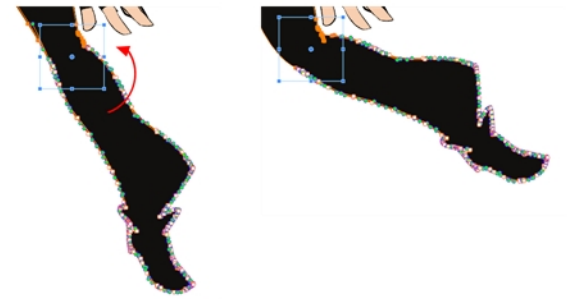


The Snap and Align option lets you snap the selected anchor point to any existing line while displaying temporary rulers as a guide that you can also snap your anchor point to.

How to snap and align

1. In the Tools toolbar, select the Contour Editor tool or press Alt + Q.
2. In the Tool Properties view, click the Snap and Align button.
3. In the Camera or Drawing view, click on an anchor point you want to snap, drag it until a ruler is displayed, position it on the ruler or on the contour line and release.

Show Contour Editor Controls

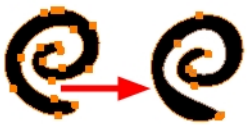


Use the Show Contour Editor Controls option to show the contour editor controls. You can use these controls to scale, reposition and rotate the selected anchor points.

Apply to Line and Colour Art

The Apply to Line and Colour Art option uses the concept of Line Art and Colour Art layers. Use this option to apply an action such as selecting, resizing or erasing a drawing on both Line Art and Colour Art layers, as well as the Overlay and Underlay layers.

Smooth Selection

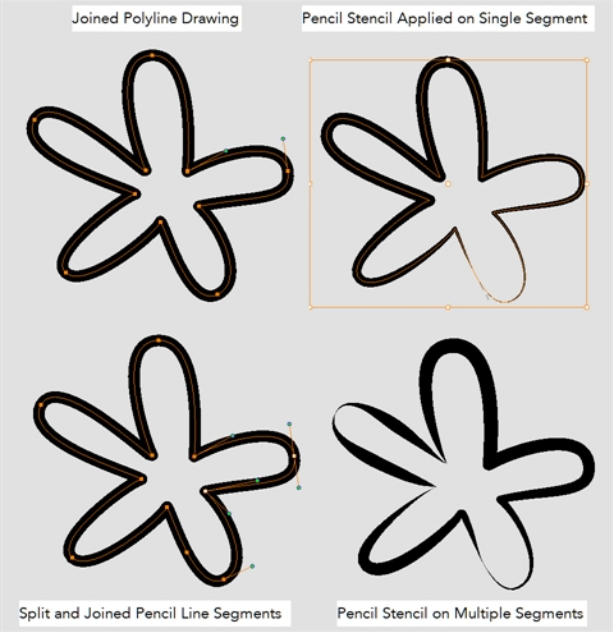


The Smooth operation lets you smooth out selected drawing strokes and remove extra points.

- From the top menu, select **Drawing> Optimize > Smooth** or press Alt + Shift + S.

Split Pencil Line and Join Pencil Lines

When drawing with the Polyline tool, your drawing has an even line thickness. You can use the Pencil Editor to adjust the thickness point by point, but if you want to adjust it quicker, you can use the Split Pencil Line and Point Pencil Lines options to create segments and apply a pencil stencil to your drawing. Note that if you did not join the pencil lines on your polyline stroke, the segments between the points will act as separated segments.

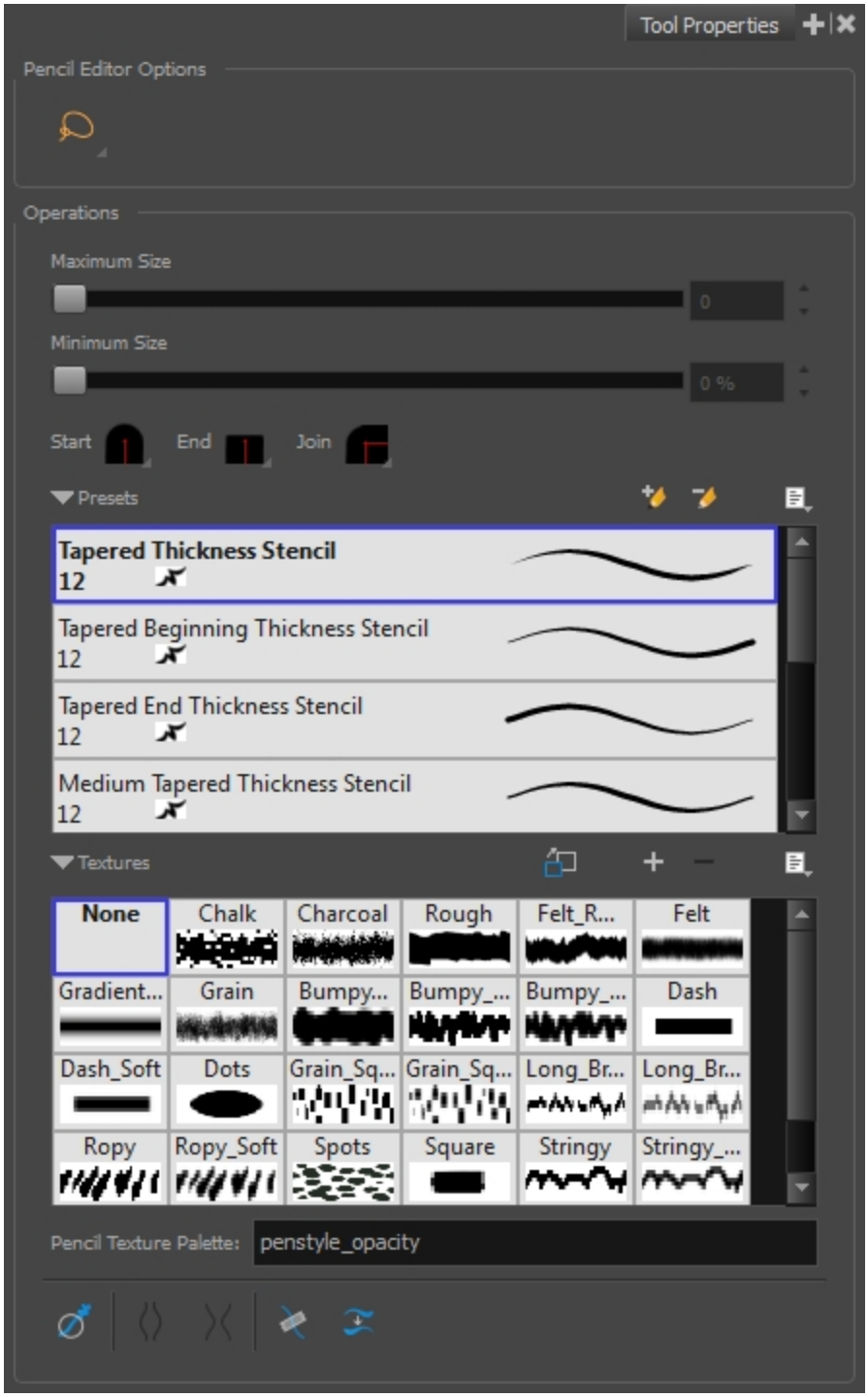


How to split and join pencil lines

1. In the Tools toolbar, select the Contour Editor tool.
2. In the Drawing or Camera view, select the contour points you want to split or join.
3. In the Tool Properties view, click on the Join Pencil Lines or Separate Pencil Line buttons.

Pencil Editor Options

When you select the Pencil Editor tool, its properties and options appear in the Tool Properties view.



Lasso and Marquee

Choose between the Lasso and Marquee options to change the selection style of the tool.

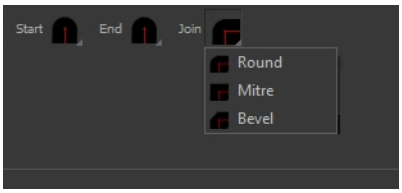
- Click and hold Alt to temporarily switch from the current mode to the other.

Maximum Size and Smoothing

This is where you set the maximum size of your drawing tool.

- **MaximumSize:** Defines the width of the stroke.
- **Smoothing:** Defines the number of control points added to the centre line. The fewer the control points the smoother (but less faithful) the line.

Adjusting the Pencil Line Style



You can adjust the start, end, and joint style of a selected pencil line.

- **Start**: Lets you select the style of the start tip, which is the first tip you drew. You can choose between Round or Flat style.
- **End**: Lets you select the style of the end tip, which is the last tip you drew. You can choose between Round or Flat style.
- **Join:** Lets you select the joint style. The joints are where the line curves abruptly. You could also define the Join style as the corner style. You can choose between Round, Mitre and Bevel style.

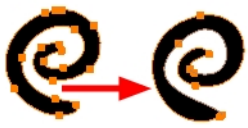
Preset

To work with Pencil line presets, see *Working with Pencil Presets* on page 39.

Textures

To work with Pencil Line Texture, see *Pencil Line Texture* on page 45

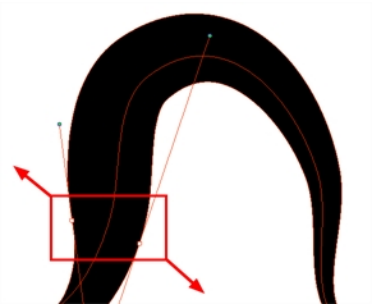
Smooth



The Smooth operation lets you smooth out selected drawing strokes and remove extra points.

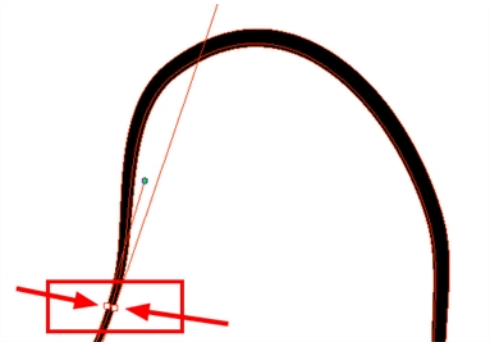
- From the top menu, select **Drawing> Optimize > Smooth** or press Alt + Shift + S.

Pump Pencil Pressure



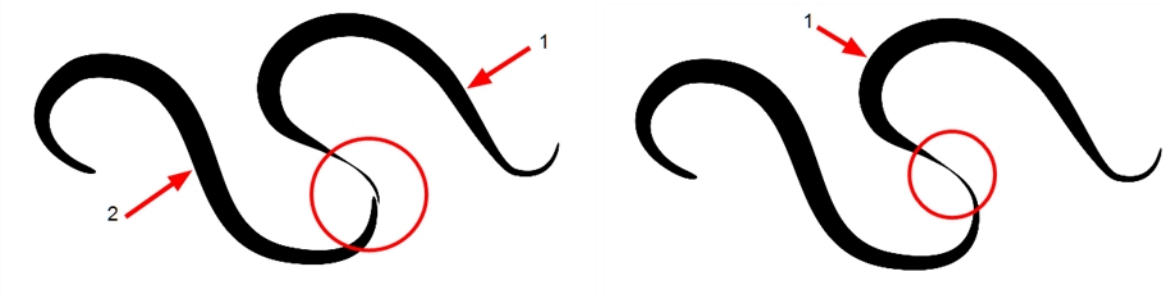
The Pump Pencil Pressure option is used to increase the line thickness of a selected area on a pencil line.

Deflate Pencil Pressure



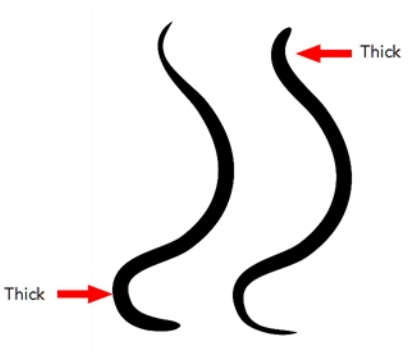
The Deflate Pencil Pressure option is used to decrease the line thickness of a selected area on a pencil line.

Merge Pencil Lines



Pencil lines are central vector lines and it might be difficult to match pencil line's tips properly to align them and make it look like it is one single line. With the Select tool, you can select several pencil lines and merge them as one single object using the Merge Pencil Lines option. The ends of your lines are adjusted to form one single line.

Reverse Pencil Thickness

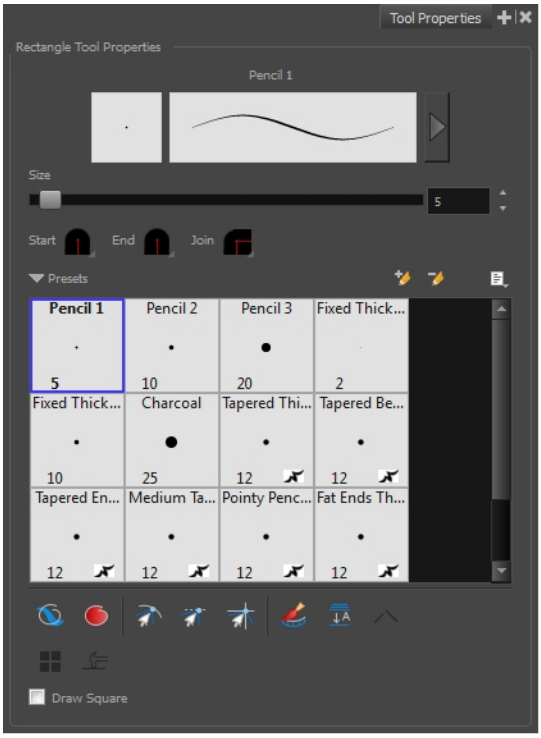


The Reverse Pencil Thickness option inverts the thick and thin section on a selected pencil line. This option will take the thickest size on the line and apply it to the thinnest, and it will apply the thinnest to the thickest.

Shape Tool Options

When you select a shape tool (Rectangle, Ellipse, Line), its properties and options appear in the Tool Properties view.

If the Tool Properties looks different than the image below, you maybe on a bitmap drawing layer instead of a vector drawing layer. If you want to use a shape tool on a bitmap drawing layer—*See Bitmap Brush Tool Options on page 125.*

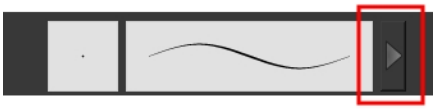


Previewing the Stroke

The Preview area lets you see a preview of the stroke that will be produced after you customize the different

parameters in the Tool Properties view.

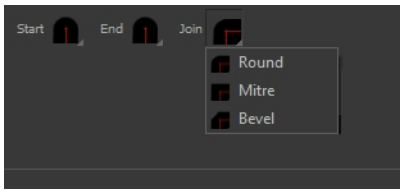
1. Select a brush style from the Presets section. It's a good idea to choose a brush preset that is closest to the style you want to create.
2. Click on the Show Extended Properties arrow to display advanced customization parameters.



Size

Move the Size slider left to reduce the line thickness and to the right to increase its width.

Adjusting the Pencil Line Style



You can adjust the start, end, and joint style of a selected pencil line.

- **Start**: Lets you select the style of the start tip, which is the first tip you drew. You can choose between Round or Flat style.
- **End**: Lets you select the style of the end tip, which is the last tip you drew. You can choose between Round or Flat style.
- **Join:** Lets you select the joint style. The joints are where the line curves abruptly. You could also define the Join style as the corner style. You can choose between Round, Mitre and Bevel style.

Pencil Presets and Thickness Stencils

Harmony provides a variety of pencil presets and thickness stencils and also lets you create and save your own. It is a good idea to create and save pencils with precise sizes and parameters when you draw and design for efficiency and consistency.

A thickness stencil saves the thickness information across the length of the line. When drawing with a thickness stencil, the pressure sensitivity of the tablet is discarded. A thickness stencil can be used while drawing, or applied afterwards.

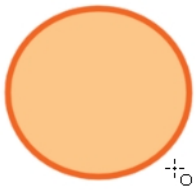
You also have the possibility to apply different textures to your lines by either using the default presets or importing your own—*See Pencil Line Texture on page 45.*

You can export the pencil presets that you have created and import those that others have created. This is a good way for you and project collaborators to keep a consistent look for the project—see *Working with Pencil Presets* on page 39

Draw Behind

When the Draw Behind mode is enabled, the lines you draw will appear behind the art that already exists.

Automatic Filling



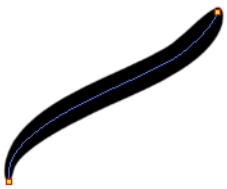
Use the Automatic Filling option to automatically fill your shape with the selected colour as you draw. By default, the Shape tool creates the outline of an empty shape that you can later fill using the Paint tool. This option is unavailable for the line tool.

Snap Options

When drawing a shape, you can enable different snap modes to help you create your shape.

- The Snap to Contour option snaps your shape to any line you position it on.
- The Snap and Align option snaps the selected anchor point to any existing line, while displaying temporary rulers as a guide that you can also snap your anchor point to.
- The Snap to Grid snaps your shape to the currently enabled grid.

Create Colour Art Automatically



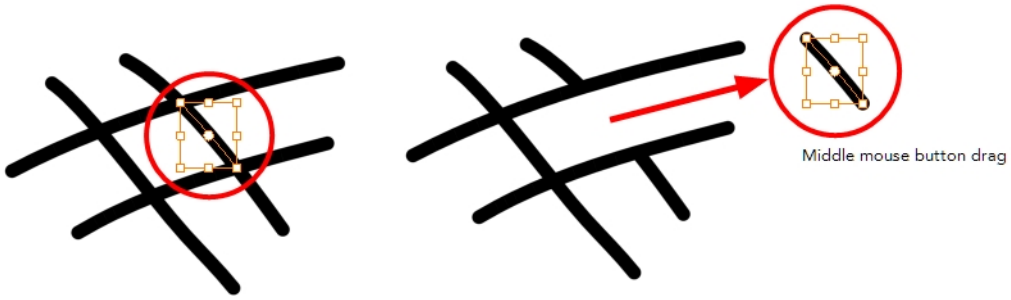
As you draw in the Line Art layer, the Create Colour Art Automatically option automatically creates the corresponding strokes in the Colour Art layer.

Auto-Flatten Mode

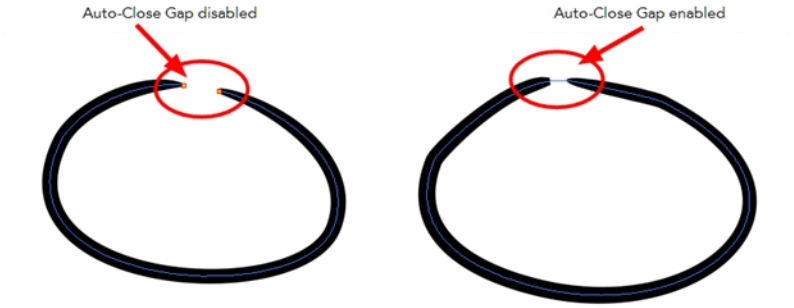
When enabled, the Auto-Flatten

mode automatically flattens the new lines created with the existing artwork as you draw in the Drawing or Camera view. Brush strokes will flatten with brush strokes and pencil lines will flatten with pencil lines.

Using the Select tool, you can use the middle mouse button to select a segment of flattened pencil line. This creates a nice finish on the lines and corners of your artwork.



Auto-Close Gap



When enabled, the Auto-Close Gap mode automatically connects, with an invisible stroke, the pencil lines you draw close to each other in the Camera or Drawing view.

NOTE: It is recommended to leave this option enabled when drawing with the Pencil tool.

Use Stored Colour Gradient

The Use Stored Colour Gradient option makes your tool use the previously stored gradient position. This way, every new brush line or colour fill will use the stored gradient position.

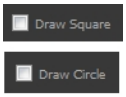
Line Building Mode

The Line Building mode is very useful when drawing long lines and curves in small increments with pencil lines or the line tool. As the pencil lines are central vector lines, it may be difficult to align the line tips perfectly to create a uniform stroke and close all gaps.

In this mode, you can draw lines in small increments and the tips are merge into one single stroke.

NOTE: This mode only works with pencil lines or the line tool.

Keep Proportion

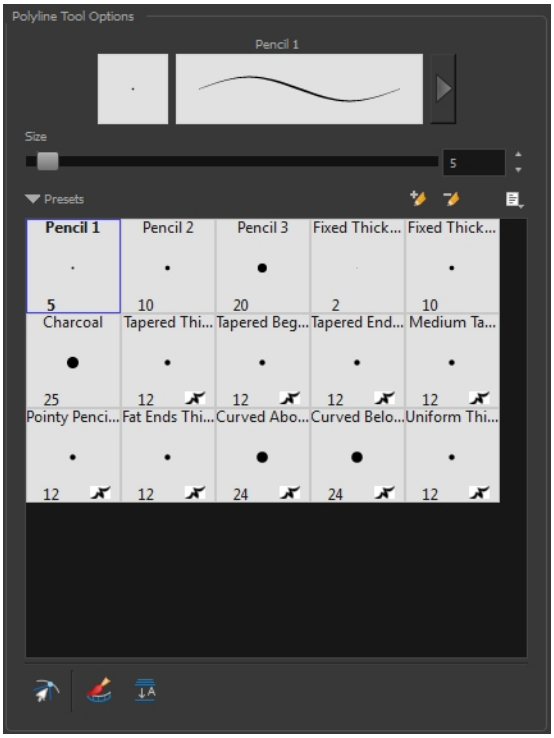


When the Ellipse or Rectangle mode is enabled in the Tool Properties view, the Draw Circle or Draw Square option appears. When selecting these options, the shape produced will be a perfect circle or square (as opposed to an oval or rectangle).

Enabling this option is a good idea if you plan to create many squares or circles. However, if you only need to create one, holding down the Shift key as you create your shape will maintain the proportion in the same way.

Polyline Tool Options

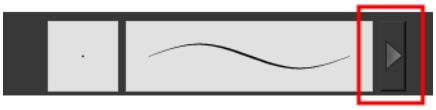
When you select the Polyline tool, its properties and options appear in the Tool Properties view.



Previewing the Stroke

The Preview area lets you see a preview of the stroke that will be produced after you customize the different parameters in the Tool Properties view.

1. Select a brush style from the Presets section. It's a good idea to choose a brush preset that is closest to the style you want to create.
2. Click on the Show Extended Properties arrow to display advanced customization parameters.



Size

The Size parameter lets you set the size of the polyline that you will draw.

Pencil Presets and Thickness Stencils

Harmony provides a variety of pencil presets and thickness stencils and also lets you create and save your own. It is a good idea to create and save pencils with precise sizes and parameters when you draw and design for efficiency and consistency.

A thickness stencil saves the thickness information across the length of the line. When drawing with a thickness stencil, the pressure sensitivity of the tablet is discarded. A thickness stencil can be used while drawing, or applied afterwards.

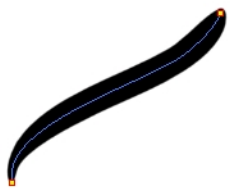
You also have the possibility to apply different textures to your lines by either using the default presets or importing your own—*See Pencil Line Texture on page 45.*

You can export the pencil presets that you have created and import those that others have created. This is a good way for you and project collaborators to keep a consistent look for the project—see *Working with Pencil Presets* on page 39

Snap to Contour

The Snap to Contour option will snap your selection to any line you position it on.

Create Colour Art Automatically



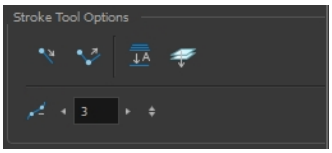
As you draw in the Line Art layer, the Create Colour Art Automatically option automatically creates the corresponding strokes in the Colour Art layer.

Auto-Flatten Mode

When enabled, the Auto-Flatten mode automatically flattens the new lines created with the existing artwork as you draw in the Drawing or Camera view. Brush strokes will flatten with brush strokes and pencil lines will flatten with pencil lines.

Stroke Tool Options

When you select the Stroke tool, its properties and options appears in the Tool Properties view.



Draw Stroke as Straight Lines

Enable the Draw Stroke as Straight Lines option if you want the new strokes you draw to be a perfect straight line. Disable the option if you want the stroke to follow the mouse gesture.

Connect Line Ends

Enable the Connect Line Ends option if you want the start or end point of your new stroke to connect to your existing strokes to make sure no gaps are left in your drawing.

Auto-Flatten Mode

When enabled, the Auto-Flatten mode automatically flattens the new lines created with the existing artwork as you draw in the Drawing or Camera view. Brush strokes will flatten with brush strokes and pencil lines will flatten with pencil lines.

Apply to Line and Colour Art

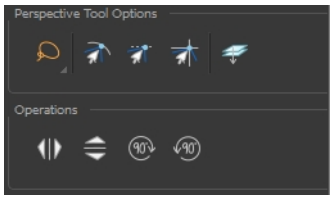
The Apply to Line and Colour Art option uses the concept of Line Art and Colour Art layers. Use this option to apply an action such as selecting, resizing or erasing a drawing on both Line Art and Colour Art layers, as well as the Overlay and Underlay layers.

Smoothness

You can modify the central line smoothness of your line using this option. This parameter smooths the initial movement of your line. Increasing the value will result in a smoother line with fewer control points. Use the left and right arrows to increment the value by one full unit. Use the Up - Down slider to quickly increment the value.

Perspective Tool Options

Selecting the Perspective tool displays its properties and options in the Tool Properties view.



Lasso and Marquee

Choose between the Lasso and Marquee options to change the selection style of the tool.

- Click and hold Alt to temporarily switch from the current mode to the other.

Snap Options

- The Snap to Contour option will snap the selected anchor point to any line you position it on—see *Contour Editor Options* on page 162.
- The Snap and Align option lets you snap the selected anchor point to any existing line while displaying temporary rulers as a guide that you can also snap your anchor point to—see *Contour Editor Options* on page 162.
- The Snap to Grid option snaps your selection according to the currently enabled grid.

Apply to Line and Colour Art

The Apply to Line and Colour Art option uses the concept of Line Art and Colour Art layers. Use this option to apply an action such as selecting, resizing or erasing a drawing on both Line Art and Colour Art layers, as well as the Overlay and Underlay layers.

Flip Horizontal and Vertical

The Flip Horizontal and Flip Vertical operations flip the current selection horizontally or vertically.

- From the top menu, select **Drawing > Flip Horizontal** and **Flip Vertical**.

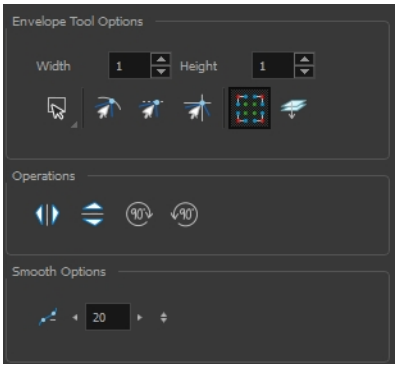
Rotate 90 Degrees CW and CCW

The Rotate 90 Degrees CW and Rotate 90 Degrees CCW operations rotate the current selection 90 degrees clockwise or counter-clockwise.

- From the top menu, select **Drawing > Transform > Rotate 90 Degrees CW** and **Rotate 90 Degrees CCW**.
- Press Ctrl + 7 and Ctrl + 9 (Windows/Linux) or ⌘ + 7 and ⌘ + 9 (Mac OS X).

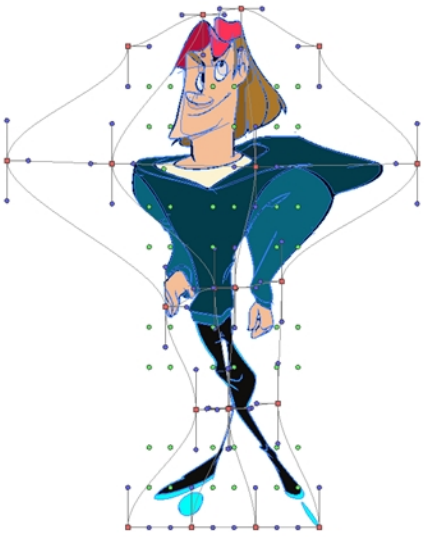
Envelope Tool Options

Selecting the Envelope tool displays its properties and options in the Tool Properties view.



Width and Height

Increase the width and height values to add more columns and rows to the deformation grids.



Lasso and Marquee

Choose between the Lasso and Marquee options to change the selection style of the tool.

- Click and hold Alt to temporarily switch from the current mode to the other.

Snap Options

- The Snap to Contour option will snap the selected anchor point to any line you position it on—see *Contour Editor Options* on page 162.
- The Snap and Align option lets you snap the selected anchor point to any existing line while displaying temporary rulers as a guide that you can also snap your anchor point to—see *Contour Editor Options* on page 162.
- The Snap to Grid option snaps your selection according to the currently enabled grid.

Show Advanced Controls

To display more controls,you can click on the Show Advanced Controls button.

Apply to Line and Colour Art

The Apply to Line and Colour Art option uses the concept of Line Art and Colour Art layers. Use this option to apply an action such as selecting, resizing or erasing a drawing on both Line Art and Colour Art layers, as well as the Overlay and Underlay layers.

Flip Horizontal and Vertical

The Flip Horizontal and Flip Vertical operations flip the current selection horizontally or vertically.

- From the top menu, select **Drawing > Flip Horizontal** and **Flip Vertical**.

Rotate 90 Degrees CW and CCW

The Rotate 90 Degrees CW and Rotate 90 Degrees CCW operations rotate the current selection 90 degrees clockwise or counter-clockwise.

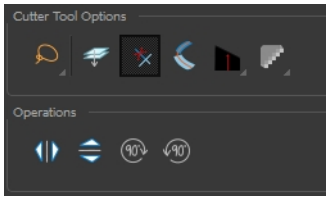
- From the top menu, select **Drawing > Transform > Rotate 90 Degrees CW** and **Rotate 90 Degrees CCW**.
- Press Ctrl + 7 and Ctrl + 9 (Windows/Linux) or ⌘ + 7 and ⌘ + 9 (Mac OS X).

Smoothness

You can modify the central line smoothness of your line using this option. This parameter smooths the deformed lines. Increasing the value will result in a smoother line with fewer control points. The more you increase the value, the less details and curves you will get. Use the left and right arrows to increment the value by one full unit. Use the Up - Down slider to quickly increment the value.

Cutter Tool Options

When you select the Cutter tool, its properties and options appear in the Tool Properties view.



Lasso and Marquee

Choose between the Lasso and Marquee options to change the selection style of the tool.

- Click and hold Alt to temporarily switch from the current mode to the other.

Apply to Line and Colour Art

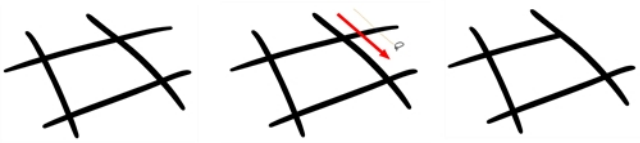
The Apply to Line and Colour Art option uses the concept of Line Art and Colour Art layers. Use this option to apply an action such as selecting, resizing or erasing a drawing on both Line Art and Colour Art layers, as well as the Overlay and Underlay layers.

Use Mouse Gesture

When using the Lasso

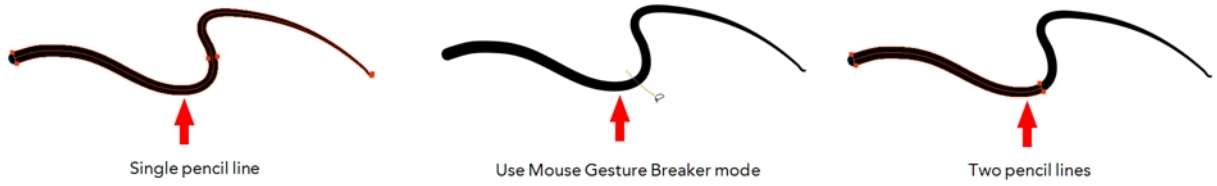
selection type, the Use Mouse Gesture option lets you automatically delete any extra sections of line in your artwork by simply dragging your mouse over it.

NOTE: For this operation to work, you lines **CANNOT** be flattened.



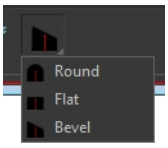
Use Mouse Gesture Breaker Mode

When using the Lasso selection type, the Use Mouse Gesture Breaker Mode option lets you draw an invisible stroke on a pencil line to cut it in two individual objects. Once a pencil line is cut with this option, you will be able to select the two portions independently with either the Cutter tool, Pencil Editor tool or Select tool.



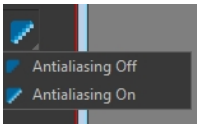
NOTE: This option only works with pencil lines.

Tip Style



If you erase the end of a pencil line or erase a pencil line through the centre, new line tips or line ends are created. Use the Tip Style option to customize the shape of the new line tips that are created.

Antialiasing



When drawing on a bitmap layer, lines are no longer clean vector shapes. For the edges to be smooth, a slight amount of antialiasing is used. When using the Cutter tool, you can cut a portion of your drawing with or without antialiasing. By default, the option is enabled. If you want to cut your drawing using a hard edge, you can select the Antialiasing Off option.

Flip Horizontal and Vertical

The Flip Horizontal and Flip Vertical operations flip the current selection horizontally or vertically.

- From the top menu, select **Drawing > Flip Horizontal** and **Flip Vertical**.

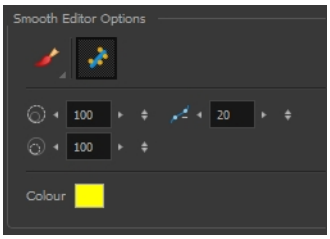
Rotate 90 Degrees CW and CCW

The Rotate 90 Degrees CW and Rotate 90 Degrees CCW operations rotate the current selection 90 degrees clockwise or counter-clockwise.

- From the top menu, select **Drawing > Transform > Rotate 90 Degrees CW** and **Rotate 90 Degrees CCW**.
- Press Ctrl + 7 and Ctrl + 9 (Windows/Linux) or ⌘ + 7 and ⌘ + 9 (Mac OS X).

Smooth Editor Tool Options

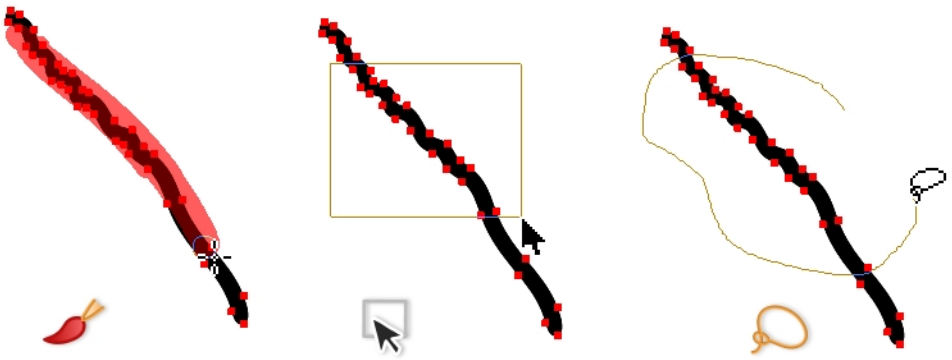
When you select the Smooth Editor tool, its properties and options appear in the Tool Properties view.



Brush, Marquee and Lasso Smoothing Style

The Smoothing Style options allow you to smooth a portion of your drawing by tracing a smoothing stroke over the zone to optimize or by selecting an area of the drawing with the Marquee or Lasso.

Note that by default, the Smooth Editor tool colour is yellow, it was changed to orange for screen grab clarity.



Show Control Points

The Show Control Points option allows you to show or hide the Bezier points around lines. When the Bezier points are displayed, you can see the result of your smoothing and the number of points left on the curve. When it is turned off, only the original artwork is displayed.

Minimum Size and Maximum Size

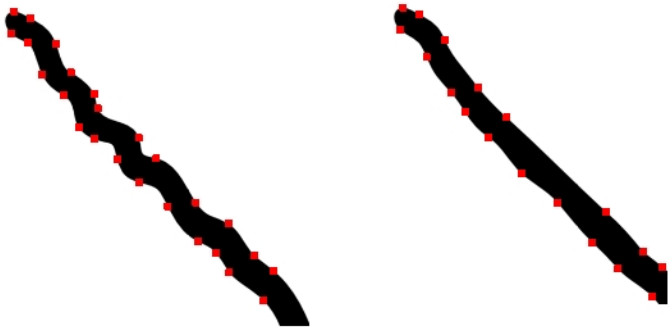
This is where you set the minimum and maximum sizes of your drawing tool which will produce the thick and thin effect on your stroke. This works with the pressure sensitivity of a pen tablet.

This options is available while using the Brush Smoothing style.

- **Maximum and Minimum Size:** Defines the maximum and minimum width of the stroke.
- **Up/Down arrows:** Use the up and down arrows to set the minimum and maximum size value.

Smoothness

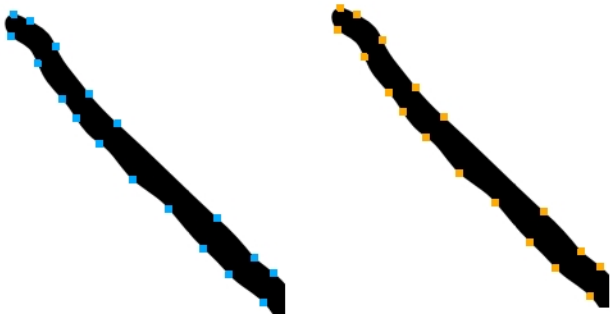
The Smoothness impacts the strength of the smoothing result. The higher the value, the more points are removed and the smoother the curve. The Smoothness range is from 0 to 100; the default value is 20.



Smoothness = 2 Smoothness = 10

Colour

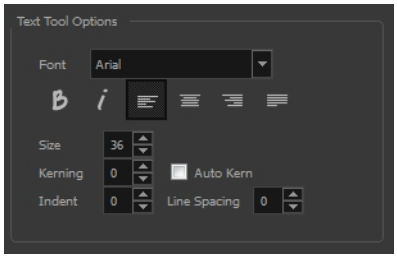
You can modify the colour of the control points displayed on the artwork while working with the Smooth Editor tool by double-clicking on the colour swatch.



Text Tool Options

Use the Text tool's properties to select the font type and other formatting options you want to apply to the text.

If you already wrote your text, you must first use the Text tool and select the text portion you want to format.



Font Type

Use the Font drop-down menu to select a font. OTF fonts are supported.

Vivaldi

Copperplate Gothic Light

Font Style

Use these buttons to select a style for your text:

- Bold

- Italic

Alignment

Use these buttons to align the paragraph.

Left LOREM IPSUM DOLOR SIT AMET, CONSECTETUR ADIPISCING ELIT. AENEAN VESTIBULUM, METUS AC FERMENTUM PORTTITOR, ODIO TURPIS PORTTITOR NIBH, ID CONSEQUAT MAGNA LIGULA ET ELIT. CURABITUR SOLLICITUDIN ELIT AC LOREM MOLLIS ACC UMSAN.	Centered LOREM IPSUM DOLOR SIT AMET, CONSECTETUR ADIPISCING ELIT. AENEAN VESTIBULUM, METUS AC FERMENTUM PORTTITOR, ODIO TURPIS PORTTITOR NIBH, ID CONSEQUAT MAGNA LIGULA ET ELIT. CURABITUR SOLLICITUDIN ELIT AC LOREM MOLLIS ACC UMSAN.
Right LOREM IPSUM DOLOR SIT AMET, CONSECTETUR ADIPISCING ELIT. AENEAN VESTIBULUM, METUS AC FERMENTUM PORTTITOR, ODIO TURPIS PORTTITOR NIBH, ID CONSEQUAT MAGNA LIGULA ET ELIT. CURABITUR SOLLICITUDIN ELIT AC LOREM MOLLIS ACC UMSAN.	Justified LOREM IPSUM DOLOR SIT AMET, CONSECTETUR ADIPISCING ELIT. AENEAN VESTIBULUM, METUS AC FERMENTUM PORTTITOR, ODIO TURPIS PORTTITOR NIBH, ID CONSEQUAT MAGNA LIGULA ET ELIT. CURABITUR SOLLICITUDIN ELIT AC LOREM MOLLIS ACC UMSAN.

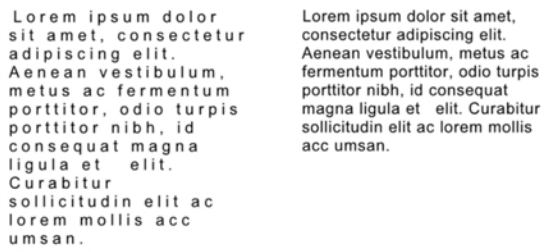
Font Size

Enter a size for the text.

small text **big text**

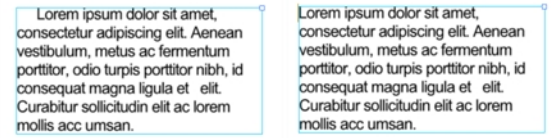
Kerning

Use the kerning field to modify the spacing between letters and characters. You can select the Auto Kern option to set the kerning automatically based on the font's predefined standard. A negative value decreases spacing between each character, creating a letter overlap and a positive value increases it.



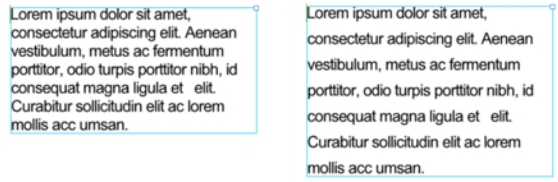
Indent

Enter a value in the Indent field to increase or decrease the indentation on the first line of your text. A positive value sets the first line of your paragraph farther to the right and a negative value sets it farther to the left.



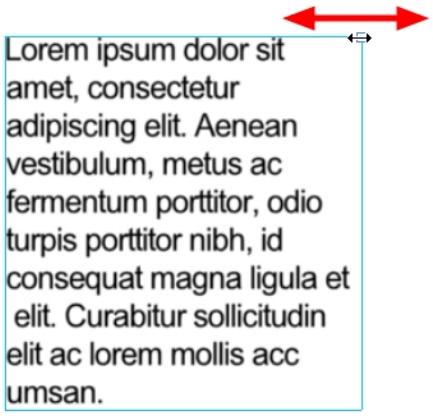
Line Spacing

Enter a value in the Line Spacing field to decrease or increase the space between each line of text.



Resizing the Text Box

You can resize the text box by selecting your text box with the Text tool and moving the anchor point right or left. Using the Select tool will distort and scale your text itself rather than changing the width and height of your text box.



Converting Text into Separate Objects

Text contained in a text field is treated as a single drawing object. You can easily separate the text so each character becomes an individual drawing object that you can select and modify independently.

How to break a text object

1. In the Tools toolbar, click the Select tool or press Alt + S.
2. In the Drawing or Camera view, select the text object you want to break.

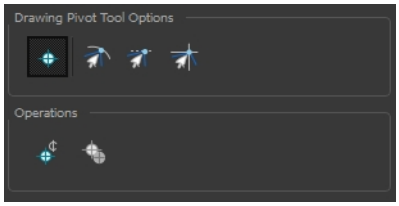
3. From the top menu, select **Drawing > Convert > Break ApartText Layers**.
   - From the Drawing or Camera view menu, select **Drawing > Convert > Break ApartText Layers**.

   Each character is surrounded by a bounding box that you can modify; they remain text objects that you can edit.

4. If you want to convert your independent letter to a complete vector object that you can deform, use the Select tool to select the letters to convert.
5. From the top menu, select **Drawing > Convert > Break Apart Text Layers** to break the selection into a regular drawing object, with no more text attributes.
   - From the Drawing or Camera view menu, select **Drawing > Convert > Break Apart Text Layers** to break the selection into a regular drawing object, with no more text attributes.

Drawing Pivot Tool

The Drawing Pivot tool lets you set the pivots on your character. You can set the drawing pivots on drawings and symbols.



Setting the Drawing Pivot for Symbols on All Frames

The Set the Pivot for Symbol on All Frames option is enabled by default. When you set a drawing pivot on a symbol, all of its cells use the same drawing pivot. This means you do not have to set a drawing pivot on all frames. Once you set it, it is done.

If you prefer to set a different drawing pivot for a series of cells, you can deselect the option and set your pivots on each cell or cell range.

NOTE: If you have already set several different pivots on your symbol's cells and selected the Set the Pivot for Symbol on All Frames option, once you set a new pivot on the same symbol, all of its pivots will be reset and will use your new pivot.

Snapping

When you drag the drawing pivot around, you can enable a snap option so that when the drawing pivot is released, it either snaps to the reference grid, drawing's contour, or aligns with an existing drawing stroke.

Reset Pivot

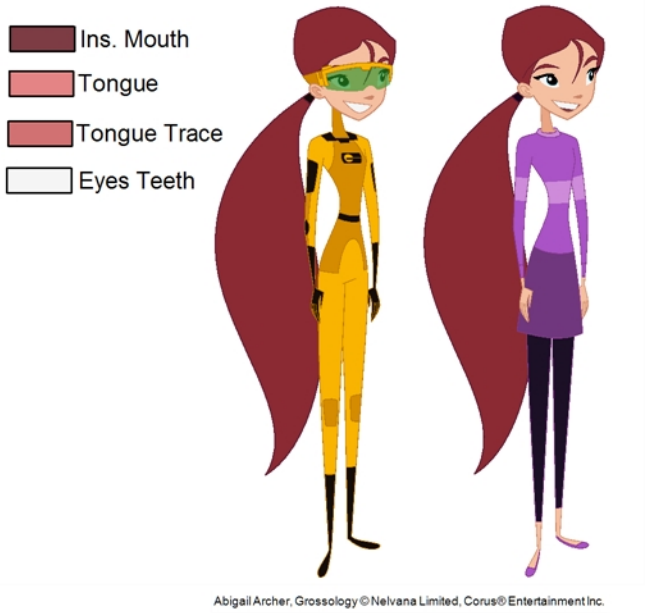
When you click the Reset Pivot option, the drawing pivot of the selected drawing or symbol is reset to the centre of the Camera view.

Copying Pivot on Parent Symbol

When you import new extra drawings, such as hands and mouths, you can use the drawing pivot that was set on your drawings and report them to the symbol's cells. Use the Copy Pivot to Parent Symbol command for this.

NOTE: When you copy drawing pivots to the parent symbol, there is no link between the drawings' pivots and the symbol's pivots. If you modify the drawing pivot later, it will not link to the symbol. You would need to perform the operation again. If you need to modify the symbol's pivots, you can do it directly on the symbol's cells.

Chapter 3: Colour Styling and Colour Models



Once the characters, props and locations are designed, it's time for the colour styling and colour models creation. This is when the colours and moods are determined. The line models created during the design step are painted and organized as colour models for the colourists.

Harmony has a great concept of colour palettes. Each character can have its own set of colours that is carried through the entire project called the *master palette*. If the master is modified, the colours in the entire project are updated simultaneously.

By doing the colour styling in Harmony, your master palette will be created at the same time, so you do not need to use third party software. Also you will not have to recreate the colour palette again in Harmony. It is possible to create this step in an external software, but it is a great time saver to do it directly in Harmony.

To create the colour style and colour models, follow these steps:

- *Preparation* on page 191
- *Working with Palettes* on page 196
- *Colours* on page 220
- *Painting the Model* on page 237

Preparation

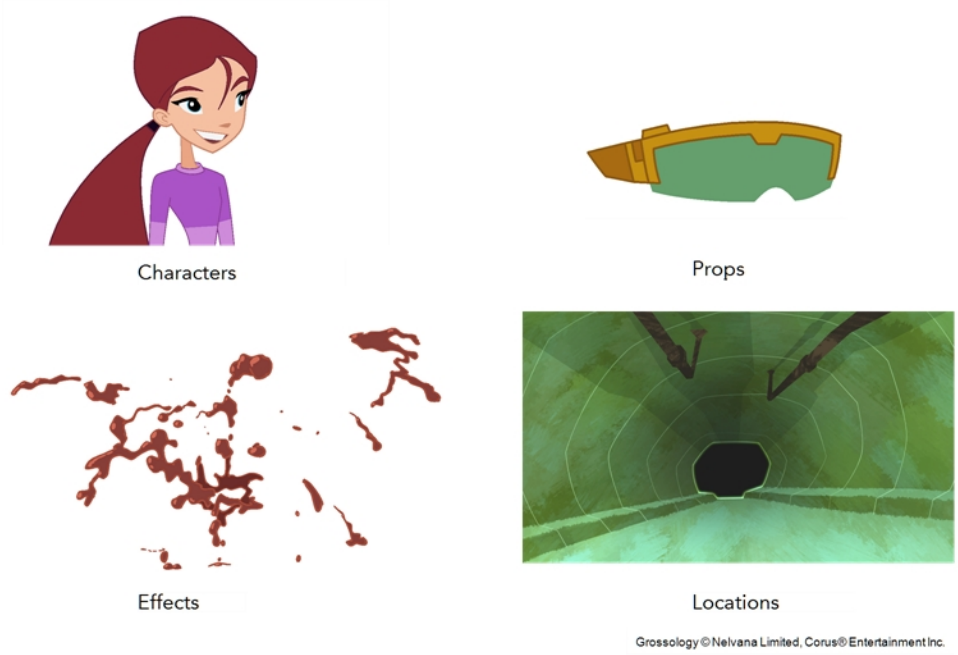
Before painting, you need to organize the colour model scenes and bring in your references. The colour styling preparation is done in five steps:

- *Colour Model Storage* on page 192
- *Scene Creation* on page 192
- *Setting Up the Workspace* on page 193
- *Naming* on page 193

Colour Model Storage

First, you will need to create a storage location for all your models and palettes. The best way to do this is to create a colour model scene. There are different possibilities available to structure your designs and colour model scenes. We strongly recommend that you put all of your colour models in the same scenes. It is important to maintain a structure for your models so they do not end up scattered throughout the project.

There are four main model categories:



If you have a small project, such as a short or an advertising contract, you can always place all the characters, props, effects, and locations in the same scene. For large projects such as feature-length productions or series, you should create four separate model scenes following these categories.

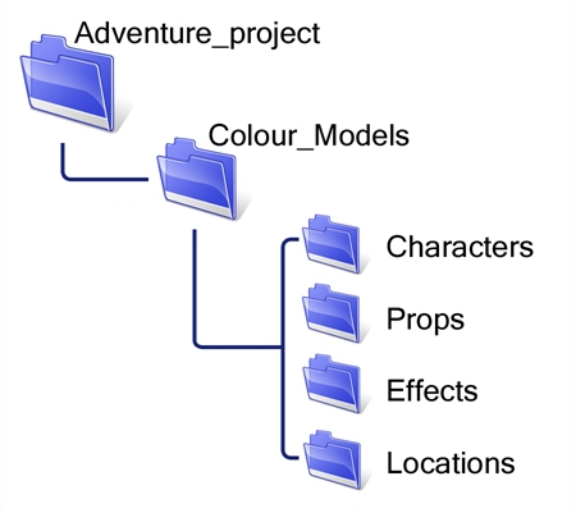
Scene Creation

In order to create colour models, you need to create your scenes.

When working on a paperless or cut-out animation project, if you have designed your characters, props, effects and locations directly in Harmony, you can paint your models directly in your design scene. You can also create a new colour model scene and import your designs in that one. Refer to the Fundamentals Guide to learn more about creating a scene.

If you have not already done so, refer to the Fundamentals Guide to learn about production structure, file organization, and how to create a Project root directory. We recommend storing your colour model scenes in the root directory or in a colour models subdirectory for even better organization.

A useful way to name your colour model scene is to include the project name, then the colour model type such as characters, props, effects, or locations, and finally **`colourmodel`**. For example, a character colour model scene for the Adventure project would be named **`adventure_characters_colourmodel`**. This ensures that you always know what scene corresponds to what.



To learn how to create environment, job, and scene for your colour models, refer to the Control Center Guide.

Colour Model Scene Structure

To store your colour models in a scene, you should create one drawing layer for each character, prop, effect, or location. You should name these according to the model.

You can also load other colour references in the scene to balance your overall colours. For example, if you work in a character colour model scene, it's a good idea to import some of the key locations to compare and adjust the colours so they match well.

Setting Up the Workspace

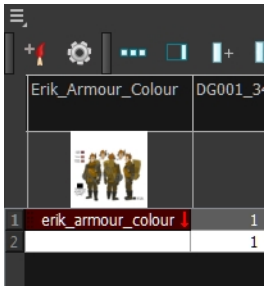
Now that your scenes are created and structured, you can open the corresponding colour model scene. For the optimal workspace for inking and painting, set up your workspace with these views:

- Xsheet
- Camera
- Drawing
- Colour
- Model

Naming

Now that your models are imported, you can rename them appropriately. You should rename elements (layers) and drawings corresponding to the model. This will help keep the work organized and make it easy for others to follow.

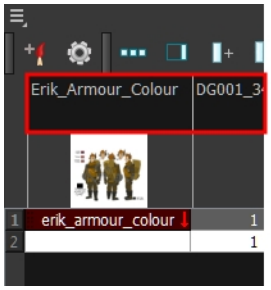
For example, if there is a black and white character model called **`Erik`** in one drawing element and its colour models in another one, rename your elements to include the character's name. For example, the colour model for Erik's armour could be named: **`erik_armour_colour`**.



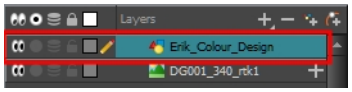
How to rename a drawing element

1. Do one of the following:

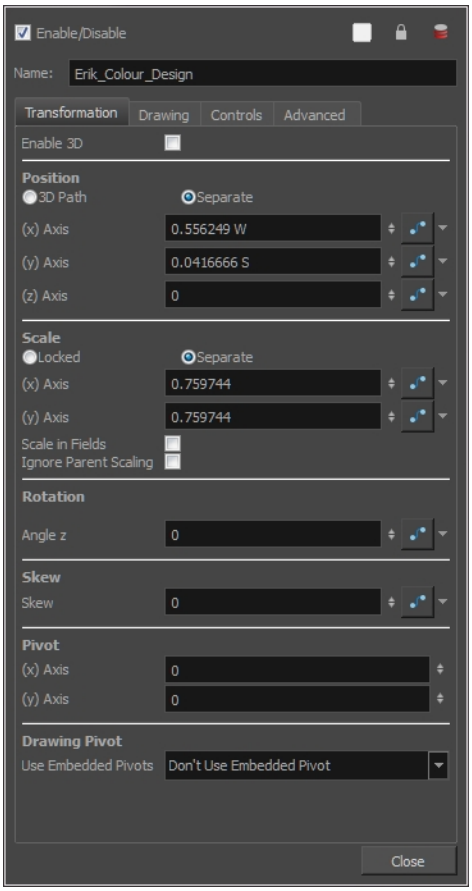
   - In the Xsheet view, double-click on the column header of the drawing element.



   - In the Timeline view, double-click on the drawing element's layer.



   The Layer Properties window opens.



2. Type in a new name.

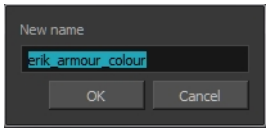
How to rename a drawing

1. In the Xsheet view, click on a drawing name.

2. Do one of the following:

   - From the Xsheet view menu, select **Drawings > Rename Drawing.**
   - Right-click on the drawing name and select **Drawings >Rename Drawing.**
   - Press Ctrl + D (Windows/Linux) or ⌘ + D (Mac OS X).

   The Rename Drawing dialog box opens.



3. Type in a new name and click **OK**.

Working with Palettes

In animation, specific colours are used to paint each particular character. In order to maintain absolute consistency, a colour palette is created for each character, prop and effect throughout the production. This is referred to as a ***master palette***[1].

Master palettes contain a colour swatch for each zone to colour with a precise RGBA colour value.

Using a master colour palette has many benefits, including:

- Each character consistently retains their dedicated colours.
- You cannot accidentally use a colour which is not in the master palette.
- Standardization and colour consistency throughout the production
- Multiple artists can use the same colour palette and produce the same results.

Toon Boom Harmony uses palettes to hold all the colours needed to paint your elements, allowing complete control and consistency in your painting process.

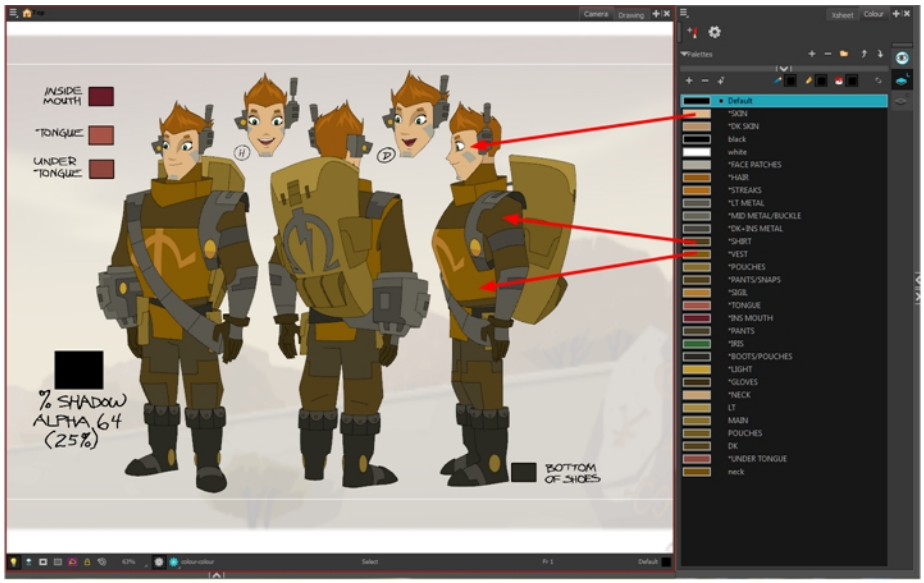
A **palette**[2] is created by assigning a set of colours to each character, prop or effect. You will create a new palette and add a new colour, known as a *colour swatch*, for each zone of the character, such as the skin, hair, tongue, shirt, pants, and so on.

In Harmony, palettes are individual files that you can copy, transfer, and store. Palettes have a **`*.plt`** file name extension—see *Palette File Storage* on page 201.

When a zone on the character is painted with the colour contained in a colour swatch, a link is automatically created between that colour swatch and the zone. This means that if the tint of the colour in the colour swatch is changed, any zone linked to it will update to the new tint. This is one way that colour palettes can save time and money in your production.

Another advantage of this system is that you can create complete palettes for different lighting situations. For instance, in addition to the regular palette for a character, you could have one for that character in the rain using colours that are duller and less vibrant than the dry daytime colours, or yet another for using in a night scene. Using palettes linked to your character in this way allows you to instantly change its colouring to suit the mood and atmosphere of the scene without tediously repainting each element.

[1] A master palette is a group of colours attributed to a character or a prop. The palette is used throughout the entire production to maintain consistency in the look and to ensure that the same colours are used throughout the production. Also known as palette.
[2] A palette or master palette is a group of colours attributed to a character or a prop. The palette is used throughout the entire Toon Boom Studio project to maintain a consistency in the look and avoid the colour changing during the animation. Also referred to as a master palette.



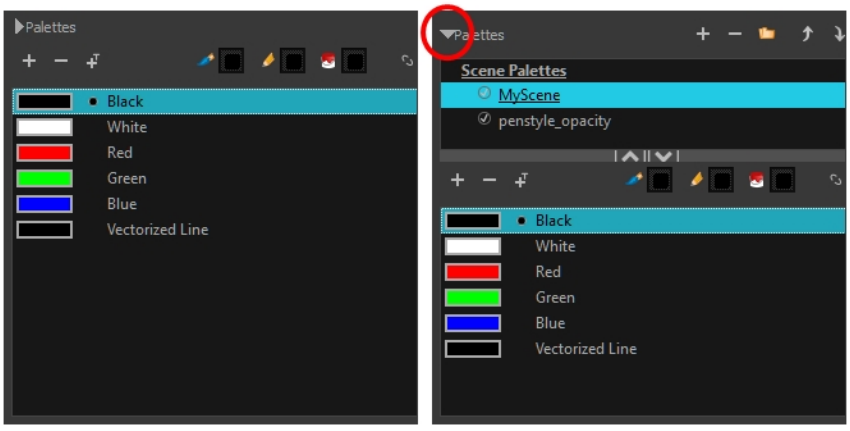
Erik, Di-Gata Defenders © Nelvana Limited, Corus® Entertainment Inc.

This section is divided as follows:

- *Palette Lists* on page 197
- *Palette File Storage* on page 201
- *Creating a Colour Palette* on page 203
- *Duplicating a Colour Palette* on page 207
- *Cloning a Colour Palette* on page 209
- *Palette Operations* on page 211
- *Importing and Linking Palettes* on page 215

Palette Lists

The Colour view has two modes: basic and advanced.



Basic mode Advanced mode

- **Basic Mode**

The Colour view's basic mode only shows the Colour list. When you open Toon Boom Harmony, you only see the colours available in the Default palette which contains six basic colour swatches and is automatically named the same as your scene. For simple projects, you can manage with the default palette, but for movies, series, or shorts it is recommended that you create palettes for your characters. To create a palette, you have to switch to the Advanced mode of the Colour view and show the Palette list.

- **Advanced Mode**

  The Advanced mode displays the list of all palettes that are linked to the scene. To create palettes for your characters, you must display the Palette list.

A palette list is a file containing all of the links to the original palette files. Every drawing layer has a palette list. The scene also has a palette list. For example, a drawing layer can use three different palettes stored in three different locations, while another drawing layer can use two of these palettes plus another one coming from another scene. The palette list keep track of the locations of the palettes.

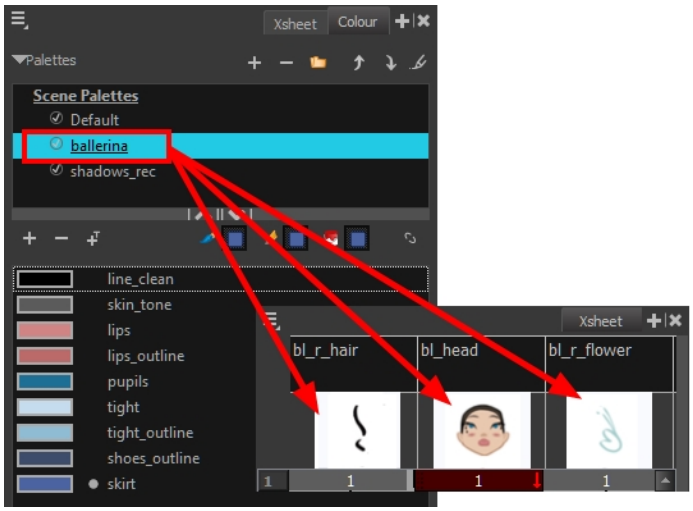
There are two types of palette lists:

- **Scene Palette List**

  The Scene Palette list is mainly used with cut-out animation, but is also very useful for paperless and traditional animations. A cut-out character will often be divided into 20 to 30 different drawing elements that use the character's master palette.

  The palette list is stored at the scene level instead of the Element directory. This way, all palettes linked to this list will appear in every drawing element created in the scene. There is no need to manually load the palette in each element.

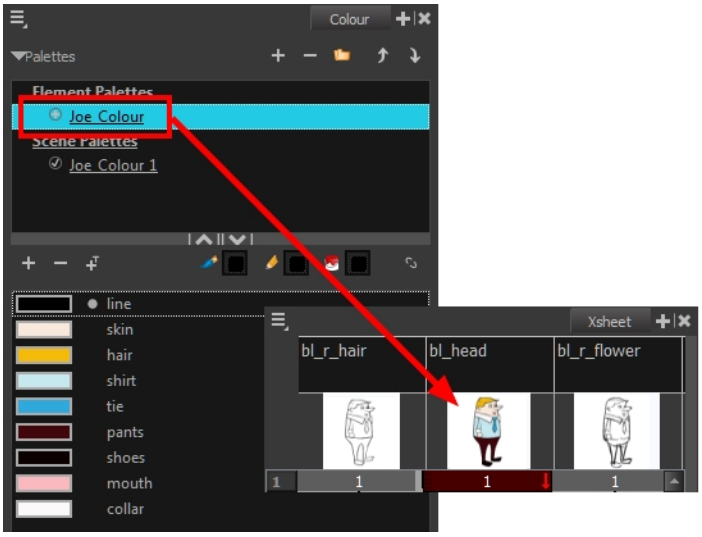
  The Scene Palette list is the simplest one to use. By default, Toon Boom Harmony is set to use only Scene Palette lists.



- **Element Palette List**

In Toon Boom Harmony, you can switch to Advanced Palette List mode and choose to save your palette at an element's level. The Element Palette list is mainly used with traditional and paperless animation. Unlike cut-out animation, all columns (drawing elements) contain different characters, props, backgrounds, and effects. The Element Palette list is used when you do not necessarily want all of the palettes for all of your elements linked in every column.

The palette list is stored in the drawing element's directory instead of directly in the Scene level. This ensures that the links to the palettes appear only in the appropriate element. If you prefer to access a global palette list, link your palettes to the Scene Palette list.



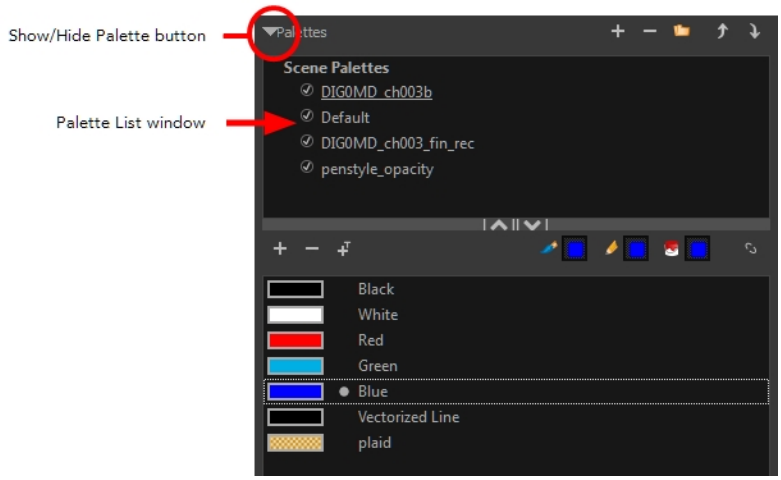
To prevent users from accidentally removing a link to a palette, the palette lists are locked. To link or create a new palette, the palette list must first be unlocked.

When you are using several cloned palettes that are related to the same original palette, Toon Boom Harmony uses the palette located highest in the list to determine the colour of the painted zones—see *Cloning a Colour Palette* on page 209.

How to show or hide the Palette list

- In the Colour view, click the Show/Hide Palette List View button to expand or collapse the Palette List area.

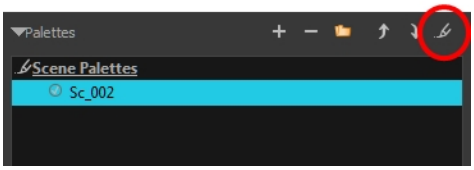
The Palette List window opens and displays all your palettes.



How to lock and unlock to the palette list

- From the top menu, select **Edit > Edit Palette List Mode**.

A grey pencil appears on the top-right corner of the Palette list to indicate that it can be modified.



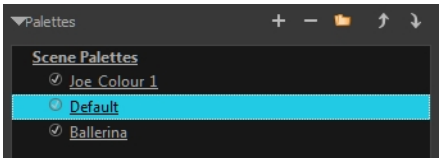
How to set the Advanced Palette Lists mode

1. Do one of the following:
   - From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences** (Mac OS X).
   - Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).
1. Select the **Advanced** tab.
2. In the Advanced Options section, select the **Advanced Palette Lists** option.
3. Click **OK**.

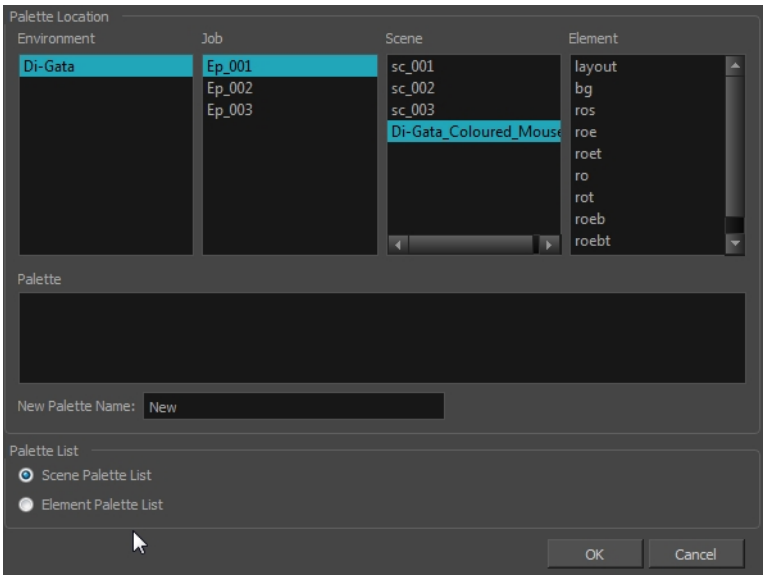
How to reorder palettes in the Palette list

Do one of the following:

- From the Colour View menu, select **Palettes** > **Move Up** or **Move Down**.
- In the Palette list, click the Up and Down buttons.



Palette File Storage



In Harmony, palettes are individual **`*.plt`** files that can be copied, transferred and stored. When a palette is created from Harmony, it needs to be stored somewhere. By default, the palette file is stored in the scene directory in a palette-library folder unless you specify a different location. There are four locations where you can find palette-library folders:

- **Element:** The Palette Library folder is stored directly in the drawing Element folder.
- **Scene:** The Palette Library folder is stored directly in the Scene folder.
- **Job:** The Palette Library folder is stored in a Job folder contained in the Scene folder.
- **Environment:** The Palette Library folder is stored in an Environment folder contained in the Scene folder.

By default, the palette is stored at the scene level. For simple projects and standalone projects, it is recommended to keep it as is. If you work with a larger studio, it is recommended to verify with them on the file structure.

This existing structure is compatible with Harmony Server. Harmony's database has a leveled structure starting from the Environment down to the Element. Its client-server configuration allows all data, such as palettes and scenes, to be shared between a series of client machines.

Element Level

Working with Harmony Stand Alone, the Element level is very useful when there are a lot of different palettes. When a colour model drawing is created, it is stored in its element folder. By storing the corresponding palette file with the colour model, the colourist can load them both from the same location. This also creates a more organized structure.

Scene Level

Working with Harmony Stand Alone, a palette file can also be saved at the scene level, so that all of the palettes from the scene are stored together. The palette naming must be structured so the colourist or character builders can find the correct one. Saving the palettes at the scene level makes it very easy to back up the palettes and retrieve their location.

The scene level can also be useful for cut-out animation. Instead of creating a colour model scene that includes all of the characters, props, effects, and location, the colour palette or model will often be directly imported to, or created in, the character building scene. Just as with a cut-out character building scene, each element uses the same palette so it would not be efficient to save the palette inside one element. Instead, it is saved at the scene level. This prevents a palette overload because all of the models are in different scenes. It also allows each scene to have its own set of palettes corresponding to its model.

When working on a cut-out animation production, it is highly recommended that you work with the Scene level.

Where to Save the Palette File

The palette storage location depends on the type of production and the backup plan being used. Some studios like to store their palettes at the Element level and others at the Environment level as this will not create a problem so long as the scene is in the Harmony structure. In fact, as long as the Harmony structure is maintained it can be stored at any level. However, difficulties may occur when the scene is backed up or transferred to another studio or database and removed from the structure.

What happens when you export a palette file?

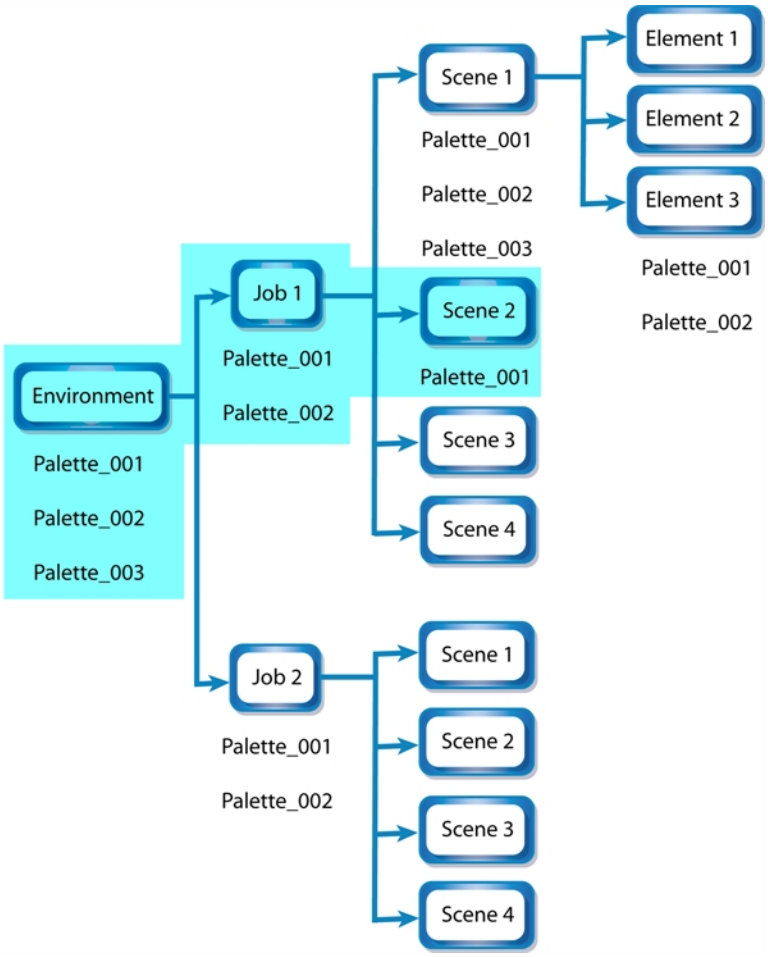
It is important to understand what is happening to a palette file when the scene is exported.

Because of the Harmony client-server configuration, all of the data can be shared through all of the scenes in the database. This also includes the palette files, even if they are stored at the Element, Scene, Job, Drawing or Environment level. The palette files can be accessed from any scene of any project.

When you export scenes from Harmony to either archive or send them to other users or studios, the palettes stored in external scenes, jobs or environment will NOT be exported.

An exported scene will carry palettes stored in its own Element's Palette Library, scene's palette library, the Job and the Environment where it is stored. Any other palette from other Environments, Jobs, Elements or Scenes (even from the same job) will **NOT** follow. Instead a recovery palette will be created when the scene is reopened in another Harmony system. A recovery palette is a local palette created by the system when palettes and colours are missing. This palette is no longer shared with the rest of the project.

For example, in the following chart, if you export Scene 2 from Job 1, the package will carry the palettes from Scene 2, Job 1 and Environment. It **WILL NOT** carry the palettes from Element 3 in Scene 1, Scene 1 and Job 2. If Scene 2 was linked to any of these, the system will create a recovery palette the next time Scene 2 is opened in another Harmony system.



The best place to store your palette is:

- Environment level for a movie or series
- Job level for a publicity or small project
- Scene level for a student exercise

To store your palette with their colour models, you can use the Element level, however, it will require more structure when exporting the scenes. The scene will have to be exported along with its colour model scene. The other studio you are working with must recreate an identical structure to yours, then import the received scenes into the same location as you have them in order to maintain the links.

Palette Backup

When sharing palettes between scenes, some users may accidentally modify the colours, even though the palettes are locked by default. That is why it is a good idea to copy and back up your palette libraries and master palette directories.

When a palette file is copied, it automatically becomes a clone palette, so there will not be any trouble replacing an altered file. Harmony automatically updates all of the files and drawings linked to it.

Creating a Colour Palette

You can create a palette in either Basic or Advanced mode.

By default, Toon Boom Harmony is set to the Basic mode. For simple productions, it is recommended to use the Basic mode. This setting stores the palettes automatically for you and saves them at the Scene level. When you use the Advanced Palette Lists mode, you can decide at which level you want to store your palettes: Environment, Job, Scene, or Element.

If you are using Harmony Server, see *Palette File Storage* on page 201.

Before you can create a palette in the Advanced Palette Lists mode, you must first set your preferences to Advanced Palette Lists mode in the Preferences dialog box. You also need to have the rights to modify the palette list. If you do not, select **Edit > Edit Palette List Mode** from the top menu.

You can remove palettes from your Palette list if they're not needed in your scene. The actual palette file will not be deleted and you can reimport it in your Palette list later on.

How to set the Advanced Palette Lists mode

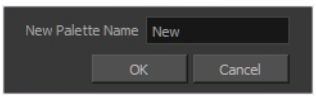
1. Do one of the following:
   - From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences** (Mac OS X).
   - Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).

1. Select the **Advanced** tab.
2. In the Advanced Options section, select the **Advanced Palette Lists** option.
3. Click **OK**.

How to create a new palette (Basic Palette Lists mode)

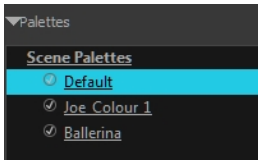
1. From the Colour View menu, select **Palettes** > **New** or click the New Palette button.
   - Make sure you have the necessary rights to modify the palette list. If not, select **Edit > Edit Palette List Mode.**

   The Create Palette window opens.
2. Enter the palette name according to the model.



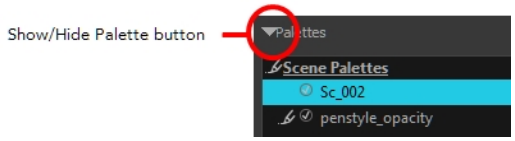
3. Click **OK**.

   The palette appears in the drawing element's palette list.



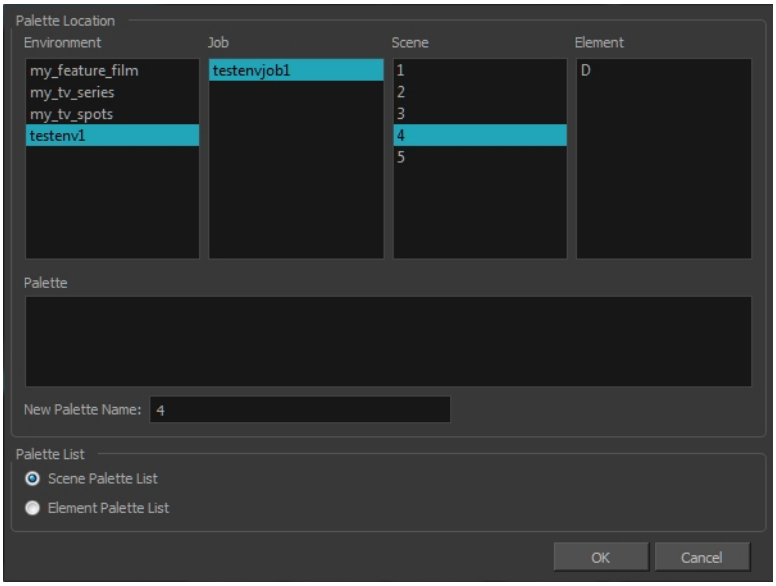
How to create a palette from the Advanced Palette Lists mode

1. In the Timeline or Xsheet view, select the drawing that requires a palette.
2. Make sure that you have the necessary rights to modify the palette list. If you do not, select **Edit > Edit Palette List Mode.**
3. In the Colour view, click the **Show Palette List View** button to display the palette list.



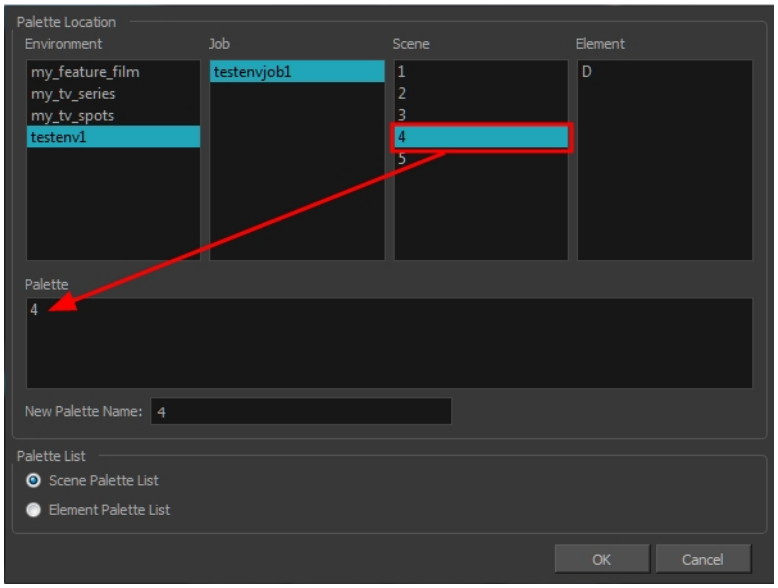
4. Do one of the following:
   - From the Colour view menu, select **Palettes > New.**
   - Click the Create Palette button.

   The Palette Browser: Create Palette dialog box opens.

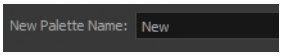


5. Select the level to store the palette file.
   - **Environment**: The palette-library folder is stored in the scene's parent environment folder.
   - **Job**: The palette-library folder is stored in the scene's parent job folder.
   - **Scene**: The palette-library folder is stored directly in the scene folder.
   - **Element**: The palette-library folder is stored directly in the drawing element folder.

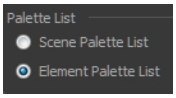
   When you select a level that has a palette stored in it, the palette names are displayed in the Palette field.



6. Name the palette. There is no need to add the suffix "palette" to the name as it is always recognized as a palette file.



7. Select a Palette List option.



   - The Scene Palette List is mainly used with cut-out animation. A cut-out character will often be divided in twenty to thirty different drawing elements that use the character's master palette.

     The palette list is stored at the scene level instead of the Element directory. This way, all palettes linked to this list will appear in every drawing element created in the scene. There is no need to manually load the palette in each element.
   - The Element Palette List is mainly used with traditional and paperless animation. Unlike cut-out animation, all columns (drawing elements) contain different characters, props, backgrounds and effects. The Element Palette List is used because you do not necessarily want all of the palettes for all of your elements linked in every column.

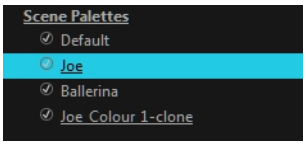
     The palette list is stored in the drawing element's directory instead of directly in the Scene level. This ensures that the links to the palettes appear only in the appropriate element. If you prefer to access a global palette list, link your palettes to the Scene Palette List.

8. Click **OK**.

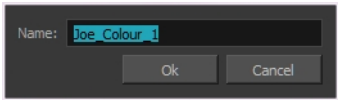
   The new palette appears in the palette list.

How to rename a palette

1. In the Colour view, select the palette to rename.

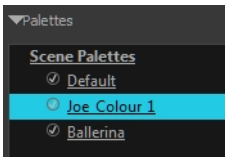


2. Do one of the following:
   - Right-click and select **Rename**.
   - From the Colour View menu, select **Palettes** > **Rename**.
3. In the Rename dialog box, give the palette a new name and click **OK**.



How to remove a palette

1. In the Colour view, select the palette to remove.



2. Do one of the following:
   - From the Colour View menu, select **Palettes** > **Remove**.
   - Right-click on the selected palette and select **Remove**.
   - Click the Remove Palette button located above the Palette list.

   If the palette was used in your scene, the zones painted with its colours turn red.

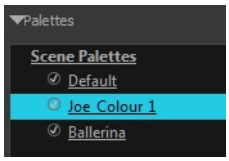
Duplicating a Colour Palette

A duplicated palette is a simple copy of the original palette. It uses the same names, colour values, but has a different ID and is independent from the original palette. This ensures that both palettes are completely independent.

This option is used when there are similar models and you want to avoid recreating and naming all the colours. You can change the values and the names afterward without affecting the original palette. You can also keep some RGBA values, such as the eyes, teeth, tongue, inside mouth, etc.

How to duplicate a palette

1. In the Colour view, select the palette to be duplicated.

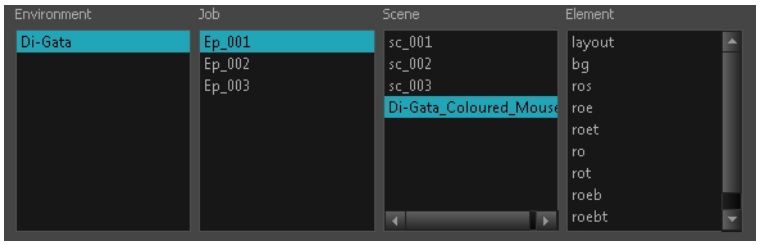


2. Do one of the following:

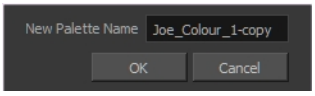
   - From the Colour menu, select **Palettes** > **Duplicate**.
   - Right-click on the selected palette and select **Duplicate**.

   The Palette Browser: Duplicate Palette window opens.

3. If you are in Advanced Palette List mode, select the palette storage level—see *Palette File Storage* on page 201.



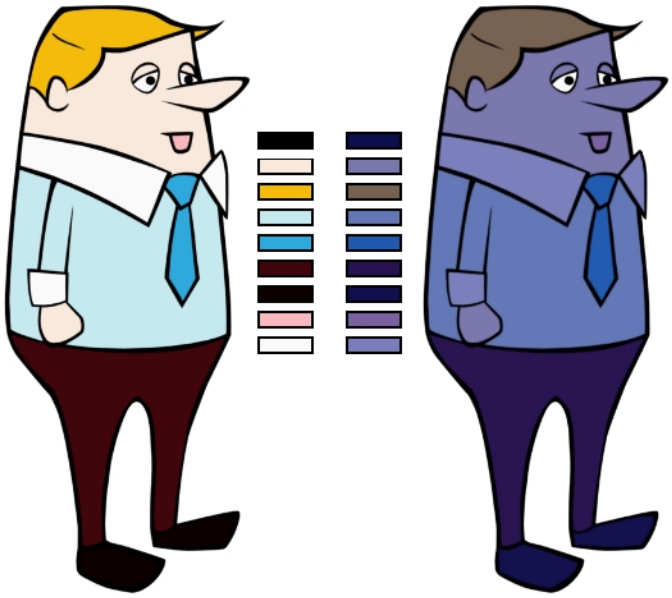
4. In the New Palette Name field, name the palette.



5. In the New Palette Name field, name the palette.
6. Click **OK**.

   The palette appears in the palette list.

Cloning a Colour Palette

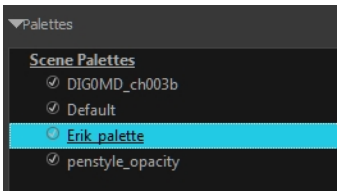


A character usually has only one master palette, although there are times when the characters are placed in different lighting conditions and require a different colour shading. The night palette is a popular choice when a scene or sequence changes from day to night. It can be difficult and time-consuming to repaint everything and creating two independent palettes can be quite complex. As an alternative, Toon Boom Harmony provides clone palettes.

The clone palette is a copy of the master palette. The colours in each palette have the same properties. The colours have the same identification number pointing to the same colour zones, but they can have different names and RGBA values. Depending on the palette (night or day) you're currently using, the painted drawing will update. So there's no need to repaint the animation. All you have to do is create or import a clone palette (palette style).

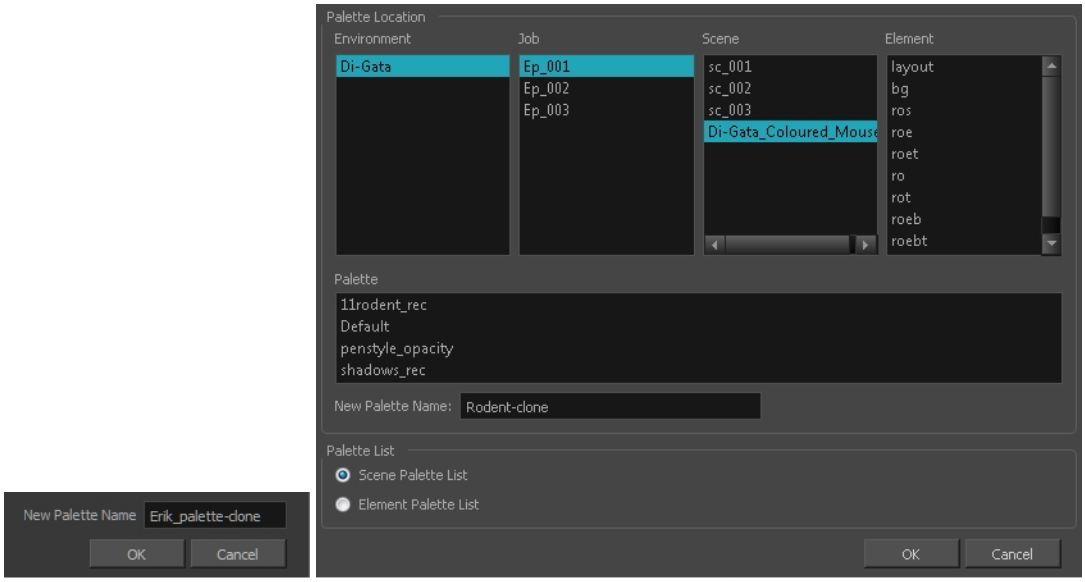
How to clone a palette

1. In the Colour view, select a palette to clone.



2. From the Colour menu, select **Palettes > Clone** or right-click and select **Clone**.

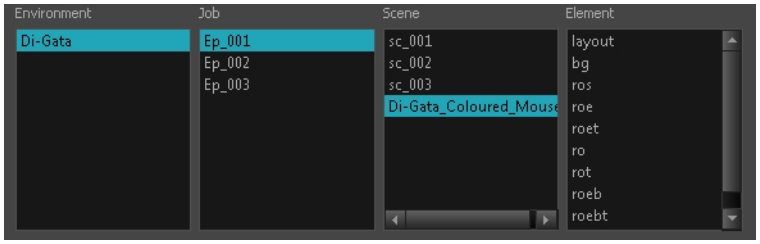
   The Palette Browser: Clone Palette dialog box opens.



Basic palette

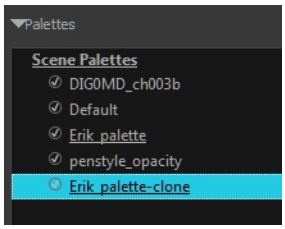
Advanced Palette List mode

3. If you're in Advanced Palette List mode, select the palette storage level—see *Palette File Storage* on page 201.



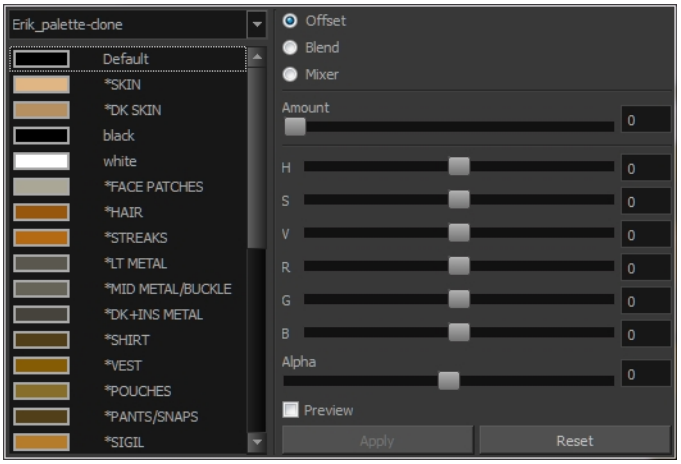
4. In the New Palette Name field, name the palette. We recommend keeping the "-clone" in the name.
5. Click **OK**.

   The cloned palette appears in the palette list.



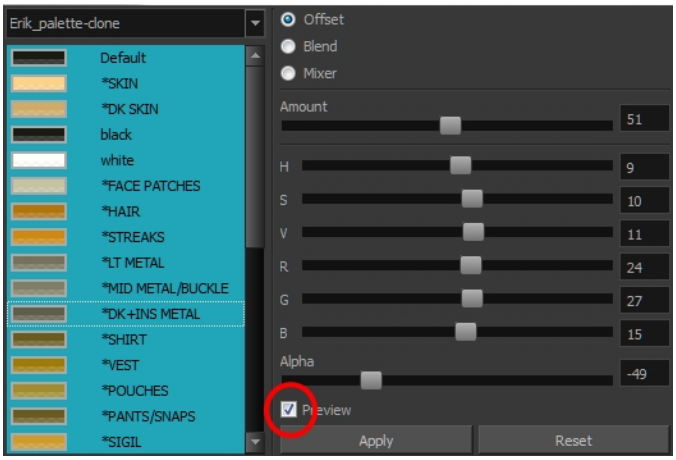
6. In the Palette list, select the clone palette you created to offset or blend colours—see *Mixing Colours* on page 235.
7. From the Colour View menu, select **Palettes > Tint Panel** or right-click and select **Tint Panel**.

   The Blend/Offset Tint panel opens.



8. Select one or more colours to modify. You can select all your colours by pressing Ctrl + A (Windows/Linux) or ⌘ + A (Mac OS X).

9. Offset, blend, or mix the colours using the sliders and increasing the Amount value.



10. Select the **Preview** option to see a preview of the colours while you adjust them.

NOTE: You can also modify the colours individually with the Colour Picker window.

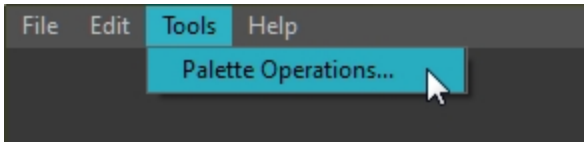
Palette Operations

When you start Toon Boom Harmony connected to the database, you can access the Palette Operations dialog box which lets you clone, rename, or delete palettes.

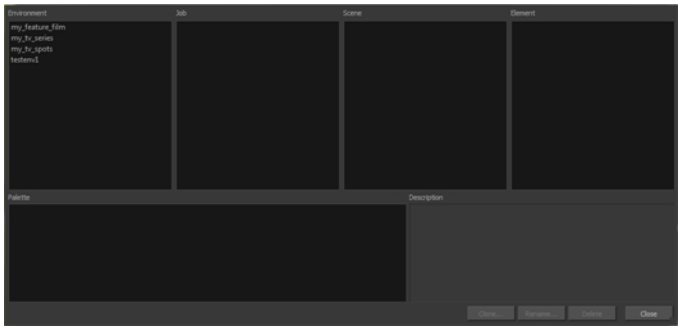
How to open the Palette Operations dialog box

1. Start Harmony and log in.

2. Close the Database Selector dialog box.
3. From the top menu, select **Tools > Palette Operations**.

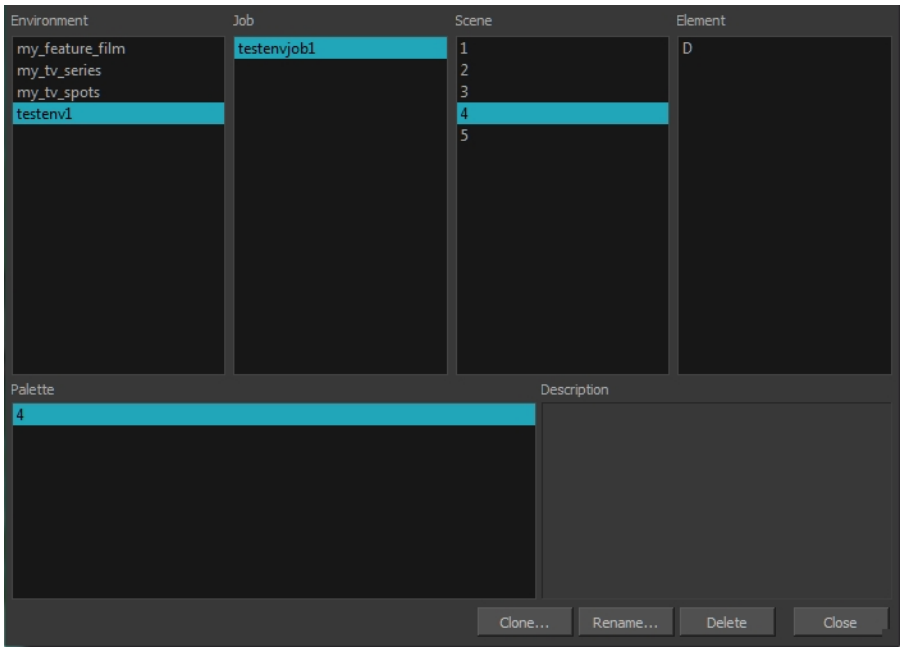


The Palette Operations dialog box opens.



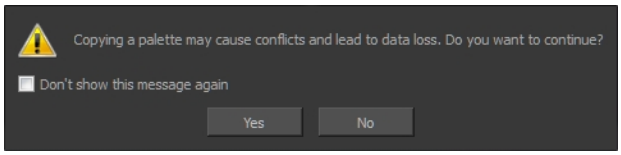
How to clone a palette in the Palette Operations dialog box

1. Select the palette you want to clone at the location and level in which it was stored.



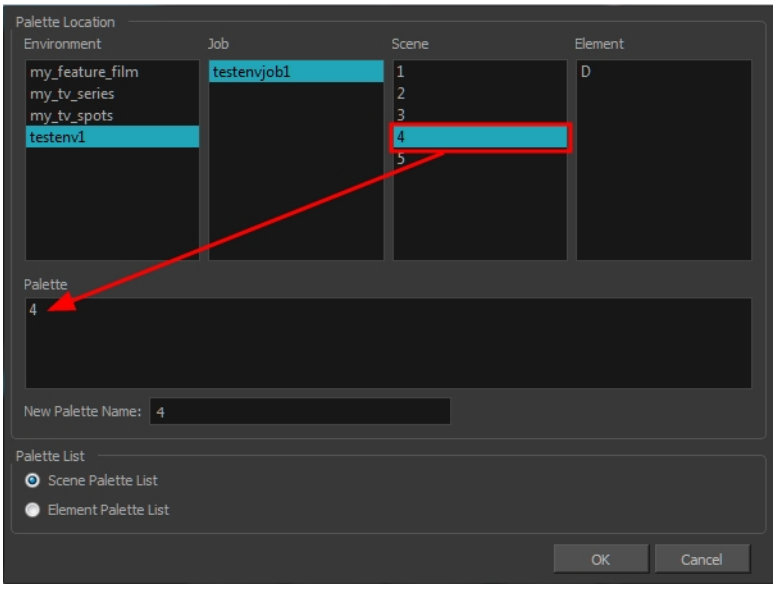
2. Click **Clone**.

   A Warning dialog box opens.

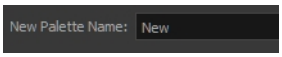


3. Select the **Don't show this message again** option if you do not want to see this message every time you perform this operation.
4. Click **Yes**.

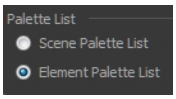
   The Palette Browser dialog box opens.
5. Select the level to store the palette file.



6. Name the palette. There is no need to add the suffix "palette" to the name as it is always recognized as a palette file.



7. Select a Palette List option.



   - The Scene Palette List is mainly used with cut-out animation. A cut-out character will often be divided in twenty to thirty different drawing elements that use the character's master palette.

     The palette list is stored at the scene level instead of the Element directory. This way, all palettes linked to this list will appear in every drawing element created in the scene. There is no need to manually load the palette in each element.
   - The Element Palette List is mainly used with traditional and paperless animation. Unlike cut-out animation, all columns (drawing elements) contain different characters, props, backgrounds and

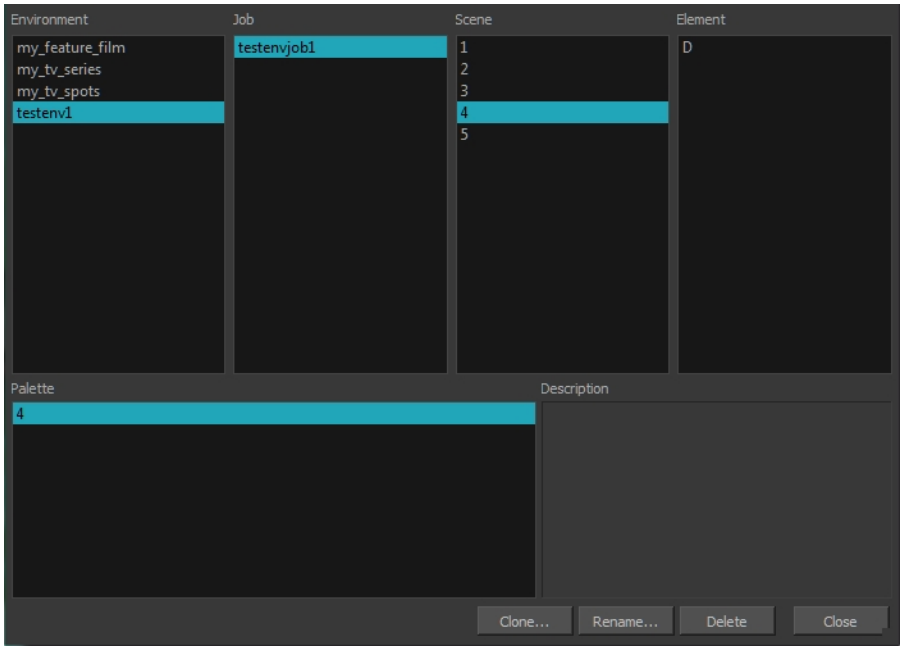
effects. The Element Palette List is used because you do not necessarily want all of the palettes for all of your elements linked in every column.

The palette list is stored in the drawing element's directory instead of directly in the Scene level. This ensures that the links to the palettes appear only in the appropriate element. If you prefer to access a global palette list, link your palettes to the Scene Palette List.

8. Click **OK**.

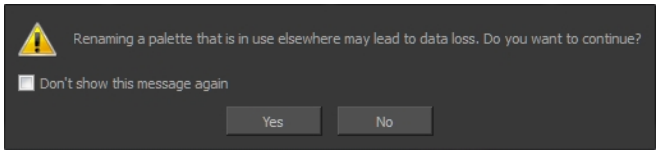
How to rename a palette in the Palette Operation dialog box

1. Select the palette you want to rename at the location and level in which it was stored.



2. Click **Rename**.

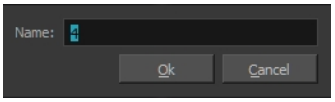
   A Warning dialog box opens.



3. Select the **Don't show this message again** option if you do not want to see this message every time you perform this operation.

4. Click **Yes**.

   The Rename Palette dialog box opens.

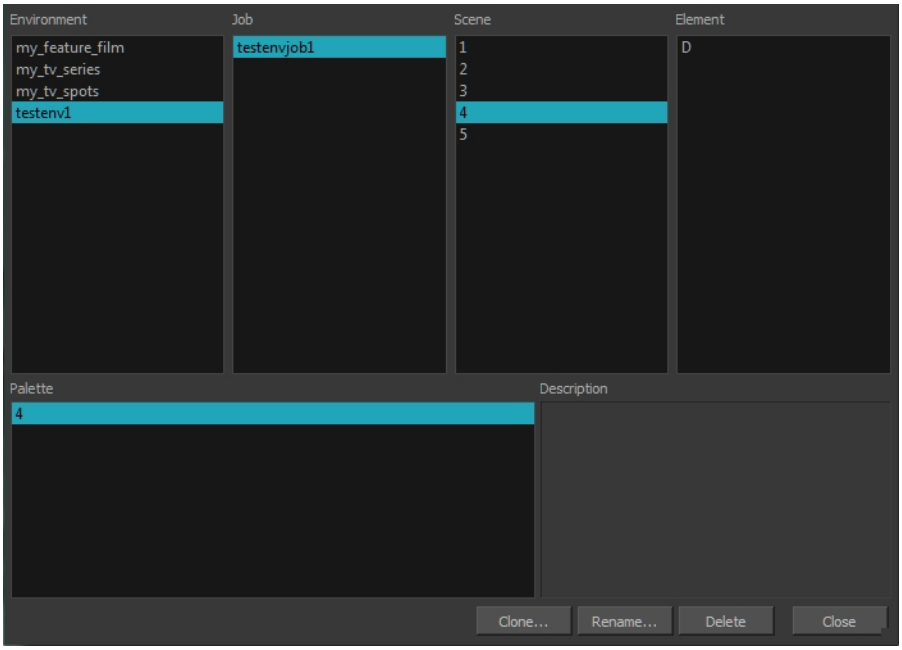


5. Type in a name for the palette.

6. Click **OK**.

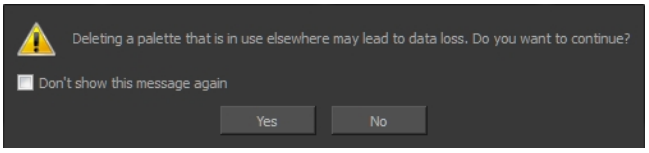
How to delete a palette in the Palette Operation dialog box

1. Select the palette you want to delete at the location and level in which it was stored.



2. Click **Delete**.

   A Warning dialog box opens.



3. Select the **Don't show this message again** option if you do not want to see this message every time you perform this operation.

NOTE: It is not recommended to disable the warning message as deleting a palette cannot be undone.

4. Click **Yes**.

Importing and Linking Palettes

Before starting colouring work such as ink and paint or even creating new colour models, you may want to load existing colour palettes to your scene. You can do so by linking colour palettes to your palette lists.

You may encounter a case where only a colour palette is visible when a layer is selected. If you need that palette in a second layer, you can link the palette to the second layer's palette list. A good example would be a scene where

there is a character on one layer and its arm is on another. In order for both layers to access the palette, you must link both Element Palette lists to that palette. If your palette is linked to the Scene Palette list, it will be accessible by all layers.

If you created a palette in another project and you want to import it in your current project, you can browse for the palette file on your computer and add it to your scene. When the palette is imported in your scene, the file is copied in the project's directory. It is not linked to the original file.

Harmony lets This method is not recommended. It is always safer to have the palettes contained within the database to avoid data loss if the source palette were to be deleted or the project exported without including the external palettes.

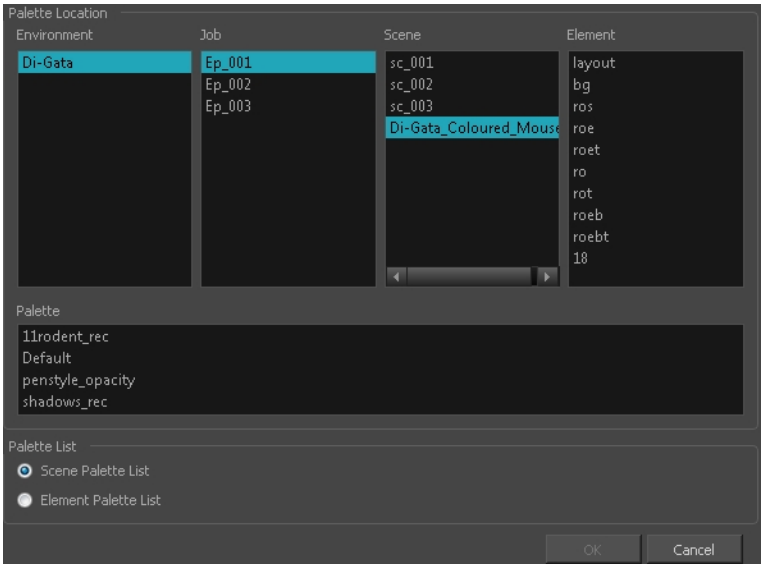
You will notice that when you create or link a palette, a small icon appears on its left. These icons represent the palette's link status.

Icon	Description
	Indicates that the palette is safe. There won't be any problems once the scene is exported. For example, the palette file is stored in the scene folder and is linked to the Scene Palette List.
	Indicates that the palette file is stored in a directory external to the scene's structure. The palette file is probably stored in a Master Palette directory on a hard drive external to the palette-libraries planned for the palette storage. The warning in this case is that if you move your Master Palette directory to another location, you may loose the palette in your scene.
	Indicates that a palette file stored in a level such as Element, Scene, Job or Environment is linked to a Palette list that is not on the same level. For example, a palette file is stored into the Environment folder and is linked to the Element Palette list. The palette is shared.
	Indicates a potentially dangerous situation. Problems may occur when trying to export or link to the palette file. For example, a palette file is stored into the element folder and is linked to the Scene Palette list. The issue in this case is that if you decide to delete the layer containing the palette, it will be lost from your scene.

How to link a colour palette

1. Do one of the following:
   - From the Colour View menu, select **Palettes** > **Link**.
   - Right-click and select **Link**.
   - Click the Import button.

   The Palette Browser: Link Palette dialog box opens.



2. Select the level where the palette file is stored—see *Palette File Storage* on page 201.

3. Select the palette list linking level by enabling either **Scene Palette List** or **Element Palette List**—see *Palette Lists* on page 197.

   The palette appears in the Colour view.

How to import a palette into your project

1. Do one of the following:

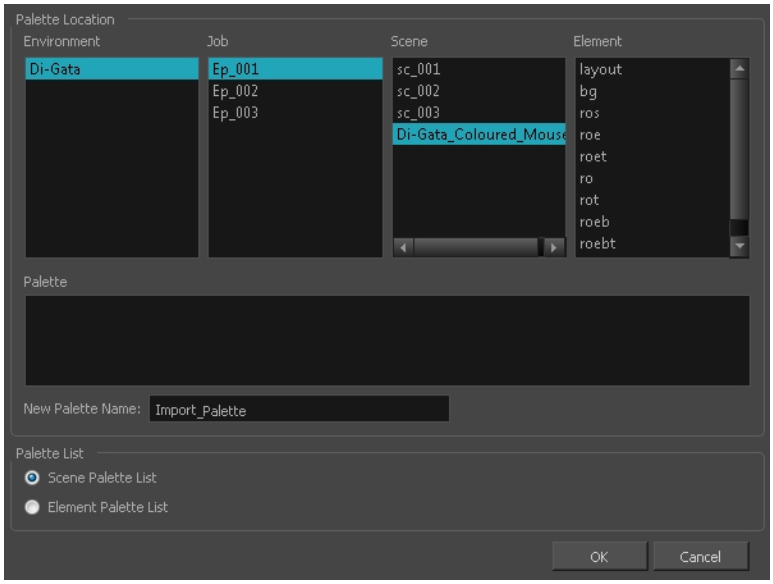
   - From the Colour menu, select **Palettes** > **Import**.
   - Right-click and select **Import**.

   The Browser window opens.

2. Browse for a palette file located (`*.plt`) on your hard drive. You will generally find the palettes in your project's palette-library directory.

3. Click **Open**.

   The Palette Browser opens.



4. If you're in Advanced Palette mode, select the level where the palette file is stored—see *Palette File Storage* on page 201.

5. If you're in Advanced Palette mode, select the palette list linking level by enabling either **Scene Palette List** or **Element Palette List**—see *Palette Lists* on page 197.

6. In the New Palette Name, name the imported palette.

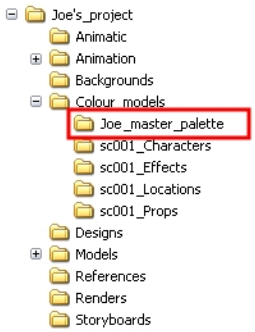
   The palette appears in the Colour view and the file is copied in your project.

How to link to an external palette

1. In the Colour view, click on the **Create Palette** button to create a palette to be used as external.

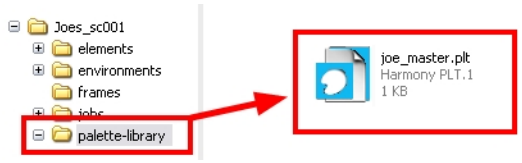
2. Save your scene by selecting **File > Save** from the top menu or by clicking the Save button or press Ctrl + S (Windows/Linux) or ⌘ + S (Mac OS X).

3. On your computer or server, create a master directory. Ideally, this should be created in your Root folder to keep it within the project directory. You could also place it inside your Colour Model's sub-directory—see *Chapter 6: Project Organization and File Structure* in the Fundamentals Guide.

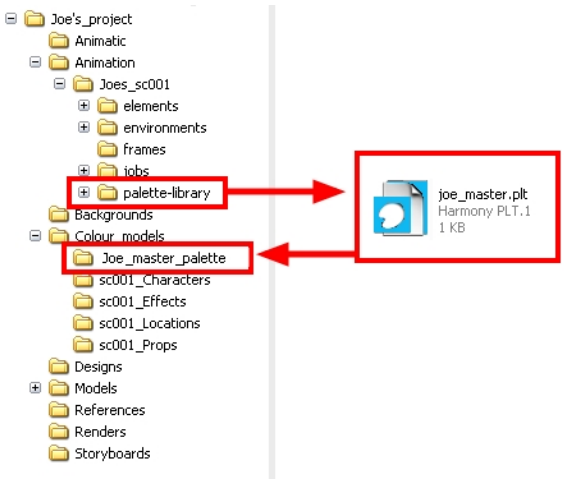


4. Name the folder appropriately, for example: **`Joe_master_palette`**.

5. From your operating system, browse to your Toon Boom Harmony scene and open the palette-library folder.



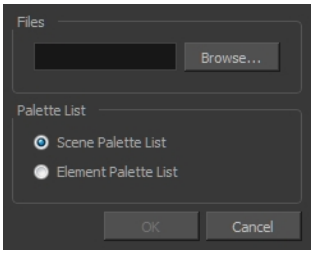
6. Select and copy your palette `*.plt` file to copy it to the master palette directory.



7. Create a new Toon Boom Harmony scene or open the scene where you will link this palette.
8. In the Timeline or Xsheet view, select the element to link the palette to.

9. From the Colour View menu, select **Palettes > Link to External.**

   The Link to External Palette dialog box opens.



10. Click **Browse** to search for your master palettes folder and select the palette `*.plt` file you want to link.
11. In the Palette list section, select how you want to load the palette; at the scene or element level.
12. Click **OK**.

    The linked palette appears in the Colour view.

If a palette is outside the scene, the External icon appears beside the palette name.

NOTE: To link an element (such as a colour model) to the palette that is stored in the external palette directory, you must remove the original palette from the element's palette list. You will then load the duplicated palette into the palette list using the Link to External command, like you did for the other elements.

Colours

Toon Boom Harmony has some very powerful colouring features when it comes to painting. To paint your drawings, you will use different colour swatches, unlike some other painting programs where you modify the main swatch each time you want to paint with a different colour.

In the Colour view, you choose a different colour swatch for each colour you want to paint in your drawing. You can add as many swatches as you want. You can also rename them and modify existing ones.

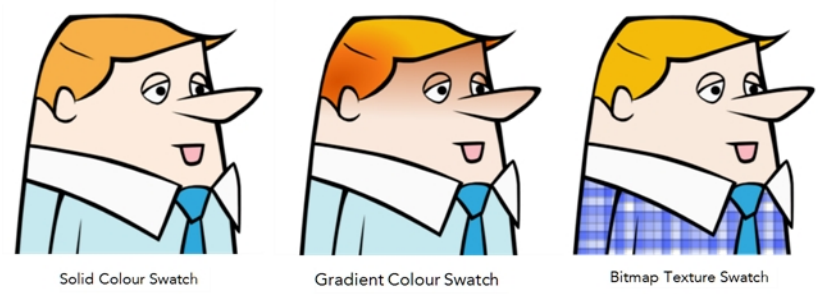
When you modify the colour of an existing swatch, it automatically updates all the zones painted with this swatch throughout the entire project. The colour swatch has a unique ID number that associates it with the painted zones. This way, you can change the look of your character at any time without having to repaint it!

This section is divided as follows:

- *Adding a Colour Swatch* on page 221
- *Editing Gradients and Textures* on page 414
- *Colour Display Modes* on page 233
- *Copying and Pasting Colours* on page 234
- *Mixing Colours* on page 235

Adding a Colour Swatch

You can use several different types of colour swatches, including solid colour, gradient colour and bitmap texture swatches.

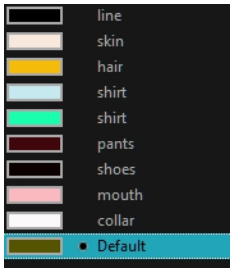


A colour palette is an actual file on the hard drive. These palette files can be stored in a different location on the server. They can be stored in the Environment, Job, Scene, or Element folder and linked to any palette list. This means that if the original palette file is modified, it will update in every drawing element the palette is linked to.

To avoid accidentally modifying the palette, the palette files can be locked. If a palette must be modified, you must get the rights to modify them before doing so.

In Toon Boom Harmony, when you click the Add Colour button, a new colour swatch is created using the colour of the currently selected swatch from your palette. However, you can set a default colour to be used every time you create a new colour in your colour palette. This is useful for creating different shades of the same basic colour.

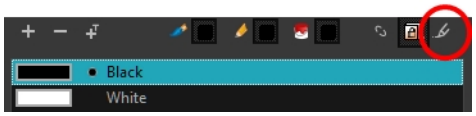
The default colour is also the colour used when you choose to vectorize images you're scanning into your scene, however you add the Default colour swatch to your palette in a different way, so it's unique. It has a unique ID number that makes it easily recognizable from all the other colours in your colour palettes. Being able to change this colour allows you to change the basic colour of all scanned drawings. This can be useful on more than just an aesthetic level as sometimes when you go to NTSC or PAL, pure colours, such as pure black, can create problems.



How to lock and unlock the palette list

- In the Colour view, click the Edit Palette Mode button.

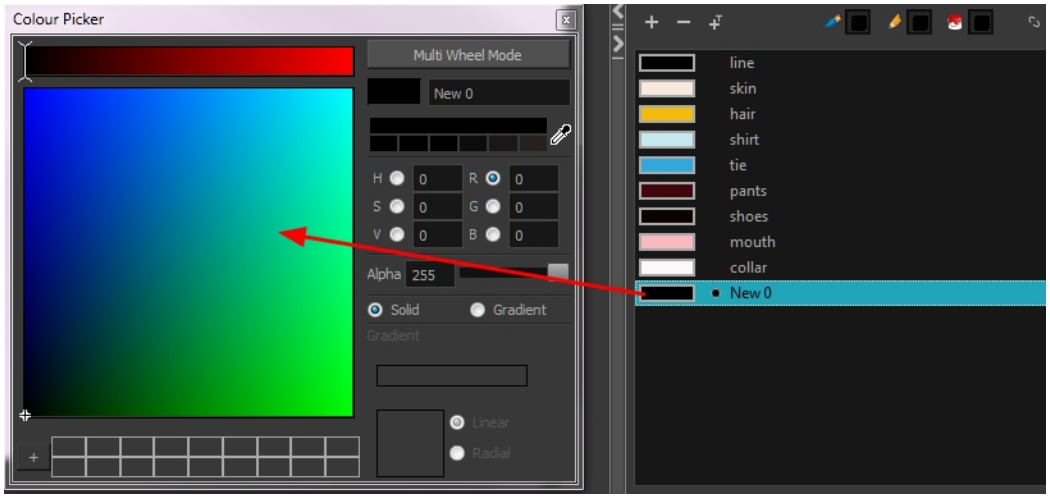
A grey pencil icon appears in the top-right corner of the Palette list.



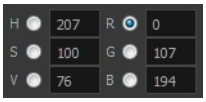
How to add or modify a solid colour swatch

1. In the Colour view, click the Add Colour button.
2. From the Colour View menu, select **Colours** > **Edit** or double-click on the colour swatch.

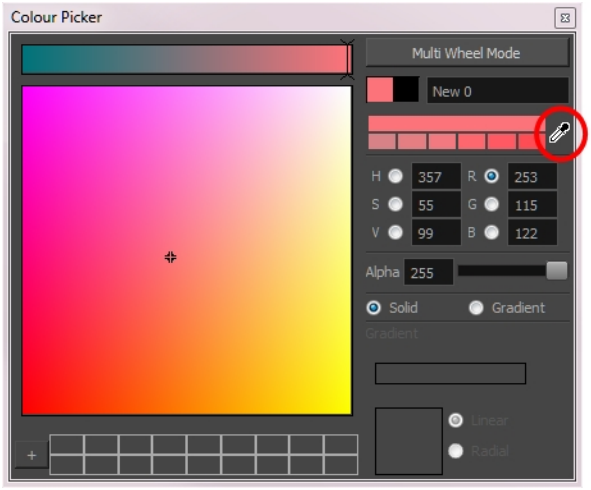
   The Colour Picker window opens.



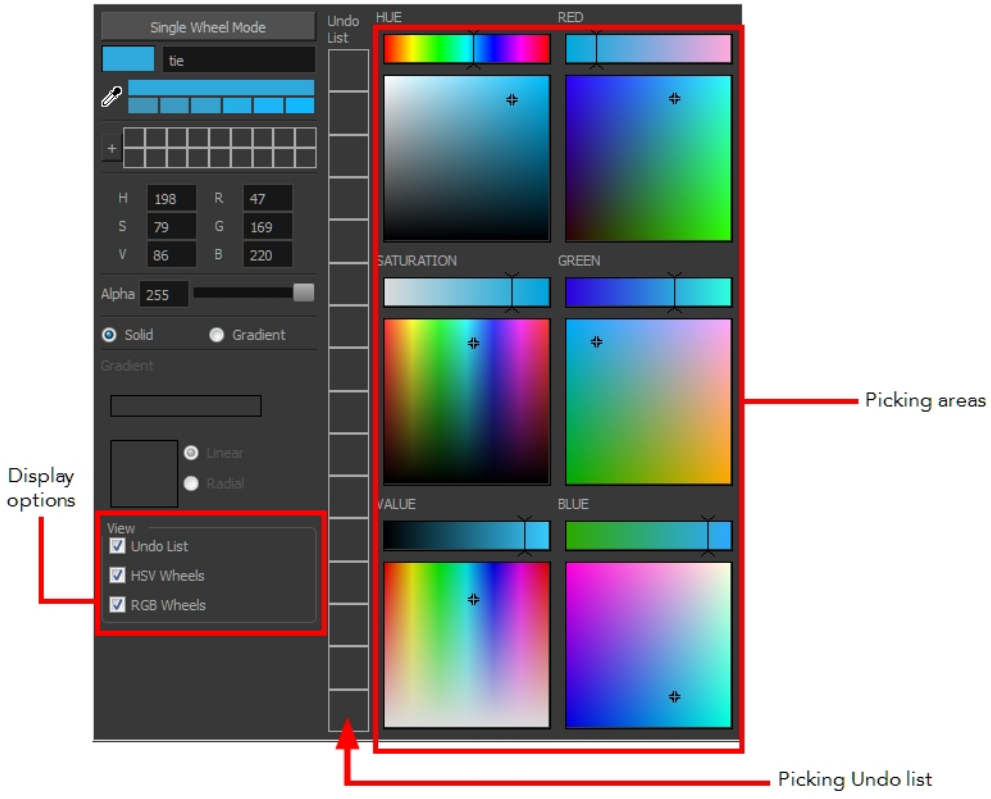
3. To set your colour, do one of the following:
   - In the colour wheel, select a colour.
   - Enter the HSV or RGB values in the corresponding fields. Select the **R,G,B,H,S** or **V** options to change the look of the colour picking area.



- Click the Dropper button to select any colour on your screen. It can be from the Harmony interface, your operating system or any other open application.



You can also click **Multi Wheel Mode** to open the Multiwheel Colour window. This displays all the picking area styles together and also contains a picking undo list. To return to the regular Colour Picker window, click **Single Wheel Mode**.

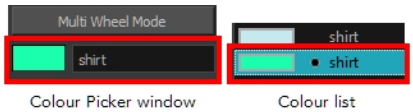


4. Click on the Shade Scale swatches to modify the shade of the selected colour.

5. Adjust the transparency with the Alpha slider or type the value directly in the Alpha field.

6. Click the **Add** button to add the current selected colour to the Colour Storage Library, so you can quickly access it later.

7. Rename the colour swatch in the Colour Picker window or directly in the colour list by double-clicking on its name.



How to change the default swatch colour for all your colour palettes

1. From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences** (Mac OS X).
2. In the Preferences dialog box, select the **Drawing** tab.
3. In the New Colour Pots section, select the **Create New Colour Pots Using the Default Colour** option. You can also click on the colour swatch beside the option to change the default colour.

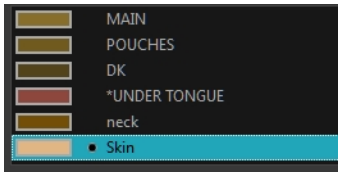
How to add a new colour swatch using the default colour

- From the Colour View menu, select **Colours > New**.

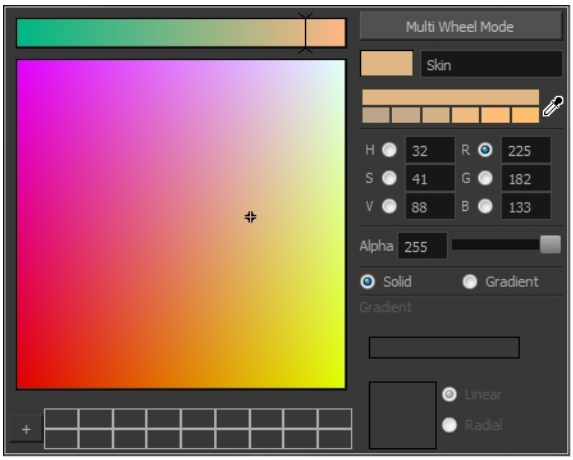
A new swatch is added to your palette using the default colour swatch colour. The new swatch created with the New command will be named **`New 0`**.

How to create a gradient colour swatch

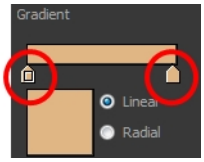
1. In the Colour view, select a colour to modify .
2. Do one of the following:
   - Click the new colour and from the Colour View menu, select **Colours > New**.
   - Double-click on the colour swatch.



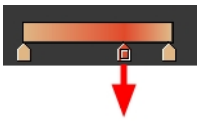
The Colour Picker window opens.



3. Select the **Gradient** option.
4. Select the **Linear** or **Radial** option.
5. Adjust the Gradient arrows to modify the colours.



- Add extra colours by clicking between the arrows below the gradient bar. Then click on the Colour Preview to select a colour.
- Pull down the arrows to remove them.



- Move the arrows left and right to modify the gradient distance.

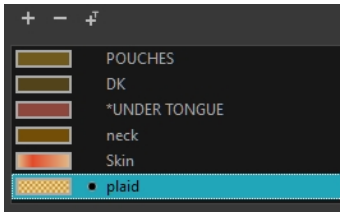
NOTE: To learn how to reposition the gradient zones in your drawings, see *Editing Gradients and Textures* on page 414.

How to create a texture colour

1. From the Colour menu, select **Colours > New Texture** or click the New Texture button.

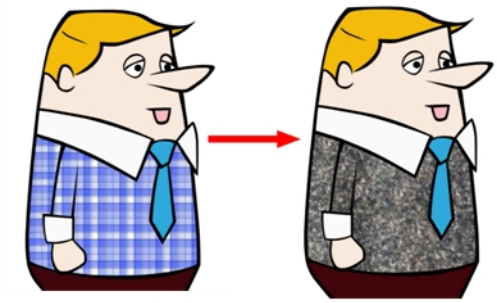
   The Browser window opens.
2. Browse for a PSD or TGA bitmap file created with a third party software and click **Open**.

   The texture is added to the colour list.



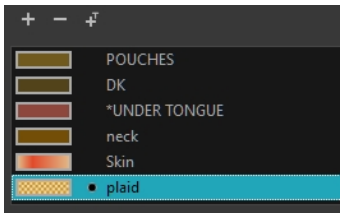
NOTE:
To learn how to reposition the textured zones in your drawings, see *Editing Gradients and Textures* on page 414.

You can also replace a texture once it is painted. If you decide to make the character's shirt wool instead of plaid, just update the texture file in the swatch and the entire project updates. Any transformation previously applied to the texture's position in your drawings will be kept.



How to replace a texture swatch

1. In the Colour view, select the texture swatch that contains the bitmap texture you want to replace.

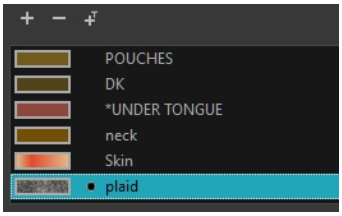


2. From the Colour View menu, select **Colours > Edit Texture** or double-click on the swatch.

   The Browser window opens.

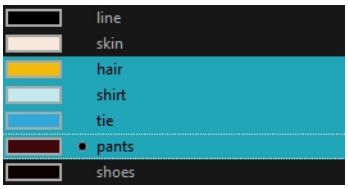
3. Browse for the new PSD or TGA bitmap file created in a third party software.

4. Click **Open** to update the colour swatch.



How to delete a colour swatch

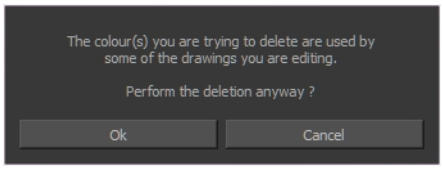
1. In the Colour view, select the colour swatches to delete.



2. Do one of the following:

   - From the Colour View menu, select **Colours > Delete**.
   - Click the Delete Colour button.
   - Right-click and select **Delete**.
   - Press Delete.

   If the colour swatch is used in a drawing, the Delete Colour dialog box opens.



3. Click **OK** to delete the colours or click **Cancel** to abort the operation.

   - If you delete colour swatches already in use, the zones painted with them turn red so you can easily identify them.

Editing Gradients and Textures

If you paint a zone with a gradient or texture colour, you can use the Edit Gradient/Texture tool to modify its position in the zone. You can move, scale, rotate and skew. If you want to match the colour to the animation, set the first texture position and copy the Edit Gradient/Texture position. When moving to the next drawing, you can select the next texture and paste the previous position to continue the modifications.

If you are painting a hand-drawn animation or if your want the Brush tool and Paint tool to use your gradient's position, angle and scale settings instead of the default ones, you can store your own settings and reuse them afterward.

This way of editing a texture using the Edit Gradient/Texture tool also works with pencil lines drawn with textured "brushes". If you then paint your textured pencil line with a gradient, you can do so and then edit both elements independently at the same time.

How to use Edit Gradient/Texture tool

1. Do one of the following:
   - In the Tools toolbar, click the Edit Texture tool.
   - From the Camera or Drawing View menu, select **Drawing Tools > Edit Gradient/Texture.**
   - Press Shift + F3.
2. Click the gradient or texture colour to modify.

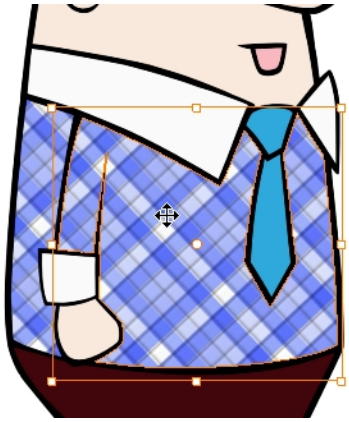
Erik, Di-Gata Defenders © Nelvana Limited, Corus® Entertainment

A blue selection frame surrounds the selected gradient or texture.

3. Edit the gradient or texture by adjusting the control handles around the selection frame.

How to store gradient and texture settings

1. In the Tools toolbar, select the Select tool or press Alt + S.
2. In the Camera or Drawing view, select the gradient or texture zone to store.



3. In the Tool Properties view, click the Store Colour Gradient button.

How to use the stored gradient and texture settings

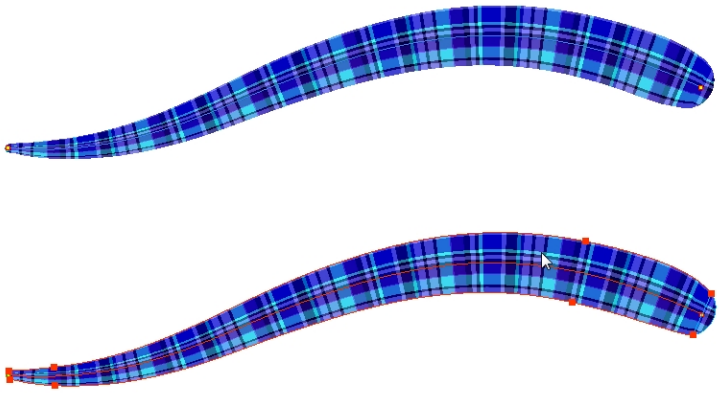
1. In the Tools toolbar, select the Brush or Paint tool.
2. In the Tool Properties view, click the Use Stored Colour Gradient button.
3. In the Camera or Drawing view, draw and paint.

How to use Pencil Editor tool to edit the texture or gradient on a pencil line

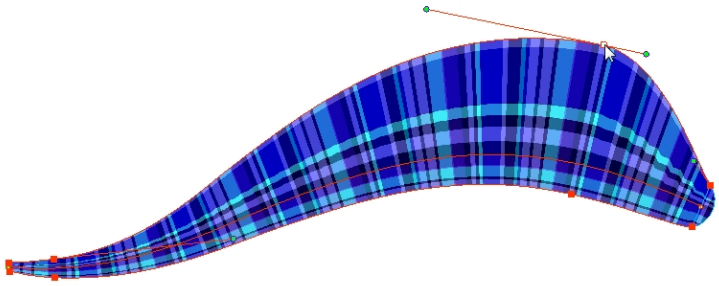
1. Do one of the following:
   - In the Tools toolbar, select the Pencil Editor tool.
   - From the top menu, select **Drawing > Drawing Tools > Pencil Editor.**

- Press Alt + W.

2. Click on the pencil line to be modified to bring up its contour envelope.

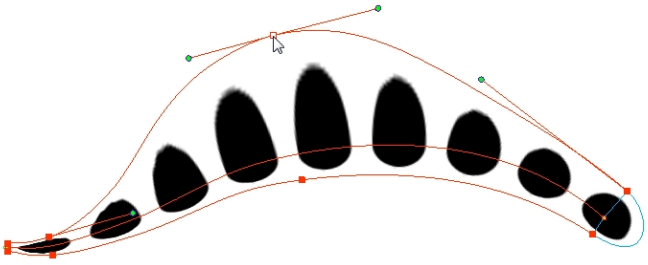


3. Select one of the contour points around the envelope and move its position to change the size of the tiled texture or gradient. You can also pull directly on the lines of the contour envelope or play with the Bezier handles of any given point in order to continue to modify the envelope form.



Expanding the width of the envelope parallel to the pencil line's central vector will cause the tiled texture to be stretched. Conversely, reducing the envelope's width will cause the tiled texture to look squashed.

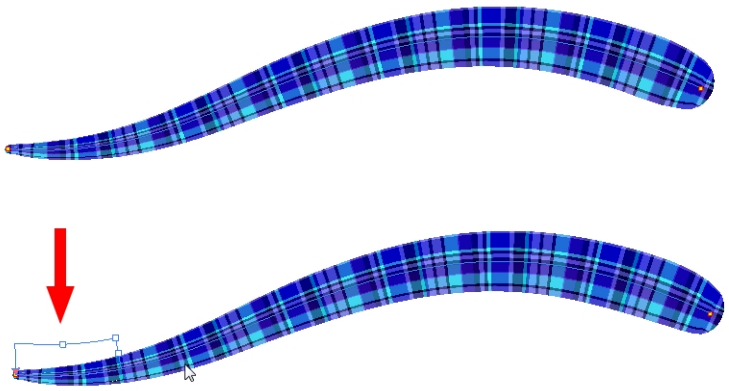
Reducing the contour's width perpendicular to the pencil line's central vector will reduce the number of tiles, while expanding it will increase the number of tiled images.



This editing technique does not just work on texture fills, but can also be applied to pencil lines drawn with a textured "brush".

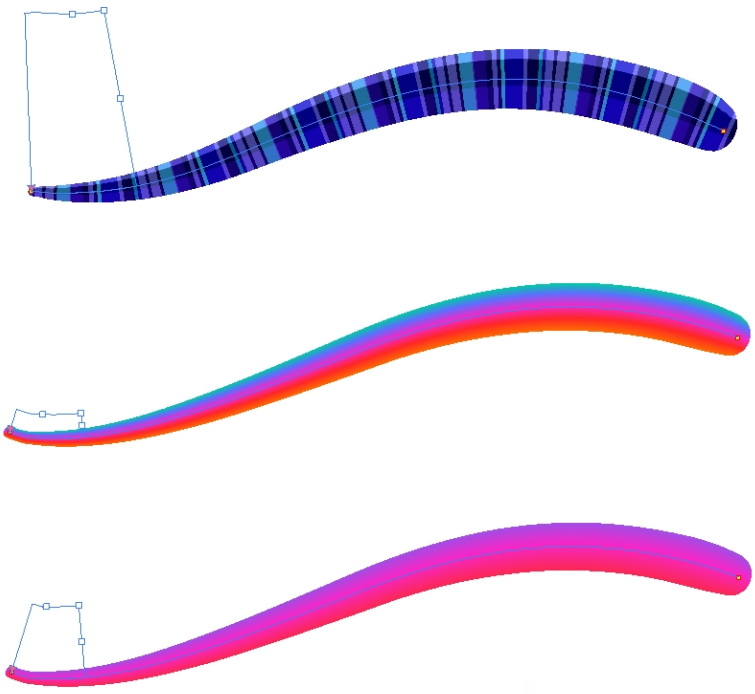
How to use Edit Gradient/Texture tool to edit the texture or gradient on a pencil line

1. Do one of the following:
   - In the Tools toolbar, select the Edit Gradient/Texture tool.
   - From the top menu, select **Drawing > Drawing Tools > Edit Gradient/Texture**.
   - Press Shift + F3.
2. Click on the pencil line to be modified to bring up the editor controls.

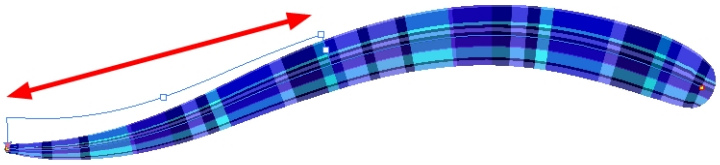


3. The editor controls delineate a single tile in the texture. For gradients, this is less applicable. Pull on the top of the editor controls to stretch the tiled texture throughout the length of the stroke.

   As gradients are parallel to the stroke's central vector, this will stretch the way that the gradient is distributed in the pencil line's envelope. The envelope still acts as a boundary for the texture or gradient.

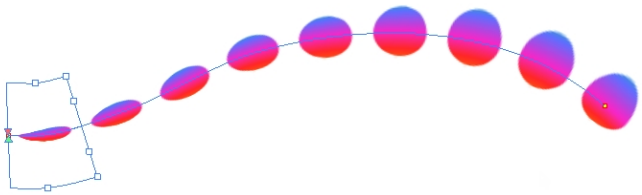


4. Drag the editor control perpendicular to the stroke. You will feel it glide along the strokes central vector line. This is another way to resize the texture tile. Instead of stretching or shrinking it vertically, this motion stretches or shrinks it vertically. As gradients are parallel to the pencil line's central vector, stretching them vertically gives no visual result.

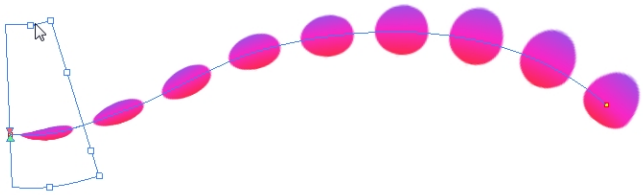


How to use Edit Gradient/Texture tool to edit the texture and gradient of a pencil line

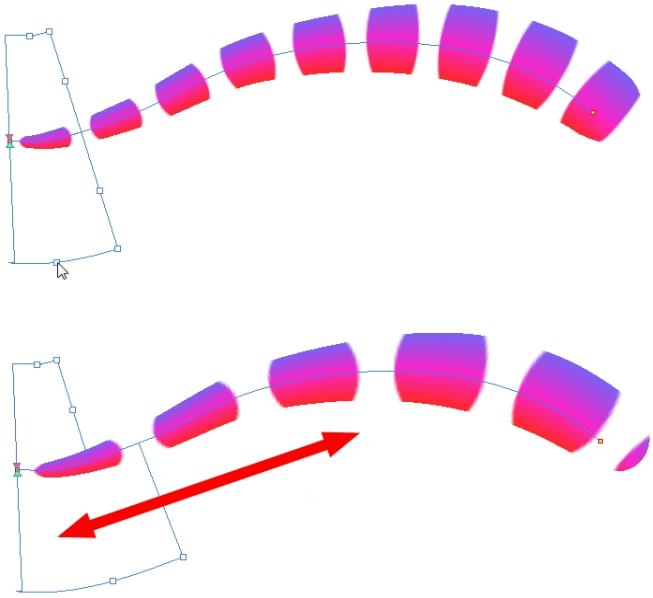
1. Do one of the following:
   - In the Tools toolbar, select the Edit Gradient/Texture tool.
   - From the top menu, select **Drawing > Drawing Tools > Edit Gradient/Texture**.
   - Press Shift + F3.
2. Click on the pencil line to be modified to bring up the editor controls.



3. Use the top editor controls edit the gradient.



4. Use the bottom controls edit the "brush" texture.



Colour Display Modes

The Colour view has two display modes:

- List
- Swatch

You can also display the RGB values and names of your solid colour swatches instead of only the name. This option is not available when displaying the colours in Swatch mode.

How to switch between the display modes

1. From the Colour View menu, and do one of the following:
   - Select **Colours > Swatch Mode** to display the swatches.
   - Deselect **Colours > Swatch Mode** to display the colour list.

List mode

Swatch mode

How to display the swatch colour values

- From the Colour View menu, select **Palettes > Display Colour Values**.

  The solid colour swatches' RGB values are displayed between the colour swatch and its name. The gradient colour swatches will be identified as (gradient).

Copying and Pasting Colours

When you're creating palettes, you may want to copy colour swatches or their values and paste them in other palettes to save time. You can also quickly copy a colour value from a palette in your scene to a selected colour swatch in a different palette.

You can copy a selected colour swatch and paste it as a clone. Since it produces a clone colour swatch, it is impossible to use the Paste as Clone command in the same palette as you copied the original colour swatch from.

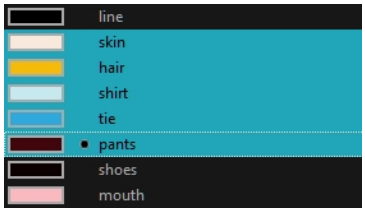
If you would like to keep a reference file of some colour IDs or use them with custom plug-ins, you can copy the colour swatch IDs. Here is an example of colour ID: **`075cf5b552401130`**.

```
ToonBoomAnimationInc PaletteFile 2
Solid    Black                    0x075cf5b15fe006a1   0   0   0 255
Solid    White                    0x075cf5b15fe006a3 255 255 255 255
Solid    Red                      0x075cf5b15fe006a5 255   0   0 255
Solid    Green                    0x075cf5b15fe006a7   0 255   0 255
Solid    Blue                     0x075cf5b15fe006a9   0   0 255 255
Solid    Custom                   0x075cf5b15fe006a8   0   0 150 255
Solid    "Vectorized Line"        0x0000000000000003   0   0   0 255
```

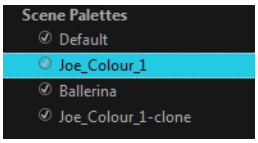
- In the Colour view, click the Edit Palette Mode button to edit the colour list.

How to copy and paste colours

1. In the Colour view, select one or more colours to copy.
   - In the Colour view, click the Edit Palette Mode button to edit the colour list.



2. In the Colour View menu, select **Colours > Copy** or press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).
3. In the Palette list, select the palette in which you want to paste the colours.



4. From the Colour View menu, select **Colours** > **Paste as New Colours** or press Ctrl + V (Windows/Linux) or ⌘ + V (Mac OS X).
   - To paste the colour values of the copied swatch over an existing colour swatch, select **Colours** > **Paste Colour Values**.

How to clone a colour swatch

1. In the Colour view, select the colour swatch you want to clone.
   - In the Colour view, click the Edit Palette Mode button to edit the colour list.
2. From the Colour View menu, select **Colours > Copy** or press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).
3. In the Colour view, select the colour palette you want to paste the clone into or create a new palette.
4. From the Colour View menu, select **Colours > Paste as Clone**.

   The cloned colour swatch appears in the palette.

How to copy a colour ID

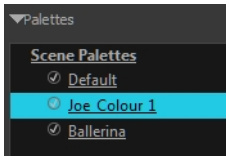
1. In the Colour view, select the colour swatch you want toget the ID from.
   - In the Colour view, click the Edit Palette Mode button to edit the colour list.
2. From the Colour View menu, select **Colours > Copy Colour ID** or press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).
3. Paste the copied value as plain text in the desired document.

Mixing Colours

If you want to modify a series of colours to blend a tint in them or offset their RGBA values, you can use the Tint panel. You can also create palette styles, such as night and day styles.

How to mix colours

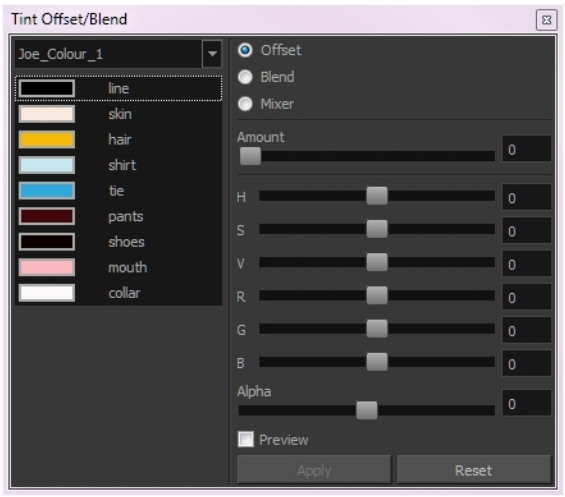
1. In the Colour view, select the palette that contains the colours you want to offset or blend.



2. Do one of the following:

   - From the Colour View menu, select **Palettes** > **Tint Panel**.
   - Right-click and select **Tint Panel**.

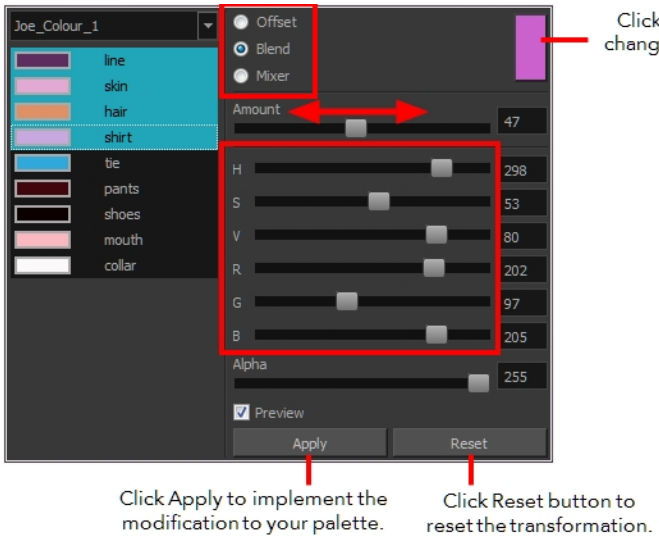
   The Tint Blend/Offset panel opens.



3. Select one or more colours to modify in the colour list. To select all the colours, press Ctrl + A (Windows/Linux) or ⌘ + A (Mac OS X).

4. Select **Preview** option.

5. Select the **Offset**, **Blend**, or **Mixer** option.



Parameter	Description
Offset	Offsets the selected colours by the adjustments made using the HSB and RGB sliders. Use the Amount slider to adjust the degree of offset. Use the Alpha slider to adjust the opacity of the selected colour.
Blend	Blends the selected colours with the colour swatch in the top-right corner. Use the Amount slider to adjust the degree of blend. A blend of 100% turns the selected colours into the same colour as the swatch. Adjusting the HSB and RGB sliders affect the swatch colour, which in turn affects the selected colours on the left. Use the Alpha slider to adjust the opacity of the swatch.
Mixer	Select a Base and Tint colour to form a third colour swatch. Use the slider just beneath to mix the Base and Tint colours by different amounts. This will affect the mixed swatch whether it is selected or not. Select either the Tint or Base swatch and use the HSB and RGB sliders to adjust its colour. This will affect the mixed swatch colour, which in turn affects the selected colours on the left.

6. Click **Apply**.

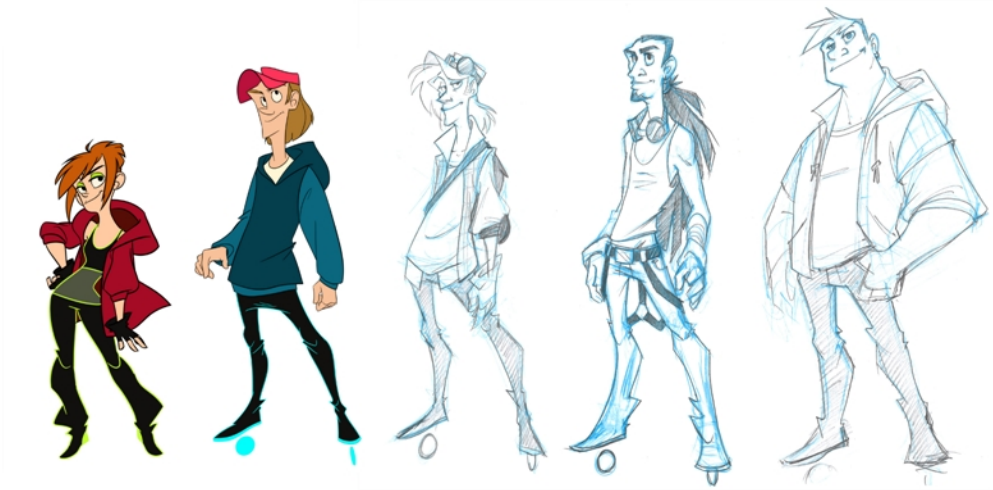
Painting the Model

Now that you've created the colours and the palette, you're ready to paint your model.

The colour model needs to be painted in order to adjust the colours with the other elements in the production. You can paint your model regardless of the colour RGBA and adjust them later when all the elements are together.

Once your palette is created and your model is painted, you can import a key background and other characters using the Import Drawings option or the Library to compare and adjust the palettes—see *Sharing the Colour Model* on page 239 to learn how to import your background file.

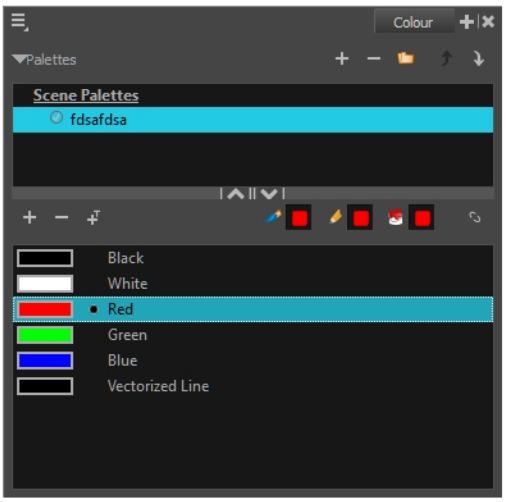
For paperless and cut-out animation, it's a good idea to provide a line-up template with the colour model to show the scale ratio between the characters, props and backgrounds.



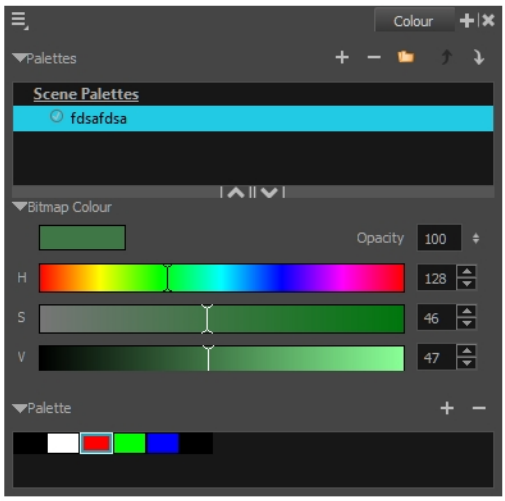
Once your colour model is completed, create a line-up template by pasting one of the production's main characters, or even just a hand, beside the colour model to show the relative size. This allows the animator, layout artist, or scene setup artist to retain the correct scaling throughout the entire project when setting the elements in the scene. You can store your template in the Library.

How to paint a colour model

1. From the Drawing or Camera View menu, select **View > Switch to Colour Art/Switch to Line Art** or press L.
2. Create your master colour palette—see *Creating a Colour Palette* on page 203
3. Add new colours to the palette—see *Adding a Colour Swatch* on page 221.
4. Select your Paint Bucket tool. We recommend the Paint Unpainted tool.
5. In the Colour view, select a colour to paint your drawing.

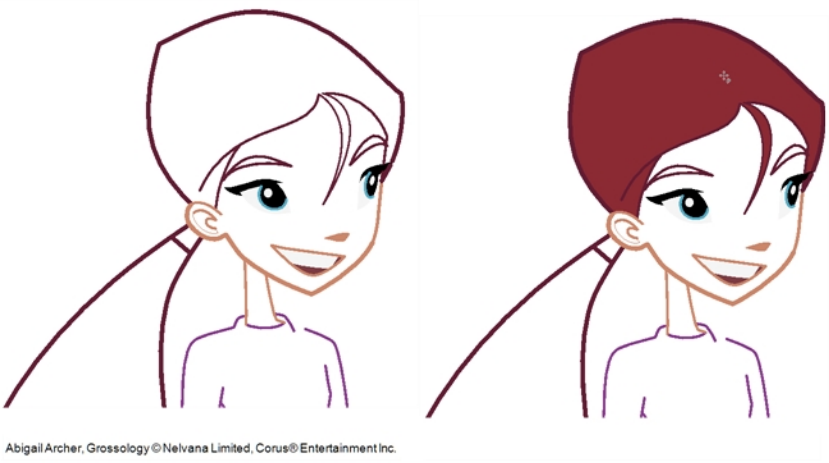


Colour view when working with vector layers



Colour view when working with bitmap layers

6. Paint the model by selecting colour swatches in the palette and clicking on your drawing. Note that only closed zones will be painted. If there's a gap in your artwork, you must close before you can paint it.



7. To separate the lines and fill zones on separated art layers, see *Art Layers* on page 396.

8. Adjust the colours—see *Mixing Colours* on page 235.

Sharing the Colour Model

When your colour models are prepared and organized in a colour model scene, it's time to share them.

The Library is a central repository for all the data which will be reused throughout the production. It can be accessed from any Harmony scene; if multiple users are connected to the same network, all machines can access a central library. These models can be shared among all the users to ensure that everyone has the same set of colours and references.

A template is a set of elements created from a Harmony scene that can be imported into other scenes. It can contain drawings, palettes, and any other elements available in Harmony.

A colour model template is very simple to make. When a drawing is stored in the Library, the corresponding palette is attached to it. This means that whenever the colour model is imported from the Library into the scene,

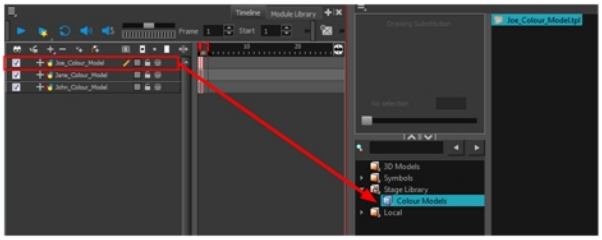
the palette is also imported. To learn more about libraries and templates—see the Harmony Cut-Out Animation Guide.

NOTE: It is recommended that you add a colour model subfolder to your library.

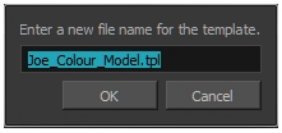
In the Timeline view, you can create a template by selecting the drawing element's node. This contains all drawings from the drawing element, palettes, and exposure. A template that was created by selecting the drawing exposure contains the selected drawings, their exposures, and the palettes.

How to create a template from the Timeline view

1. In the Library, select a folder to store the template. Right-click and select **Right to Modify**.
2. From the Timeline view, select the drawings, pegs, effects, keyframes, sounds, exposures, and nodes, and drag them to the Library's folder. Anything that is available in the Timeline view can be stored as a template.



The Rename window opens.

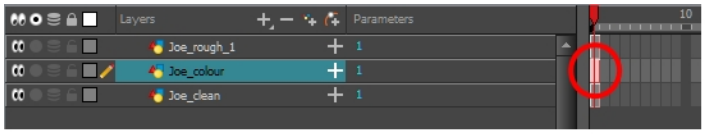


3. Type in a name for the template and click **OK**.

   There is no need to save the library. Everything is automatically stored and saved as soon as it is pasted in the library.

How to load a colour model from the Timeline or Xsheet view

1. In the Timeline or Xsheet view, select a drawing (*.tvg).



2. Bring the model into the Model view by doing one of the following:

   - In the Timeline view, drag the selected drawing and drop it directly in the Model view.

- From the Model View menu, select **Use Current Drawing as Model**.

NOTE: The Use Current Drawing as Model button is not part of the default Model View toolbar. To add the Use Current Drawing as Model button to the Model toolbar, right-click in the Model view toolbar and select **Customize**. Drag the Use Current Drawing as Model button from the Available Tools column and move it to the right (Toolbar) column. Click **OK**.

- In the Model View toolbar, click Current Drawing button.

The model appears in the Model view.

How to browse for a colour model drawing on your hard drive

1. Do one of the following:
   - In the Model View toolbar, click the Import Model button.
   - From the Model View menu, select **Import Model**.
   - Select **File > Import > Colour Model**.
2. In the Browser window, browse for any *.tvg drawing file on your hard drive or in the database.
3. Click **Open**.

   The model appears in the Model view.

How to load the default models

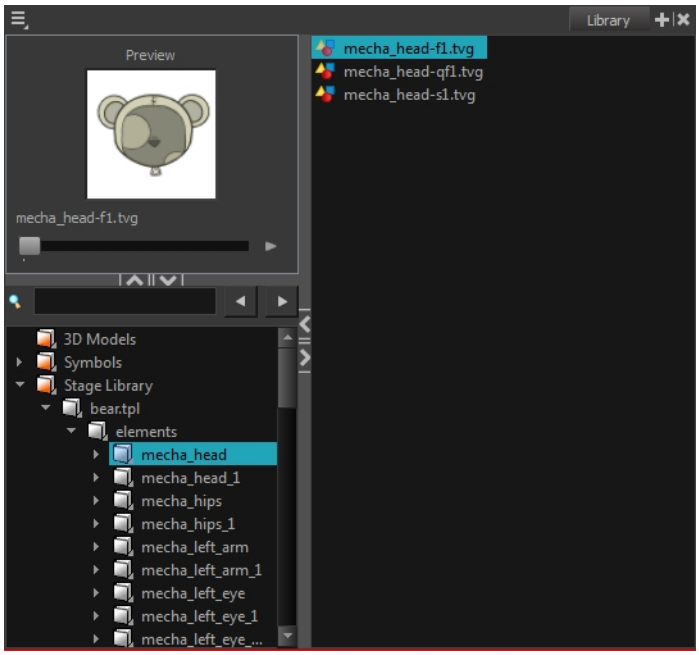
1. In your scene's folder, create a new folder and name it: **`models`**.
2. On your hard drive, copy the *.tvg drawing file you want to use as colour models in your scene.
3. Do one of the following:
   - From the Model View menu, select **Load Default Models**.
   - In the Model View toolbar, click the Load Default Model button.

NOTE: The Load Default Model button is not part of the default Model View toolbar. To add the Load Default Model button to the Model toolbar, right-click in the Model view toolbar and select **Customize**. Drag the Load Default Model button from the Available Tools column and move it to the right (Toolbar) column. Click **OK**.

How to load a single drawing from the Library view

1. In the Library view, click the template containing the drawing to import in the Model view.
2. Right-click on the template and select **Open As Folder**.

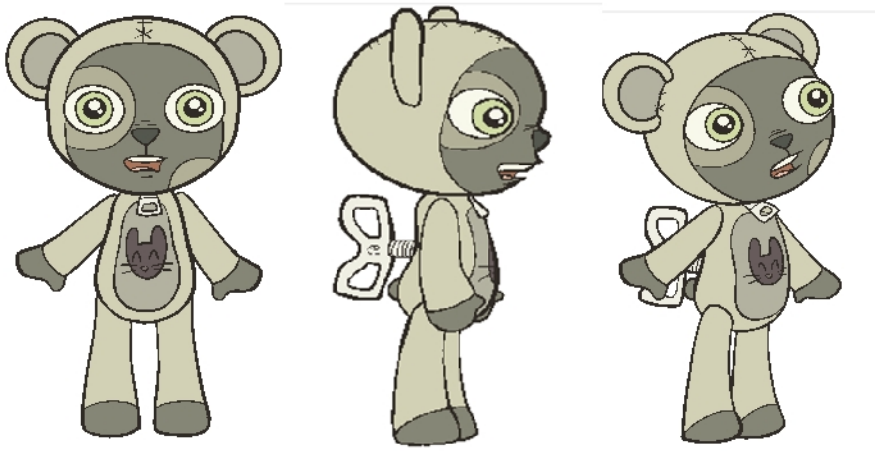
3. In the Library view's left side, select the template's folder and continuing expanding its subfolders until *.tvg files appear on the right side.



4. In the Library view's right side, select the TVG drawing to import and drag it into the Model view.

How to load a template with multiple drawings from the Library view

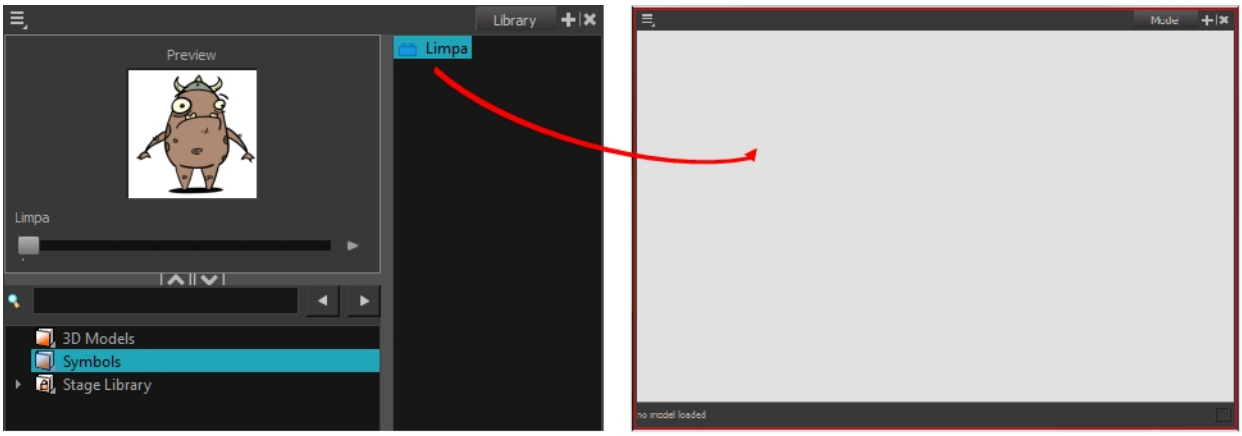
1. In the Library view, find the template you want to import in the Model view.
2. In the Library view's right side, drag the template (*.tpl file) and drop it directly in the Model view.
3. Use the Previous Model and Next Model buttons in the Model View toolbar to view all the drawings contained in the template. This can often be the front, profile, and 3/4 views of a character.



Front view Profile view 3/4 view

How to load a symbol from the Library view

1. In the Library view's left side, select the **Symbols** folder.
2. In the Library view's right side, select the symbol you want to use as a model, and drag and drop it into the Model view.



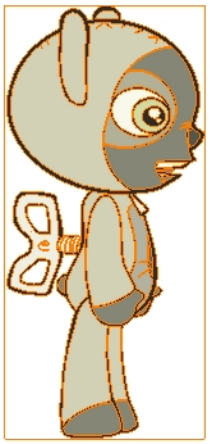
3. Use the Previous Model and Next Model buttons in the Model View toolbar to view all the drawings contained in the template. This can often be the front, profile, and 3/4 views of a character.

How to clear a colour model

- In the Model View menu, select **Clear Model** or press Delete.

How to copy the entire model from the Model view

1. In the Model View toolbar, select the Select tool.
1. In the Model view, select your model.



2. From the top menu, select **Edit > Copy Drawing Object** or pressCtrl + C (Windows/Linux) or ⌘ + C (Mac OS X).

2. In the Timeline view, make sure you have the correct layer and frame selected.

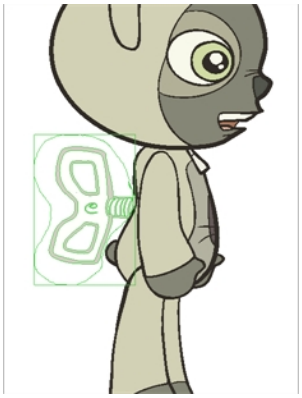
3. Select the Drawing or Camera view, then go to the top menu and select **Edit > Paste Drawing Object**, or select the Timeline view and from the top menu, select **Edit > Paste cells in the Timeline** or pressCtrl + V (Windows/Linux) or ⌘ + V (Mac OS X).

   The model appears in the selected view.

How to copy part of the model in the Model view

1. In the Model View toolbar, select the Cutter tool or press Alt + T.

1. In the Model view, use the Cutter tool to create a selection around the part of your model that you want to copy.



2. From the top menu, select **Edit > Copy Drawing Object** or pressCtrl + C (Windows/Linux) or ⌘ + C (Mac OS X).

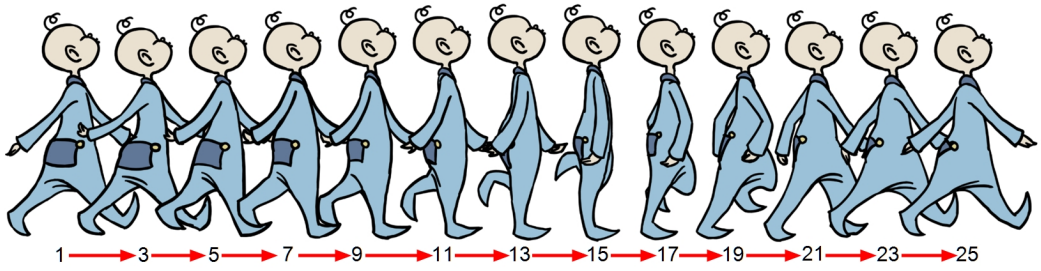
2. In the Timeline view, make sure you have the correct layer and frame selected.

3. Do one of the following:

   - Select the Drawing or Camera view and select **Edit > Paste Drawing Object**.
   - Select the Timeline view and select **Edit > Paste cells in the Timeline** or press Ctrl + V (Windows/Linux) or ⌘ + V (Mac OS X).

   The model appears in the selected view.

Chapter 4: Timing



When you create hand-drawn animation traditionally or in a paperless environment, it's important to know how to set and modify the timing of your drawings.

In a traditional workflow, the person in charge of the digital exposure sheet reproduces the paper exposure sheet created by the animator. In a paperless workflow, the animator creates and manages their own exposure sheet directly in Harmony without the need for reproduction.

If you're more of a traditional animator, you will probably work with an exposure sheet. If you're a digital animator, you may prefer to work with a timeline to visualize your timing. Harmony offers both.

The Xsheet view displays the digital reproduction of a traditional paper exposure sheet used in hand-drawn animation. You can set the animation sequence's exposure and name the drawings.

The Timeline view is also used to visualize timing, and represents elements and groups of elements as layers.

You can adjust timing in both views; your choice depends on which technique you're accustomed to using. Depending on your working style, some actions may seem preferable to do in one view instead of another. Many of the actions you perform in the Xsheet can also be accomplished in the Timeline. This chapter will often show both techniques. You can choose which one you prefer.

In this chapter, you will learn how to work on your drawing's exposure and length. The exposure and animation paths for symbols are covered in separate chapters.

NOTE: The exposure sheet is not mandatory for cut-out animation. It can be useful for creating characters and parts, but is not really needed for animation and timing. If you plan to work with cut-out animation, you can still learn useful tips by reviewing the section on exposure sheets.

The basic digital exposure sheet process is divided into the following steps:

Preparation

The digital exposure task is quite simple. There are very few things to prepare in order to get ready.

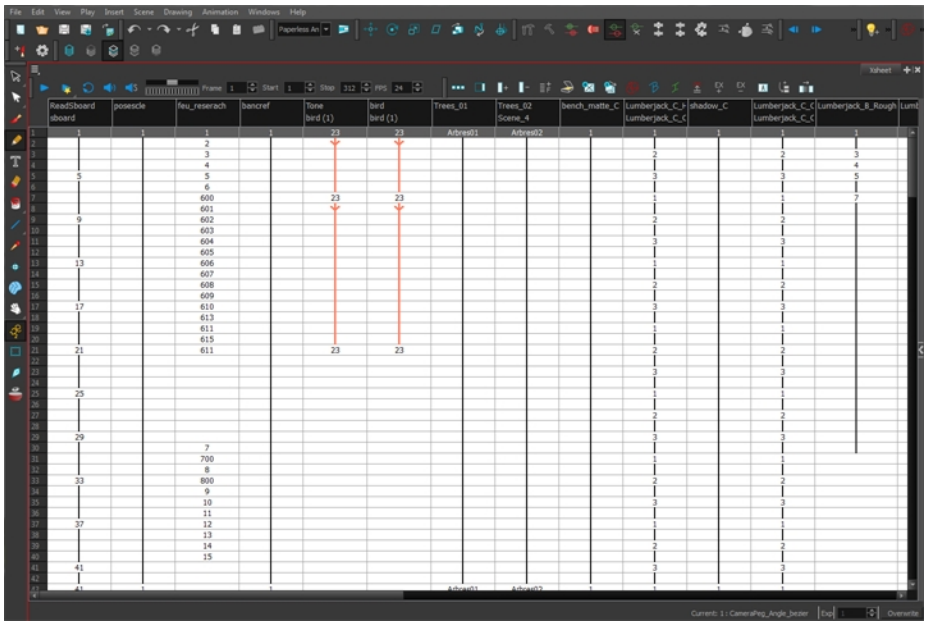
Opening the Scene

The scene is generally created during a previous step, such as scanning (in a traditional animation workflow), scene set up, digital layout, or production organization.

Using the Workspace

The person creating the exposure sheet will need only the Xsheet view to create the digital exposure sheet, although the Timeline view may also be helpful. If you're doing paperless animation, use the Camera or Drawing view if you want to sketch at the same time.

If you work with this layout often, you can use the Workspace Manager to save it as a workspace,and name it **`Xsheet`**, for example.



While drawing and animating paperless animation, you can use the Workspace Manager to save a frequently used layout and name it **`Paperless Animation`**, for example.

Preparing References

To start an exposure sheet, you need to prepare your references. For traditional animation, you will need to reproduce the animator's paper exposure sheet. If you're working remotely, the studio can scan the paper exposure sheet using third-party software and send the digital files to be opened and viewed digitally.

In paperless animation, you will usually create an exposure sheet from the Xsheet view.The information from your layout and posing or storyboard will help you approximate how many elements are required in the scene.

Frames

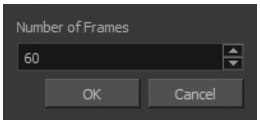
Once the references are ready, you need to set the scene length by adding the right number of frames to your scene. You can set the global scene length from the top menu.

In the Xsheet and Timeline view, you can add and remove frames from a scene to edit its length.

How to set the scene length

1. From the top menu, select **Scene > Scene Length.**

   The Set Scene Length dialog box opens.

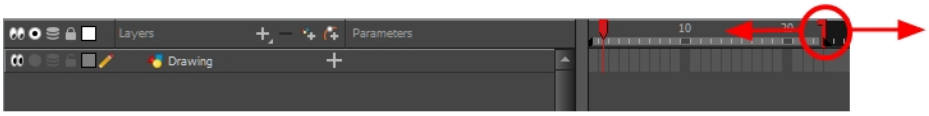
   

2. In the Number of Frames field, enter the number of frames needed.

How to extend or reduce the scene length in the Timeline view

When you remove frames at the end of a scene to reduce the scene length in the Timeline view, the exposed drawings and symbols are not deleted. They're still available if you extend the scene afterward.

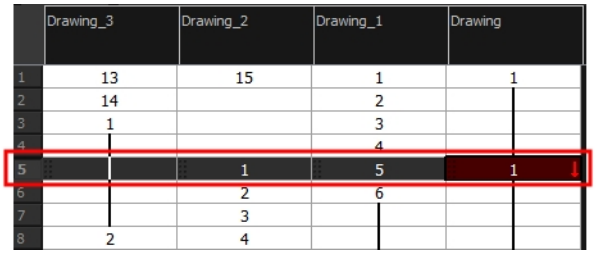
1. In the Timeline view, drag the scene length bracket:
   - **Right**: To add more frames to your scene.
   - **Left**: To reduce the number of frames in your scene.



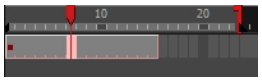
How to add frames in the middle of a scene

You can add frames anywhere in the middle of the scene—before or after a selection. If you select a frame row in the Xsheet view, Harmony will add the new frames before or after the selection, depending on your choice.

1. Do one of the following:
   - In the Xsheet view, select a frame row.

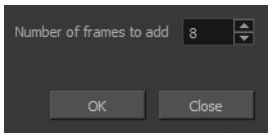


- In the Timeline view, select the frame to which you want to add frames before or after.



2. Do one of the following:
   - From the top menu, select **Scene > Frame > Add Frames Before Selection** or **Add Frames After Selection**.
   - In the Xsheet view, right-click and select **Frames > Add Frames Before Selection** or **Add Frames After Selection**.
   - In the Xsheet toolbar, click the Add Frames button to add frame after your selection.
   - Press Ctrl + G and Ctrl + H (Windows/Linux) or ⌘ + G and Ctrl + H (Mac OS X).

   The Add Frames dialog box opens.

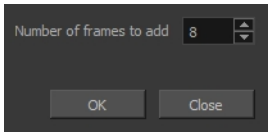


3. In the Number of Frames to Add field, enter the number of frames needed in the scene.
4. Click OK.

How to add frames at the start or end of a scene

1. In the top menu, select **Scene > Frames > Add Frames at Start** or **Add Frames at End**.

   The Add Frames dialog box opens.



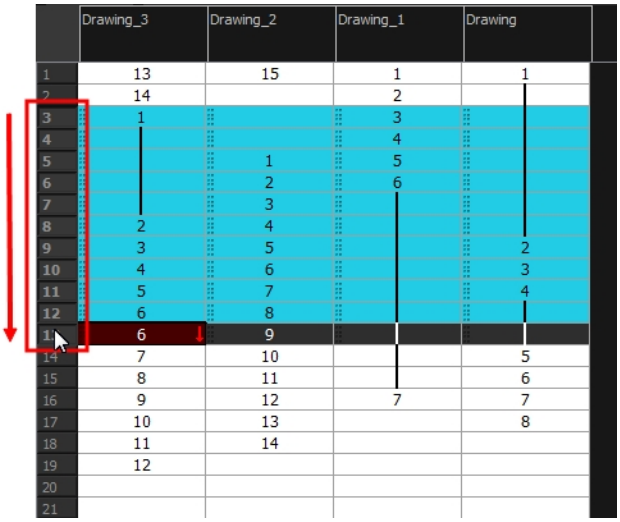
2. In the Number of Frames to Add field, enter the number of frames needed in the scene.

3. Click OK.

How to remove a frame or a range of frames to reduce the scene length in the Xsheet view

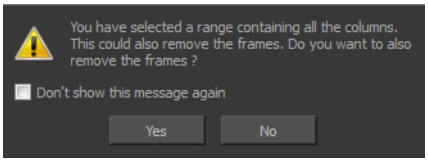
In the Xsheet view, you can remove any selected frame range, such as the last frame.

1. In the Xsheet view, do one of the following:
   - Select a frame in a given column.
   - Select a frame range by clicking the first frame's number and then dragging the selection highlight down to the last frame to delete.



2. To delete the selected frames, do one of the following:
   - From the top menu, select **Scene > Frame > Remove Selected Frames**.
   - Press Delete to delete the selection.
   - Click the Remove Frames button. To remove several frame selections, click the button repeatedly.

   If you selected a range of frames, the Warning dialog box may open.



3. To complete the operation:
   - Click **Yes** to delete the selection.
   - Click **No** to delete only the exposure in the cell and not the frames.
   - Select the **Don't Show This Message Again** option to prevent the warning message from being displayed each time you delete a frame range.

Creating Drawings

Before filling any value or setting any timing or exposure, you need to add different drawing elements.

Each drawing element is represented as a vertical element column in the Xsheet view and a horizontal element layer in the Timeline view.

In Harmony, whether you work in the Timeline or Xsheet view, any modification you do to one view will be applied to both. You can also see your layers displayed in the Node view as nodes.

To start an exposure sheet, you will use drawing elements. Drawing elements are drawing containers. Any image file, either bitmap or vector, will use a drawing element.

When you add a drawing element to your scene, a folder is added to the scene directory. This folder is named the same way as the drawing element. Its purpose is to contain all the drawings related to this element. For example, in cut-out animation, a character can have many heads available. All of the head drawings will be contained in this folder, even if they are not exposed in the Timeline or the Xsheet view. There is always a drawing container connected to a drawing element (layer, column).

NOTE: There are different element types available, such as sound and expression. A sound element contains sound files. Expressions, Beziers, eases, 3D path, Quadmaps and Pegs are for motion purposes during the compositing step. It's not necessary to create these types to create your exposure sheet.

You can add drawing elements from the Timeline view, Xsheet view, and the Scene menu.

This section is divided as follows:

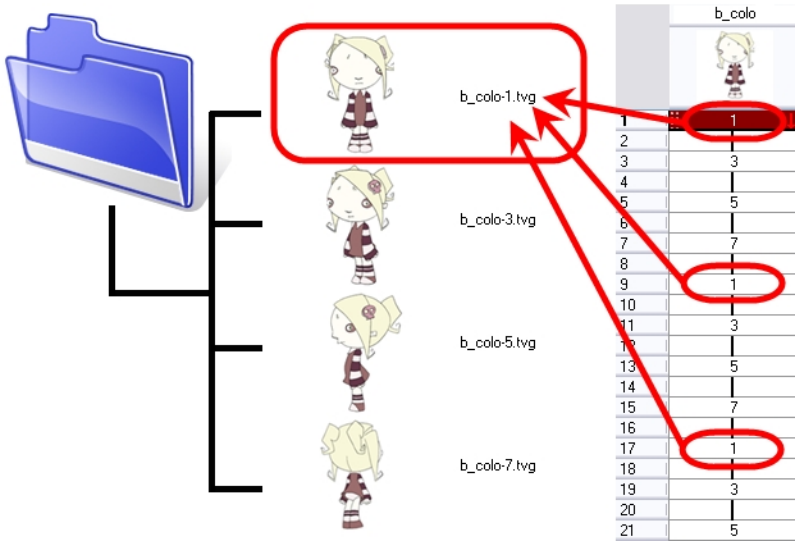
- *Layer and Column Concepts* on page 250
- *Layer and Column Types* on page 251
- *Adding New Drawing Elements* on page 254
- *Deleting Layers and Columns* on page 257
- *Layer and Column Properties* on page 258
- *Modifying Layers and Columns* on page 261
- *Duplicating Layers and Columns* on page 264
- *Cloning Layers and Columns* on page 264
- *Adding an Annotation Column* on page 265
- *Linking External Files with Timing Columns* on page 270

Layer and Column Concepts

A layer is linked to a directory, the location where all its drawings are saved. This directory has the same name as the layer. When a name is typed in a cell ,Harmony searches the layer's directory for the corresponding drawing to display. If there is no corresponding drawing, a new one is created.

Drawings are exposed in cells and linked to the drawings saved in the layer's directory. When you remove a drawing from a cell, it is not displayed and still exists in the directory.

A drawing that is exposed multiple times (for example, in a walk-cycle) would be linked to the same original drawing in the layer's directory. If you modify, repaint, or correct the drawing, all exposed drawings with the same name are updated simultaneously. You must duplicate or create a new drawing to modify a single exposure and retain the others.



When you create a drawing cycle, all of the repeated drawings are linked to the original files. This means that when you modify, repaint, or correct a drawing named "1," all drawings named "1" are updated simultaneously. In order to modify a drawing independently from its other exposures, you must duplicate the drawing.

Layer and Column Types

A column is also known as a layer. There are several types of layers that you can add in the Xsheet and Timeline view. Each layer is indicated by an icon to help you differentiate them. Some layers are represented differently in the Xsheet view.

Drawing Layer

The most common layer type is the drawing layer. Any time you need to create a vector drawing or import a symbol or image, you can use a drawing layer. You can also create bitmap artwork on a drawing layer.

NOTE: Bitmap images are contained in bitmap layers.

Bitmap Layer

If you import a bitmap images (as original bitmap) in your project, they are inserted in a Bitmap layer. If you choose to vectorize your image when you import, the vectorized object will be placed on a Drawing layer.

When importing a bitmap image, you have the option of encapsulating the image in a symbol. If you place a bitmap into a symbol, you will be able to mix vector drawings with it on the same layer.

Camera Layer

You can only have one Camera layer at a time in the Timeline view. By default, there is no Camera layer when you create a scene. You need to add a Camera layer when you want to create a camera motion.

The Camera layer is not visible in the Xsheet view.

NOTE: If you want to have several cameras with different settings, you can keep adding Camera layers in your Timeline view (however, only one will ever be visible at a time as you can only have one camera at a time in your timeline). To switch to a different camera, select **Scene > Camera** and select another camera layer.

Effect Layer

To enhance the look of your scene, you can add effect layers and attach your drawings to them.

In Harmony, there is a series of effect nodes in the Node Library view.

When you select the Effect layer in the Timeline view, the effect's parameter columns are displayed in the Functions section of the Xsheet view.

Colour-Card Layer

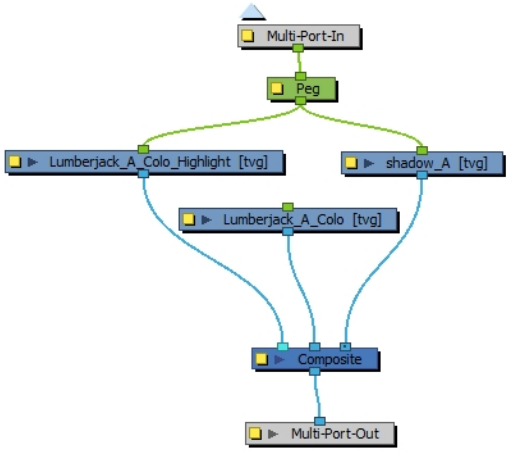
The Colour-Card layer is used to add a plain colour background to a scene. By default, your scene has no background colour and if you render it as a QuickTime movie or image sequence, it will have a black background.

This layer is not visible in the Xsheet view.

Group Layer

A Group layer can be used to organize both the Timeline and Node views. You can drag and drop other layers onto a Group layer and then collapse the Group layer to hide these other layers from view.

If you create the Group layer in the Timeline view, a corresponding node will appear in the Node view. Any layers that you connect to the Group layer will appear in the Group node connected to an Input and Output port.



Peg Layer

A Peg layer is a trajectory or motion path layer that does not contain drawings. It can be attached to any drawing layer, cut-out puppet, or other peg layers; they will all follow the trajectory you set in the Peg layer.

When you select the Peg layer in the Timeline view, the peg's function columns are displayed in the Functions section of the Xsheet view.

Quadmap Layer

A Quadmap layer can be described as a deformation transformation layer that does not contain drawings. This can be attached to any drawing layer, cut-out puppet, or even other Peg layers. They will all follow the deformation you set in the Quadmap layer.

When you select the Quadmap layer in the Timeline view, the Quadmap's function columns are displayed in the Functions section of the Xsheet view.

Sound Layer

You can import sound files to add dialog and sound effects to your project. The sound layer will be added to your Timeline and Xsheet view when you import a sound file in your scene.

In the Xsheet view, the Sound layer is a dark grey colour.

Advanced Column Types

In the Xsheet view, you can add several advanced column types to create particular animation paths. When you create these columns, they are not linked automatically to any particular drawing layer. You can create a motion path using these columns and then link or unlink several drawing or peg layers to it.

Advanced column types include:

- Timing
- 3D Path
- 3D Rotation
- Bezier Curve
- Ease Curve
- Expression
- Annotation

Adding New Drawing Elements

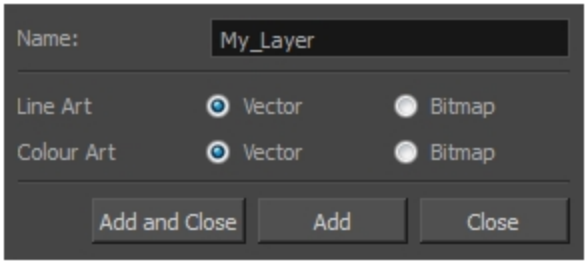
There are different ways to add a drawing layer to your project. By default, when you create a new scene there is one Drawing column in the Xsheet view and one corresponding Drawing layer in the Timeline view.

You can add an element for each drawing and it will appear as a column in the Xsheet view, a layer in the Timeline view, and a node in the Node view.

How to add a drawing element from the Timeline view

1. In the Timeline view, click the Add Drawing Layer button or press Ctrl + R (Windows/Linux) or ⌘ + R (Mac OS X).

   The Add Drawing Layer window opens.



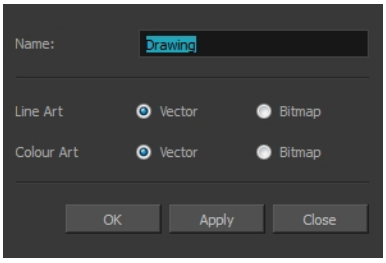
2. In the Name field, name your new layer.
3. Set the Line Art and Colour Art options to **Vector** to get a vector layer or to **Bitmap** to have a bitmap layer.
4. Do one of the following:
   - Click **Add** to add a first layer and keep the window open to add more layers.
   - Click **Add and Close** to add a new layer and close the window.

A new drawing layer is added to the Timeline view.

How to add a drawing element from the top menu

1. From the top menu, select **Insert > Drawing**.

   The Add Drawing Layer dialog box opens.



2. In the Name field, type a relevant element name and click **OK**.

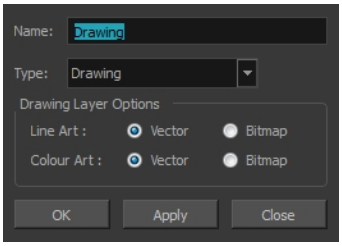
   The new drawing element appears in your scene.

How to add a drawing element from the Xsheet view

1. Do one of the following:

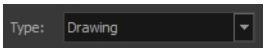
   - In the Xsheet menu, select **Columns > Add Columns**.
   - Click the Add Columns button.
   - Press Shift + C.

   The Add Column dialog box opens.



2. In the Name field, type a relevant element name.

3. In the Type field, select **Drawing**.



4. To complete the operation:

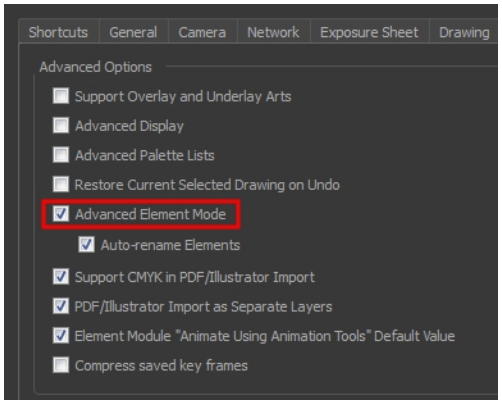
   - Click **OK** to add your new layers and close the dialog box.
   - Click **Apply** to add your new layers and keep the dialog box open to add column.
   - Click **Close** to cancel the operation.

The new drawing element appears in the Timeline, Xsheet and Node views—see *Layer and Column Types* on page 251.

How to create a column using the advanced Add Column dialog box

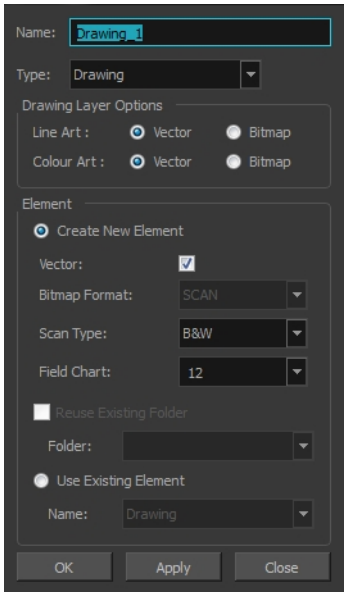
You can use the advanced Add Column dialog box to make more file format and field size options available when you insert a column.

1. From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences (Mac OS X)** and select the **Advanced** tab.
2. In the Advanced Options section, select the **Advanced Element Mode** option to access the advanced Add Column dialog box.



3. Click **OK**.
4. In the Xsheet menu, select **Columns > Add Column** or press Shift + C.

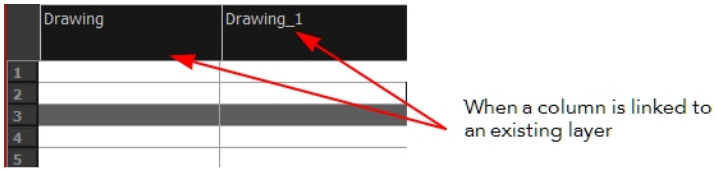
   The Add Column dialog box opens.



5. In the Name field, type the new column's name.

6. In the Type menu, select the Drawing type.
7. In the Element section, select one of the following:
   - **Create New Element**: Creates an independent column with its own drawing folder.
   - **Reuse Existing Folder**: Links your column to an existing folder within the Element folder of your scene. If you select this option, in the Folder menu, select the folder to which you want to link your new column.
   - **Use Existing Element**: Uses drawings from an existing column in the new column. Both columns will be attached to the same set of drawings, but their timing will remain independent from one another. If you modify one of the drawings, it will be modified in both columns. This is the same principle as the Clone column.

     In the Name menu, select the column to which you want to link your new column.



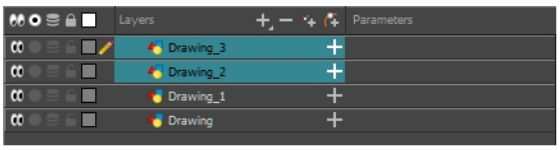
8. If you selected the Create New Element option:
   - Deselect the **Vector** option if you want your layer to contain bitmap images or enable it if you want the layer to contain vector drawings. Most of the time, the Vector option will be enabled.
   - If you deselected the **Vector** option, from the **Bitmap Format** list, select which type of bitmap image you want to insert in the column. Select the **SCAN** type if you are planning to scan drawings using the Toon Boom Harmony Scan module.
   - If you deselected the **Vector** option and you chose the **SCAN** type, from the Scan Type menu, select what kind of scanning you want to achieve.
   - In the **Field Chart** field, when importing traditional animation, indicate the size of paper on which the animation or background was drawn. If you are not using perforated animation paper, leave the 12 field default value as is.
9. Do one of the following:
   - Click **OK** button to create the new column and close the dialog box.
   - Click **Apply** to create the new column but keep the dialog box opened to create other new columns.

Deleting Layers and Columns

You can delete an element in the Timeline view or Xsheet view.

How to delete layers in the Timeline view

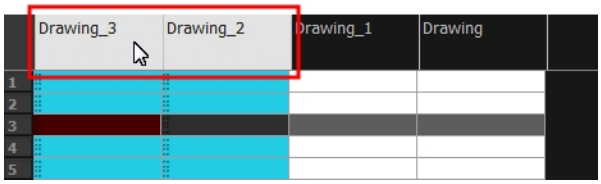
1. In the Timeline view, select the layers to delete.



2. Do one of the following:
   - In the Timeline's Layer toolbar, click the Delete Layers button.
   - Right-click on the selection and select **Delete**.

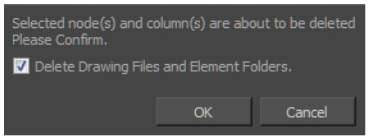
How to delete columns in the Xsheet view

1. In the Xsheet view, select the columns to be deleted by clicking on their header.



2. Do one of the following
   - Right-click on the selection and select **Delete Columns**.
   - In the Xsheet toolbar, click the Delete Columns button.
   - Press Delete.

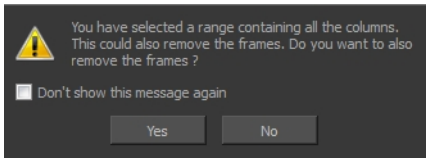
   The Confirm Delete dialog box opens.



   - Select the **Delete Drawing Files and Element Folder** option if you want to delete the drawings and folders linked to the selected column.

3. To complete the operation:
   - Click **OK** to delete the selected layers.
   - Click **Cancel** to cancel the operation.

   The Warning dialog box may open.



4. Do one of the following:
   - Click **Yes** to delete all the frames from your scene.
   - Click **No** to keep the frames in your scene.
   - Select the **Don't Show This Message Again** option if you do not want the dialog box to display again in the future.

Layer and Column Properties

Each element has its own set of properties that you can modify, including effect and peg layers.

If you want to modify an element's properties, you can display the properties of a selected layer in the Timeline view or selected node in the Node view. If you're working with the Xsheet, you can display its properties as well. You can display a layer's properties as a window or as a view of its own.

The Layer Properties editor allows you to:

- Rename the layer
- Enable or disable the layer
- Lock the layer
- Change the track colour
- Activate the onion skin preview
- Adjust the positioning and animation parameters
- Adjust many other advanced parameters

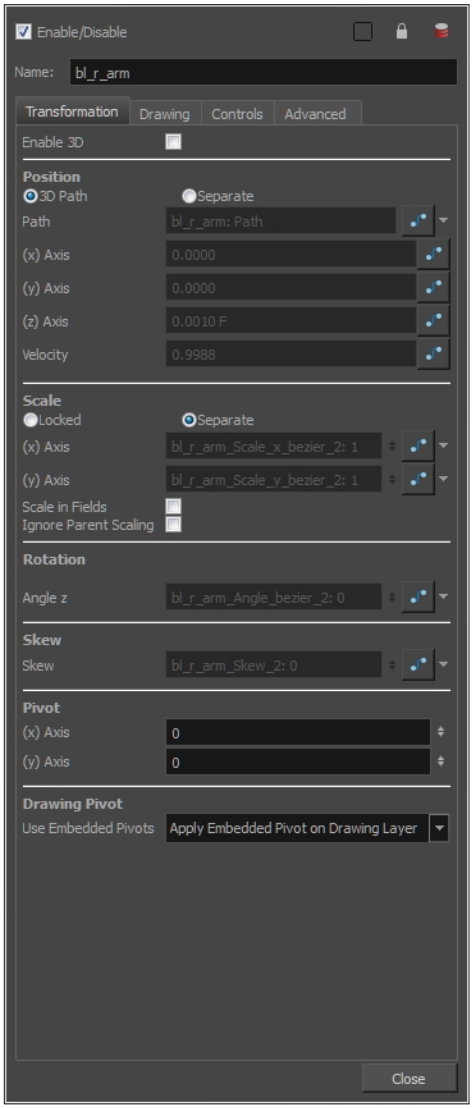
The Column Properties editor allows you to:

- Rename the layer
- Enable or disable the layer

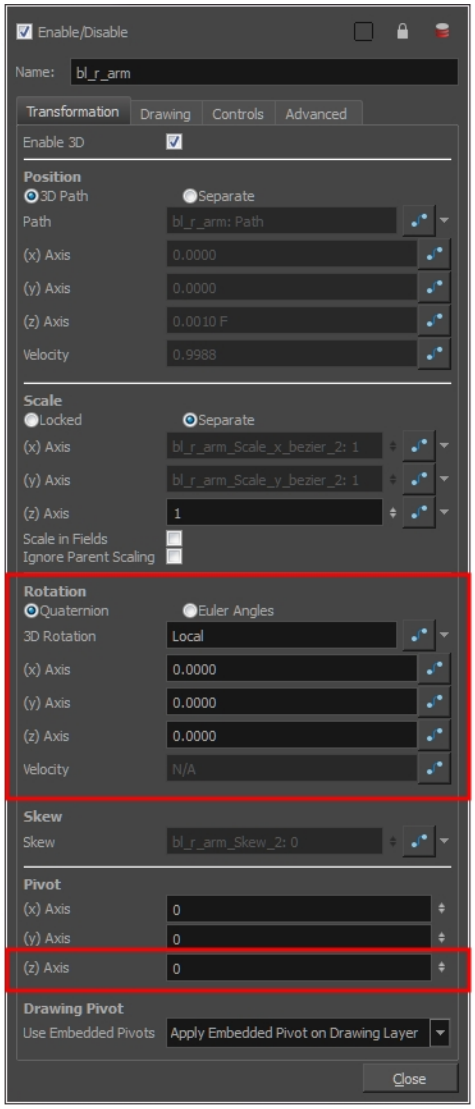
How to display a layer's properties

1. Do one of the following:
   - In the Layer Properties view is not part of your workspace, from the top menu, select **Windows > Layer Properties**. In the Timeline view, select a layer
   - In the Timeline view, double-click on a layer.
   - Press Shift + E.
   - In the Node view, click on a node's yellow properties button.

   The properties display.



Transformation tab with the Enable 3D option deselected

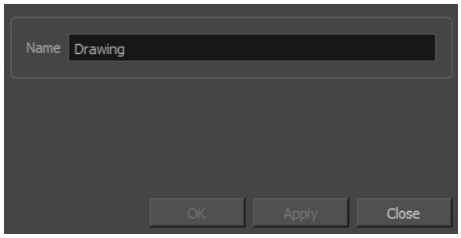


Transformation tab with the Enable 3D option selected

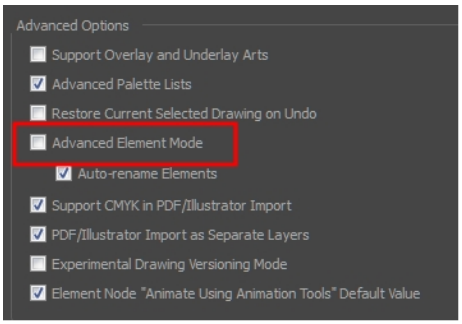
How to display a column's properties in the Xsheet view

1. In the Xsheet view, do one of the following:
   - Double-click on a column header.
   - Right-click on a column header and select **Column Editor**.

   The properties for the column are displayed.

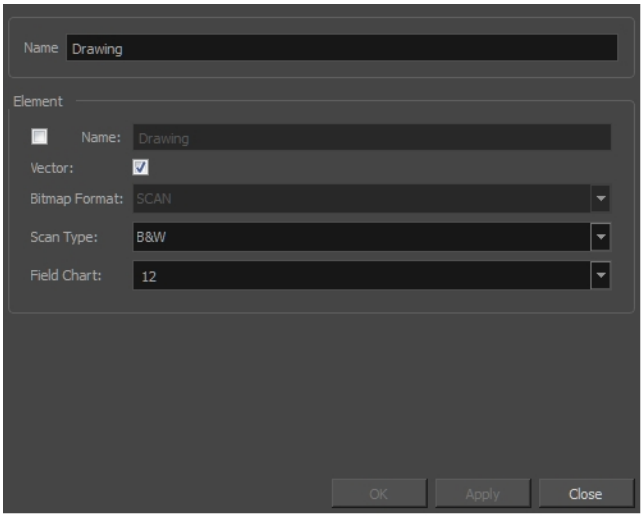


2. (Optional) To view additional properties, select **Edit > Preferences** from the top menu.
3. In the Preferences dialog box, select the **Advanced** tab, then select the **Advanced Element Mode** option.



4. In the Xsheet view, double-click on a column header.

   Additional properties for the column are displayed.



Modifying Layers and Columns

Once you add layers and columns to your project, you can modify their properties, names, or ordering.

You can change the order of your elements in the Timeline view and Xsheet view. When you change the order of your elements in one view, the other one is updated.

The Element Manager window lets you add, delete or modify elements (drawing folders) in your scene. If you have drawing folders that are not linked to a column in your scene, use the Element Manager to delete them if needed.

How to rename a layer in the Timeline view

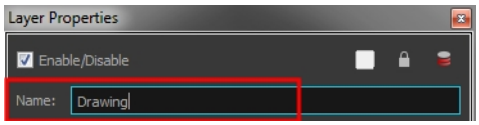
1. In the Timeline view, double-click on the name of the layer to rename.
2. In the Name field, rename the layer and press Enter/Return.

How to rename a layer in the Layer Properties editor

1. In the Timeline view, double-click anywhere on the layer except the layer name to rename.

   The Layer Properties editor opens.

2. In the Name field, rename the layer.

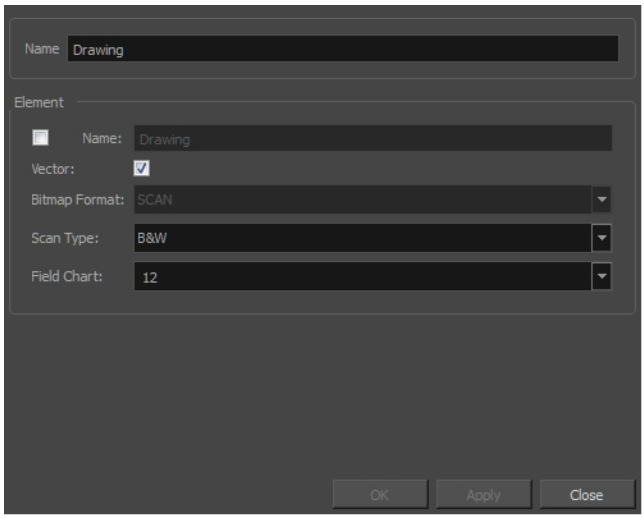


3. Click **Close**.

How to rename a column

1. In the Xsheet view, double-click on a column name. Do not click on the drawing folder name that the column is linked to (this also appears in the column header just below the column name).

   The Drawing dialog box opens.

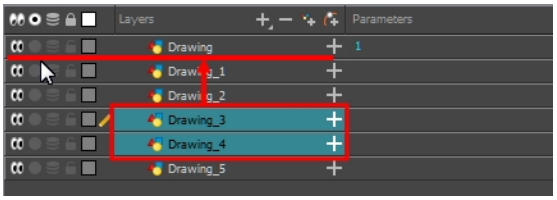


2. In the Name field, rename the column.
3. Click **OK**.

How to reorder layers in the Timeline view

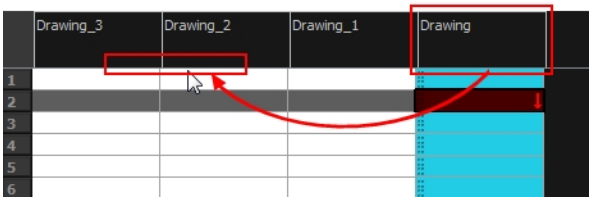
1. In the Timeline view, select the layers to move.
2. Drag the selection to the new location.

3. Do one of the following:
   - Drop the selection on an existing layer to make it a child of another element layer.
   - Drop it between the existing layers. Timeline layers that are located above the selection are displayed in front it. Layers located under it in the Timeline View are displayed behind it.



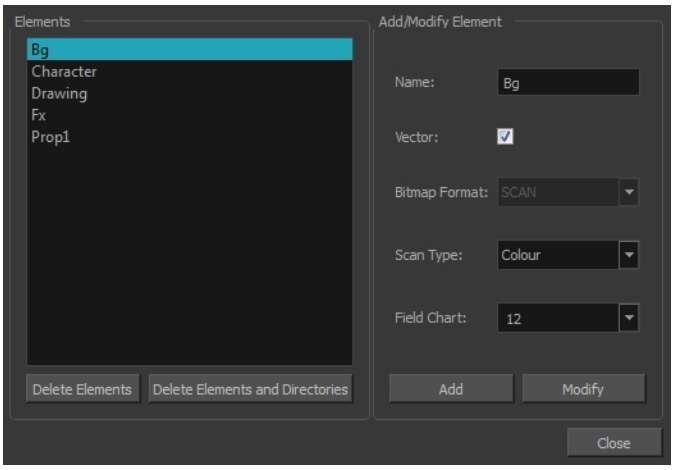
How to reorder columns in the Xsheet view

1. In the Xsheet view, click on the column's header with the middle mouse button.
2. Drag the column to its new position.



How to use the Element Manager dialog box

- From the top menu, select **Scene > Element Manager**.



Interface Element	Action
Elements	Displays a list of the elements in the scene.
Delete Elements	Deletes the selected elements.
Delete Elements and Directories	Deletes the selected layer and its directories (drawing folder).

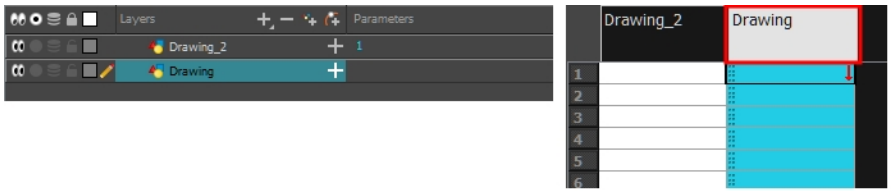
Interface Element	Action
Add/Modify Element	Use this area to add or modify an element.
Name	Type in a new name in this field to create an element or to rename the selected element.
Vector	Select this option if the new element is a vector drawing or if you want to enable the parameters on the selected element in the Elements list.
Bitmap Format	Lets you select the file format of the bitmap layer.
Scan Type	If you're planning to scan elements with the Toon Boom Harmony Scan module, select the scan type from the list.
Field Chart	If you're importing traditional animation, select the size of the paper on which the animation was drawn.
Add	Creates a new element with the current parameters entered in the **Add/Modify Element** section.
Modify	Applies the parameter changes made to the selected element.

Duplicating Layers and Columns

Duplicating an element provides you with a copy of the drawings and their exposure. You can modify anything you want in the duplicated element without affecting the original one.

How to duplicate an element

1. In the Timeline or Xsheet view, click the layer or column you want to duplicate.



1. In the Timeline or Xsheet menu, select **Drawings > Duplicate Drawings** or press Alt + Shift + D.

   The new duplicated layer or column appears.

Cloning Layers and Columns

Cloning a layer or column provides you with a copy of the selected element that uses the same drawings as the original. For example, if you modify a drawing in the cloned or original column, it is updated in both columns.

You can choose whether or not to copy the column timing to the cloned columns.

- You can modify the column timing independently from each other, but the drawings remain linked.

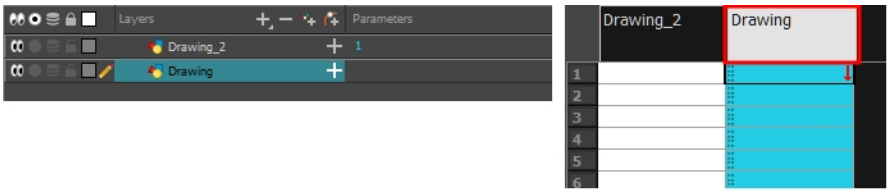
- You can copy the columns timing, so drawings and timings remain linked.

You can clone selected nodes from the Node view in the same way.

This is useful when you want to reuse a hand-drawn animation but have different timings.

How to clone an element

1. In the Timeline or Xsheet view, select the layer or column you want to clone.



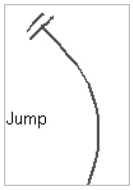
1. Do one of the following:
   - From the top menu, select **Edit > Clone: Drawings Only** to clone only the layer or column drawings.
   - From the Timeline menu, select **Layers > Clone Selected Layers: Drawings Only**.
   - In the Xsheet menu, select **Columns: Clone Selected Columns: Drawings Only**.

   The new cloned layer or column appears.

Adding an Annotation Column

The annotation columns are useful for marking actions, corrections or other information related to your animation that you want to draw or write. This way, you can print your Xsheet, take it back to your animation table and work with the annotations.

Before you can draw in the Annotation column, you must first activate the Enable Drawing option to activate the Drawing mode. Pen tablet pressure sensitivity is not supported in the annotation column.



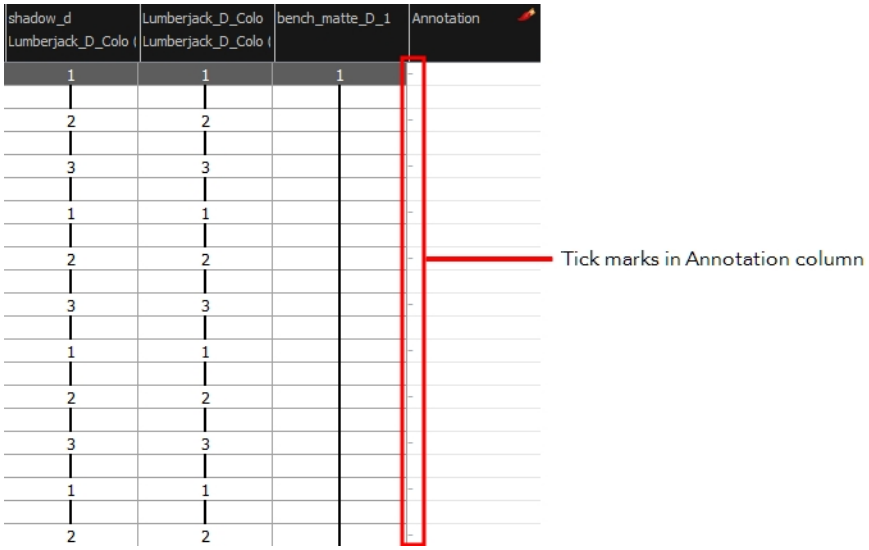
In the annotation column, you can type in your notes and relevant information, as well as draw sketches and ideas that will be useful in producing your animation.

Typing in an annotation column is independent from the Drawing mode. You can be in either mode and the typing will work. To learn about typing values in the Xsheet view, see *Typing Exposure* on page 273.

You can erase part or all of the annotation column's text and drawn annotations. Annotations that you type in cannot be erased using this method.

You can change the pen size and colour when you draw in the annotation column.

When working with the annotation columns, it is useful to display tick marks on odd-numbered frames.



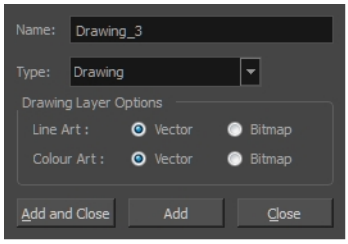
To display the tick marks, you must run a short script.

If you scanned your paper exposure sheet's annotations or if you need to place some pictures or drawings in the Annotation columns, you can easily import them.

How to add an annotation column

1. Do one of the following:
   - In the Xsheet menu, select **Columns > Add Columns**.
   - In the Xsheet toolbar, click the **Add Columns** button.
   - Press Shift + C.

   The Add Column dialog box opens.



2. In the Name field, type in an appropriate name.
3. From the Type list, select **Annotation** and click OK.

   The new column appears.

How to draw in the annotation column

1. Do one of the following:
   - In the Xsheet menu, select **Annotation > Enable Drawing**.

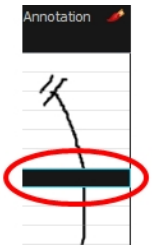
- In the Annotation column header, click the icon in the upper-right corner to cycle through the icons until the Brush icon is displayed.

The Drawing mode is enabled.

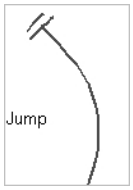
2. To draw in an Annotation column, simply use your mouse or pen tablet.

How to type in an annotation column

1. Do one of the following:
   - In the selected cell, press Ctrl (Windows/Linux) or ⌘ (Mac OS X).
   - In the selected cell, hold down Ctrl + Shift + click (Windows/Linux) or ⌘ + Shift + click (Mac OS X).

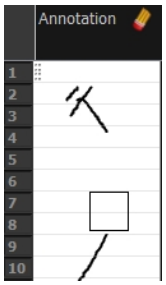


2. In the selected cell, type the desired text.



How to erase part of a drawn annotation using Erasing mode

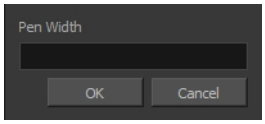
1. In the annotation column header, click the icon in the upper-right corner to cycle through the icons until the Eraser icon is displayed.
2. In the column, click and drag the cursor on top of the drawn annotation to erase parts of it.



NOTE: When using a pen on a tablet, you MUST flip your pen to the eraser side for the eraser to work.

How to change the pen width

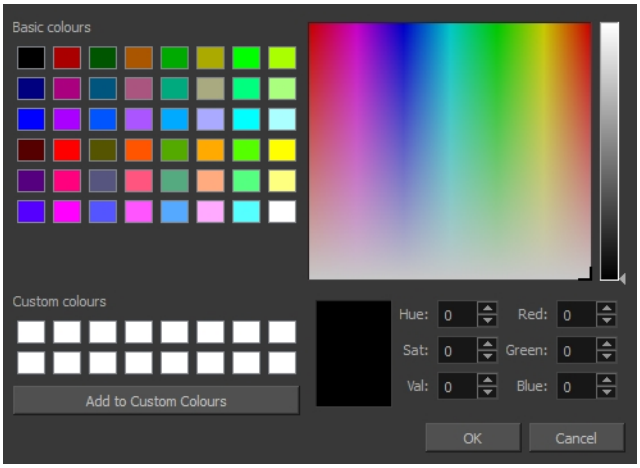
1. In the Xsheet menu, select **Annotation > Pen Width** and do one of the following:
   - Select a pen width preset.
   - Select **Change Current** to display the Pen Width dialog box. In the Pen Width field, type the number of pixels for the pen size and click **OK**.



How to change the pen colour

1. In the Xsheet menu, select **Annotation > Change Pen Colour**.

   The Select Colour dialog box opens.



2. Choose a new colour.
3. Click **OK**.

How to display tick marks

1. From the top menu, select **Windows > Script Editor**.
2. From the Script Editor menu, select **File > New Script**.
3. Type in a name for your script and click **OK**.
4. In the File list, select the script you created.
5. On the right side of the view, type the following script:

   function *display_tick_marks*()
   {
   preferences.setBool("XSHEET_ANNOTATION_FRAME_MARKER", true);
   MessageLog.trace(preferences.getBool("XSHEET_ANNOTATION_FRAME_MARKER", false));
   }
6. Click **Verify**.

   The script is verified.
7. From the Script Editor menu, select **Play/Debug > Run**.

   A dialog box opens with your script selected in the Files column.
8. In the Functions column, select **display_tick_marks** and click **OK**.

   Tick marks appear on odd frames in the Annotation column. If you do not see tick marks, close and restart Harmony.

How to turn off the display of tick marks

1. Follow steps 1 to 5 of *How to display tick marks* and use the following script:

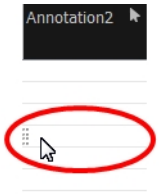
   ```
   {
   preferences.setBool("XSHEET_ANNOTATION_FRAME_MARKER", false);
   MessageLog.trace( preferences.getBool("XSHEET_ANNOTATION_FRAME_MARKER", false));
   }
   ```

2. Follow steps 6 to 8.

   All tick marks are removed from the Annotation column.

How to import annotation files

1. In the Xsheet view, select the first cell in the Annotation column where you want the imported image to start.

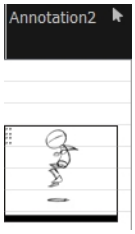
2. Do one of the following:

   - Right-click on the cell and select **Annotation > Import File**.
   - From the Xsheet menu, select **Annotation > Import File**.

3. Browse for the bitmap image to import.

4. Click **Open**.

   The image appears in the Annotation column.

Linking External Files with Timing Columns

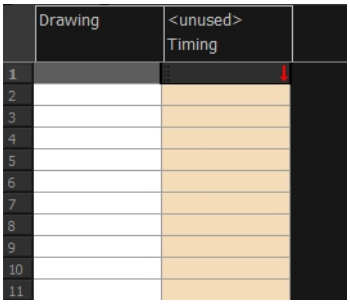
Timing columns are unique in that they can reference a source folder outside of the project folder to bring images into the project. For example, you may have background scenes created in a third party software that you might need to update in the future. By using Timing columns, you can dynamically link your backgrounds, expose different backgrounds at different times, and have live, automatic updating capabilities.

IMPORTANT: If the project file is moved, or if the folder that the column is linked to is moved, then dynamic linking is broken and the images that were in that folder will disappear in Toon Boom Harmony.

How to use a Timing column

1. In the Xsheet view, click the Add Columns button.
1. In the Add Column dialog box, type in the name of the new column, then from the Type menu, select **Timing**.
1. Do one of the following:
   - Click **OK** if you are finished.
   - Click **Apply** if you want to continue adding more columns and column types.

   A peach coloured column appears in the Xsheet with the name you typed in, and for the header, <unused>.

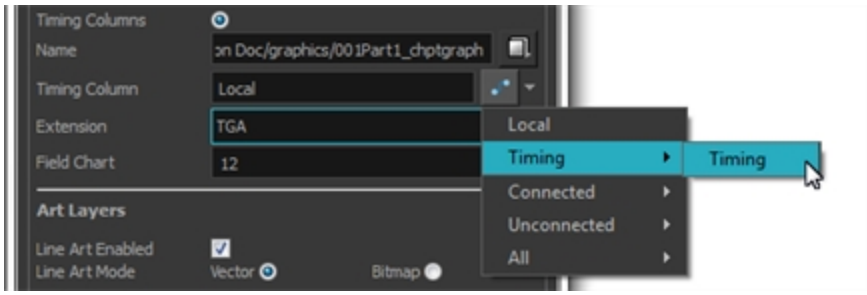


1. In the Node view, add a new node.
1. Open the **Layer Properties** editor by clicking the yellow square of the node.
1. In the Drawing tab, select the **Timing Columns** option.
1. In the Name field, enter the path of the folder you want to access. If you use the Browse button to locate a folder, you must select a file in the folder you want and then delete the dash and the suffix (for example, **`background-01`** should be renamed to **`background`**) from the file name in the field. If you leave the full file name selected, Harmony will display that file for the entire duration of the scene, regardless of the contents of the Timing Column field.

NOTE: This means that all the images in the folder that you are linking to are named using the naming convention described above. If for some reason you are unable to access a certain directory, type the directory extension directly in the path extension field at the top of the browser window.

1. In the Timing Column field, click the **Arrow** button to create a new timing column, or select the name of the column from the list. If you have an element directory selected in the Name field, the Timing Column will indicate which files are called from that element directory. Remember that the file displayed at each frame is based on the element name, cell label, and extension. If the element is **`toto`**, the timing column is

labeled 1, 2, and 3, and the extension is TVG, Harmony will display drawings **`totobody-1.tvg`**, **`totobody-2.tvg`**, and **`totobody-3.tvg`** at the selected frames.



In the Xsheet, the <unused> header changes to the name of the node in the Node view.

1. From the Extension list, select the file format of the files you want to display.

1. Click **OK**.

1. In the Xsheet view, in the Timing column, type the number that corresponds to the suffix of the drawing file that you want to expose to make it appear in the Camera view.

Filling Exposure

Harmony provides different tools to fill in exposures and values, create cycles, and set increments.

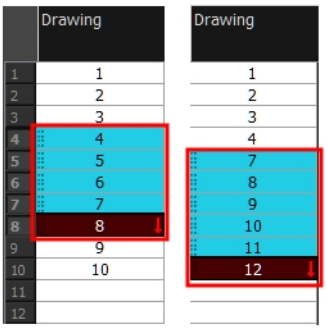
This section is divided as follows:

- *Filling Exposure Mode* on page 273
- *Typing Exposure* on page 273
- *Holding Exposure* on page 275
- *Extending a Single Exposure* on page 276
- *Extending an Exposure Sequence* on page 277
- *Extending the Exposure of Previous Drawings* on page 278
- *Dragging Cells* on page 279
- *Increasing and Decreasing Exposure* on page 282
- *Inserting Blank Cells* on page 285
- *Setting the Exposure* on page 286
- *Filling a Selection with a Single Exposure* on page 287
- *Filling a Selection with a Sequence* on page 288
- *Filling a Selection Randomly* on page 290
- *Filling Empty Cells* on page 291
- *Deleting Exposure* on page 284
- *Creating Cycles* on page 292
- *Managing Key Exposures* on page 296

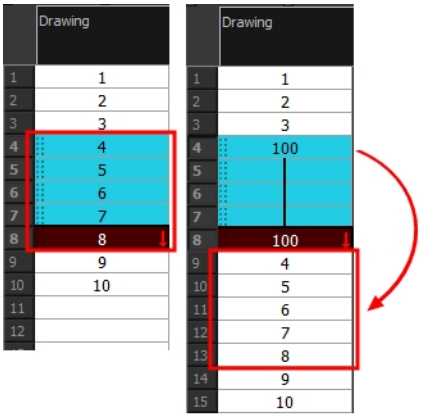
Filling Exposure Mode

In the Xsheet view, you can fill columns using two different filling modes: Overwrite or Insert. These modes control the filling behaviour. The Timeline view only uses the Overwrite mode.

By default, the Xsheet view is set to Overwrite mode. Adding a new value or a new value sequence overwrites existing ones. The existing timing sequence remains in the same place and is not pushed down the column.



The Insert mode is the opposite of the Overwrite mode. When you add a new value or a new value sequence over existing ones, the new values are inserted between the old ones. The existing timing sequence is pushed down the column.



How to switch between Overwrite and Insert modes

1. Do one of the following:
   - In the bottom-right corner of the Xsheet view, click **Overwrite/Insert**.
   - Press I.

Typing Exposure

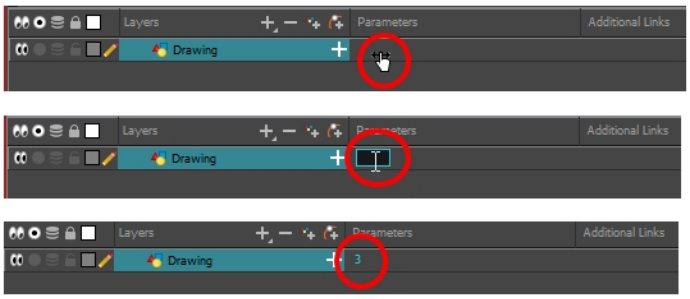
To fill in your exposure, you can type the values directly in the Xsheet view.

If you want to type an exact drawing name or value in the Timeline view, you must use the Parameters section of the Timeline.

NOTE: You can only use alphanumeric values. (**0–9**, **a–z**, underscore (_) and dash (-)).

How to type a value in the Timeline view

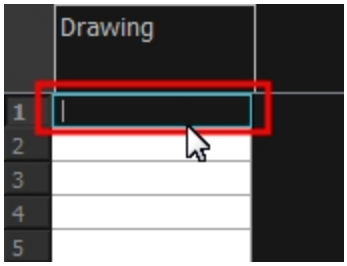
1. In the Drawing Substitution field, double-click to edit the field and type the name of the drawing you want to create.



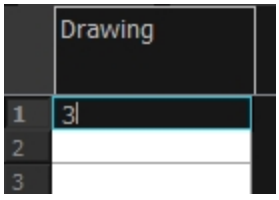
2. Press Enter/Return to validate the value.

How to type values in the Xsheet view

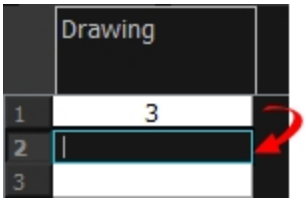
1. In an Xsheet column, double-click on a cell.



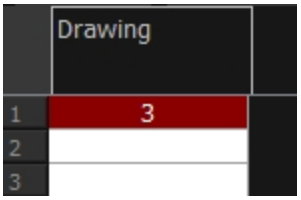
2. Type a value or drawing name in the cell.



3. Press Enter/Return to move to the next cell.



4. Press Esc to exit the typing mode and return to normal mode.

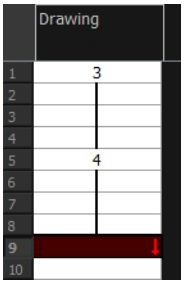


Holding Exposure

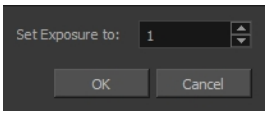
Drawings in an animation project are often exposed for more than one frame. The most common exposure of a drawing is two frames. In the industry, this type of exposure is known as *animation in double frames* or *animation on twos*. A drawing can also be exposed for three, four, or five cells and so on. To prevent mistakes and save time, you can hold cells automatically as you type in the Xsheet view.

How to hold exposure

1. Do one of the following:
   - In the Xsheet menu, select **Exposure > Hold Exposure > Hold 2 Cells**.
   - In the Xsheet view, right-click and select **Exposure > Set Exposure To > Set Exposure to 1, 2,3**, or **Set Exposure**. The settings you select will be kept from session to session. You do need to set them every time you use Harmony.
   - From the top menu, select **Animation > Cell > Hold Exposure > the desired option**.
2. Type a value or drawing name in the cell.
   - Press Enter/Return to move on to the next cell.
   - Press Esc to quit the typing mode.



   - If you selected Set Exposure, the Set Exposure dialog box opens. You can hold as many cells as needed.

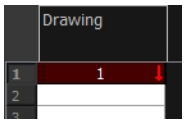


Extending a Single Exposure

Extending the exposure lets you select a cell that contains a value and pull it down to the desired frame.

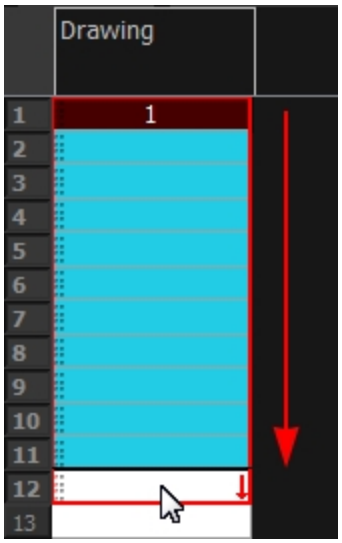
How to extend a cell exposure gesturally

1. In the Xsheet view, select the red arrow in the cell's right side. Make sure you see the drag down cursor.



2. Pull down the selected cell to the desired frame.

> **NOTE:** The red selection box must be visible when releasing the cursor. If not, the action is considered cancelled.



How to extend a sequence from the top menu

1. Do one of the following:
   - From the top menu, select **Animation > Cell > Extend Exposure**.
   - Press F5.

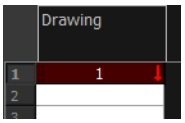
   The Extend Exposure dialog box opens.
2. Enter the frame number you want to extend the cell to.

Extending an Exposure Sequence

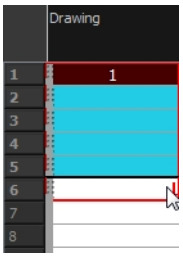
When working with a sequence that contains only numbers, you can extend an exposure sequence in a similar manner to extending a single exposure.

How to extend an exposure to create a sequence

1. In the Xsheet view, select a cell containing a number.
2. In the selected cell, click the red arrow on the cell's right side. Make sure to see the drag down cursor.

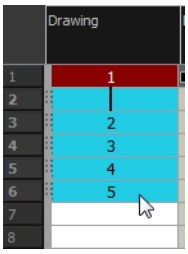


3. Hold down the Shift key. Make sure a plus sign (+) appears.
4. Pull down the selection box to the desired frame.



> **NOTE:** The red selection box must be visible when releasing the cursor. If not, the action is considered cancelled.

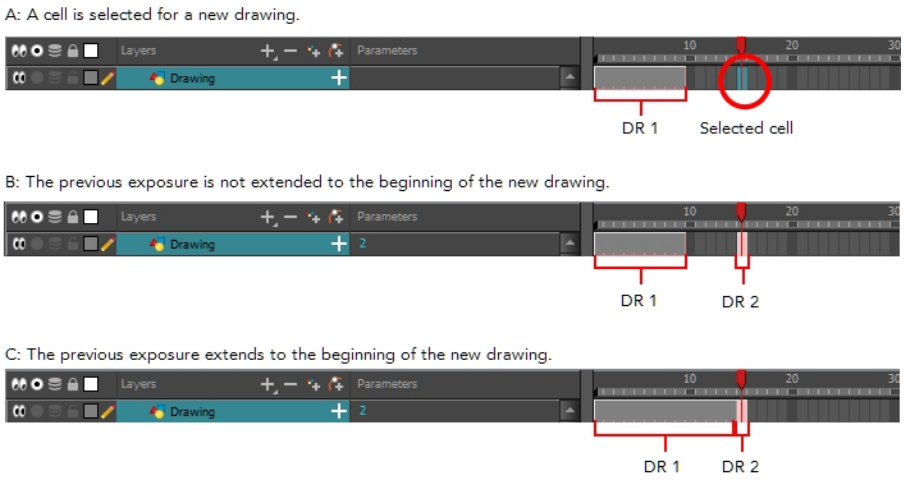
5. First release the Shift key, then release the mouse button.



Extending the Exposure of Previous Drawings

When drawing on a blank frame you can automatically create a new drawing and extend the timing from the previous exposed drawing.

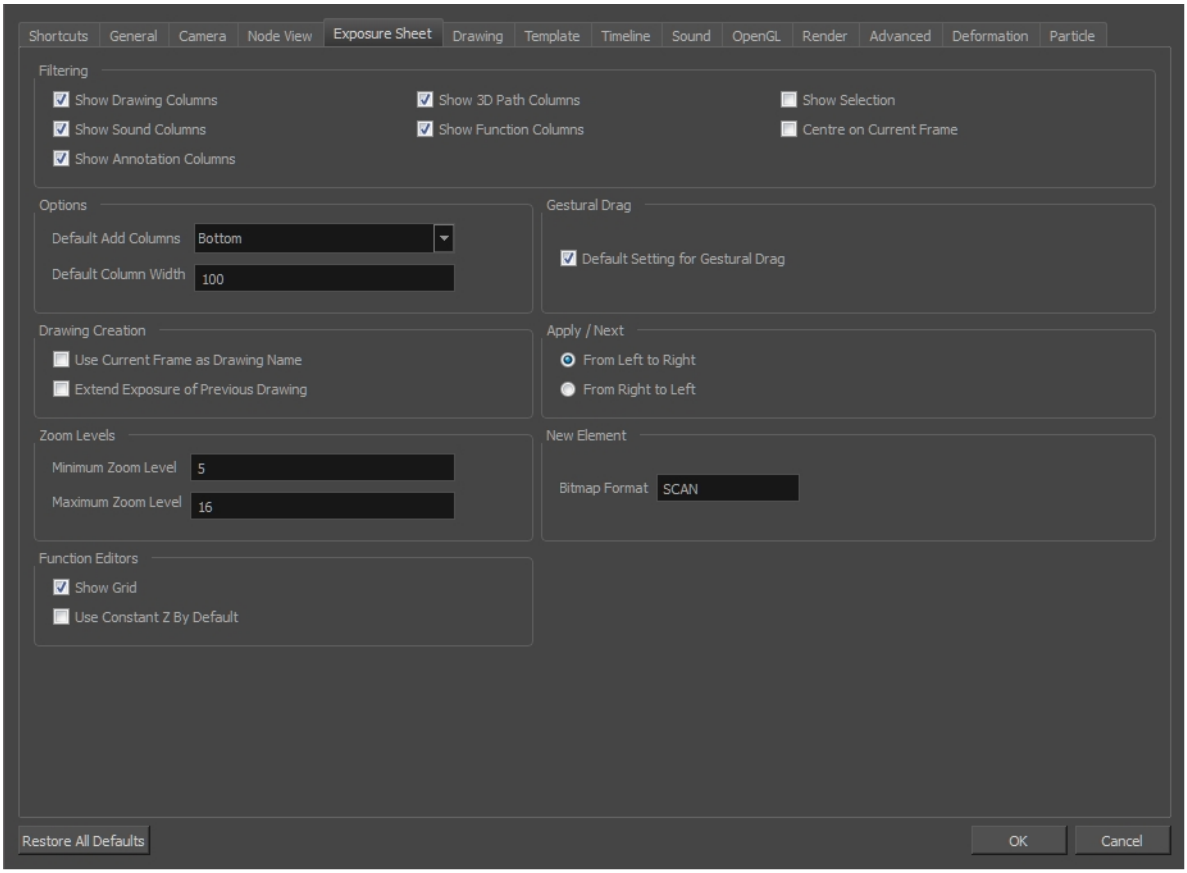
In the following example, a cell is selected on the timeline for creating a new drawing in image A. In image B, the previous exposure does not extend to the new drawing, while in image C, it does.



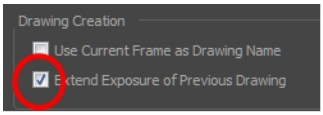
How to extend the exposure of previous drawings

1. Open the Preferences dialog box by doing one of the following:
   - From the top menu, select Edit > Preferences.
   - Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).

   The Preferences dialog box opens.
2. Select the **Exposure Sheet** tab.



3. In the Drawing Creation section, select the **Extend Exposure of Previous Drawing** option.



4. On the left side of the Timeline view, select a cell and create a new drawing.

   The previous exposure automatically extends to the beginning of the new drawing.

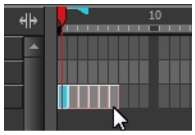
Dragging Cells

To readjust your timing, you can drag one or more cells to a new location. You can drag a cell to any other frame in the same column or into another column.

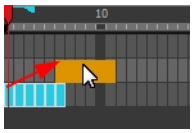
You can turn off the Gestural Drag mode for the Xsheet view to prevent drawings from being dragged from one location to another. This feature does not apply to Annotation columns.

How to drag a cell to another location in the Timeline view

1. In the Timeline view, select one or more cells to move.

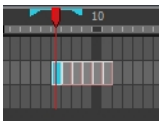


2. Drag the cells to the new location.

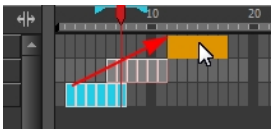


3. Drop the selection by doing one of the following:

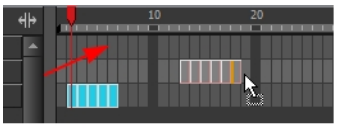
   - Drop by simply releasing the mouse or pen.

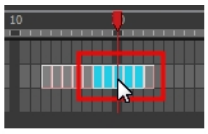


   - Hold Ctrl (Windows/Linux) or ⌘ (Mac OS X) while dropping the selection to copy the cells. The original cells will not be moved.



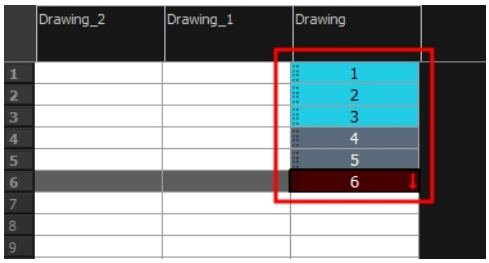
   - Press Shift while dropping the selection to insert them between existing frames.



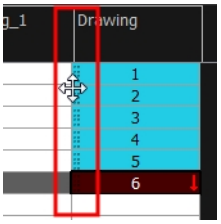


How to drag a cell to another location in the Xsheet view

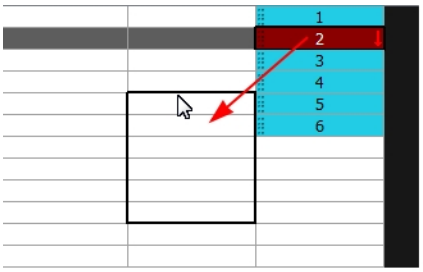
1. In the Xsheet view, select one or more cells.

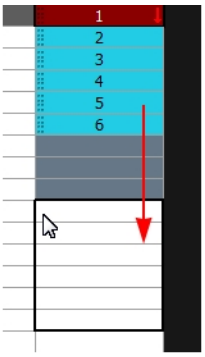


2. In the Xsheet view, position the pointer over the small dotted area on the left side of the selected cells.



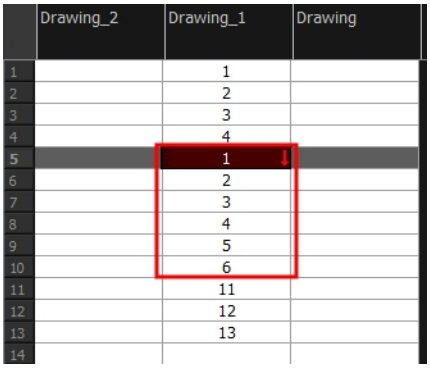
3. Drag the selection to any other cell in the same column or in another column.



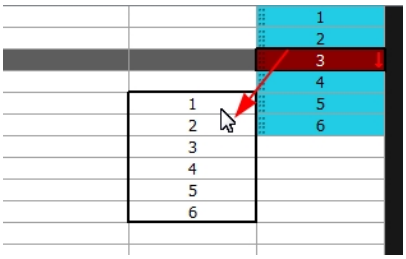


4. Do one of the following:

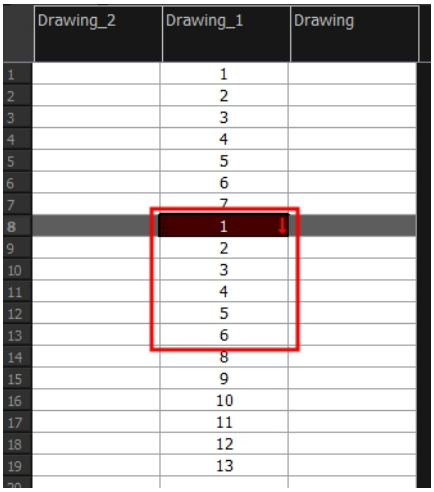
   - Drop the selection to overwrite the existing cells.



   - Hold down Ctrl (Windows/Linux) or ⌘ (Mac OS X) while dropping the selection to copy the cells. The original selection will not be moved.



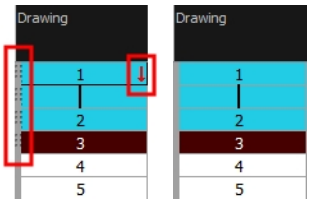
   - Press Shift while dropping the selection to insert it between existing frames.



How to turn off the Gestural Drag mode

1. Do one of the following:

- In the Xsheet view, right-click and deselect the **Gestural Drag Mode** option.
- In the Xsheet toolbar, click the Toggle Gestural Drag Mode button (you may have to customize the toolbar to display it).



The dragging pad disappears on selected cells when the Gestural Drag mode is off.

Increasing and Decreasing Exposure

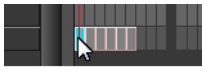
Once a value is entered in the Timeline or Xsheet view, you can increase and decrease its exposure.

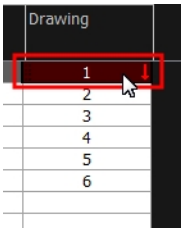
Increasing the exposure adds one more exposure to a selected cell; repeating this action adds an extra cell each time. This is an efficient way to extend a drawing's exposure and is always set in Insert mode. Increasing an exposure pushes the existing exposure forward.

Decreasing the exposure removes one exposure from a selected cell and pulls any cells following it to the beginning of selection.

How to increase exposure

1. In the Timeline or Xsheet view, select a cell.



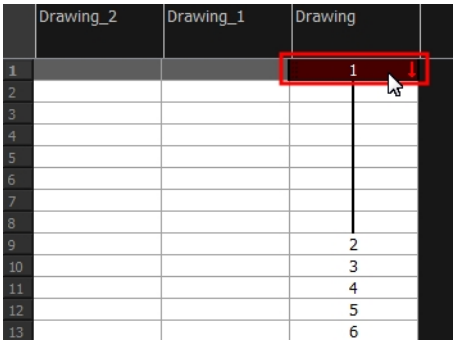


2. Do one of the following:
   - From the top menu, select **Animation > Cell > Increase Exposure**.
   - In the Xsheet toolbar, click the Increase Exposure button.
   - At the bottom-right corner of the Xsheet view, set the number of cells over which the drawing will be exposed.

   - Right-click and select **Exposure > Increase Exposure**.
   - Press +.

How to decrease exposure

1. In the Timeline or Xsheet view, select a cell.

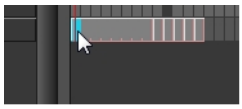


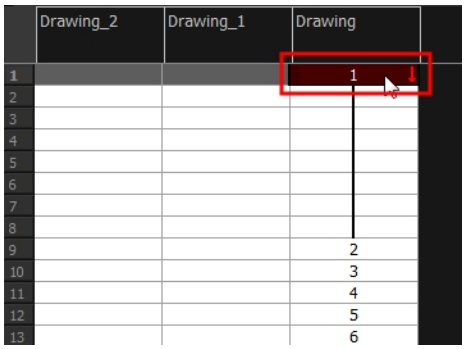
2. Do one of the following:
   - From the top menu, select **Animation > Cell > Decrease Exposure**.
   - In the Xsheet toolbar, click the Decrease Exposure button.
   - At the bottom-right corner of the Xsheet view, set the number of cells over which the drawing will be exposed.

   - Right-click and select **Exposure > Decrease Exposure**.
   - Press -.

How to use the Clear Exposure and Pull feature

1. In the Timeline or Xsheet view, select a range of cells.





2. Do one of the following:
   - From the top menu, select **Animation > Cell > Clear Exposure and Pull**.
   - Right-click and select **Exposure > Clear Exposure and Pull**.
   - In the Xsheet toolbar, click the Clear Exposure and Pull button.

   The exposure is reduced by the selected number of cells.

Deleting Exposure

You can delete a drawing's exposure in several ways. When you delete a drawing's exposure from the Timeline or Xsheet view, you are not deleting the actual drawing file. You can always retrieve it by typing its name again in a cell.

You can delete the exposure in a selected cell range or delete the entire exposure of a drawing exposed over several cells. Note that you can also delete the exposure for drawings inside a collapsed group.

How to delete selected exposures

1. In the Timeline or Xsheet view, select the exposure you want to delete.
2. Do one of the following:
   - Right-click and select **Delete**.
   - Press Delete.

How to clear the entire exposure of a drawing

1. In the Timeline or Xsheet view, select a cell of a drawing exposed over several cells.

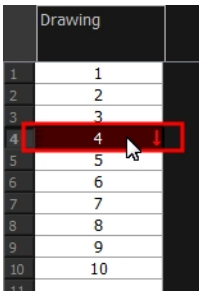
2. Do one of the following:
   - From the top menu, select **Animation > Cell > Clear Exposure**.
   - In the Timeline view, right-click and select **Exposure > Clear Exposure**.
   - In the Xsheet toolbar, click the Clear Exposure button (you may have to customize the toolbar to display it).

Inserting Blank Cells

You can place an empty cell between other cells.

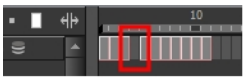
How to insert blank cells

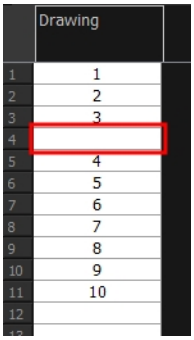
1. In the Timeline or Xsheet view, select the cell in which you want to insert a blank cell.



2. Do one of the following:
   - In the top menu, select **Animation > Cell > Insert Blank Cell**.
   - Right-click on the selected cell and select **Exposure > Insert Blank Cell**.
   - In the Timeline or Xsheet toolbar, click the Insert Blank Cell button (you may have to customize the toolbar to display it).
   - Press Shift + J.

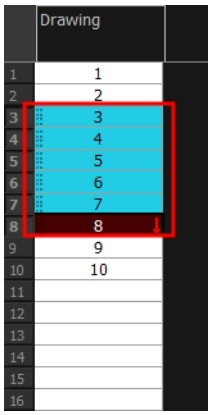
   A blank cell is inserted.



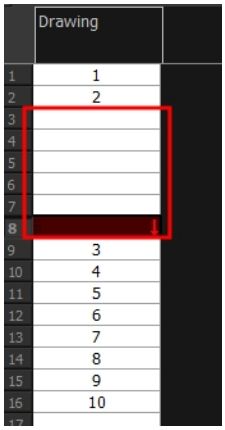


How to clear a selected cell range without changing the exposure and timing

1. In the Xsheet view, select a frame range to clear.



2. Right-click and select **Clear**.

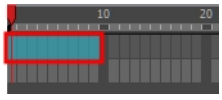


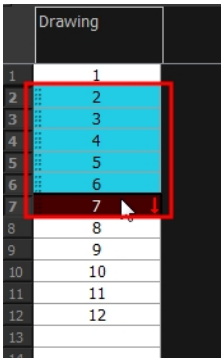
Setting the Exposure

You can easily increase or decrease the exposure for a selected cell range.

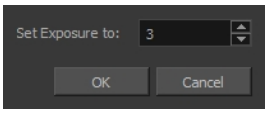
How to set the exposure

1. In the Timeline or Xsheet view, select the cell range on which you want to set the exposure.

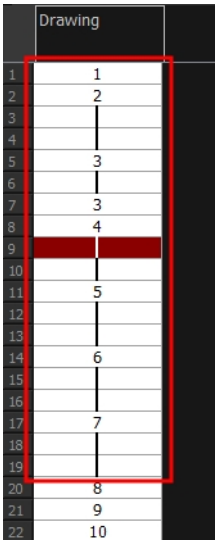




2. Do one of the following:
   - From the top menu, select **Animation > Cell > Set Exposure to > Set Exposure to 1**, **2**, **3**, or **Set Exposure**.
   - In the Timeline toolbar, click one of the Set Exposure buttons (you may have to customize the toolbar to display them).
   - In the Xsheet view, right-click and select **Exposure > Set Exposure to > Set Exposure to 1**, **2**, or **3**, or **Set Exposure**.
3. If you chose the Set Exposure option, the Set Exposure dialog box opens. Enter the number of frames you want the drawings to display and click **OK**.



The new timing is displayed in the Xsheet view.

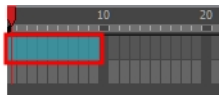


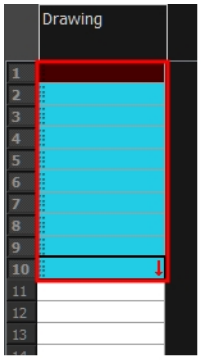
Filling a Selection with a Single Exposure

You can fill the same value over an entire selection. The selection can be over one cell, a cell range in one column, a cell range over many columns, an entire column, or many columns. You can use numbers, words, letters, or any alphanumeric value.

How to fill a selection with a single exposure

1. In the Timeline or Xsheet view, select a cell range.

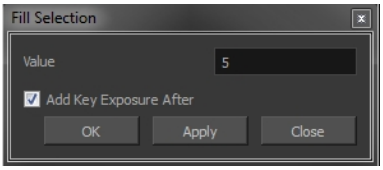




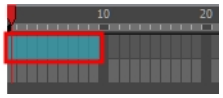
2. Do one of the following:

   - From the top menu, select **Animation > Cell > Fill Selection**.
   - In the Xsheet toolbar, click the Fill Selection button (you may have to customize the toolbar to display it).
   - Press Ctrl + T (Windows/Linux) or ⌘ + T (Mac OS X)).

   The Fill Selection dialog box opens.



3. In the Value field, type the desired value.
4. To insert a key exposure in the frame following the last cell in the selection, select the **Add Key Exposure After** option. Otherwise, leave it deselected.
5. Click **OK**.

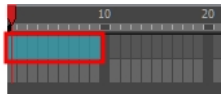


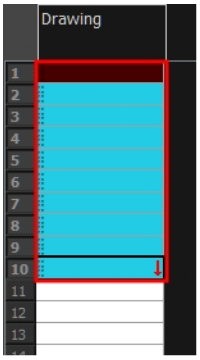
Filling a Selection with a Sequence

You can create a numbered sequence over a selection. The sequence can be forward, backward, single, double or higher increment, as a cycle, and so on. The selection can be over one cell or a cell range in one column or more or an entire column or many entire columns.

How to fill a selection with a sequence

1. In the Timeline or Xsheet view, select a cell range.

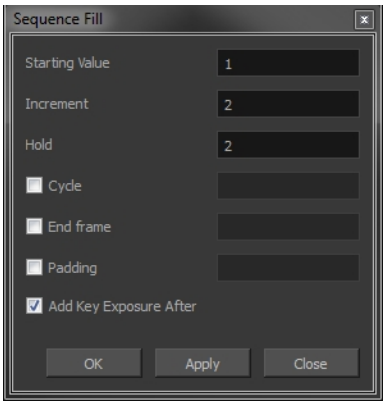




2. Do one of the following:

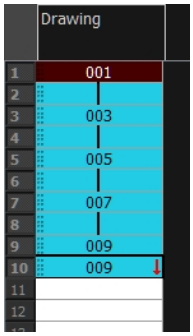
   - From the top menu, select **Animation > Cell > Sequence Fill**.
   - In the Timeline view, right-click and select **Exposure > Sequence Fill**.
   - In the Xsheet toolbar, click the Sequence Fill button (you may have to customize the toolbar to display it).
   - Press Ctrl + M (Windows/Linux) or ⌘ + M (Mac OS X)).

   The Sequence Fill dialog box opens.



3. In the Starting Value field, type the first number in the sequence.

4. In the Increment field, type the number by which the drawing number will increase from frame to frame. For example, an increment of 1 gives you: **`1-2-3-4`**; an increment of 2 gives you: **`1-3-5-7`**; and -2 gives you this: **`8-6-4-2`**.

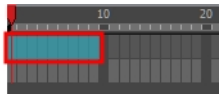


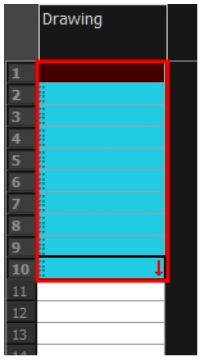
Filling a Selection Randomly

You can fill in random values over a selection. You can give a maximum and a minimum value and create a range for Harmony to choose the random values from. The selection can be over one cell or a cell range in one column or more or an entire column or many entire columns.

How to fill cells randomly

1. In the Timeline or Xsheet view, select a cell range.

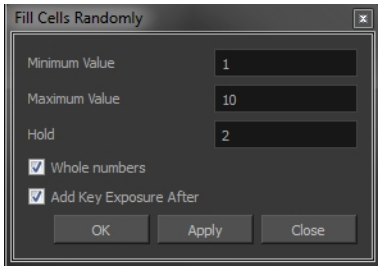




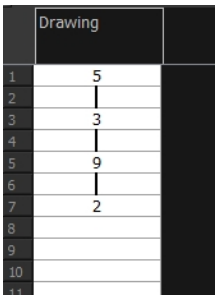
2. Do one of the following:

   - Select **Animation > Cell > Fill Cells Randomly**.
   - In the Xsheet view, click the Fill Cells Randomly button (you may have to customize the toolbar to display it).

   The Fill Cells Randomly dialog box opens.



3. In the Minimum Value field, enter the lowest acceptable value.
4. In the Maximum Value field, enter the highest acceptable value.
5. In the Hold field, choose an exposure holding value.
6. If you are applying this option to a drawing column, select the **Whole Numbers** option to avoid decimal points.
7. Click **OK**.

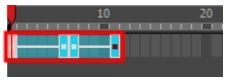


Filling Empty Cells

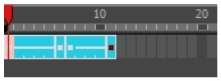
You can fill empty cells to extend the exposure of single frame drawings to fill the range of empty cells after each one.When creating drawings on cells that are not side-by-side, the exposure of the first drawing no longer fills automatically. You must select the frame range where you want your drawings to hold their exposure up to the next drawing and use the Fill Empty Cells command.

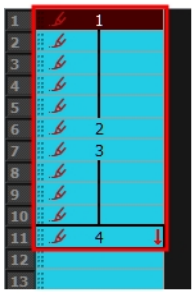
How to fill empty cells

1. In the Timeline or Xsheet view, select a cell range.



2. Do one of the following:
   - Right-click and select **Exposure > Fill Empty Cells**.
   - From the top menu, select **Animation > Cell > Fill Empty Cells**.
   - In the Timeline toolbar, click the Fill Empty Cells button.





Each drawing in the selection is exposed in the range of empty cells that follow it.

Creating Cycles

Once you have entered a series of drawings and exposures, you can create cycles out of them in several ways.

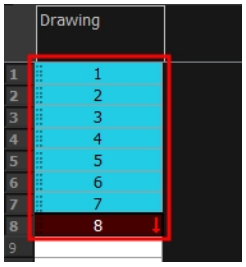
You can loop your drawings using the following commands:

- Create Cycle
- Paste Cycle
- Paste Reverse

  When you create a drawing cycle, all of the repeated drawings are linked to the same original files. This means that when you modify, repaint, or correct a drawing named "**1**" for example, all drawings named "**1**" are updated simultaneously. In order to modify a drawing independently from its other exposures, you must duplicate the drawing.

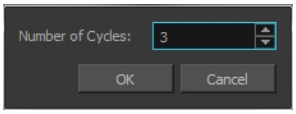
How to create a cycle

1. In the Timeline or Xsheet view, select the cell range to loop.

2. Right-click on the selection and select **Create Cycle** or in the Timeline toolbar, click the Create Cycle button (you may have to customize the toolbar to display it).

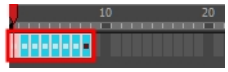
   The Create Cycle dialog box opens.

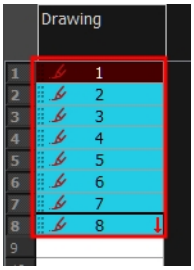


3. Enter the number of cycles you want, including the current selection.

How to paste a cycle

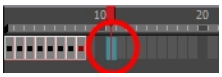
1. In the Timeline or Xsheet view, select the cell range to loop.

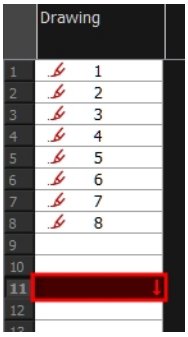




1. From the top menu, select **Edit > Copy Cell from Timeline** or **Xsheet** or press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).

2. In the Timeline or Xsheet view, select the cell where you want your cycles to start.

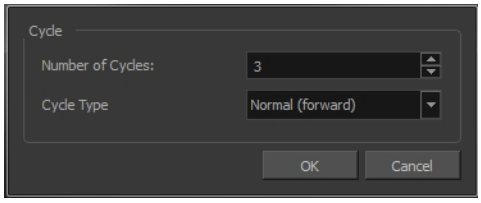




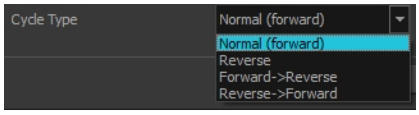
3. Do one of the following:

   - From the top menu, select **Edit > Paste Cycle**.
   - Right-click and select **Paste Cycle**.
   - Press Ctrl + / (Windows/Linux) or ⌘ + / (Mac OS X).

   The Paste Cycle dialog box opens.



4. Do one of the following:
   - In the Number of Cycles field, enter the number of cycles you want to paste.
   - Increase or decrease the number of cycles you want to paste.
5. In the Cycle Type menu, select the type of cycle you want to paste.

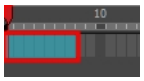


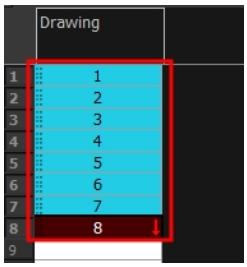
   - **Normal (forward)**: Pastes cycles as for all cycles, starting with the first cell of your selection and ending with the last.
   - **Reverse**: Pastes cycles in the reverse order of the original selection, starting with the last cell of your selection and ending with the first one.
   - **Forward > Reverse**: Pastes the first cycle in your selection as is, then the following one in reverse order. This repeated until all cycles are pasted.
   - **Reverse > Forward**: Pastes the first cycle in your selectionin reverse order, then the following one as is. This repeated until all cycles are pasted.
6. Click **OK**.

> **NOTE:** You can perform the same operation using the Paste Special dialog box. To open the Paste Special dialog box, select **Edit > Paste Special** or press Ctrl + B (Windows/Linux) or ⌘ + B (Mac OS X).

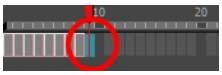
How to paste a reversed cycle

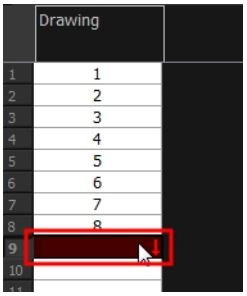
1. In the Timeline or Xsheet view, select the cell range to paste in reverse order.



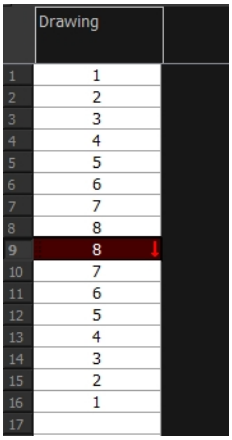


2. From the top menu, select **Edit > Copy Cell from Timeline** or **Xsheet** or press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).
3. In the Timeline or Xsheet view, select the cell where you want your cycles to start.





4. Do one of the following:
   - From the top menu, select **Edit > Paste Reverse**.
   - Right-click and select **Paste Reverse**.
   - Press Ctrl + . (Windows/Linux) or ⌘ + . (Mac OS X).



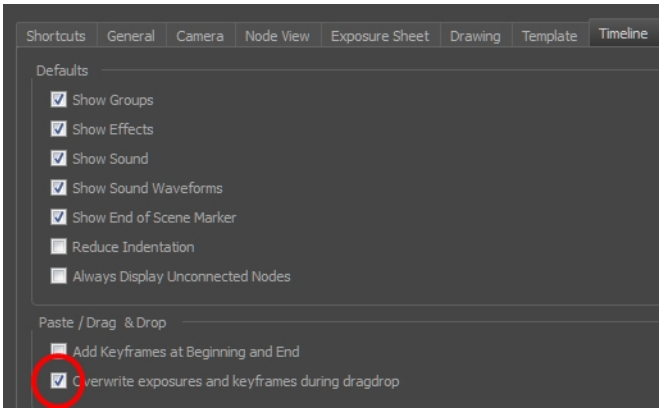
Overwriting Exposures and Keyframes

If the area on which you are dropping a selection contains exposures and/or keyframes, they are overwritten by the content you are selected by dragging. You can set this mode in two places: the Timeline toolbar and the Preferences dialog box.

How to override exposure and keyframes

1. In the Timeline or Xsheet view, drag to select the drawings you want to move.
2. Do one of the following:
   - In the Timeline toolbar, click the Toggle Override Exposure and Keyframe During Drag and Drop button (you may have to customize the toolbar to display it).

- From the top menu, select **Edit > Preferences** or press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X). Select the **Timeline** tab, then select the **Override Exposure and Keyframe During Drag and Drop** option.



3. Drop your selection at the desired location.

Managing Key Exposures

Before working with key exposures, it's important to understand how keyframes, exposure and key exposure work in Harmony:

- **Keyframe**: A keyframe is a point in time where a change to the properties of the object or character occurs. In Harmony, keyframes consist of the coordinates that determine how an entire layer and its contents are moved. Keyframes include these parameters: XYZ position, skew, scale, angle and pivot.
- **Exposure**: Exposure is a property; it is the length of time that a drawing is visible over a series of frames. In Harmony, exposure is independent of keyframes. That is, keyframes are not linked to drawings. Keyframes can be moved independently from the drawing exposure.
- **Key Exposure**: A key exposure in Harmony is a type of exposure that forces a drawing to remain exposed on a specific frame. If a drawing is exposed before a key exposure and you swap out that drawing for another one, then the original drawing is retained. This preserves the key drawing. Note that Harmony automatically sets a key exposure when you perform a drawing swap.

Adding Key Exposures

Key exposures are mainly used for swapping drawings in cut-out animation where you will have numerous drawings for the various positions of the mouth or eyes of a character for example.

If there is a particular drawing you want to keep on a specific frame, you can set it as a key exposure. This prevents it from be overwritten by a drawing swap on a preceding frame. A key exposure is simply a property of an exposure that forces it to be exposed on a certain frame regardless of whether the previous exposure is the same drawing or not.

NOTE: Keep in mind that if you modify the artwork in a drawing, all instances of that drawing will be automatically updated even if set as a key exposure. This keeps your existing animation key poses intact. It is frequently used on a mouth or eyes layer.

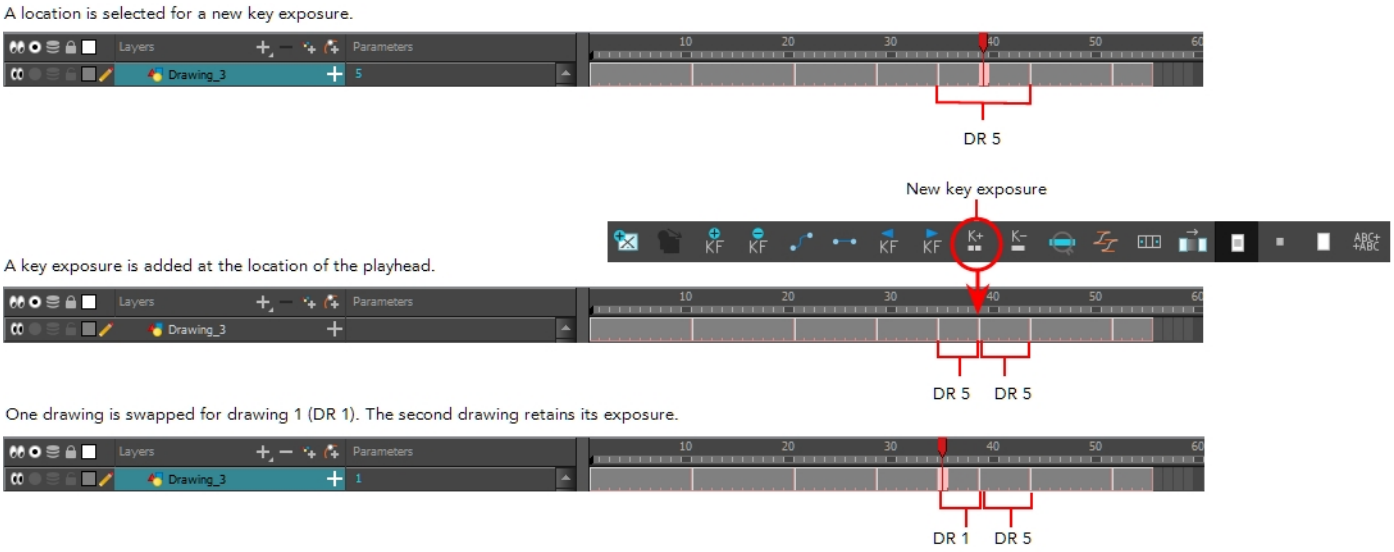
Example: Swapping a drawing with no key exposure

In the following example, drawing 3 (DR 3) is selected on the timeline and it contains no key exposure.

When it is swapped for drawing 4 (DR 4), the entire duration of drawing 3 substituted for drawing 4.

Example: Swapping a drawing with a key exposure

Here's what happens when swapping a drawing with a key exposure. In the following example, the playhead is positioned in the middle of drawing 5 (DR 5) to set the position for the new key exposure. When the new key exposure is added, drawing 5 is split in two; both halves contain drawing 5. Now if you swap the first drawing 5 for drawing 1, the second drawing 5 retains its exposure.



How to add a key exposure

1. In the Timeline view, select the drawing cell to set as the key exposure.
2. Do one of the following:In the Timeline toolbar, click the Add Key Exposure button.
   - In the Timeline toolbar, click the Add Key Exposure button.
   - In the Timeline menu, select **Exposure > Add Key Exposure**.
   - Right-click and select **Exposure > Add Key Exposure**.

   A new key exposure is added.

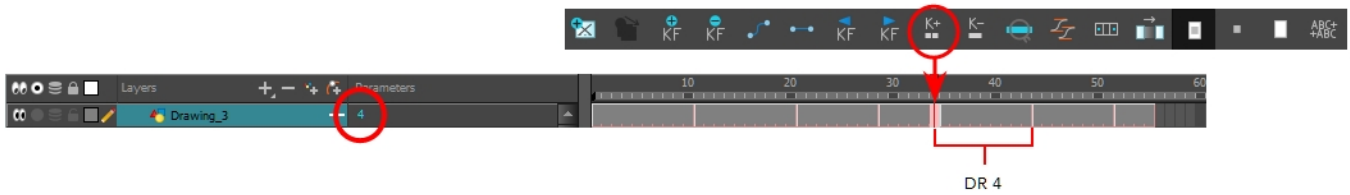
If you added a key exposure at the beginning of the drawing, the entire exposure is filled with that same drawing. If you added a key exposure anywhere other than the beginning of the drawing, then the drawing is split in two and both parts contain the same drawing.

Removing Key Exposures

When you no know longer need a key exposure, you can remove it. When you do this, the existing key exposure is replaced by the preceding exposure. In the following example, a key exposure is set to drawing 1 (DR 1). When the key exposure is removed, the exposure is replaced by the preceding exposure, drawing 4 (DR 4).

Before: Key exposure is set to drawing 1.

After: Key exposure is removed. The preceding exposure, drawing 4, replaces the exposure.



How to remove a key exposure

1. In the Timeline view, select a key exposure to remove.
2. Do one of the following:
   - In the Timeline toolbar, click the Remove Key Exposure button.
   - In the Timeline menu, select **Exposure > Remove Key Exposure**.
   - Right-click and select **Exposure > Remove Key Exposure**.

   The key exposure is removed and replaced by the preceding exposure.

Removing Duplicate Key Exposures

When working with drawings to adjust the timing of a mouth in a lipsync, for example, and forcing the use of specific key exposures, unnecessary key exposures will be created. You can delete these duplicates without affecting the rest of the drawing. The first drawing of the selection will be used for the range.

NOTE: Duplicate key exposures may occur when pasting with the Enforce Key Exposure option selected.

How to remove duplicate key exposures

1. In the Timeline view, select the layer that contains duplicate key exposures.

2. In the Timeline toolbar, click the Remove Duplicate Key Exposure button (you may have to customize the toolbar to display it).

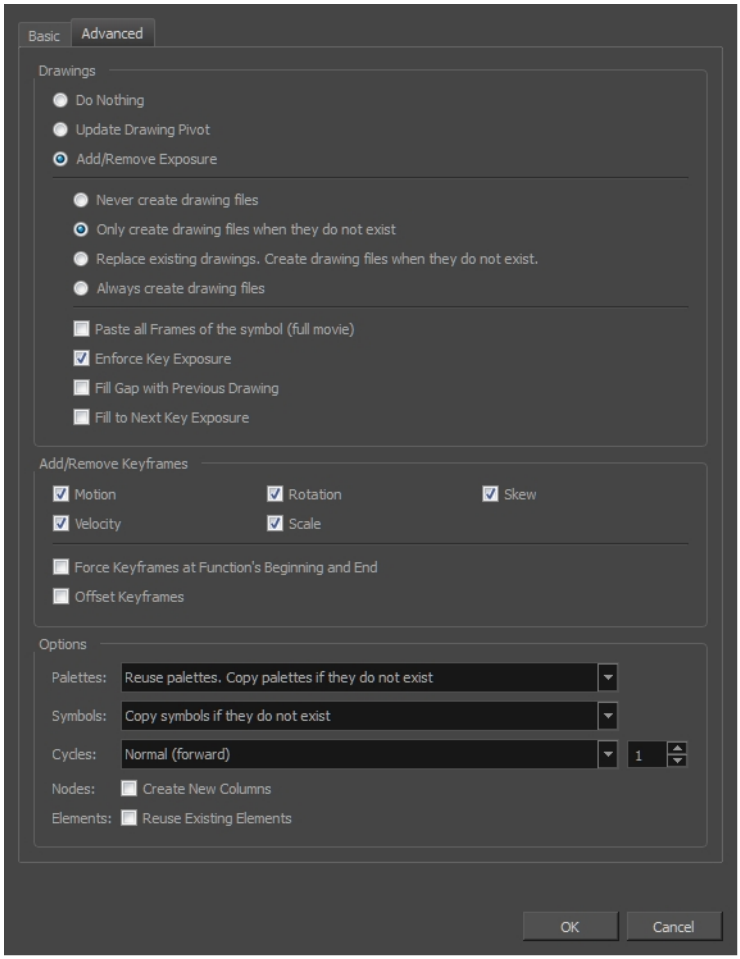
Pasting Key Exposures Using Different Modes

As you animate, you will find that you reuse key exposures. There are different options to paste your selected drawings when they contain key exposures:

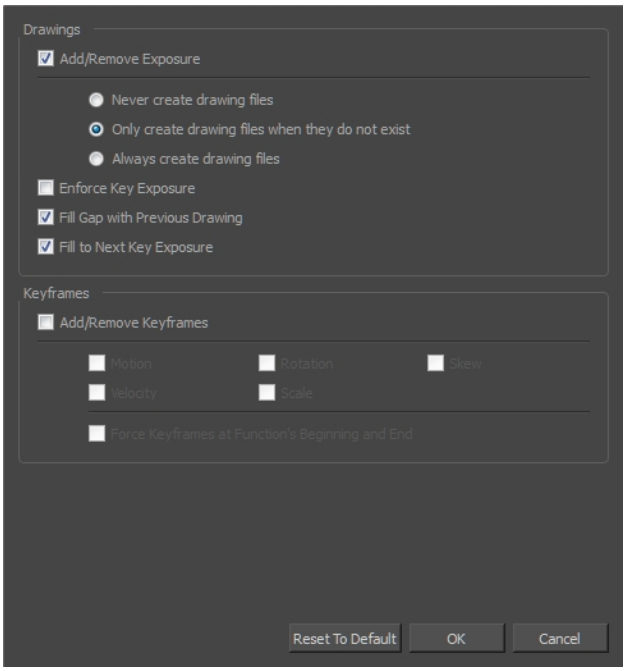
- **Enforce Key Exposure:** If there are key exposures that exist on copied drawings, they are preserved when pasting. No key exposures are added. This is the default behavior when pasting.
- **Fill Gap with Previous Drawing**: Fills selected area in the Xsheet or Timeline view with the previous drawing.
- **Fill to Next Key Exposure**: Fills selected area till the next key exposure.

How to paste using different modes

1. In the Timeline or Xsheet view, select the drawings you want to copy and press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).
2. In the Timeline or Xsheet view, select the cell where you want your pasted selection to start.
3. Do one of the following:
   - Press Ctrl + B (Windows/Linux) or ⌘ + B (Mac OS X).
     The Paste Special dialog box opens.



- From the Timeline menu, select **Edit > Modify Paste Presets > Exposure**.
  The Edit Exposure Paste Preset dialog box opens.



4. Select the **Enforce Key Exposure** or **Fill to Next Key Exposure** option. In the Paste Special dialog box, these options are on the Basic tab.
5. Click **OK**.
6. Press Ctrl + V (Windows/Linux) or ⌘ + V (Mac OS X) to paste your selection.

Navigating between Frames and Columns

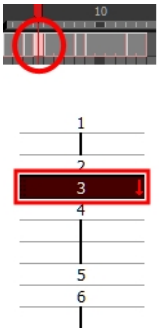
Once a cell is selected in the Timeline or Xsheet view, you can navigate between the drawings, frames, and layers using keyboard shortcuts that work in the Camera, Drawing, Xsheet and Timeline views.

You can navigate through:

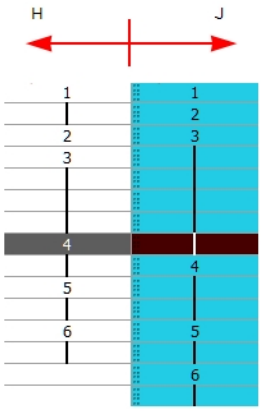
- Drawings
- Frames
- Columns

How to navigate through drawings, frames and columns

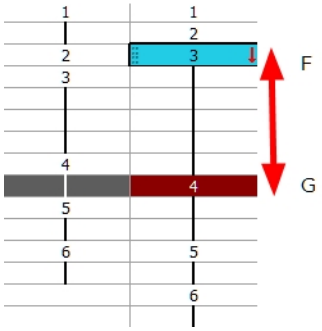
1. In the Timeline or Xsheet view, select a cell.



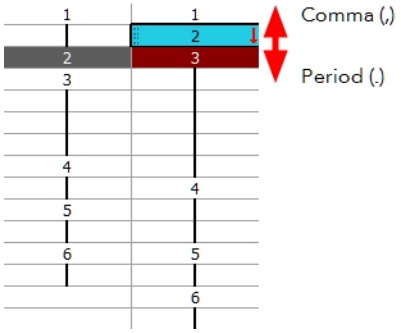
2. Once the cell is selected, you can navigate between:
   - **Previous and next layers**: From the top menu, select **Drawing > Previous Layer** and **Next Layer** or press H and J.



   - **Previous and next drawings**: From the top menu, select **Drawing > Previous Drawing** and **Next Drawing** or press F and G.



- **Previous and next frames**: From the top menu, select **Play > Previous Frame** and **Next Frame** or press comma (,) and period (.).



Managing Drawings

Drawings that are created in Toon Boom Harmony are not stored in their cells. They are actual files stored in the project's folder. If you want to rename a drawing or delete a drawing from your project, you need to edit the file and not the cells.

This section is divided as follows:

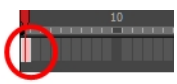
- *Renaming a Drawing* on page 302
- *Deleting a Drawing* on page 304
- *Duplicating a Drawing* on page 305
- *Copying and Pasting Drawings* on page 305
- *Merging Drawings* on page 307

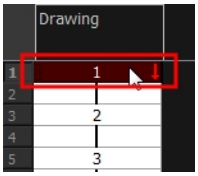
Renaming a Drawing

To rename a drawing, you need to select the drawing cell and use the Rename Drawing command.

How to rename a drawing

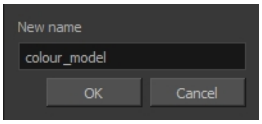
1. In the Timeline or Xsheet view, select the drawing to rename.





2. Do one of the following:
   - Right-click and select **Drawings > Rename Drawing**.
   - In the Timeline toolbar, click the Rename Drawing button (you may have to customize the toolbar to display it).
   - Press Ctrl + D (Windows/Linux) or ⌘ + D (Mac OS X).

   The Rename Drawing dialog box opens.



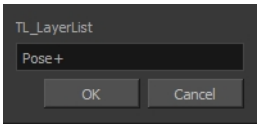
3. In the New Name field, type in the new drawing name.

How to rename a drawing sequence with a prefix

You can rename a drawing sequence with a prefix, which can be quite useful for cut-out puppet breakdown and deformation animation.

1. In the Timeline or Xsheet view, select a drawing sequence. Note that you can only select a drawing range in one column or layer at a time.
2. Right-click and select **Drawings > Rename Drawing with Prefix**.

   The Rename Drawing with Prefix dialog box opens.

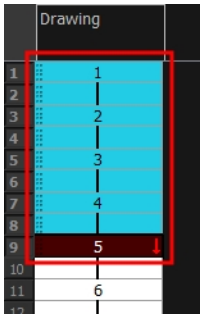


3. In the Prefix to Add field, type the prefix to add before the drawing name.

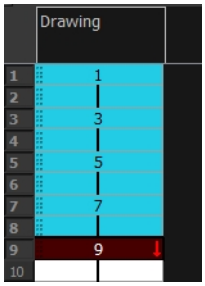
How to rename drawings by their frame position

You can rename a series of drawings relative to their frame position. This is useful in hand-drawn animation.

1. In the Timeline or Xsheet view, select the drawing sequence to rename.



2. From the top menu, select **Drawing > Rename by Frame**.



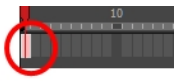
Deleting a Drawing

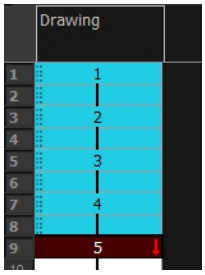
You can permanently delete a drawing file from a project's folder.

NOTE: Deleting a drawing file is an operation that cannot be undone.

How to delete a drawing

1. In the Timeline or Xsheet view, select the drawings to delete.





2. Do one of the following:
   - From the top menu, select **Drawing > Delete Selected Drawings**.
   - Right-click and select **Drawings > Delete Selected Drawings**.

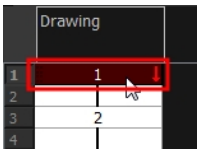
Duplicating a Drawing

If you want to modify a drawing that already exists, but keep the original drawing intact, you can duplicate the drawing and work on the copy. When duplicating a drawing, the selected cell is replaced with the new drawing. The exposure of the original drawing that was on the current cell is removed. The original drawing is not deleted from the project folder or other cells in which it is exposed.

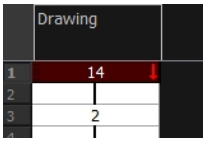
With Toon Boom Harmony, you can create a keyframe at the same time as you duplicate your drawing. This way, you can modify and reposition drawings without affecting the original drawing.

How to duplicate a drawing

1. In the Timeline or Xsheet view, select the drawing to duplicate.



2. Do one of the following:
   - From the top menu, select **Drawing > Duplicate Drawings**.
   - Right-click and select **Drawings > Duplicate Drawings**.
   - In the Xsheet toolbar, click the Duplicate Drawing button.
   - Press Alt + Shift + D.



Copying and Pasting Drawings

When you copy and paste a selection in the Timeline or Xsheet view, you are not copying and pasting the actual drawings, you are pasting the exposure. Exposure is a property; it is the length of time that a drawing is visible over a series of frames. In Harmony, exposure is independent of keyframes. That is, keyframes are not linked to drawings. Keyframes can be moved independently from the drawing exposure.

If you want to copy and paste selected drawings into a different layer or paste the selection in the same layer to duplicate the drawings, you must use the Paste Special feature.

There are four different ways to paste your selected drawings with the Paste Special dialog box:

Never create drawing files: When adding exposures to a drawing layer, drawing files will not be created.

Only create drawing files when they do not exist: When adding exposures to a drawing layer, new drawings will be created only when drawings with the same name do not already exist in the destination.

Replace existing drawings. Create drawing files when they do not exist: Replace drawings with the same names to update a scene with new modified drawings and preserve the animation.

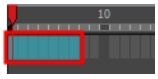
> **Tip**: If you don't want to lose the existing animation when pasting a template, such as when placing new drawings after the animation, then delete the template's animation. It will still have updated the drawings but not override the existing animation.

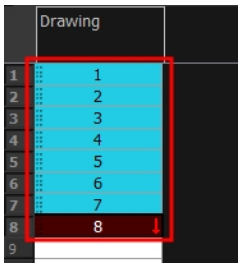
Always create drawing files: When adding exposures to a drawing layer, new drawings will always be created. If drawing files with the same name already exist, Harmony will create a new name for the drawing.

If you want to perform another Paste Special operation using the same settings you used previously, you can use the Paste Special Again command instead. You can paste your selection using the same settings as in the most recent Paste Special operation, without opening the Paste Special dialog box.

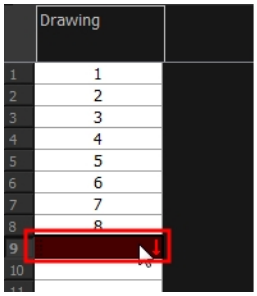
How to paste drawings with the Paste Special command

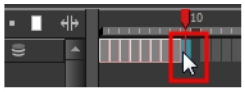
1. In the Timeline or Xsheet view, select the drawings to copy and press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).





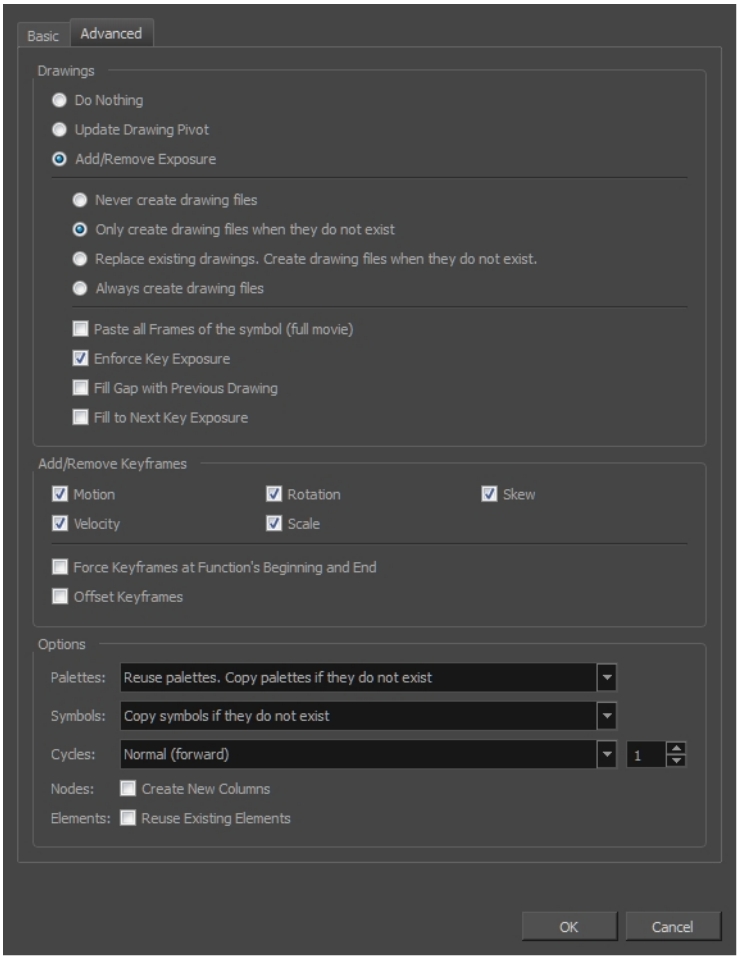
2. In the Timeline or Xsheet view, select the cell where you want your pasted selection to start.





3. Do one of the following:
   - Right-click and select **Paste Special**.
   - From the top menu, select **Edit > Paste Special**.
   - In the Xsheet or Timeline toolbar, click the Paste Special button (you may need to customize the toolbar to display it).
   - Press Ctrl + B (Windows/Linux) or ⌘ + B (Mac OS X).

   The Paste Special dialog box opens.



4. Select the **Basic** tab.
5. In the Drawings section, select the **Always Create Drawings** or **Only Create Drawings When They Do Not Exist option.**

How to paste new drawings with the previous Paste Special settings

1. Do one of the following:
   - From the top menu, select **Edit > Paste Special Again**.
   - Right-click and select **Paste Special Again**
   - In the Timeline or Xsheet toolbar, click the Paste Special Again button (you may have to customize the toolbar to display it).
   - Press Ctrl + Shift + B (Windows/Linux) or ⌘ + Shift + B (Mac OS X).

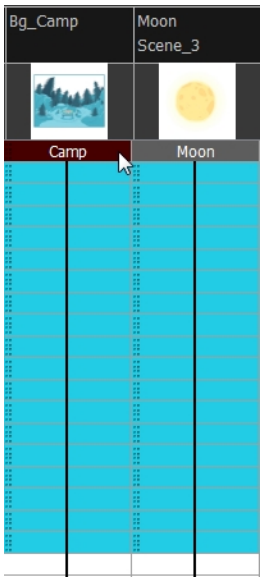
Merging Drawings

There are two methods of merging drawings.

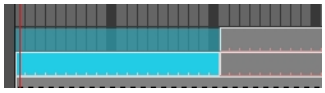
- You can merge selected drawings in adjacent elements. The columns and layers will be left intact, and each new merged drawing will reside in the frames of the left-most column or lower layer.
- You can merge elements. All drawings will be merged. Unused columns and layers will be deleted, but the original drawing files are still accessible.

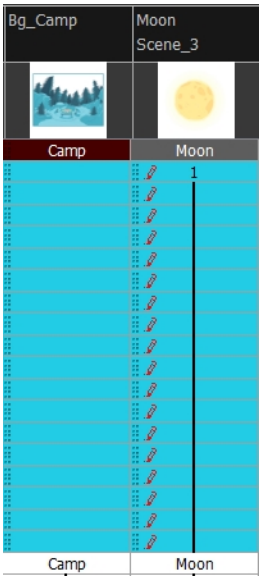
How to merge selected drawings

1. In the Xsheet view, select the drawings to merge.



2. Do one of the following:
   - In the Xsheet menu, select **Columns> Merge Selected Drawings**.
   - In the Timeline menu, select **Layers > Merge Selected Drawings**.



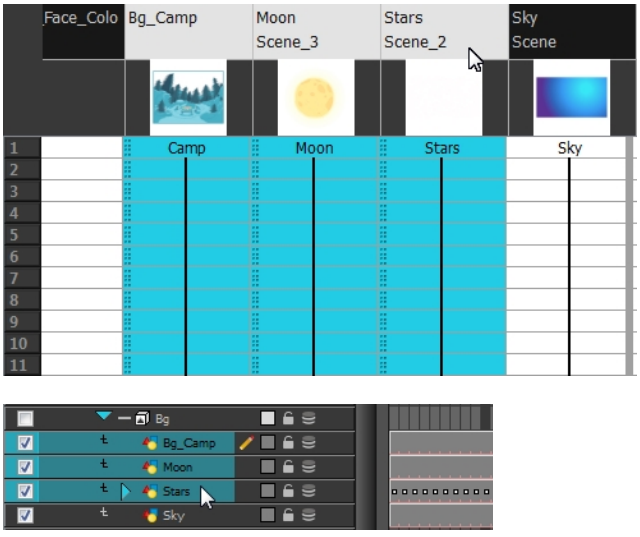


3. Do one of the following:
   - In the Xsheet menu, select **Columns > Merge Selected Columns.**
   - In the Timeline menu, select **Layers > Merge Selected Layers**.

In the Xsheet view, the right-most column will contain the merged drawings and the remaining columns will be left blank at the corresponding frames. In the Timeline view, the bottom timeline layer will contain the merged drawings from all layers and the other layers will be left blank at the corresponding frames. Drawings are not deleted and are still accessible.

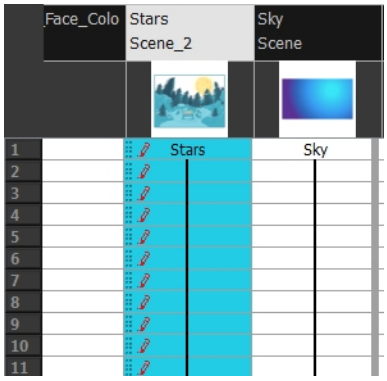
How to merge drawings in entire layers or columns

1. Do one of the following:
   - In the Timeline view, select the layers you want to merge.
   - In the Xsheet view, Shift-click the headers of the columns you want to merge.



2. Do one of the following:
   - In the top menu, select **Edit > Merge**.

- In the Xsheet menu, select **Columns > Merge Selected Columns.**
- In the Timeline menu, select **Layers > Merge Selected Layers**.



In the Xsheet view, the right-most column will contain the merged drawings and the other columns will be deleted. In the Timeline view, the bottom timeline layer will contain the merged drawings from all layers and the other layers will be deleted. Drawings are not deleted and are still accessible.

Modifying the Layer and Column Display

You can change the way a column in the Xsheet view displays. You can change the way a layer in the Timeline view or a column in the Xsheet view displays. You can stay organized without changing the content of elements or your animation output.

This section is divided as follows:

- *Expanding and Collapsing Layers and Columns* on page 310
- *Showing or Hiding Layers* on page 311
- *Showing and Hiding Columns* on page 313
- *Modifying the Look of the Column* on page 316
- *Xsheet Thumbnails* on page 321
- *Changing the Colour of a Layer or Column* on page 322
- *Setting Scene Markers* on page 323
- *Setting Tempo Markers* on page 326

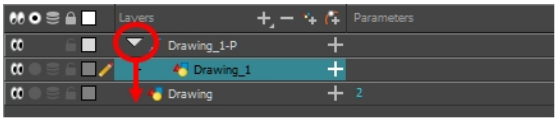
Expanding and Collapsing Layers and Columns

To simplify the look of the Timeline or Xsheet view, you can expand and collapse the layers and columns. If some layers are parented to other ones, you can collapse the parent layer to hide its children.

How to collapse or expand selected layers in the Timeline view

1. In the Timeline view, select the layer(s) to collapse or expand.
2. Do one of the following:

- Right-click on the selection and select **Collapse/Expand > Collapse/Expand**.
- Click the Expand Children Arrow button on the parent layer.
- Click the Collapse/Expand button (you may have to customize the toolbar to display it).
- Press Ctrl + I (Windows/Linux) or ⌘ + I (Mac OS X).



How to collapse or expand all layers in the Timeline view

1. Do one of the following:
   - Right-click on the layers and select **Collapse/Expand > Expand All** or **Collapse All**.
   - In the Timeline toolbar, click the Collapse All or Expand All buttons (you may have to customize the toolbar to display them).
   - Press 0 and 9.

How to collapse and expand 3D path or rotation columns in the Xsheet view

1. In the Xsheet toolbar, click the Show Column List button to display the Functions list.
2. In the Xsheet view, select the column header of the 3D path or 3D rotation column to collapse or expand.
3. Do one of the following:
   - Right-click on the column's header and select **Expand/Collapse > Collapse Selection** or **Expand Selection**.
   - In the Xsheet toolbar, click the Collapse Selection or Expand Selection buttons (you may have to customize the toolbar to display it).

How to collapse or expand all 3D path and 3D rotation columns in the Xsheet view

Do one of the following:

- Right-click on any column's header and select **Expand/Collapse > Expand All** or **Collapse All**.
- Press 0 and 9.
- In the Xsheet toolbar, click the Collapse All or Expand All buttons (you may have to customize the toolbar to display it).

Showing or Hiding Layers

As you work in the Drawing or Camera view, some layers may be in the way or are used as references. You can hide these layers to make your work area less cluttered and easier to navigate. You can show and hide layers in the Timeline view in several different ways.

When using the Solo mode to show or hide layers, here's how it works:

- If you have anything selected, it is not affected.

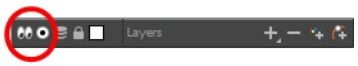
- When multiple layers are selected and you enable/disable the Solo mode on any of those layers, it is applied to all the selected layers.
- When multiple layers are selected and you enable/disable the Solo mode on layers that are not part of the selection, it is applied only to those particular layers.

When exporting or rendering a scene, the Solo mode setting of layers is ignored.

NOTE:
When a layer is affected by an inverted cutter, enabling the Solo mode for this layer will not show it unless the mask is also enabled.

How to show or hide all layers

1. Click one of the following in the Layers toolbar:



   - Enable/Disable All button to show or hide all layers.

     Any hidden layers are unhidden, so you can view all layers.
   - Solo Mode button to view disable your current Solo mode selection. Any soloed drawing or sound layers are disabled, so you can view all layers. When you click again on the Solo Mode button, you last Solo selection is displayed.

How to show or hide individual layers

1. Do one of the following:
   - In the Layer toolbar, click the Solo Mode button.
   - Click the layer's Enable/Disable All button to show or hide that layer.

   - Press A to show a layer or D to hide selected layers.
   - In the Timeline toolbar, click the Enable/Disable button (you may have to customize the toolbar to display it).

   When you deselect a layer in the Timeline view, the corresponding column is hidden in the Xsheet view.

How to enable the selected layer and disable all others

1. Do one of the following:
   - Hold down Alt and click the Solo Mode button of the layer you want to solo and hide all other layers.

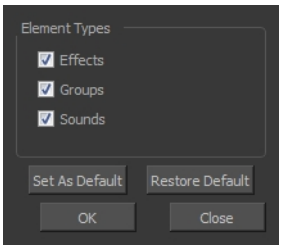
- In the Timeline toolbar, click the Disable All Others button (you may have to customize the toolbar to display it).

In the Timeline view, you can hide or show certain types of layers such as Group and Effect.

How to show and hide layer types in the Timeline view

1. Do one of the following:
   - From the Timeline menu, select **View > Show > Show Manager**.
   - You can also select **View > Show > Show Sounds**, **Show Effects** or **Show Groups** to immediately show or hide the selected type. This option will remain only for the current session. When you close and reopen Harmony, the default settings will return.

   The Show Manager dialog box opens.



2. Select the types of layers you want to display and deselect the ones you want to turn off.
3. Click **Set As Default** to make these new settings the default ones that will be used each time to start the application. Click **Restore Default** to restore the settings used when installing the application.

   In the Xsheet view, you have the choice of hiding or showing certain types of columns such as Annotation and Functions.

Showing and Hiding Columns

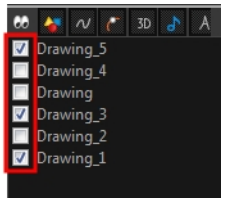
The Xsheet view has a Column List section that displays all the columns contained in the exposure sheet. It can be used to hide individual columns.

If you need to see a column after it has been hidden, you can display it directly from the Xsheet view without using the Column List section.

You can also hide a column type, such as Drawing or Sound. When you do this, its corresponding layer is disabled in the Timeline view.

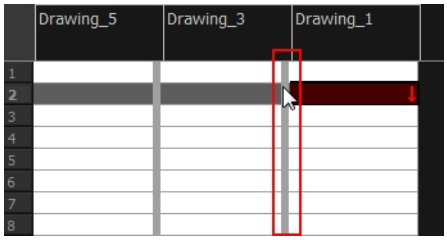
How to show or hide columns in the Xsheet view

1. In the Xsheet toolbar, click the Show Column List button.
2. On the right side of the Functions section, click the Expand button to display the Column List section.
3. Do one of the following:
   - In the Column List section, select the columns to display and deselect the columns to hide.
   - In the Xsheet toolbar, click the Hide Selected Column button (you may have to customize the toolbar to display it).

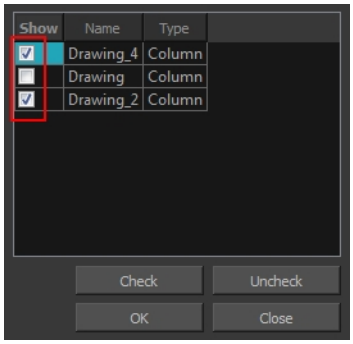


How to show a hidden column in the Xsheet view

1. In the Xsheet menu, click on the thick grey line that represents a hidden column. You can also right-click on the column header and select **Show Hidden Columns**.



The Show Hidden Columns dialog box opens.



2. In the Show column, select the hidden columns you want to display in the Xsheet view.
   - Click **Check** to select all the selected columns.
   - Click **Uncheck** to deselect all selected columns.

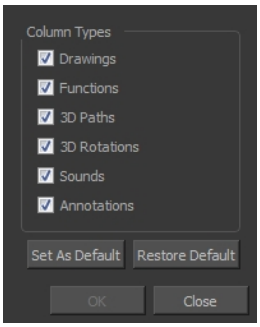
How to show all columns

- In the Xsheet menu, select **View > Unhide All Columns**.

How to show and hide column types

1. In the Xsheet view, select **View > Column Types Manager**.

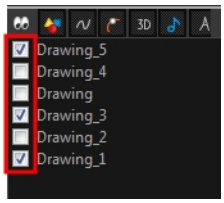
   The Column Types dialog box opens.



2. Select the types of columns you want to display and disable the ones you want to hide.
3. Click **Set As Default** if you want to make these new settings the default ones that will be used each time to start the application.
4. Click **Restore Default** if you want to restore the settings used when installing the application.

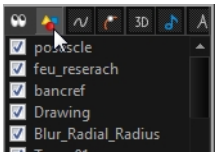
How to show or hide Xsheet columns using the Column List

1. In the Xsheet toolbar, click the Show Column List button.
2. On the right side of the Functions section, click the Expand button to display the Column List section.
3. In the Column List section, select the columns to display and deselect the columns to hide.



How to show or hide an Xsheet column type using the Column List

1. In the Column List section, click the button corresponding to the column type you want to show or hide.



Column Type	Action
	Show/Hide All Columns
	Show/Hide Drawing Columns
	Show/Hide Function Columns
	Show/Hide 3D Path Columns

3D	Show/Hide 3D Rotation Columns
	Show/Hide Sound Columns
A	Show/Hide Annotation Columns

How to show or hide function columns on the left side of the Xsheet view

1. Right-click on a column and select **Tag > Function Columns Visible** or **Function Columns Invisible**.

Modifying the Look of the Column

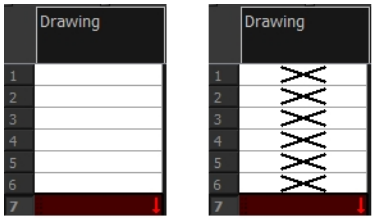
In Harmony, you can modify the way the column displays drawings, empty cells and the column width.

You can modify the following elements:

- Empty cells
- Row units
- Held exposure
- Column width

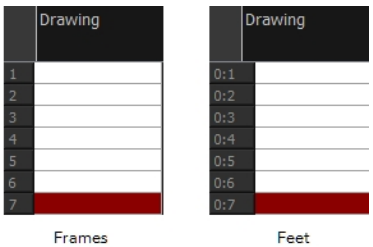
How to modify the look of empty cell

1. From the Xsheet menu, select **View > Empty Cells > With an "X"** or **Blank**.



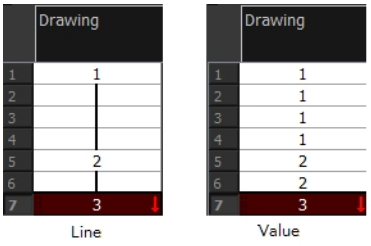
How to modify row units

1. From the Xsheet menu, select **View > Row Units > Frames** or **Feet**.



How to modify the look of a held exposure

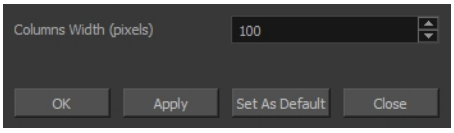
1. In the Xsheet menu, select **View > Held Exposures > Line** or **Value**.



How to modify column width

1. In the Xsheet view, select any column to modify the width.
2. From the Xsheet menu, select **View > Set Columns Width**.

   The Xsheet Column Width dialog box opens.



3. In the Column Width field, enter the desired width in pixels.
4. Do one of the following:
   - Click **OK** to validate and close the dialog box.
   - Click **Apply** to validate the operation and keep the dialog box opened to adjust the next column's width.
   - Click **Set As Default** to create all the new columns to this width.
   - Click **Close** to cancel the operation.
5. To restore all columns to the default value, in the Xsheet menu, select **View > All Columns to Default Width**.

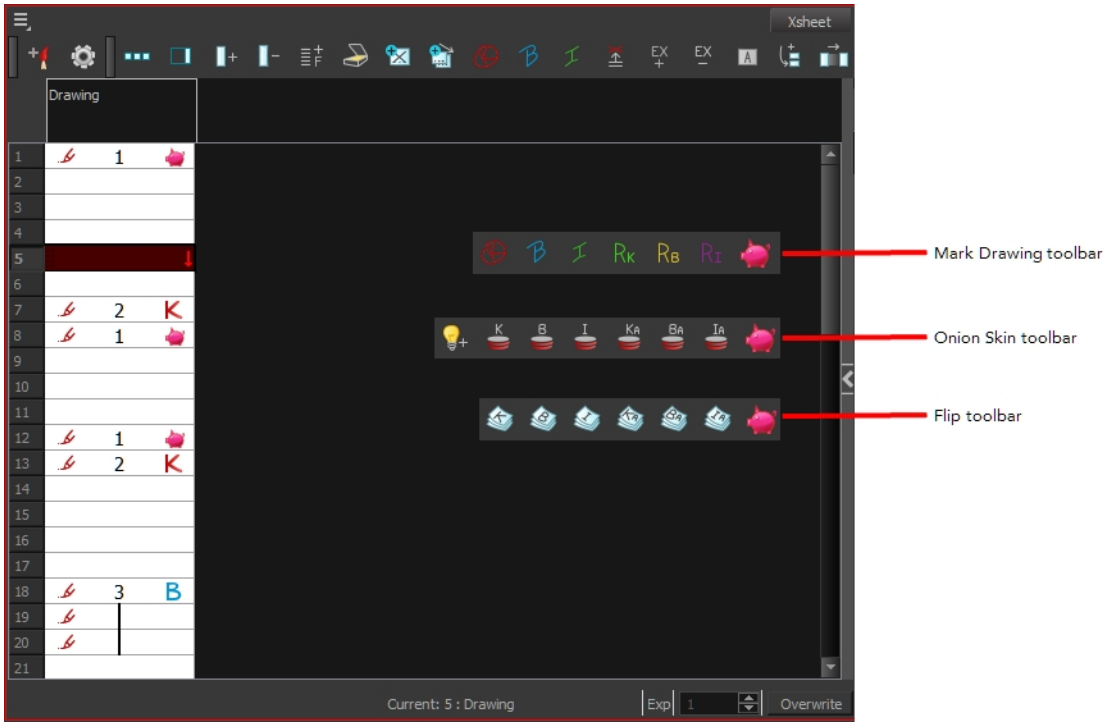
Drawing Identification

In the Xsheet view, you can identify drawings as Key, Breakdown or In-between. This helps to keep the Xsheet well organized while animating.

When working with several animators, directors or even other studios, the necessity for retakes will often arise. Harmony gives you the possibility to mark new drawings as either Retake Key, Retake Breakdown, or Retake In-betweens.

If your production requires you to mark drawings with a custom marker, you also have the option to create your own.

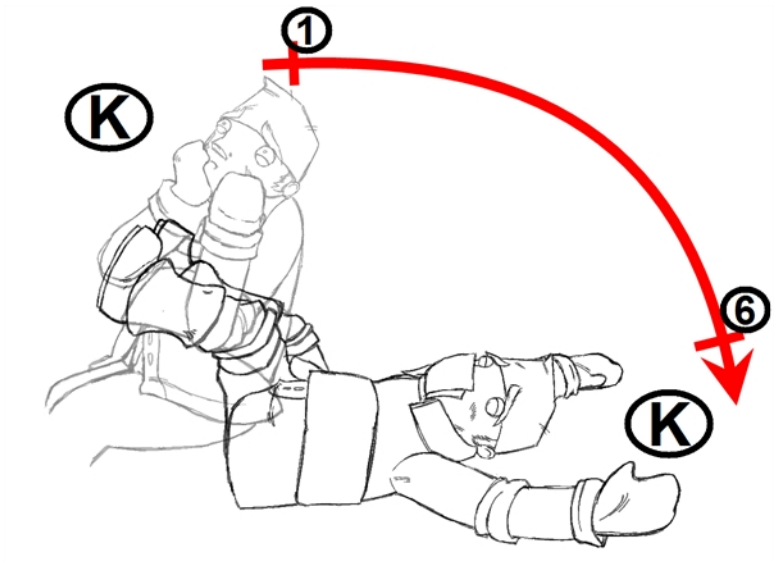
Make custom marks for the Xsheet by creating your own icons, then cutting, pasting and changing a bit of code. Not only is it possible to have your custom mark appear in the Xsheet and Mark Drawing toolbars, but also in the Onion Skin and Flip toolbars.



NOTE: You can create custom shortcuts for the Drawing Identification options in the Preferences dialog box.

Key Drawing

A key drawing is a visually significant pose in a movement, often an extreme position. For example, if a character that is sitting down falls on his back, the key poses would be the character sitting and the character on his back. Of course, it may vary from one animation to another.



Breakdown Drawing

A breakdown drawing is a pose somewhere between two key poses that better shows the movement. Most animation moves are arcs, such as an arm waving, somebody bending, or a leg walking. All of these movements are rotations. The breakdown pose is used to describe this curve better.

The breakdown drawing is then used to indicate secondary poses, also called the *follow-through*. These actions can be a big stomach jiggle as somebody jumps, a cloak floating behind somebody that is running, or arms moving after the main body action. These moves will generally have a different timing than the primary action. They will mainly start later and finish later. So, the breakdown drawings are used to complete the key drawings.

Note that a breakdown drawing is not always placed exactly in the middle of two keys. It will often be closer to one or the other depending on the timing and the action. Also, you can have more than one breakdown pose between two keys.

How to mark a drawing as Key, Breakdown or In-between

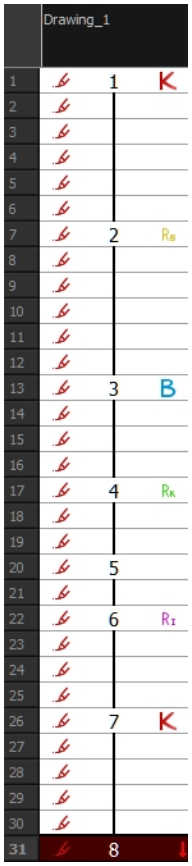
1. From the top menu, select **Windows > Toolbars > Mark Drawing.**

   The Mark Drawing toolbar displays.

2. In the Xsheet view, select the cell you want to identify. This option is not available in the Timeline view.

3. In the Mark Drawing toolbar, click one of these buttons: Mark as Key Drawing , Mark as Breakdown Drawing or Mark as In-between Drawing . In the Xsheet menu, you can also select **Drawing > Mark Drawing As > Key Drawing**, **Breakdown Drawing**, **In-between Drawing**, **Retake Key**, **Retake BD** and **Retake IB**.

   - If you selected Mark as Key Drawing, a icon appears in the cell.
   - If you selected Mark as Breakdown Drawing, a icon appears in the cell.
   - If you selected Mark as In-Between Drawing, there is no icon displayed in the cell since it is used to remove a Key or Breakdown marker.



How to create custom markers

1. With a bitmap editing software, create the following icons in PNG format:
   - Mark Drawing Toolbar icon (24 x 24 pixel)
   - Onion Skin Toolbar icon (24 x 24 pixel)
   - Flip Toolbar icon (24 x 24 pixel)
   - Xsheet Column icon (16 x 16 pixel)
2. Close Harmony.
3. When your icons are ready, open the Toon Boom Harmony **`drawingTypes.d`** folder.

   In Harmony Server, the path is global for all users so you must create the folder and place in /USA_DB.
   - **`/USA_DB/drawingTypes.d`**

NOTE:
If the **`drawingTypes.d`** folder does not exist, you must create it. To do so, copy the **`resources`** folder from the following location.

- Windows: **Start > Programs > Harmony 12.1 Premium**

- Mac OS X: **Applications > Toon Boom Harmony 12.1Premium > resources > drawingTypes.d**
- Linux: /usr/local/ToonBoomAnimation/harmony_12/lnx86_64/bin/Stage/resources/drawingTypes.d

4. Paste your icons in the **`drawingTypes.d`** directory.
5. In the same directory, open the **`drawingTypes.xml`** file in a text editor.
6. For each custom icon you want to create, add the following line. Make sure to place it before this closing tag: **`</DrawingTypes>`**.
   - <DrawingType text="NewButtonName" pixmapFile="XsheetIcon.png" commandIcon="MarkDrawingIcon.png" flipIcon="FlipIcon.png" onionIcon="OnionIcon.png" />
7. In that line, replace the following information with your new icon information:
   - NewButtonName: Write the name of your new marker. This name will appear in the button tooltip.
   - XsheetIcon.png: Write the name of the icon that you created to appear in the Xsheet column. Include the file extension.
   - MarkDrawingIcon.png: Write the name of the icon that you created to appear in the Mark Drawing toolbar. Include the file extension.
   - FlipIcon.png: Write the name of the icon that you created to appear in the Flip toolbar. Include the file extension.
   - OnionIcon.png: Write the name of the icon that you created to appear in the Onion Skin toolbar. Include the file extension.
8. Save the file and close it.
9. Start Harmony.

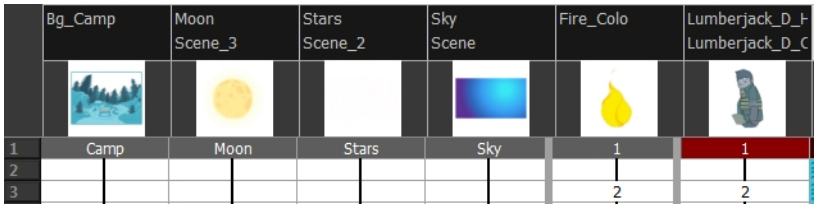
Xsheet Thumbnails

When there are a large number of columns in the exposure sheet, it's not easy to quickly identify a particular column. Displaying the column thumbnails makes this easier. This option displays a small thumbnail picture of the current frame below the column header.

How to display the thumbnails

1. Do one of the following:
   - In the Xsheet toolbar, click the Show Thumbnails button.
   - In the Xsheet menu, select **View > Show Thumbnails**.

   The thumbnails appear.

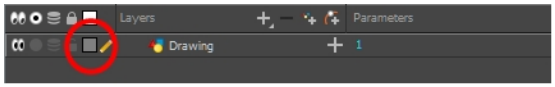


Changing the Colour of a Layer or Column

To easily identify elements in the Timeline or Xsheet view, you can change the colour of layers and columns. The colours you choose will be reflected in the Node view.

How to change the layer's colour in the Timeline view

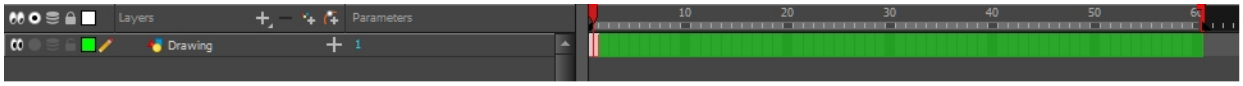
1. In the Timeline view, click the Change Track Colour button of the layer you want to modify.



2. In the Select Colour dialog box, select a new colour for your layer.

3. Click **OK**.

   The layer's background colour is updated. In a Drawing layer, exposed cells are the brighter, selected colour for easy identification. The corresponding column colour is also updated in the Xsheet.

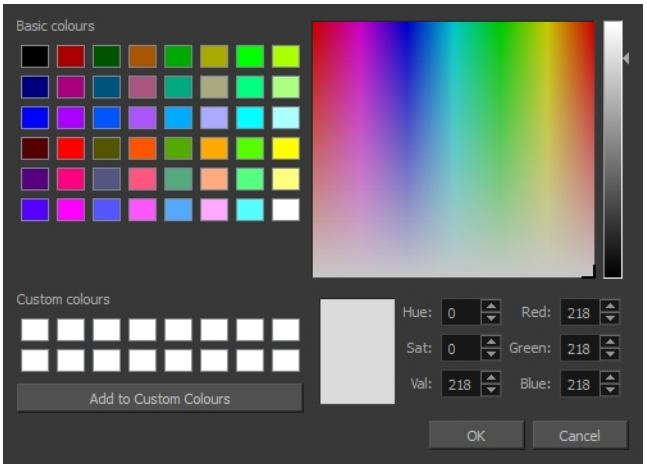


How to reset a layer's colour in the Timeline view

1. In the Timeline view, select the layers to reset.
2. In the Timeline toolbar, click the Default Track Colour button (you may have to customize the tool-bar to display it).

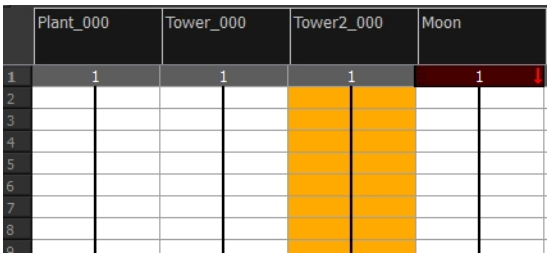
How to change a column's colour in the Xsheet view

1. In the Xsheet view, select one or more columns to modify.
2. Right-click on the column's header and select **Colour > Change Columns Colour**.
3. In the Select Colour dialog box, select a new colour for your columns.



4. Click **OK**.

   The column's colour is updated. The corresponding column colour is also updated.



How to reset the column's colour in the Xsheet view

1. In the Xsheet view, select the columns to reset.
2. Right-click on the column's header and select **Colour > Default Columns Colour**.

Setting Scene Markers

Scene markers are visual indicators displayed at the top of the Timeline view in the frame counter area. You can use it to denote anything relevant to your work. You can indicate the frames you want to clean up, a change in action, an impact, or where you intend to apply an effect. You can also add a note to a scene marker, which is displayed when you hover over the scene marker.

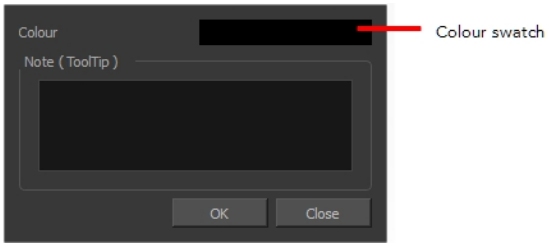
There are two ways to add a scene marker. You can mark the current frame or make a frame range selection and mark the whole section.

How to mark the current frame

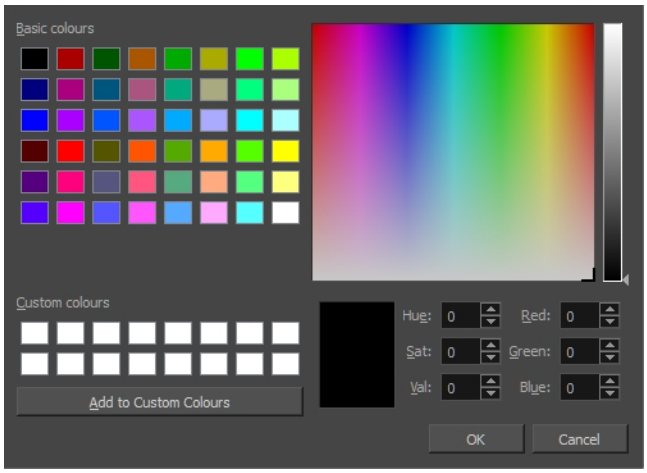
1. In the Timeline view, make sure the red playhead is set on the frame you want to mark. Even if you right-click on a different frame, the scene marker will be created on the current frame on which the playhead is positioned.

2. Right-click in the frame counter area and select **Scene Markers > Mark Current Frame**.

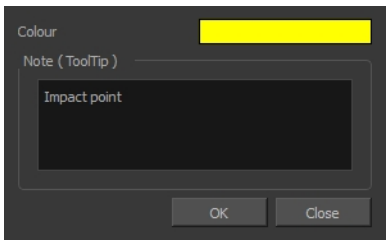
The Timeline Scene Marker dialog box opens. The Colour box displays a black colour swatch, or the colour of the last scene marker you created.



3. Click the Colour swatch to open the Mark Colour dialog box and select a colour for the scene marker. Click **OK**.

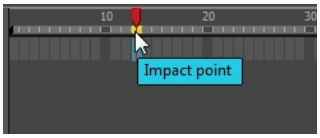


4. In the Note field, enter text to display as the tooltip and click **OK**.



In the Timeline view, the scene marker is displayed at the current frame.

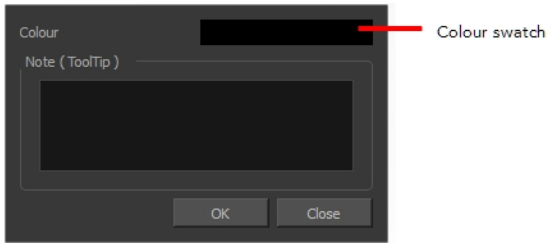
5. Hover over the scene marker to display its tooltip.



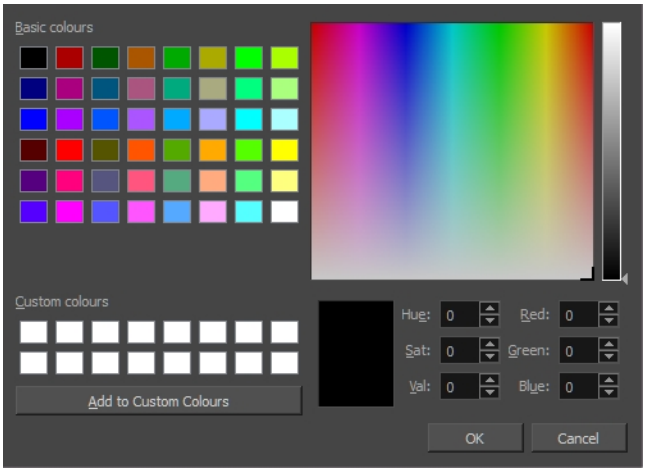
How to create a scene marker on a frame range

1. In the frame counter area of the Timeline view, select the frame range you want to mark.

The Timeline Scene Marker dialog box opens. The Colour box displays a black colour swatch, or the colour of the last scene marker you created.



2. Click the Colour swatch to open the Mark Colour dialog box and select a colour for the scene marker. Click **OK**.



3. In the Note field, enter text to display as the tooltip and click **OK**.

   In the Timeline view, the scene marker is displayed over the selected frame counters.

4. Hover over the scene marker to display its tooltip.

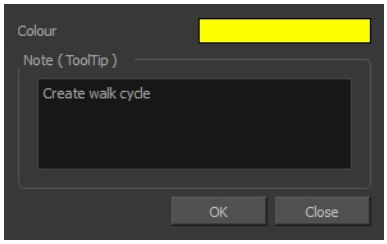
How to edit a scene marker

NOTE: If you select only a part of a scene marker, you will not open the scene marker for editing. You will only be able to create a new scene marker to overwrite it.

1. In the Timeline view frame counter, select the entire scene marker.

2. Right-click the selection and select **Scene Markers > Edit Scene Marker**.

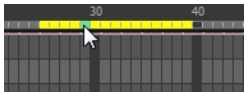
   The Timeline Scene Marker dialog box opens.



3. Make your changes.
4. Click **OK**.

How to delete a scene marker

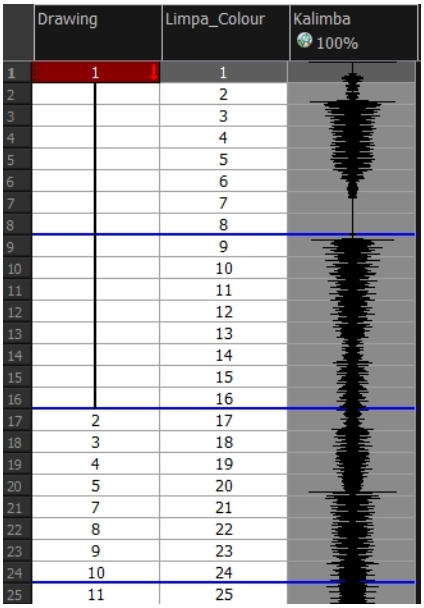
1. In the Timeline view frame counter, at least one frame counter in the scene marker you want to delete.



2. Right-click the selection and select **Scene Markers > Delete Scene Marker**.

Setting Tempo Markers

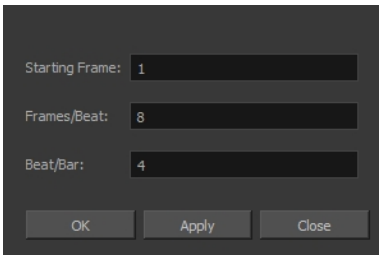
Tempo markers are used to synchronize your animation with a musical score. This lets you reproduce the FPB (Frames Per Beat) and use the tempo signature as tempo markers. The Xsheet view allows you to pace your animation according to the tempo or beat of the soundtrack music or to any rhythmic sound, such as the ticking of a clock or water leaking from a spout.



How to set the tempo markers

1. In the Xsheet menu, select **View > Set Tempo Marker.**

   The Tempo Marker dialog box opens.

2. Reproduce the tempo and beat value of your music or sound for the Xsheet view marker display.
   - **Starting Frame**: Enter the number of the frame where you want the tempo markers to begin.
   - **Frames/Beat**: Set the frames per beat value. This will determine the frequency (in frames) in which a beat marker will appear. Keep in mind that, by default, 24 frames represent 1 second.
   - **Beat/Bar**: Set the tempo of your music or sound. This will determine the frequency (in beats) in which a tempo marker will appear in the Xsheet view.
3. Click **OK**.

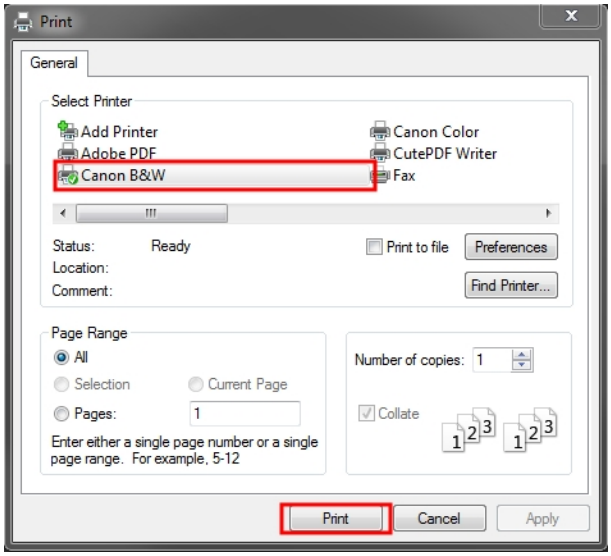
Printing the Xsheet

Once you have marked all the information, corrections, and timing you want in the Xsheet view, you can print your exposure sheet. Printing the Xsheet allows you to take it with you to your animation table or give a copy to the animator. You can also use it to create your Xsheet skeleton directly in Harmony.

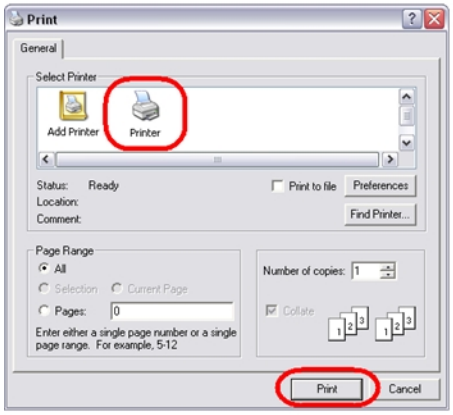
How to print your exposure sheet

1. Select **File > Print > Xsheet**.

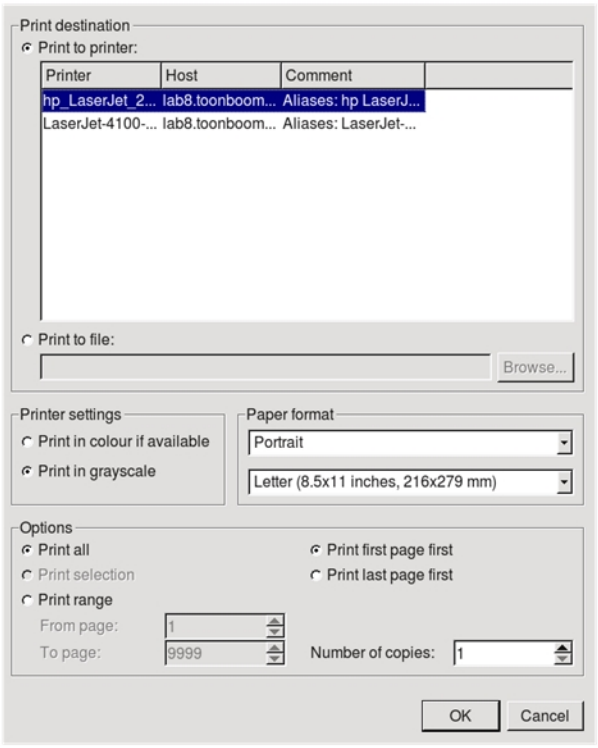
   The Print dialog box opens.



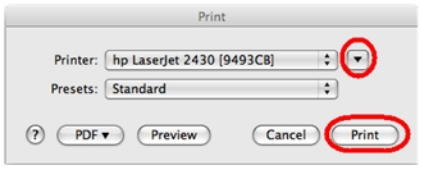
Windows



Linux



Mac OS X



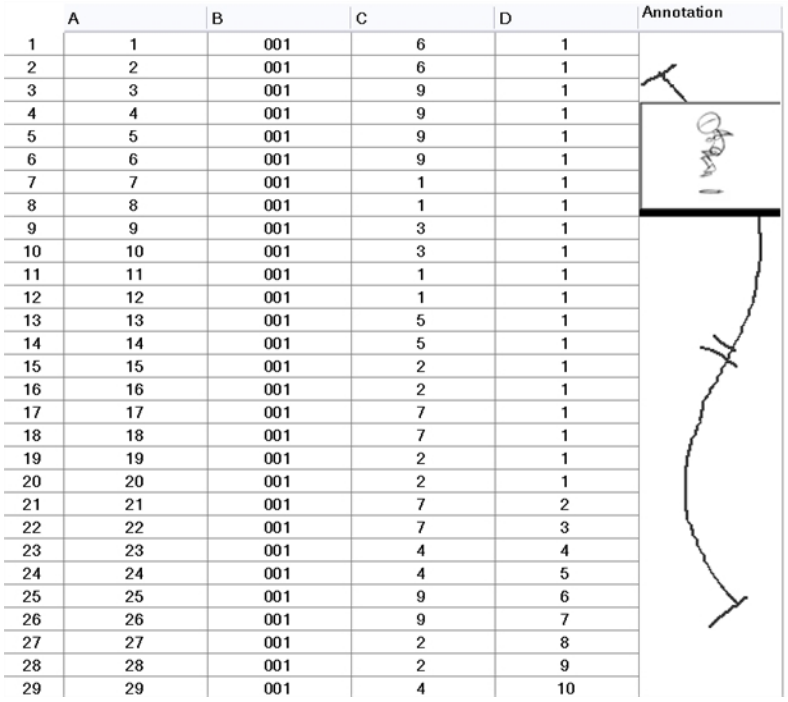
2. To set up your print:

   - **Windows**: In the Select Printer section, select your printer and adjust the rest of the printing settings.

- **Linux**: In the Print Destination section, select your printer and adjust the rest of the printing settings.
- **Mac OS X**: In the Printer section, select your printer and adjust the rest of the settings by clicking on the Parameters button. You can also click **PDF** and select an option from the menu if you want to save a PDF version of your exposure sheet.

NOTE: Refer to your printer user guide to learn more about its options.

3. Do one of the following:
   - **Windows** and **Mac OS X**: Click **Print**.
   - **Linux**: Click **OK**.



	A	B	C	D	Annotation
1	1	001	6	1	
2	2	001	6	1	
3	3	001	9	1	
4	4	001	9	1	
5	5	001	9	1	
6	6	001	9	1	
7	7	001	1	1	
8	8	001	1	1	
9	9	001	3	1	
10	10	001	3	1	
11	11	001	1	1	
12	12	001	1	1	
13	13	001	5	1	
14	14	001	5	1	
15	15	001	2	1	
16	16	001	2	1	
17	17	001	7	1	
18	18	001	7	1	
19	19	001	2	1	
20	20	001	2	1	
21	21	001	7	2	
22	22	001	7	3	
23	23	001	4	4	
24	24	001	4	5	
25	25	001	9	6	
26	26	001	9	7	
27	27	001	2	8	
28	28	001	2	9	
29	29	001	4	10	

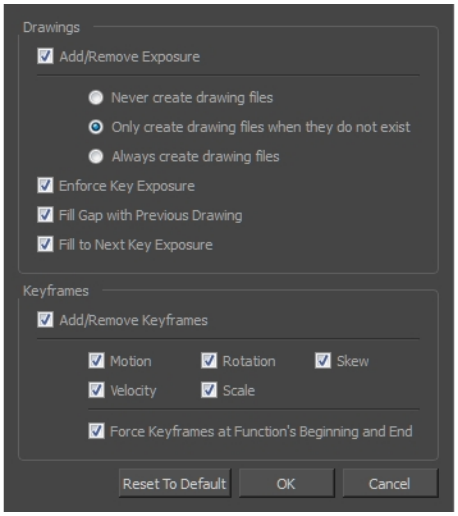
Modifying Paste Presets

When pasting key frames and exposures, you can modify the existing presets to your liking. There are three presets you can modify: the default presets for both key frames and exposures, key frames only and exposures only.

How to modify paste presets

1. From the Timeline view menu, select **Edit > Modify Paste Presets** and one of the following options:
   - **All** to edit the default paste preset settings.
   - **Key Frame** to edit the preset settings for pasting key frames.
   - **Exposure** to edit the preset settings for pasting exposures.

   The Edit Paste Presets dialog box opens.



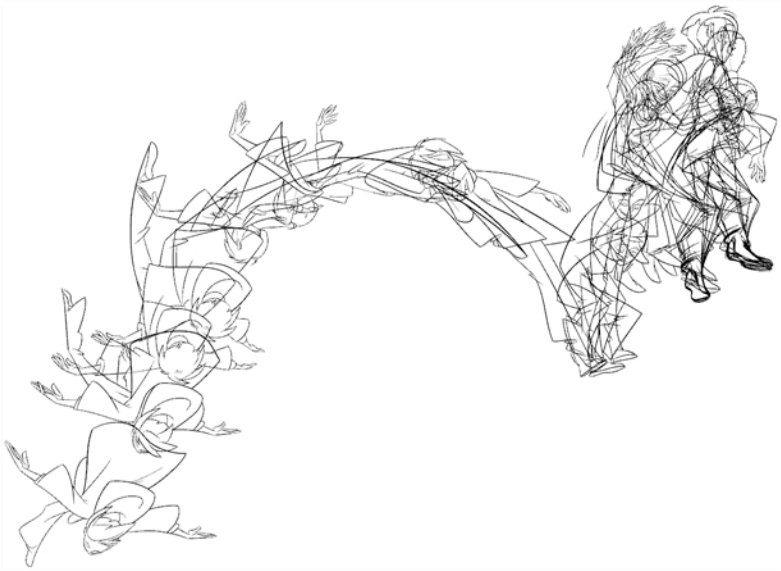
2. Refer to the following table and edit the presets as desired.

Edit Paste Preset Dialog Box Parameters

Parameter	Description
Drawings	
Add/Remove Exposure	**Never create drawing files**: **Never create drawing files**: When adding exposures to a drawing layer, drawing files will not be created.
	Only create drawing files when they do not exist: When adding exposures to a drawing layer, new drawings will be created only when drawings with the same name do not already exist in the destination.
	Always create drawing files: When adding exposures to a drawing layer, new drawings will always be created. If drawing files with the same name already exist, Harmony will create a new name for the drawing.
Enforce Key Exposure	If there are key exposures that exist on copied drawings, they are preserved when pasting. No key exposures are added. This is the default behavior when pasting.
Fill Gap with Previous Drawing	Fills selected area in the Xsheet or Timeline view with the previous drawing.
Fill to Next Key Exposure	Fills selected area till the next key exposure.
Keyframes	
Add/Remove Keyframes	**Motion:** Copies the properties of the selected motion keyframe to the new frame.
	Velocity: Copies the properties of the selected velocity keyframe to the new frame.
	Rotation: Copies the properties of the selected rotation keyframe to the new frame.

	Scale: Copies the properties of the selected scale keyframe to the new frame.
	Skew: Copies the properties of the selected skew keyframe to the new frame.
	Force Keyframes at Function's Beginning and End: Adds a keyframe to the beginning and end of the pasted function, reproducing the source function.

Chapter 5: Paperless Animation



Toon Boom Harmony is a powerful paperless animation software that incorporates animation and drawing tools to make your work easier and more efficient.

Although it is a digital process, paperless animation is still hand-drawn and the fundamental principles of animation still apply.

One of the advantages of working with paperless animation is that you do not lose time scanning elements in and testing them because everything is already digital. You can simply draw your animation and play back your line test right away. This also saves the substantial amount of paper required by traditional animation. Another practical advantage is the ability to undo and redo some actions that are often difficult on paper, such as erasing brush strokes.

This chapter is divided as follows:

- *Preparation* on page 333
- *Rough Animation* on page 344
- *Secondary Animation* on page 348
- *Bringing Your Animation on Model* on page 352
- *Animation Clean-up* on page 352
- *Tools* on page 354
- *Advanced Tools* on page 363

Preparation

To prepare for paperless animation with Harmony, you will need to complete the following tasks.

- *Setting Up Your Workspace* on page 334
- *Setting the Scene Resolution and Length* on page 334
- *Importing the Layout, Storyboard and Animatic* on page 335
- *Importing the Background Elements* on page 337

- *Creating the Drawing Elements* on page 337
- *Importing the Models* on page 338

Setting Up Your Workspace

To sketch the animation directly in Harmony, you will mostly frequently need the Camera or Drawing view, the Xsheet or Timeline view, and the Tool Properties and Colour views.

While drawing and animating paperless animation, you can use the Workspace Manager to save a frequently used layout and name it **`Paperless Animation`**, for example.

For more information on setting up your workspace, refer to Chapter 2: Interface in the Fundmentals Guide.

Setting the Scene Resolution and Length

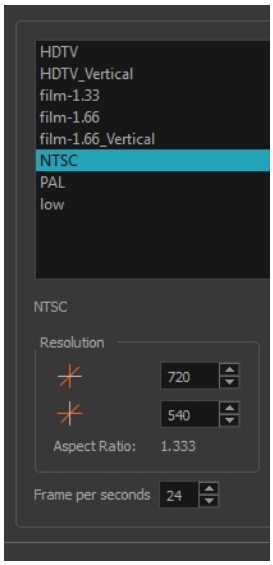
If the scene resolution was not already set by the digital layout artist or by a Toon Boom Storyboard Pro import, it is the next step to be accomplished. The layout artist, scene planner or animator will often take care of this task prior to the animation when working with paperless and cut-out animation.

How to set the resolution and frame rate

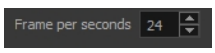
1. From the top menu, select **Scene > Scene Settings**.

   The Scene Settings dialog box opens.

2. In the Resolution tab, Choose a resolution from the list or enter a new one.



3. Set your frame rate.



4. Click **OK**.

NOTE: It is important to set the resolution before you begin to set positioning and camera moves, as it may affect the ratio and composition.

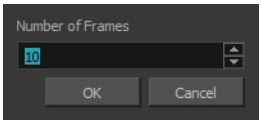
Once you have set the resolution and frame rate, you must set the scene length by adding the right number of frames to the scene. You can set the scene length from the top menu. If you do not yet know the number of frames that will be needed, simply add some frames so you can draw different poses. However, if you only need to draw a background and one pose, you do not need to add more frames.

You don't need to do this step if you are importing your animatic in the QuickTime movie file format. The QuickTime import feature takes care of the scene length at the same time as the movie import.

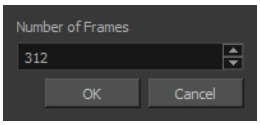
How to set the scene length

1. From the top menu, select **Scene > Scene Length**.

   The Set Scene Length dialog box opens.

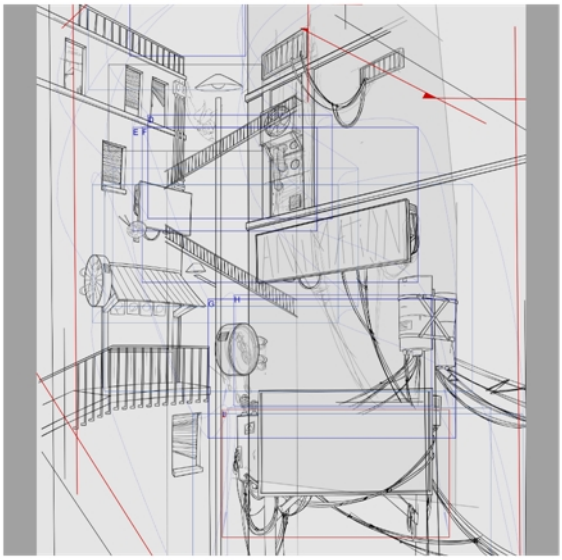


2. Type the scene duration in the Number of Frames field.



3. Click **OK**.

Importing the Layout, Storyboard and Animatic



To animate a scene, you need to import your layout, storyboard or animatic, depending on which technique you are using. The most popular method is the animatic.

If you created a digital layout prior to the scene animation, you will animate directly in that scene. In this case, there is no need to import references since they are already there.

Importing the Animatic

If you have an animatic available, you can import it. The animatic will give you the right timing to expose your animation poses.

There are three ways to import an animatic in a scene.

How to import a QuickTime animatic

Toon Boom lets you import QuickTime movie files in the scene, cut them as image sequences and import the sound as an independent soundtrack.

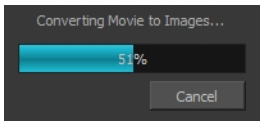
1. From the top menu, select **File > Import > Movie**.

   The Select QuickTime Movie window opens.

2. Browse to your animatic.

3. Click **Open**.

4. The Import Movie window displays the conversion progress.

   When the conversion is complete, the Import Images dialog box opens—see the Import chapter in the Compositing and Effects guide to learn more.

1. Click **OK**.

How to import an image sequence animatic

You can also import an animatic composed of a sequence of bitmap images that were created in a third-party software by using the Import Images feature.

Use the same technique to import layouts and poses that were created on paper and scanned in third-party software.

1. From the top menu, select **Import > Images**.

2. The Import Images dialog box opens—see the Import chapter in the Compositing and Effects guide to learn more.

3. Click **OK**.

How to import a Toon Boom Storyboard Pro animatic

If the animatic was created with Toon Boom Storyboard Pro, you need to create an Export to Toon Boom function from that software. This will create your scenes and import your layout and posing and camera moves. This must be done at the beginning of the production. When you work in Harmony, use the same technique as you would in any QuickTime animatic.

If your project was created using Toon Boom Storyboard Pro, the animatic and camera moves are already set in your scene and you can go ahead and import the background elements.

Importing the Background Elements

Once the layout or animatic is set, you can import the background elements.

There are two types of background elements you can import: bitmap and vector-based.

Bitmap background

You can import external bitmap background elements to your scene using the Import Images dialog box. Be sure to deselect the Convert to Toon Boom Vector Drawing option to retain your elements as bitmaps and preserve your colours.

To import a bitmap background, follow the procedure to import an image sequence animatic—see *Importing the Animatic* on page 336. For in-depth information on importing bitmap images, refer to Chapter 7: How to Import Bitmap Images in the Getting Started Guide.

Creating the Drawing Elements

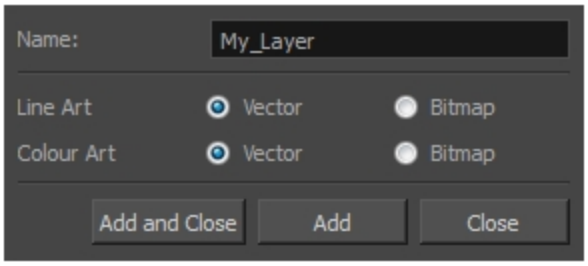
Before beginning to draw in the Camera or Drawing view, you must add a drawing element to the Xsheet or Timeline view. You will also need to select the appropriate cell in your drawing element.

How to add a drawing element from the Timeline view

1. In the Timeline view, click the Add Drawing Layer button or press Ctrl + R (Windows/Linux) or ⌘ + R

(Mac OS X).

The Add Drawing Layer window opens.



2. In the Name field, name your new layer.
3. Set the Line Art and Colour Art options to **Vector** to get a vector layer or to **Bitmap** to have a bitmap layer.
4. Do one of the following:
   - Click **Add** to add a first layer and keep the window open to add more layers.
   - Click **Add and Close** to add a new layer and close the window.

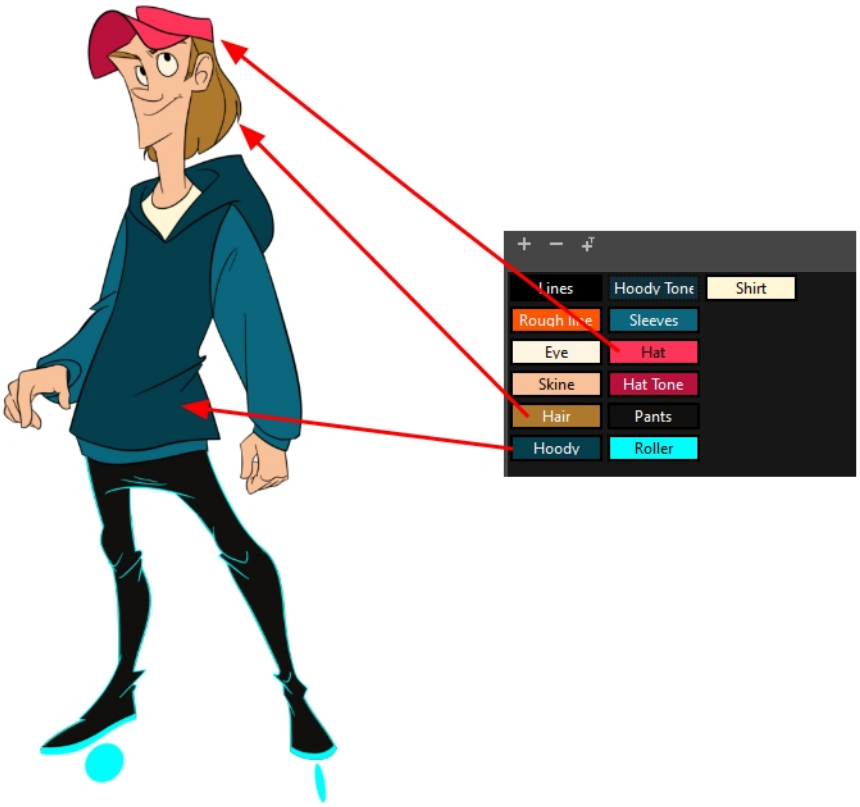
   A new drawing layer is added to the Timeline view.

Importing the Models

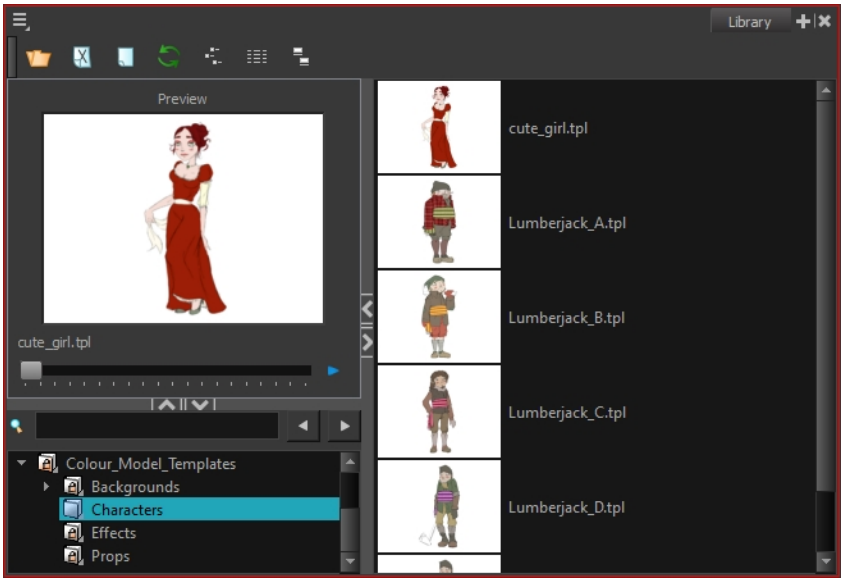
In order to animate your characters and props, you must load the colour models and their corresponding palettes—see *Working with Palettes* on page 196.

Harmony makes good use of palettes. Each character can have his or her own colour palette with its own set of colours that can be reused in all the scenes. Each zone (for example, the shirt, eyes, shoes, and hair) can have its own colour swatch stored in the colour palette. Once the zone is painted with its corresponding colour, the zone and the colour are linked throughout the entire scene.

There is no need to repaint each zone individually. If you modify the colour after the painting process, all the corresponding zones in all drawings and all layers are changed simultaneously.



Prior to the paperless animation process, the colour stylist creates the palettes and models and stores them in templates or colour model scenes—see *Colour Styling and Colour Models* on page 191.



Importing Model Templates

Once the model templates are created, you are ready to import them into the scene. From the Library, import the appropriate templates to make the models and their palettes available in the scene.

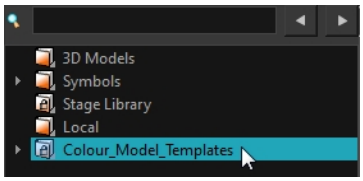
From there, you can:

- Load the palettes in the proper drawing element and
- Load the drawing models to the Model view.

NOTE: There is no need to obtain the right to modify the Library in order to import a template.

How to import a model template

1. Open the Template Library.
2. In the Template Library, select the colour model storage folder.



3. Select the colour models you need and drag them to the Camera view.
   - To create new layers and nodes, drop the selection on the left side of the Timeline view.
   - To insert the information into pre-existing layers, drop the selection on the right side of the Timeline view. In order for the template to combine with existing layers, the structure needs to be consistent. If you cannot merge the layers together, create new layers on the left side of the Timeline view.

When you import a template into a scene, there is no link between the Library and the scene. Instead, a copy of all elements is created, such as drawings, effects, and trajectories. You can modify anything copied in your scene.

Loading Palettes and Models

By importing the model templates in the scene, you have created a new drawing element. This also saves the master palettes in your scene. These palettes are local to the scene.

The first step is to load your model in the Model view. You will then have to load the palette in your animation column.

How to load the current drawing in the Model view

1. In the Timeline or Xsheet view, select the model's cell.
2. Do one of the following:
   - From the Model view menu, select **Use Current Drawing as Model**.
   - Right-click on the Model view and select **Use Current Drawing as Model**.

   The model appears in the Model view.

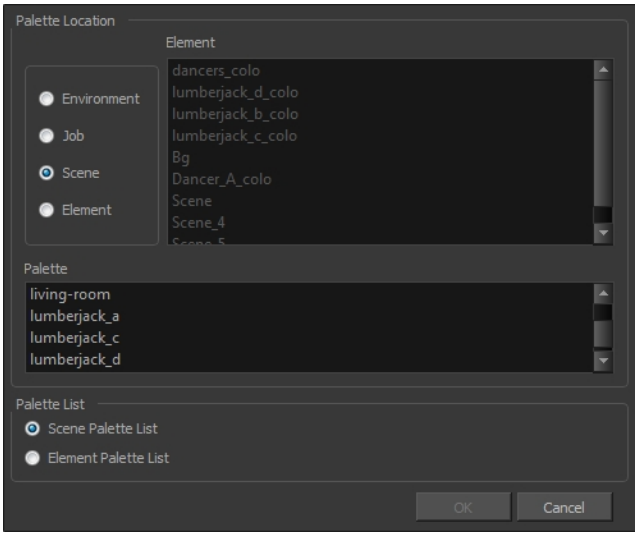
Once your model is loaded, you can import palettes in the animation column/layer.

If you are animating a character or prop, it is always a good idea to use its proper palette for drawing, especially if you need to use different colours to clean the drawing outlines. This will save the colourist from having to load the palette and repaint with the correct colours.

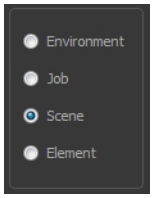
How to add a palette to your element

1. In the Timeline view or Xsheet view, select the cell in the drawing element that you plan to animate.
2. Do one of the following:
   - From the Colour view menu, select **Palettes > Link**.
   - Click the Link Palette button.

   The Palette Browser window opens.



3. Select the level in which the palette file is stored (usually Element or Scene).



4. Select the palette from the list.

5. Click **OK**.

Creating the Drawings

Once your drawing elements have been created and your palettes are loaded, you are ready to create drawings for your animation. But before creating the drawings, you should familiarize yourself with the following operations.

There are two different ways to create drawings. You can create drawings automatically by letting Harmony do it for you or by typing names (Typing mode) in the Xsheet cells.

How to automatically create a drawing

1. From the Timeline or Xsheet view, select the appropriate cell and start drawing in the Camera or Drawing view.

   Harmony creates the drawing and names it using the next available number. If there is no existing drawing, then it will be named "1", then "2" and so on—see the Preferences guide to learn more about the Use Current Frame As Drawing Name option.

How to create a drawing using the Typing mode

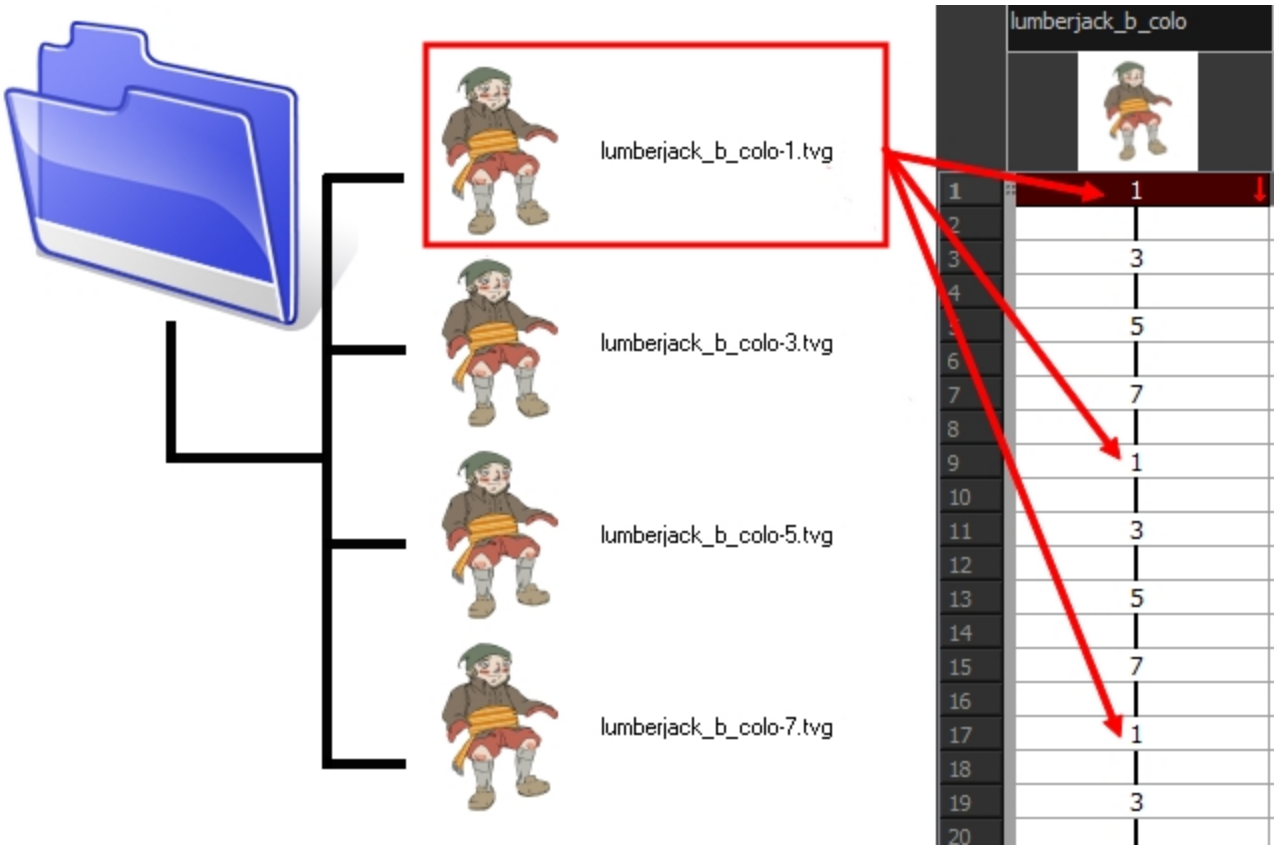
1. To insert a drawing name in a column cell, double-click on the cell and type the name using alphanumeric values: **0-9**, **a-z**, **underscore** (_) and **dash** (-). By default, if you press the Enter/Return key, the cursor will move on to the next cell. If you press the Esc key, it will quit the typing mode and return to normal mode—see Typing Exposure to learn more about the Typing mode.

Drawing Concept

When you add a drawing element to your scene, a folder is automatically added to the scene directory. This folder is named the same as the drawing element. Its purpose is to store all the drawings related to this drawing element. For example, when working with cut-out animation, a character can have many hands available. All of these hand drawings will be contained in this folder even if they are not exposed in the Timeline or Xsheet view. In other words, there is always a drawing container associated with a drawing element (layer, column).

All the drawings that were scanned in or created directly in Harmony will be saved in this directory. This means that when a value or drawing name is entered in the column, the Harmony will search the directory for the corresponding drawing to display. If it is unable to find it, a new drawing will be created. The column cells are not storage places, but simply links to the corresponding directory. If you remove a drawing from the column exposure, it will not be deleted; it is simply not displayed. You can always access it again.

When you create a drawing cycle, all repeated drawings are linked to the same original files. So when you modify, repaint or correct drawing 1, the entire cycle will be updated; every time drawing 1 appears, it is accessed from a single file.

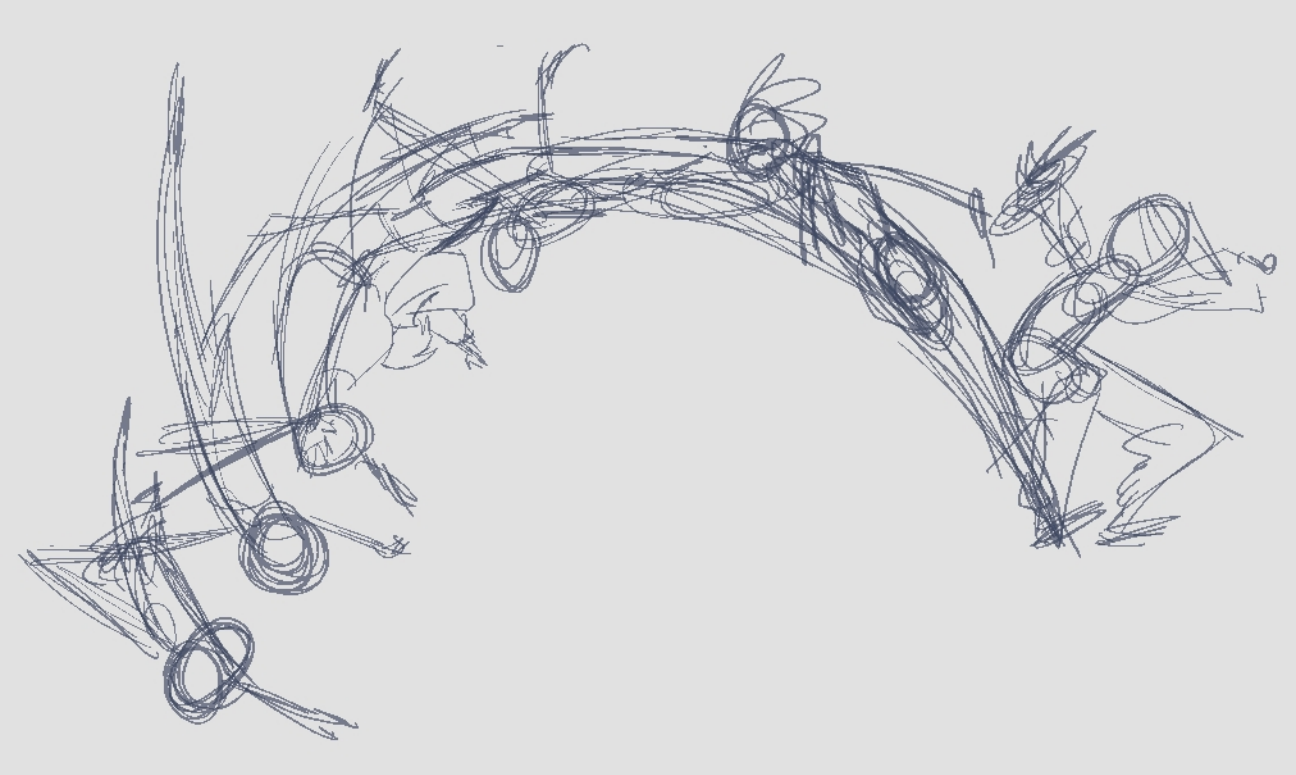


Renaming a Drawing

When you want to rename a drawing, use the Rename Drawing command. Do not double-click on the frame and write a new name, as this will create a new drawing and hide your actual drawing. Note that your drawing will not be deleted; it is still contained inside the element folder. Simply re-enter the name and it will reappear.

NOTE: To learn how to rename a sequence of cells by prefix or by frame position, see Renaming a Drawing.

Rough Animation



The first step to complete a traditional paperless animation is the rough construction, which is the skeleton of your animation. You would usually start with the main action. For example, to animate a walk cycle, you will start with the torso motion and the legs. Head, arms and clothes will be added later during the secondary animation.

For a satisfactory animation, complete the main action before adding all the details. If you start animating all the details right away, you will lose a lot of time if you have to make corrections. Your animation will often look too rigid.

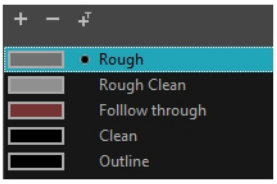
How to animate

1. Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X) to open the Preferences dialog box.
2. Select the **Exposure Sheet** tab.

3. Select the **Use Current Frame as Drawing Name** option. When this preference is enabled, drawings will be named like the frame they are created on (frame number).

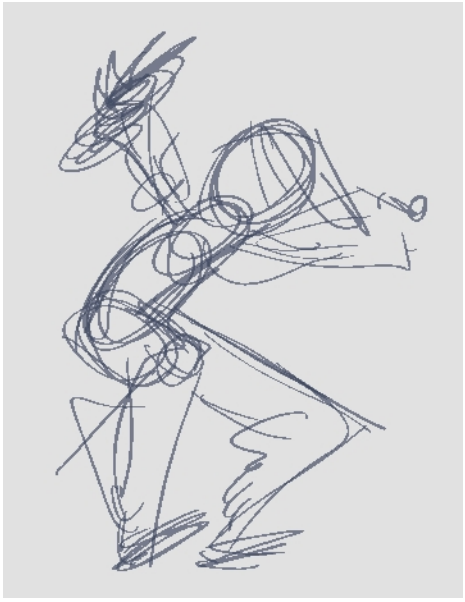
4. In the Tools toolbar, select the Brush tool or press Alt + B.

5. In the Colour view, select a colour for the brush. It is a good idea to choose a light colour for your rough animation. This will help you in the task that follows, the clean up process.



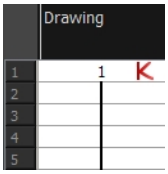
6. In the Timeline or Xsheet view, select the cell where the first drawing will appear.

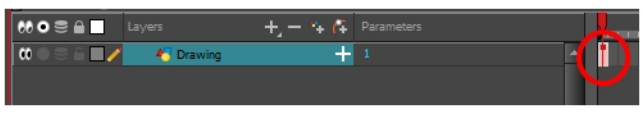
7. In the Camera or Drawing view, draw the first key drawing.



8. With your first cell still selected, do one of the following to mark your drawing as a key drawing. This will help you stay organized.

   - In the Mark Drawing toolbar, click the Mark Selected Drawings as Key button.
   - In the Xsheet view, select **Drawings > Mark Drawing As > Key Drawing**.
   - In the Timeline view, select **Drawings > Mark Drawing As > Key Drawing**.





9. In the Tools toolbar, click the Onion Skin button. The Onion Skin feature displays your previous and next drawings as visual references to help you draw your new pose.

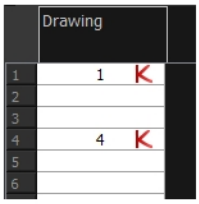
10. In the Timeline view, click and drag the blue onion skin markers to extend the number of previous and next visible drawings.

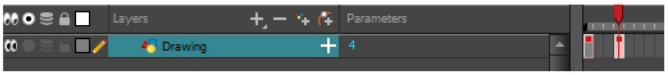
11. In the Camera View or Drawing View toolbar, press either the Onion Skin Reduce One Next/Previous Drawing or Onion Skin Add One Next/Previous Drawing to reduce or increase the number of previous and next visible drawings. The red icons are for the previous drawings and the green icons are for the next drawings.

12. In the Timeline or Xsheet view, select the cell where your next key drawing will appear.

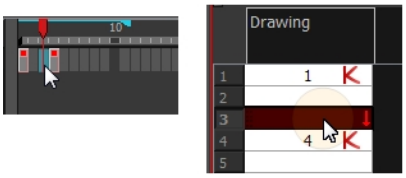
13. In the Camera or Drawing view, draw your second key drawing.

14. In the Xsheet or Timeline view, identify the drawing as a key drawing.



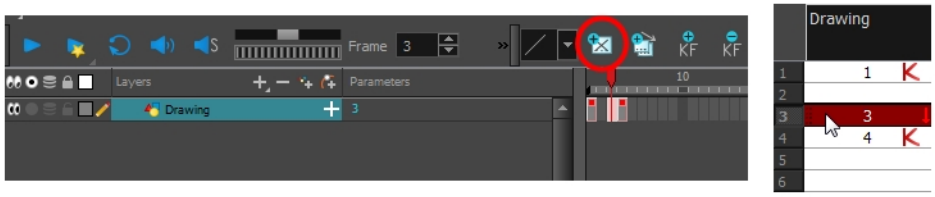


15. In the Timeline or Xsheet view, select a cell between the two key drawings.



16. From the Timeline toolbar, click Create Empty Drawing to create an empty drawing or press Alt + Shift + R.

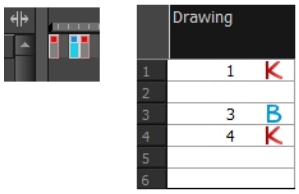
    - In the Xsheet view, right-click and select **Drawings > Create Empty Drawing** or press Alt + Shift + R.



NOTE: Instead of creating an empty drawing, you can simply start drawing.

17. In the Camera or Drawing view, draw your new pose.

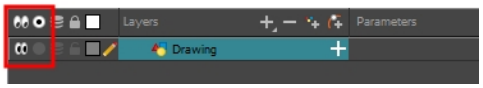
18. If necessary, in the Xsheet or Timeline view, identify the new drawing as a key, breakdown or in-between drawing using the Mark Drawing toolbar.



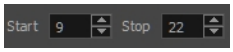
19. Use the Flip and Easy Flipping toolbars to review your animation—see *Flipping and Easy Flipping Toolbars* on page 363.

20. In the Timeline or Xsheet view, select a new cell and repeat the previous steps for each new drawing.

21. In the Timeline view, use the Enable/Disable All and Solo buttons to turn off any layers you don't want to see during playback.



22. To loop playback, move the red playhead to the desired start frame and click the **Start** button on the Timeline toolbar. Move the playhead to the last frame of the playback and click the **Stop** button.



23. in the Playback toolbar, click the Loop button to start the playback.

24. In the Playback toolbar, click the Play button to start the animation.

Secondary Animation

Once your rough animation is correct, you can start adding extra details, such as arms, clothes or hair.

You can add the extra details on the same layer with the same colour or you can also create a new colour so that you can always see your original sketch.

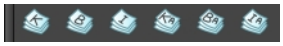
NOTE: If you want to keep your rough animation as it is to avoid any mistakes, you can add an extra drawing element and use the Light Table feature to draw over the first drawing element. This technique can also be used if you want to reuse your rough animation for other characters. For example, if you have a rough walk-cycle, you can reuse it for another character and add its personal features in a new layer. This way, you only need to animate the secondary animation instead of the whole body again.

How to create secondary animation on the same layer

1. In the Xsheet or Timeline view, select the cell in which you want to add new details.
2. In the Colour view, create a new colour (give it the same name and add the prefix *_2* or *_sec*, for example) or select the same rough colour as before.
3. In the Drawing Tools toolbar, select your drawing tool.
4. In the Camera or Drawing view, draw the secondary animation.

5. Do one of the following:
   - In the Xsheet or Timeline view, select the next cell in which you want to draw.
   - Press F and G to navigate between your drawings.
6. Do one of the following:
   - Select **View > Onion Skin > Show Onion Skin**.
   - In the Timeline view menu, select **Onion Skin > Show Onion Skin**.
   - Press Alt + O.
7. Extend the onion skin.
8. In the Camera or Drawing view, draw the secondary animation.

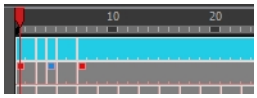
9. Use the Flip and Easy Flipping toolbars to review your animation—see *Flipping and Easy Flipping Toolbars* on page 363.



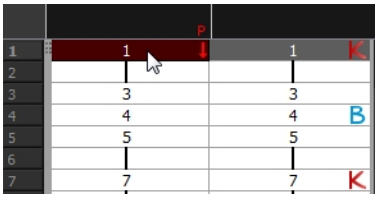
10. You can also use the Playback toolbar to play the animation in real time.

How to create your secondary animation on an extra layer

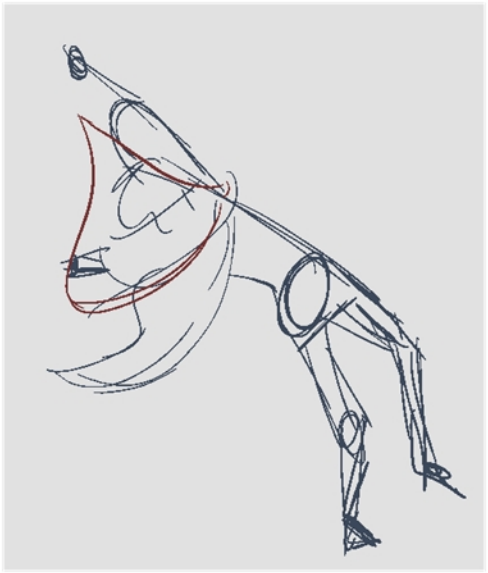
1. Add a new drawing layer and name it **`secondary_animation`**.
2. In the Timeline or Xsheet view, select the rough layer's timing.
3. Copy the timing and in the top menu, select **Edit > Paste Specia**l or Ctrl + B (Windows/Linux) or ⌘ + B (Mac OS X).
4. Choose **Never create drawing files** from the options to paste the timing but not the drawing files.



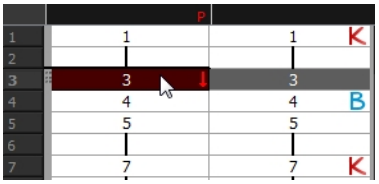
5. If you are working in the Drawing view, in the Drawing View toolbar, enable the Light Table.
6. In the Xsheet or Timeline view, select the cell where you want to add the new details.



7. In the Colour view, create a new colour (give it the same name and add the prefix *_2* or *_sec*, for example) or select the same rough colour as before.
8. In the Tools toolbar, select your drawing tool.
9. In the Drawing or Camera view, draw the secondary animation on top of your rough drawing.



10. Do one of the following:
    - In the Xsheet View, select the next cell in which you want to draw.
    - In the Camera, Drawing or Xsheet view, press F and G to navigate between your drawings.



11. Do one of the following:
    - In the top, Drawing View or Camera View menu, select **View > Onion Skin > Show Onion Skin**.
    - In the Timeline view menu, select **Onion Skin > Show Onion Skin**.
    - Press Alt + O.
12. Extend the onion skin.
13. In the Camera or Drawing view, draw the next secondary animation.

14. Use the Flip and Easy Flipping toolbars to review your animation—see *Flipping and Easy Flipping Toolbars* on page 363.

15. You can also use the Playback toolbar to play the animation in real time.

Bringing Your Animation on Model

If your primary and secondary animation were done as a rough drawing, it is now time to put your drawing on model. This means that you have to review your animation and ensure that every single detail is on model and there is no volume distortion. You can do this directly on the original sketch layer or on a new layer.

If your primary and secondary animation was done quite on model, you can proceed directly to the animation clean-up. If not, proceed the same way as you did for the secondary animation task to bring your animation on model.

Animation Clean-up

When your rough animation is ready, it is time to clean it up and ink it. The clean-up is also called *tracing*. It consists of tracing solid and clean lines over the rough animation to get closed zones. This is the final paperless animation step before the ink and paint step.

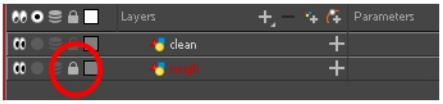
You will need to add a new drawing layer to create your cleaned up drawing. This is the equivalent of adding a sheet of paper and tracing the rough using the animation disk.

This method allows you to keep the roughs and the cleans intact. You only need to disable the rough layer to prevent it from appearing in the scene.

If you plan on tracing your animation in the Drawing view, enable the light table to display all the layers in your project.

How to trace your animation in a new layer

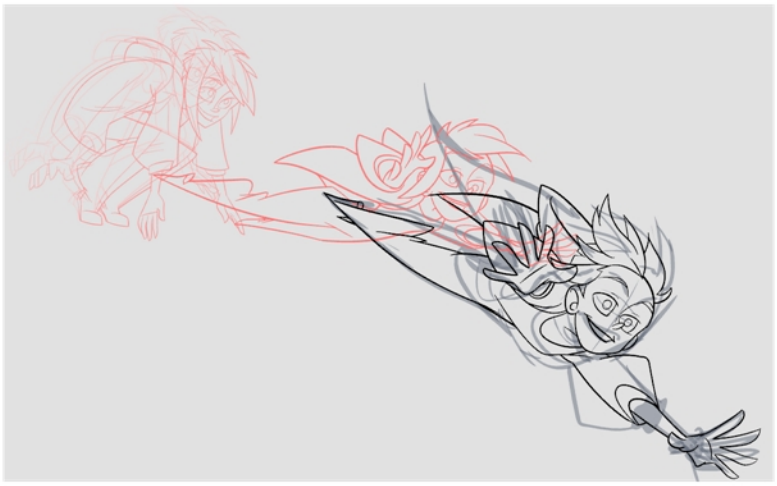
1. In the Layer toolbar, click the Add Drawing Layer button.
2. In the Timeline view, click the Lock button of the layer containing your rough animation to avoid selecting the layer in the Camera view.



3. In the Timeline or Xsheet view, in the new layer, select the cell corresponding to the first key drawing of your rough animation.
4. In the Tools toolbar, select the drawing tool of your choice. The Pencil tool is recommended.
5. In the Colour view, select a colour for tracing your animation. A dark bold colour, such as black, would ensure that it contrasts well with the light colour of your rough animation.
6. In the Camera or Drawing view, start tracing the first key drawing.

7. If you have some other layers in the way, you can disable them temporarily from the Timeline view so that only the rough animation and clean-up layer are displayed in the Camera view.
8. In the Tools toolbar, click the Onion Skin button and pull on the blue onion skin handles in the Timeline view to extend the number of frames you can see.

9. In the Camera View or Drawing View toolbar, press either the Onion Skin Reduce One Next/Previous Drawing or Onion Skin Add One Next/Previous Drawing to reduce or increase the number of previous and next visible drawings. The red icons are for the previous drawings and the green icons are for the next drawings.
10. In the Timeline or Xsheet view, select the next cell corresponding to a rough drawing.
11. In the Drawing or Camera view, trace your next drawing.



12. Repeat the previous steps for each drawing.

Tools

To understand paperless animation, you must first discover the tools available. There are, of course, drawing tools, but also practical features such as setting a drawing as a key, breakdown or in-between.

When you create hand-drawn animation digitally, there are certain tools you require in order to work efficiently, as you would with an animation table, paper and pencils.

The onion skin and light table are used to preview previous and next drawings, cells, elements and frames. When designing or animating, it is very useful to see your previous drawings. Just as if you were building a cut-out puppet, you want to view other drawing elements to know where to draw the new element.

This topic is divided as follows:

- *Onion Skin* on page 355
- *Light Table* on page 356
- *Rotate View Tool* on page 357
- *Create Empty Drawing* on page 358
- *Reposition All Drawings* on page 359

For more advanced tools, see:

- *Advanced Tools* on page 363

Onion Skin

The Onion Skin tool lets you preview the previous and next drawings. By default, the previous drawings appear in a shade of red and the next drawings are displayed with a shade of green. You can change these colours in the Preferences dialog box.

How to enable onion skinning

1. Do one of the following:
   - From the top menu, select **View > Onion Skin > Show Onion Skin**.
   - In the Timeline view, click the Onion Skin button on a layer.

   - In the Tools toolbar, click the Onion Skin button.
   - Press Alt + O.

   Blue arrows appear on both sides of the play head.
2. Drag the blue arrows to add more frames to the onion skin display.

Light Table

The light table is used to preview the previous and subsequent active layers in washed-out colours. It is useful for seeing the other layers when designing, animating or cleaning up your animation.

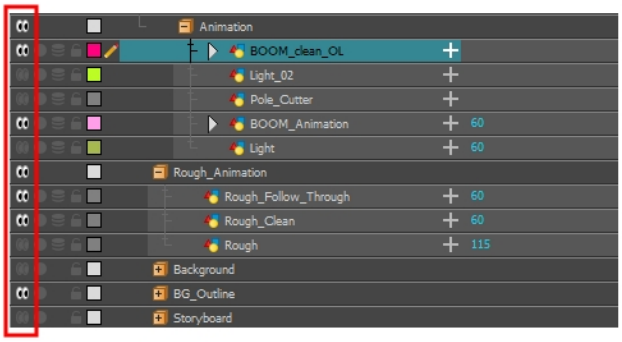
Only the currently selected drawing is displayed by default in the Drawing view. When enabling the light table, the other layers appear as a washed-out display and are used as a reference. You can not select or manipulate them.

In the Camera view, when the light table is activated, all layers but the currently selected one are shown washed-out. The display returns to the normal mode when an animation tool is selected.

How to enable the light table

1. Do one of the following:
   - In the top menu, select **View > Light Table**.
   - In the Drawing View toolbar, click the Light Table button.
   - In the bottom Camera View toolbar, click the Light Table button.
   - Press Shift + L.
2. The drawings for the other layers are displayed as washed-out colours in the Camera and Drawing views.

3. In the Timeline view, you can disable the layers you want to hide from the light table.



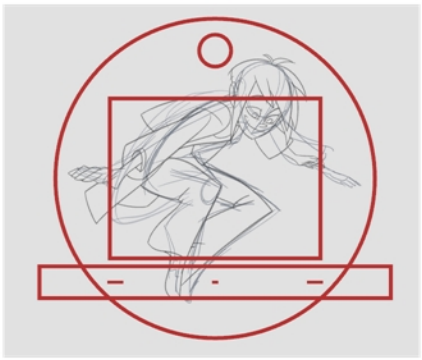
Rotate View Tool

Use the Rotate View tool (animation disk) to rotate your Camera or Drawing view while you draw for increased flexibility. The rotary tables in each view are independent; if you rotate the Drawing view 25 degrees, if you switch to the Camera view, you can use the rotary table in that view and rotate it to a different angle without affecting the settings in the other view.

How to use the rotary table

1. Do one of the following:
   - In the Camera or Drawing view, hold down Ctrl + Alt (Windows/Linux) or ⌘ + Alt (Mac OS X)
   - In the Tools toolbar, click the Rotate View button.

   The rotary table appears.



2. Rotate the view to the desired angle.

3. Release the keyboard shortcut or switch to a new drawing tool.
4. Press Shift + X to reset the rotation.

Create Empty Drawing

The Create Empty Drawing command automatically creates a drawing in the selected cell, replacing any drawing that may already be exposed in that cell and the following ones until it meets another drawing, key exposure or a blank cell.

How to create an empty drawing

1. In the Timeline or Xsheet view, select the cell in which you want to create an empty drawing.
2. Do one of the following:
   - In the top menu, select **Drawing > Create Empty Drawing**.
   - In the Xsheet View menu, select **Drawings > Create Empty Drawing**.
   - In the Xsheet View toolbar, click the Create Empty Drawing button.
   - In the Timeline View toolbar, click the Create Empty Drawing button.
   - Press Alt + Shift + R.

   The new drawing is created in the Xsheet and Timeline view.

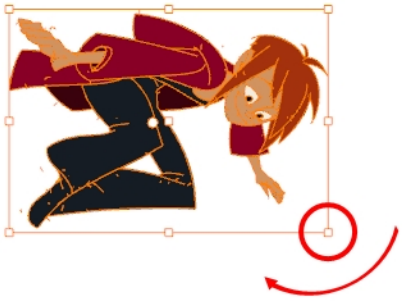
Reposition All Drawings

The Reposition All Drawings option is used to reposition, scale, rotate or skew all drawing strokes on every drawing included in a layer.

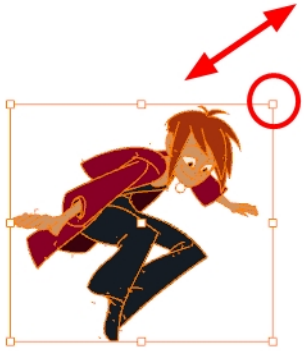
How to reposition all drawings

1. From the Tools toolbar, select the Reposition All Drawings tool. This also automatically selects every stroke in your drawing in the Drawing and Camera view.
2. Do any of the following:
   - To reposition, click and drag your selection to a new area.

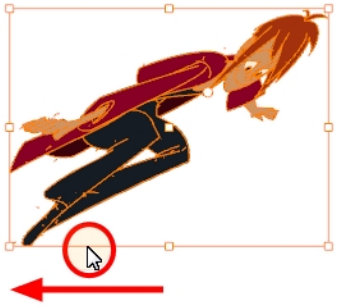
   - To rotate, rotate the selection box handle.



- To scale, pull or push on the top, side, bottom or corner control points. Hold down Shift to maintain the selection's ratio.



- To skew, drag the sides or top and bottom segments, between the control points.

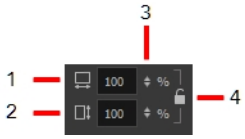


3. When you release your cursor, every drawing in the drawing layer you repositioned, scaled, rotated or skewed will follow the same transformation.

4. You can also adjust the position by modifying the settings and using the operation buttons in the Tool Properties view.

Reposition All Drawings Properties

Parameter	Description
Flip Horizontal and Flip Vertical	The Flip Horizontal and Flip Vertical operations flip the current selection horizontally or vertically. • From the top menu, select **Drawing > Flip Horizontal** and **Flip Vertical**.

Rotate 90 Degrees CW and CCW	 The Rotate 90 Degrees CW and Rotate 90 Degrees CCW operations rotate the current selection 90 degrees clockwise or counter-clockwise. ‣ From the top menu, select **Drawing > Transform > Rotate 90 Degrees CW** and **Rotate 90 Degrees CCW**. ‣ Press Ctrl + 7 and Ctrl + 9 (Windows/Linux) or ⌘ + 7 and ⌘ + 9 (Mac OS X).
Width and Height	Use the Width and Height operation fields to enter specific values to resize the selected shape with precision.  1. **Width**: Type a value in this field to resize the width of your selection. 2. **Height**: Type a value in this field to resize the height of your selection. 3. **Up/Down arrows:** Use the up and down arrows to modify the value in the Width or Height fields. 4. **Lock icon**: Click the lock icon to lock or unlock the ratio between the Width and Height values.
Offset X and Offset Y	Use the Offset X and Offset Y operation fields to enter specific values and precisely reposition the selected shape. 1. **X**: Type a value in this field to reposition your selection along the X-axis. 2. **Y**: Type a value in this field to reposition your selection along the Y-axis. 3. **Up/Down arrows:** Use the up and down arrows to modify the value in the X or Y value field.
Angle	The Angle operation lets you to enter specific values and accurately rotate the selected shape. 1. **Angle**: Type a degree value in this field to rotate your selection.

	2. **Up/Down arrows:** Use the up and down arrows to modify the value in the Angle value field.

Advanced Tools

Harmony has many useful features such as the Flipping toolbar, enhanced onion skin, extra drawing layers, and automated matte generation.

This section is divided as follows:

- *Flipping and Easy Flipping Toolbars* on page 363
- *Onion Skin Toolbar* on page 364
- *Drawing Identification* on page 366
- *Drawing Desk* on page 370
- *Shift and Trace* on page 372
- *Art Layers* on page 396
- *Previewing Drawings* on page 385

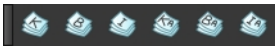
Flipping and Easy Flipping Toolbars

Toon Boom Harmony allows you to rapidly flip through drawings in the Drawing view just as you do with paper drawings. You can flip through the key, breakdown or in-between drawings individually, or view a combination.

How to flip through drawings

1. Do one of the following:
   - In the top menu, select **Windows > Toolbars > Easy Flipping**.

   - Select **Windows > Toolbars > Flip**.

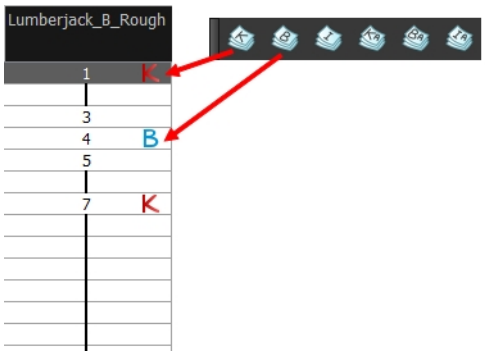
     

2. In the Easy Flipping toolbar, click the Previous or Next button to see the previous or next drawing of your animation.
3. To display drawings in the first frame after you reach the last frame of your animation, select the **Loop** option.

4. Move the slider to the right to flip forward and to the left to flip backward through your drawings.

- The further you move the slider to the left or right, the faster the drawings will flip.

5. If you marked some of your drawings, you can flip through the markers and avoid seeing all the in-betweens. Enable the Flip Key, Breakdown or In-between buttons in the Flip toolbar to see only one type or a combination—see Tools



Onion Skin Toolbar

In the Drawing view, you can set up your onion skin to display marked drawings only, in the same way that you flip through your drawings marked as key, breakdown or in-between drawings—see Tools

How to display marked drawings in the onion skin

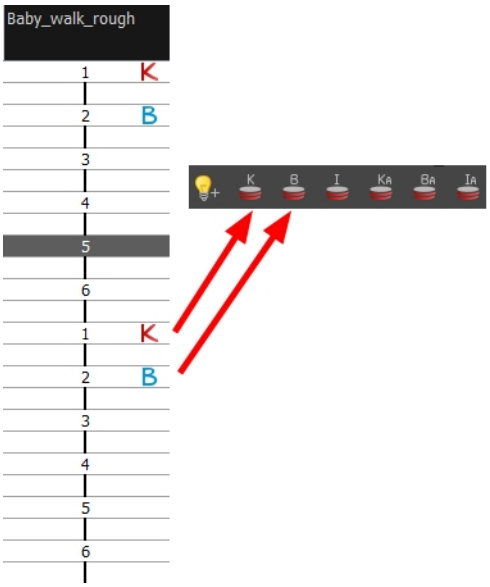
1. From the top menu, select **Windows > Toolbars > Onion Skin**.

2. In the Tools toolbar, click the Show Onion Skin button.

3. In the Timeline view, pull on the blue arrows to extend the number of drawings displayed in the onion skin preview.

4. In the Camera View or Drawing View toolbar, press either the Onion Skin Reduce One Next/Previous Drawing or Onion Skin Add One Next/Previous Drawing to reduce or increase the number of previous and next visible drawings. The red icons are for the previous drawings and the green icons are for the next drawings.

5. In the Onion Skin toolbar, enable the markers you want to see in your Onion Skin preview.



How to enable the onion skin in other layers

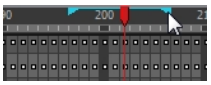
You might need to refer to previous and next drawings in other layers than the current one. In the Drawing view, use the Enable Onion Skin in Other Elements feature to see the previous and next drawings of the layers visible in Light Table mode.

1. In the top menu, select **Windows > Toolbars > Onion Skin**.

2. In the Tools toolbar, click the Onion Skin button.

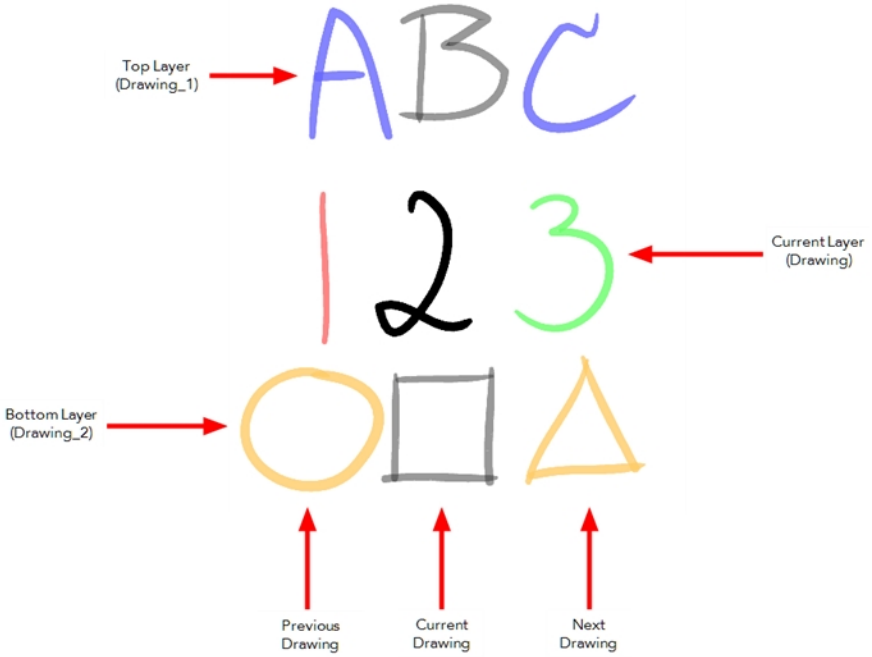
3. In the Drawing view, click the Light Table button.

4. In the Timeline view, pull on the blue arrows to extend the number of drawings displayed in the onion skin preview.



5. In the Camera View or Drawing View toolbar, press either the Onion Skin Reduce One Next/Previous Drawing or Onion Skin Add One Next/Previous Drawing to reduce or increase the number of previous and next visible drawings. The red icons are for the previous drawings and the green icons are for the next drawings.

6. In the Onion Skin toolbar, enable the Enable Onion Skin in Other Elements option.



- The current layer is displayed by default in shades of green and red.
- Drawings in timeline layers above the current layer are displayed by default in shades of blue.
- Drawings in timeline layers below the current layer are displayed by default in shades of yellow.

NOTE: You can change default onion skin display colours in the Preferences dialog box.

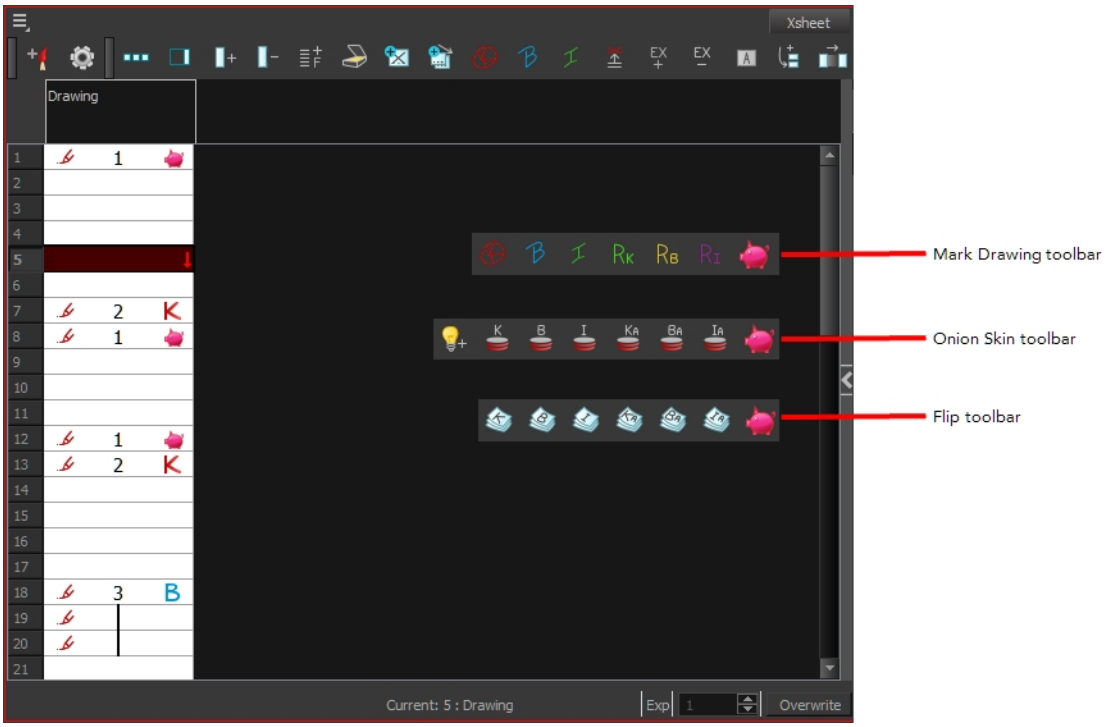
Drawing Identification

In the Xsheet view, you can identify drawings as Key, Breakdown or In-between. This helps to keep the Xsheet well organized while animating.

When working with several animators, directors or even other studios, the necessity for retakes will often arise. Harmony gives you the possibility to mark new drawings as either Retake Key, Retake Breakdown, or Retake In-betweens.

If your production requires you to mark drawings with a custom marker, you also have the option to create your own.

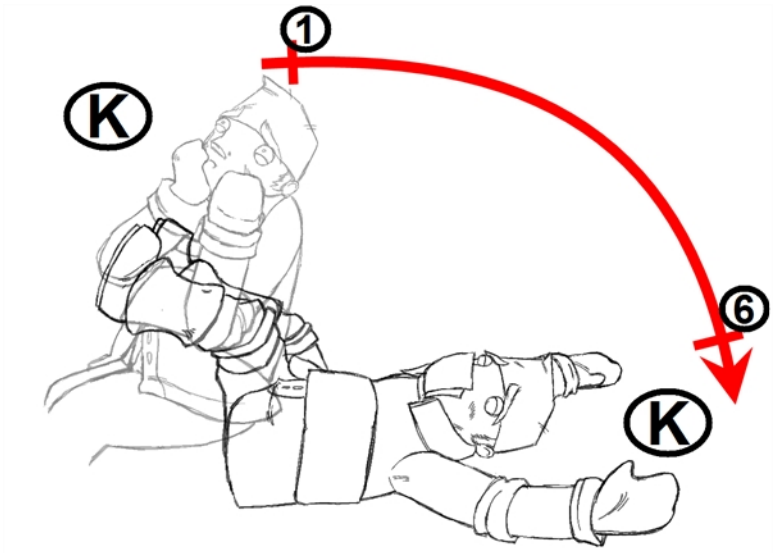
Make custom marks for the Xsheet by creating your own icons, then cutting, pasting and changing a bit of code. Not only is it possible to have your custom mark appear in the Xsheet and Mark Drawing toolbars, but also in the Onion Skin and Flip toolbars.



NOTE: You can create custom shortcuts for the Drawing Identification options in the Preferences dialog box.

Key Drawing

A key drawing is a visually significant pose in a movement, often an extreme position. For example, if a character that is sitting down falls on his back, the key poses would be the character sitting and the character on his back. Of course, it may vary from one animation to another.



Breakdown Drawing

A breakdown drawing is a pose somewhere between two key poses that better shows the movement. Most animation moves are arcs, such as an arm waving, somebody bending, or a leg walking. All of these movements are rotations. The breakdown pose is used to describe this curve better.

The breakdown drawing is then used to indicate secondary poses, also called the *follow-through*. These actions can be a big stomach jiggle as somebody jumps, a cloak floating behind somebody that is running, or arms moving after the main body action. These moves will generally have a different timing than the primary action. They will mainly start later and finish later. So, the breakdown drawings are used to complete the key drawings.

Note that a breakdown drawing is not always placed exactly in the middle of two keys. It will often be closer to one or the other depending on the timing and the action. Also, you can have more than one breakdown pose between two keys.

How to mark a drawing as Key, Breakdown or In-between

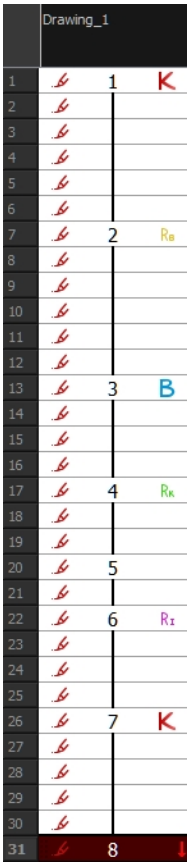
1. From the top menu, select **Windows > Toolbars > Mark Drawing.**

   The Mark Drawing toolbar displays.

2. In the Xsheet view, select the cell you want to identify. This option is not available in the Timeline view.

3. In the Mark Drawing toolbar, click one of these buttons: Mark as Key Drawing , Mark as Breakdown Drawing or Mark as In-between Drawing . In the Xsheet menu, you can also select **Drawing > Mark Drawing As > Key Drawing**, **Breakdown Drawing**, **In-between Drawing**, **Retake Key**, **Retake BD** and **Retake IB**.

   - If you selected Mark as Key Drawing, a icon appears in the cell.
   - If you selected Mark as Breakdown Drawing, a icon appears in the cell.
   - If you selected Mark as In-Between Drawing, there is no icon displayed in the cell since it is used to remove a Key or Breakdown marker.



How to create custom markers

1. With a bitmap editing software, create the following icons in PNG format:
   - Mark Drawing Toolbar icon (24 x 24 pixel)
   - Onion Skin Toolbar icon (24 x 24 pixel)
   - Flip Toolbar icon (24 x 24 pixel)
   - Xsheet Column icon (16 x 16 pixel)
2. Close Harmony.
3. When your icons are ready, open the Toon Boom Harmony **`drawingTypes.d`** folder.

   In Harmony Server, the path is global for all users so you must create the folder and place in /USA_DB.
   - **`/USA_DB/drawingTypes.d`**

> **NOTE:**
> If the **`drawingTypes.d`** folder does not exist, you must create it. To do so, copy the **`resources`** folder from the following location.
>
> - Windows: **Start > Programs > Harmony 12.1 Premium**

- Mac OS X: **Applications > Toon Boom Harmony 12.1Premium > resources > drawingTypes.d**
- Linux: /usr/local/ToonBoomAnimation/harmony_12/lnx86_64/bin/Stage/resources/drawingTypes.d

4. Paste your icons in the **`drawingTypes.d`** directory.
5. In the same directory, open the **`drawingTypes.xml`** file in a text editor.
6. For each custom icon you want to create, add the following line. Make sure to place it before this closing tag: **`</DrawingTypes>`**.
   - <DrawingType text="NewButtonName" pixmapFile="XsheetIcon.png" commandIcon="MarkDrawingIcon.png" flipIcon="FlipIcon.png" onionIcon="OnionIcon.png" />
7. In that line, replace the following information with your new icon information:
   - NewButtonName: Write the name of your new marker. This name will appear in the button tooltip.
   - XsheetIcon.png: Write the name of the icon that you created to appear in the Xsheet column. Include the file extension.
   - MarkDrawingIcon.png: Write the name of the icon that you created to appear in the Mark Drawing toolbar. Include the file extension.
   - FlipIcon.png: Write the name of the icon that you created to appear in the Flip toolbar. Include the file extension.
   - OnionIcon.png: Write the name of the icon that you created to appear in the Onion Skin toolbar. Include the file extension.
8. Save the file and close it.
9. Start Harmony.

Drawing Desk

You can work on a portion of an animation sequence or many drawings from different layers. To do this, select the segment needed in one or more layers in the Xsheet or Timeline view and then use the drawing desk to allow you to work only on these drawings.

The Drawing Desk is only available in the Drawing view.

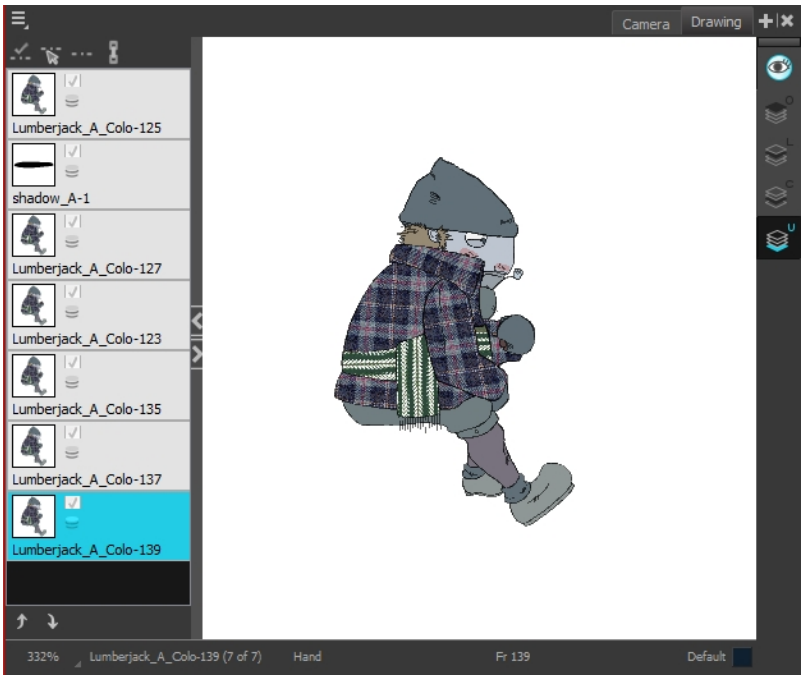
How to send several drawings to the drawing desk

1. Do one of the following:
   - In the Xsheet or Timeline view, select a consecutive cell range from one or several layers.
   - In the Xsheet view, hold down Ctrl (Windows/Linux) or ⌘ (Mac OS X) and click on any cell to add it to the selection, even if it is not consecutive.

2. Do one of the following:

   - In the Timeline or Xsheet view menu, select **Drawings > Send Drawings to Desk**.
   - In the Xsheet view, right-click and select **Send Drawings to Desk**.
   - In the Xsheet view, hold down the Alt key and click on the selection.

   The drawing desk opens on the side of the Drawing view.



NOTE: The drawing desk is by default on the left side of the Drawing view. You can change its positioning in the Preferences dialog box.

3. If the drawing desk side panel is hidden, click the Arrow button, located on the right side of the view.

How to add more drawings to the drawing desk

1. In the Timeline or Xsheet view, select the drawings to be added.
2. Do one of the following:
   - In the Timeline or Xsheet view menu, select **Drawings > Add Drawings to Desk**
   - Alt + click the selection.

How to clear drawings and send new ones to the drawing desk

1. Select a new drawing in the Timeline or Xsheet view.
2. In the Timeline or Xsheet view menu, select **Drawings > Send Drawings to Desk**.

   The previous drawing desk selection is removed and replaced with the current selection.

How to change the size of drawing desk thumbnails

- Right-click the drawing desk and select **No Thumbnail**, **Small Thumbnail**, **Medium Thumbnail** or **Large Thumbnail**.

How to change the position of a thumbnail in the drawing desk

- In the drawing desk, select the thumbnail.
- Click the Move Drawing Up and Moving Drawing Down buttons as needed, to move it to the new position in the drawing desk.

How to clear selected or all drawings from the drawing desk

1. In the drawing desk, select one or more drawings to remove.
2. Do one of the following:
   - Right-click the drawing desk and select **Remove Selected Drawings** or **Remove All Drawings**.
   - In the Drawing view, press Esc to remove all drawings.

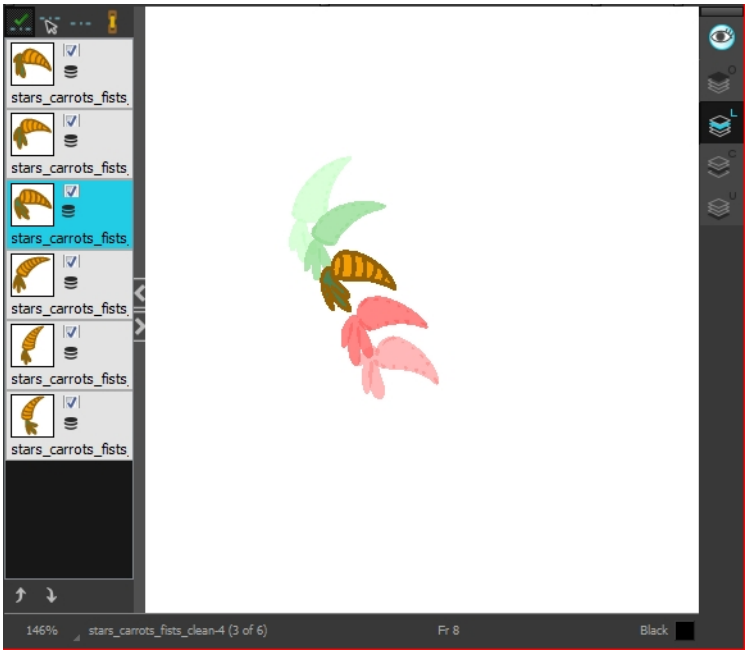
Shift and Trace

When hand drawing animation, it is very important to stay on model as it is easy to lose the proportions or features of a character. The Shift and Trace feature lets you temporarily move a drawing so you can trace it on a new drawing. This is similar to animators working on an animation light table and using an entire character or cut-out pieces of a character and moving it underneath the new drawing to trace it.

Your drawings will not be modified. It will only be moved, rotated or scaled in the Shift and Trace mode. When you turn off this mode, the repositioned drawing returns to its normal state.

How to enable the Shift and Trace mode

1. Go to the Drawing view.
2. In the Tools toolbar, click the Show Onion Skin button—see Onion Skin.
3. Send the selected drawings to the drawing desk—see *Drawing Desk* on page 370.



4. In the Drawing Desk toolbar, click the Shift and Trace Enable button.

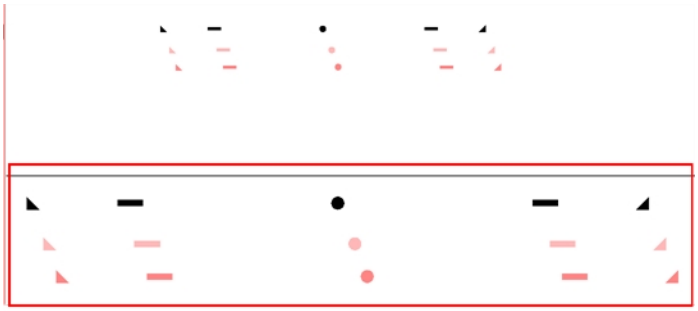
   Registration marks appear at the bottom of your drawings.

How to shift

Using the shift and trace manipulator, you can move the registration marks to reposition selected drawings while you work.

1. In the Drawing Desk toolbar, click the Shift and Trace Manipulator button.

   At the bottom of the Drawing view, a window displays a zoomed in view of the manipulator. You can move the dividing line between the manipulator and the Drawing view to resize the area.



2. In the Drawing view, transform the drawing as needed, positioning it between your two key poses.
   - To reposition, click and drag the drawing to a new area.

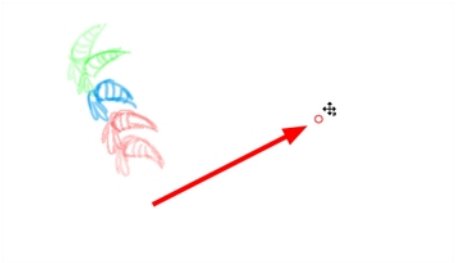
   - To rotate from the centre peg, click the flat peg hole and rotate.

   - To scale, pull or push on the triangle control.

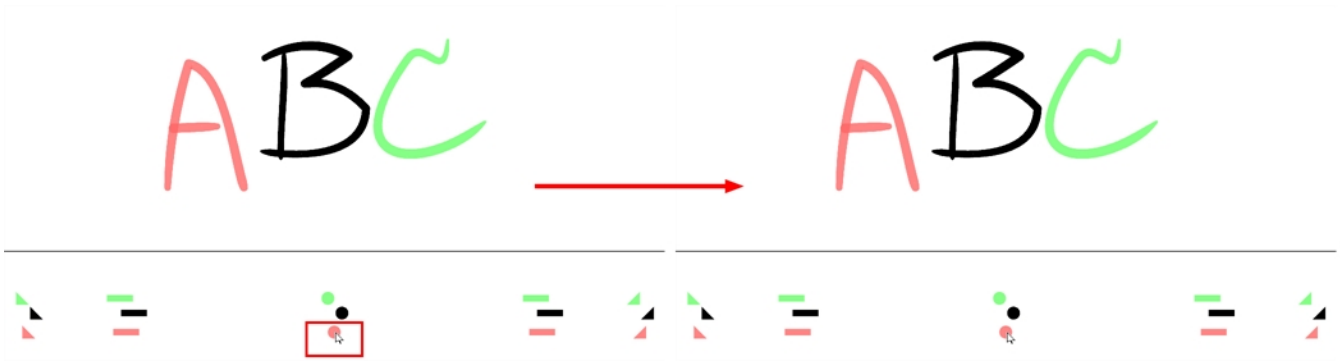
- To show the pivot point, hold Alt. The pivot point is in the middle of your current drawing view. To rotate from the pivot point, hold Alt and rotate.

- To scale from the pivot point, hold Shift and move your cursor.

- Click and drag the pivot point to move it to a new position. Once the pivot point is moved, you can hold Alt and move your drawing to show it again.



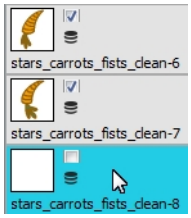
3. To select another drawing and reposition it, hold down Ctrl (Windows/Linux) or ⌘ (Mac OS X).



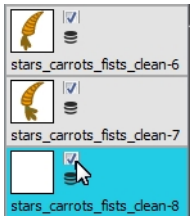
4. If necessary, click the Shift and Trace Reset button to reset the position of the modified drawing.

How to trace

1. In the drawing desk, select the drawing into which you want to trace.



2. Select the check box next to the drawing you want to allow to be temporarily transformed. By default, all drawings are enabled for Shift and Trace operations.



3. Select the drawing you want to move.

4. If you want to trace more than one drawing at the same time, you can link them together. In the drawing desk, select several drawings and click the Link Drawings button to lock their position together—see How to link your shift and trace drawings.
5. In the Tools toolbar, select a drawing tool.
6. In the Drawing view, trace your drawing.

How to link your shift and trace drawings

When using the Shift and Trace feature, you can link different drawings from the drawing desk, so they move together when dragging or scaling. These drawings can be from different columns in the Xsheet view.

1. In the drawing desk, display the drawings you want to use for the Shift and Trace operation.
2. Hold down Ctrl (Windows/Linux) or ⌘ (Mac OS X) and select the drawings you want to link together.
3. In the Drawing Desk toolbar, click the Link Drawings button to enable linking.

   Coloured boxes appear beside drawing thumbnails to identify different linked drawing groups.

   A link icon appears beside the currently selected drawing and all drawings linked to it.

4. Shift your linked drawings.

5. To unlink your drawings, select one of the linked drawings and click the Link Drawing button again to disable it.

6. You can shift your drawings independently.

7. To unlink your drawings, select one of the linked drawings and click the Link Drawing button again to disable it.

How to enable and disable individual onion skin drawings

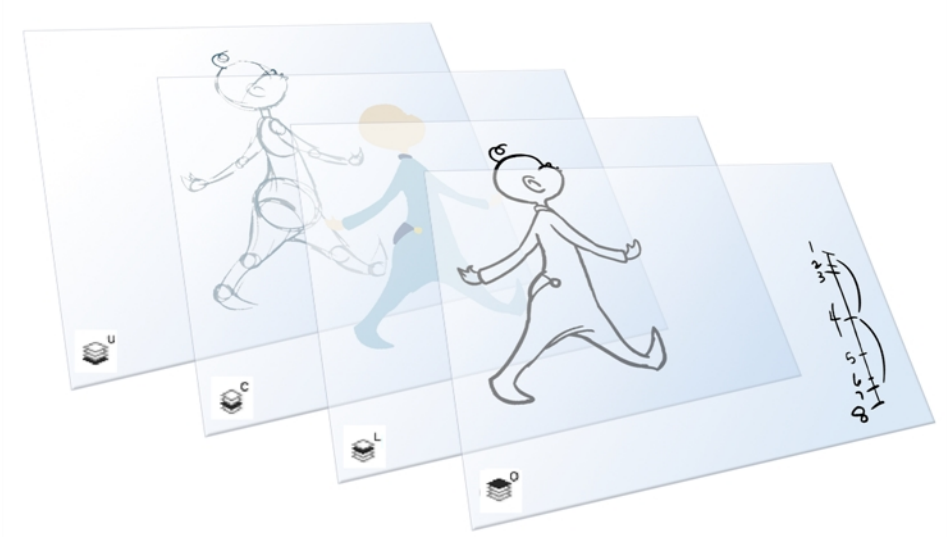
You may end up with a lot of drawings in your onion skin display while working with the Shift and Trace feature. You can disable individual drawings from the onion skin display without deactivating them.

1. In the Tools toolbar, click the Onion Skin button.
2. In the drawing desk, click on the drawing's Onion Skin button to enable or disable it.When enabled, the icon turns black .

Customizing Shift and Trace Shortcuts

If you use the Shift and Trace feature frequently, you can assign custom shortcuts for Shift and Trace operations in the Preferences dialog box—see the Preferences guide.

Art Layers



Art layers give you the possibility to divide the artwork in your drawing on different layers. For example, you can separate the outline and colour fill on two art layers, similar to 1950s traditional cell animation. These art layers are contained within a single drawing as opposed to the layers in the Timeline view or Xsheet columns where individual drawings with individual timing are stacked one on top of the other—see *Creating Strokes* on page 384.

Toon Boom Harmony drawings include four art layers.

- *Overlay* on page 380
- *Line Art* on page 381
- *Colour Art* on page 381
- *Underlay* on page 382

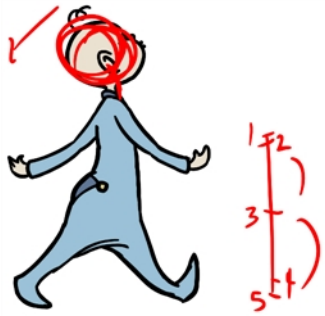
You can access the art layers through the Art Layer toolbar. By default, only the Line Art and Colour Art are displayed. You need to enable the Support Overlay and Underlay Arts option in the Preferences dialog box.

Each layer can be used for separate hand-drawn animation tasks, letting you organize your work and facilitate creation and revision.

Overlay

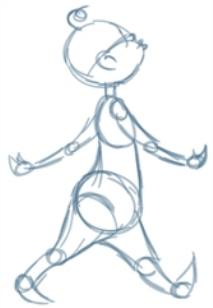
The Overlay layer can serve multiple purposes:

- Highlights and tones
- Annotations and corrections



- Sketching

  You can also draw in the Overlay layer as it's a regular layer.

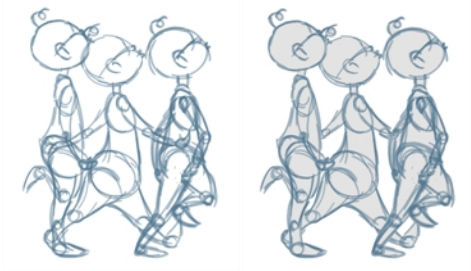


Line Art

In hand-drawn animation, the Line Art layer is mainly used to trace and clean up animation. The outline is drawn in the Line Art layer and colour is painted in the Colour Art layer.

Colour Art

In hand-drawn animation, you use the Colour Art layer to paint your animation. The outline is drawn in the Line Art layer and colour is painted in the Colour Art layer. Strokes (invisible lines) are generated from Line Art to contain the painted area.



When you are doing rough animation, you may want to send a clip for feedback or approval before carrying on with your work. If you have several characters in your project that are overlapping, it may be difficult to understand what is going on as you can see through the characters. Toon Boom Harmony can generate a matte automatically in the Underlay, or even in the Colour Art layer, and fill all the zones inside your characters to make them opaque. This process is fast and easy, and allows you to send easy-to-understand movies.

Underlay

The Underlay layer can serve multiple purposes. It is frequently used by animators to sketch rough animation or generate a matte colour when doing line testing.

How to enable the Support Overlay and Underlay Arts option

1. From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences** (Mac OS X).
2. In the Preferences dialog box, select the **Advanced** tab.
3. In the Advanced Options section, select the **Support Overlay and Underlay Arts** option.
4. Click **OK**.

How to switch between drawing layers

1. In the Art Layer toolbar, click the Line Art or Colour Art buttons. When switching art layers, you can edit the select layer without affecting the other one.

2. Click the Preview All Enabled Art Layers button to display both layers together. Even when the Preview mode is enabled, you will only be able to edit the select art layer. The other ones are only displayed as a reference. By default, the Preview mode is always enabled in the Camera view. You will only be able to see the select art layer by itself if you enable the Current Drawing on Top option located in the Camera bottom toolbar.

NOTE:
To edit both Line Art and Colour Art at the same time, you must enable the Apply to Line Art and Colour Art button in the Tool Properties of the tools supporting the operation.

How to switch between the drawing layers in Advanced Art mode

1. In the Art Layer toolbar, click the Overlay Art, Line Art, Colour Art or Underlay Art buttons to display the appropriate layer—see *How to enable the Support Overlay and Underlay Arts option* on page 382. When switching art layers, you can edit the selected layer without affecting the

other one.

2. Click the Preview All Enabled Art Layers button to display all the layers together. The other ones are only displayed as a reference. By default, the Preview mode is always enabled in the Camera view. You can view only the selected art layer if you select the Current Drawing on Top option in the Camera bottom toolbar.

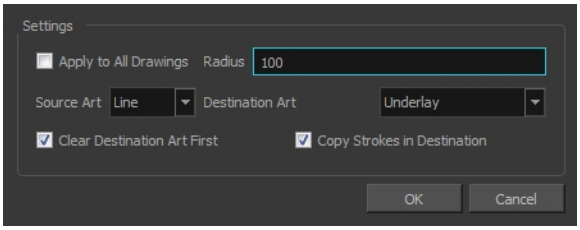
How to generate a matte

1. Do one of the following:
   - In the Tools toolbar, select the Select tool.
   - Press Alt + S.
2. In the Camera or Drawing view, select the drawing you want to create a matte for.

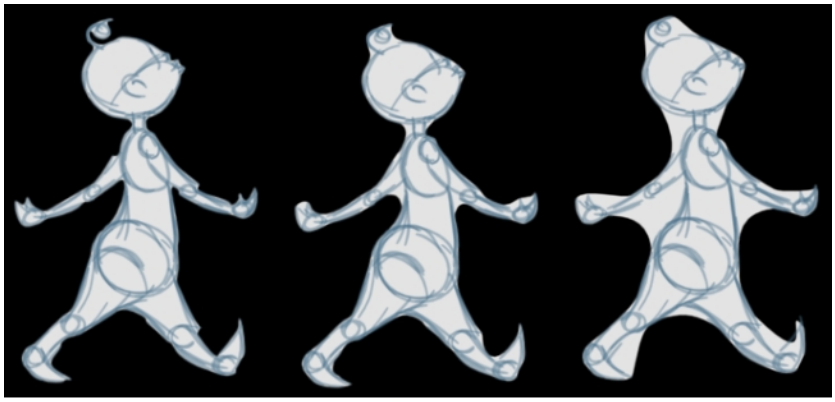
NOTE: You can also apply the operation to all the drawings in the layer at the same time.

3. Do one of the following:
   - From the top menu, select **Drawing > Generate Auto-Matte**.
   - In the Camera or Drawing menu, select **Drawing > Generate Auto-Matte**.

   The Auto-Matte dialog box opens.



4. If you want to create a matte for all the drawings included in your layer, select the **Apply to Multiple Drawings** option.
5. Depending on how precise or rough your line is, increase or decrease the radius value. The lower the value, the closer to your lines' contours the matte will be shaped. The higher the value, the looser the matte will be shaped.

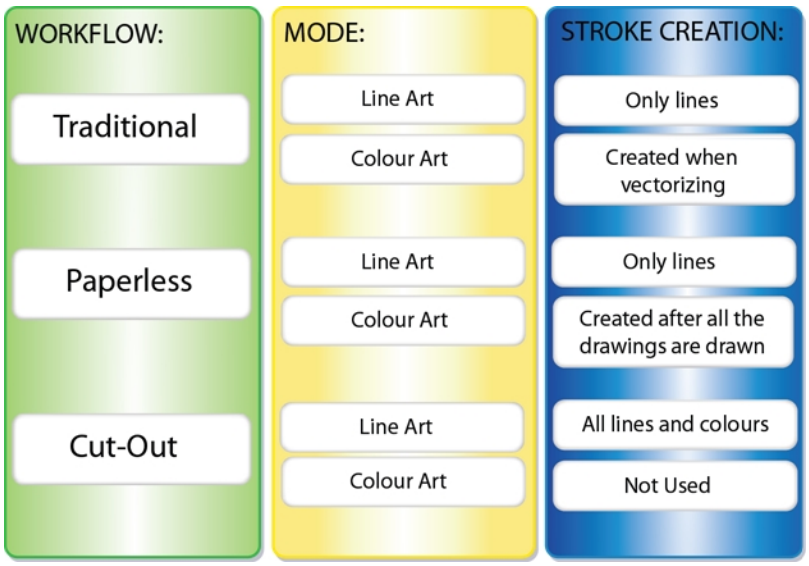


Radius: 20 Radius: 100 Radius: 300

6. In the Source Art menu, select the layer from which you want the matte created: **Line Art, Colour Art**, **Underlay** or **Overlay**.
7. In the Destination Art menu, select the layer on which you want the matte to be created: **Line Art**, **Colour Art**, **Underlay** or **Overlay**.
8. If you already have artwork on the destination layer and you want the content to be deleted before the matte is added into it, select the **Clear Destination Art First** option.
9. If you want the contour of your lines to be copied as invisible lines in your matte drawing (in case you ever need to keep them for later), select the **Copy Stroke in Destination** option.
10. Click **OK**.

Creating Strokes

A drawing is composed of Line and Colour filling layers. Lines and colours can be separated or kept together, depending on which animation process you use. The following diagram presents Line Art and Colour Art recommendations based on the selected animation workflow.



When a traditional drawing is scanned, strokes are automatically created in the Colour Art from the Line Art when drawings are vectorized unless you specified otherwise.

When working with Cut-out animation, we recommend that you do all of the work in the Line Art.

Once the drawing sequence is completed for paperless drawings, you can proceed with creating Colour Art strokes if you plan to paint the animation in the Colour Art. Use the Create Colour Art from Line Art option to create strokes from your lines.

You can create strokes in the Colour Art during the following stages:

- After the full drawing is completed in Line Art
- While drawing in Line Art

You may have some traditional drawings that need to be fixed; for example, needing extra lines to patch gaps. Use the Auto-Create Colour Art from Brush option to create the strokes at the same time as the lines are drawn. This creates strokes from the lines and brush strokes created in the Line Art while you draw and is useful for fixing drawings. However, if you are drawing a new sketch, it is better to create the strokes afterward using the Create Colour Art from Line Art option.

How to create Colour Art zones out of the Line Art content

1. In the Tools toolbar, select the Select tool or press Alt + S.
2. In the Tool Properties view, click the Permanent Selection button if you want to apply the operation on all drawings in the layer.
3. In the Camera or Drawing view, select the artwork to transfer to the Colour Art. Create a selection around the entire animation sequence if you want to apply the operation to all your drawings.
1. In the Drawing View toolbar, click the Create Colour Art from Line Art button or press *.

How to create strokes with the Create Colour Art Automatically option

1. In the Tools toolbar, select the Brush tool.
2. In the Tool Properties view, enable the Create Colour Art Automatically option.
3. Draw the required lines.
4. Once you're done, deselect the Create Colour Art Automatically option.

   You are now ready to paint your model.

Previewing Drawings

It is a good idea to preview your drawings to check your animation ink and paint, verify that there are no colour mistakes, or to play your animation in real time. You can do this by scrolling through your drawings or pressing F and G. You can also use the Preview option in the Xsheet view.

How to preview drawings from the Xsheet view

1. Save your scene.
2. Do one of the following:
   - From the top menu, select **File > Save**.
   - Click the Save button.
   - Press Ctrl + S (Windows/Linux) or ⌘ + S (Mac OS X).
3. In the Xsheet view, select the range of drawings or the whole column to preview.
4. In the Xsheet view menu, select **View > Preview Selected Drawings**.

   Toon Boom Play opens.
5. In the Play window, press the Play button to play back your drawings.
6. Select the **Preroll** option to see blank frames at the beginning and end of the animation sequence while looping the playback.

Chapter 6: Ink and Paint

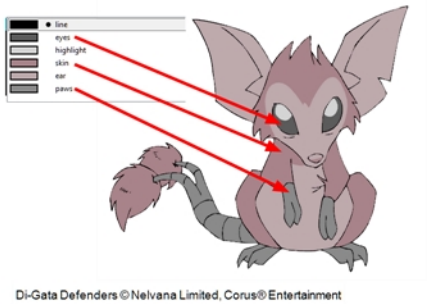
When traditional animation is traced, cleaned up, scanned in and properly exposed, it's time for the ink and paint process. This consists of cleaning all dirt and hair (for example, dust that was in the scanner, dots that do not belong in the drawing, extra floating artwork around the drawing that must be removed), painting the lines and filling the colours in the empty zones on an entire animation sequence.

For paperless animation, the drawings are cleaned up directly in Harmony, so there is generally no dirt to clean, only painting and inking.

For cut-out animation, once the character builder paints the pieces, there is no more ink and paint process because the same parts are always reused and moved around. The ink and paint process applies only to traditional and paperless animation workflows.

Harmony is optimized to ink and paint drawings efficiently. Since most of the drawings are vector-based, the colour zones are completely filled and there are no scattered spots left blank. Also, there are some actions that can be applied on an entire animation sequence at once, like dirt removal, some colour filling, line repainting, and so on.

Harmony uses palettes to hold all the colours you need to paint your elements. A palette is created by assigning a set of colours to each character, prop or effect. The colour styling artist will create a new palette and add a new colour for each zone of the character, such as the skin, hair, tongue, shirt, pants, and so on. Each colour is known as a *colour swatch*—see *Working with Palettes* on page 196.



When a zone on the character is painted with the colour contained in a colour swatch, a link is automatically created between that colour swatch and the zone. This means that if the tint of the colour in the colour swatch is changed, any zone linked to it will update to the new tint. This is one way that colour palettes can save time and money in your production.

Another advantage of this system is that you can create complete palettes for different lighting situations. For instance, in addition to the regular palette for a character, you could have one for that character in the rain using colours that are duller and less vibrant than the dry daytime colours, or yet another for using in a night scene. Using palettes linked to your character in this way allows you to instantly change its colouring to suit the mood and atmosphere of the scene without tediously repainting each element.

The ink and paint process is divided into the following steps:

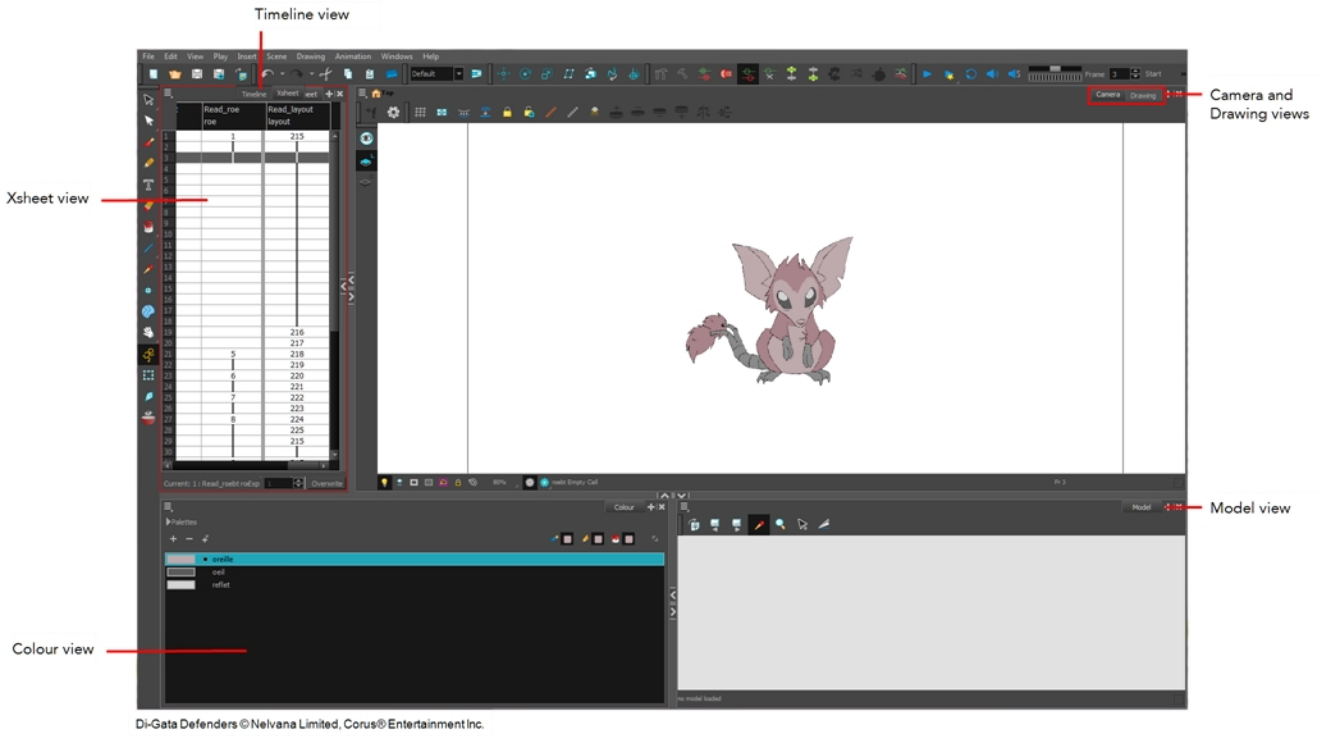
Preparation 388
Dirt Clean Up 392
Art Layers 396
Painting 402
Painting Using the Paint Tool 404
Importing Models 409
Protecting Colours 420
Inking the Lines 422
Verifying the Zones are Painted 426
Ink and Paint Tool Properties 429

Preparation

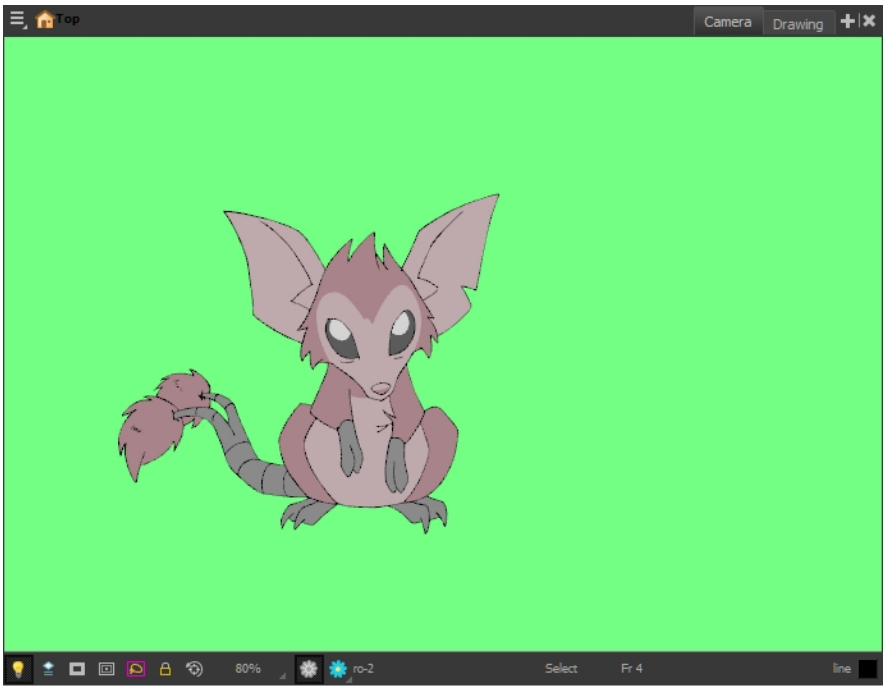
The optimal workspace for creating colour models and inking/painting in traditional animation includes the following views:

- Xsheet
- Camera
- Drawing
- Colour
- Model

As there is no default workspace for these tasks, you will need to create a custom workspace for yourself—see the Fundamentals Guide.



You may have a character or element palette that has colours that are very similar to the Drawing and Camera view's background colour. For example, a white eyeball colour on a white background which makes it difficult to know if the zone was painted. You can change the background colour of the Camera or Drawing view in the Preferences dialog box.

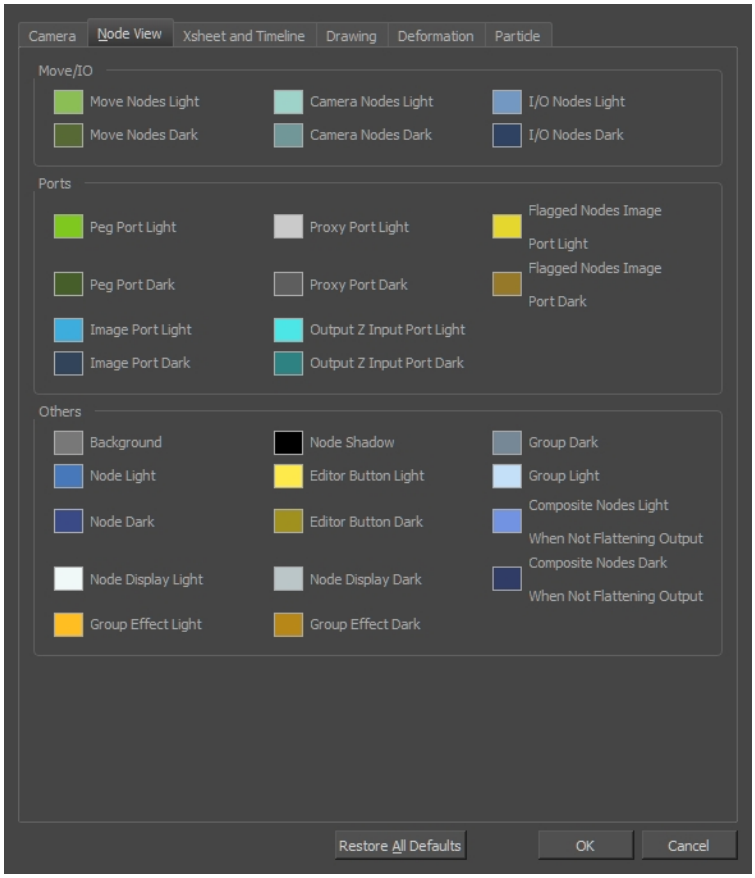


How to change a view's background colour

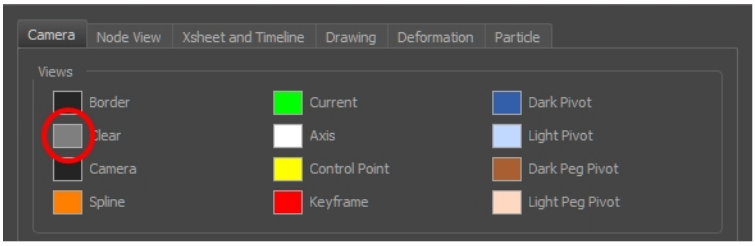
1. Do one of the following:
   - From the top menu, select **Edit > Preferences**.
   - Mac OS X: Select **Stage > Preferences.**
   - Press Ctrl + U (Windows/Linux) or ⌘ + U (Mac OS X).

   The Preferences dialog box opens.
2. Select the **General** tab.
3. In the Colours section, click **Edit Colours**.

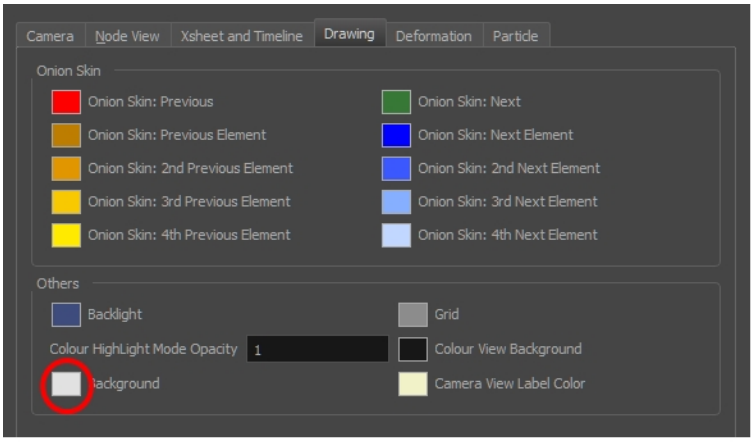
   The Colours dialog box opens.



4. Select the **Camera** or **Drawing** tab.
5. Change the background colour of:
   - **Camera View**: Click the **Clear** colour swatch.

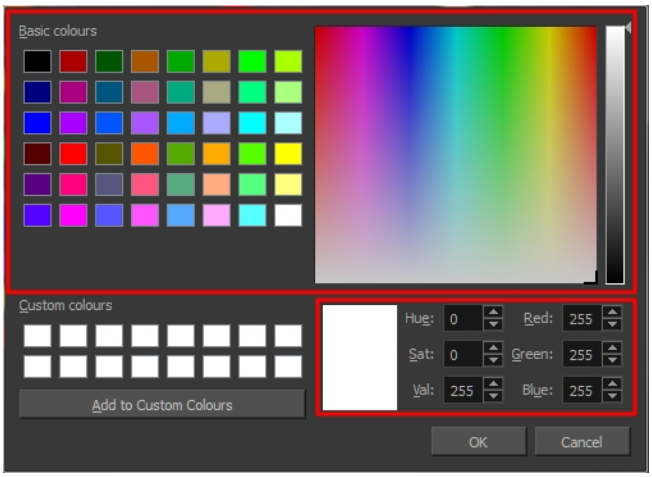


- **Drawing View**: Click the **Background** colour swatch.



The Select Colour dialog box opens.

6. Select a colour by clicking a colour swatch, clicking a colour in the colour gradient, or entering a HSV/RGB Value.



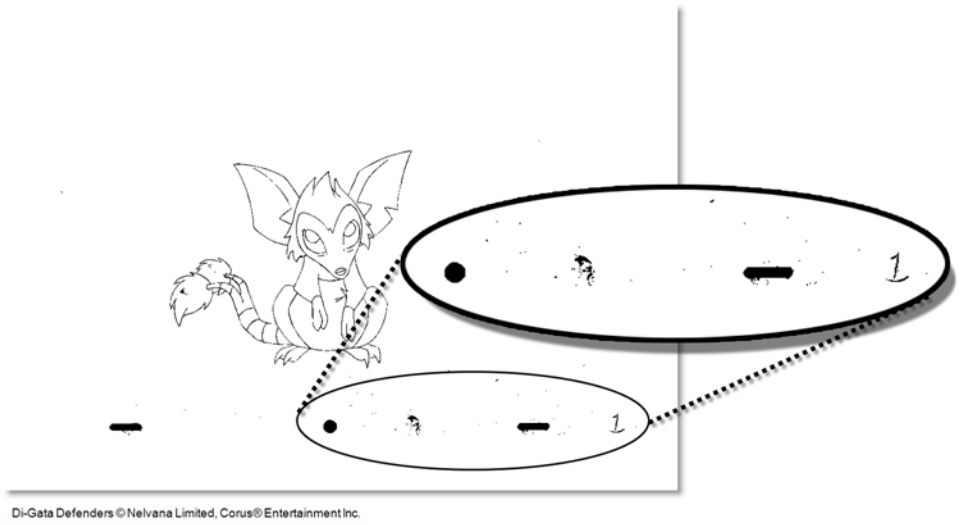
7. Click **OK** in the three opened dialog boxes to apply your changes.

NOTE:
When you need to paint drawings with similar colours throughout the palette, you can create a clone of that palette and change all the colours to very bright tints to facilitate the paint process—see *Cloning a Colour Palette* on page

209.

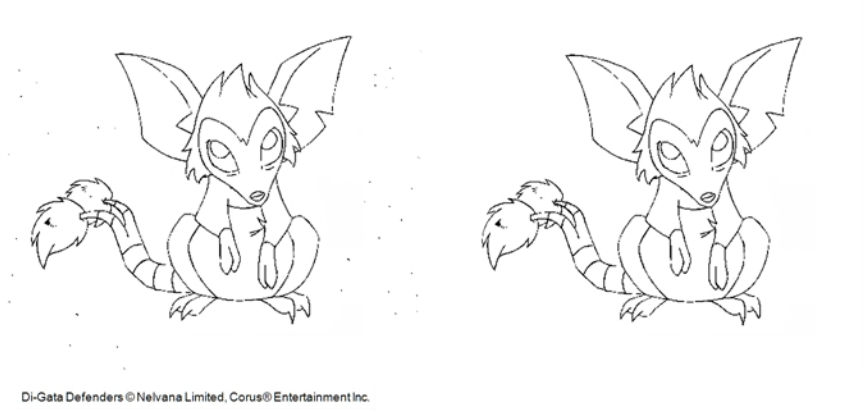
Dirt Clean Up

When paper drawings are passed through a scanner, there can be some hair and dirt scattered across them. These lines and dots need to be cleaned. Harmony provides different tools to help get rid of them quickly.



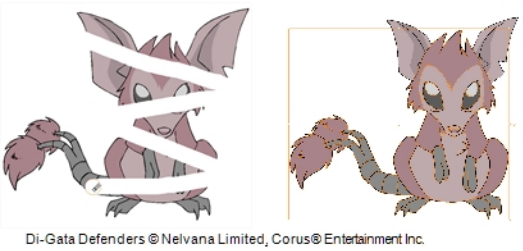
The Remove Dirt tool selects small dots and hairs on the drawing. Raising the Remove Dirt level will select bigger dots. When selecting larger dots, be careful not to lose small details like pupils and nostrils. Once you have chosen the level, you can apply it to the current drawing or the entire animation sequence. This is a quick way to get rid of most dirt and dust.

During this process, the dirt that will be removed is highlighted in red.



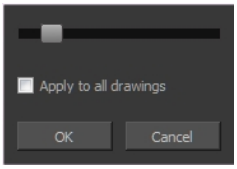
The Remove Art Outside Selection option lets you remove any art existing outside a selection. It is recommended that you clean your Colour Art level as well. If you have a stroke accumulation in your Colour Art, it can result in large output files, especially if you work in high-definition resolutions.

If there are some marks that cannot be removed with the automated tools, you can erase them with the Eraser tool or select them with the Select tool and then delete them. It's always safer to select and delete them than to erase them, so you do not overlook anything.



How to use the Remove Dirt tool

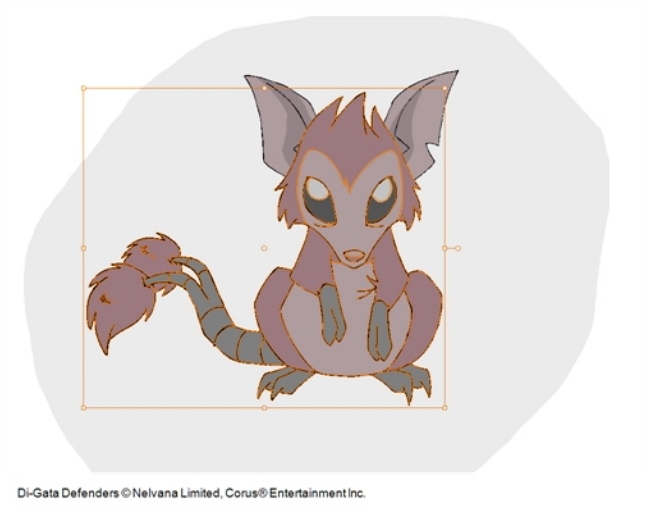
1. Do one of the following:
   - From the top menu, select **Drawing > Clean Up > Remove Dirt.**
   - From the Camera or Drawing View menu, select **Drawing > Clean Up > Remove Dirt**.
   - Press Shift + D.



2. Increase the Remove Dirt value by moving the slider to the right.
3. Select the **Apply to All Drawings** option if you want to apply the operation to all drawings in the layer.

How to clean dirt with Remove Art Outside Selection

1. In the Tools toolbar, select the Select tool.
2. In the Tool Properties view, click the Permanent Selection button.
3. Draw a selection around the animation making sure to include the entire animation sequence.



4. In the Camera or Drawing View menu, select **Drawings > Clean Up** and one of the following options:
   - **Remove Art Outside Selection** to delete artwork outside your selection on a single drawing.
   - **Remove Art Outside Selection on All Drawings** to delete artwork outside your selection on all the drawings.

     The art outside the selection is removed.

Removing Art Inside a Selection

You can delete any art inside a selection with the Remove Art Inside Selection option. We recommend that you clean your Colour Art level as well. If you have a stroke accumulation in your Colour Art, it can result in large output files, especially if you work in high definition resolutions.

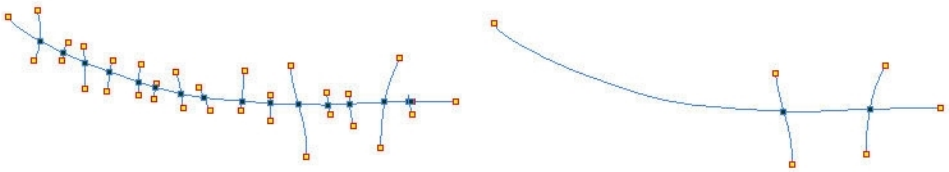
You can simultaneously apply this operation to all your drawings in the layer by using the Remove Art Inside Selection on All Drawings command.

How to clean dirt with Remove Art Inside Selection

1. In the Tools toolbar, click the Select tool or press Alt + S.
2. To apply the action to your entire animation, click the Permanent Selection button in the Tool Properties view.

3. In the Camera or Drawing view, draw a selection around the animation. Make sure the area is large enough to include all the zones to be cleaned up on all drawings.
4. From the top menu, select **Drawing > Clean Up > Remove Art Inside Selection** to delete artwork inside your selection on one single drawing. You can also press Delete.
5. To apply the action on all your drawings in the layer, select **Drawing > Clean Up > Remove Art Inside Selection on All Drawings** to delete artwork inside your selection on all the drawings.

Removing Small Strokes in the Colour Art Layer

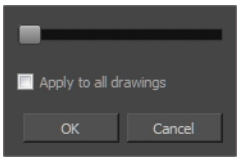


The Remove Hair command lets you remove any small strokes created in the Colour Art layer from very thick lines or filled zones. Increasing the Remove Hair level value will select larger strokes for removal from the drawing.

How to use the Remove Hair tool

1. In the Timeline or Xsheet view, select the drawing containing the drawing to clean.
2. From the top menu, select **View > Show > Show Strokes** to display the invisible lines or press K.
3. In the top menu, select **Drawing > Clean Up > Remove Hair**.

   The Remove Hair dialog box opens.

4. Move the slider to the right to increase the number and length of hairs to be selected.
5. Select the **Apply to All Drawings** option if you want to apply the operation to all the drawings in the layer.
6. Click **OK**.

How to access the Eraser tool

- From the Tools toolbar, click the Eraser button.
- From the top menu, select **Drawing > Drawing Tools > Eraser**.
- From the Camera or Drawing View menu, select **Drawing > Drawing Tools > Eraser**.
- Press Alt + E.

How to access the Select tool

- From the Tools toolbar, click the Select button.
- From the top menu, select **Drawing > Drawing Tools > Select**.
- From the Camera or Drawing View menu, select **Drawing > Drawing Tools > Select**.
- Press Alt + S.

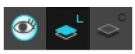
Art Layers

Art layers give you the possibility to divide the artwork in your drawing on different layers. For example, you can separate the outline and colour fill on two art layers, similar to 1950s traditional cell animation. These art layers are contained within a single drawing as opposed to the layers in the Timeline view or Xsheet columns where individual drawings with individual timing are stacked one on top of the other—see *Creating Strokes* on page 401.

Toon Boom Harmony drawings include four art layers.

- *Overlay* on page 397
- *Line Art* on page 398
- *Colour Art* on page 398
- *Underlay* on page 399

You can access the art layers through the Art Layer toolbar. By default, only the Line Art and Colour Art are displayed. You need to enable the Support Overlay and Underlay Arts option in the Preferences dialog box.

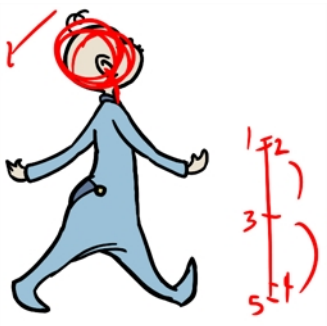


Each layer can be used for separate hand-drawn animation tasks, letting you organize your work and facilitate creation and revision.

Overlay

The Overlay layer can serve multiple purposes:

- Highlights and tones
- Annotations and corrections



- Sketching

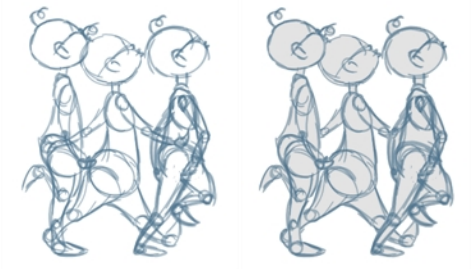
  You can also draw in the Overlay layer as it's a regular layer.

Line Art

In hand-drawn animation, the Line Art layer is mainly used to trace and clean up animation. The outline is drawn in the Line Art layer and colour is painted in the Colour Art layer.

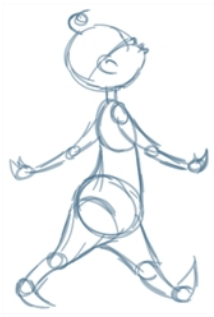
Colour Art

In hand-drawn animation, you use the Colour Art layer to paint your animation. The outline is drawn in the Line Art layer and colour is painted in the Colour Art layer. Strokes (invisible lines) are generated from Line Art to contain the painted area.



When you are doing rough animation, you may want to send a clip for feedback or approval before carrying on with your work. If you have several characters in your project that are overlapping, it may be difficult to understand what is going on as you can see through the characters. Toon Boom Harmony can generate a matte automatically in the Underlay, or even in the Colour Art layer, and fill all the zones inside your characters to make them opaque. This process is fast and easy, and allows you to send easy-to-understand movies.

Underlay



The Underlay layer can serve multiple purposes. It is frequently used by animators to sketch rough animation or generate a matte colour when doing line testing.

How to enable the Support Overlay and Underlay Arts option

1. From the top menu, select **Edit > Preferences** (Windows/Linux) or **Stage > Preferences** (Mac OS X).
2. In the Preferences dialog box, select the **Advanced** tab.
3. In the Advanced Options section, select the **Support Overlay and Underlay Arts** option.
4. Click **OK**.

How to switch between drawing layers

1. In the Art Layer toolbar, click the Line Art or Colour Art buttons. When switching art layers, you can edit the select layer without affecting the other one.

2. Click the Preview All Enabled Art Layers button to display both layers together. Even when the Preview mode is enabled, you will only be able to edit the select art layer. The other ones are only displayed as a reference. By default, the Preview mode is always enabled in the Camera view. You will only be able to see the select art layer by itself if you enable the Current Drawing on Top option located in the Camera bottom toolbar.

NOTE:
To edit both Line Art and Colour Art at the same time, you must enable the Apply to Line Art and Colour Art button in the Tool Properties of the tools supporting the operation.

How to switch between the drawing layers in Advanced Art mode

1. In the Art Layer toolbar, click the Overlay Art, Line Art, Colour Art or Underlay Art buttons to display the appropriate layer—see *How to enable the Support Overlay and Underlay Arts option* on page 399. When switching art layers, you can edit the selected layer without affecting the other one.

2. Click the Preview All Enabled Art Layers button to display all the layers together. The other ones are only displayed as a reference. By default, the Preview mode is always enabled in the Camera view. You can view only the selected art layer if you select the Current Drawing on Top option in the Camera bottom toolbar.

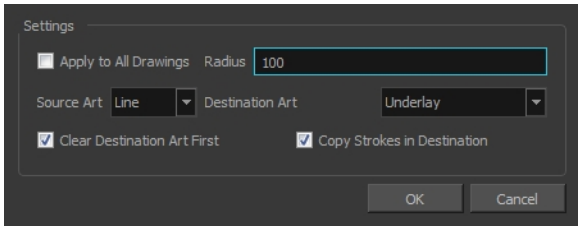
How to generate a matte

1. Do one of the following:
   - In the Tools toolbar, select the Select tool.
   - Press Alt + S.
2. In the Camera or Drawing view, select the drawing you want to create a matte for.

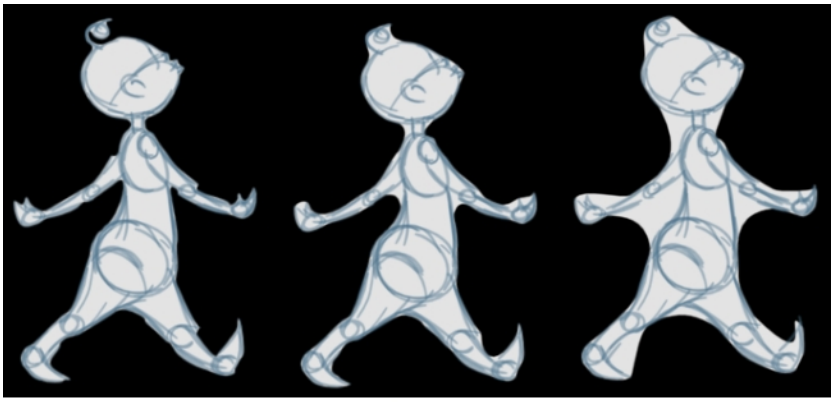
NOTE: You can also apply the operation to all the drawings in the layer at the same time.

3. Do one of the following:
   - From the top menu, select **Drawing > Generate Auto-Matte**.
   - In the Camera or Drawing menu, select **Drawing > Generate Auto-Matte**.

   The Auto-Matte dialog box opens.



4. If you want to create a matte for all the drawings included in your layer, select the **Apply to Multiple Drawings** option.
5. Depending on how precise or rough your line is, increase or decrease the radius value. The lower the value, the closer to your lines' contours the matte will be shaped. The higher the value, the looser the matte will be shaped.

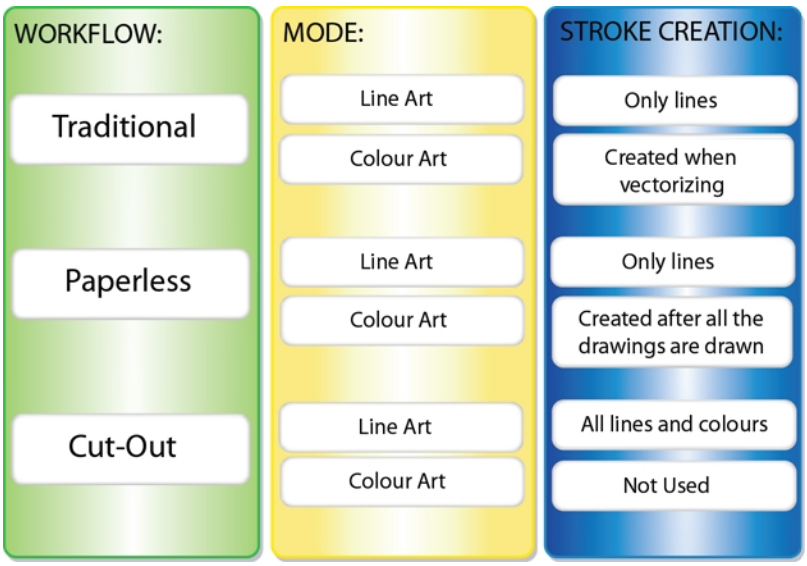


Radius: 20 Radius: 100 Radius: 300

6. In the Source Art menu, select the layer from which you want the matte created: **Line Art, Colour Art**, **Underlay** or **Overlay**.
7. In the Destination Art menu, select the layer on which you want the matte to be created: **Line Art**, **Colour Art**, **Underlay** or **Overlay**.
8. If you already have artwork on the destination layer and you want the content to be deleted before the matte is added into it, select the **Clear Destination Art First** option.
9. If you want the contour of your lines to be copied as invisible lines in your matte drawing (in case you ever need to keep them for later), select the **Copy Stroke in Destination** option.
10. Click **OK**.

Creating Strokes

A drawing is composed of Line and Colour filling layers. Lines and colours can be separated or kept together, depending on which animation process you use. The following diagram presents Line Art and Colour Art recommendations based on the selected animation workflow.



When a traditional drawing is scanned, strokes are automatically created in the Colour Art from the Line Art when drawings are vectorized unless you specified otherwise.

When working with Cut-out animation, we recommend that you do all of the work in the Line Art.

Once the drawing sequence is completed for paperless drawings, you can proceed with creating Colour Art strokes if you plan to paint the animation in the Colour Art. Use the Create Colour Art from Line Art option to create strokes from your lines.

You can create strokes in the Colour Art during the following stages:

- After the full drawing is completed in Line Art
- While drawing in Line Art

You may have some traditional drawings that need to be fixed; for example, needing extra lines to patch gaps. Use the Auto-Create Colour Art from Brush option to create the strokes at the same time as the lines are drawn. This creates strokes from the lines and brush strokes created in the Line Art while you draw and is useful for fixing drawings. However, if you are drawing a new sketch, it is better to create the strokes afterward using the Create Colour Art from Line Art option.

How to create Colour Art zones out of the Line Art content

1. In the Tools toolbar, select the Select tool or press Alt + S.
2. In the Tool Properties view, click the Permanent Selection button if you want to apply the operation on all drawings in the layer.
3. In the Camera or Drawing view, select the artwork to transfer to the Colour Art. Create a selection around the entire animation sequence if you want to apply the operation to all your drawings.
1. In the Drawing View toolbar, click the Create Colour Art from Line Art button or press *.

How to create strokes with the Create Colour Art Automatically option

1. In the Tools toolbar, select the Brush tool.
2. In the Tool Properties view, enable the Create Colour Art Automatically option.
3. Draw the required lines.
4. Once you're done, deselect the Create Colour Art Automatically option.

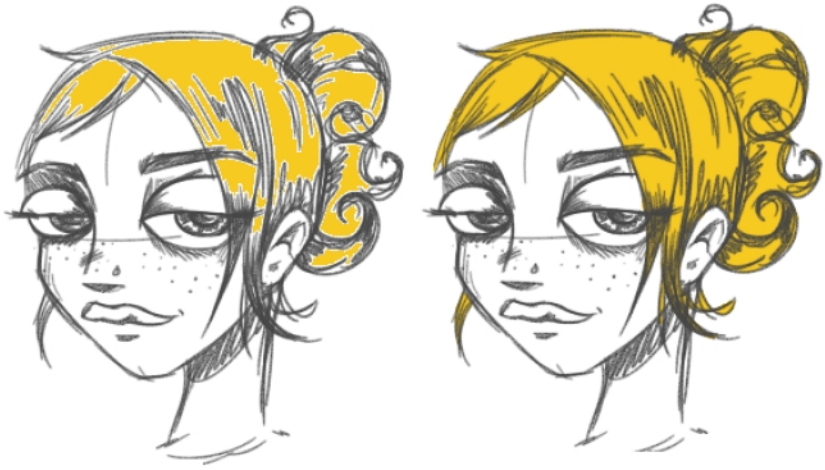
   You are now ready to paint your model.

Painting

You can choose to paint your animation in the Line Art or Colour Art level. You can paint in Line Art, but for traditional and paperless animation, you should fill your colour zones in Colour Art. You can access the art layers through the Art Layer toolbar—see *Art Layers* on page 396.

There are many advantages to separating the lines and colour zones, but the main one concerns the painting process. To paint very quickly, it's useful to not have to worry about painting over the lines. If the lines are separated, you can fill the zones very quickly and you will never accidentally paint the lines. Conversely, if you are inking the lines, you will not repaint the colour zones either.

If you have transparent lines, bitmap lines, or textured lines with transparency, it's better to have your colour zones bleeding under your lines to avoid seeing the backgrounds and other elements through the lines.



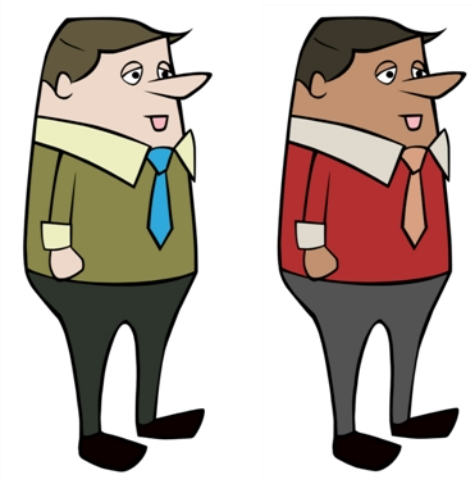
Line art Colour art

NOTE: To avoid painting in Line Art by mistake, turn off the Preview mode and paint in the Drawing view instead of the Camera view. Press P to turn the mode on or off.

This section is divided as follows:

- *Painting Using the Paint Tool* on page 404
- *Advanced Painting Features* on page 405
- *Selecting a Colour in a Drawing* on page 408
- *Importing Models* on page 409
- *Editing Gradients and Textures* on page 414
- *Closing Gaps* on page 419
- *Protecting Colours* on page 420
- *Highlighting a Selected Colour* on page 421
- *Inverting a Colour Selection* on page 422

Painting Using the Paint Tool



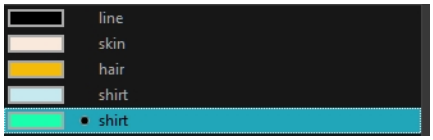
The main tool you will use to paint your drawings with is the Paint tool. The Paint tool can be used in several different modes, which can be customized in the Tool Properties view.

The Paint tool paints closed zones, including brush strokes and pencil lines. If there are gaps in the lines defining a zone, you must close them using the Brush, Pencil, or Close Gap tools or the Automatic Close Gap option.

How to paint with the Paint tool

1. In the Timeline or Xsheet view, select the cell on which you want to paint.

2. Do one of the following:
   - In the Tools toolbar, click the Paint tool.
   - Press Alt + I.
3. In the Colour view, select a colour.



4. In the Drawing or Camera view, start painting. Click on a zone or pencil line to paint it, or trace a lasso or marquee selection to paint several zones or pencil lines at the same time.

NOTE: The last colour you select while using the Paint tool will be used the next time you select the Paint tool if you're using the unlocked painting tools in the Colour view.

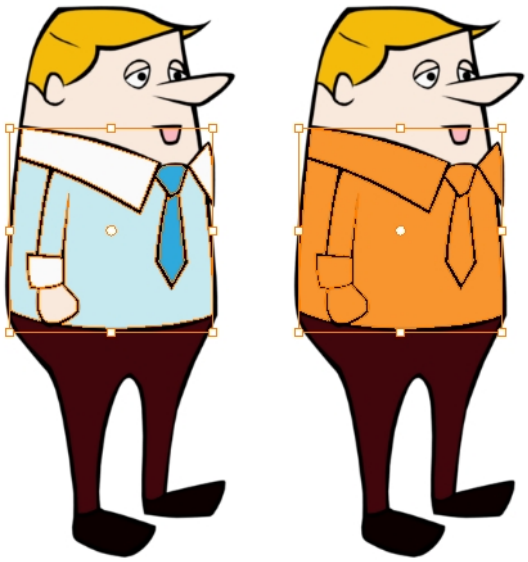
Advanced Painting Features

The following advanced painting features are available in Toon Boom Harmony:

- *Repaint Selection* on page 405
- *Repaint Selection on All Drawings* on page 405
- *Repaint Outside Selection* on page 406
- *Repaint Outside Selection on All Drawings* on page 406
- *Unpaint Selection* on page 407
- *Unpaint Selection on All Drawings* on page 407
- *Unpaint Outside Selection* on page 407
- *Unpaint Outside Selection on All Drawings* on page 408

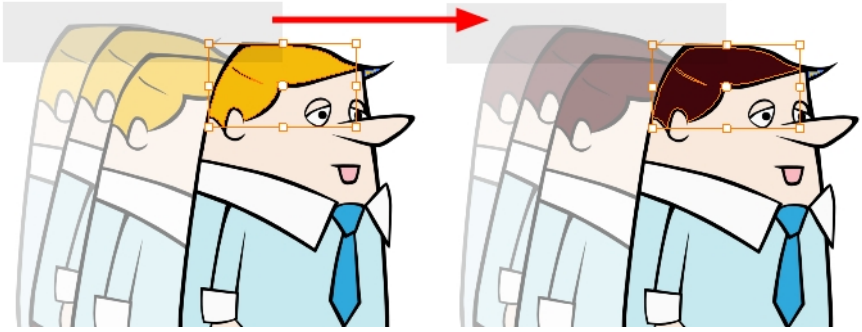
Repaint Selection

The Repaint Selection command is used to repaint any art inside a selection. You must first draw a selection using the Select tool in order for this command to be available.



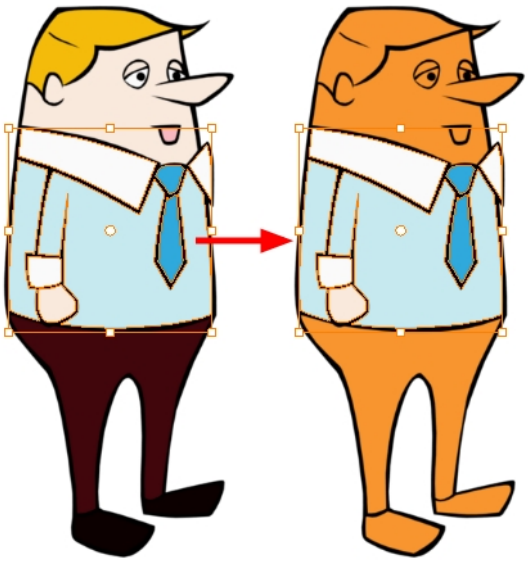
Repaint Selection on All Drawings

The Repaint Selection On All Drawings command is used to repaint any art inside a selection on all the drawings contained within the same layer. You must enable the Permanent Selection option in the Select tool Tool Properties view and then select an area of your drawing using the Select tool in order for this command to be available. The Permanent Selection option lets you maintain the same selection throughout the drawings of a same layer.



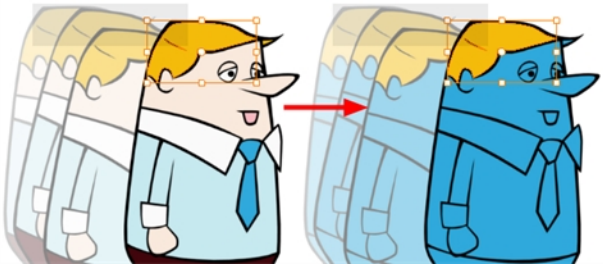
Repaint Outside Selection

The Repaint Outside Selection command is used to repaint any art outside a selection. If no selection has been drawn using the Select tool, the entire drawing will be repainted.



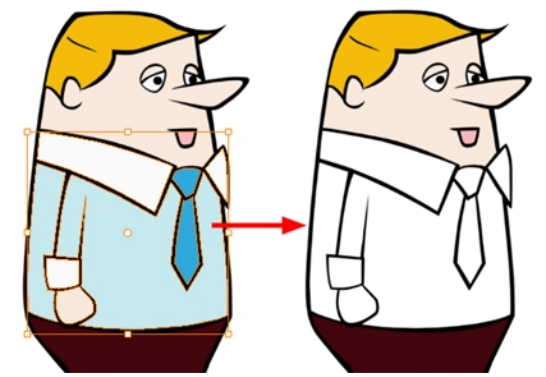
Repaint Outside Selection on All Drawings

The Repaint Outside Selection On All Drawings command is used to repaint any art outside a selection on all the drawings contained within the same layer. You must enable the Permanent Selection option in the Select tool Tool Properties view and then select an area of your drawing using the Select tool in order for this command to be available. The Permanent Selection option lets you maintain the same selection throughout the drawings of a same layer.



Unpaint Selection

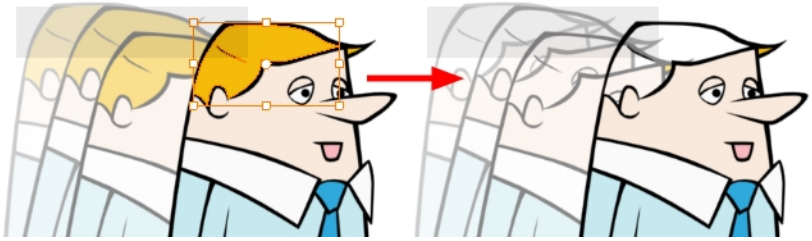
The Unpaint Selection command is used to unpaint any art existing inside a selection. You must first draw a selection using the Select tool in order for this command to be available.



Unpaint Selection on All Drawings

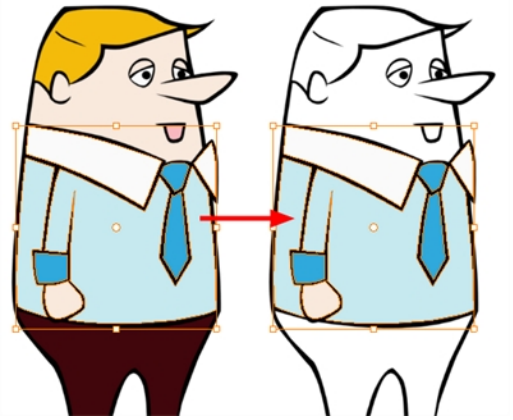
The Unpaint Selection on All Drawings command is used to unpaint all art contained inside a selection on all the drawings within the same layer.

You must enable the Permanent Selection option in the Select tool Tool Properties view and then select an area of your drawing using the Select tool in order for this command to be available. The Permanent Selection option lets you maintain the same selection throughout the drawings of a same layer.



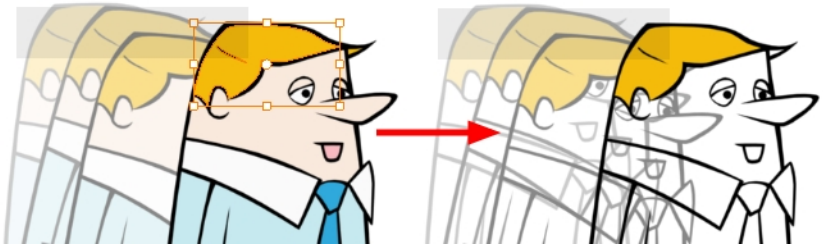
Unpaint Outside Selection

The Unpaint Outside Selection command is used to unpaint any art existing outside a selection. If no selection have been drawn using the Select tool, the entire drawing will be unpainted.



Unpaint Outside Selection on All Drawings

The Unpaint Outside Selection on All Drawings command is used to unpaint all art outside a selection on all the drawings within the same layer. You must enable the Permanent Selection option in the Select tool Tool Properties view and then select an area of your drawing using the Select tool in order for this command to be available. The Permanent Selection option lets you maintain the same selection throughout the drawings of a same layer.



How to access the advanced painting tools

- From the top menu, Camera or Drawing view menu, select **Drawing > Paint** and one of the following:

  Repaint Selection

  Repaint Selection on All Drawings

  Repaint Outside Selection

  Repaint Outside Selection on All Drawings

  Unpaint Selection

  Unpaint Selection on All Drawings

  Unpaint Outside Selection

  Unpaint Outside Selection on All Drawings

Selecting a Colour in a Drawing

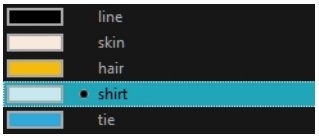
While working in the Camera or Drawing view, you can use the Dropper tool to pick a colour from your drawing without going to the Colour view.

How to use the Dropper tool

1. Do one of the following:
   - In the Tools toolbar, select the Dropper tool.
   - From the top menu, select **Drawing > Drawing Tools > Dropper**.
   - Press Alt + D.
2. In the Camera or Drawing view, click on the desired colour.
   - If you're using another drawing tool such as the Paint tool, you can temporarily hold down the D key and click in your drawing before releasing the key to pick your colour. When you release the key, you will return to your previous tool. You may also want to select the zones painted with the colour currently selected in the Colour view. This can be useful for removing rough lines from a clean drawing.

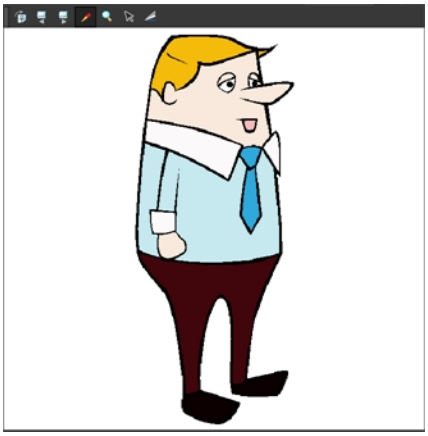
How to select the zones painted with the current colour

1. In the Colour view, select the colour from which you want to select the corresponding zones.



2. Do one of the following:
   - Select **Drawing > Select Strokes With Current Colour**.
   - Press Ctrl + Shift + A (Windows/Linux) or ⌘ + Shift + A (Mac OS X).

Importing Models



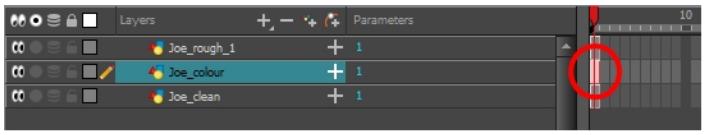
Once you have a fully painted drawing, you can use it as a colour model and load it in the Model view. That drawing can be used and loaded in any of your Harmony scenes.

Once a drawing is loaded in the Model view, you can use the Dropper to select a colour from the model and use it to paint in your Camera or Drawing view without having to pick the colour from the colour palette.

You can do more than just copy colours from a colour model. Harmony gives you the ability to copy parts of the character directly from its colour model and paste these elements into the Drawing or Camera views.

How to load a colour model from the Timeline or Xsheet view

1. In the Timeline or Xsheet view, select a drawing (*.tvg).



2. Bring the model into the Model view by doing one of the following:
   - In the Timeline view, drag the selected drawing and drop it directly in the Model view.
   - From the Model View menu, select **Use Current Drawing as Model**.

NOTE: The Use Current Drawing as Model button is not part of the default Model View toolbar. To add the Use Current Drawing as Model button to the Model toolbar, right-click in the Model view toolbar and select **Customize**. Drag the Use Current Drawing as Model button from the Available Tools column and move it to the right (Toolbar) column. Click **OK**.

   - In the Model View toolbar, click Current Drawing button.

   The model appears in the Model view.

How to browse for a colour model drawing on your hard drive

1. Do one of the following:
   - In the Model View toolbar, click the Import Model button.
   - From the Model View menu, select **Import Model**.
   - Select **File > Import > Colour Model**.
2. In the Browser window, browse for any *.tvg drawing file on your hard drive or in the database.
3. Click **Open**.

   The model appears in the Model view.

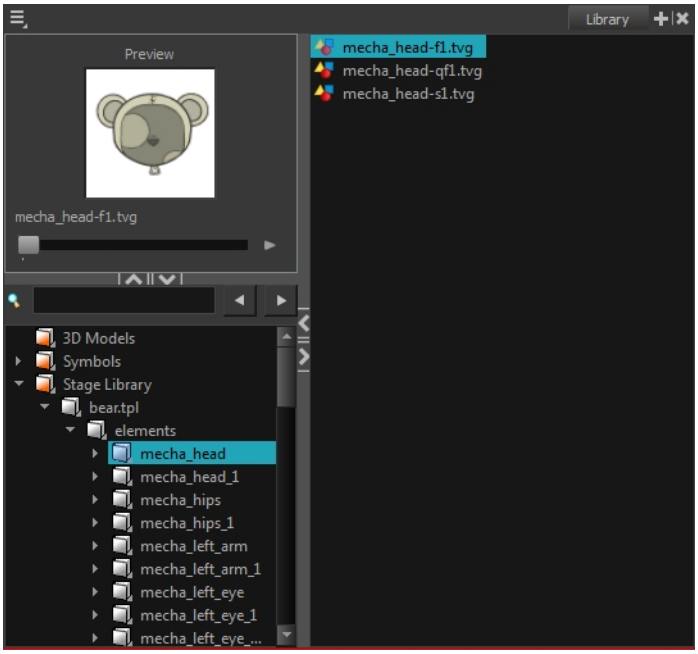
How to load the default models

1. In your scene's folder, create a new folder and name it: **`models`**.
2. On your hard drive, copy the *.tvg drawing file you want to use as colour models in your scene.
3. Do one of the following:
   - From the Model View menu, select **Load Default Model**s.
   - In the Model View toolbar, click the Load Default Model button.

NOTE: The Load Default Model button is not part of the default Model View toolbar. To add the Load Default Model button to the Model toolbar, right-click in the Model view toolbar and select **Customize**. Drag the Load Default Model button from the Available Tools column and move it to the right (Toolbar) column. Click **OK**.

How to load a single drawing from the Library view

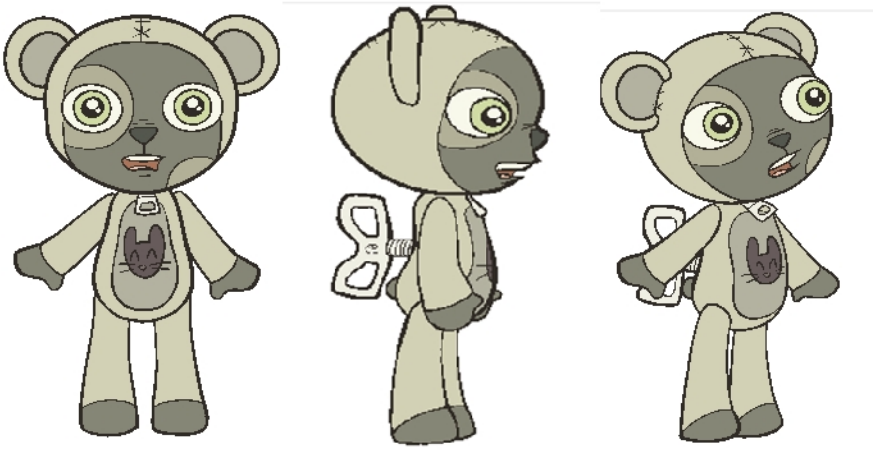
1. In the Library view, click the template containing the drawing to import in the Model view.
2. Right-click on the template and select **Open As Folder**.
3. In the Library view's left side, select the template's folder and continuing expanding its subfolders until *.tvg files appear on the right side.



4. In the Library view's right side, select the TVG drawing to import and drag it into the Model view.

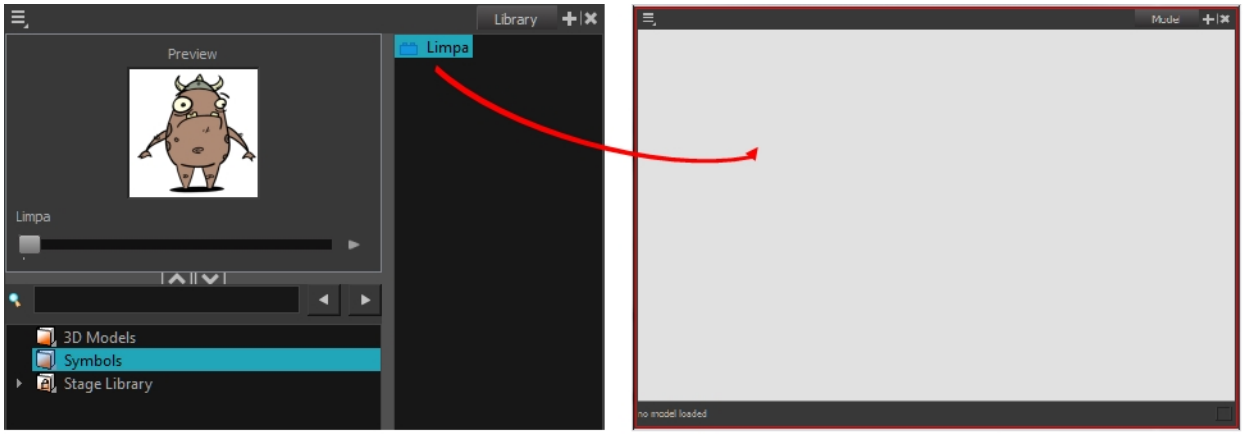
How to load a template with multiple drawings from the Library view

1. In the Library view, find the template you want to import in the Model view.
2. In the Library view's right side, drag the template (*.tpl file) and drop it directly in the Model view.
3. Use the Previous Model and Next Model buttons in the Model View toolbar to view all the drawings contained in the template. This can often be the front, profile, and 3/4 views of a character.



How to load a symbol from the Library view

1. In the Library view's left side, select the **Symbols** folder.
2. In the Library view's right side, select the symbol you want to use as a model, and drag and drop it into the Model view.



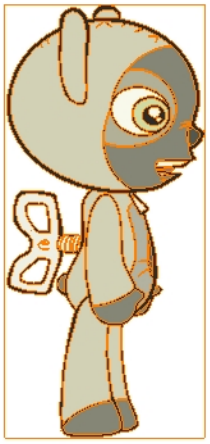
3. Use the Previous Model and Next Model buttons in the Model View toolbar to view all the drawings contained in the template. This can often be the front, profile, and 3/4 views of a character.

How to clear a colour model

- In the Model View menu, select **Clear Model** or press Delete.

How to copy the entire model from the Model view

1. In the Model View toolbar, select the Select tool.
1. In the Model view, select your model.



2. From the top menu, select **Edit > Copy Drawing Object** or pressCtrl + C (Windows/Linux) or ⌘ + C (Mac OS X).

2. In the Timeline view, make sure you have the correct layer and frame selected.

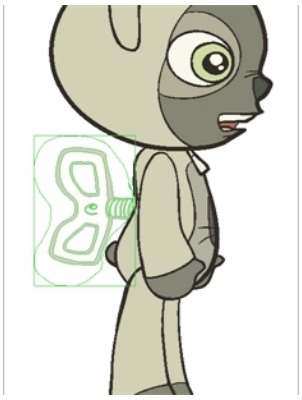
3. Select the Drawing or Camera view, then go to the top menu and select **Edit > Paste Drawing Object**, or select the Timeline view and from the top menu, select **Edit > Paste cells in the Timeline** or pressCtrl + V (Windows/Linux) or ⌘ + V (Mac OS X).

   The model appears in the selected view.

How to copy part of the model in the Model view

1. In the Model View toolbar, select the Cutter tool or press Alt + T.

1. In the Model view, use the Cutter tool to create a selection around the part of your model that you want to copy.



2. From the top menu, select **Edit > Copy Drawing Object** or pressCtrl + C (Windows/Linux) or ⌘ + C (Mac OS X).

2. In the Timeline view, make sure you have the correct layer and frame selected.

3. Do one of the following:

   - Select the Drawing or Camera view and select **Edit > Paste Drawing Object**.

- Select the Timeline view and select **Edit > Paste cells in the Timeline** or press Ctrl + V (Windows/Linux) or ⌘ + V (Mac OS X).

The model appears in the selected view.

Editing Gradients and Textures

If you paint a zone with a gradient or texture colour, you can use the Edit Gradient/Texture tool to modify its position in the zone. You can move, scale, rotate and skew. If you want to match the colour to the animation, set the first texture position and copy the Edit Gradient/Texture position. When moving to the next drawing, you can select the next texture and paste the previous position to continue the modifications.

If you are painting a hand-drawn animation or if your want the Brush tool and Paint tool to use your gradient's position, angle and scale settings instead of the default ones, you can store your own settings and reuse them afterward.

This way of editing a texture using the Edit Gradient/Texture tool also works with pencil lines drawn with textured "brushes". If you then paint your textured pencil line with a gradient, you can do so and then edit both elements independently at the same time.

How to use Edit Gradient/Texture tool

1. Do one of the following:
   - In the Tools toolbar, click the Edit Texture tool.
   - From the Camera or Drawing View menu, select **Drawing Tools > Edit Gradient/Texture.**
   - Press Shift + F3.
2. Click the gradient or texture colour to modify.

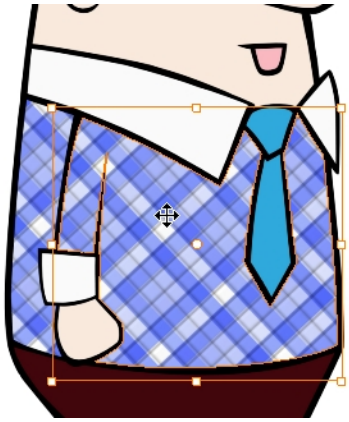
Erik, Di-Gata Defenders © Nelvana Limited, Corus® Entertainment

A blue selection frame surrounds the selected gradient or texture.

3. Edit the gradient or texture by adjusting the control handles around the selection frame.

How to store gradient and texture settings

1. In the Tools toolbar, select the Select tool or press Alt + S.
2. In the Camera or Drawing view, select the gradient or texture zone to store.



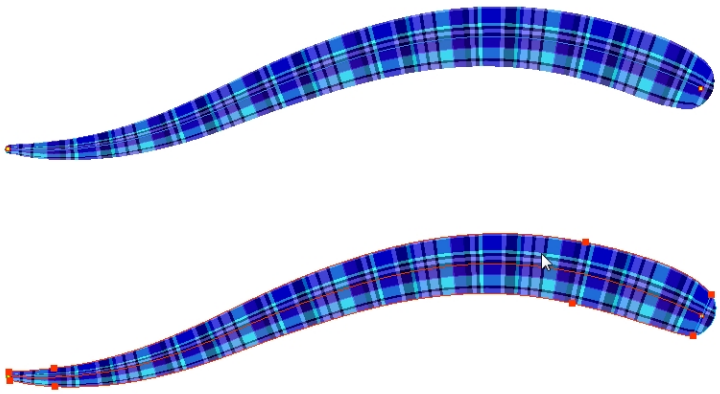
3. In the Tool Properties view, click the Store Colour Gradient button.

How to use the stored gradient and texture settings

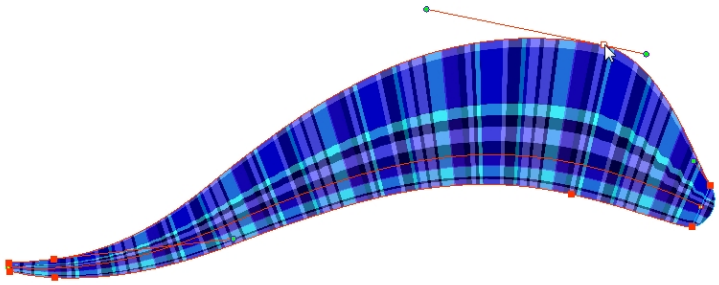
1. In the Tools toolbar, select the Brush or Paint tool.
2. In the Tool Properties view, click the Use Stored Colour Gradient button.
3. In the Camera or Drawing view, draw and paint.

How to use Pencil Editor tool to edit the texture or gradient on a pencil line

1. Do one of the following:
   - In the Tools toolbar, select the Pencil Editor tool.
   - From the top menu, select **Drawing > Drawing Tools > Pencil Editor.**
   - Press Alt + W.
2. Click on the pencil line to be modified to bring up its contour envelope.

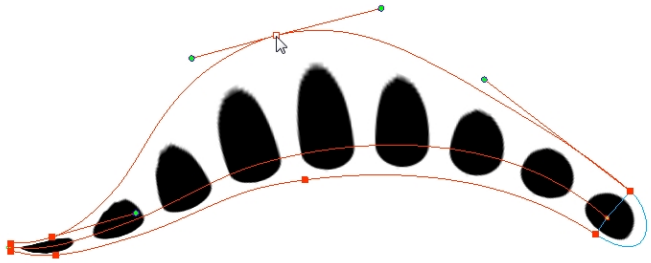


3. Select one of the contour points around the envelope and move its position to change the size of the tiled texture or gradient. You can also pull directly on the lines of the contour envelope or play with the Bezier handles of any given point in order to continue to modify the envelope form.



Expanding the width of the envelope parallel to the pencil line's central vector will cause the tiled texture to be stretched. Conversely, reducing the envelope's width will cause the tiled texture to look squashed.

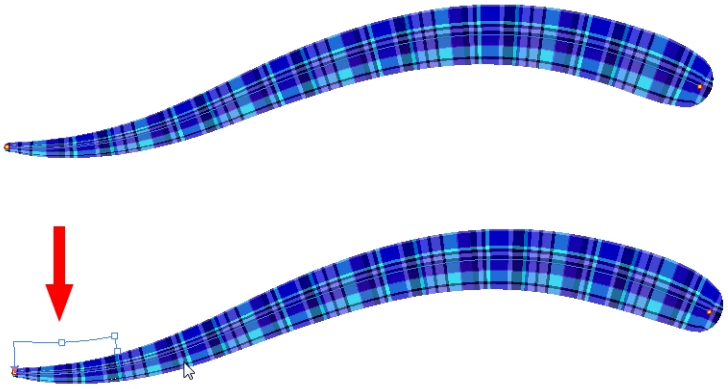
Reducing the contour's width perpendicular to the pencil line's central vector will reduce the number of tiles, while expanding it will increase the number of tiled images.



This editing technique does not just work on texture fills, but can also be applied to pencil lines drawn with a textured "brush".

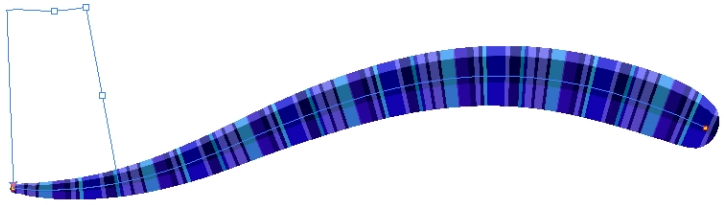
How to use Edit Gradient/Texture tool to edit the texture or gradient on a pencil line

1. Do one of the following:
   - In the Tools toolbar, select the Edit Gradient/Texture tool.
   - From the top menu, select **Drawing > Drawing Tools > Edit Gradient/Texture**.
   - Press Shift + F3.
2. Click on the pencil line to be modified to bring up the editor controls.

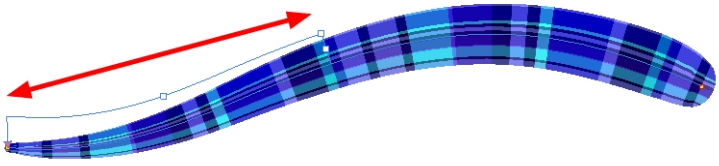


3. The editor controls delineate a single tile in the texture. For gradients, this is less applicable. Pull on the top of the editor controls to stretch the tiled texture throughout the length of the stroke.

   As gradients are parallel to the stroke's central vector, this will stretch the way that the gradient is distributed in the pencil line's envelope. The envelope still acts as a boundary for the texture or gradient.

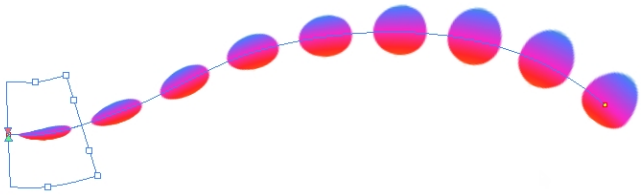


4. Drag the editor control perpendicular to the stroke. You will feel it glide along the strokes central vector line. This is another way to resize the texture tile. Instead of stretching or shrinking it vertically, this motion stretches or shrinks it vertically. As gradients are parallel to the pencil line's central vector, stretching them vertically gives no visual result.

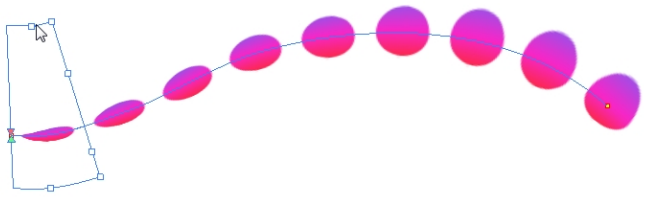


How to use Edit Gradient/Texture tool to edit the texture and gradient of a pencil line

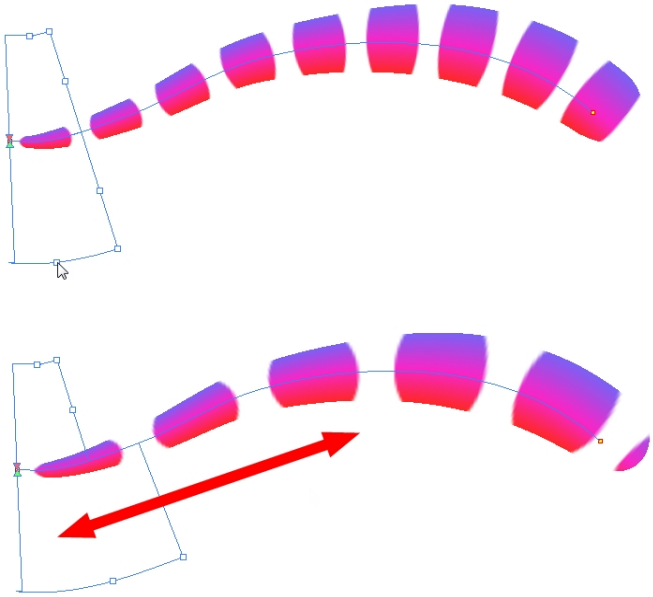
1. Do one of the following:
   - In the Tools toolbar, select the Edit Gradient/Texture tool.
   - From the top menu, select **Drawing > Drawing Tools > Edit Gradient/Texture**.
   - Press Shift + F3.
2. Click on the pencil line to be modified to bring up the editor controls.



3. Use the top editor controls edit the gradient.



4. Use the bottom controls edit the “brush” texture.



Closing Gaps

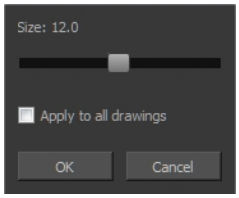
When painting, you may notice that some drawing areas are not closed. To close the zone, you can draw the missing line with the Brush or Pencil tool, or close the gap with an invisible line using the Close Gap tool.

The Close Gap tool lets you close small gaps in a drawing by creating small, invisible strokes between the two closest points to close the colour zone. You do not need to trace directly over the gap. You can draw it a few millimeters away. The two closest points automatically close the gap.

How to close gaps

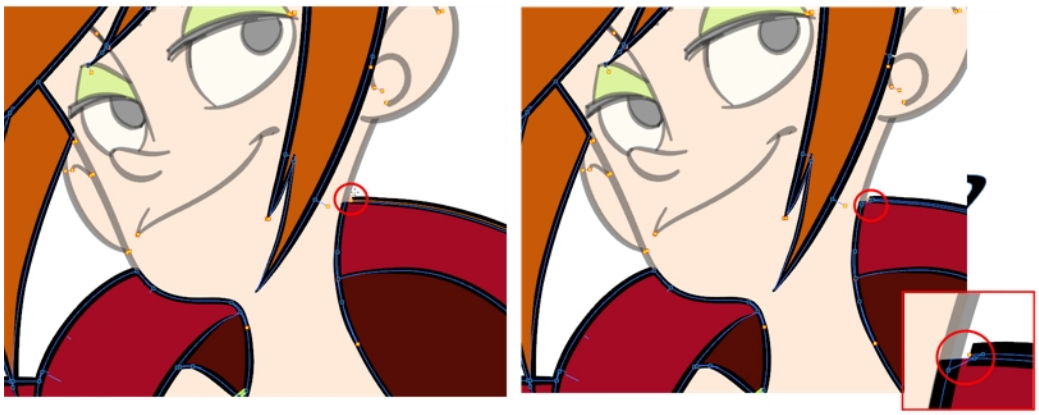
1. From the top menu, select **View > Show > Show Strokes** or press K to see a preview of the result.
2. If you want the strokes you draw to be flattened in your drawing instead of being on top, click the Auto-Flatten button in the Tool Properties view.
3. From the top menu, select **Drawing > Clean Up > Close Gaps** or press Shift + F10 (Windows/Linux only).

   The Close Gaps dialog box opens.
4. Adjust the slider to set the size of the gap you want to be closed.

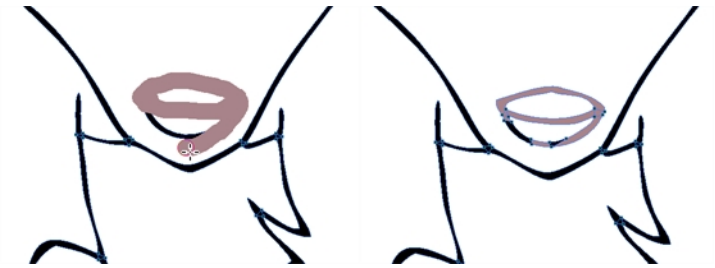


5. To close all gaps in the drawings of the selected layer, select the **Apply to all drawings** option and click **OK**.
6. In the Tools toolbar, select the Close Gaps tool.
7. In the Camera or Drawing view, trace a line near the gap to be closed. Your strokes will be invisible

   The gap automatically closes.



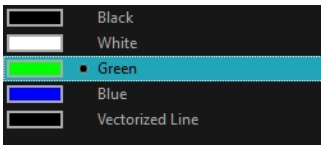
Protecting Colours



When you are finished inking one colour, you can lock it so if you ever paint over it accidentally, the work already done will not be affected. You can also use the Protect Colour feature to block the filling colours if you painted all of the animation in Line Art and you plan to repaint the lines.

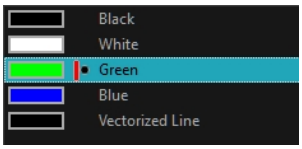
How to protect colours

1. In the Colour view, select the colour to be protected.



2. Do one of the following:
   - Right-click and select **Protect Colour**.
   - From the Colour view menu, select **Colours > Protect Colour**.

   A red bar appears beside the colour to indicate that it is locked.



Respecting Protected Colours

When painting, the Respect Protected Colour option is enabled by default. In the Colour view, you can protect In the Colour view, you can protect a colour swatch to avoid repainting or unpainting the zones linked to that swatch. If you using the Paint tool and this option is deselected, you will repaint or unpaint the protected colours on your drawings until you enable the option again.

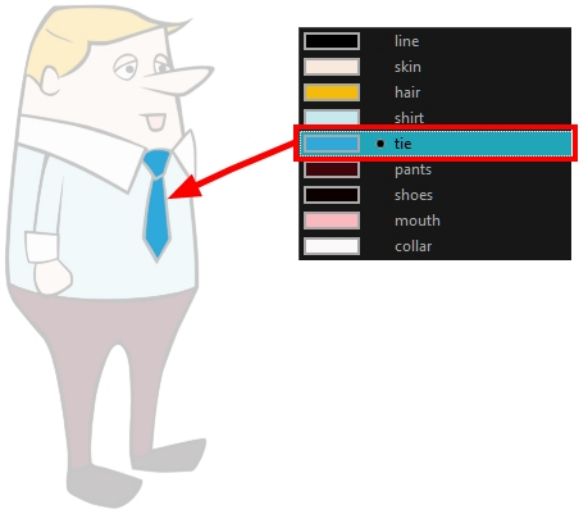
How to enable the Respect Protected Colours option

Do one of the following:

- In the Paint tool properties, click the Respect Protected Colour button.
- From the top menu, select **Drawing> Colour Protection > Respect Colour Protection**.
- Press Shift + S.

Highlighting a Selected Colour

If there are unnamed colours in your palette and you want to know if a particular colour was used on the current model or drawing, you can select a colour and it will be used to highlights the parts that use that colour. The rest of the colours are dimmed, so you can easily identify the highlighted colour. You can then rename it accordingly.



How to highlight a selected colour

1. In the Colour view, select the colour to highlight.
2. From the Camera or Drawing menu, select **View > Show > Highlight Selected Colour**.

Inverting a Colour Selection

When you need to select all colour swatches but one, or select only a few swatches here and there, it might be faster to select the only colour you do not need in order to select and invert the selection.

How to invert a colour swatch selection in the Colour view

1. In the Colour view, select the colour swatch you **DO NOT** want to have in your final selection.

2. Do one of the following:
   - From the Camera or Drawing View menu, select **Edit > Invert Selection**
   - Press Ctrl + Shift + I.

Inking the Lines

Unless you're repainting all the lines in the entire animation sequence, do not use the Apply Tool to All Drawings option. Since the line positions change a lot over time, you risk painting lines that should not be painted.

These are the main tools and techniques used to ink lines:

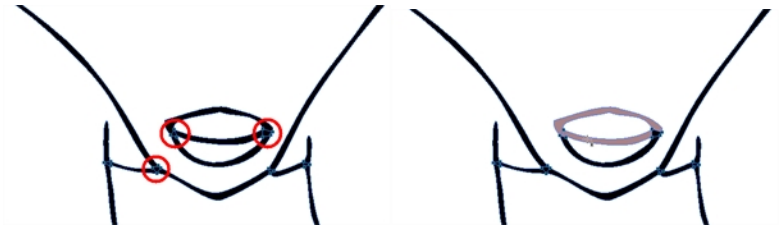
- *Repaint Tool* on page 423

- *Repaint Brush Mode* on page 423
- *Inking the Lines* on page 422
- *Protecting Colours* on page 425
- *Breaking Triangles* on page 425

Repaint Tool

The main tool used to ink the lines is the Repaint tool. As the colour filling is probably done in the Colour Art, you will not have to worry about not touching it. The Repaint tool will not paint empty zones either.

During the vectorization process on traditional scanned drawings, triangles are added on the lines' intersections to break the artwork in segments. This way, when you paint a line, it will not repaint the whole drawing, only the relevant segment.



How to access the Repaint Tool

1. In the Tools toolbar, select the Repaint tool located in the Paint tool drop-down menu.

Repaint Brush Mode

The Repaint Brush mode is used to paint a section by manually painting over the lines. This is useful when the vectorization triangles are not placed as you would like or you simply need to repaint a section of a segment. It is also useful for paperless animation, where there are no triangles. So, the Repaint Brush is used to paint a certain area. It acts like the Brush tool, but will only show on painted areas that are already painted.

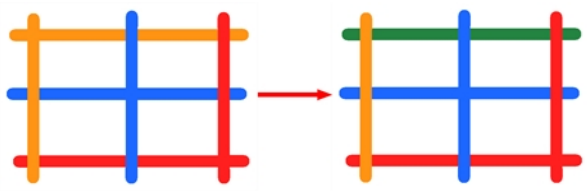
Unlike the Brush tool, the Repaint Brush mode flattens automatically. The brush strokes are not added one on top of each other.

How to enable the Repaint Brush mode

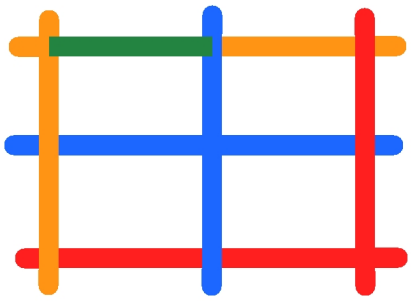
1. In the Tools toolbar, select the Brush tool.
2. In the Tool Properties view, enable the Repaint Brush mode.

Ink Tool

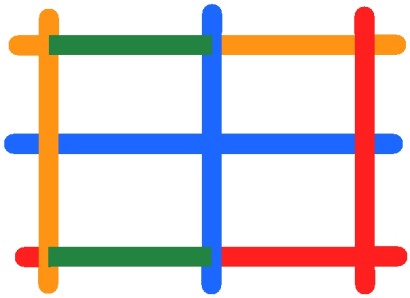
Although pencil lines can be painted in much the same way as closed zones, you can use the Paint, Repaint, Repaint Brush, and Ink tools to make painting segmented lines easier. Normally when you have a drawing, such as the one below, and you use the Paint tool to paint one of the lines, the entire line is painted.



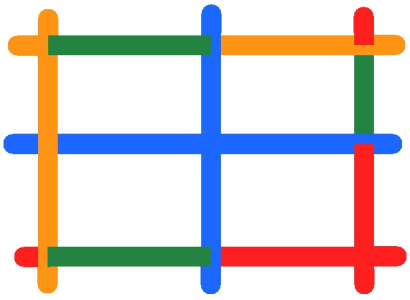
However, if you select the Ink tool instead and click on the same pencil line, only the segment that you clicked on between two intersections will be painted.



The newly inked segment will always be moved to the front of all other pencil strokes, even if it was behind all other pencil strokes before it was inked.



That is, unless you hold down Alt while clicking a segment. Then the opposite happens. The inked segment will be sent to the back, even if it was in front of all other segments to begin with.

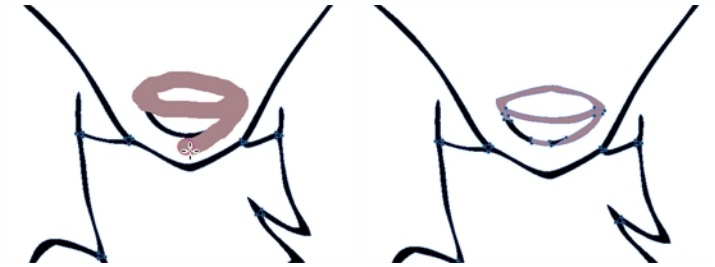


Painting and inking can be used in combination depending on what you need to paint. If you need to ink a character's outline in black, it might be easier to use the Paint tool. If you need to paint the outline of a character's neck with a tan colour and its shirt outline blue and both the neck and shirt belong to the same continuous outline, then the Ink tool might prove more useful.

How to access the Ink tool

1. In the Tools toolbar, select the Ink tool located in the Paint tool drop-down menu.

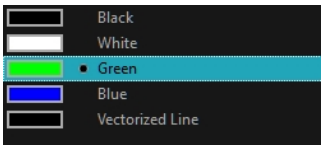
Protecting Colours



When you are finished inking one colour, you can lock it so if you ever paint over it accidentally, the work already done will not be affected. You can also use the Protect Colour feature to block the filling colours if you painted all of the animation in Line Art and you plan to repaint the lines.

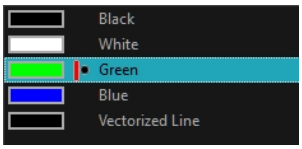
How to protect colours

1. In the Colour view, select the colour to be protected.



2. Do one of the following:
   - Right-click and select **Protect Colour**.
   - From the Colour view menu, select **Colours > Protect Colour**.

   A red bar appears beside the colour to indicate that it is locked.



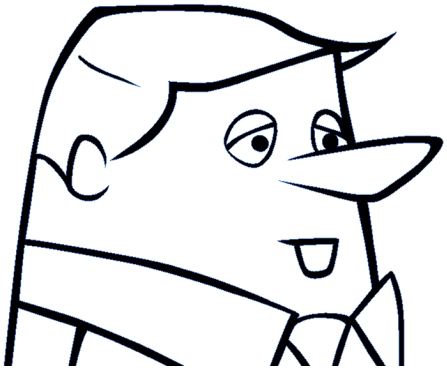
Breaking Triangles

The Brush tool is often the most intuitive and rapid tool for creating rough sketches and clean lines. A single colour, such as black, is often used when tracing a clean version of a rough sketch. However, when it comes time to soft trace the lines in different colours, the flattened or unflattened clean brush strokes can suddenly become time consuming to ink.

Toon Boom Harmony lets you create triangular breaks at natural line intersections. These intersections are the probable locations where colour line breaks may occur, such as where a sleeve meets a hand.

How to create breaking triangles on a drawing

1. In the Drawing or Camera view, use the Select tool to select part or all of the drawing to be broken.



2. From the top menu, select **Drawing > Create Breaking Triangles**. If your brush strokes are not flattened, they will be flattened automatically before the breaking occurs.

3. Use the Repaint tool to paint the outline of different colour zones with different colours.

Verifying the Zones are Painted

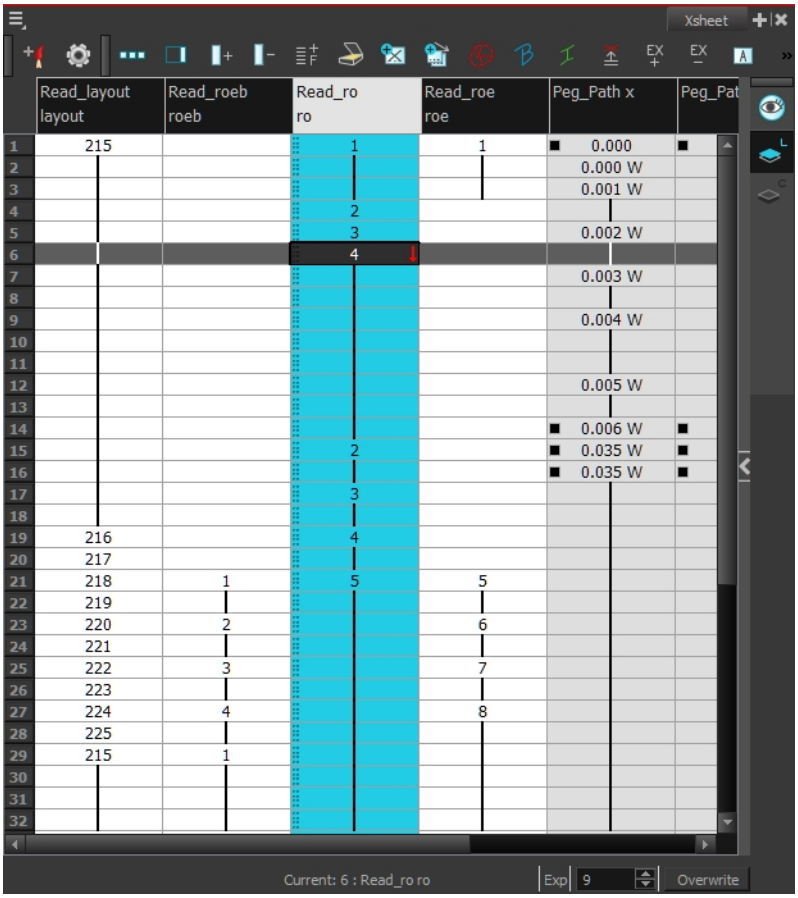
When the ink and paint process is completed, it's always a good idea to verify that every zone was painted properly.

The first step to check your ink and paint is to go through all your drawings and verify that there are no colour mistakes. You can use the F and G keyboard shortcuts or the Preview option available in the Xsheet.

The backlight produces a silhouette effect by changing the drawing's coloured areas into a single dark, solid colour. Use this to verify the completeness of the ink and paint process. Any unpainted zones can be seen as the light shows through the unpainted areas of the silhouetted drawing.

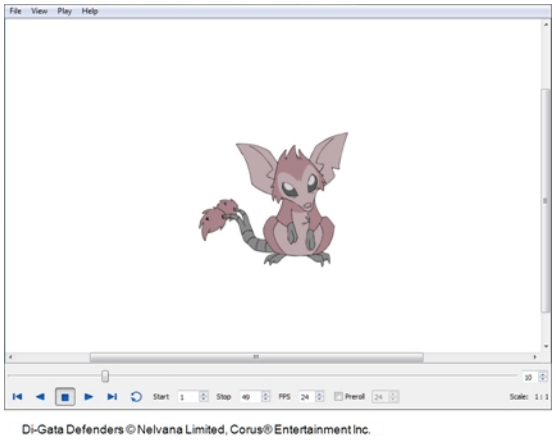
How to preview drawings from the Xsheet

1. First, save your scene.
2. Do one of the following:
   - From the top menu, select **File> Save**.
   - Click the Save button.
   - Press Ctrl + S (Windows/Linux) or ⌘ + S (Mac OS X).
3. In the Xsheet view, select the range of drawings or the whole column to preview.



4. In the Xsheet View menu, select **View > Preview Selected Drawings** or press Alt + P.

   The Play window opens.



5. Play your drawings.

6. Select the **Preroll** option to see blank frames at the beginning and end of the animation sequence while looping the playback.

How to use the backlight

NOTE: This feature is only available in the Drawing view.

1. Do one of the following:
   - From the top menu, select **View > Backlight**.
   - Press Alt + Shift + B.
2. Verify the drawings in the Colour Art to make sure that all the areas are painted. From the Camera or Drawing View menu , select **View > Switch to Colour Art** or press L.

1. In the Art Layer toolbar, click the Preview All Art Layers button to see the colour zones with lines to ensure that you did not forget any spots between the colour filling and lines.

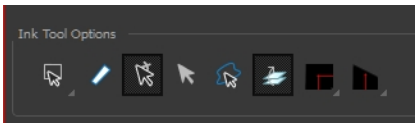
Ink and Paint Tool Properties

The Ink and Paint tool properties contain many options that will help you along with your task.

- *Ink Tool Properties* on page 429
- *Paint Tool Properties* on page 430

Ink Tool Properties

When you select the Ink tool, its properties and options appear in the Tool Properties view.

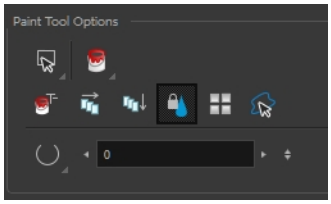


Icon	Tool Name	Tool
	Lasso and Marquee	The Lasso and Marquee options let you choose the type of selection the current tool will perform. The default selection mode is Marquee. • Lasso lets you draw a custom selection box around zones. • Marquee makes a rectangle selection box. **NOTE: NOTE**: Hold down the Alt key to switch to toggle between the selection modes.
	Show Inkable Lines	Highlights all pencil lines (no brush strokes) on the selected layer. Pencil line segments that are already inked with the selected swatch colour from the colour palette are also not highlighted.
	Be Smart on Connecting Lines	As you hover and move the cursor across

		intersecting pencil lines, the path that you create will be highlighted. When you click on your mouse or stylus the highlighted segments are inked. With this option disabled, all the intersecting segments that your cursor comes near will be highlighted and become part of the selection, even if they were not situated in the direction of the chosen path. **NOTE: NOTE**: This option only works if the Ink tool is in Hover mode.
	Select Mode	Use this mode instead of the Hover Mode. In the Hover Mode, any potentially inkable pencil line will have its central vector line highlighted as the Ink tool's cursor hovers over it. Use Ctrl (Windows/Linux) or ⌘ (Mac OS X) to toggle between the two modes.
	Mitre	As you hover over two perpendicular or nearly perpendicular segments, a highlighted path with a corner is created. Clicking on these highlighted segments inks both segments and makes them appear as a single stroke with a corner or bend. Options include: As Is, Round, Miter, and Bevel.
	Tip Style	Lets you customize the edge of the Ink tool. Options include: Round, Flat, and Bevel.

Paint Tool Properties

When you select the Paint tool, its properties and options appears in the Tools Properties view.



Icon	Tool Name
	Lasso and Marquee on page 431
	Painting Modes on page 431
	Paint and Remove Texture on page 433
	Apply to Multiple Drawings on page 433

	Apply to All Visible Drawings on page 433
	Respect Protected Colour on page 434
	Use Stored Colour Gradient on page 434
	Select Newly Painted, Repainted and Unpainted Contours/Lines on page 434
	Close Gap on page 434

Lasso and Marquee

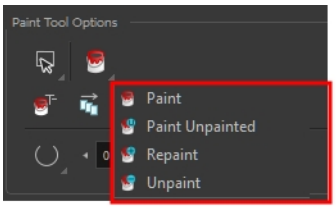
The Lasso and Marquee options let you choose the type of selection the current tool will perform. The default selection mode is Marquee.

- Lasso lets you draw a custom selection box around zones.
- Marquee makes a rectangle selection box.

NOTE:
Hold down the Alt key to switch to toggle between the selection modes.

Painting Modes

The Paint tool has four different modes available:

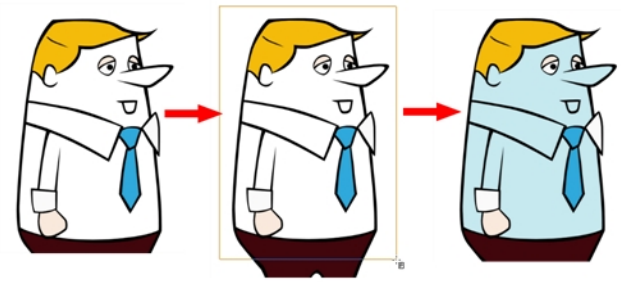


You can also find these tools directly in the Tools toolbar and in the Drawing Tools menu.

Paint Mode

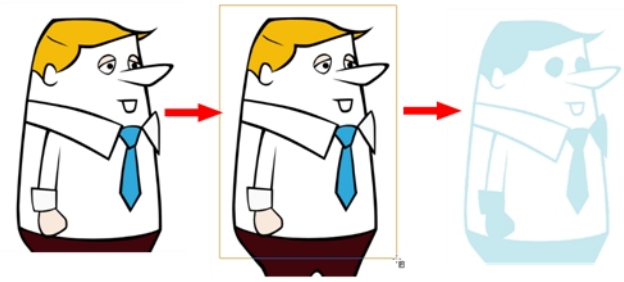
The Paint mode paints everything it touches, including empty and filled zones—see *Painting Using the Paint Tool* on page 404.

Paint Unpainted Mode



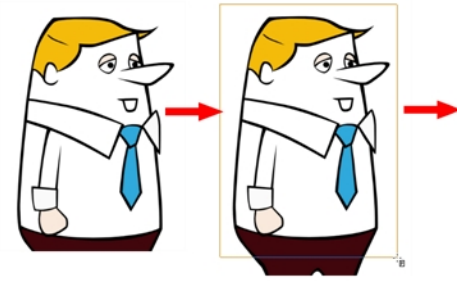
The Paint Unpainted mode paints only empty zones. Any line or filled zone will remain unchanged.

Repaint Mode



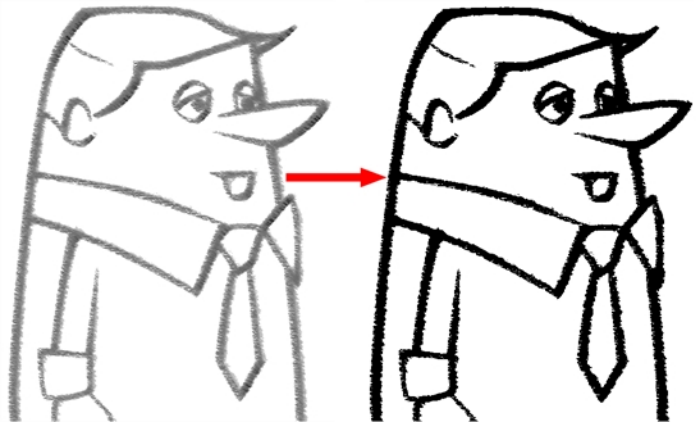
The Repaint mode paints everything it touches except empty zones. Any zone that is not painted will remain intact.

Unpaint Mode



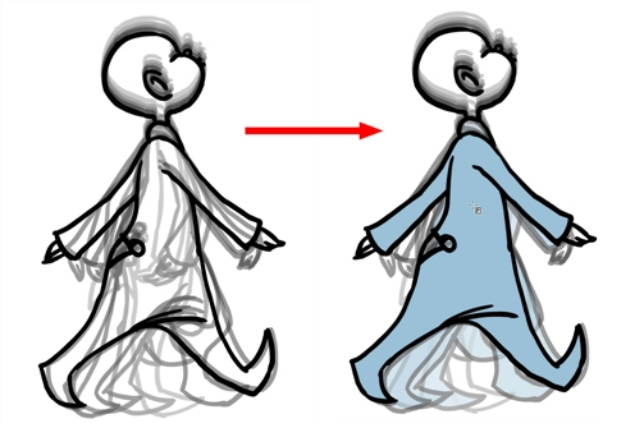
The Unpaint mode unpaints everything it touches, including empty and filled zones.

Paint and Remove Texture



The Paint and Remove Texture option is used when you vectorized images as greyscale texture style. An image vectorized as texture is a mix of bitmap filling encapsulated in a vector-based frame. Painting a textured zones with the Paint tool will change the tint of the textured lines. Painting the textured zones using the Paint and Remove Texture option transforms the bitmap filling into a 100% vector based zone and fills it with a solid colour.

Apply to Multiple Drawings



The Apply to Multiple Drawings option is used for fast painting in hand-drawn animation. When you want to paint several drawings in a same layer at once, such as a walk cycle, you can enable this option and make a selection in the Camera or Drawing view. All the closed zones located within your Paint tool selection are painted with the selected colour swatch.

You do not need to enable the Onion Skin preview to use this option. The option will stay enabled only for the next action. If you want to use it again, you must click on the Apply to Multiple Drawings button again, or press Alt + A.

Apply to All Visible Drawings

The Apply to All Visible Drawings option is used to paint several drawings on separated layers on the current frames. If you have a character broken in several layers, you can enable this option to paint all your layers at once. The operation is only applied on the current frame. This option will stay enabled only for the next action. If you want to use it again, you must click on the Apply to All Visible Drawings button again.

NOTE: This option is only available in the Camera view and does not affect symbols.

Respect Protected Colour

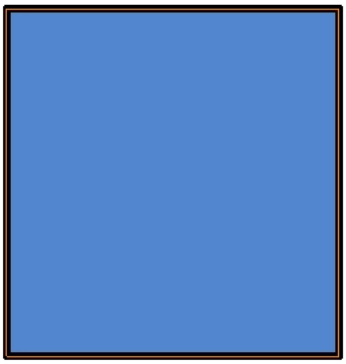
The Respect Protected Colour option is enabled by default. In your Colour view, you can protect some colour swatches to avoid repainting or unpainting the zones linked to that swatch.

If you disable this option the Paint tool will not follow the protect colour rule and will repaint or unpaint the protected colours on your drawings until you enable the option again—see *Protecting Colours* on page 420.

Use Stored Colour Gradient

When you paint a zone with a gradient or textured colour swatch, the gradient or texture's position is set relative to the size of the zone you are painting. If you want the Paint tool to use a particular size and position, you must first store your desired position and size using the Select tool and then enable the Use Stored Colour Gradient option in the Paint tool properties—see *Editing Gradients and Textures* on page 414.

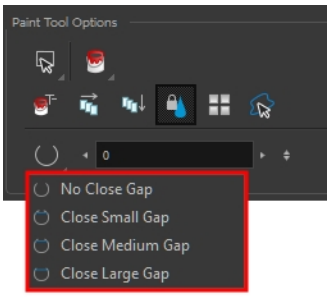
Select Newly Painted, Repainted and Unpainted Contours/Lines



In the Paint tool properties, this option keeps a selection highlighted around the latest painted zone after using the Paint, Repaint, Unpaint, or Paint Unpainted tool.

Close Gap

The Close Gap option has four modes available:



When painting, you may notice that some drawing areas are not closed. To close the zone, you can draw the missing line with the Brush or Pencil tool, or close the gap with an invisible line using the Close Gap tool.

The Close Gap tool lets you close small gaps in a drawing by creating small, invisible strokes between the two closest points to close the colour zone. You do not need to trace directly over the gap. You can draw it a few millimeters away. The two closest points automatically close the gap.

For more information, see *Closing Gaps* on page 419.

Chapter 7: Morphing

Hand-drawn animation requires you to spend a lot of time tracing in-between drawings. Harmony speeds up the process using its helpful morphing feature. This powerful and useful feature creates computer-generated drawings and places them between vector drawings to save time and increase productivity. Animation created with the morphing feature can be reused in different projects. You can easily modify the timing and velocity (ease in and ease out).

One of the main uses of the morphing feature is effects animation. For example, animating smoke or water can be time-consuming because these types of effects are usually slow moving requiring a large number of closely placed inbetweens.

This chapter is divided as follows:

- *Understanding Morphing* on page 438
- *Source and Destination Drawings* on page 438
- *Morphing Rules* on page 439
- *Creating a Basic Morphing Sequence* on page 443
- *Tool Properties View* on page 445
- *Adjusting the Velocity and Timing* on page 448
- *Morphing Tool and Hints* on page 451
- *Morphing Layers* on page 459
- *Morphing Two Sequences in a Row* on page 466
- *Inserting a Morphing Key Drawing* on page 467
- *Converting Morphing Inbetweens to Drawings* on page 468
- *Morphing Holes and Transparencies* on page 468
- *Adjusting the Morphing Quality* on page 471
- *Tips and Tricks* on page 471

Understanding Morphing

The morphing feature is used to animate similar and simple shapes such as hair or smoke. It helps you by saving time when you are working on tedious inbetweening and tracing tasks This, in turn, provides you with more time to spend on complex animation tasks such as walk cycles or acrobatic sequences.

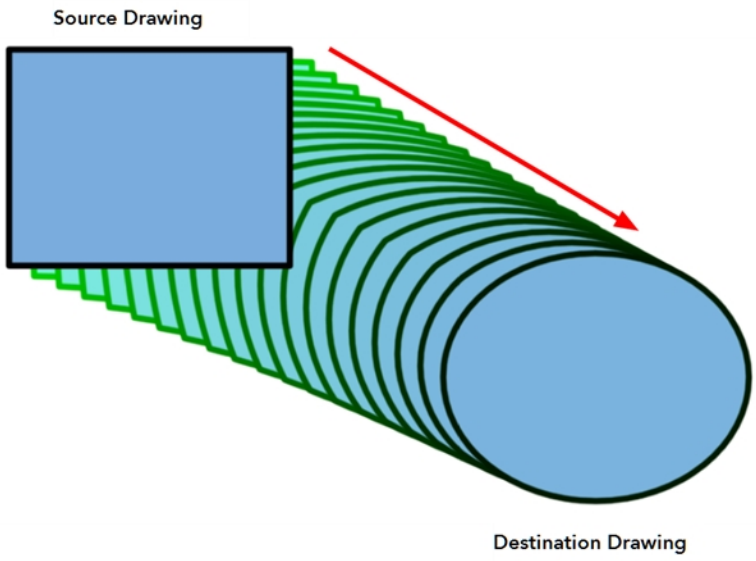
Ideas behind Morphing

To learn how to morph drawings, it is better to start with basic shapes such as circles and rectangles. Once you are more familiar with the tool, you can increase your knowledge and expertise. In a very short time you will be producing some remarkable effects.

It is helpful to know the pros and cons of morphing before you start. Understanding what you can do and which drawing lines may be more useful or problematic will enable you to design your key drawings so they morph efficiently.

NOTE: The more complex the shape is, the longer it takes to morph. If it takes more time to morph a drawing than to hand-draw it, then it is better to animate it instead of morphing. However, if you spot an occasion when you can morph your drawings, do it! It allows you to fix your timing and velocity in no time without having to create any extra drawings!

Source and Destination Drawings



The morphing feature matches similar shapes in a source and a destination drawing. Harmony evaluates the source's shape properties and matches them to the most similar ones in the destination drawing.

Morphing works between similar shapes, which are drawings that have the same palette, colours and number of shapes. You can even change any shape into another one, as long as the source and destination keep the same colours, number of lines and number of shapes.

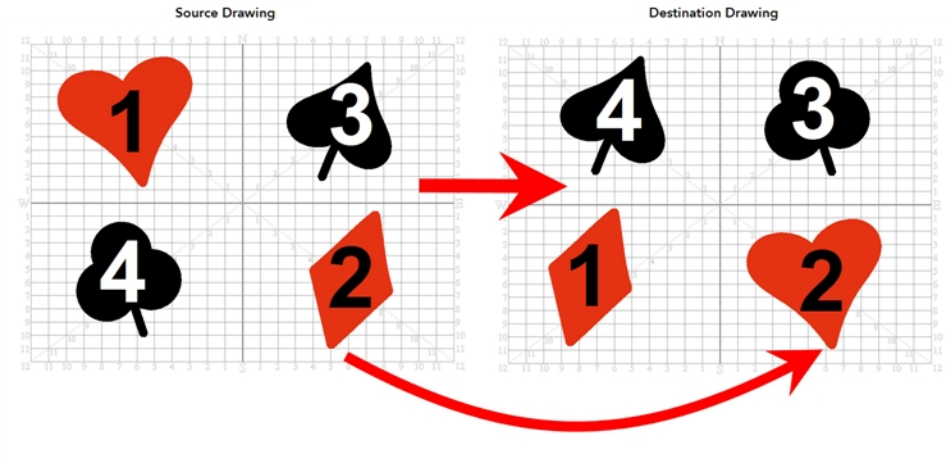
Morphing Rules

Harmony follows a set of rules as it evaluates the shapes. Familiarize yourself with these basic morphing rules before you start morphing.

NOTE: Note that a morphing sequence can only be done on vector drawings. You cannot morph bitmap layers or Toon Boom bitmap drawings.

Closest Similar Shape

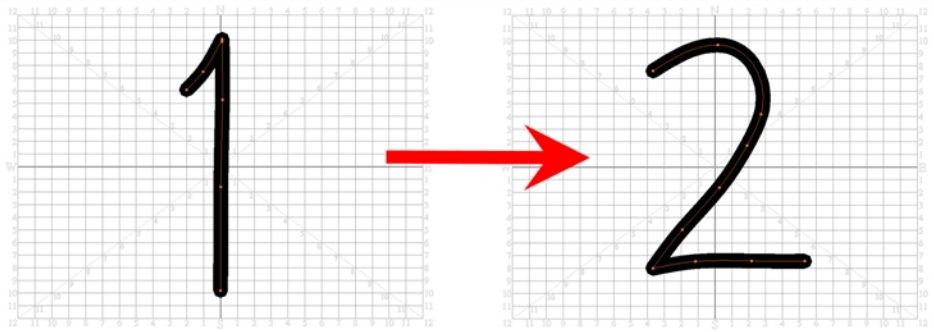
A colour, line shape or zone will morph with the closest similar one in the destination drawing. This means it will morph with the zone nearest to it, as long as that zone uses the same palette's colour swatch (colour ID) and has the same vector properties (Central or Contour).



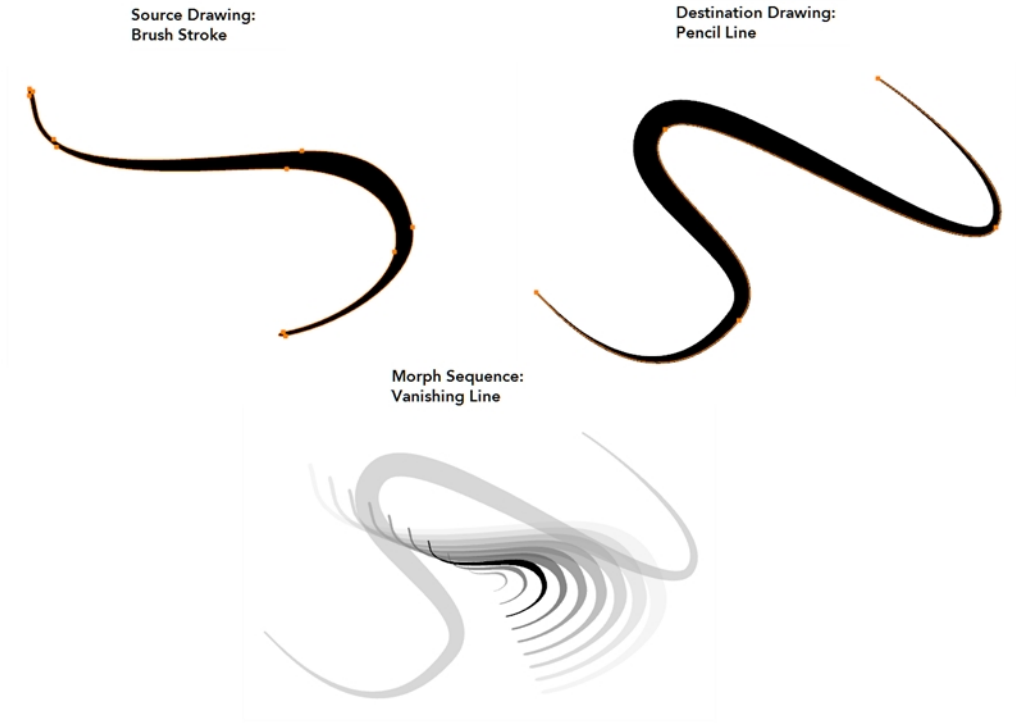
In the example above, the red heart shape (1) will morph with the closest shape using the same colour swatch. It will morph with the red diamond shape (1) in the next drawing. The red diamond shape (2) in the source drawing will morph with the red heart shape (2) located in the same area in the destination drawing. The black spade shape (3) in the source drawing will morph with the black club shape (3) located in the same area in the destination drawing. Finally, the black club shape (4) in the source drawing will morph into the black spade shape (4) located above in the destination drawing.

Pencil Line to Pencil Line

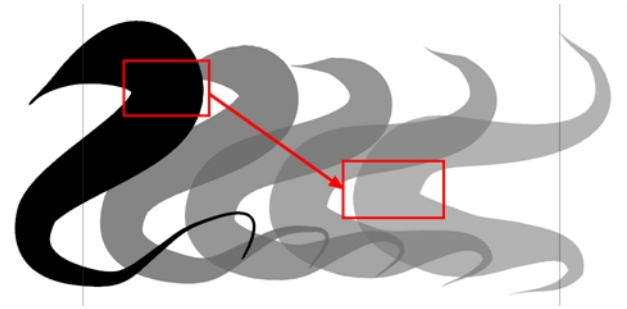
If you trace a shape using a pencil line such as the Ellipse , Rectangle , Polyline , Line or Pencil tool, you have to morph it with another pencil line. Make sure that both drawings are pencil shapes (central vector).



A pencil line will never morph with a brush stroke.



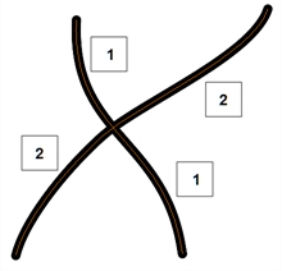
Pencil lines with thickness are supported in morphing sequences. The thickness will morph according to the thickest and thinnest areas in the source and destination drawings.



Pencil lines with textures are not supported in a morphing sequence. During the morphing, the texture will disappear and show without pencil line opacity texture.

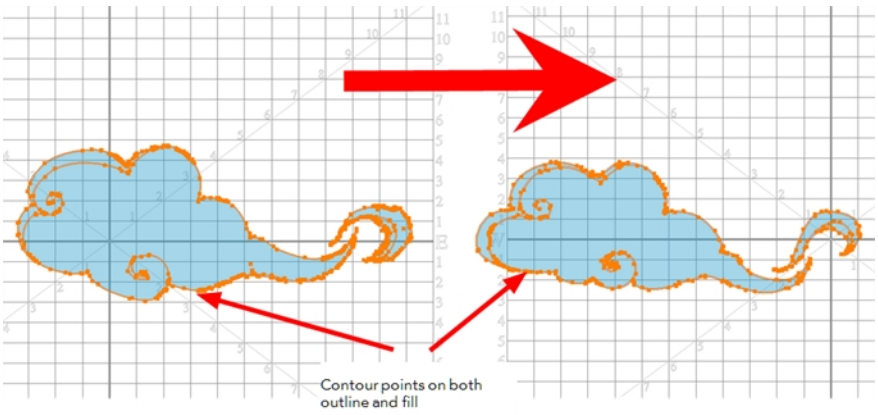
If you have pencil lines in your source drawing, the same number of pencil lines must be present in the destination drawings. A pencil line will appear if it is not found in the destination drawing. It will pop out on the first or last frame depending on which one it is drawn.

When two pencil lines cross one another, they are considered to be two lines and not four lines anymore (as it was in version 7.8 and below of the application). In this case, you must have two pencil lines in your destination drawing for your morphing to work correctly.



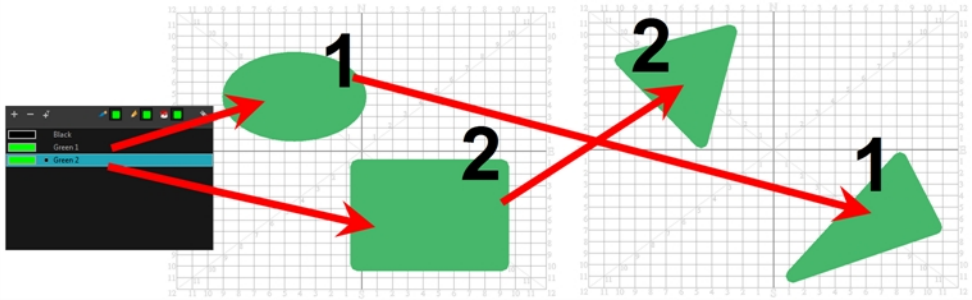
Fill Shape to Fill Shape

If you have a brush stroke or a colour fill (contour vectors), make sure that you morph it with another brush stroke or fill zone. It is important to undersand that strokes drawn with the Brush tool are the same thing as zones painted with the Paint tool. Vector points are located along the contour. They are simply not the same size. Contour vectors will not morph with pencil lines (central vectors). A brush stroke can morph into a colour fill zone and vice versa as they are the exact same thing.



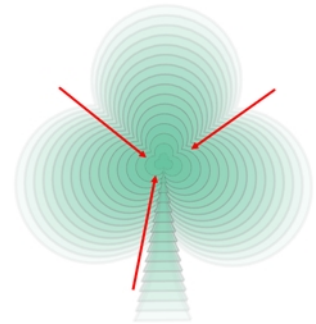
Colour Swatch to Same Colour Swatch

Harmony does not morph between colours. If you want to perform a colour transition, you have to create the effect during the compositing step of your production. A colour palette is composed of colour swatches. Each colour swatch has its own unique identification number, even if two swatches are the same colour value, they are identified independently. A colour zone or shape will morph with another one painted with the same colour swatch.



Vanishing and Appearing

If a colour zone does not find a match in the first or the second drawing, it will progressively appear or disappear.

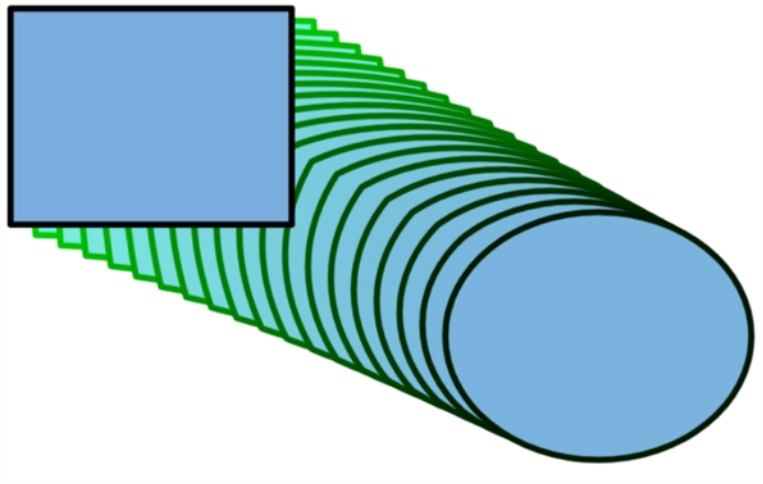


Colour Art to Colour Art and Line Art to Line Art

In Harmony, there is an advanced concept for painting your drawings called Line Art and Colour Art. Basically, an extra layer is added in your drawings so that you can fill the colour zones on a separate layer. The regular layer on which you are drawing is called Line Art and the extra layer under the Line Art is the Colour Art.

- A shape drawn in Colour Art can only be morphed with another shape existing in the Colour Art.
- A shape drawn in Line Art can only be morphed with another shape existing in the Line Art.
- A shape created in Colour Art can never morph with a shape created in Line Art.

Creating a Basic Morphing Sequence

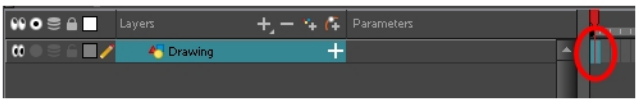


When it comes to morphing, you will need to practice and become at ease with it. Once you are familiar with the basic rules, you can start creating morphing sequences. To begin, start with simple elements. When you are confident with the morphing process, you can start to use complex and advanced morphing techniques, such as head rotations or full characters.

You may want to delete an entire morphing sequence in order to redo a sequence from scratch.

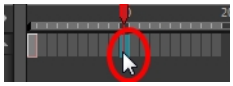
How to create a basic morph

1. In the Timeline toolbar, click the Add Drawing Layer button to add a new layer to your project.
2. Rename the new layer (for example, **`Morphing`**).
3. In the Timeline or Xsheet view, select the first cell in the layer.

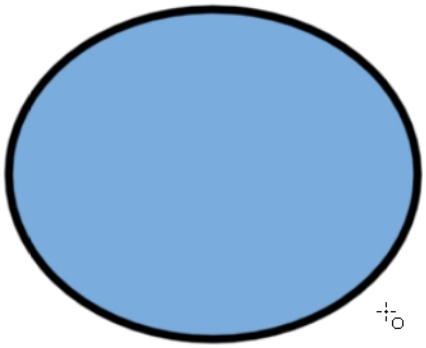


4. Do one of the following:
   - In the Tools toolbar, select the Rectangle tool.
   - Press Alt + 7.
5. In the Camera or Drawing view, draw a rectangle.
6. Do one or both of the following:
   - Hold down the Shift key to draw a square.
   - Hold down the Alt key to draw the rectangle from its centre.
7. Paint your rectangle using the Paint tool.

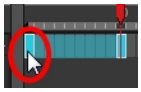
8. In the Xsheet or Timeline view, select the cell on which you want your morphing sequence to end.



9. Do one of the following:
   - In the Tools toolbar, select the Ellipse tool.
   - Press Alt + =.
10. Draw and paint the ellipse using the same outline colour as the rectangle.

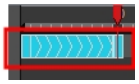


11. In the Xsheet or Timeline view, select the first frame and all the frames up to and including the last frame, which is the rectangle drawing.



12. Do one of the following:
    - From the top menu, select **Animation > Morphing > Create Morphing**.
    - In the Xsheet or Timeline view, right-click and select **Morphing > Create Morphing**
    - Press Alt + M.

    Arrows appear between the two key drawings to show that computer generated inbetweens have been created.



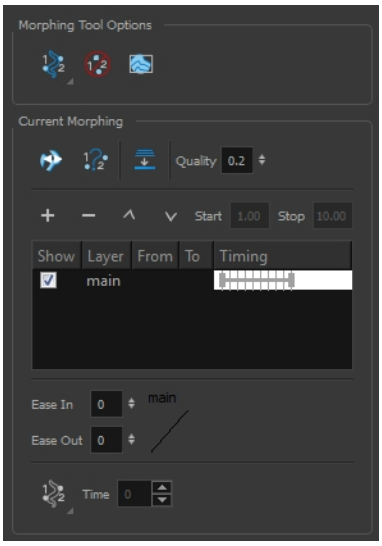
NOTE: Use the Playback toolbar to play the morphing sequence. To flip through the inbetweens, toggle between comma (,) and period (.). Press F4 to toggle between the two key drawings.

How to delete an entire morphing sequence

1. In the Xsheet or Timeline view, select a cell in the morphing sequence.
2. Do one of the following:
   - From the top menu, select **Animation > Morphing > Delete Morphing**.
   - In the Xsheet or Timeline view, select **Morphing > Delete Morphing**.
   - Right-click on your sequence and select **Morphing > Delete Morphing**.

   The entire sequence between the two keyframes is removed.

Tool Properties View

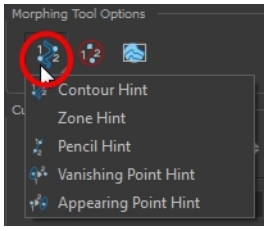


As you create and adjust your morphing sequences, you will often use the Tool Properties view. Using this view allows you to do things such as toggle between your key drawings, adjust the easing or select a hint type.

How to access the content of the Tool Properties view

1. Do one of the following:
   - In the Tools toolbar, select the Morphing tool.
   - Press F3.

Hint Type



The Hint Type drop-down menu allows you to select the correct hint to remedy any problem areas in your drawing—see *Contour Hint* on page 455 and *Morphing Tool and Hints* on page 451.

You can have more than one hint type in your drawings. You can mix all of the hint types in your morphing sequence.

Hide Hints

The Hide Hints button temporarily hides the hint points from the key drawings. Use this option when you have a series of hint points hiding some lines you would like to see.

Show Morphing in Place

The Show Morphing In Place option is used with morphing layers. Enabling this option prevents the currently selected morphing layer from being shown on top of the others and maintains the correct layer ordering—see *Morphing Layers* on page 459.

Suggest Hints

The Suggest Hints option is used to automatically set hint points on key drawings as a help tool. If you're not sure where to set hints, you can use this option. It will set the main hints which you can then fine tune.

Switch Between Drawings

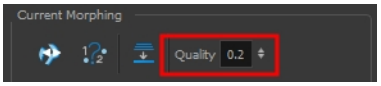
The Switch Between Drawings button is used to toggle between the two key drawings in your morphing sequence. This option is useful while setting hints. You can use the default keyboard shortcut F4 to toggle between your drawings.

Flatten

The Flatten

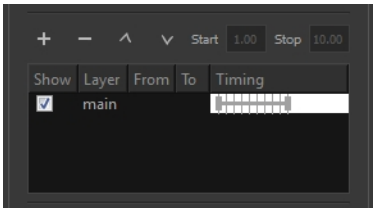
option is used when you have to morph a sequence with a semi-transparent or transparent colour in it—see *Morphing Holes and Transparencies* on page 468.

Quality



The Quality setting is used to make the lines of the morphed drawings smoother. Adjust this parameter when you are doing an extreme close up of your animation—see *Adjusting the Morphing Quality* on page 471.

Morphing Layers



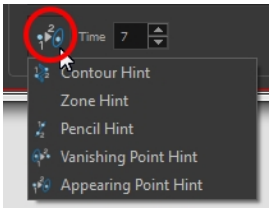
The Morphing Layers option is used when working with morphing layers. You can add, remove and manage your different morphing layers in this space—see *Morphing Layers* on page 459

Easing

The Easing option is used to adjust the starting and ending velocity of your morphing sequence so that the motion is smooth and not mechanical.

You can adjust the Ease In and Ease Out value by dragging your cursor up and down or typing a new value. The values go from -1.0 to 1.0—see *Adjusting the Velocity and Timing* on page 448

Convert Hints



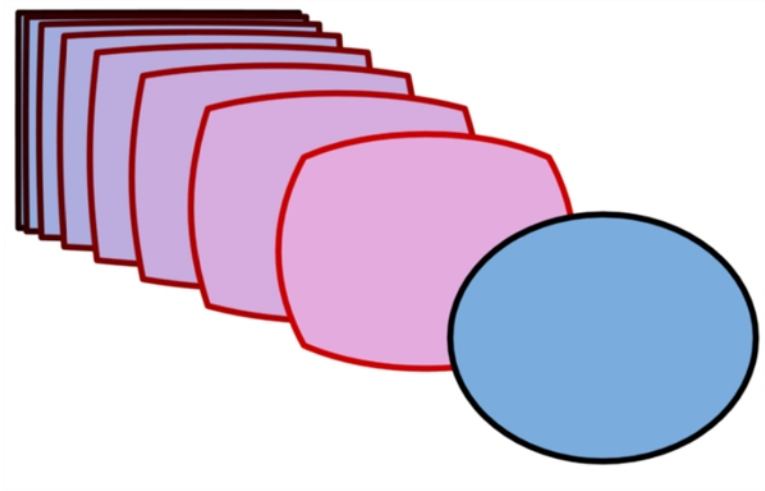
The Convert Hints option is used to switch the type of the selected hint points. This option is useful when you position hints and then realize they are not the right type. You can select them and convert them to the correct type instead of deleting them and setting new ones.

Use the Morphing tool to select the hints and then convert them by going to the Tool Properties view and selecting the new hint type from the Convert Hints drop-down menu.

Time

The Time field is used to set the timing on Appearing Point and Vanishing Point hints. These hints are used to set the trajectory of appearing and vanishing objects, With the Time field, select your Appearing Point or Vanishing Point hint and type the frame number on which the object will start its appearing or vanishing animation.

Adjusting the Velocity and Timing



Once you have set up a morphing sequence, you can control its timing and velocity. When you look at your animation you will notice that the morphing motion is constant. To produce a less mechanical motion, you will probably want to create some ease in or ease out.

If you did not place your source and destination drawings on the correct frames you may need to extend or shrink the sequence length.

If you have several morphing sequences on a single layer, you may find it easier to adjust their velocities on one function curve rather than several separate ones. Having all of your velocity parameters in one place is more efficient and easier to modify.

Adjusting the velocity in the Layer Properties editor also allows you to reverse a section of the morphing sequence. The sequence will always start with the source drawing and end at the destination. You can play the morphing sequence backwards or forwards during the animation.

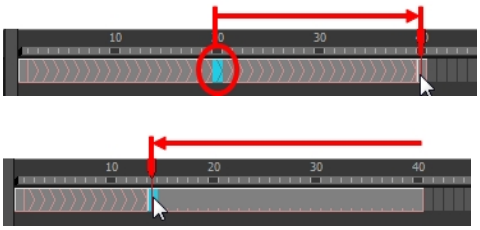
You can have two levels of easing:

- In the Tool Properties View, you can adjust the velocity of each sequence in your layer independently
- In the Layer Properties editor, you can adjust the morphing velocity function to control the entire layer's easing

How to extend or shrink a morphing sequence length

1. In the Timeline view, select the source or destination drawing.

2. Click on your selection and drag the drawing to its new frame.



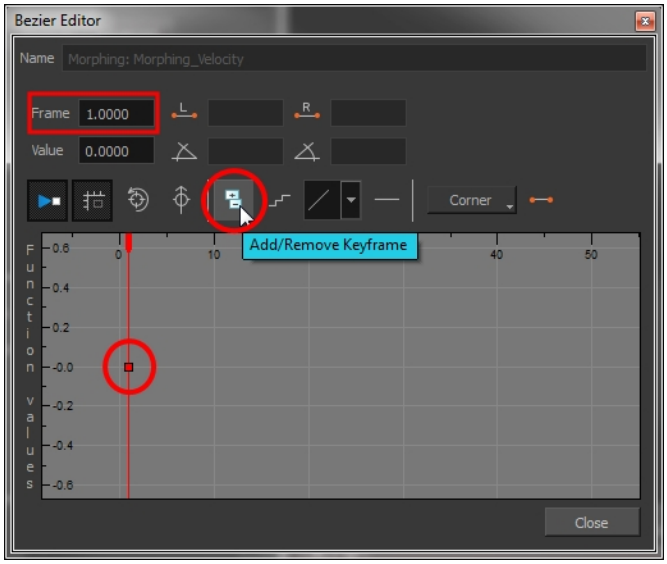
How to adjust the velocity in the Tool Properties view

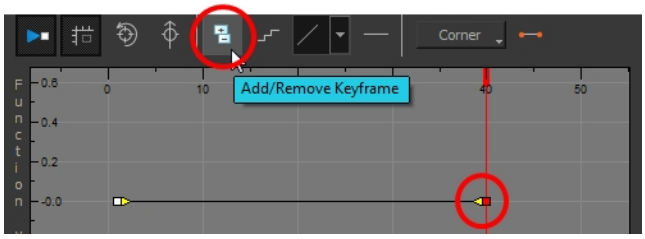
1. In the Timeline view, click on a frame in the morphing sequence you want to adjust.
2. In the Tool Properties view, increase and decrease the Ease In and Ease Out value to adjust the sequence's velocity.

How to adjust the velocity in the Layer Properties editor

1. In the Timeline view, double-click on the drawing layer to open the Layer Properties editor.
2. In the Layer Properties editor, go to the Advanced tab and click on the Function button to create a function curve.

3. In the Layer Properties editor, click the Function button again to open the velocity curve.
4. Add a keyframe at the first frame of the morphing (source) and one at the end (destination) by clicking on the Add/Remove Keyframe button.

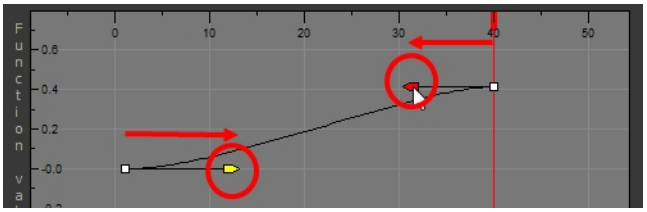




5. Move the destination keyframe upward.

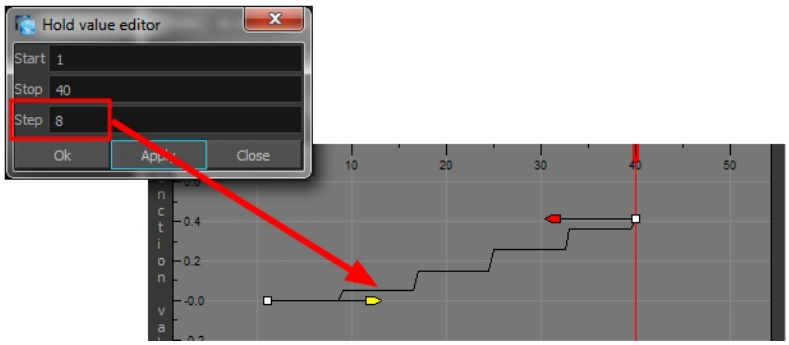
NOTE: It is important that the last keyframe remains above the first one.

6. Make sure that the first keyframe is not a stop-motion keyframe. To do this, disable the Stop-motion Keyframe button. To use the Toggle Stop-Motion Segment feature, press S.
7. Click on the keyframes and pull the Bezier handles to create ease in and ease out. If you make the curve go downward instead of upward, the animation will play backward until the curve starts to go upward again.



NOTE: If you have more than one morphing sequence in the same layer, you need to add a keyframe on the velocity curve for each source and destination drawing.

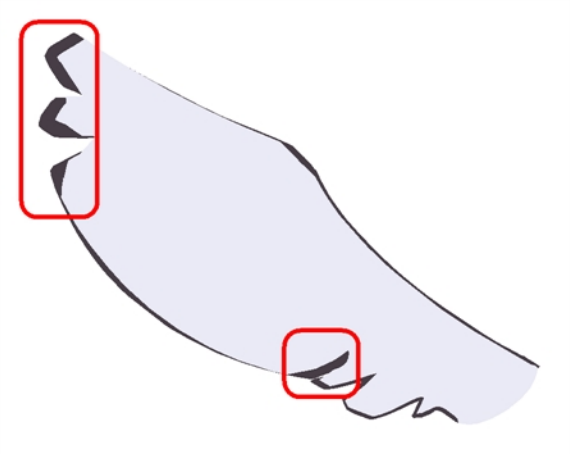
8. If you want your morphing to play back on a double frame exposure rather than single frame, you can use the Hold Value editor and set the velocity to change every second frame, instead of every frame.
9. In the Morphing Function editor, click on the Hold Value Editor button and set the parameters to hold the value for two frames.



Morphing Tool and Hints

Harmony's Morphing tool controls your morphing sequence, this works by placing different types of hints to help the system morph the animation the way that you want it.

Hints are points that are placed in both the source and destination drawings. They associate zones and lines between the two drawings. Hints are used to fix problem zones, such as a line that is not following the colour fill zone.



Corners and points are more challenging, in general. Animation curves are complex and may be unable to match corners. It will generally associate a corner with its nearest neighbour; this is not always correct and it is why we use hint points to determine what goes with what.

Using the Morphing Tool

Hints are identification points existing in both the source and destination drawings to create associations between the two of them.

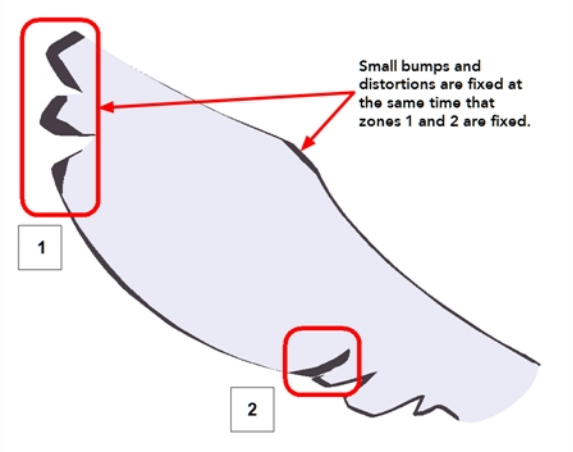
To correct morphing distortions, Harmony has different types of hints available for controlling different types of problems:

- *Contour Hint* on page 455
- *Zone Hint* on page 455
- *Pencil Hint* on page 456
- *Vanishing Point Hint* on page 456
- *Appearing Point Hint* on page 457

Each type of hint has a different purpose and they can all be used in the same drawing. Use the Morphing tool to add hints to your morphing sequences.

A hint will automatically appear in both the source and destination drawings when it is added. A hint cannot exist in a single drawing. If you delete a hint from one drawing, it will be also deleted from the other.

The key to placing your hints is to put them where the biggest problem is. Fix the largest distortions first, this may also fix the smaller ones at the same time.

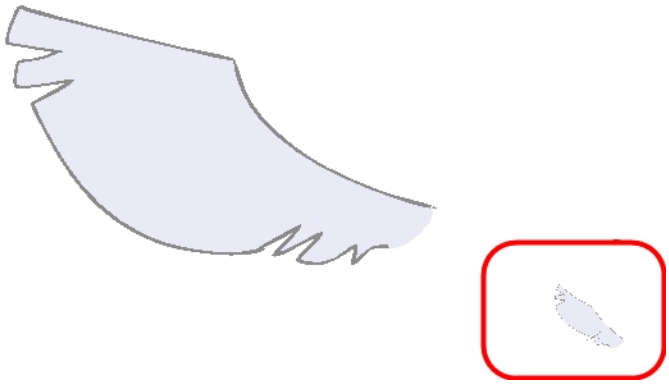


Do not add too many hints, this is a common mistake when morphing, it takes some practice to learn how to correctly use and place hints.

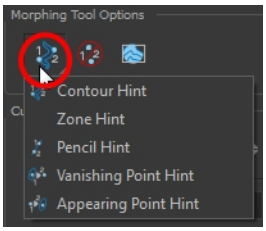
How to Add and Remove Hints

1. In the Timeline or Xsheet view, select the source or destination drawing of your morphing sequence.
2. In the Tools toolbar, select the Morphing tool or press F3.

   Use your other morphing key drawing, shown in the Drawing view's bottom right corner, as a reference.



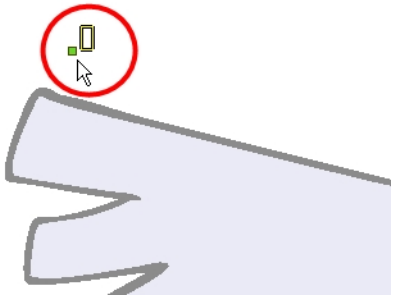
3. In the Tool Properties view, select the type of hint you want to use.



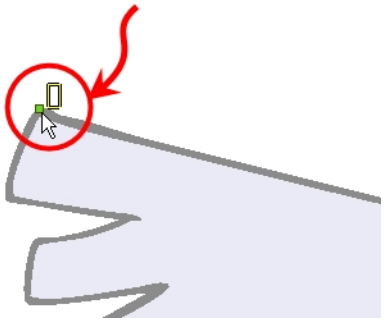
- Select Contour Hint to correct a brush line or colour zone's contour (Contour vector).
  Contour Hint points will behave similar to Pencil Hint points when used on a pencil line. Note that you obtain better results using the Pencil Hint point on pencil line rather than Contour Hint points.
- Select Pencil Hint to correct a pencil line (Central vector).
- Select Zone Hint to correct a colour zone morphing match.

- Select Vanishing Point Hint to correct a vanishing shape's trajectory.
- Select Appearing Point Hint to correct an appearing shape's trajectory.

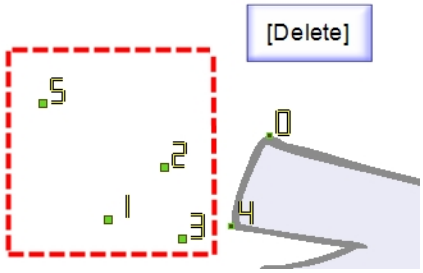
4. In the Camera or Drawing view, click on the drawing near the problematic area.



5. Select the hint's point and move it to its correct position.

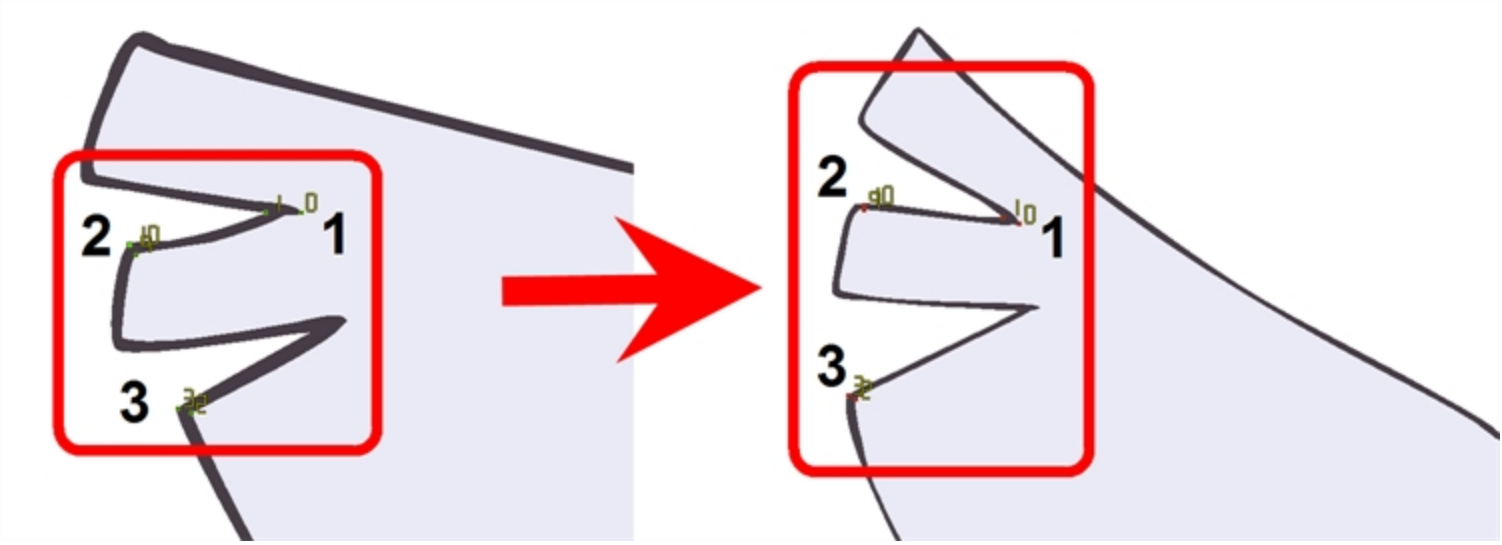


6. Select one or many hints and press Delete to remove extra or unused hints.
   - To delete all of the hint points at once, press Shift + Delete.



7. In the Playback toolbar, press the Play button to see the result.

Hints



Hint points in the source drawing are green and red in the destination drawing.

Contour Hint

The Contour Hint point is used on the colour fill zone and brush lines; in other words, on Contour vectors. It allows you to control the line thickness and contour position. Also, if a contour is not animated correctly, you can use hints to correct the animation. For example, if a flag is not waving properly.

When adding a Contour Hint point, make sure to place it far enough away from the contour so you can see it snap to the contour.

Contour Hint points are yellow.

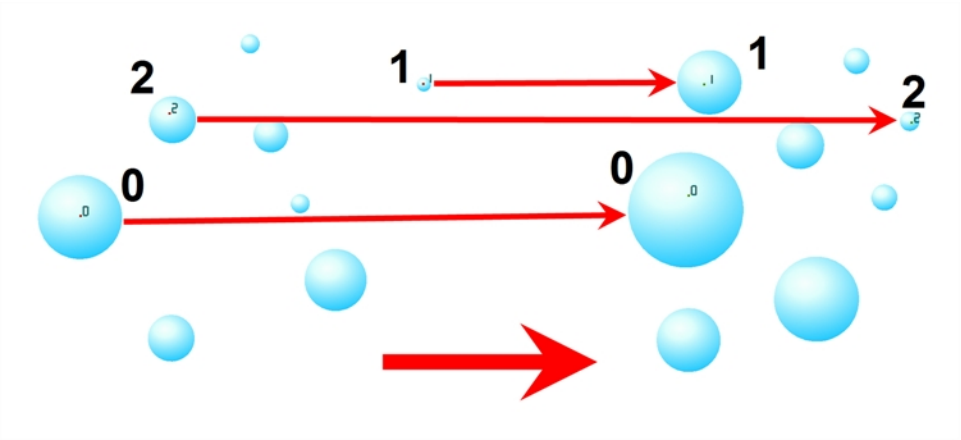
NOTE: Do not place the Contour Hint directly on the line as it may look like it has snapped to the contour, when in fact, it has not and the morphing will remain unchanged.

NOTE: To correct a brush stroke, place a hint on both sides of the line to indicate its thickness variations over time.

Zone Hint

The Zone Hint point is used on a colour zone to control the proximity rule. The Zone Hint is placed in the centre of the colour zone. Sometimes a colour zone is not associated with the corresponding one by default. For example, in a splash animation there are many water droplets that are the same colour. Harmony automatically morphs the droplet to the nearest one. This is not always the one you may have predicted. A Zone Hint will force a colour zone to morph with another one.

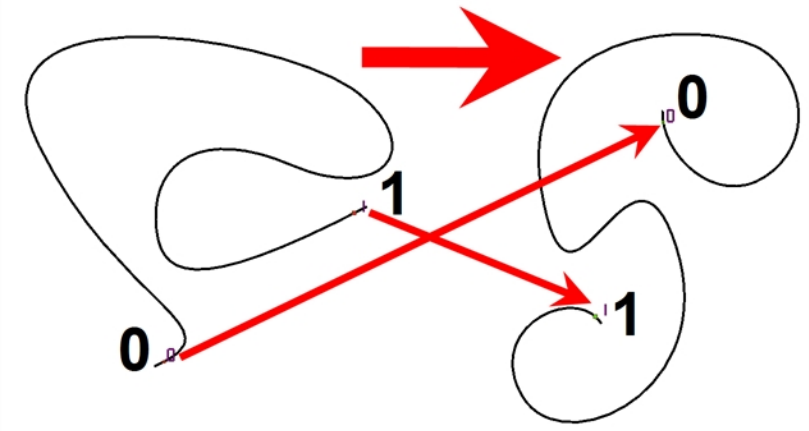
Zone Hint points are cyan in colour.



Pencil Hint

A Pencil Hint point is used to control a pencil line, also known as *central vector*. It can be used on drawings that were done using the Pencil, Polyline, Ellipse, Line and Rectangle tools. Like the Contour Hint, the Pencil Hint snaps to the central vector. Make sure to place it far enough away from the line so you will see it snap when you move it.

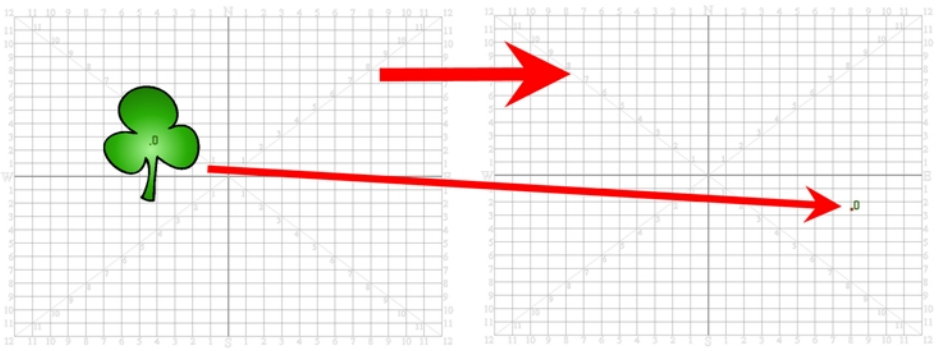
Pencil Hint points are magenta in colour.



Vanishing Point Hint

A Vanishing Point Hint is used to control the trajectory of a vanishing shape. A shape will vanish from the source drawing when there is no corresponding shape in the destination drawing. If you do not place a Vanishing Point Hint to control the point of disappearance, the shape will vanish into its centre.

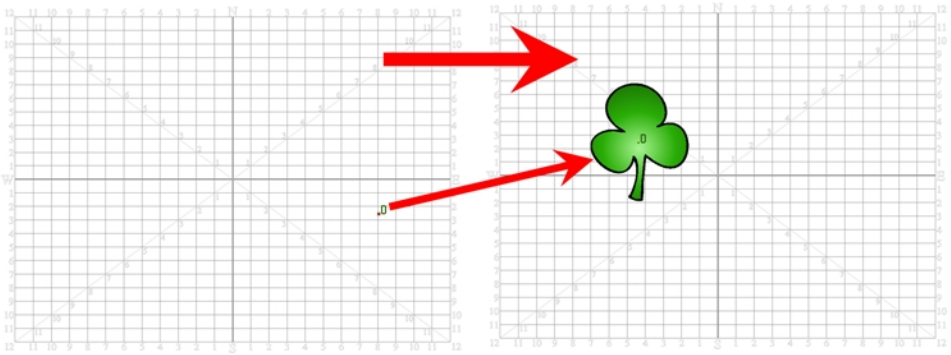
Vanishing Point Hint points are green in colour.



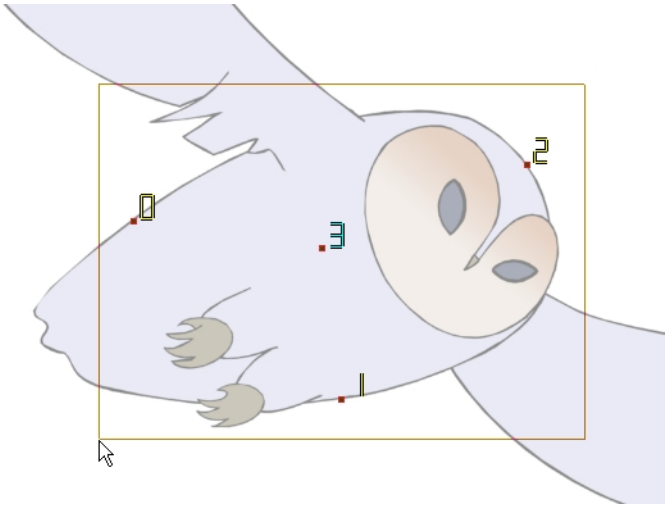
Appearing Point Hint

An Appearing Point Hint is used to control the trajectory of an appearing shape. A shape will appear in the destination drawing when there is no corresponding shape in the source drawing. If you do not place an Appearing Point Hint to control the point of appearance, the shape will appear from its centre and expand outwards.

Appearing Point Hint points are violet in colour.



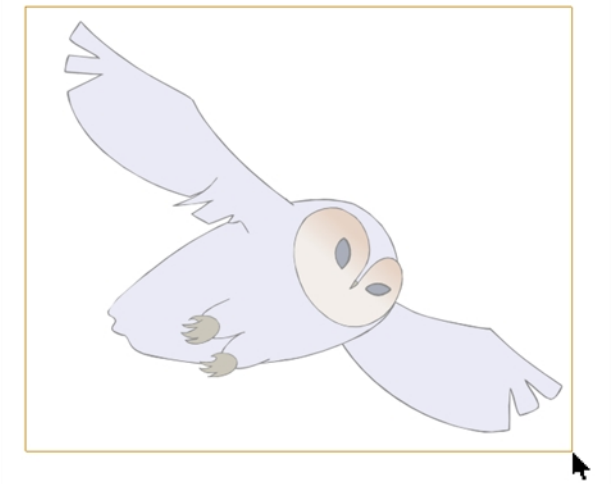
Copying Hint Points from One Drawing to Another



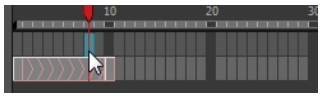
If you have two morphing sequences that use the same drawing and you would like to copy it and its hint points, you can do so in the Drawing view.

How to copy a drawing and its hints

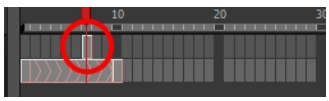
1. Do one of the following:
   - In the Tools toolbar, click the Select tool.
   - Press Alt + S.
2. In the Drawing view, select the drawing to reuse in your second morphing sequence.
3. Do one of the following:
   - In the top menu, select **Edit > Copy**.
   - Press Ctrl + C (Windows/Linux) or ⌘ + C (Mac OS X).



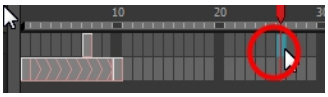
4. In the Timeline view, select the cell where the new drawing will be.



5. In the Drawing view, paste your selection.
6. Do one of the following:
   - In the top menu, select **Edit > Paste** .
   - Press Ctrl + V (Windows/Linux) or ⌘ + V (Mac OS X).

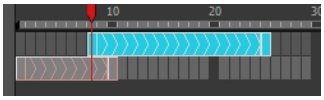


7. In the Timeline view, select the cell where the second drawing will be.



8. In the Drawing or Camera view, draw your second drawing.

9. Do one of the following:
   - In the Timeline view, create the morphing sequence for the new drawings.
   - Press Alt + M.



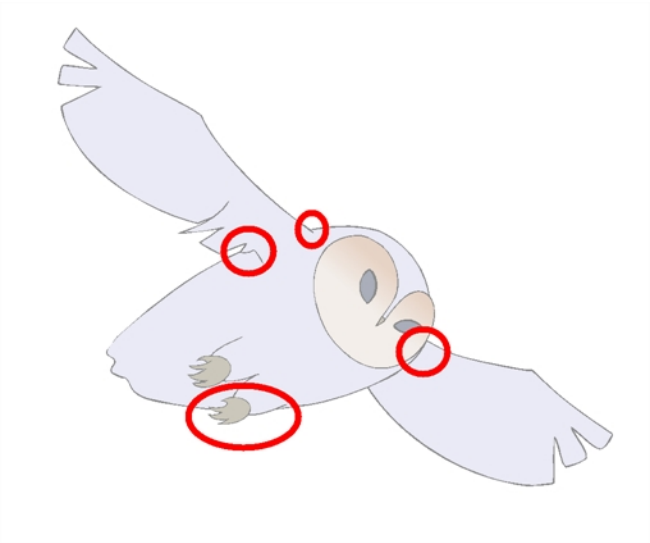
10. Do one of the following:
    - In the Tools toolbar, select the Morphing tool.
    - Press F3.
11. In the Drawing or Camera view, position your hint points.

Morphing Layers

Morphing layers simplify the morphing animation. Complex shapes are often too difficult to control and may not work properly, by dividing the drawings into morphing layers, the task becomes much easier.

The major points used in controlling a morphing sequence are the intersections. If there are many lines intersecting within a drawing, the system will require more control—see *Hints* on page 455

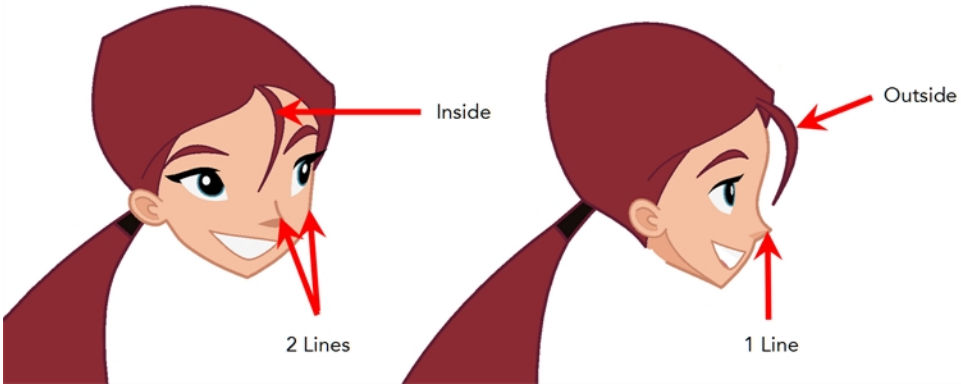
An important aspect of morphing is to identify possible problem zones in order to fix them and avoid potentially frustrating situations.



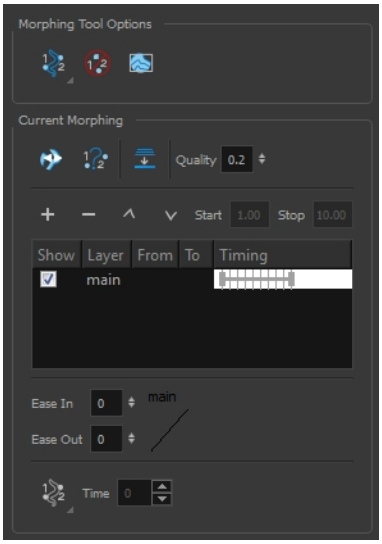
Identifying Problem Zones

Simple details that look easy to morph can sometimes be more challenging than they may initially appear to be. For example, you may find that the nose becomes an issue when performing a head rotation. As explained earlier, the drawings need to be similar in their number of shapes. Generally, on a head rotation, the source nose is in the centre of the face, but on the destination, the nose line is part of the face outline. This means that on the source drawing, the nose and the face outline are two separate shapes, whereas they are combined into one shape on the destination drawing.

Morphing a full face as demonstrated on the figure below will cause the source nose to slowly vanish as the destination nose grows from the character's cheek.



Any shape that is contained inside another one and has to morph out of that shape will be problematic for the same reasons as the nose is. At some point during the morphing sequence, the shape contained inside the face will merge with the face outline, and then become a separate shape again.



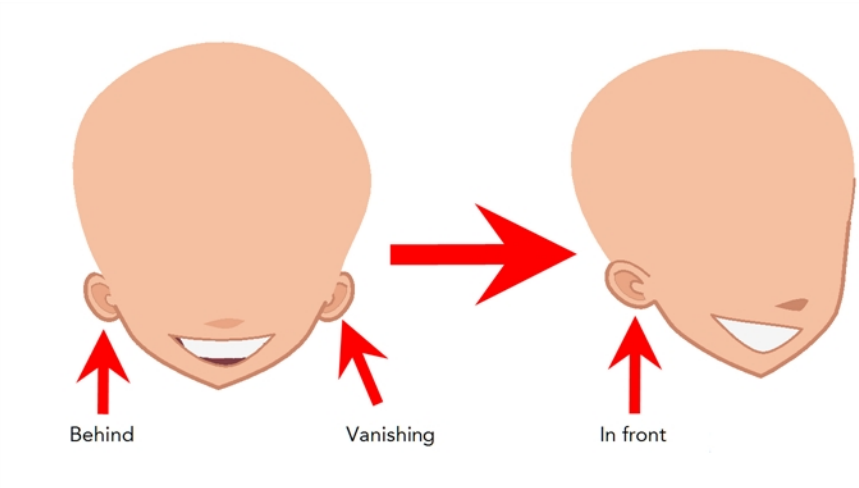
Morphing Layer Properties

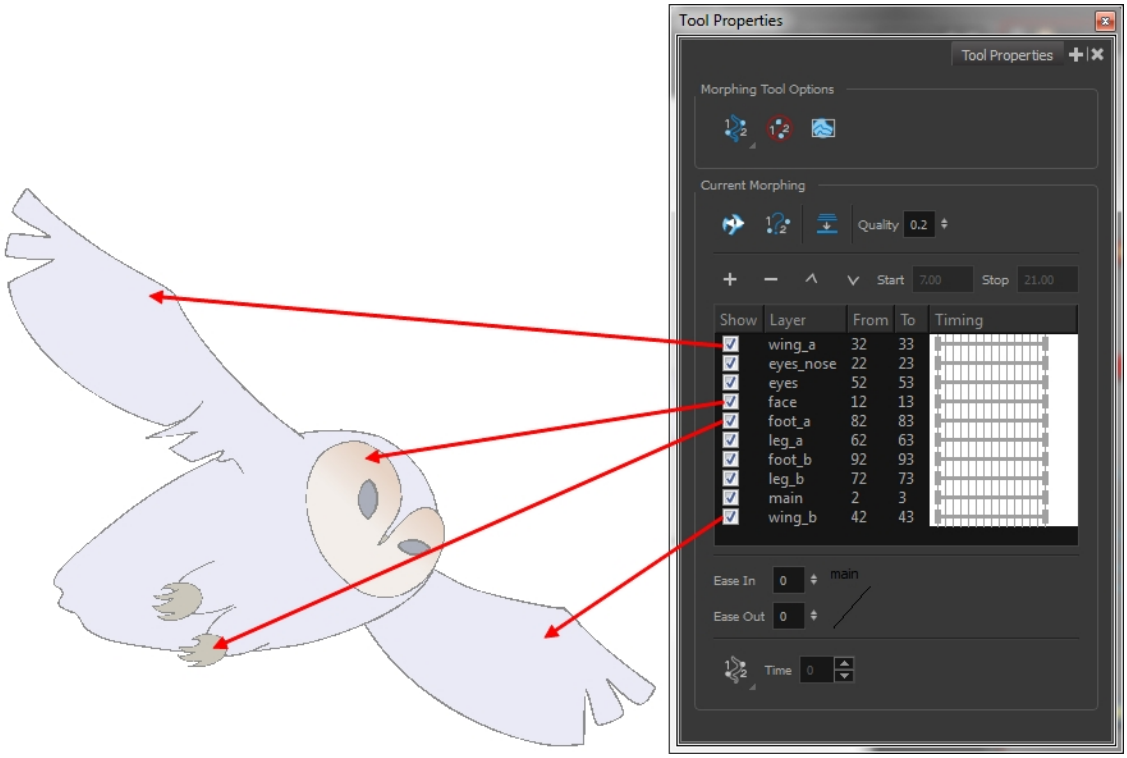
It is because of these reasons, explained in the section, *Identifying Problem Zones* on page 460, that morphing layers exist. Morphing layers are all contained in the same drawing layer. It is like having a mini Timeline within a Timeline layer, or a mini Xsheet within an Xsheet column.

Each morphing layer can have its own duration and velocity. Also, because you only have a single element to handle in your Timeline or Xsheet view, it will be treated as one element for the Compositing process, making the compositor's work easier.

You can separate all of your elements into different drawing elements and have many layers, but you would have to create a large number of morphing sequences and make sure that you modify all of their timings properly.

NOTE: Both solutions are correct, but morphing layers makes it easier to handle and does not change the scene structure by adding more elements, which can be very important for Cut-out animation puppets. For example, if you morph a front head to a three-quarter head where the ear needs to be separate, you do not want to add a new ear layer at the same time and have to worry about connecting it inside the puppet's construction. Instead, simply create an ear morphing layer within the head layer.





How to create a morph with morphing Layers

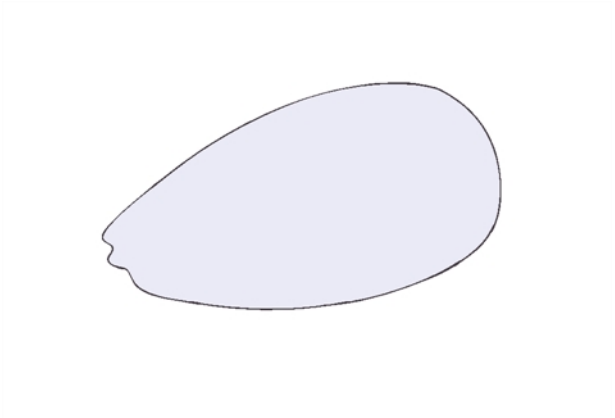
When you click on a morphing layer drawing, it automatically appears on top of the others. If you want it to stay in place, for example the wing behind the body, enable the Show Morphing in Place option in the Morphing Tool Properties view.

NOTE: Use a naming convention for each morphing layer such as ear_1, ear_2 or head_1, head_2. You can also use the numbers 1 to 9 for the first layer, 10 to 19 for the second one, 20 to 29 for the third one and so one. This

technique is useful if you plan to do more than one morphing sequence in the same column. For example, front head to three-quarter head to side head. The three-quarter drawings will be used in both morphing sequences.

How to create a morph with morphing layers

1. In the Timeline view, add a new drawing element and name it properly.
2. In the first cell, draw the main source shape such as the head shape or body shape. Do not add details like eyes.

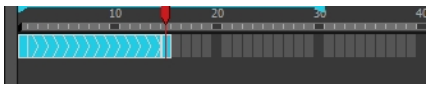


3. In the Timeline view, select the destination cell.
4. Enable and extend the Onion Skin.

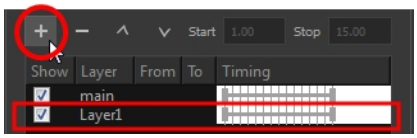
5. In the destination cell, draw the second drawing.

6. In the Timeline view, select the in-between cells.
7. Do one of the following:

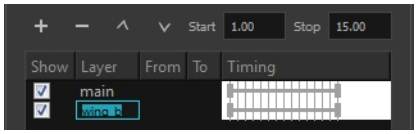
- Right-click and select **Morphing > Create Morphing**.
- Press Alt + M.



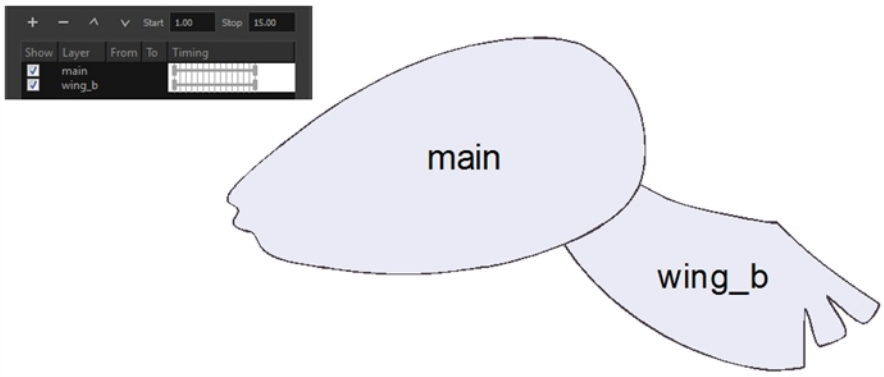
8. In the Tools toolbar, select the Morphing tool.
9. In the Morphing Tools Properties view, click on the Add Layer button to add a new morphing layer.

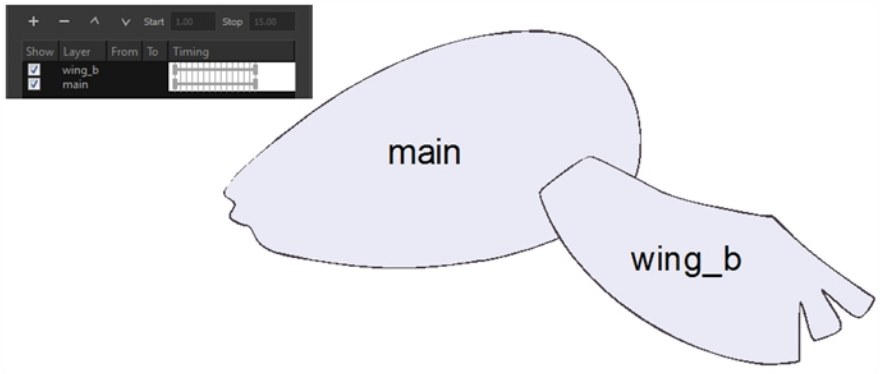


10. Double-click on the new layer's name and name it appropriately.
11. Press Enter/Return.



12. Use the Up and Down arrow buttons to move the new layer above or below the **Main** layer.
    - If placed above the **Main** layer, it will be displayed in front. If it is placed below, it will be displayed behind.

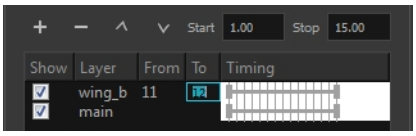




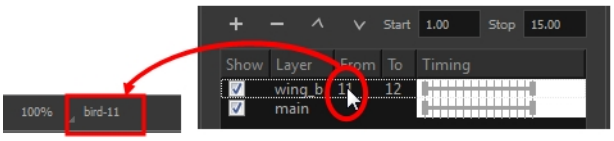
13. To create new drawings, double-click on the blank area under the **From** section to create the source drawing and the **To** section for the destination drawing and type a different value than the ones used for the main layer.

14. Press Enter/Return.

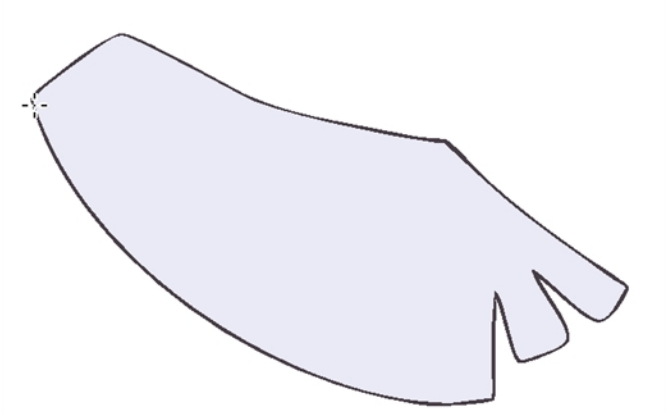
    You do not need to type any value for the **`Main`** layer as it uses the one from the Xsheet column.



15. Click on the new source drawing to start drawing the new part. (Make sure that you are working on the proper drawing by verifying the name in the Camera or Drawing view's bottom left corner.)



16. In the Camera or Drawing view, draw the source drawing.

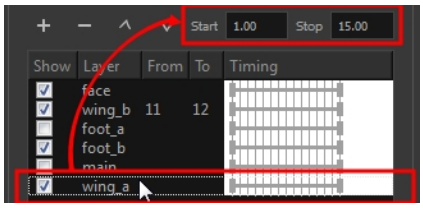


17. Once the source drawing is done, use the Morphing Tool Properties view and click on the destination drawing's name and draw it in the Camera or Drawing view.

18. Repeat steps 9 to 15 for each layer needed. You can add as many layers as you want.

19. Enable or disable the layers that you want to display or hide while drawing.

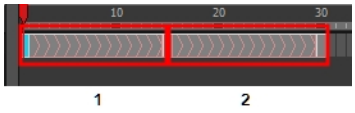
20. If you want to change the layer duration, click on the layer and change the start and stop numbers.



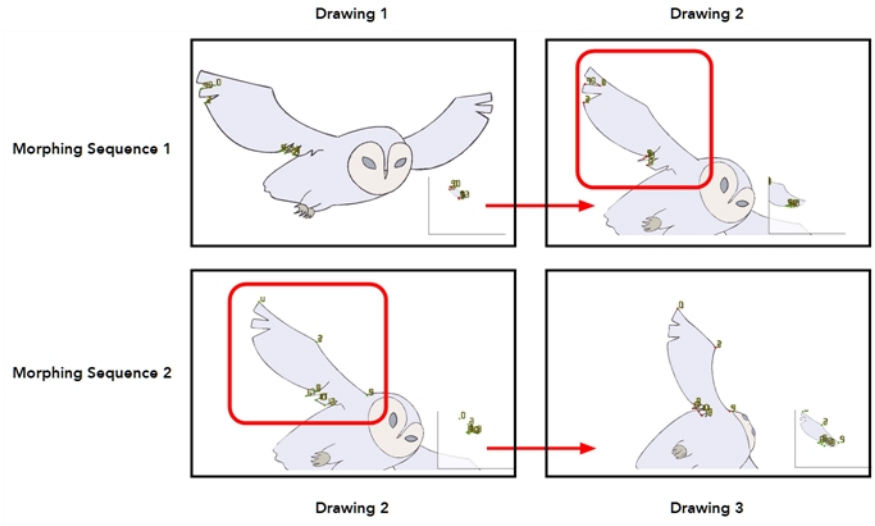
The length indicator changes according to the new values.

Morphing Two Sequences in a Row

If you are morphing two sequences in a row, you will have to create a different set of hint points for each sequence.

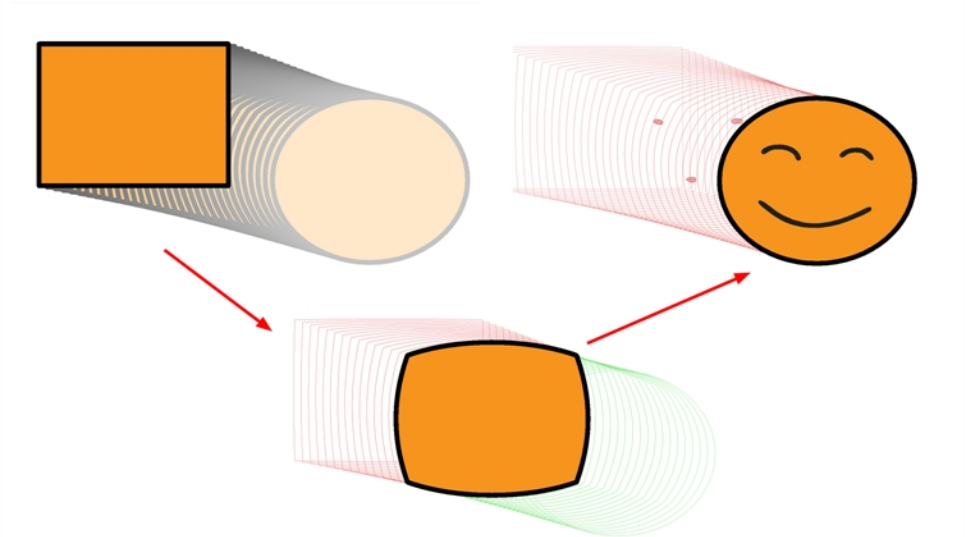


Morphing two sequences in a row requires three drawings: 1, 2 and 3. Using these three drawings you create two morphing sequences; one sequence between drawings 1 and 2, and a second sequence between drawings 2 and 3.



NOTE: Each morphing sequence has its own set of parameters and hints. This means that Drawing 2 will have a set of hints for the first sequence and another set for the second sequence. The two sets of hints will not show at the same time. Each set of hints that appears always corresponds to the morphing sequence you are working on.

Inserting a Morphing Key Drawing



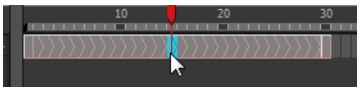
Once you have a morphing sequence, you can add a morphing key drawing.

A morphing key drawing allows you to insert extra details into a morphing sequence. For example, during a morphing sequence you may need to insert a detail such as teeth or a mouth; this is easy to do when you use a morphing key drawing. Instead of creating an entirely new drawing, convert a computer generated in-between to a morphing key drawing and add your extra details to it and the next key drawing.

A morphing key drawing converts a computer-generated morphing frame into a real drawing that you can edit. It splits the morphing sequence into two sequences, retaining any previous modifications.

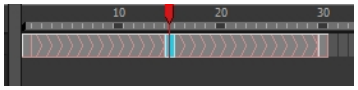
How to insert a morphing key drawing

1. In the Timeline or Xsheet view, select the morphing frame you want to transform into a morphing key-frame.



2. Do one of the following:
   - In the top menu, select **Animation > Morphing > Insert Morphing Key Drawing**.
   - Right-click and select **Morphing > Insert Morphing Key Drawing**.

The new morphing key drawing appears.



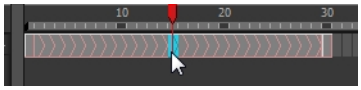
3. In the Drawing or Camera view, draw your new details on the morphing key drawing.
4. In the Playback toolbar, press the Play button to see the result.

Converting Morphing Inbetweens to Drawings

Harmony lets you convert your morphing inbetweens to real drawings you can edit. This is useful when manually editing a morphing sequence or if you prefer to have animation timing in double frame (on twos) instead of single frame (on ones).

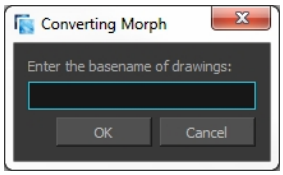
How to convert morphing inbetweens to drawings

1. In the Timeline or Xsheet view, select a morphed drawing in the morphing sequence you want to convert to real drawings.

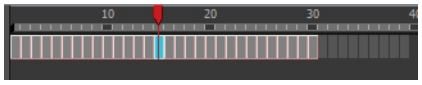


2. Do one of the following:
   - In the top menu, select **Animation > Morphing > Convert Morphing to Drawings**.
   - Right-click and select **Morphing > Convert Morphing to Drawings**.

   The Converting Morph dialog box opens.

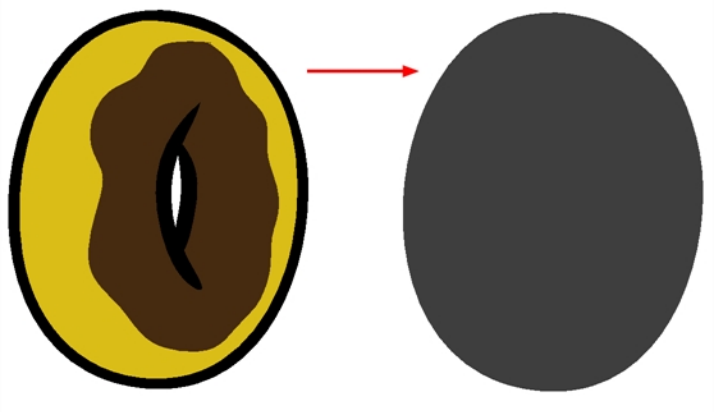


3. Type the drawing basename you want to give to your new drawings. In this case, you could type **`circle`**.
4. Click OK.

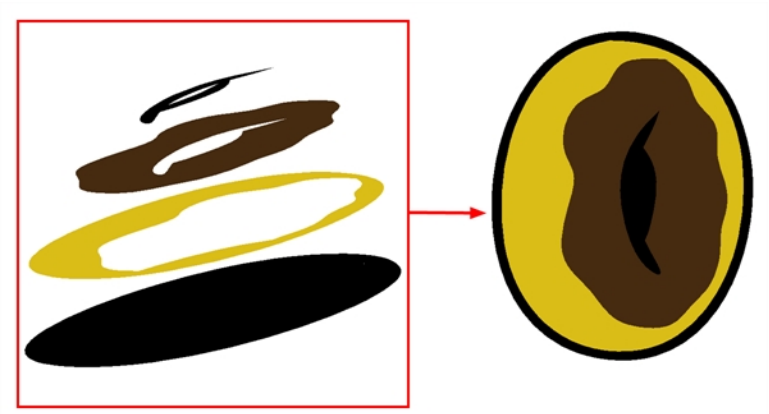


Morphing Holes and Transparencies

To be able to morph shapes with holes or transparent colours, it is important to understand the process of analyzing and morphing a shape. Harmony begins the process by reading the exterior outline of the entire shape. So if you are morphing a doughnut, it will first read the entire circular shape and ignore the central hole.



Once the general morphing shape is analyzed, the system will carry on analyzing the interior details such as colour zones and holes.

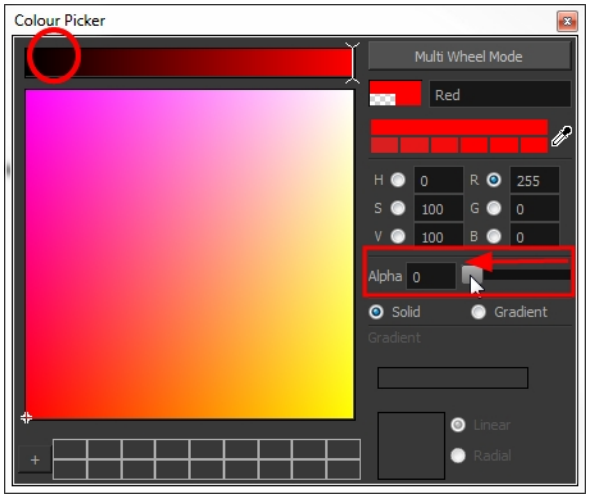


As you can see, because the hole was placed on top after the main shape was morphed, the centre is filled with an opaque brown colour. In order to avoid opaque holes, you have to paint the zone with a transparent colour so that you can control it and flatten the transparency to cut a hole through the main shape.

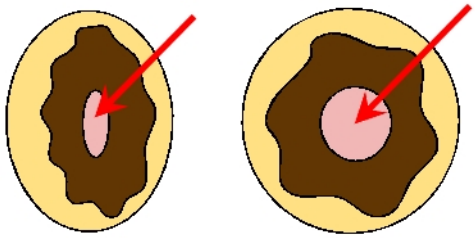
The same thing happens when you have holes painted with semi-transparent colours. To see through your shapes, you have to follow the same process as morphing shapes with holes.

How to morph a shape with a hole

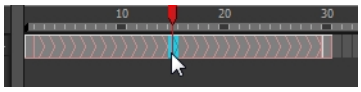
1. In your Colour view, select an unused colour swatch and set its alpha (transparency) to **0**.



2. Paint both holes on the source and destination drawings.

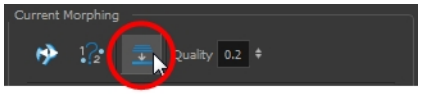


3. In the Timeline or Xsheet view, click on a cell in your morphing sequence.

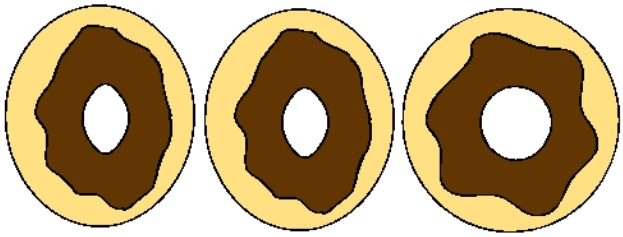


4. Do one of the following:
   - In the Tools toolbar, select the Morphing tool.
   - Press F3.

5. In the Tool Properties view, enable the Flatten button.

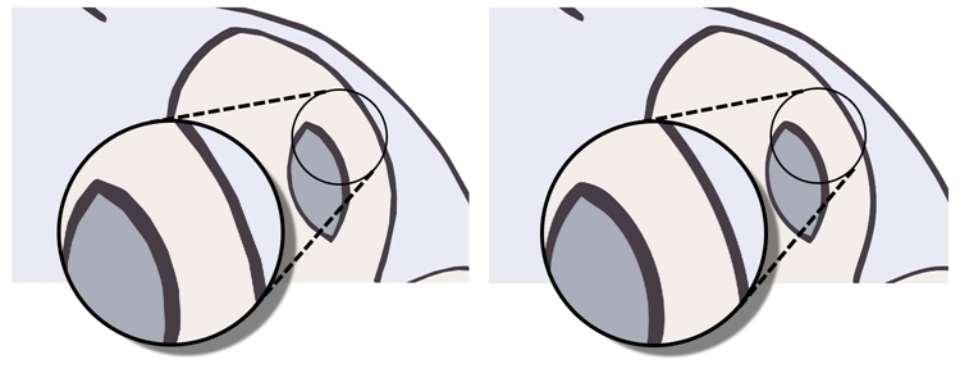


A hole appears in the shape.



Adjusting the Morphing Quality

Increasing the morphing quality settings improves the line shape between vector points. It also creates a larger file, so only increase quality when you are zooming in closely. You can adjust the quality in the Tool Properties view and in the Preferences panel.

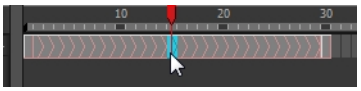


When morphing in Toon Boom Harmony, there is a preference you can set to help you set the default quality of morphing sequences. Refer to the following parameter in the Preferences Guide for complete descriptions.

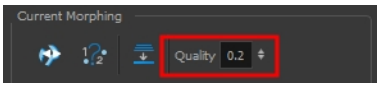
- **Drawing tab**: Settings, Morphing Quality

How to set a morphing sequence's quality level

1. In the Timeline or Xsheet view, click on a cell in your morphing sequence.



2. Do one of the following:
   - In the Tools toolbar, select the Morphing tool.
   - Press F3.
3. In the Tool Properties view, adjust the Quality level.



Tips and Tricks

This section provides a list of easy tips and tricks to help you morph your drawings more efficiently.

Using the Brush Tool as a Beginner

When learning about morphing, it is recommended that you use the Brush tool. You can use the Pencil line for simple closed shapes.

Using the Contour Hint on Pencil Lines

If you are using pencil lines, use Contour hints instead of Pencil hints. Use Pencil hint if you want the Pencil line to

switch direction.

Flattening Drawings

Flatten your drawing before starting a morphing sequence.

Cleaning-up your Drawings

If you leave a dot, even the smallest one, it is possible that your morphing will create odd shapes. If the source line is closer to the dot than the destination line, the source line will morph into the dot and the destination line will disappear.

Using the Same Colour Swatch

Use the same colour swatch between two drawings. You cannot morph between two different colour swatches even if they have the same RGB values. This can be turned to your advantage for complex morphing.

Morphing Similar Shapes

Similar shapes should have the same number of colour zones. This only applies to the number of zones and lines and not the number of points on a curve.

Avoiding Crossing Zones During Morphing

If a zone inside a larger zone on the source drawing ends up outside on the destination drawing, the morphing will fail.

A line cannot cross another line during a morphing sequence.

For example, if you are morphing a face so it turns from the front to the side, the nose is located in the middle of the face on the source drawing. However if after morphing, the nose ends up outside or merged with the face profile line on the destination drawing, this will give undesirable results. You can avoid this by using morphing layers and splitting the nose on a separate layer.

Glossary

alpha channel	An image channel that carries transparency information. An image already has three channels: red, green and blue (RGB). The alpha channel is the fourth channel (RGBA). The matte, or the transparency information, is stored in this fourth channel. An image without an alpha channel is always opaque.
animatic	A movie with sound that is developed from the storyboard. The storyboard panel is exposed for the duration of the scene and at times, the characters are placed on a trajectory to indicate motion. The camera moves are also animated. The animatic is used to determine the rhythm of a project and provides a good overview of the project before beginning production.
animation	A simulation of movement created by displaying a series of pictures or frames.
anime	An animation style known for its sinister and dark feel; popular in Japan.

arc	Action rarely occurs in a straight-forward manner; rather it typically unfolds in what storytellers refer to as an arc. The purpose of a story arc is to move a character or situation from one state or scenario to the next.
aspect ratio	The relationship between the width and height dimensions for any scene, frame or film format. Television ratio is 4:3 and widescreen ratio is 16:9.
auto-feed	An automated method of feeding drawings into a scanner in which multiple drawings are stacked into a sheet feeder. When the scanner is activated, the drawings are scanned consecutively, without further user intervention.
automatic lip-sync detection	Automatically mapping drawings in an element to the mouth chart generated for a sound. This can save time when lip-syncing a voice track.
axis	An imaginary line around which an object rotates. For 2D graphics, there are two axes: X (horizontal and Y (vertical). For 3D graphics, there are three axes: X (horizontal, Y (vertical) and Z (depth).
background	The part of a scene that is farthest to the rear. The background is the artwork, or decor, against which the animation takes place.
Bézier	A method of defining curved lines invented by French mathematician Pierre Bézier. A Bézier curve is a mathematical or parametric curve. Bézier curves use at least three points to define a curve.
bitmap	An image composed of pixels with a single resolution (size). If it is enlarged too much, it will lose definition and pixels will begin to appear. This is known as *pixelation*.
breakdown	In cut-out animation, breakdown is the action of breaking a character into pieces to create a puppet with articulations. To break down a character, the artist cuts parts, such as the hands and arms, from the character's model and pastes them in separate layers. Next, the joints are fixed and the pivots set. In traditional animation, a breakdown is an animation pose generally found between two key poses. The key poses are the main poses in an animation and the breakdowns are secondary poses, ones that help describe the motion and the rotation curve (usually referred to as an *arc*).
camera shake	Camera shake occurs in a scene when the camera moves slightly and quickly in several directions. This gives the impression of an impact, vibration or, for example, bumps on the road.
caption	A text field containing dialogue, effects, sound, or slugging information in a storyboard.
cel	In traditional animation, a cel (also known as *celluloid*) is a transparent sheet on which the animation is inked and painted before being sent to the camera. The picture's outline is drawn on the front of the cel and then coloured along the back. In Harmony, a cel is an individual space in an Xsheet column from which you can expose a drawing or a function's coordinate.
character design	Each character in an animated film is drawn from multiple angles in poster-

	style format, called a *model sheet*, which serves as a reference for the animators.
clean up	After rough drawings have been tested and approved, all the noise in the image (excess lines, notes, etc) is removed to create final drawings which can be inked, painted and shot. The cleanup process refers to either tracing a clean line over a rough drawing to achieve the final version, or removing dirt and extra lines left by the scanning process.
CMYK	Cyan, Magenta, Yellow, Black. Refers to the process used by printers to define colour on the printed page.
colour card	A colour card is a solid colour card that is the same size as the camera. The colour card can be used to fill the background with a solid colour when there is no background image included.
colour model	The official colour design that must be used to paint the animation. A model is the definitive character, prop, or location design that each artist must follow for the production.
colour wheel	A display of the colour spectrum in the form of a circle.
compositing	Compositing is the action of incorporating all of a scene's elements to create the final result prior to rendering. For example, the compositing artist will import all the animation sequences, background, overlays and underlays in the scene and position them correctly. The artist will then set the camera frame and animate it, if needed. Finally, the animator will create all the computer-generated effects for the project.
cross dissolve	An effect used to fade two scenes, one into the other.
cut	A direct transition between two scenes. When a cut is used, there are no transition effects inserted to pass from one scene to the next. The first scene ends and the second one starts immediately.
cut-out animation	The action of animating characters made of several pieces by moving them around frame by frame. Cut-out animation can either be computer generated or done traditionally using paper.
cycle	A group of images that together make up an action, such as walking. A cycle is an action repeated as a loop over a period of time. It can be a series of animated drawings or keyframes.
dialogue	The text spoken by a character in a movie or animation.
dope sheet	Used by animators, directors and other members of a crew to track the sequence and timing of images, dialogue, sound effects, sound tracks and camera moves. Also known as an *exposure sheet* or *Xsheet*.
doping	To assign a particular drawing to a range of frames.
DPI	Dots per inch is the standard measure of resolution for computerized printers. It is sometimes applied to screens, in which case it should more accurately be referred to as *pixels per inch*. Either way, the dot is the smallest discrete element making up the image.
ease/velocity	In animation, the ease, also known as *velocity*, is the acceleration and deceleration of a motion. It can be a motion created by a function curve, or

	a series of animated drawings. Other common terms for ease-in and ease-out are slow-in and slow-out.
ease-in	Gradual acceleration in the action. Also known as *slow-in*.
ease-out	Gradual deceleration in the action. Also known as *slow-out*.
establishing shot	A scene in which the viewer can see the whole area in which a sequence is happening. For example, if a child is playing on the ground in front of his house, the establishing shot would be a scene where the viewer can see the house, the ground, a part of the street and the buildings around the central point of action. This helps the viewer understand the story location and scene orientation.
exposure	In animation, an exposure is the number of cels on which a drawing appears in the scene. For a drawing to appear longer, the exposure must be extended over a greater number of cels.
exposure sheet	A sheet with several vertical columns and horizontal frames used to indicate a scene's timing. Each column represents a scene layer. The drawing numbers in each column are indicated and repeated over the particular amount of frames they need to appear. The exposure sheet is used by animators, directors and other members of a crew to track the sequence and timing of images, dialogue, sound effects, sound tracks and camera moves. Also known as a *dope sheet*.
fade in/fade out	Fade in or fade out is a transition effect used to open or close a sequence. A fade in occurs when the first scene appears progressively, from complete transparency to its complete opacity. A fade out occurs when the last scene progressively disappears, going from complete opacity to complete transparency.
fast-in	Dramatic acceleration at the start of the action.
fast-out	Dramatic acceleration at the end of the action.
field	In animation, a field is a measurement unit used to calculate motion, registration and camera positioning. A standard animation scene will vary between 6 to 12 fields.
field chart	A guide containing all the field units that animation and layout artists use to determine a scene size or camera motion.
film-1.33	A resolution that is ideal for the widescreen film format that conforms to the standard 4:3 pixel aspect ratio.
film-1.66	A resolution that is ideal for the widescreen film format that conforms to the 16:9 pixel aspect ratio. (The pixels are wider than they are high).
flipping	In traditional animation, flipping is the action of going through the drawings of an animation sequence very quickly in order to see the animation in motion. Flipping can also be the action of creating a mirror transformation of an object.
follow-through	The secondary motion caused by the main action. For example, a character wearing a cloak is running. The main action is the body running. This will cause the cloak to follow the motion, although it will not move at the same

	time, but react a few frames later and follow the main motion curve.
forward kinematics	Forward kinematics is a feature used to animate principally 3D characters and cut-out puppets with hierarchy. It is used to animate a puppet from one of parent parts, such as a shoulder, and make the rest of the arm move with it as a single piece.
frame	A single photographic image in a movie. In traditional animation, the North American standard generally contains 24 frames per second, while in Europe the standard is 25 frames per second.
frame rate	The frame rate is the speed at which the frames are played. They are generally calculated by frame per second. For example, a scene could be played back at 12, 24, 25, 30 or 60 frames per second or any other number. This is the measurement of the frequency (rate) at which an imaging device produces unique consecutive images, called *frames*. The term applies equally to computer graphics, video cameras, film cameras, and motion capture systems. Frame rate is most often expressed in frames per second (fps) and in progressive-scan monitors as hertz (Hz).
functions	A computer-generated motion, trajectory or path on which elements, other trajectories and effects parameters can be attached. The function can be controlled by adding keyframes and control points on the function curve.
gamut	The range of colours that a particular device can represent.
HDTV	High Definition Television delivers a higher quality image than standard television does because it has a greater number of lines of resolution. To take advantage of the superior quality and make full use of your resolution setting, the output device must be compatible with HDTV technology.
hold	A frame in the animation in which the character maintains its position without moving. A hold can be created between any two keyframes.
HSV	Hue, Saturation, Value. A method of defining colours in terms of hue (tint), saturation (shade) and value (tone or luminance).
in-between	The drawings that exist between the key poses. These are drawn to create fluid transitions between poses.
ink and paint	The ink and paint process is the action of painting the empty zones and colouring the lines on the final animation drawings, while following a colour model.
interpolation	The computer-generated motion created between two keyframes. You have the choice to create interpolation, or not, between your keyframes.
jump cut	A jerky cut between two scenes. Typically, a jump cut is not visually pleasing. It is generally caused by one scene ending, and a second one starting, with a similar image. The lack of difference causes the eye to see a little jump between the two scenes.
key pose	Important positions in the action defining the starting and ending points of any smooth transition. Keys, or key poses, are the main drawings in an animation sequence describing the motion. For example, if an arm is

	waving, the keys will be of the arm at one extremity of the wave motion and the other extremity. By flipping those drawings, the animator can see the skeleton of the motion without having all the drawings.
keyboard shortcuts	One or more keyboard keys which, when used, cause an operation to be performed.
keyframe	Important positions in the action defining the starting and ending points of any action. A keyframe is a computer-generated position at a specific moment (frame) on a given trajectory.
layers	In animation, a layer is an individual column, level or character. A scene's layers are superimposed to form the final image.
layout	The communication step between the storyboard and the animation. It is the action of putting the storyboard on model. That is, drawing the character by following the design in the model pack, so the animator can start working. The layout artist draws the background, creates the camera and field guide matching the scene and camera motion. Lastly, the animator draws on model the main action poses.
layout and posing	The action of putting on model. That is, at the right scale, the storyboard for the animator to start working.
library	A storage area containing templates and assets that can be reused in any project or scene.
light table	A device that allows you to see other layers in transparency while you are working on a particular layer.
line of action	The direction that the action will follow. Also known as *path of action*.
lip-sync	The character's mouth synchronization with the dialogue sound track. Frame by frame, the mouth will be adjusted to fit the sound to give the illusion of the character is speaking.
low resolution	A format that is ideal for videos destined for the web, where size and fast download of a video file take precedence over quality. A low-resolution image is one that lacks fine detail.
manual lip-sync detection	The manual swapping of mouth position drawings to match a voice track. For this process, both sound scrubbing (listening to a sound wave broken up frame-by-frame) and drawing substitutions are used.
master palette	A group of colours attributed to a character or prop. The palette is used throughout the entire production to maintain consistency in the look and to ensure that the same colours are used throughout the production. Also known as *palette*.
model/colour model	The definitive character, prop or location design each artist must follow for a production. A colour model is the official colour design that must be used to paint the animation.
motion keyframe	A keyframe with computer-generated interpolation.
mouth chart	A chart based on the eight animation phonemes (A, B, C, D, E, F, G, and X, which is used to represent silence) used for lip-sync.

multiplane	The effect of passing through multiple levels of drawings to create a sense of depth in a shot. A multiplane is a scene in which the layers are placed at different distances from the camera so that when the camera moves, a depth illusion occurs. With a multiplane, all the perspective and scale is calculated automatically.
NTSC	The standard analogue television broadcasting system used in North America. NTSC conforms to North American standards on how rectangular pixels are displayed for computer and television screens.
nudge	A small push (left, right, up, down, forward or backward) done with the keyboard arrow keys on a selected element. Nudging is used to move a selection very slightly and precisely.
onion skin	A feature that lets you see the previous and next drawings of a sequence.
overlay	A part of the scene environment, such as a chair or a bush, that is placed in front of the main animation.
PAL	A resolution that works best with the European format for television and computer screens, as the rectangular pixels are displayed at a different orientation.
palette/master palette	A palette or master palette is a group of colours attributed to a character or a prop. The palette is used throughout the entire project to maintain a consistency in the look and avoid the colour changing during the animation. Also referred to as a master palette.
palette style	A palette style is a second version of an existing palette with a slight change in the tint and value. A palette style can be used to create the night version of a palette. It may also be called a clone palette.
pan	To move the camera across the scene in any direction.
panel	In a storyboard, a panel is a frame in a shot. A shot can be composed of one or several panels.
paperless animation/tradigital	The paperless animation process is the action of animating digitally. The main paperless animation process is to draw, frame by frame, the animation directly in the software.
passing position	When drawing a walk sequence for a character, the passing position is the point at which one leg passes the other.
path of action	Direction that the action will follow. Also known as *line of action*.
peg	In traditional animation, a tool used to ensure accurate registration of action as cel layers move. In digital animation, in which you are doing a more advanced puppet rigging, you can use peg layers. Peg layers are trajectory layers that do not contain drawings. They are motion paths that you can use to add path articulations. For the latter, you can also use the Inverse Kinematics tool.
phoneme	A unit of sound in a language.
pivot	The point around which a peg or drawing rotates.
pixel	The smallest element of an image displayed on a monitor or TV screen.

	Pixel, short for *picture element*, is a single point in a graphic image. It is a small sample of an image, a dot, a square, or a very small section made out of smooth filtering. If you zoom in close enough on a digital image, you will see the pixels, which look like small squares of different colours and intensity.
pose-to-pose animation	The pose-to-pose animation process is the action of creating all the main action poses, called *key poses*, and then placing the secondary poses between the keys. The secondary poses are called *breakdown*. Finally, the animator fills the gaps with the in-between drawings to achieve a smooth animation.
rendering	The final step when animating by computer. During rendering, the computer takes each pixel that appears on screen and processes all of the components, as well as adding motion blur before it produces a final image. The process of calculating the final images after the compositing process.
resolution	The size of a scene, generally calculated in pixels. For example, the NTSC resolution is 720 x 480. The resolution should match the final output: HDTV, film-1.33, film-1.66, NTSC, PAL, low.
RGB	Red, Green, Blue. A method of defining colour by specifying amounts of these three colour components.
rigging	The process of attaching the various parts of a cut-out puppet.
rotary table	Equivalent to the animation disk/table, a device that allows you to rotate the workspace for greater comfort while drawing.
rotoscoping	An animation technique in which animators trace over live-action film movement, frame by frame, for use in animated films. The act of sketching over live-action footage to create an animated sequence.
roughs	The skeleton sketch of an animation or design. Roughs mainly consist of sketch lines and shapes, though they can also contain design details.
safe area	The zone at the center of a scene's frame that is safe from being cropped by the TV frame. As a TV frame cuts a margin off the original frame size, maintaining a safe area ensures that the scene's main action will remain clearly visible once the film is screened on television.
scene	A shot in a movie or show. A sequence is composed of several scenes. A scene changes to another scene by a simple cut or transition.
script	The original text containing all the movie or show information. In animation, the script contains all of the location descriptions, dialogue, time and more. A project starts with a script.
sequence	A series of scenes or shots forming a distinct part of the story or movie, usually connected by unity of location or time.
shot	A scene in a movie or show. A sequence is composed of several shots. A shot changes to another shot by a simple cut or transition.
slow-in	The gradual acceleration in the action. Also known as *ease-in*.
slow-out	The gradual deceleration in the action. Also known as *ease-out*.

slugging	To indicate the start and stop times of dialogue and relevant actions.
sound scrubbing	A process that lets you hear sound in real time while you move the playhead forward or backward. This is very useful for finely-tuning a lip-sync.
stop-motion keyframe	A keyframe with no computer-generated interpolation.
storyboard	A visual plan of all the scenes and shots in an animation. The storyboard indicates what will happen, when it will happen and how the objects in a scene are laid out.
straight-ahead	A technique in which an entire sequence is drawn from the first position to the last, in order. There is very little planning in this methodology. Where the character ends up and how it gets there can be a surprise for both the audience and the animator. While this approach is spontaneous and creative, it can create inaccurate results.
strokes	Invisible vector lines forming the drawing zones. They can be adjusted with Bézier handles.
tablet/pen	A device used in conjunction with, or instead of, a mouse to move a mouse pointer (sometimes referred to as the *cursor*) around the computer screen.
template	An asset stored in the library that can be reused in any project. A template can be a drawing, a series of keyframes, a sound file, a panel, a cut-out character, an effect, a trajectory, an animation, or anything else used in the animation.
thumbnails	A very small image used as a reference or indicator.
timecode	The timing information printed on a movie clip to indicate the scene, hour, minute and second that is currently displayed on the screen.
timeline	A horizontal representation of a scene's elements, timing and keyframes.
trace and paint	After the rough animations have gone through cleanup and a final line or pencil test, each drawing is traced and painted for the final animation. In today's digital world, this may be done in a variety ways other than the traditional celluloid or acetate methods.
track breakdown	The break down of an animated film's soundtrack into individual sounds to produce the precise frame-by-frame position of each sound.
traditional animation	A type of animation process whereby all the animation sequences are drawn by hand on paper before scanning or inking them on cels.
trajectory	A computer-generated path or trajectory that elements can follow. The trajectory can be controlled by control points, keyframes and velocity.
transition	An effect placed between two scenes as they pass from one to the other. Common transition effects are cross-dissolve and wipe.
underlay	In animation, an underlay is a specific part of the decor placed behind the main animation.
aspect ratio	The aspect ratio describes the shape of the grid unit. A square grid unit would have a 1:1 ratio , whereas a grid unit of aspect ratio 4:3 is a unit with one side 1.33 times as big as the other side.

vector	A vector-based image is composed of points and Bézier curves. The computer reads the points and traces the segments, linking them to reproduce the image shape. There is no fixed size or resolution in a vector image. The graphic can be enlarged and distorted as much as desired and the system will simply recalculate the segments and rebuild the shapes. Vector images are translated and displayed in pixels once the calculation is done.
velocity	In animation, the velocity, also known as *ease*, is the acceleration or deceleration of a motion. This can be achieved by a function curve, or via a series of animated drawings. Other common terms for ease-in and ease-out are *slow-in* and *slow-out*.
walk cycle	A series of drawings "on the spot" that describe the walk for a character. The illusion of movement is created by the use of background pans. To avoid making innumerable drawings, animators routinely make a walk cycle for a character.
Xsheet (exposure sheet)	The Xsheet or exposure sheet, is a sheet with several vertical columns and horizontal frames used to indicate a scene's timing. Each column represents a scene's layer. In each column, the drawing numbers are indicated and spread over the specific number of frames in which they appear. The exposure sheet is used by animators, directors and other members of the crew to track the sequence and timing of images, dialogue, sound effects, sound tracks and camera moves. Also known as *dope sheet*.
zone	An area which can be painted with colour.

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